

US EPA RECORDS CENTER REGION 5




524075

**FOURTH FIVE-YEAR REVIEW REPORT FOR  
THE CONTINENTAL STEEL CORP. SUPERFUND SITE  
HOWARD COUNTY, INDIANA**



**Prepared by**

**U.S. Environmental Protection Agency  
Region 5  
CHICAGO, ILLINOIS**

*for*   
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*8/22/2017*  
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**Date**

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## LIST OF ABBREVIATIONS & ACRONYMS

ARARs	Applicable or Relevant and Appropriate Requirements
CAMU	Corrective Action Management Unit
CERCLA	Comprehensive Environmental Response, Compensation and Liabilities Act
CFR	Code of Federal Regulations
ERC	Environmental Restrictive Covenant
ESD	Explanation of Significant Differences
GPM	Gallons Per Minute
HSVE	Heated Soil Vapor Extraction
IDEM	Indiana Department of Environmental Management
MCL	Maximum Contaminant Level
NCP	National Contingency Plan
NTCRA	Non-Time-Critical Removal Action
O&M	Operation and Maintenance
OUs	Operable Units
PAHs	Polynuclear Aromatic Hydrocarbons
PCBs	Poly-Chlorinated biphenyls
RAO	Remedial Action Objective
ROD	Record of Decision
Site	Continental Steel Superfund Site
TCE	Trichloroethylene
UU/UE	Unlimited Use/Unlimited Exposure
VOC	Volatile Organic Compound
WWTP	Waste Water Treatment Plant

## **I. INTRODUCTION**

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The United States Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 121, consistent with the National Contingency Plan (NCP) (40 C.F.R. Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the fourth FYR for the Continental Steel Superfund Site (Site). The triggering action for this statutory review is the signature date of the previous FYR on August 30, 2012. The FYR has been prepared due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE). The Site consists of six Operable Units (OUs), all of which are addressed in this FYR.

This FYR was led by Nabil Fayoumi, EPA Remedial Project Manager. Participants included Janet Pope, EPA Community Involvement Coordinator, and Jessica Fliss, Indiana Department of Environmental Management (IDEM). IDEM was notified of the initiation of the five-year review. The review began on November 11, 2016.

### **Site Background**

The Site is located on West Markland Avenue in Kokomo, Howard County, Indiana (Figure 1 – Site Location Map). The total Site covers approximately 183 acres and is comprised of six areas that were designated as OUs. The four source areas include:

- OU2, Acid Lagoon Area, a waste acid treatment and disposal facility;
- OU4, Markland Avenue Quarry Area, a waste disposal area;
- OU5, Main Plant, an abandoned steel manufacturing facility; and
- OU6, Slag Processing Area, a slag processing and disposal area.

The two receptor areas are:

- OU1, Site-wide Groundwater; and
- OU3, Wildcat and Kokomo Creeks

Continental Steel was built in 1914. The plant produced nails, wire, and wire fence from scrap metal. Operations included reheating, casting, rolling, drawing, pickling, annealing, hot-dip galvanizing, tinning, and oil tempering. The steel manufacturing operations at the plant included the use, handling, treatment, storage, and disposal of hazardous materials. Continental Steel operated from approximately 1914 to 1986. The company entered into bankruptcy and the Site was abandoned in 1986. The area surrounding the facility is mixed residential, commercial, and industrial use and is zoned for general use, except for the Main Plant and Acid Lagoon Areas, which are zoned for industrial use.

The Acid Lagoon Area is located approximately 0.3 miles west of the Main Plant along the south side of West Markland Avenue, bordered by Wildcat Creek, Markland Avenue and the City of Kokomo Wastewater Treatment Facility. It covers approximately 56 acres and is composed of 10 lagoons that received spent pickling and finishing liquors from the Main Plant. In 1989, pre-construction stabilization activities occurred at the Acid Lagoon Area, including acid neutralization of the settling ponds.

The Markland Avenue Quarry is a former limestone quarry purchased by Continental Steel in 1947 and used until the early 1980s for disposal of waste materials from processing operations. The 23-acre quarry area is bordered by Harrison Street, West Markland Avenue, Courtland Avenue, and Brandon Street. An open pond covered approximately four acres of the old quarry property. Near-empty drums were taken to the quarry and the remaining contents were dumped onto the ground. A large portion of the quarry was backfilled with slag, refractory brick, pig iron, baghouse dust (electric arc furnace dust), and drums. More than 400 drums, along with several tanks and other waste materials were also scattered across the surface of the property. Drums contained mostly oils, solvents, and refuse. Some of the drums were also disposed of in the pond. Drums were removed from the pond in 1990 by EPA.

The Main Plant is bordered by Kokomo Creek, West Markland Avenue, Leeds Street, and Park Avenue. It also extends west of Park Avenue to Wildcat Creek. The Main Plant included many buildings, underground sewers, and utility lines. More than 700 oil and solvent-filled drums, 55 aboveground storage tanks, 33 vats, 24 electrical transformers, 200 capacitors, large quantities of electric arc furnace dust, and exposed asbestos were located throughout the Main Plant. Tanks and vats contained primarily oil and some chlorinated solvents and acids. A portion of the Main Plant Area south of Kokomo Creek, known as the Crushed Drum Area, was investigated with an electro-magnetic survey during the remedial design. Anomalies were noted suggesting that one or more buried tanks might be in this location. EPA enclosed the area with an 8-foot chain link fence in December 2000. In 2007, EPA performed a limited investigation of the Crushed Drum Area and discovered large pieces of buried slag, which may be the objects detected during the electro-magnetic survey. EPA also removed large piles of slag and cinders from this area and transported the material to the Acid Lagoon Area.

Slag generated from Continental Steel operations was processed and disposed of in the nine-acre Slag Processing Area, approximately 0.2 miles west of the Acid Lagoon Area and bounded by West Markland Avenue, Wildcat Creek, and the Acid Lagoon Area. Slag processing refers to reclamation of metals from the slag. The slag consisted primarily of calcium and iron oxides, with lesser amounts of aluminum, chromium, lead, manganese, magnesium, and zinc oxides. The Slag Processing Area was unfenced and contained a 50-foot high exposed mound of slag in the west/northwest section and a stockpile of lead-contaminated soil from the Residential Soil Removal Action was completed in December 1998. The lead-soil stockpile was graded and seeded by EPA in August 10, 2011. A portion of the Slag Processing Area was formerly known as the Chaffin Quarry, and may also have been used to dispose of waste materials (i.e., drums) from the Main Plant. An abandoned railroad spur ran between the Slag Processing Area and the Acid Lagoon Area. An undetermined amount of slag was placed in this area as well. It was determined that the slag piles presented no threat of airborne release of contaminants.

Groundwater beneath the Site appears to have received contaminants from the Main Plant, the Markland Avenue Quarry, the Acid Lagoon Area, and possibly from adjacent industrial facilities. Groundwater quality varies considerably across the Site, and groundwater contamination exists outside the source areas identified above as well.

Kokomo and Wildcat Creeks run along the border between the Main Plant and the Acid Lagoon Area. The Kokomo area is drained by these two creeks, which are tributaries of the Wabash River. Kokomo Creek is generally 15 to 20 feet wide and less than 2 feet deep, and Wildcat Creek is generally 30 to 50 feet wide and approximately 2.5 to 5 feet deep. The creeks received water from the plant's wastewater recycling and filtration system, neutralized pickle liquor from the Acid Lagoon Area, discharge from Site outfalls, and storm water runoff from the Site.

**FIVE-YEAR REVIEW SUMMARY FORM**

<b>SITE IDENTIFICATION</b>		
<b>Site Name:</b> Continental Steel Corp.		
<b>EPA ID:</b> IND001213503		
<b>Region:</b> 5	<b>State:</b> IN	<b>City/County:</b> Kokomo/Howard
<b>SITE STATUS</b>		
<b>NPL Status:</b> Final		
<b>Multiple OUs?</b> Yes	<b>Has the Site achieved construction completion?</b> Yes	
<b>REVIEW STATUS</b>		
<b>Lead agency:</b> EPA		
<b>Author name (Federal or State Project Manager):</b> Nabil Fayoumi, EPA Remedial Project Manager		
<b>Author affiliation:</b> EPA		
<b>Review period:</b> 11/11/2016 – 7/10/2017		
<b>Date of Site inspection:</b> 6/22/2017		
<b>Type of review:</b> Statutory		
<b>Review number:</b> 4		
<b>Triggering action date:</b> 8/30/2012		
<b>Due date (five years after triggering action date):</b> 8/30/2017		

## II. RESPONSE ACTION SUMMARY

### Basis for Taking Action

IDEM and EPA determined that the Site poses potential long-term risks to human health and the environment by the presence of chemical constituents above the acceptable cancer risk range of  $1 \times 10^{-4}$  to  $1 \times 10^{-6}$ , and above the non-cancer hazard quotient of one (1) that were established in the NCP, 40 CFR 300.430(e)(2)(i)(A)(2). This determination was documented in the Record of Decision (ROD) for the Site, signed by IDEM and EPA on September 30, 1998.

Inhalation of contaminated soil dust, dermal contact with contaminated soils, ingestion of contaminated soils and garden vegetables planted in contaminated soils, and inhalation of asbestos were identified as exposure routes for on-site workers, trespassers and residents nearby the Site. The contaminants and associated remediation goals for each OU of the Site are listed in Tables 1 through 6 below.

**Table 1 - Remediation Goals for Groundwater (OU1)**

Chemical	Remediation Goals ( $\mu\text{g/l}$ )
Acrylonitrile	2
Arochlor-1242	0.5
Arochlor-1248	0.5
Arsenic	10
1,1-dichloroethene	7
1,2-dichloroethene	70
Benzene	5
Manganese	50
Chloroform	100
Methylene Chloride	5
Perchloroethene (PCE)	5
Trichloroethene (TCE)	5
Vinyl Chloride	2

**Table 2 - Remediation Goals for Acid Lagoon Area (OU2)**

Chemical	Remediation Goals ( $\mu\text{g/kg}$ )
Benzo(a)anthracene	5,984
Benzo(a)pyrene	598
Benzo(b)fluoranthene	5,984
Di-benzo(a,h)anthracene	598
Indeno(1,2,3-c,d)pyrene	5,984
Arochlor-1242	1,000
Arochlor-1248	1,000
Beryllium	2,000
Lead	1,096,000

**Table 3 - Remediation Goals for Sediment in Kokomo and Wildcat Creeks (OU3)**

Chemical	Remediation Goals ( $\mu\text{g/kg}$ )
Benzo(a)pyrene	1,585
Benzo(b&k)fluoranthene	1,361
Benzo(a)anthracene	1,853



Indeno(1,2,3-c,d)pyrene	930
Arsenic	19,000
Beryllium	840
Arochlor-1016	1,000
Arochlor-1242*	1,000*
Arochlor-1248*	1,000*
Arochlor-1254*	1,000*
Arochlor-1260	1,000

\* IDEM and EPA incorporated a cleanup level for each individual Arochlor of 1ppm based upon the background. IDEM and EPA further determined that sediment excavation will be performed by excavating all polygons with Poly Chlorinated biphenyls (PCBs) greater than 3 times the remedial goal, and Polynuclear Aromatic Hydrocarbons (PAHs) greater than 5 times the remedial goal.

