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STEEL PRODUCTION AREA REMEDIAL ACTION PLAN/REMEDIAL DESIGN/REMEDIAL ACTION WORK PLAN

FORMER WISCONSIN STEEL WORKS
CHICAGO, ILLINOIS

PREPARED FOR

INTERNATIONAL TRUCK AND ENGINE CORPORATION

APRIL 2006

ARCADIS

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Steel Production Area Remedial Action Plan/Remedial Design/Remedial Action Work Plan
Former Wisconsin Steel Works
Chicago, Illinois
in the matter of: People of the State of Illinois v. Navistar International Transportation Corp., Case Number 96CH0014146, Illinois EPA

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Executive Summary

ARCADIS has prepared this Steel Production Area Remedial Action Plan (RAP)/Remedial Design/Remedial Action (RD/RA) Work Plan, on behalf of International Truck and Engine Corporation (International), for environmental activities performed at the former Wisconsin Steel Works (WSW) facility (site), located at 2701 East 106th Street, Chicago, Illinois. This Steel Production Area RAP/RD/RA Work Plan has been prepared in accordance with the Site Remediation Program (SRP) rules consistent with Title 35 Illinois Administrative Code (IAC) Section 740.450 and requirements of the Tiered Approach to Corrective Action Objectives (TACO), as presented in 35 IAC 742. This document presents remedial alternatives selected for various environmental conditions at the Steel Production Area.

Section 2, Statement of Remediation Objectives and Risk Assessment Summary, identifies the areas that will require remediation. Groundwater samples collected from the Steel Production Area contained chemical constituents exceeding Tier 1 remediation objectives (ROs). In previous documents, impacts to groundwater were further evaluated by groundwater fate and transport modeling and through the application of a dilution factor. Through this assessment, groundwater impacts were demonstrated to meet ROs established for the site. Therefore, no groundwater remedies are required.

Constituent concentrations from foundation solids, surface soil, and debris piles were compared to the established site worker ROs to identify areas for remediation. At the Steel Production Area, solids present in foundations and surface soil have various levels of chemical constituents exceeding Tier 1 ROs. A Revised Steel Production Area Risk Assessment was submitted to the Illinois Environmental Protection Agency (Illinois EPA) in November 2005 (approved January 19, 2006), identifying constituents of concern (COCs) located in the Steel Production Area. ROs were developed for the site worker #1 exposure scenario. Through a Construction Worker Caution, the construction worker exposure pathway will be addressed. This risk assessment report established site worker ROs based on a specified cancer risk, a non-cancer risk hazard index (HI) of 1, a polychlorinated biphenyl (PCB) regulatory level, and blood-lead level RO. The table below summarizes the risk evaluation and selected remedy for the three features that constitute the Steel Production Area: foundations, surface soil, and debris piles.

	Foundations	**Surface Soil**	**Debris Piles**
Cancer Risk:	Exceeds threshold	Exceeds threshold	Below Tier 1 threshold
Non-cancer Risk:	Exceeds threshold	Blood-lead levels exceed threshold	Below Tier 1 threshold
Remedy:	Solids and/or liquids removal, engineered barrier, and/or Soil Management Zone	Excavation and placement in a Soil Management Zone	None needed

The Remedial Alternatives Evaluation details the specific actions to be taken for each foundation and surface soil impacts.

The foundations will be remediated through one or more of the following activities: dewatering, light non-aqueous phase liquid (LNAPL) removal and disposal, if necessary, solids removal and disposal, soil stabilization, placement of solids in a Soil Management Zone (SMZ), placement of an engineered barrier, demolition of foundation walls, backfilling, surface grading, and/or plugging of encountered foundation piping. The specific treatment train will be driven by the nature of the solids and liquids in the foundations. Confirmation sampling will be conducted for foundations as warranted.

Two defined surface soil areas with elevated impacts will be excavated and placed in a designated SMZ within the adjacent Coke Plant Area parcel. The SMZ will ultimately be covered with an engineered barrier. Confirmation sampling will be conducted to confirm the extent of excavation and document remaining conditions for this soil remedial activity. Of the two soil remediation areas, one area contributes to the elevated carcinogenic risk and the other area contains elevated lead concentrations. As presented in the Revised Steel Production Area Risk Assessment, the current average lead concentration exceeds the blood-lead model derived RO of 1,200 milligrams per kilogram (mg/kg) (site-worker, surface soil). The surface soil remedy is designed to reduce the average lead concentration to below 1,200 mg/kg.

In addition to the above remedies, institutional controls will be included as part of the Steel Production Area remedy. ARCADIS recommends that the following institutional controls be recorded on the property deed for the Steel Production Area:

- use of groundwater on-site will be prohibited through the use of the Chicago Groundwater Ordinance;
- the future site use will be limited to industrial/commercial (in accordance with 35 IAC 742.1000);
- site workers will not have access to soil below three feet, since the site worker risk has not been evaluated for soil below this depth;
- a "Construction Worker Caution" will be added advising of the need for special safety requirements for construction workers when performing subsurface excavation and construction activities; and
- engineered barriers incorporated in this remedial program will require institutional controls that will provide for continued inspection and maintenance of the barrier.

This Steel Production Area RAP/RD/RA Work Plan addresses each condition of the former WSW Steel Production Area with the goal of setting a remedial program that will result in a No Further Remediation determination. The Remediation Objectives Statement evaluates analytical data and physical observations against risk- and regulatory-based goals to identify the specific areas or features where remediation is warranted. Subsequently, the remedial alternatives evaluation presents a remediation program for each area or feature, based on an analysis of effectiveness in meeting the remediation objective. The selected remedies are specifically suited and applicable to the physical and chemical properties at the site. Upon successful implementation of the remedial plan, all known environmental conditions at the Steel Production Area will have been addressed.

1. Introduction

This section describes the former WSW site, the surrounding properties, and the Steel Production Area history.

1.1 Site Description

The former WSW site is located in the southeastern portion of Chicago, Illinois in Sections 7 and 8, T37N, R15E of the 3rd Principal Meridian, in Hyde Park Township, Cook County, Illinois, as shown on Figure 1. The address of the site is 2701 East 106th Street, Chicago, Illinois, 60617.

The former main mill property is bordered on the north by 106th Street, on the south by 112th Street, on the west by a rail line just east of Torrence Avenue, and on the east by the Calumet River, as shown in Figure 2.

The site is zoned "industrial/commercial" and is situated in a mixed residential, commercial, and industrial area. Residences and commercial establishments are located to the west of the site, across Torrence Avenue. A former coke plant was located to the west and southwest of the former main mill property. Industrial properties are located to the north and south of the former main mill property. The former main mill property is bordered on the east by the Calumet River, beyond which were other steel mills. The site is currently fenced with security guard surveillance. The public is not allowed access to the site.

This Steel Production Area RAP/RD/RA Work Plan focuses on the liquids and solids located in the Steel Production Area, as shown in Figure 3. The Steel Production Area is part of the former main mill property and is bounded by the North Slip and the North Tract of the mill property to the north; the Coke Plant Area, the Walsh Construction Yard, and the South Slip to the east; railroad tracks to the west; and 112th Street to the south.

1.2 Regulatory History

The former WSW facility has been non-operational since 1982, and essentially all of the on-site structures have been demolished and removed from the site. Initial mill demolition, removal, and environmental investigation activities were managed and directed by the United States Department of Commerce Economic Development Administration (EDA) and the United States Army Corps of Engineers (USACE). EDA and International became beneficiaries of the Wisconsin Steel Trust (WST),

which was created in 1981 when the then-owner of the site, Envirodyne, Inc., filed for bankruptcy.

In September 1994, International entered into a Settlement Agreement with EDA (Settlement Agreement 1994) in which International, among other things, assumed responsibility for addressing all site environmental cleanup needs. The agreement required International to enter into a state court enforceable consent order and enroll the former WSW site in the Illinois SRP. Accordingly, International entered into a Consent Order with the State of Illinois in December 1996 (Consent Order 1996) to define International's participation in the Illinois SRP regarding the former WSW site and to provide a framework for the relationship between the Illinois EPA and International in the program. The Consent Order requires cleanup to industrial standards.

1.3 Field Activities and Documentation

The primary investigations completed at the site to date include the following: (1) a Resource Conservation and Recovery Act (RCRA) closure investigation performed by Dames & Moore (Dames & Moore 1987); (2) sampling conducted in support of demolition by Wang Engineering, Inc. (Wang Engineering) of Itasca, Illinois; (3) Site Characterization Interim Report conducted by the USACE (USACE 1994); and (4) the Phase II Remedial Investigation (RI) Report prepared for International by ARCADIS (ARCADIS 2001). Details regarding these various investigations are provided in the Phase II RI Report.

During the period from 1984 to 1987, remedial actions were undertaken by a number of parties, as described in the Dames & Moore (1987) RCRA Closure Plan. These remedial actions included removal of: asbestos, PCB-containing transformer oils, 55-gallon drums and their contents, lead pellets, virgin sulfuric acid (stored in on-site underground storage tanks [USTs]), light oils (benzene, toluene, and xylenes) and the USTs in which they were stored, dust piles, eleven sealed radiation sources, and two X-ray machines.

