



STATE COOPERATIVE AGENCY DECISION STATEMENT
Kansas Department of Health and Environment
Bureau of Environmental Remediation

FINAL

SITE NAME: Altoona Smelter Site (C3-103-71601)

CITY/COUNTY: Altoona, Wilson County

DATE: November 2015

MEDIA IMPACTED: Soil

LAND USE (Current): Vacant, Agricultural

SITE BACKGROUND: The Altoona Smelter Site is located adjacent to the northwest corner of Altoona, Wilson County, Kansas, as shown in Exhibit 1. The facility, in operation from 1904 to 1917, processed zinc ore to produce zinc metal. The site is currently being addressed under Consent Agreement and Final Order No. 09-E-0156 BER between Cyprus Amax Minerals Company (Cyprus) and the Kansas Department of Health and Environment (KDHE). The site includes the Former Altoona Smelter Property, associated drainages, and other areas adjacent to the Former Smelter property where contamination has been identified.

Soil, sediment, and stormwater contamination were identified in 2003 during two Focused Former Smelter Assessments conducted by KDHE. Lead, cadmium, arsenic and zinc were identified in surface and subsurface soil at concentrations above respective KDHE Tier 2 Levels for the Soil Pathway for non-residential use as specified in KDHE's Risk-Based Standards for Kansas (RSK) Manual, and lead was identified in sediment above the Threshold Effect Concentrations in on-site ponds. Onsite stormwater samples exceeded Kansas Surface Water Quality Standards for lead, cadmium and zinc; however, these locations were observed to be seasonally dry and do not meet the definition of Classified Surface Water per K.S.A. 28-16-28d(a), to which Kansas Surface Water Quality Standards apply.

Cyprus completed a Removal Site Evaluation (RSE) between 2011-2014, which delineated the extent of on- and off-site soil, smelter material, groundwater, and sediment impacts from historical operations. Cyprus identified arsenic and lead in on- and off-site soil exceeding KDHE's Tier 2 Levels. Cadmium and lead were detected in on-site groundwater above respective Tier 2 Levels for the Groundwater Pathway for non-residential use, but groundwater was determined to be non-potable due to yield. A Streamlined Ecological Risk Evaluation (SERE) concluded that on- and off-site sediment and soil in drainages and man-made stock ponds did not present an unacceptable risk to the environment. The SERE also determined that pore water extracted from sediment from four offsite ponds did not contain bioavailable metals in excess of acute and chronic Aquatic Life Water Quality Criteria standards. The intermittent nature of two on-site ponds precluded them from meeting the BER Policy #BER-ARS-045, *Sediment Policy*, definition of sediments as "eroded material which lies below surface water...where the surface water is capable of providing for an aquatic biota habitat".

The 2014 RSE included an evaluation of Remedial Alternatives to identify the most effective way to address contamination at the site. Each remedial alternative was

evaluated using the following criteria: 1) overall protectiveness of human health and the environment; 2) compliance with Federal and State applicable or relevant and appropriate requirements; 3) long-term effectiveness and permanence; 4) reduction of toxicity, mobility, and volume through treatment; 5) short-term effectiveness; 6) implementability; and 7) cost.

The following remedial alternatives were evaluated:

- Alternative 1: No Action (\$0)
- Alternative 2: Excavation and Off-Site Disposal to offsite landfill with access controls and institutional controls (\$54,500,000)
- Alternative 3: Excavation, On-Site Consolidation, and On-Site Repository with access controls and institutional controls (\$5,900,000)

The selected remedy was Alternative 3: excavation, on-site consolidation and on-site repository with access controls and institutional controls. KDHE selected Alternative 3 because:

- 1) Alternative 3 meets the overall protectiveness criteria because it meets all of the Remedial Action Objectives by eliminating migration of and human and ecological exposures to impacted soil and smelter waste;
- 2) Alternative 3 meets the criteria for compliance with ARARs because it complies with existing applicable Federal, State and local requirements.
- 3) Alternative 3 meets long-term effectiveness and permanence criteria through the environmental use controls, long-term care agreement, and operations and maintenance plan;
- 4) Alternative 3 meets the criteria for the reduction of toxicity, mobility or volume by reducing the lateral extent of impacted soils, eliminating potential exposure through direct contact, inhalation, and ingestion, and reducing the mobility of metals in impacted soil and smelter waste through the use of a soil cap feature;
- 5) Alternative 3 meets the criteria for short-term effectiveness because the potential for exposure to metal-impacted materials or airborne contaminants by site workers and surrounding residents during implementation of the constructed remedy will be minimized through best management practices and engineering controls;
- 6) Alternative 3 meets the criteria for implementability because the remedy will be constructed using known means and methods in the construction industry; and
- 7) Alternative 3 meets the criteria cost because the remedy estimates have been determined to be reasonable.