**Table 4 - Remediation Goals for Markland Avenue Quarry (OU4)**

Chemical	Remediation Goals (µg/kg)
Benzo(a)anthracene	546
Benzo(a)pyrene	501
Benzo(b&k)flouranthene	779
Di-benz(a,h)anthracene	180
Indeno(1,2,3-c,d)pyrene	404
Arochlor-1248	1,000
Arsenic	19,000
Lead	400,000

**Table 5 - Remediation Goals for Soil at Main Plant (OU5)**

Chemical	Remediation Goals (µg /kg)
Benzo(a)anthracene	13260
Benzo(a)pyrene	1330
Benzo(b&k)flouranthene	13260
Di-benzo(a,h)anthracene	1330
Indeno(1,2,3-c,d)pyrene	13260
Arochlor-1242	4640
Arochlor-1248	4640
Arochlor-1254	2650
Arochlor-1260	4640
Lead	400,000
Total Volatile Organic Compounds (VOCs)	1,000

**Table 6 - Remediation Goals for Slag Processing Area (OU6)**

Chemical	Remediation Goals (µg/kg)
Arsenic	19,000
Lead	400,000

There are no viable Potentially Responsible Parties at the Site, so the remedy is being funded by the EPA with a 10% cost share being paid by the State of Indiana.

## Response Actions

Interim Remedial Action - Decontamination and Demolition of Main Plant Buildings (OU 5). IDEM investigated the Main Plant Area in 1995 and reported that the buildings presented a potential risk to nearby residents and trespassers. IDEM performed an Interim Remedial Investigation/Feasibility Study for the Main Plant buildings in 1996 and developed an Interim Proposed Plan that recommended the buildings be decontaminated and demolished. The proposed plan was presented to the public in March 1996, and an Interim ROD was signed in September 1996. Decontamination and demolition of the Main Plant Buildings was the selected remedy. The work began in April 1999 and was completed on December 28, 2000. The remedy included:

- Gross removal of lead dust from building interiors with disposal of dust as hazardous waste in a permitted facility;
- Management and proper disposal of rinse water collected from decontamination;
- Abatement of exposed friable asbestos-containing material and asbestos-containing insulation by removal and disposal at a permitted facility;
- Sampling to confirm decontamination;
- Removal of PCB-contaminated wood block floors and disposal as hazardous waste;
- Demolition of all building superstructures, tanks, and equipment to grade, leaving floor slabs;
- Salvaging of structural steel as scrap unless it could be decontaminated and reused;
- Disposal of all debris and demolition rubble as hazardous, special or non-hazardous waste as determined by waste characterization;
- Use of water for dust control during demolition. Dust control water runoff would be contained and managed properly;
- Pumping out flooded basements, removal of equipment and residue;
- Filling or covering of pits and basements;
- Finishing of unpaved areas with crushed stone; and
- Securing of the site after the interim remedy was completed.

Non-Time Critical Removal Action (NTCRA) - Residential Soil Removal Action. IDEM performed a NTCRA to address the threat to human health posed by lead-contaminated residential soils. The work began May 5, 1998, and concluded February 26, 1999. The NTCRA included excavation of contaminated surface soil and disposal in an off-site landfill. The total volume of material excavated from the off-site residential area was approximately 14,700 cubic yards. The components of this action were as follows:

- Removal of small shrubbery and yard equipment from the residential area of concern;
- Removal of lead-contaminated surface soil to a depth of approximately one foot;
- On-site x-ray fluorescence testing of excavated surface soil samples for lead to determine limits of excavation;
- Laboratory confirmation sampling of approximately 20 percent of the surface soil samples;
- Backfill of excavations to grade with clean fill;
- Restoration of the site with sod and replacement of small shrubbery and yard equipment;
- Transportation of contaminated soil to an off-site landfill. The lead-soil stockpile from the removal action was staged, and later graded and seeded at the Slag Processing Area;
- Dust suppression measures including wetting down and covering exposed soils during transportation off-site as appropriate; and

- Preventative safety measures during construction activities to inhibit visitor intrusion onto the removal area.

The preferred alternatives for final remedies at the six OUs at the Site were presented to the public in a Proposed Plan in March 1997, and the final remedial action selection was documented in the ROD signed by IDEM and EPA on September 30, 1998. The Remedial Action Objectives (RAOs) are:

- Prevent ingestion of shallow groundwater that contains contamination in excess of federal and state drinking water standards or criteria, or that poses a threat to human health.
- Restore groundwater to federal and state drinking water standards.
- Prevent the migration of contamination that would result in continued degradation of Site-wide groundwater or surface water to levels that exceed federal and state drinking water or water quality standards or criteria, or that pose a threat to human health or the environment, to the extent feasible and practical. For groundwater, this goal will be addressed through source remediation, extraction and treatment of shallow groundwater, control of the migration of intermediate and deep groundwater, and implementation of environmental restrictive covenants (ERCs) to restrict groundwater use. A Technical Impracticability Waiver of the drinking water Applicable or Relevant and Appropriate Requirements was granted due to the length of time necessary to attain drinking water standards in the intermediate and deep aquifers.
- Prevent incidental ingestion and direct contact with sludge, soil, and waste piles that contain contamination in excess of federal and state soil standards or criteria, or that pose a threat to human health.
- Prevent inhalation of airborne contaminants (from disturbed soil) that exceed federal and state air standards or criteria, or that pose a threat to human health.
- Prevent direct contact with contaminated sediment that exceeds federal and state standards or criteria, or that poses a threat to human health.
- Prevent ingestion of potentially contaminated fish from the creeks that may present a health risk.
- Prevent sediment impacts to the ecological environment.
- Restore sediments to levels protective of human health and the environment, to the extent practical and feasible, while minimizing adverse impact to the wetlands from potential remedial activities, and minimizing the potential for sediment to become suspended in the surface water column.
- Prevent surface water impacts to the ecological environment.
- Prevent dermal contact with groundwater that contains contamination in excess of federal and state standards or criteria, or that poses a threat to human health.

The remedial action at the site included the following activities:

#### **Site-Wide Groundwater (OU1)**

- Collect Intermediate and Lower Groundwater at Martin Marietta Quarry to Contain Contaminants within Current Boundaries
- Dispose of Collected Martin Marietta Quarry Groundwater Off-Site
- Collect Shallow Groundwater and Dispose Off-site at Kokomo Wastewater Treatment Plant
- Monitor Groundwater for Natural Attenuation
- Groundwater Use Restrictions

**Lagoon Area (OU2)**

- Resource Conservation and Recovery Act Surface Impoundment Closure
- Excavate Contaminated Solids and Consolidate On-Site
- Collect and Contain Shallow Groundwater with Expanded Interception Trench System and Dispose Off-Site
- Deed and Groundwater Use Restrictions

**Wildcat and Kokomo Creeks (OU3)**

- Excavate Contaminated Creek Sediment and Consolidate in On-Site Corrective Action Management Unit (CAMU) Landfill

**Markland Avenue Quarry (OU4)**

- Cover Contaminated Solids with Common Soil
- Dispose of Quarry Sediment in Lagoon Area CAMU
- Contain and Collect Shallow Groundwater and Dispose at Waste Water Treatment Plant (WWTP)
- Excavate Contaminated Sediment from Quarry Pond
- Backfill Quarry Pond with alternative fill material
- Deed and Groundwater Use Restrictions

**Main Plant (OU5)**

- Excavate PCB Solids along Kokomo Creek and Dispose On-Site
- Install Common Soil Cover
- Collect and Contain Shallow Groundwater and Dispose Off-Site
- Elevated Volatile Organic Compounds (VOC) Solids Removal and On-Site Disposal
- Deed and Groundwater Use Restrictions

**Slag Processing Area (OU6)**

- Regrade Slag Pile to Level Site
- Install Protective Common Soil Cover over Contaminated Solids
- Deed Restrictions
- Stabilize Creek Bank

**Post ROD Decision Documents**

- 2001 Explanation of Significant Differences (ESD) to explain the increase in the cost of the Interim Remedial Action from the cost estimated in the Focused Feasibility Study.
- 2003 ESD to incorporate remedial action goals, incorporate a more stringent remedial action goal for PCBs in Kokomo and Wildcat Creeks based on background levels; and incorporate the new Maximum Contaminant Level (MCL) for arsenic as a groundwater cleanup goal.
- 2005 ESD to describe significant differences from the 1998 remedy as shown in Table 7:

**Table 7 – Summary of Changes, Explanation of Significant Differences, September 2005**

Elements Changed	Amended Remedy
<p><u>Acid Lagoon Area (OU2)</u> Excavate contaminated solids and consolidate on-site in CAMU. Collect and contain shallow groundwater with expanded interception trench system and dispose off-site.</p>	<p>Solids will not be consolidated on-site. They will remain in place and a soil cover will be placed over the closed lagoons and surrounding area. Shallow groundwater will be extracted using wells, and the extracted water will be treated and discharged as appropriate.</p>
<p><u>Kokomo and Wildcat Creeks (OU3)</u> Excavate PCB solids (sediment and bank soil) along Kokomo Creek and dispose on-site in CAMU. Elevated VOC solids removal and on-site disposal.</p>	<p>Creek solids (PCB and VOC solids) will be disposed off-site at an existing permitted facility.</p>
<p><u>Markland Avenue Quarry Area (OU4)</u> Dispose of Quarry sediment in Lagoon Area CAMU.</p>	<p>Quarry sediment will be disposed off-site at an existing permitted facility.</p>
<p><u>Main Plant Area (OU5)</u> Elevated VOC solids removal and on-site disposal in CAMU.</p>	<p>Elevated VOC solids will be treated in place using Heated Soil Vapor Extraction (HSVE).</p>

On September 22, 2010, EPA issued an ESD documenting the addition of remedial actions for the Crushed Drum Area of the Main Plant Area and the inclusion of the Continental Steel Maintenance Property to the Acid Lagoon Area of the Site.

**Status of Implementation**

**The Site-wide Groundwater (OU1)**

The Site-wide Groundwater remedy includes the installation of a HSVE system at the northwest corner of the Main Plant Area and a groundwater pump and treatment system at the Site. Three wind turbines, at the Markland Avenue Quarry, are producing enough energy to off-set approximately half to three quarters of the energy required to power the groundwater extraction system.

The HSVE system installation was completed on January 1, 2011, and the system was started on January 13, 2011. The HSVE work was completed in November 2012. Soil verification samples results indicated that levels of TCE were below IDEM Risk Integrated System of Closure Industrial Default Closure Levels of 350 ppb.

The groundwater extraction system was installed in the spring of 2011 and was started in the fall of 2011 after completing negotiations with the Kokomo Wastewater Treatment Facility concerning discharge requirements. The extraction system is designed to intercept contamination in the upper aquifer. The three groundwater extraction arrays are situated at strategic points within the groundwater plume (Figure 2 – Groundwater Extraction Wells Locations).

These arrays are located in the following three areas:

- The Markland Avenue Quarry array consists of two wells (EW-15 and EW-16) located at the Markland Avenue Quarry and positioned to address source contamination remaining at the quarry.
- The Wildcat Creek array consists of seven extraction wells installed near the intersection of Park Street and South Phillips Street, parallel to Wildcat Creek. The wells are positioned to intercept the groundwater plume downgradient of the Markland Avenue Quarry at Wildcat Creek. The array consists of wells EW-8 through EW-14.
- The Lagoons array consists of seven extraction wells located parallel to West Markland Avenue near the intersection with South Berkley and adjacent to the Kokomo Wastewater Treatment Facility. The wells are positioned to intercept the groundwater plume near its leading edge. The array consists of wells EW-1 through EW-7.

#### **Acid Lagoon Area (OU2)**

In September 2011, EPA completed the cleanup of the Acid Lagoon Area. The cleanup entailed clearing and grubbing, demolition of the groundwater treatment plant, excavation and off-site disposal of TCE-contaminated soils, use of on-site slag as fill, rough grading, covering of the Area with two feet of clean soil cap; and seeding of the Area. Large amounts of asbestos-containing material, as well as a small quantity of PCB-contaminated soil was removed from the area of the treatment plant.