In 1992, the USACE performed a removal action (Rapid Response) at the site. These tasks are described in the "Final Report for a Rapid Response and Hazardous Waste Removal at the Wisconsin Steel Trust Property" (USACE 1992). The Phase II RI Report (ARCADIS 2001) provides a summary description of the removal actions.

In July of 1993, OHM Remediation Services Corporation (OHM) began the remediation of the Mill 6. OHM remediation activities performed at Mill 6 were

completed in the spring of 1994. Specific tasks included: the removal of various oil sludges, debris, soil, and metal shavings; disposal of 14 drums of waste from the truck-loading warehouse; removal of approximately 2,500 feet of asbestos-containing piping; oil skimming in the scale pit area; and grease removal at selected locations (OHM 1994).

In February 1994, USACE completed the Site Characterization Interim Report that synthesized previous investigations and also included an assessment of 25 groundwater monitoring well sampling results, 52 soil borings with soil analyses, analytical results of surface water and surface soil samples, and a physical investigation of remaining foundations, pits, and tunnels.

Some pertinent additional activities and documentation completed under the direction of International by ARCADIS from 1997 to the present include the following:

- **Phase II RI Work Plan - August 1998:** The Phase II RI Work Plan guided the Phase II RI activities at the former WSW site. The primary objective of the Phase II RI was to complete the characterization of the type, magnitude, extent, and migration pathways of contamination attributable to past operations at the former WSW site. (ARCADIS 1998a)
- **Plan Acquisition and Review Technical Memorandum - September 17, 1998:** This technical memorandum reported the results of the Plan Acquisition and Review activity, which consisted of reviewing plans of the former WSW site and obtaining those deemed pertinent to the Phase II RI and potential remediation activities. The drawings were primarily reviewed for piping, USTs, and underground structures. This activity also provided a comprehensive background of the site operations, investigations performed to-date, and the locations of particular facilities.
- **Preliminary Risk Assessment - October 1998:** The Preliminary Risk Assessment (Preliminary RA) was prepared to focus future investigation activities to be detailed in the Phase II RI Work Plan for the former WSW site. This document incorporated the rules of the Illinois EPA SRP (35 IAC 740) and TACO (35 IAC 742). The Preliminary RA provided a Tier 1 evaluation of site data through a comparison of constituent levels in soil and groundwater to the preliminary ROs and also identified specific compounds where additional information was required, such as chromium and arsenic. (ARCADIS 1998b)
- **Chromium Sampling Technical Memorandum - October 5, 1998:** This technical memorandum presented the procedures, evaluation, and conclusions

regarding the concentrations of hexavalent chromium at the former WSW site, based on the On-Site Chromium Sampling. (ARCADIS 1998c)

- **October 1997 Groundwater Sampling Results Technical Memorandum (Groundwater Tech Memo) - October 16, 1998:** This technical memorandum reported the results of the four previous groundwater sampling events, evaluated the results, and provided recommendations for a monitoring well network at the former WSW site. This comprehensive assessment of historical groundwater monitoring well sampling and hydrogeological conditions at the site provided the basis for future groundwater investigations and risk assessment with respect to site groundwater. (ARCADIS 1998d)
- **Arsenic Background Sampling Results and Analysis Technical Memorandum - November 19, 1998**: This technical memorandum presented the evaluation and conclusions regarding the concentrations of arsenic detected in area background sampling near the former WSW site. In conjunction with the Arsenic Addendum, dated February 3, 1999, a preliminary screening level of 18 mg/kg was agreed to for site activities. (ARCADIS 1998e)
- **UST Investigation - June 2, 1999:** ARCADIS completed a UST Investigation task at the former WSW site. The UST field investigation was completed between September 30 and October 8, 1998. The technical memorandum describes the physical and geophysical investigations conducted to identify USTs at the site.
- **Debris Pile Characterization Results and Analysis - June 21, 2000:** The Debris Pile Characterization Technical Memorandum documented the results of the visual inspection of each of 27 debris piles at the site, the sampling and chemical analysis of the debris piles, and an asbestos survey as it related to the debris piles. Following a risk evaluation of the analytical results, the report categorized each pile as requiring removal, suitable for site use, or undetermined, pending risk assessment.
- **UST Removal Technical Memorandum - June 28, 2000:** This report documented the activities associated with the excavation, removal, and disposal of the remaining nine USTs located at the site. All USTs were removed, any liquids were pumped, and the excavation was backfilled according to an approved work plan.
- **Debris Pile Removal Technical Memorandum - November 2000:** This document described the removal of 10 debris piles. Four piles containing asbestos and six piles considered unsuitable for site use were all removed. The asbestos was removed in accordance with an accepted Asbestos Removal

Work Plan. All asbestos observed that was not associated with debris piles was also removed.

- **Phase II RI Report - June 2001:** The Phase II RI Report integrated and organized the sum of site information into a unified, comprehensive characterization of the site. The primary purpose of this document was to further characterize the type, magnitude, extent, and migration pathways of contamination attributable to past operations at the former WSW site. The site was characterized through the review of historical records and reports, the completion of a site well survey, the evaluation of historical aerial photographs, the completion of a hot spot demarcation program, a plan acquisition and review, a debris pile assessment, installation of groundwater monitoring wells, and the collection of soil, free-product, and groundwater samples. The soil investigation activities included over 300 soil borings and over 800 soil sample analyses of selected constituents. The remedial groundwater investigation included the installation of 23 additional monitoring wells and one round of groundwater sampling.
- **Groundwater Compliance Demonstration Technical Memorandum - May 9, 2002:** This memorandum presented the derivation of a dilution factor for the evaluation of risk associated with groundwater from the former WSW site discharging into the Calumet River. The dilution factor correlated a groundwater concentration at the river bank to a resultant surface water concentration in the river using a flow balance equation.
- **Groundwater Technical Memorandum (Part II) - May 10, 2002:** The 2002 Groundwater Technical Memorandum evaluated five rounds of groundwater sampling data. The analysis used the TACO approach, comparing the groundwater results to Tier 1 (Class II) objectives, then applying Tier 2 modeling equations to data that exceed the Class II standards. Using the dilution factor and surface water quality criteria, the impacts to the Calumet River were also predicted. The report concluded that, with the exception of free product in the Coke Plant Area, the groundwater at the former WSW site did not exceed ROs. (ARCADIS 2002a)
- **Foundation Technical Memorandum - June 2002:** The Foundation Technical Memorandum evaluated the structure and contents (debris, sediment, sludge, and/or liquid) of the WSW foundations, consisting of basements, tunnels, pits, and former storage tank containment structures. Field observations from the USACE and ARCADIS investigations identified a total of eighty-eight foundations. Those foundations containing soil, sludges, or sediments were sampled. The foundation solids were sampled for

characterization and/or disposal parameters and were compared to appropriate ROs. Based on the visual observations and sampling conducted on foundation solids, the volume of total solid waste in the foundations was estimated. (ARCADIS 2002b)

- **Revised Risk Assessment Report - Steel Production Area - November 2005.** The Revised Risk Assessment Report - Steel Production Area (Steel Production Area Risk Assessment) was prepared for the Steel Production Area of the former WSW site to evaluate potential human health risks associated with constituents detected in environmental media (soil, foundation solids, and groundwater) at the site. The Illinois EPA approved the risk assessment on January 19, 2006.

1.4 Sections of Report

This Steel Production Area RAP/RD/RA Work Plan is presented in seven sections, consistent with the requirements of 35 IAC 740.450, which are described below:

Section 1 - Introduction.
Section 2 - Statement of Remediation Objectives and Risk Assessment Summary.
Section 3 - Remedial Alternatives Evaluation.
Section 4 - Confirmation Sampling Plan.
Section 5 - Current and Future Use of the Property.
Section 6 - Applicable Engineered Barriers and Institutional Controls.
Section 7 - References.

Consistent with SRP requirements, ARCADIS is requesting Illinois EPA review and evaluation of this report by submitting a DRM-2 Form, included in Appendix A.

2. Statement of Remediation Objectives and Risk Assessment Summary

The review of the Steel Production Area Risk Assessment and ROs will be subdivided into the following areas of concern: foundations, surface soil, and debris pile solids.

In the Steel Production Area Risk Assessment submitted to the Illinois EPA in November 2005, a baseline risk assessment was performed to evaluate whether constituent concentrations detected in solids located in the Steel Production Area pose a significant threat to human health. The risk assessment involved the derivation of quantitative risk estimates based on relevant exposure scenarios identified in the exposure assessment. Steel Production Area foundation solids and surface soil

analytical data were used in this assessment. Debris solids were not evaluated in the Steel Production Area Risk Assessment; however, analytical data from the debris piles are evaluated in this section using identical risk procedures that were employed for other media.

Groundwater in the Steel Production Area was shown to meet ROs established for the site in the Steel Production Area Risk Assessment. Therefore, groundwater is not further addressed in this report.