REMEDIAL PLAN:

The primary Contaminants of Concern (COCs) at the site are lead and arsenic found in smelter waste and soil. Remedial Action Objectives (RAOs) include: 1) preventing human exposure through direct contact with and/or ingestion of contaminated soil and

smelter waste with COCs in excess of Tier 2 Levels for non-residential use on site property; 2) preventing human exposure through direct contact with and/or ingestion of contaminated soil and smelter waste with COCs in excess of KDHE's Tier 2 Levels for residential use off site property; and 3) preventing migration of soil and smelter waste that contain COCs in excess of applicable standards that could result in degradation of surface water, sediment, soil and the adjacent environment.

The corrective action selected to achieve site RAOs includes excavation, consolidation and capping of on-site contaminated smelter waste and soil in excess of Tier 2 Level non-residential criteria and off-site smelter waste and soil in excess of Tier 2 Level residential criteria in a single consolidation cell at the former smelter as shown in Exhibit 2. The consolidation cell will be located within the 32-acre area of former smelter operations. An Environmental Use Control (EUC) will be placed on the site to prevent the use of the property for residential use and to prohibit future intrusive activities that may damage the cap, among other restrictions. A long-term Operations and Maintenance (O&M) plan will be developed which will include routine inspections, and repairs will be conducted as needed to ensure long-term effectiveness of the remedy.

Specific requirements of the remedial plan include the following:

- (1) Approximately 75,000 cubic yards of contaminated soil and smelter waste will be consolidated, graded, compacted and covered with an engineer-designed cap. The encapsulation cell will be seeded and mulched to create a vegetative cap. Fencing will be installed around the cell to prevent unauthorized access and to protect the structural integrity of the cell. The approximate location of the consolidation cell is shown in Exhibit 2.
- (2) A EUC and Long Term Care Agreement (LTCA) will be established to prevent intrusive activities within the consolidation cell area and restrict future use of the site to non-residential where there is residual contamination above residential Tier 2 levels.
- (3) A long-term O&M plan will be developed which will include mowing and routine inspections of the consolidation cell, with repairs conducted as needed to ensure long-term effectiveness of the remedy.

SELECTION: On the basis of information available in the Administrative Record and summarized above, KDHE selects the proposed remedial plan as the final remedy for the Site.

COMMUNITY INVOLVEMENT: Public notice of the availability of the Draft Agency Decision Statement (ADS) was published in the *Wilson County Citizen* on October 15, 2015, and the Draft ADS was available for review at Altoona Public Library from October 16, 2015 through October 30, 2015 during the 15-day comment period held to solicit written comments from the public. KDHE has also established a webpage dedicated to the Altoona Smelter site which made available the Draft ADS and other site documents. No comments were received during the comment period.

TABLE 1: CONTAMINANT CONCENTRATIONS IN ONSITE SOIL

Contaminant of Concern	Non-Residential Tier 2 Level Soil Pathway (mg/kg)*	Maximum Concentration Detected (mg/kg)
Arsenic	63.2	160
Cadmium	965	520
Lead	1,000	6,230
Zinc	613,000	30,000

*KDHE's Risk Based Standards for Kansas (RSK) Manual, October, 2010, revised March 2014.
 Bold Font indicates concentration exceeds specified threshold level, laboratory analysis only
 mg/kg = milligrams per kilogram

TABLE 2: CONTAMINANT CONCENTRATIONS IN OFFSITE SOIL

Contaminant of Concern	Residential Tier 2 Level Soil Pathway (mg/kg)*	Maximum Concentration Detected (mg/kg)
Arsenic	18.9	82
Cadmium	39	21
Lead	400	10,000
Zinc	23,500	7,200

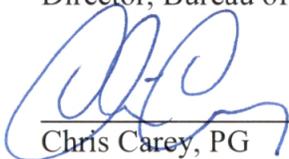
*KDHE's Risk Based Standards for Kansas (RSK) Manual, October, 2010, revised March 2014.
 Bold Font indicates concentration exceeds specified threshold level, laboratory analysis only
 mg/kg = milligrams per kilogram

FINAL AGENCY APPROVAL:



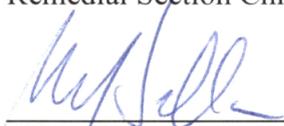
Leo Henning
Director, Bureau of Environmental Remediation