#### **Kokomo and Wildcat Creeks (OU3)**

On October 4, 2010, EPA completed the remedial action at OU3, Kokomo and Wildcat Creeks. The Kokomo and Wildcat Creeks remedial action included a pre-construction sediments and soils investigation, dredging of contaminated sediments, removal of lead-contaminated soils along the northern bank of Kokomo Creek, transportation and disposal of contaminated sediments, and creeks restoration.

#### **Markland Avenue Quarry (OU4)**

On March 7, 2011, EPA completed the remedial action at OU4, Markland Avenue Quarry. The Markland Avenue Quarry remedial action included dewatering of the Markland Avenue Quarry to access drums, debris, and sediment, treatment of the Quarry's water before discharging off-site, dredging of contaminated sediments, transportation and disposal of contaminated sediments, backfill and cover installation. EPA and IDEM worked with the City of Kokomo on re-use plans for the Quarry. The City of Kokomo is using the Quarry for storm water retention and has responsibility for long-term O&M of the Quarry.

#### **The Main Plant Area (OU5)**

On August 10, 2011, IDEM completed the remedial action at the Main Plant (OU5). The Main Plant remedial action included pre-treatment sampling of contaminated soil, removal of Aboveground Storage Tanks, Underground Storage Tanks and asbestos-containing material, consolidation of contaminated soil, and the construction of the final cover.

Within the Main Plant Area, the remedial work at the Crushed Drums Area included clearing and grubbing, grading, and installation of an asphalt cover, which was completed in May 2012. The Kokomo Park District is using the Crushed Drums Area for equipment storage.

**The Slag Processing Area (OU6)**

On August 10, 2011, EPA completed the remedial action at the Slag Processing Area. American Reinvestment and Recovery Act funds were used to complete the remedial work at the Slag Processing Area. The Slag Processing Area remedial action included site preparation, excavation and transportation of excess slag to the Acid Lagoon Area, rough grading of remaining slag material and lead-impacted soil, installation of the final cover, and restoration activities.

**Institutional Controls**

Institutional Controls (ICs) are required to ensure the protectiveness of the remedy. ICs are nonengineered instruments, such as administrative and/or legal controls, that help minimize the potential for exposure to contamination and protect the integrity of the remedy. Implementation of and compliance with ICs is required to assure long-term protectiveness for any areas which do not allow for UU/UE. A map showing the area in which the ICs apply is included in Appendix B.

Table 8: Summary of Planned and/or Implemented Institutional Controls

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective(s)	Title of IC Instrument(s) Implemented and Date (or planned)
Groundwater (OU1)	Yes	Yes	Area where groundwater exceeds cleanup standards	Prohibit groundwater use until cleanup standards are achieved.	The City of Kokomo Zoning Ordinance No. 6375, May 9, 2005.
Acid Lagoon Area (OU2), Markland Avenue Quarry Area (OU4), Main Plant Area (OU5), and Slag Processing Area (OU6)	Yes	Yes	Acid Lagoon Area, Markland Avenue Quarry Area, Main Plant Area, and Slag Processing Area	Prohibit residential or recreational use, require maintenance of cover and control excavation of contaminated media under the cover.	Environmental Restrictive Covenants, recorded with the Howard County Recorder's Office on July 24 and 25, 2014.
Wildcat and Kokomo Creeks (OU3)	Yes	Yes	Wildcat and Kokomo Creeks	Prevent exposure to contaminated fish through consumption.	Indiana Department of Natural Resources, Indiana Department of Health, and IDEM have issued a Fish Consumption Advisory (Level-Five Advisory in 1988) and conducted Public Education.

					<p>The Fish Consumption Advisory is published through Purdue University at:  <a href="http://fn.cfs.purdue.edu/prodaai/publis hedgeneral.pdf">http://fn.cfs.purdue.edu/prodaai/publis hedgeneral.pdf</a></p>
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Status of Access Restrictions and ICs:

The 1998 ROD requires ICs for the Acid Lagoon Area, the Slag Processing Area, the Main Plant Area, the Markland Avenue Quarry Area, and the Site-wide Groundwater since it was anticipated that the remedy would not achieve unlimited use of those land areas and the cleanup standards for groundwater would not be achieved for some time. The required ICs, in the form of a local ordinance and of ERCs, were implemented on July 24 and July 25, 2014. The City of Kokomo Zoning Ordinance No. 6375, dated May 9, 2005, prohibits groundwater uses until the cleanup standards have been met. ICs have been reviewed and evaluated. All required ICs are in place and effective, including the Fish Consumption Advisory, which has not been evaluated as part of the FYR.

Current Compliance:

Based on the Site inspection, no inappropriate land use was observed. EPA and IDEM are not aware of Site or media uses that are inconsistent with the stated objectives of the ICs. The current FYR confirmed that the objectives of the ICs are being complied with. No activities were observed that would have violated the ICs. No new uses of groundwater were observed. The remedy appears to be functioning as intended.

IC Follow-up Actions Needed:

The ICs and the current zoning restriction limits the use of the Acid Lagoon Area to commercial/ industrial. The remedial action cleanup goals for the Acid Lagoon Area were developed to be protective for recreational use. A zoning adjustment is required to allow for the planned recreational use as a soccer field complex. The City of Kokomo plans to adjust zoning by December 2017. This change does not affect the protectiveness of the remedy at the Site.

To assure proper maintenance and monitoring of effective ICs, the Operation and Maintenance (O&M) Plan should be updated to include a provision for regular inspection of ICs at the Site and regular certifications to EPA that the required ICs are in place and effective.

Long-Term Stewardship:

Long-term protectiveness at the Site requires compliance with the ROD, ESDs and required ICs to assure the remedy continues to function as intended. The required ICs have been implemented. To assure proper maintenance and monitoring of effective ICs, the O&M Plan should be updated to include a provision for regular inspection of ICs at the Site and regular certifications to EPA that the required ICs are in place and effective. The O&M Plan will be updated by December 30, 2017.



### Site-Wide Ready for Anticipated Use

In 2014, EPA determined that the site met the requirements for a Site-Wide Ready for Anticipated Use (SWRAU) determination based on previous remedial actions and all documents reviewed for the site. A SWRAU determination was signed by EPA on August 28, 2014.

### Systems Operations/Operation & Maintenance

The groundwater extraction system is to be operated continuously, discharging groundwater at the target fixed pumping rates per extraction well. Groundwater is monitored to meet discharge and reporting requirements, as required by the City of Kokomo discharge permit. Compliance with the discharge criteria has been met. The 16 extraction wells are designed to operate twenty-four hours a day, seven days a week. The total target flow rate to provide the necessary groundwater capture for the three groundwater extraction well arrays is up to 266 gallons per minute (gpm). The Pete's Run sump is designed to add capacity by flowing intermittently at 25 gpm when saturated conditions force the pumps to run. These flow rates may be adjusted, as needed, to meet project objectives; however, the maximum flow rate is not to exceed 291 gpm.

The extraction pumps start and stop operations remotely and are controlled through an auto dialer. The Kokomo WWTP may remotely stop the extraction pumps during wet periods to control flow to the combined sanitary sewers. If this occurs, as part of routine operations, the system will be inspected upon restart at the end of the wet period. Adjustment of the motor speed, if necessary, is completed manually at each Area pump house.

The groundwater extraction system is designed to operate continuously without operator attention. If the pumps stop, the auto dialer calls the operator to report an alarm. The operator can restart the system once the alarm condition has been removed. Occasional short-term shutdowns of the pumps due to power outages or pump failures are not expected to have a significant impact on the containment of the contaminant plumes. A work control and maintenance record system to manage and document the accomplishment of preventive and corrective maintenance work is established and recorded in an annual preventative maintenance plan.

In June 2013, the pumps in the Acid Lagoons Area extraction wells were replaced and acid-washed. In November 2013, the Wildcat Creek extraction wells were acid-washed, and four pumps were replaced. Currently, these extraction wells are not pumping at the designed flow rates due to iron fouling and they need to be rehabilitated and/or possibly replaced.

Monitoring wells UA-024 and UA-120 need to be replaced. These two monitoring wells are located in relatively heavy contamination areas and are critical to understanding plume behavior and natural attenuation characteristics of the Site. Also, the locations of the available monitoring wells will be evaluated to determine if additional monitoring wells should be installed to refine plume delineation.

Analytical sampling to determine compliance with the discharge permit requirements includes monthly sampling for benzene, toluene, ethylbenzene and xylene and selected VOCs, in addition to yearly sampling for Total Toxic Organics. pH and flow measurements are measured daily from the three discharge locations. pH and flow are measured monthly for Pete's Run. The analytical results are included in the monthly discharge report. This monthly report includes an operations report, a description of well performance, maintenance logs, a log of alarms, and corrective actions completed

during the month. Analytical results of discharge sampling are entered into the Discharge Monitoring Report. This report is required to be submitted to the Kokomo WWTP by the 28<sup>th</sup> of the month that follows.

Groundwater monitoring of the contamination plume at the Site is to be completed semi-annually and includes sampling of all the long-term monitoring network wells (73 wells), with the groundwater sampling events typically being scheduled for the spring and fall months (Figure 3 – Monitoring Wells Location).

Other O&M activities include regular mowing, inspection and repair of the soil covers at the Main Plant Area, the Acid Lagoon Area, the Slag Processing Area, and the Markland Avenue Quarry.

### III. PROGRESS SINCE THE LAST REVIEW

Table 9: Protectiveness Determinations/Statements from the 2012 FYR

OUs	Protectiveness Determination	Protectiveness Statement
1, 2, 3, 4, 5, and 6	Short-term Protective	<p>The remedies at OUs 1, 2, 3, 4, 5 and 6 are functioning as designed and are protective of human health and the environment in the short-term. Threats at the Site have been addressed through encapsulation of contaminated soils, offsite disposal of contaminated sediment, treatment of VOC solids in place using soil vapor extraction system, and extraction, treatment and disposal of contaminated groundwater. Long-term protectiveness at the Site will be achieved by continuing the long-term operation and monitoring of the groundwater system. Additionally, required ICs must be implemented, monitored, maintained and enforced to ensure long-term protectiveness. To that end, the required Environmental Restrictive Covenants (ERCs) will be prepared, approved, implemented, maintained, monitored and enforced to ensure the Site's long-term stewardship.</p>

Table 10: Status of Recommendations from the 2012 FYR

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
1, 2, 4, 5, 6	1) Required effective ICs must be implemented, monitored, maintained, and enforced. Site RCs must be prepared, approved, and implemented.	To ensure required ICs are implemented, monitored, maintained, and enforced, the Environmental Restrictive Covenants (ERCs) will be prepared by IDEM and approved by EPA by June 2013	Completed	ERCs were recorded with the Howard County Recorder's Office on July 24 and 25, 2014.	July 24 and July 25, 2014
1, 2, 4, 5, 6	2) The O&M Plan does not contain a provision for regular inspection of ICs at the Site and/or annual certification to EPA that the required ICs are in place and effective.	Once the ERCs are approved and implemented, the O&M Plan should be updated to ensure that it includes a provision for regular inspection of ICs at the Site and annual certification to EPA that the required ICs are in place and effective. The updated O&M Plan will provide for long-term stewardship (LTS) and will conduct additional ICs evaluation activities as needed.	Ongoing	2017 FYR action item.	NA

## **IV. FIVE-YEAR REVIEW PROCESS**

### **Community Notification, Involvement & Site Interviews**

A notice was published in the local newspaper, the Kokomo Tribune, on March 12, 2017, stating that a FYR is being conducted, requested public comments, and that the FYR report will be made available on EPA's website for the Site. EPA received no public comments. A copy of the public notice can be found in Appendix C.

### **Data Review**

#### **Data Observation and Trends**

Groundwater sampling events were conducted in the spring and fall of 2014, 2015, and 2016. Groundwater monitoring wells are located at the Markland Avenue Quarry, the Acid Lagoons Area, the Main Plant Area, and at Site-wide locations, including neighboring commercial, industrial, and residential areas. The sampling included monitoring wells from each of the three aquifers (upper, intermediate, and lower). Groundwater samples were analyzed for the following: VOCs, PAHs, and Target Analyte List metals.