Three exposure scenarios were selected to evaluate potential human health risks for contact with soil in the Steel Production Area: (1) site worker #1 (default 25-year exposure duration); (2) site worker #2 (site-specific 9.3-year exposure duration); and (3) construction worker. The risk evaluations included soil exposure via incidental ingestion, dermal contact, and inhalation of volatiles and particulates released from the soil. The ROs for this Steel Production Area RAP/RD/RA Work Plan are based on the site worker #1 exposure scenario. Through a Construction Worker Caution, the construction worker exposure pathway will be prevented and therefore will not be further addressed in this Steel Production Area RAP/RD/RA Work Plan.

2.1 Foundation Remediation Objectives and Risk Assessment

The Foundation Technical Memorandum submitted to the Illinois EPA in June 2002 summarizes the state of the foundations at the site. Specifically, nineteen Steel Production Area foundations were evaluated. None of the foundation solids had analytical results below the preliminary screening criteria established in the Foundation Technical Memorandum. The Steel Production Area foundation physical characteristics are shown in Table 1 and the locations are depicted on Figure 4. The Foundation Technical Memorandum concluded the following:

- No solids are present in seven foundations (F-25, F-26, F-36, F-37, F-40, F-41, and F-42); therefore, these foundations do not require any further analysis.
- Solids were sampled from nine foundations (F-21, F-23, F-24, F-27, F-35, F-35A, F-38, F-39, and F-91) and analyzed for Target Compound List/Target Analyte List (TCL/TAL) parameters. The analytical results from these samples exceeded the preliminary screening criteria as presented in the Foundation Technical Memorandum.
- Solids sampled from two foundations (F-22 and F-24) were analyzed by Toxicity Characteristics Leaching Procedure (TCLP) for lead and exceeded the hazardous waste threshold established in 40 Code of Federal Registrations

(CFR) 261.24. The solids from these two foundations will be addressed in the Steel Production Area remedy.

- Solids from the remaining two foundations (F-64 and F-65) have not been fully characterized and may warrant additional investigation.

Total cyanide and reactive sulfide were detected in foundation solids; however, generator knowledge was used and the material was determined not to be hazardous for reactivity, in accordance with current United States Environmental Protection Agency (U.S. EPA) guidance documents. U.S. EPA guidance from July 1985 recommended analysis of cyanides and sulfides for comparison to risk-based limits to determine if a waste is RCRA-hazardous for reactivity characteristics (Claussen). Subsequent guidance from April 1998 rescinded the 1985 memorandum and indicated that generator knowledge must be used to classify a waste as hazardous for the reactivity characteristic (Bussard and Johnson). At the former WSW site, the processes and activities contributing to the foundation solids are generally unknown and there is no basis to classify the foundation solids as hazardous for reactivity. Furthermore, the foundations are typically exposed to the atmosphere and surface water infiltration. During the course of the site investigations, personnel observed no indication of toxic vapors or fumes emanating from the foundations. It is unlikely that after more than two decades of exposure, reactive material will be present in the foundations. Therefore, ARCADIS does not consider the solid material in the foundations hazardous for reactivity.

2.1.1 Foundation Remediation Objectives Determination

The Steel Production Area Risk Assessment evaluated the foundations as a single, combined unit, incorporating analytical results from all foundations into a single data set. To establish a conservative risk scenario, the greater of the maximum detected concentration and the maximum quantitation limit of each analyte was used as the exposure point concentration (EPC).

Results from the Steel Production Area Risk Assessment for the foundation solids are discussed below. The COCs identified in the Steel Production Area Risk Assessment are compared to the secondary screening criteria, as described below, and shown in Table 2.

2.1.1.1 Foundation Cancer Risk

The total cancer risk (defined as excess lifetime cancer risk [ELCR]) for the site worker #1 exposure pathway is $5x10^{-3}$. The risk exceeds the Illinois EPA benchmark range of

$1x10^{-6}$ to $1x10^{-4}$ for the site worker scenario. Therefore, the Steel Production Area Risk Assessment includes calculation of cancer risk-based soil ROs for the relevant COCs (those with ELCRs of $1x10^{-6}$ or more) based on the assumed site worker exposure conditions. Any constituent detected in a Steel Production Area foundation that, at its EPC, contributed to the cancer risk by $1x10^{-6}$ or more was identified as a COC. Through this analysis, a comprehensive list of carcinogenic COCs was developed.

Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene are the carcinogenic COCs identified for the site worker exposure pathway. Therefore, ROs have initially been chosen for these COCs at a conservative target ELCR of $1x10^{-5}$. The $1x10^{-5}$ ELCR was initially selected to allow for the presence of multiple carcinogenic COCs, while maintaining a cumulative ELCR less than $1x10^{-4}$.

Pursuant to a U.S. EPA correspondence dated February 24, 1998, the allowable PCB concentration at the former WSW site is 25 mg/kg, as shown in Appendix B. PCBs are identified in the Steel Production Area Risk Assessment as contributing to the carcinogenic risk to site workers. As a conservative measure, this Steel Production Area RAP/RD/RA Work Plan will use the lower of a risk-based RO or the regulatory concentration for PCBs as the RO.

2.1.1.2 Foundation Non-cancer Risk

The total non-cancer risk hazard index (HI) for site worker #1 exposure pathway is 9. The risk exceeds the benchmark of 1; therefore, the HIs for each scenario were segregated according to target organ/critical effect. For the site worker exposure route, all of the organ/critical effect HI values are less than or equal to 1 with the exception of the effects on the liver, nervous system, blood/hair, and gastro-intestinal tract due to the contribution of copper, manganese, and thallium. The major contributor to the nervous system HI is manganese. The manganese concentrations in foundations solids are below the TACO Tier 1 industrial/commercial RO; therefore, manganese does not present an unacceptable risk to site workers and is no longer considered a COC. The major contributors to the remaining health effects are the levels of copper and thallium. Therefore, an RO is developed in the Steel Production Area Risk Assessment for these constituents.

2.1.1.3 Foundation Lead Remediation Objective

In the Steel Production Area Risk Assessment, the exposure to lead is quantified through evaluating potential risk from exposure through prediction by associated blood-lead levels. The RO for lead is calculated as 1,200 mg/kg for the site worker scenario.

In addition, two foundations (F-22 and F-24) have hazardous TCLP lead concentrations and the solids will be addressed accordingly. Available data do not indicate that total lead concentrations exceed the risk-based remedial objectives (1,200 mg/kg); however, confirmation samples will be collected to verify total lead concentrations.

2.1.2 Foundation Remediation Objectives Secondary Screening

Based on the above risk and RO analysis, the foundations that exceeded preliminary screening criteria were evaluated against the Tier 3 ROs developed in the Steel Production Area Risk Assessment. "Secondary screening criteria" are based on the risk analysis presented in the Steel Production Area Risk Assessment; cancer risk of $1x10^{-5}$ and noncancer risk HI of 1. If one of the above criteria is less than the Tier 1 RO, then the Tier 1 RO was selected as the secondary screening criterion, as is the case with thallium. The Tier 1 value for thallium is greater than the Tier 3-based RO; therefore, the secondary screening criterion will be equal to the Tier 1 RO. The secondary screening criteria are shown in Table 2. ARCADIS compared the detected analytical results from the nine foundations under consideration to these secondary screening criteria, as shown in Table 3 and summarized below.

Solids in Foundation F-23 do not exceed any of the secondary screening criteria. Therefore, the risk associated with this foundation will not be further evaluated.

Eight of the foundations (F-21, F-24, F-27, F-35, F-35A, F-38, F-39, and F-91) exceed the secondary screening criteria as shown below.

- Foundation F-21 for arsenic;
- Foundation F-24 for Aroclor 1248 and benzo(a)pyrene;
- Foundation F-27 for Aroclor 1242, Aroclor 1248, benzo(a)pyrene, dibenzo(a,h)anthracene, and copper;
- Foundation F-35 for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene;

- Foundation F-35A for arsenic;
- Foundation F-38 for Aroclor 1242;
- Foundation F-39 for thallium; and
- Foundation F-91 for Aroclor 1248.

2.1.3 Foundation-Specific Remediation Objectives Analysis

The secondary screening criteria comparison presented in Section 2.1.2 is a conservative evaluation of the site worker exposure pathway with respect to the carcinogenic effects. The ROs developed in the Steel Production Area Risk Assessment for carcinogenic COCs are conservatively set for an ELCR of $1x10^{-5}$ to allow for the presence of multiple COCs in a given location without exceeding $1x10^{-4}$ risk. Because each foundation does not contain the full suite of carcinogenic COCs at the assumed levels presented in the Steel Production Area Risk Assessment, a foundation-specific risk analysis is the most reliable method of determining the cancer risk associated with solids in each foundation. Therefore, as a final screening activity, a foundation-specific cancer risk was calculated for six individual foundations (F-21, F-24, F-35, F-35A, F-38, and F-91) that only had carcinogenic COCs that exceed the secondary screening criteria. Foundation F-27 was not subjected to the foundation-specific carcinogenic risk assessment because the solids had a measured level of PCBs (Aroclor 1242 and Aroclor 1248) in excess of the U.S. EPA site-specific RO. Foundation F-39 was not subjected to the foundation-specific carcinogenic risk assessment because the solids had a measured level of non-carcinogenic thallium in excess of the RO. These foundations will require remedial action independent of the cancer risks.