Date 11-9-15



Chris Carey, PG
Remedial Section Chief

Date 11/6/15



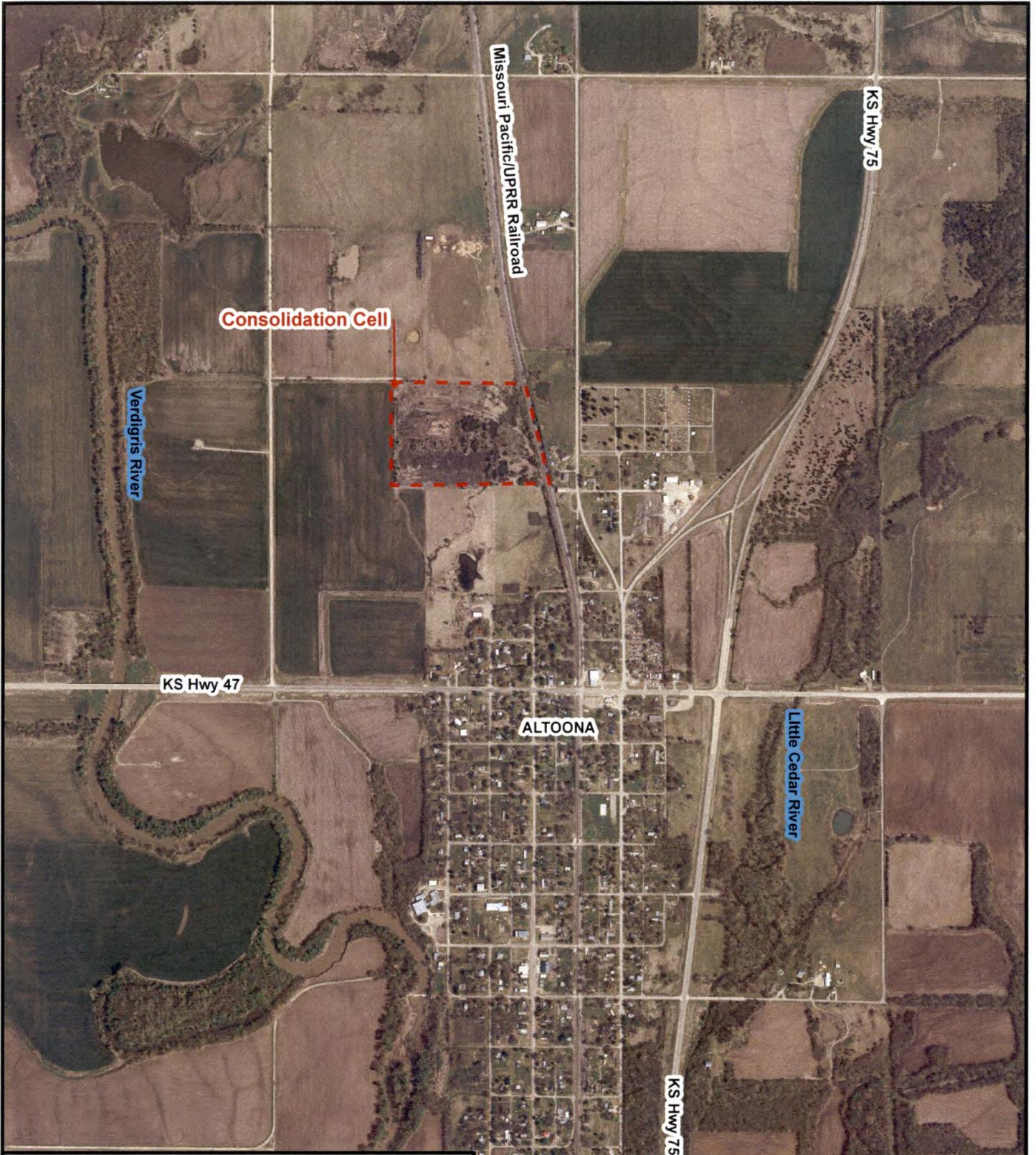
Maura O'Halloran, PG
Site Restoration Unit Manager