#### **Groundwater Contours**

##### **Upper Aquifer Groundwater Contour Map**

Groundwater flow in the Upper Aquifer is generally to the west and exhibits an increased mounding around the Markland Avenue Quarry, likely due to the new source of water from the water retention pond created for the City of Kokomo. This pond is causing a slightly steeper groundwater gradient between the Markland Avenue Quarry and Wildcat Creek. There is a depression located along Wildcat Creek near the center of the Site. The depression is caused by groundwater flowing in the Creek. This does not impact the overall plume and the effectiveness of the remedy.

##### **Intermediate Aquifer Groundwater Contour Map**

The intermediate aquifer groundwater elevations are similar to previous monitoring events. The increase of the water table in the vicinity of the Markland Avenue Quarry had the effect of creating a mound that created a consistent gradient heading to the west. The groundwater in the intermediate aquifer is strongly controlled by ongoing pumping in the Martin-Marietta Quarry to the west of the Site.

##### **Lower Aquifer Groundwater Contour Map**

The lower aquifer groundwater contour data show the groundwater is moving west. However, near the west edge of the Wildcat Creek Soccer Complex at the Acid Lagoon Area the flow turns to the southwest.

#### **Contaminant Plume Maps**

##### **Upper Aquifer Contaminant Plume**

Analytical results from the groundwater sampling in the upper aquifer showed an overall stable plume. The groundwater plume exceeding the MCLs remediation goal target was broader in 2011 than in recent sampling events, indicating that the plume is being controlled. The highest MCL exceedances in each year were at Markland Avenue Quarry. TCE at monitoring well UA-109 was 240 µg/L in 2011 and 219 µg/L in 2014. Cis-1,2-DCE at monitoring well UA-111 was 1,900 µg/L in 2011 and 932 µg/L in 2014.

Samples collected from monitoring well UA-07 did not detect TCE in 2011 and 2014, but detected 34 µg/L in 2015.

The highest vinyl chloride MCL exceedance was at Markland Avenue Quarry at monitoring well UA-111 at 170 µg/L in 2011 and 90 µg/L in 2014. Vinyl chloride in UA-111 was measured at less than 1 µg/L in 2015. In the fall of 2015, vinyl chloride was detected at monitoring well UA-24 at a concentration of 4.3 µg/L.

The highest manganese MCL exceedances were at monitoring wells UA-111 and UA-117 at 10,500 µg/L and 6,100 µg/L, respectively in 2014. In 2015, the highest MCL exceedance was at monitoring well UA-07 at 10,300 µg/L.

PCE has been detected in the area northwest of the Markland Avenue Quarry. In 2011, 800 µg/L of PCE was detected at monitoring well UA-06, the highest concentration detected at the Site to date. The highest concentrations detected in 2014 and 2015 were at monitoring well UA-06, at 490 µg/L and 571 µg/L, respectively. PCE was not detected in any monitoring wells located at the Markland Avenue Quarry, as has been the case previously. Although historically not a contaminant of concern at the Site, the PCE is upgradient and captured by the well array at Wildcat Creek.

#### **Intermediate and Lower Aquifer Contaminant Plume**

In 2014, TCE was primarily detected at the Markland Avenue Quarry at monitoring wells IA-111 and IA-109, at 77.4 µg/L and 11.6 µg/L, respectively. In 2015, only three monitoring wells IA-126, IA-109, and LA-105E, exceeded the MCL of 5 µg/L, with concentrations measured at 29 µg/L, 17 µg/L, and 140 µg/L, respectively.

In 2014, vinyl chloride was detected at the highest concentration at monitoring wells IA-111 and IA-131, at 442 µg/L and 40.7 µg/L, respectively. In 2015, the concentrations at these two wells were 570 µg/L and 140 µg/L.

In 2014, cis-1,2-DCE concentrations at monitoring wells IA-111 and IA-130 were reduced considerably from 2011, with IA-111 dropping from 1,800 µg/L to 864 µg/L and IA-130 falling from 1,400 µg/L to 71 µg/L. In 2015, the concentrations at these two monitoring wells were 600 µg/L and 340 µg/L, respectively.

In 2014, the highest manganese concentrations were found at monitoring wells IA-114 and IA-131, at 174 µg/L and 155 µg/L, respectively. In 2015, the highest manganese concentrations were found at monitoring wells IA-131 (168 µg/L), IA-128 (157 µg/L), IA-114 (150 µg/L), UA-06 (3,970 µg/L), UA-07 (10,300 µg/L), and LA-128 (471 µg/L).

Overall, the aquifers show a decline in the concentrations of primary contaminants such as TCE. Breakdown products of these contaminants are also detected at decreased levels from previous monitoring events. This is evidence that natural attenuation of the chlorinated solvents in the intermediate and lower aquifers is occurring at the Site. The intermediate and lower aquifers are not actively remediated as part of the groundwater remedial action, but are affected by the continued

pumping at the Martin-Marietta Quarry nearby. Human health risk is addressed through the use of ICs in the form of deed and groundwater use restrictions.

### **Site Inspection**

A Site inspection was conducted on June 22, 2017. In attendance were Nabil Fayoumi, EPA; Jessica Fliss, IDEM, and Mike Lehman, CH2M Hill. The purpose of the inspection was to assess the protectiveness of the remedy, including the integrity of the cap at the Acid Lagoon Area (OU2), the Markland Avenue Quarry Area (OU4), the Main Plant Area (OU5), and the Slag Processing Area (OU6). The inspection also assessed the condition of the groundwater extraction system and the monitoring and extraction wells.

A pre-inspection meeting was held at the Main Plant Area (OU5) prior to the inspection. EPA and IDEM inspected the Site caps, the groundwater extraction system, and the extraction and monitoring wells. The Site was in good condition. However, tall weeds and grass observed at the Slag Processing Area requires mowing by the City of Kokomo.

## **V. TECHNICAL ASSESSMENT**

**QUESTION A:** Is the remedy functioning as intended by the decision documents?

Answer: Yes.

The review of documents, ARARs, risk assumptions, and the results of the Site inspection indicate that the implemented remedy is functioning as intended by the ROD, ROD Amendment, and ESDs. The remedy components that have been constructed at the Site include the Slag Processing Area re-grading and final cover; the Markland Avenue Quarry sediment removal and final cover; the Acid Lagoon Area excavation of TCE-contaminated soil, backfilling, and final cover; the Main Plant HSVE for removal of VOCs; the Site-wide groundwater extraction system; the Main Plant final contaminated soil consolidation and cover; and the Kokomo and Wildcat Creeks PCB-contaminated sediment dredging and restoration.

The HSVE work is complete. The groundwater extraction system is performing as intended by the ROD, ROD amendment, and ESDs. The groundwater extraction system is effectively capturing the Upper Aquifer groundwater plume.

The City of Kokomo acquired the Acid Lagoon Area, the Markland Avenue Quarry Area, the Main Plant Area, and the Slag Processing Area properties. This acquisition facilitated implementation of the ICs and the required ICs have been fully implemented. These include land use restrictions in the form of ERCs that are components of the remedial actions for the Main Plant Area, Acid Lagoon Area, Markland Avenue Quarry Area, and Slag Processing Area. The City of Kokomo Zoning Ordinance No. 6375, dated May 9, 2005, prohibits groundwater uses until the cleanup standards have been met. Implementing and maintaining effective ICs are required to assure long-term protectiveness of the remedy.

The Acid Lagoon Area property is currently zoned for commercial/industrial use. The City of Kokomo is constructing the Wildcat Soccer Field Complex at the Acid Lagoon Area. The remedial action cleanup goals for the Acid Lagoon Area were developed to be protective for recreational use. However, the

current zoning restriction limits the use of the Acid Lagoon Area to commercial/industrial and requires adjustment to allow for recreational use.

Current Use Compatibility with Land Use Restriction: The ICs at the Acid Lagoon Area, the Markland Avenue Quarry Area, the Main Plant Area, and the Slag Processing Area properties are in place and are proving to be effective in preventing exposure. Based on the Site inspection, EPA is not aware of any Site uses which are inconsistent with the stated objectives of the ICs. The remedy appears to be functioning as intended.

**QUESTION B:** Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid?

Answer: Yes.

The RAOs in place at the time of the remedy selection are still valid. Other factors are discussed below.

Changes in Standards and To-Be-Considered Requirements: Standards outlined and updated in the decision documents and discussed in the previous FYR reports are still valid at the Site. There have been no known changes in ARARs or standards affecting the protectiveness of the remedy since the last FYR report.

Changes in Exposure Pathways: There have been no changes in the potential exposure pathways at the Site since the 2012 FYR. No other changes in the Site conditions that affect exposure pathways were identified as part of this FYR. A solar park was constructed at the Main Plant. The Markland Avenue Quarry is being used by the City as a storm water retention pond. The City is constructing the Wildcat Creek Soccer Field Complex at the Acid Lagoon Area. The current Site land use is compatible with the selected remedy and ICs.

Changes in Toxicity and Other Contaminant Characteristics: Neither the toxicity factors for the contaminants of concern nor other contaminant characteristics have changed in a way that could affect the protectiveness of the remedy. Because the remedy implemented ICs to prevent contact with contaminants that remain at the Site, changes in COC toxicity generally would not impact the effectiveness of the remedy.

Changes in Risk Assessment Methods: Standardized risk assessment methods have not changed in a way that could affect the assessment of the protectiveness of the remedy.

**QUESTION C:** Has any other information come to light that could call into question the protectiveness of the remedy?

Answer: No.

According to the data reviewed and the Site inspection, there is no new information that would suggest that the selected remedy is not protective.



**VI. ISSUES/RECOMMENDATIONS**

**Issues and Recommendations Identified in the Five-Year Review:**

OU(s): 1, 2, 4, 5, 6	<b>Issue Category: Institutional Controls</b>			
	<b>Issue:</b> The O&M Plan should be updated to include a provision for regular inspection of ICs at the Site and an annual certification to EPA that the required ICs are in place and effective.			
	<b>Recommendation:</b> The O&M Plan will be updated to include regular inspection and an annual certification of ICs.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Party Responsible</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
No	Yes	EPA	State	12/30/2017

OU(s): 1	<b>Issue Category: Operations and Maintenance</b>			
	<b>Issue:</b> These extraction wells at the Acid Lagoon Area and Wildcat Creek are not pumping at the designed flow rates due to iron fouling. These extraction wells need to be rehabilitated and/or the extraction pumps possibly replaced.			
	<b>Recommendation:</b> Rehabilitate and/or possibly replace the extraction well pumps at the Acid Lagoon Area and at Wildcat Creek.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Party Responsible</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
No	Yes	EPA	State	12/30/2018

OU(s): 1	<b>Issue Category: Operations and Maintenance</b>			
	<b>Issue:</b> Monitoring wells UA-024 and UA-120 need to be replaced.			
	<b>Recommendation:</b> Replace monitoring wells UA-024 and UA-120.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Party Responsible</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
No	Yes	EPA	State	12/30/2018

<b>OU(s):</b> 1	<b>Issue Category: Operations and Maintenance</b>			
	<b>Issue:</b> The locations of the available monitoring wells should be evaluated to determine if additional monitoring wells should be installed to refine plume delineation.			
	<b>Recommendation:</b> Evaluate the locations of the available monitoring wells to determine if additional monitoring wells should be installed.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Party Responsible</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
No	Yes	EPA	State	12/30/2018

<b>OU(s):</b> 6	<b>Issue Category: Operations and Maintenance</b>			
	<b>Issue:</b> Tall weeds and grass observed at the Slag Processing Area require mowing by the City of Kokomo.			
	<b>Recommendation:</b> Coordinate mowing of tall weeds and grass at the Slag Processing Area with the City of Kokomo.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Party Responsible</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
No	Yes	Other	EPA/State	9/30/2017

## OTHER FINDINGS

In addition, the following are recommendations that were identified during the FYR (and may improve performance of the remedy, reduce costs, improve management of O&M, accelerate site close out, conserve energy, promote sustainability, etc.), but do not affect current nor future protectiveness:

- Some parts of the Site could be considered for delisting from the NPL. EPA and IDEM plan to pursue partial delisting of the Site.
- EPA is evaluating the progress of natural attenuation at the Site. EPA plans to collect geochemical parameters at selected wells to allow more detailed evaluation of aquifer redox conditions and to support evaluation of secondary lines of evidence for natural attenuation.
- The ICs and the current zoning restriction limits the use of the Acid Lagoon Area to commercial/industrial. Zoning adjustment is required to allow for the planned recreational use as a soccer field complex. The City of Kokomo plans to adjust zoning restrictions.