The foundation-specific carcinogenic risk analysis is identical to that performed in the Steel Production Area Risk Assessment, with the exception that only measured contributing carcinogenic COCs (greater than $1x10^{-6}$ cancer risk) are evaluated for individual foundations. Tables enclosed in Appendix C provide a risk analysis for Foundations F-21, F-24, F-35, F-35A, F-38, and F-91. As presented in Appendix C, Foundations F-21, F-24, F-35A, F-38, and F-91 have a cancer risk less than $1x10^{-4}$ and Foundation F-35 has a cancer risk greater than $1x10^{-4}$. Table 4 summarizes the results provided in Appendix C.

Three foundations exceed either secondary screening criteria (non-cancer risk [copper and/or thallium]) and/or foundation-specific risk analysis (cancer risk greater than $1x10^{-4}$).

- Foundation F-27 for Aroclor 1242, Aroclor 1248, cancer risk, and copper;
- Foundation F-35 for cancer risk; and
- Foundation F-39 for thallium.

In addition, two foundations, F-22 and F-24, have leachable (TCLP) lead concentrations in excess of the hazardous waste criteria.

2.2 Surface Soil Remediation Objectives

Surface sampling activities are summarized in the Phase II RI Report (ARCADIS 2001). Nine demarcation boring sets were defined in the Steel Production Area, which included MW-20, MW-21, MW-22, B-6, SB-6, SB-7, X-114, X-116, and X-119. Samples from these soil borings were analyzed for select polynuclear aromatics (PNAs), some metals, and one pesticide.

The former lead baghouse soil delineation activities are summarized in a technical memorandum (ARCADIS 2002c). Twelve soil borings (PBG-1 through PBG-12) were advanced and soil samples were collected from 0 to 2 feet and 2 to 4 feet in depth. Samples from these soil borings were analyzed for total lead and/or TCLP lead. TCLP lead concentrations were below the hazardous waste threshold of 5 milligrams per liter (mg/L).

Nine additional borings or sampling locations were advanced, which included UST characterization samples USTSP1 through USTSP4 analyzed for volatile organic compounds (VOCs) and hot spot supplement borings HSS018 through HSS022. Each hot spot supplement sampling location was analyzed for VOCs, arsenic, lead, and/or manganese.

ARCADIS collected additional subsurface soil samples during the 1,000-gallon UST (SP-1) removal activities (ARCADIS 2000). During the excavation, five soil samples were collected: SP-1ESW (east sidewall), SP-1NSW (north sidewall), SP-1SSW (south sidewall), SP-1WSW (west sidewall), and SP-1F (floor). The sample collection depths ranged from 5 to 6 feet. The soil samples were analyzed for TCL VOCs and semivolatile organic compounds (SVOCs). Two soil samples had VOCs detected at concentrations exceeding Tier 1 industrial/commercial site worker and construction worker ROs. Since these soil exceedances occurred at greater than three feet in depth, the institutional controls will prevent exposure to these constituents.

Results from the Steel Production Area Risk Assessment for the surface soil samples are discussed below. Surface soil sampling locations are shown on Figure 5.

2.2.1 Surface Soil Cancer Risk

The total cancer risk (ELCR) for the site worker #1 exposure pathway is $2x10^{-4}$. The cancer risk exceeds the upper limit of the acceptable Illinois EPA benchmark range of $1x10^{-6}$ to $1x10^{-4}$; therefore, the Steel Production Area RAP/RD/RA Work Plan will address carcinogenic constituents in soil.

2.2.2 Surface Soil Non-Cancer Risk

The total non-cancer HI for site worker #1 exposure pathway is 5. This risk value exceeds the benchmark of 1 for non-cancer risk; therefore, the HI is segregated according to target organ/critical effect. For the site worker exposure route, all of the organ/critical effect HI values are less than or equal to 1 with the exception of the nervous system. When the contribution of manganese is excluded, the nervous system HI (0.004) is less than 1. The manganese EPC derived from site soil data is significantly below the TACO Tier 1 site worker RO; therefore, manganese is no longer considered a COC and the non-cancer risk is considered acceptable.

2.2.3 Surface Soil Lead Remediation Objective

In the Steel Production Area Risk Assessment, the exposure to lead is quantified through evaluating potential risk from exposure through prediction by associated blood-lead levels. The RO for lead is calculated as 1,200 mg/kg for the site worker scenario. The mean concentration of lead in surface soil samples is approximately 4,000 mg/kg, which exceeds the site worker RO. Therefore, the lead levels in surface soil will be addressed in this Steel Production Area RAP/RD/RA Work Plan.

2.3 Debris Pile Solids Remediation Objectives

Debris pile activities are summarized in the Debris Pile Characterization Results and Analysis (June 21, 2000) and the Debris Pile Removal Technical Memorandum (November 15, 2000). Four debris piles (SP-1 through SP-3 and SP-5) are or were located in the Steel Production Area, as shown in Figure 6.

In the June 2000 memorandum, Debris Pile SP-1 was characterized as being suitable for use as backfill or site grading for on-site activities. Samples were also collected from Debris Piles SP-2 and SP-3 with the analytical results being below Tier 1 ROs. However, since Debris Piles SP-2 and SP-3 consisted of railroad ties, they were

designated to be taken off-site for disposal as special waste. The November 2000 memorandum documented the removal and disposal of Debris Piles SP-2 and SP-3 in August 2000.

Debris Pile SP-4 is identified in the Debris Pile Technical Memorandum; however, after re-defining the boundary of the Steel Production Area, pile SP-4 is outside of the Steel Production Area, to the northeast, and is not addressed further in this report.

During site activities in 2005, ARCADIS identified an additional debris pile located at the southeast corner of the Steel Production Area. This pile, identified as Debris Pile SP-5, will be characterized and assessed consistent with the Debris Pile Technical Memorandum and the Revised Risk Assessment Report. Thereafter, a decision as to remedial action will be made.

With the potential exception of SP-5, no debris piles in the Steel Production Area require further evaluation in this Steel Production Area RAP/RD/RA Work Plan.

3. Remedial Alternatives Evaluation

In this section, technologies are evaluated and a remedial alternative is selected for the media of interest at the Steel Production Area. The presumptive remedy for protection of construction workers is a Construction Worker Caution. Therefore, the remedies evaluated below will only address the site worker exposure pathway.

3.1 Foundations Remedy

The foundation remedies are described below and have incorporated results from the Foundation Technical Memorandum, the Steel Production Area Risk Assessment, and foundation-specific risk analyses presented in Section 2.1.3. Throughout this RAP/RD/RA Work Plan, the conditions observed at the Steel Production Area Foundations will be referenced and presented, with respect to liquid and solid quantities. Discrepancies between site conditions observed during remediation and conditions presented in the Foundation Technical Memorandum will be documented and presented in the Remedial Action Completion Report. Therefore, the approach presented in this work plan will be used to address changes in site conditions.

Through this analysis, a cost effective remedial plan is presented for each foundation through one or more of the following approaches: (1) light non-aqueous phase liquid (LNAPL) removal and disposal by high vacuum equipment; (2) dewatering via discharge to the local sanitary system (pretreatment may be required); (3) solids

removal and off-site disposal; (4) engineered barrier by placing fill material over the solids to a depth of three feet to exclude dermal and ingestion exposure pathways; (5) placement of solids in an SMZ; (6) soil stabilization to fix leachable metals with the objective of removing the hazardous toxicity characteristic; (7) demolition of foundation walls to 18 to 24 inches below ground surface (bgs), backfilling, and grading work; and/or (8) plugging of encountered foundation piping. Applicable institutional controls are also included as part of the overall remedial strategy, as appropriate.

Table 5 provides the selected remedy for each foundation.

3.1.1 Light Non-Aqueous Phase Liquid Recovery

This alternative involves the removal and disposal of LNAPL through high vacuum extraction equipment. The equipment will be used to skim LNAPL from the surface water within a foundation. The liquid will be disposed of appropriately or recycled at a liquid blending facility.

The Foundation Technical Memorandum does not address the potential presence of non-aqueous phase liquid (NAPL) within the Foundations. Although recent site observations indicate that NAPL is not present in any of the foundations, historical observations have noted the presence of LNAPL in selected foundations. Because the most recent observations do not indicate NAPL presence, this RAP/RD/RA Work Plan does not include a NAPL remedy. However, if conditions within the foundations change by the time of remediation, any NAPL observed will be removed from those foundations.

3.1.2 Foundations Dewatering and Disposal

Under this alternative, various disposal methods are evaluated for standing water located in foundations. Two methods of disposal are recommended: a Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) one-time discharge permit and removal with a vacuum tuck for offsite treatment/disposal.