Date 11/6/15



Daniel Newman
Site Project Manager

Date 11/6/15



Valtus Imagery Service

LEGEND

 Consolidation Cell

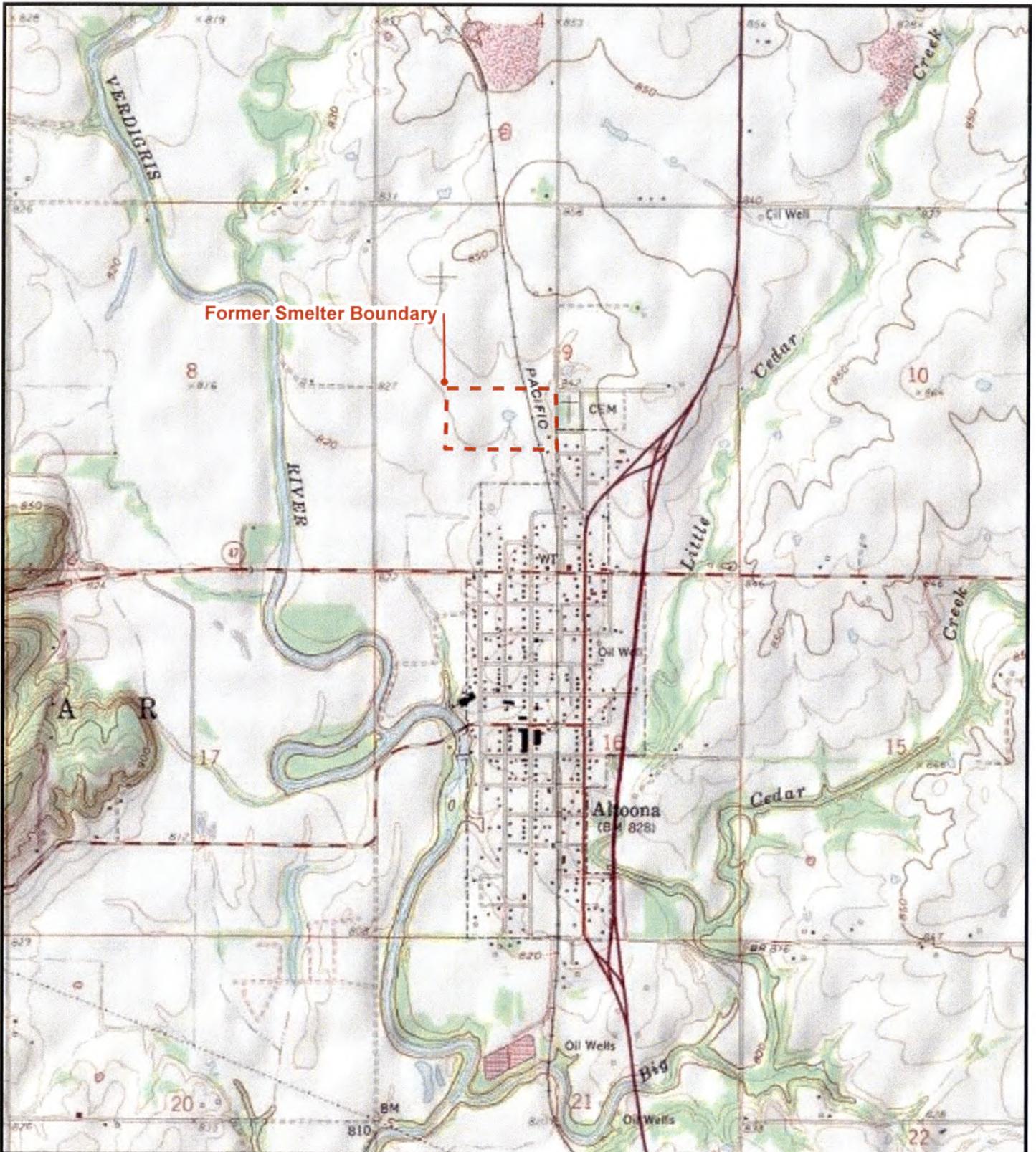


SITE: **Altoona Smelter Site
Altoona, Kansas
C3-103-71601**

TITLE: **Consolidation Cell Location**

PROJECT PHASE: Agency Decision Statement

DRAWN BY:	DM	5/20/2015	BASEMAP DATE:	2014
CHECKED BY:	MO	5/20/2015	Exhibit 2	



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LEGEND

 Former Smelter Boundary



SITE:		Altoona Smelter Site Altoona, Kansas C3-103-71601	
TITLE:		Facility Location	
PROJECT PHASE:		Agency Decision Statement	
DRAWN BY:	DM	5/20/2015	BASEMAP DATE: 2013
CHECKED BY:	MO	5/20/2015	Exhibit 1



CONCURRENCE SHEET

BUREAU OF ENVIRONMENTAL REMEDIATION

TODAY'S DATE: 11/6/15

Transmittal letter dated one week from today's date.

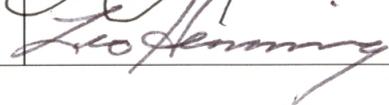
**This concurrence form is for your review and comments on the attached document;
Please be advised that this is the ORIGINAL INSTRUMENT.**

DOCUMENT TYPE: Agency Decision Statement

PROJECT NUMBER: C3-103-71601

IN THE MATTER OF: Altoona Smelter
Altoona, Kansas

CASE NUMBER: 09-E-0156 BER

	Name	Date	Comments
Project Manager		11/6/15	
Unit Chief		11/6/15	
Section Chief		11/6/15	
Bureau Director		11-9-15	

PLEASE RETURN ORIGINAL TO PROJECT MANAGER AFTER SIGNED

Return to Daniel Newman, BER, Suite 410