## VII. PROTECTIVENESS STATEMENT

OU1 (Groundwater):

<b>OU1 Protectiveness Statement</b>
<i>Protectiveness Determination:</i> Short-term Protective
<i>Protectiveness Statement:</i> The remedy at OU1 is currently protective of human health and the environment because it is functioning as designed. Threats at OU1 have been addressed through treatment of VOC solids in place using a heated soil vapor extraction system; and through extraction, treatment and disposal of contaminated groundwater. However, in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure protectiveness: update the O&M Plan to include regular inspection and an annual certification of ICs; rehabilitate and/or replace the extraction well pumps at the Acid Lagoon Area and at Wildcat Creek; replace monitoring wells UA-024 and UA-120; and evaluate the locations of the available monitoring wells to determine if additional monitoring wells should be installed. Long-term protectiveness at OU1 will be achieved by continuing the long-term operation and maintenance of the groundwater treatment system and by monitoring, maintaining, and enforcing the required ICs.

OU2 (The Acid Lagoon Area):

<b>OU2 Protectiveness Statement</b>
<i>Protectiveness Determination:</i> Short-term Protective
<i>Protectiveness Statement:</i> The remedy at OU2 is currently protective of human health and the environment because it is functioning as designed. Threats at OU2 have been addressed through demolition of the groundwater treatment plant, excavation and off-site disposal of TCE-contaminated soils, use of on-site slag as fill; rough grading, covering of the Area with two feet of clean soil cap; and seeding of the Area. Large amounts of asbestos-containing material, as well as a small quantity of PCB-contaminated soil, were removed from the groundwater treatment plant area. However, in order for the remedy to be protective in the long-term, the following action needs to be taken to ensure protectiveness: update the O&M Plan to include regular inspection and an annual certification of ICs. Long-term protectiveness at OU2 will be achieved by monitoring, maintaining, and enforcing the required ICs to ensure long-term protectiveness.

OU3 (The Wildcat and Kokomo Creeks):

<b>OU3 Protectiveness Statement</b>
<i>Protectiveness Determination:</i> Protective
<i>Protectiveness Statement:</i> The remedy at OU3 is protective of human health and the environment. Threats at OU3 have been addressed through dredging of contaminated sediments, removal of lead-contaminated soils along the northern bank of Kokomo Creek, transportation and disposal of contaminated sediments, and restoration of the Creeks.

OU4 (The Markland Avenue Quarry):

<b>OU4 Protectiveness Statement</b>
<i>Protectiveness Determination:</i> Short-term Protective
<i>Protectiveness Statement:</i> The remedy at OU4 is currently protective of human health and the environment because it is functioning as designed. Threats at OU4 have been addressed through dewatering of the Markland Avenue Quarry to access drums, debris, and sediment, treatment of the Quarry's water before discharging it off-site, dredging of contaminated sediments, transportation and disposal of contaminated sediments, backfill and cover installation. However, in order for the remedy to be protective in the long-term, the following action needs to be taken to ensure protectiveness: update the O&M Plan to include regular inspection and an annual certification of ICs. Long-term protectiveness at OU4 will be achieved by monitoring, maintaining, and enforcing the required ICs to ensure long-term protectiveness.

OU5 (The Main Plant Area):

<b>OU5 Protectiveness Statement</b>
<i>Protectiveness Determination:</i> Short-term Protective
<i>Protectiveness Statement:</i> The remedy at OU5 is currently protective of human health and the environment because it is functioning as designed. Threats at OU5 have been addressed through removal of Underground Storage Tanks and Asbestos-Containing Material, consolidation of contaminated soil, and the construction of a final cover. However, in order for the remedy to be protective in the long-term, the following action needs to be taken to ensure protectiveness: update the O&M Plan to include regular inspection and an annual certification of ICs. Long-term protectiveness at OU5 will be achieved by monitoring, maintaining, and enforcing the required ICs to ensure long-term protectiveness.

OU6 (The Slag Processing Plant Area):

<b>OU6 Protectiveness Statement</b>
<i>Protectiveness Determination:</i> Short-term Protective
<i>Protectiveness Statement:</i> The remedy at OU6 is currently protective of human health and the environment because it is functioning as designed. Threats at OU6 have been addressed through excavation and transportation of excess slag to the Acid Lagoon Area, rough grading of remaining slag material and lead-impacted soil, installation of the final cover, and restoration activities. However, in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure protectiveness: update the O&M Plan to include regular inspection and an annual certification of ICs, and coordinate mowing of tall weeds and grass at the Slag Processing Area with the City of Kokomo. Long-term protectiveness at OU6 will be achieved by monitoring, maintaining, and enforcing the required ICs to ensure long-term protectiveness.

<b>Sitewide Protectiveness Statement</b>
<i>Protectiveness Determination:</i> Short-term Protective
<i>Protectiveness Statement:</i> The Sitewide remedy is currently protective of human health and the environment because it is functioning as designed. Threats at the Site have been addressed through encapsulation of contaminated soils, offsite disposal of contaminated sediment, treatment of VOC solids in place using soil vapor extraction system, and extraction, treatment and disposal of contaminated groundwater. However, in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure protectiveness: update the O&M Plan to include regular inspection and an annual certification of ICs; rehabilitate and/or replace the extraction well pumps at the Acid Lagoon Area and at Wildcat Creek; replace monitoring wells UA-024 and UA-120; evaluate the locations of the available monitoring wells to determine if additional monitoring wells should be installed; and coordinate mowing of tall weeds and grass at the Slag Processing Area with the City of Kokomo.

**VIII. NEXT REVIEW**

The next FYR report for the Continental Steel Site is required no less than five years from EPA's signature date of this review.

## **APPENDIX A – REFERENCE LIST**

- 2011 Groundwater Sampling Investigation Report
- 2014 Annual O&M Groundwater Environmental Conditions Report
- 2015 Annual O&M Groundwater Environmental Conditions Report
- 2017 Draft Evaluation of Natural Attenuation Potential of VOCs

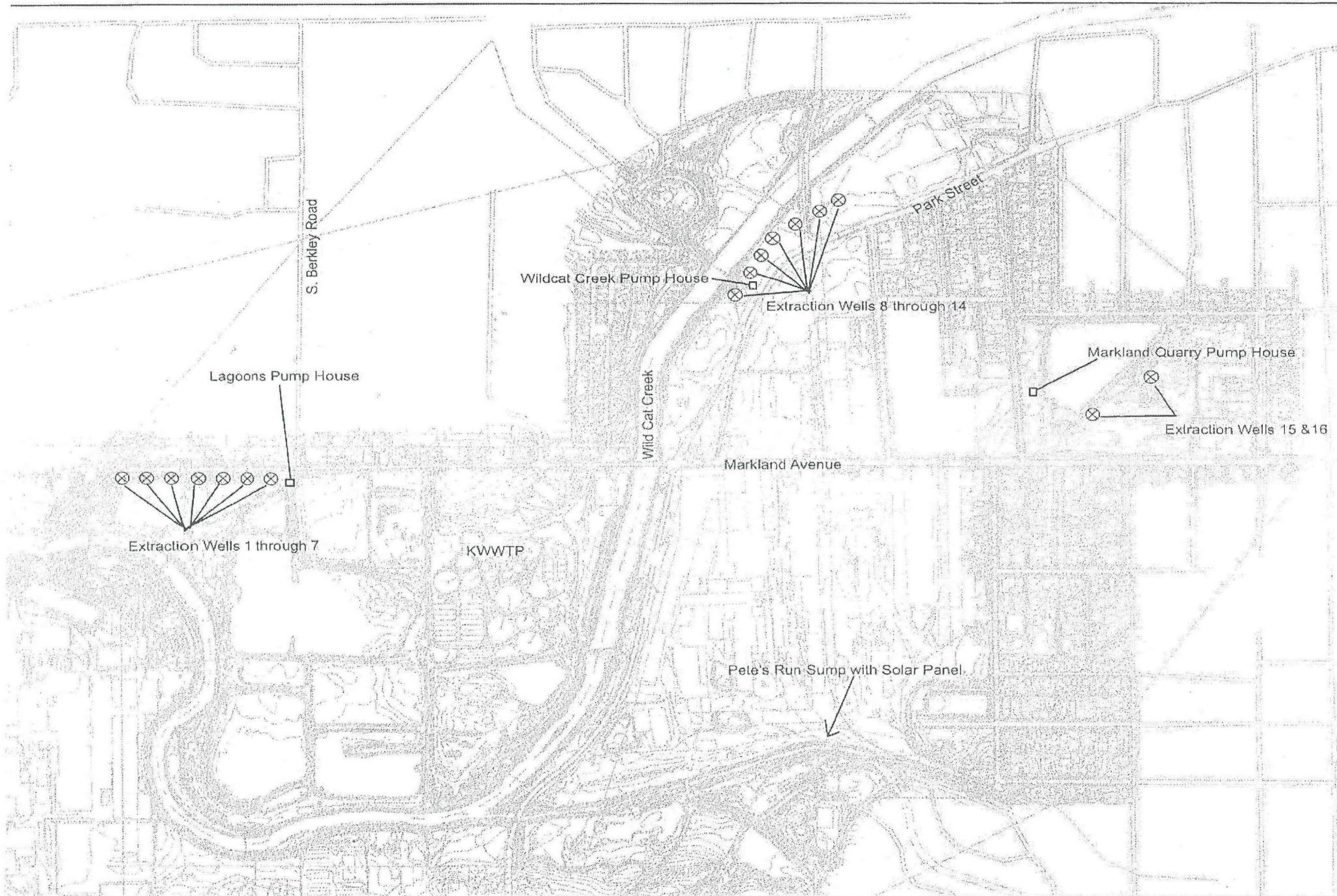
## **OTHER APPENDICES**

### Appendix B – Site Map

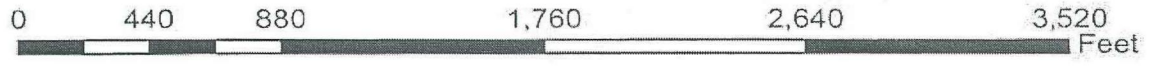
- Figure 1 – Site Map
- Figure 2 – Groundwater Extraction Well Locations
- Figure 3 – Groundwater Long-term Monitoring Well Map
- Figure 4-9 ICs Maps