Due to the impacted solids located in some foundations, precautionary measures will be taken in order to prevent the release of any regulated compounds from entering the MWRDGC sewer system. A water filtration system will be used to prevent the discharge of potentially impacted suspended solids during dewatering activities.

Foundations F-22, F-24, F-27, F-35, F-39, F-64, and F-65 contain water and impacted or potentially impacted solids. Additionally, F-21, F-23, F-25, F-35A, F-36, F-37 and F-38 have water without impacted solids present. Five foundations do not contain water. The MWRDGC allows a one-time discharge permit for sites that are performing dewatering activities. The discharge permit applies to water that has been characterized and meets the MWRDGC's acceptance criteria. It is anticipated that water will be removed from all foundations containing water and discharged to the MWRDGC, pending confirmation from these foundations that water quality meets discharge requirements.

The second option is to utilize high vacuum extraction equipment to remove the liquid from the foundations and have it transported and disposed off-site.

During remedial activity, both options will likely be utilized. It is anticipated that a one-time MWRDGC discharge permit will be employed to dewater the majority of water in foundations in the Steel Production Area. Approximately, 225,000 gallons of water will be pumped to the nearest sewer connection that leads to the MWRDGC combined sewer system for treatment and final discharge. As determined on a foundation-specific basis, vacuum trucks may also transport the water offsite for disposal.

Foundation-specific remedies are presented in Table 5.

3.1.3 Foundation Solids Remedy

As discussed in Section 2.1, foundation solids that exceed risk criteria for one or more COCs will be addressed. The foundation remedies are summarized below.

- Foundations F-22 and F-24: Solids will be solidified in place. The treated solids will be tested for leachable lead and TCL/TAL. After successful lead stabilization (leachable lead concentrations below 5 mg/L), the solids will either remain in place or be removed to the SMZ. The TCL/TAL analysis will provide the information relevant to the final disposition of the stabilized solids. F-24 has been previously characterized, although a follow-up analysis will be completed to account for the addition of stabilization agents. F-22, which has not yet been characterized for TCL/TAL, will also be sampled and analyzed for TCL/TAL. A risk analysis will be performed on the newly acquired data to determine if the solids will remain in place or be moved to the SMZ.

- Foundation F-27: Solids have levels of Aroclor 1242, Aroclor 1248, benzo(a)pyrene, dibenzo(a,h)anthracene, and copper above ROs. Therefore, the solids in this foundation will be disposed as PCB waste.
- Foundations F-35 and F-39: Solids have levels of COCs that exceed allowable risk levels. Therefore, these solids will be removed and placed in the SMZ.
- Foundations F-64 and F-65: Solids in these foundations have not been characterized; therefore, sample collection and laboratory analysis is required. Upon receipt of the analytical results, the solids will be addressed consistent with this Work Plan.
- Foundations F-21, F-23, F-35A, F-38, and F-91: Solids in these foundations do not present an unacceptable risk; therefore, no remedy is required to address the solids in these foundations.

Table 5 includes the specific remedies for foundation solids, as further described below.

3.1.3.1 Solids Stabilization

Due to the measured levels of leachable (TCLP) lead in Foundations F-22 and F-24, ARCADIS will stabilize the solids. Stabilization will involve mixing the solids with chemical binders such as cement, bentonite, adhesives, and other reagents that immobilize the lead. These activities will chemically fix the lead to a relatively immobile state. This work will be accomplished with conventional earth moving equipment (i.e. backhoe, loader, bulldozer, etc.) that will mix the chemical binder into the solids. Following stabilization, confirmation samples will be analyzed for TCL/TAL, as noted previously. If the total risk is within the allowable range, then the material may remain in place (with no engineered barrier); conversely, if the risk exceeds standards in this report, then the solids will be relocated to the SMZ.

3.1.3.2 PCB Solids Removal

Due to the measured levels of PCBs in Foundation F-27, ARCADIS will remove the solids in this foundation for off-site disposal. As part of a Toxic Substances Control Act (TSCA) self implementation program, the U.S. EPA will be notified of this activity and the material will be disposed of at an appropriate facility.

3.1.3.3 Solids Removal to SMZ

Due to the elevated risk presented by solids in Foundations F-35 and F-39 (and other foundations as determined by sampling), solids will be removed from these foundations and placed in the SMZ, located in the Coke Plant Area, as further described in Section 3.3.

3.1.3.4 Engineered Barrier

Although it is not anticipated for the Steel Production Area foundations, an engineered barrier may be employed for select foundations if removal of impacted solids is impractical. Per 35 IAC 742.1105(c)(2) and (3), an engineered barrier can be constructed of soil, gravel, or other geological materials to eliminate the soil ingestion and inhalation exposure routes. The regulations stipulate that the barrier cover the contaminated media; meet the soil ROs under Subpart E for residential property for contaminants of concern; and is a minimum depth of three and ten feet for the ingestion and inhalation routes, respectively. Additionally, for the soil inhalation exposure route, the soil cannot be within ten feet of any manmade pathway. Since the site will be designated for industrial/commercial land use, ARCADIS recommends that the engineered barrier can be constructed of slag from the Slag Storage Area or surrounding surface soil.

If field conditions warrant leaving impacted foundation solids in place, ARCADIS will install an engineered barrier, consisting of a 3-foot layer of slag from the Slag Storage Area or surrounding surface soil over the solids.

3.1.3.5 Solids Characterization

Solids located in Foundations F-64 and F-65 have not been sampled for TCL/TAL constituents. Therefore, after the dewatering activities are completed, the solids in these foundations will be sampled and analyzed for the TCL/TAL. Based on the analytical results, a remedy will be selected consistent with the strategy and criteria set forth in this document.

3.1.4 Foundations Demolition and Backfilling

After the above activities have occurred, all foundation walls will be pushed into the substructures (if abovegrade) or, if at grade, will be broken-up via construction equipment to 18 to 24 inches below grade. The remaining depth will be backfilled to grade with slag from the Slag Storage Area or surrounding surface soil.

3.1.5 Foundation Piping

Due to the subsurface nature of the foundations, known and/or suspected subsurface piping connected to the foundations may be encountered during dewatering, product removal, or solids removal activities. As these conduits are exposed, grout or bentonite will be used to seal or plug the pipes to minimize migration.

It is recognized that an extensive piping network exists throughout the Steel Production Area. It is not the objective of this remedial program to seal or fill each subsurface conduit. Rather, as piping is observed in connection with a foundation, at a minimum, the inlet/outlet section of the pipe should be sealed to minimize communication between the pipe and the foundation backfill material. This will eliminate the migration pathway for COCs in the pipes from entering the foundation or from impacts remaining in the foundation from entering the pipe network. In general, residuals within the pipes are not considered to present a risk because they are contained (in the piping material) and typically deeper than 3 feet.

3.1.6 Potential Asbestos Containing Material and Protruding Rebar

The potential exists for finding suspect asbestos containing material (ACM) in the form of transite conduit. Consistent with the North Tract, if suspect ACM conduit is found, it will be grouted, sealed in place, and covered with slag as per the specific foundation remediation. ARCADIS will attempt to map out the positioning of the material.

If it is damaged or broken during the foundation remediation activities, the damaged pieces will be placed in the SMZ. If warranted, samples will be collected to confirm asbestos content prior to remediation. The ends will then be grouted and the material will be remediated per the foundation specific remediation.

ARCADIS expects to encounter rebar in foundation walls and possibly protruding from concrete debris within the foundation. As with the North Tract the exposed and protruding rebar will be cut from the concrete debris within foundations, from the foundation fill, and cut from the demolished foundation walls, consistent with regulations.

3.2 Surface Soil Remedial Alternatives

Based on the risk assessment results, surface soil presents a health risk to site workers due to elevated lead concentrations and to elevated levels of carcinogenic chemicals.

The average lead concentration (shallow zone soil) in the Steel Production Area exceeds the site worker objective. After a review of the distribution of lead concentrations in shallow soil an area (two borings) located near the western property boundary was identified with lead concentrations as high as 120,000 mg/kg. When the concentrations of the two samples (D06SS2A and D06SS3A) are removed from the sample population, the average concentration decreases to less than the remedial objective. Therefore, the remediation of lead impacted soil will involve excavation of soil no deeper than 3 feet along the west end property boundary, inclusive of borings D06SS2 and D06SS3, and placement of soil in the SMZ located in the Coke Plant Area parcel as described in Section 3.3. Then, the excavated areas will be backfilled with slag from the Slag Storage Area or surrounding surface soil. The proposed extent of excavation is shown on Figure 7.

With respect to the carcinogenic risk, one area of the site identified by soil boring BO7SE1, was identified as having a significant influence on the elevated carcinogenic risk. Table 6.1 of the Steel Production Area Risk Assessment indicates that benzo(a)pyrene and dibenzo(k)anthracene constitute approximately 80 percent of the cancer risk. Soil sample BO7SE1A had the highest concentration of both of these PNAs. A preliminary risk analysis indicates that removal of soil in this area will reduce the site cancer risk to the allowable carcinogenic risk range ($1x10^{-6}$ to $1x10^{-4}$). Therefore, it is recommended that this area will be excavated to no deeper than 3 feet bgs and placed in the SMZ.

Prior to conducting the surface soil remediation for either the lead area or the BO7SE1 area, pre-remediation soil delineation sampling will be performed to pre-define the extent of remediation. The delineation activity for the lead area will include TCLP sampling to characterize the material for disposal. If the results indicate that the soil is hazardous for toxicity associated with lead, the remedial approach may include in situ soil stabilization prior to placement in the SMZ. Recommended delineation borings are presented in Figure 7, which also approximates the estimated extent of surface soil to be remedied.

3.3 Soil Management Zone

The remedial approach for impacted soil and selected foundation solids at the Steel Production Area will employ an SMZ, which will be located in the adjacent Coke Plant Area of the WSW property, as shown in Figure 8. The SMZ is a mechanism through which site soils can be consolidated under a single engineered barrier, providing a cost-effective remedy that minimizes future encumbrances to the property without incurring the liability associated with off-site disposal.

In accordance with 35 IAC 740.535, the horizontal and vertical dimensions of the SMZ are presented in Figure 9. The western end of the former coal storage area, which is part of the site parcel identified as the Coke Plant Area, will be used as the SMZ. The coal storage area lies north of and parallel to the South Slip, and is lined with concrete on the bottom and sides. At the west end, the base of the Coal Storage Area is 1.5 feet thick and approximately level with the groundwater surface (8 to 12 feet bgs), the walls range from 4 feet thick at the top to 10 feet at the base. Backfill activities that occurred during site demolition gradually increase the grade elevation in the coal storage area such that it meets existing site grade at its east end, where the walls are 7 feet thick at the top and 10 feet thick at the base.

The soil volume to be placed in the SMZ is conservatively estimated at 2,403 cubic yards (cy)(263 cy of foundation solids and 2140 cy of surface soil), which is less than the SMZ capacity. The impacted soil will meet the requirements of 35 IAC 742.305 (a) through (f). The coal storage area which will be used as the SMZ has two soil sample locations (SB-3 and BO2SS3) as shown on Figure 8. The top of boring SB-3 is coincident with the water table; therefore, direct comparison to residential soil standards is not appropriate. The arsenic concentration (53.8 mg/kg) in boring SB-3, from 0 to 2 feet bgs, however, exceeds residential objectives. Additionally, soil boring BO2SS3 is contained within the proposed SMZ. Soil samples from this boring were analyzed for PNAs and the laboratory results exceeded residential TACO Tier 1 ROs for multiple analytes (ARCADIS 2001). Therefore, this SMZ meets the requirement that the SMZ not be located in an area that meets remedial objectives for residential properties (35 IAC 740.535 b) 8)).

Ultimately, an engineered barrier will be placed over the SMZ. Note that placing an engineered barrier over the SMZ is not anticipated as part of the Steel Production Area remedy. Rather, to allow for subsequent placement of waste soils from the Coke Plant Area, the SMZ will remain uncapped until implementation of the Coke Plant Area remedy. The Coke Plant Area is part of the WST and will be remediated to closure under the Consent Order.

4. Confirmation Sampling Plan

Confirmation soil sampling is potentially required for some foundation solids and surface soils. The sampling and quality assurance measures shall be completed in accordance with 35 IAC 740.415(d) and the site-specific Quality Assurance Project Plan (QAPP).

4.1 Foundation Solids Sampling Plan

Field sampling activities relative to sample collection, documentation, preparation, labeling, storage, shipment and security, quality assurance and quality control, and decontamination procedures will be completed in accordance with "Test Methods for evaluating Solid Waste, Physical/Chemical Methods" (U.S. EPA SW-846).

Quantitative analyses of samples collected will be completed by an accredited laboratory in accordance with the requirements of 35 IAC 186.

An evaluation will be performed to determine if confirmation soil sampling will be necessary for the exterior of the foundation structures. Exterior soil confirmation samples may be collected from Foundations F-22 and F-24 since solids within these foundations exhibit hazardous characteristics; and from Foundations F-27, F-35, and F-39 since solids within these foundations exceeded ROs. Likewise, sampling may be warranted for Foundations F-64 and F-65, pending characterization. If the walls or floor at these foundations have significant cracks present (greater than 2 inches wide) after dewatering and excavation activities occur, a soil sample will be collected either:

- outside of the foundation at the approximate depth of the crack through a geoprobe soil boring, or
- if the foundation crack is large enough to allow a native soil sample to be collected through the foundation, a soil sample will be collected directly.

A maximum of five confirmation soil samples will be collected per foundation. The solids samples will be analyzed for the specific COCs that were identified at concentrations sufficient to trigger remedial action. Foundations that contained LNAPL will be analyzed for TCL VOCs and SVOCs. As warranted, soil outside of the foundations will be remediated consistent with the approach in this Steel Production Area RAP/RD/RA Work Plan.

For foundations F-22 and F-24, one sample will be collected from solids in each foundation following solids stabilization. These samples will be analyzed for TCLP lead and TCL/TAL.

4.2 Surface Solids Sampling Plan

After soil excavation activities have been completed at the west side of the Steel Production Area, additional soil samples will be collected to characterize remaining lead soil conditions. Soil samples will be collected approximately every 50 feet along

the perimeter of the excavation areas and every 400 square feet from the excavation floors. If analytical results exceed 1,200 mg/kg, additional soil will be removed from the area.

For the BO7SE1 area, the delineation sampling will be conducted at the same frequency and analyzed for the carcinogenic PNAs. The results will be evaluated with respect to the overall carcinogenic risk.

5. Current and Future Use of the Property

The Steel Production Area is currently owned by the WST. International currently does not use the site.

Future land use and development will be restricted to industrial/commercial usage. The industrial/commercial status will be incorporated into the institutional controls that will be placed on the property.

6. Applicable Engineered Barriers and Institutional Controls

Five Institutional Controls are proposed for the property.

- The use of groundwater on-site will be prohibited through the use of the Chicago Groundwater Ordinance.
- The site usage will be restricted to industrial/commercial because the risk to residential receptors has not been evaluated.
- Because the site worker risk has not been evaluated for soil located below three feet, an institutional control will be placed requiring that earthwork/construction activity will not result in soil from below three feet being accessible to site workers.
- A Construction Worker Caution will be placed on the property deed to alert construction workers of the potential risks presented by the site. The Construction Worker Caution will require that appropriate health and safety precautions be followed and appropriate Personal Protection Equipment (PPE) be used during subsurface excavation and construction activities.
- Engineered barriers may be constructed over specific foundations and will require monitoring and maintenance to preserve the integrity of the barrier as effective protection against contact with impacted soil. The SMZ will be restricted through regulatory activities pertaining to the Coke Plant Area.

These proposed institutional controls will be documented in the NFR letter for the Steel Production Area. After the NFR letter is issued to International, the letter will be recorded on the property deed through the Cook County Recorder's Office.

7. References

ARCADIS, 2002a, Groundwater Technical Memorandum, Part II, dated May 10, 2002.

ARCADIS, 2002b, Foundation Technical Memorandum for the Former Wisconsin Steel Works, dated June.

ARCADIS 2002c, Technical Memorandum, Lead Baghouse Delineation Soil Sampling – Investigation Results and Analysis, dated June 19, 2002.

ARCADIS, 2001, Phase II Remedial Investigation Report for the Former Wisconsin Steel Works, dated June 2001.

ARCADIS, 2000, UST Removal Technical Memorandum Former Wisconsin Steel Works Site, dated June 28.

ARCADIS, 1998a, Phase II Remedial Investigation Work Plan for the Former Wisconsin Steel Works, dated August.

ARCADIS, 1998b, Preliminary Risk Assessment for the Former Wisconsin Steel Works, dated October.

ARCADIS, 1998c, Technical Memorandum - Chromium Sampling Results and Analysis, dated October 5.

ARCADIS, 1998d, Technical Memorandum, October 1998. Groundwater Sampling Results, dated October 16.

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OHM Remediation Service Corporation, 1994. Final Report for Removing and Disposing of Various Hazardous Wastes at Merchant Mill No. 6, dated September 28.

U.S. Army Corps of Engineers, 1992. Final Report for a Rapid Response and Hazardous Waste Removal at the Wisconsin Steel Trust Property; dated May 22.

U.S. Army Corps of Engineers, 1994; Site Characterization Interim Report, Wisconsin Steel Works, Chicago, Illinois, February 1994, Buffalo District.

Wang Engineering, Inc., 1990. Draft Report on Sampling and Analysis Program in Support of Demolition Activities, Wisconsin Steel Works Site, November 1, 1990.