### Appendix C – Public Notice





HILL



**Figure 2**  
 Extraction Well Lo  
 Continental Steel  
 Kokomo, Indiana



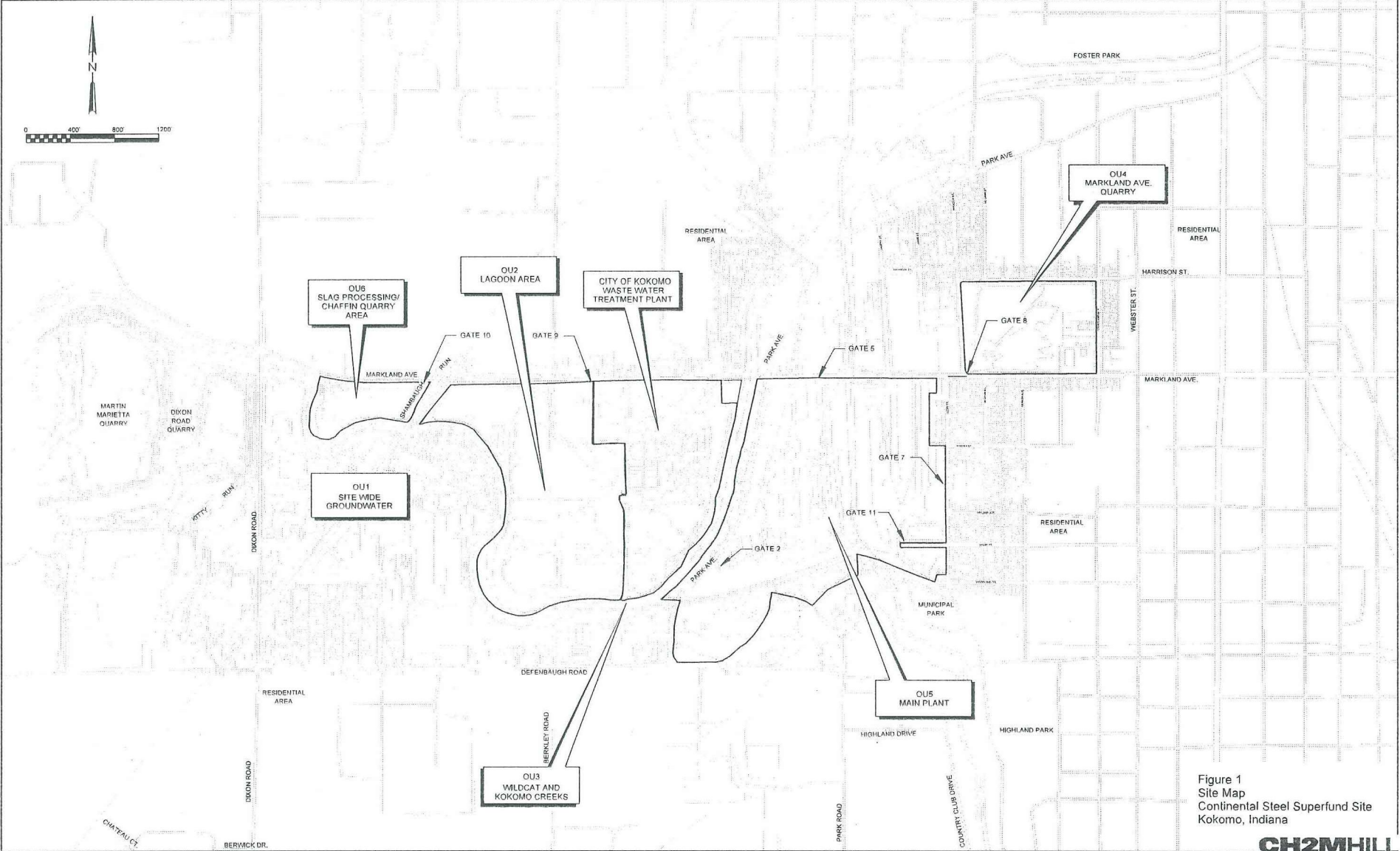
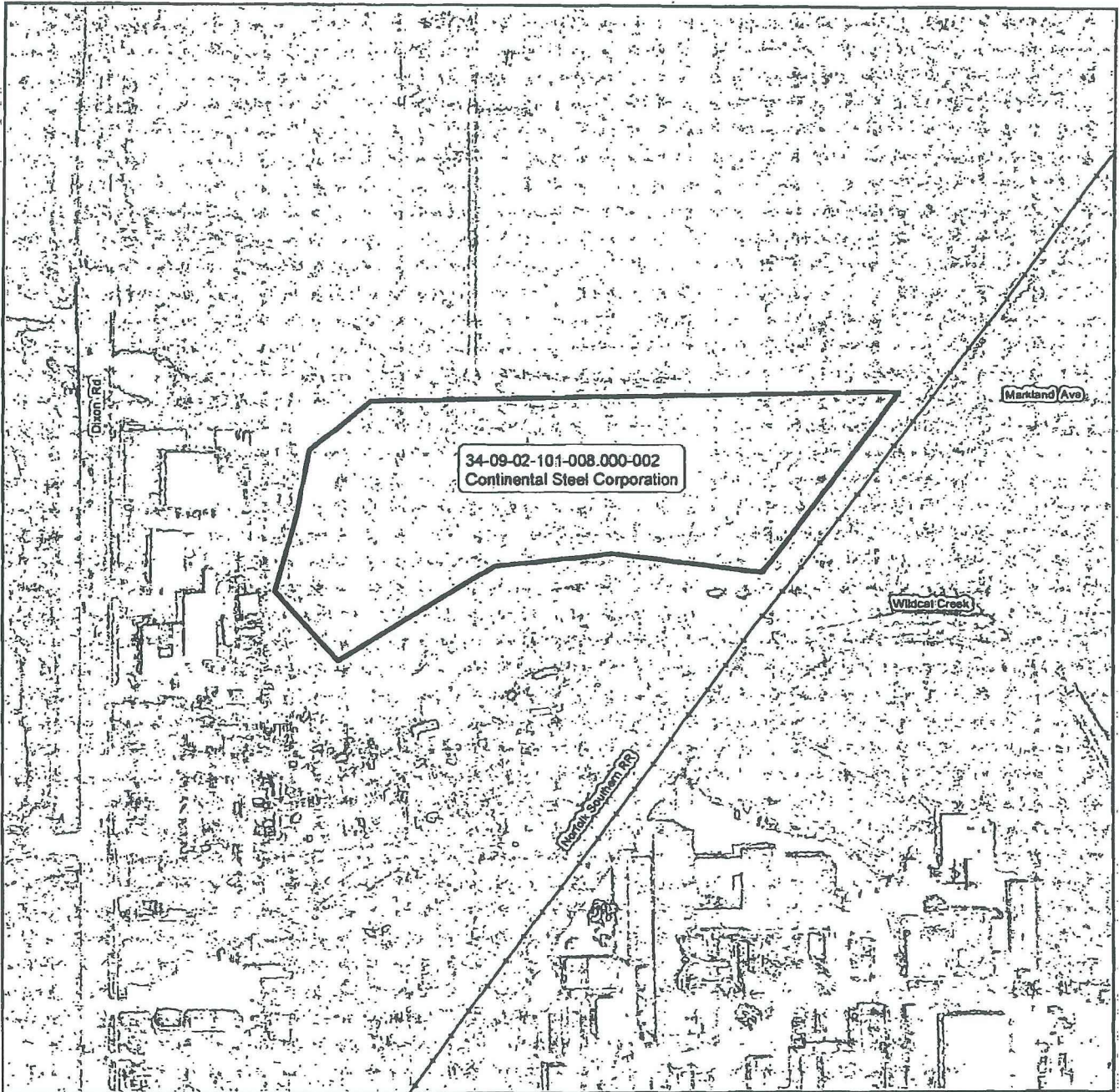


Figure 1  
Site Map  
Continental Steel Superfund Site  
Kokomo, Indiana

# SF 7500040 (Continental Steel - Slag Area) Proposed Environmental Restrictive Covenant



**Mapped By:** Mike Hill, IDEM, Office of Land Quality, Science Services Branch, Engineering & GIS Services, December 14, 2011

**Sources:** -Parcel lines based on Howard County parcel data obtained by Indiana Department of Homeland Security on 8/27/2011.

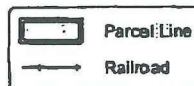
-Parcel information based on Howard County database - <http://hscan.schneidercorp.com> obtained on 12/14/2011.

-2005 State of Indiana Orthophotography (1 foot resolution)

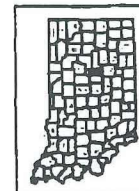
**Parcel Info:** 34-09-02-101-008.000-002

**Location Info:** Section 2, T23N, R3E  
Center Township  
Kokomo, Howard County, IN

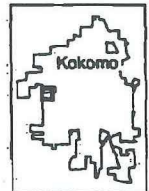
**Disclaimer:** This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.



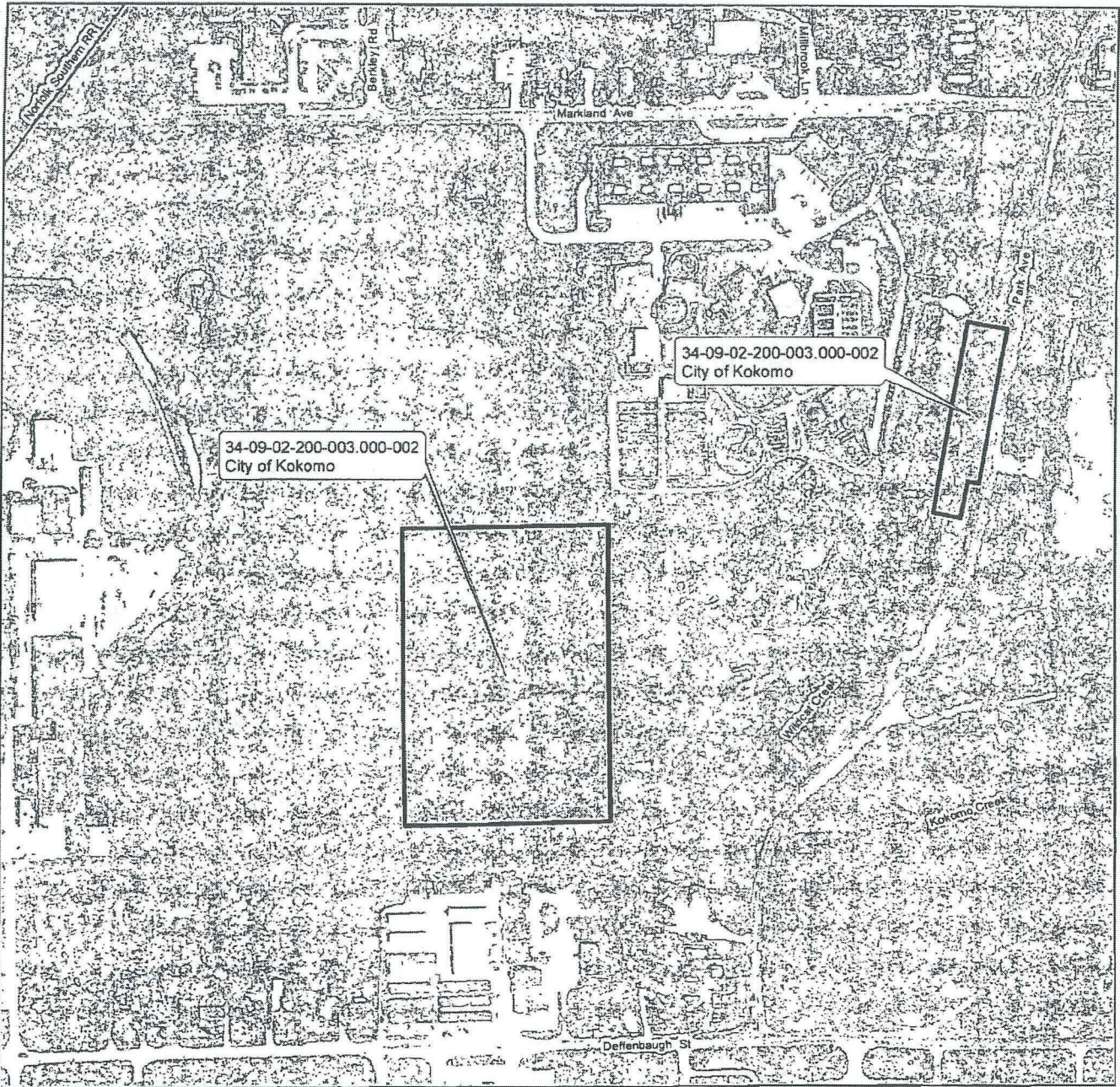
**Howard County**



**Project Area**



**SF 7500040 (City of Kokomo - Lagoon Area)  
Proposed Environmental Restrictive Covenant**



**Mapped By:** Mike Hill, IDEM, Office of Land Quality, Science Services Branch, Engineering & GIS Services, December 14, 2011

**Sources:** -Parcel lines based on Howard County parcel data obtained by Indiana Department of Homeland Security on 8/27/2011.