Table 1. Steel Production Area Foundation Characteristics
Steel Production Area Remedial Action Plan
Former Wisconsin Steel Site Chicago, Illinois

Foundation Number	Dimensions (ft)		Liquid Thickness (ft)	Solids Thickness (ft)	Liquid Volume (gal)	Solids Volume (cy)	NAPL Volume (gal)
F-21	15	7.5	4.5	3.5	3,661	14	0
F-22	7.0	16	1.3	4.0	1,089	17	0
F-23	4.0	4.0	0.75	1.5	90	0.89	0
F-24	5.0	4.0	1.0	2.0	150	1.5	0
F-25	50	68	0.10	0	2,543	0	0
F-26	6.0	5.0	0	0	0	0	0
F-27*	36	59	2.4	0.2	37903.8	16.5	0
F-35	24	11	2.0	0.75	3,950	7.3	0
F-35A	0.33	diameter	8.5	0.75	5.55	0.0024	0
F-36	11	11	9.8	0	8,825	0	0
F-37	11	14	14	0	14,997	0	0
F-38	20	15	1.5	0.50	3,366	6	0
F-39	24	12	2.0	8.0	4,309	85	0
F-40	6.5	8.0	0	0	0	0	0
F-41	9.0	8.0	0	0	0	0	0
F-42	4.0	4.0	0	0	0	0	0
F-64	6.0	5.5	24	0.50	5,801	0.61	0
F-65	39	40	12	2.0	138,240	114	0
F-91	2.5	2.5	0	1.5	0	0.35	0
				Total =	224,930	263	0

Note:

*For Foundation F-27, dimensions are approximate to represent two distinct compartments

Solids are sediment and/or sludge not including surface debris.

ft = feet

cf = cubic feet

gal = gallons

cy = cubic yards

NAPL = Non-Aqueous Phase Liquid

Table 2. Steel Production Area Foundation Secondary Screening Criteria Summary
Steel Production Area Remedial Action Plan
Former Wisconsin Steel Works Chicago, Illinois

Constituent of Concern	Site Worker RO[1]	Site Worker RO[2]	Tier 1 Industrial-Commercial Ingestion RO	U.S. EPA Site-Specific RO
Aroclor 1242	8.3	--	--	25
Aroclor 1248	8.6	--	--	25
Aroclor 1254	8.4	--		25
Aroclor 1260	8.4	--	--	25
Arsenic	32	--	--	--
Benzo(a)anthracene	25	--	--	--
Benzo(a)pyrene	2.5	--	--	--
Benzo(b)fluoranthene	25	--	--	--
Benzo(k)fluoranthene	240	--	--	--
Dibenzo(a,h)anthracene	2.5	--		
Indeno(1,2,3-cd)pyrene	24	--	--	--
Copper	--	60,000	--	--
Thallium	--	120	160	--
Lead	--	1,200	--	--

Note:
All concentrations presented as milligrams per kilogram.
U.S. EPA United States Environmental Protection Agency
RO Remediation Objective

[1] The soil remediation objective is chosen at the cancer risk of $1x10^{-5}$.

[2] The soil remediation objective is chosen at the hazard index of 1, or at the calculated RO for lead

Table 3. Steel Production Area Foundation Secondary Screening Criteria Comparison
Steel Production Area Remedial Action Plan
Former Wisconsin Steel Works Chicago, Illinois

Constituent of Concern	Site Worker RO[1]	Site Worker RO[2]	Tier 1 Industrial-Commercial Ingestion RO	U.S. EPA Site-Specific RO	F-21	F-23	F-24	F-27	F-35	F-35A	F-38	F-39	F-91
Aroclor 1242	8.3	--	--	25	1.8	--	--	***3,000***	--	6	***13***	--	--
Aroclor 1248	8.6	--	--	25	--	--	***11***	***93***	8	--	--	--	***15***
Aroclor 1254	8.4	--		25	--	--	--	--	--	--	--	--	4.3
Aroclor 1260	8.4	--	--	25	--	0.19	--	--	--	--	--	4.9	1.1
Arsenic	32	--	--	--	***39***	8	22	10	21	***45***	12	15	--
Benzo(a)anthracene	25	--	--	--	--	--	--	0.49	***47***	--	--	--	--
Benzo(a)pyrene	2.5	--	--	--	--	--	***13***	***7.5***	***60***	--	--	--	--
Benzo(b)fluoranthene	25	--	--	--	--	--	15	6.6	***76***	--	--	--	--
Benzo(k)fluoranthene	240	--	--	--	--	--	--	1.1	29	--	--	--	--
Dibenzo(a,h)anthracene	2.5	--	--	--	--	--	--	***6.3***	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	24	--	--	--	--	--	--	6.4	***44***	--	--	--	--
Copper	--	60,000	--	--	83.4	170	835	***106,000***	665	143	67.6	123	340
Thallium	--	120	160	--	111	39	62	82	32	49	53	***208***	--
Lead	--	1,200	--	--	290	186	788	206	622	506	190	467	640

Note:
All concentrations presented as milligrams per kilogram.

U.S. EPA	United States Environmental Protection Agency
RO	Remediation Objective
NA	Not analyzed (needs further characterization)
--	Below detection limits

[1] The soil remediation objective is chosen at the cancer risk of $1x10^{5}$.

[2] The soil remediation objective is chosen at the hazard index of 1, or at the calculated RO for lead.

bold / italic / underlined Concentration exceeds Remediation Objectives

Table 4. Steel Production Area Foundation-Specific Carcinogenic Risk Analysis
Steel Production Area Remedial Action Plan
Former Wisconsin Steel Works Chicago, Illinois

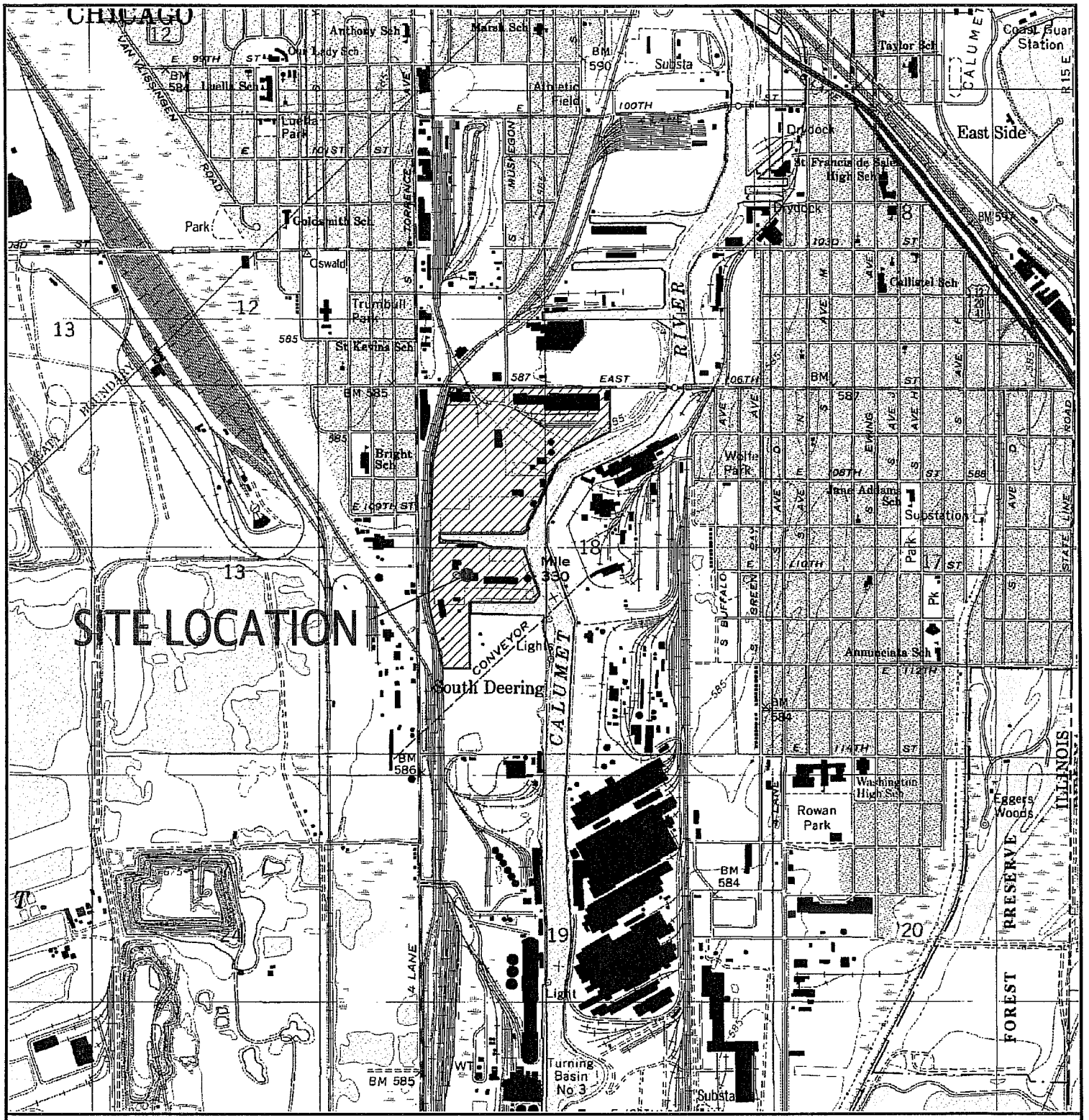
Constituent of Concern	F-21	F-24	F-35	F-35A	F-38	F-91
Aroclor 1242	1.8	--	--	6	13	--
Aroclor 1248	--	11	8	--	--	15
Aroclor 1254	--	--	--	--	--	4.3
Aroclor 1260	--	--	--	--	--	1.1
Arsenic	39	22	21	45	12	--
Benzo(a)anthracene	--	--	47	--	--	--
Benzo(a)pyrene	--	13	60	--	--	--
Benzo(b)fluoranthene	--	15	76	--	--	--
Benzo(k)fluoranthene	--	--	29	--	--	--
Dibenzo(a,h)anthracene	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	--	44	--	--	--
Cancer Risk =	1.5E-05	7.9E-05	***3.3E-04***	2.1E-05	1.9E-05	2.5E-05