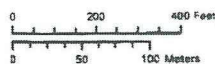
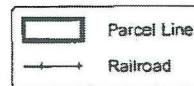
-Parcel information based on Howard County database - <http://beacon.schneidercorp.com> obtained on 12/14/2011.

-2005 State of Indiana Orthophotography (1 foot resolution)

**Parcel Info:** 34-09-02-200-003.000-002

**Location Info:** Section 2, T23N, R3E  
Center Township  
Kokomo, Howard County, IN

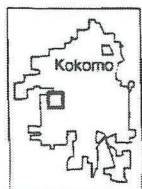
**Disclaimer:** This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes



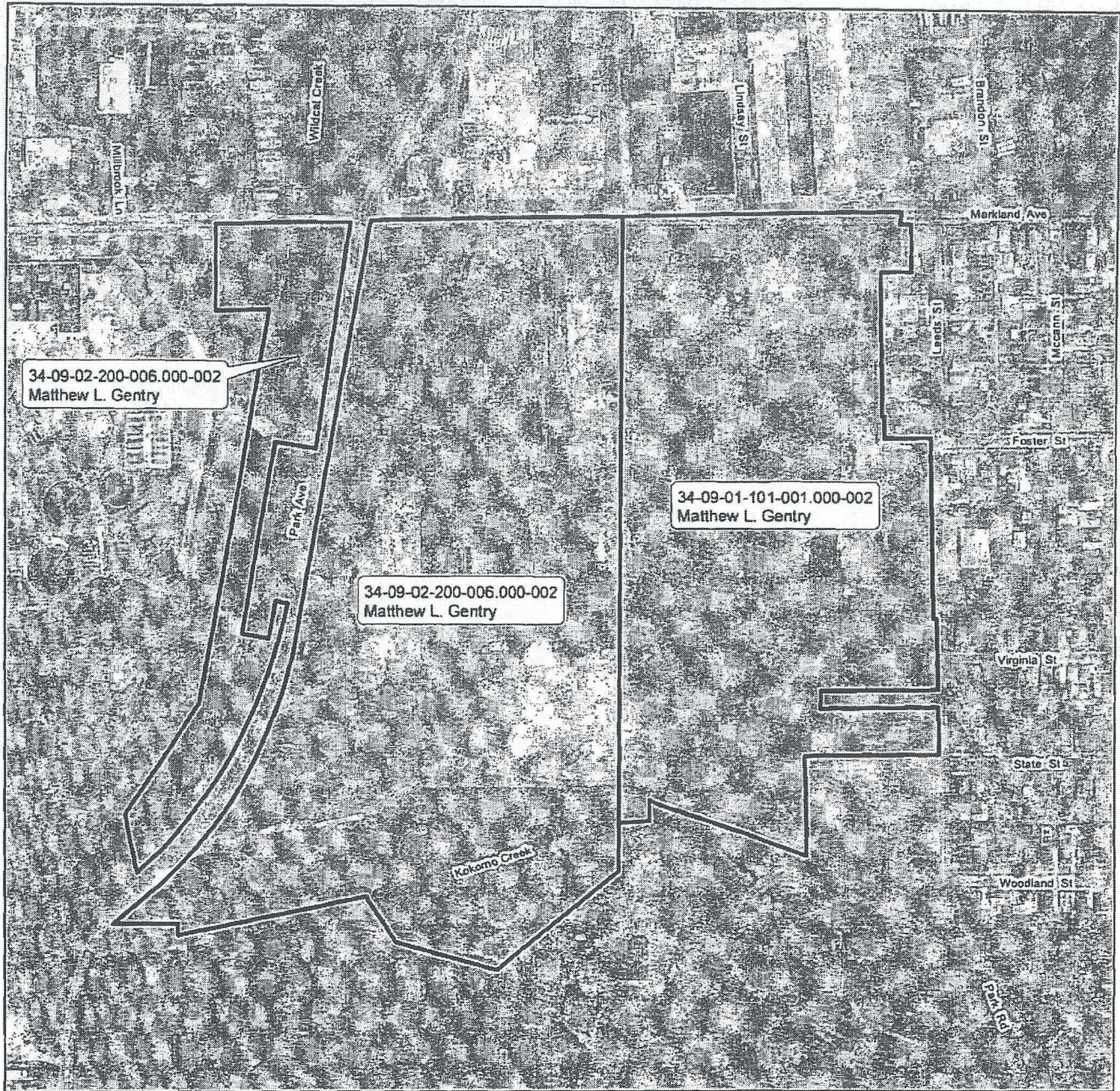
**Howard County**



**Project Area**



**SF 7500040 (Matthew L. Gentry - Main Plant Area)  
Proposed Environmental Restrictive Covenant**



**Mapped By:** Mike Hill, IDEM, Office of Land Quality, Science Services Branch, Engineering & GIS Services, December 14, 2011

**Sources:** -Parcel lines based on Howard County parcel data obtained by Indiana Department of Homeland Security on 8/27/2011.

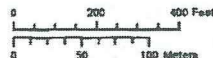
-Parcel information based on Howard County database - <http://beacon.schneidercorp.com> obtained on 12/14/2011.

-2005 State of Indiana Orthophotography (1 foot resolution)

**Parcel Info:** 34-09-01-101-001.000-002 (Section 1)  
34-09-02-200-006.000-002 (Section 2)

**Location Info:** Sections 1 & 2, T23N, R3E  
Center Township  
Kokomo, Howard County, IN

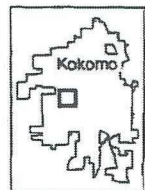
**Disclaimer:** This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.



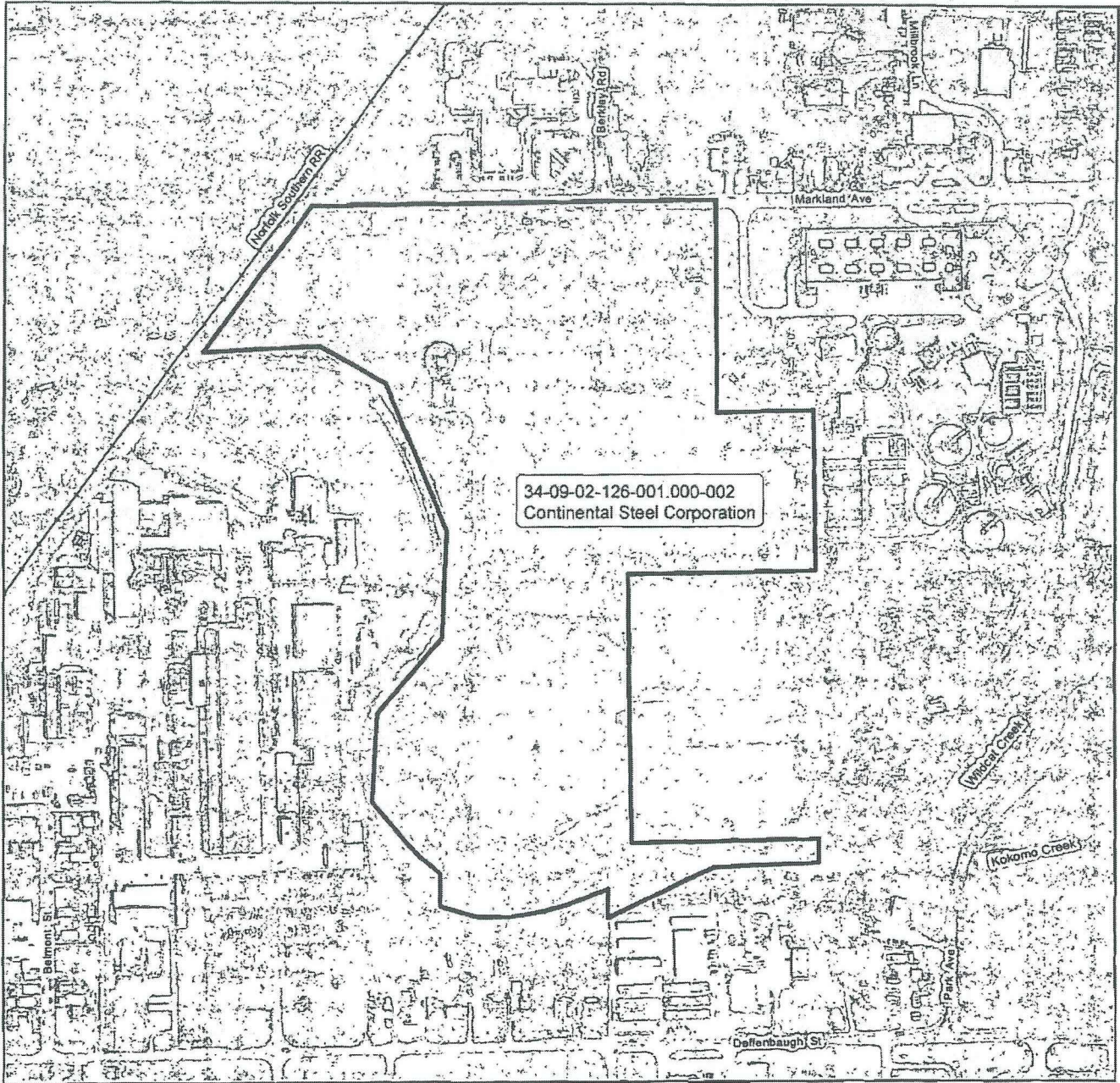
Howard County



Project Area



**SF 7500040 (Continental Steel - Lagoon Area)  
Proposed Environmental Restrictive Covenant**



**Mapped By:** Mike Hill, IDEM, Office of Land Quality, Science Services Branch, Engineering & GIS Services, December 14, 2011

**Sources:** -Parcel lines based on Howard County parcel data obtained by Indiana Department of Homeland Security on 8/27/2011.

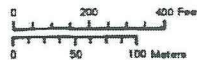
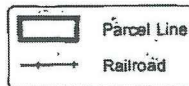
-Parcel information based on Howard County database - <http://beacon.schneidercorp.com> obtained on 12/14/2011.

-2005 State of Indiana Orthophotography (1 foot resolution)

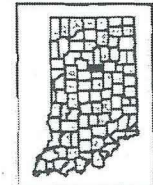
**Parcel Info:** 34-09-02-126-001.000-002

**Location Info:** Section 2, T23N, R3E  
Center Township  
Kokomo, Howard County, IN

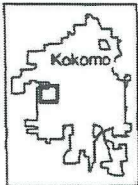
**Disclaimer:** This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.



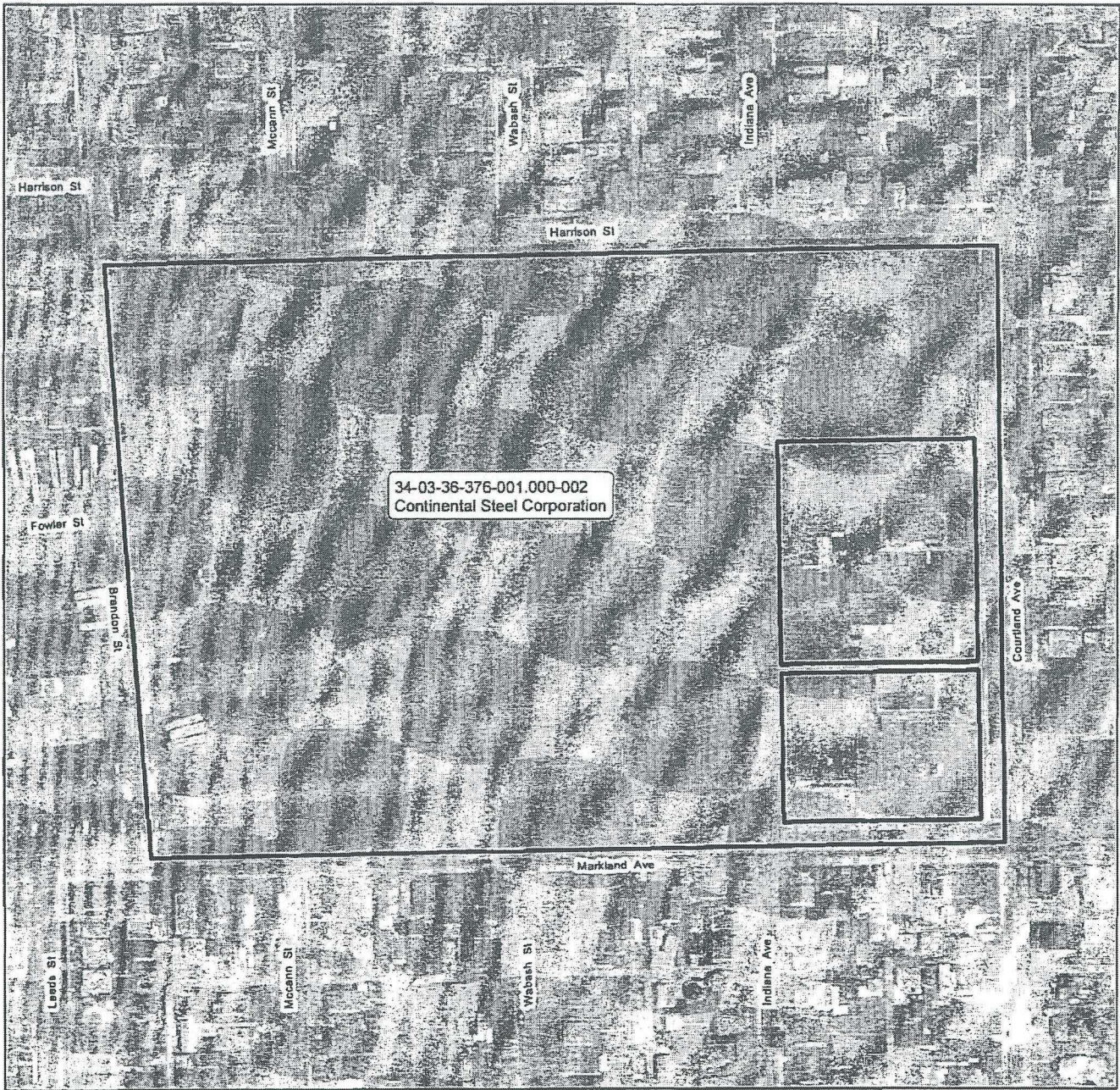
Howard County



Project Area



# SF 7500040 (Continental Steel - Markland Quarry Area) Proposed Environmental Restrictive Covenant



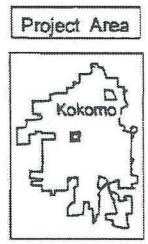
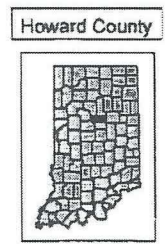
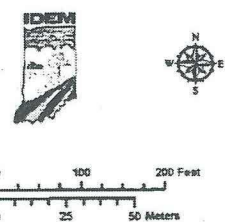
**Mapped By:** Mike Hill, IDEM, Office of Land Quality, Science Services Branch, Engineering & GIS Services, December 8, 2011

**Sources:**  
 -Parcel lines based on Howard County parcel data obtained by Indiana Department of Homeland Security on 9/27/2011.  
 -Parcel information based on Howard County database - <http://beacon.schneidercorp.com> obtained on 12/8/2011.  
 -2005 State of Indiana Orthophotography (1 foot resolution)

**Parcel info:** 34-03-36-376-001.000-002

**Location info:** Section 36, T24N, R3E  
 Center Township  
 Kokomo, Howard County, IN

**Disclaimer:** This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.



# West Virginians go to Washington to make their

BY KERY MURAKAMI  
CNHI WASHINGTON REPORTER

**WASHINGTON** - Some 50 aggrieved West Virginians carpooled for four hours and 250 miles Wednesday to confront the Mountain State's congressional delegation in the nation's capital.

Tracy Cannon, the group's organizer, said they had tried to meet with some members of the delegation back home, but they wouldn't hold town

meetings to listen to their concerns over Washington proposals to reduce Medicaid benefits and federal environmental regulations.

"If they're not coming to us, we're going to them," said Cannon.

Cannon said the protesters are members of "Indivisible," a national group started by former Democratic House staffers who have organized protests at Republican town hall meetings around the country.

They presented their litany of grievances to the West Virginia delegation at a reception hosted by the West Virginia State Society at the Dirksen Senate Office Building. They hoped to tak with Sens. Joe Manchin and Shelley Moore Capito, and Congressman Alex Mooney.

Cannon said the group has picketed outside Mooney's Martinsburg, West Virginia, office for weeks, urging him to hold a town hall meeting during the week-long congressio-

nal recess in February.

Cannon said many West Virginians are concerned about the fate of the 170,000 low-income residents who gained health care coverage under Obamacare's Medicaid program.

A House Republican plan unveiled Monday would roll back the Medicaid expansion in 2020, with federal payments after that going only to those already covered. It would also overhaul the broader Medicaid program to end its open-ended

federal funding and instead each state would receive limited financing based on enrollment and costs.

Capito was among four moderate Republican senators from states that expanded Medicaid who wrote Senate Majority Leader Mitch McConnell, R-Ky., earlier this week expressing concerns about an earlier draft of the House plan that would not have grandfathered in those already on the program.

Cannon said the West Vir-

ginia group about repeal Trump environment cy's budget staffing by for his mili "It is the the water v non. "The ( ble. I feel it bilizing the

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# Winners and losers emerge from GOP health care tax c

BY KERY MURAKAMI  
CNHI WASHINGTON REPORTER

**WASHINGTON** - House Republican leaders tout their replacement plan for the Affordable Care Act, also known as Obamacare, as the best way to lower the price of health insurance for Americans.

An examination of the plan's details by the Kaiser Family Foundation doesn't entirely support that premise when comparing tax credit subsidies between the GOP proposal and Obamacare for individuals purchasing their own insurance.

While many lower-income Americans will get higher tax credit subsidies to help pay for premiums, there will also be many who won't, including individuals like Meredith Ryan, a paralegal making \$21,000 in Montgomery County, Texas.

Ryan, 46, suffers from diabetes. Obamacare subsidies allow her to buy a level of health insurance that covers the cost of such necessities as a \$5,000 insulin pump she wears instead of giving herself several

shots throughout the day.

The less generous GOP plan would reduce her \$3,670 annual subsidy by \$670, according to a county-by-county comparison by Kaiser. That could force her to buy higher deductible coverage or make up the difference for the same benefits.

"They're screwing the little people again," said Ryan.

Unlike Obamacare, the House plan does not consider income or the cost of premiums in determining the size of the tax credits. Instead subsidies are based primarily on age, rising as people get older.

The House Ways and Means Committee began public hearings Wednesday on the Republican plan, which has already drawn fire from some GOP senators and congressmen for being either too liberal or too frugal. Democrats have banded against the approach as hurtful to lower-income Americans while also increasing the federal debt.

In addition to lowering the tax credit subsidies, the plan rolls back in 2020 Medicaid rules that expanded health in-

surance to more than 11 million people in 31 states; eliminates the requirement that people have insurance or pay a penalty, and gives larger employers the option of offering insurance coverage to fulltime employees.

West Virginia Republican Sen. Shelley Moore Capito said she's concerned federal government cutbacks in Medicaid coverage could force cash-strapped states like hers to finance health insurance for their poorest residents.

The plan does retain two popular elements of Obamacare: coverage for individuals with pre-existing conditions, and young people can remain on their parents' health insurance until age 26.

Rep. Kevin Brady of Texas, chairman of the Ways and Means Committee, and other Republican leaders are highlighting what they consider positive changes, claiming that when all is said and done, the GOP plan will reduce the cost of health insurance.

They admit, however, their income-based tax credit subsidies creates winners and losers

even in the same county.

In Walker County, an East Texas rural area represented by Brady, 40 year olds making \$20,000 a year would receive about \$3,000 in tax credits, or about \$2,520 less than they get under Obamacare, according to the Kaiser analysis.

Yet persons in that age bracket making up to \$75,000 and living in Walker County could also qualify for \$3,000 in tax credits even though now they make too much to receive subsidies.

Cynthia Cox, a Kaiser health policy analyst, said the House plan would help upper middle-income people who struggle to pay for insurance, but it would come "at the expense of lower-income people."

Fiscal conservatives like Sen. Rand Paul, R-Ky., are critical of the tax credit approach. "It keeps Obamacare subsidies but renames them 'refundable credits,'" he wrote in a Twitter post.

The chief criticism Republicans have of Obamacare is the law's broad insurance coverage requirements. Brady told a news conference Tuesday that

feature has raised premiums and loaded coverage with benefits people don't want.

Republicans could not say Wednesday whether the replacement legislation would insure more people than now and House Democrats are opposed to moving forward without an answer to that question.

Brady said by eliminating mandated health insurance, Americans will be able to choose between plans with different levels of coverage and prices, including catastrophic care - although those would have higher co-payments.

Instead of health care "tailored to Washington's needs," consumers will be able to buy insurance "tailored to what they need," said Brady.

Kaiser's Cox said the House plan could help some very low-income people left behind by Obamacare, such as those living in urban areas. Only those making at least the national poverty level - \$12,060 for an individual, \$24,600 for a family of four - are eligible for subsidies under Obamacare.

In addition, Cox said, 2.5

million people left without 19 states t Obamacare aid coverage Under th they would ceive tax 2020 at the people un for peopl \$3,000 for \$3,500 for 1 and \$4,000 and over st

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## MARRIAGES

The following couples have been issued marriage licenses by the Howard County Clerk's office:

Andrew Jay Luckey and Sarah Elizabeth Baker, Kokomo.

Cary G. Jacobs and Stacy L. Wines, Kokomo.

Lindsay Christine Harris and Eric David Hall, Kokomo.

Sandeep Singh and Elizabeth G. Fouch, Kokomo.

Kaylan Alexa Whitaker, Kokomo, and Paige Breanne Turley, Kokomo.

Guy V. Sharp and Flora Joan Duke, Kokomo.

Mark K. Shea and Reba Jo Bagley, Kokomo.

Benjamin Mikal Walden and Shelby Danielle Eikenberry, Hemlock.

Toby Allen Blankenship, Kokomo, and Alyson Faye Harrison, Kokomo.

Briana Nicole Hickman and James Edward Cardwell Jr., Kokomo.

Danny Lee Chapman Jr.



## EPA Begins Review Of Continental Steel Corp. Superfund Site Kokomo, Indiana

U.S. Environmental Protection Agency is conducting a five-year review of the Continental Steel Corp. Superfund Site in Kokomo, Indiana. The 183-acre Contin Steel Corp. Superfund site is located along W. Maryland Avenue in Kokomo, I