Note:
All concentrations presented as milligrams per kilogram.
-- Below detection limits
bold / italic/ underlined Cancer Risk exceeds $1x10^{-4}$

Table 5. Steel Production Area Foundation Characteristics and Remedial Strategies
Steel Production Area Remedial Action Plan
Former Wisconsin Steel Site Chicago, Illinois

Foundation Number	Liquid Action	Liquid Volume (gal)	Constituent of Concern in Solids	Solids Action	Solids Volume (cy)
F-21	Discharge to the MWRDGC sewer	3,661	None	--	14
F-22	Discharge to the MWRDGC sewer	1,089	Hazardous for TCLP lead	Stabilize and remove to SMZ	17
F-23	Discharge to the MWRDGC sewer	90	None	--	0.89
F-24	--	150	Hazardous for TCLP lead	Stabilize and remove to SMZ	1.5
F-25	Discharge to the MWRDGC sewer	2,543	No Solids	--	0
F-26	--	0	No Solids	--	0
F-27	Discharge to the MWRDGC sewer	37,904	Aroclor 1242, Aroclor 1248, B(a)P, D(a,h)A, copper	Remove as PCB Waste	16.5
F-35	Discharge to the MWRDGC sewer	3,950	B(a)A, B(a)P, B(b)F, I(1,2,3-cd)P	Remove to SMZ	7.3
F-35A	Discharge to the MWRDGC sewer	5.55	None	--	0.0024
F-36	Discharge to the MWRDGC sewer	8,825	No Solids	--	0
F-37	Discharge to the MWRDGC sewer	14,997	No Solids	--	0
F-38	--	3,366	None	--	6
F-39	Discharge to the MWRDGC sewer	4,309	Thallium	Remove to SMZ	85
F-40	--	0	No Solids	--	0
F-41	--	0	No Solids	--	0
F-42	--	0	No Solids	--	0
F-64	Discharge to the MWRDGC sewer	5,801	Not sampled	Sample - Remedy to be determined	0.61
F-65	Discharge to the MWRDGC sewer	138,240	Not sampled	Sample - Remedy to be determined	114
F-91	--	0	None	--	0.35
	Total =	224,930			263

Note:
Solids are sediment and/or sludge not including surface debris.
MWRDGC = Metropolitan Water Reclamation District of Greater Chicago
gal = gallons
cy = cubic yards
B(a)A = Benzo(a)anthracene
B(a)P = Benzo(a)pyrene
B(b)F = Benzo(b)fluoranthene
D(a,h)A = Dibenzo(a,h)anthracene
I(1,2,3-cd)P = Indeno(1,2,3-cd)pyrene
TCLP = toxicity characteristic leaching procedure



SOURCE: USGS 7.5 MIN. TOPOGRAPHIC MAP, LAKE CALUMET, ILLINOIS–INDIANA QUADRANGLE, 1991.
NOTE: SITE BOUNDARIES ARE APPROXIMATE.

0' 1000' 2000' 4000'

SCALE IN FEET

N

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Chicago, IL 60601
Tel (312)263-6703 Fax (312)263-7897

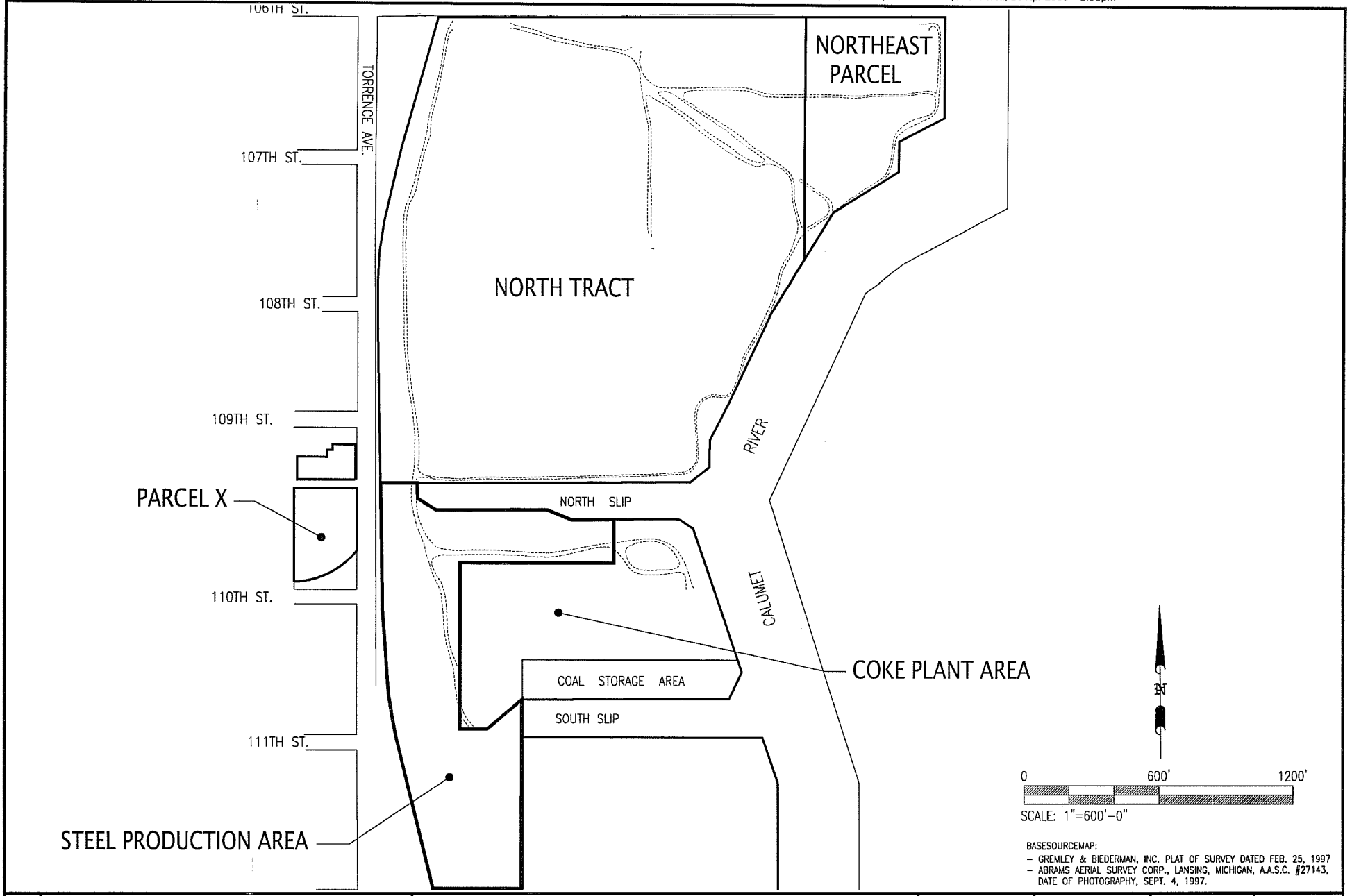
Drawing Date	File Name	File Location	Drawn BY	Checked BY	Project Manager
2/23/06	AGMSITE.DWG	G:\drafting\WSW	FS	T. GRANZEIER	G. VANDERLAAN

FORMER WISCONSIN STEEL WORKS
2701 EAST 106TH STREET

SITE LOCATION MAP

CHICAGO, ILLINOIS

Department Manager	Unique Number
P. DELAHUNT	
Project Number	**Figure**
CI000664.0009	1



BASESOURCEMAP:
- GREMLEY & BIEDERMAN, INC. PLAT OF SURVEY DATED FEB. 25, 1997
- ABRAMS AERIAL SURVEY CORP., LANSING, MICHIGAN, A.A.S.C. #27143, DATE OF PHOTOGRAPHY, SEPT. 4, 1997.

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FORMER WISCONSIN STEEL WORKS

SITE LAYOUT MAP

CHICAGO, ILLINOIS

File Name	Drawn BY	Checked BY	Project Manager
06CI0056.DWG	FS	T. GRANZEIER	G. VANDERLAAN
		Department Manager P. DELAHUNT	Unique Number
Drawing Date	File Location	Project Number	Figure
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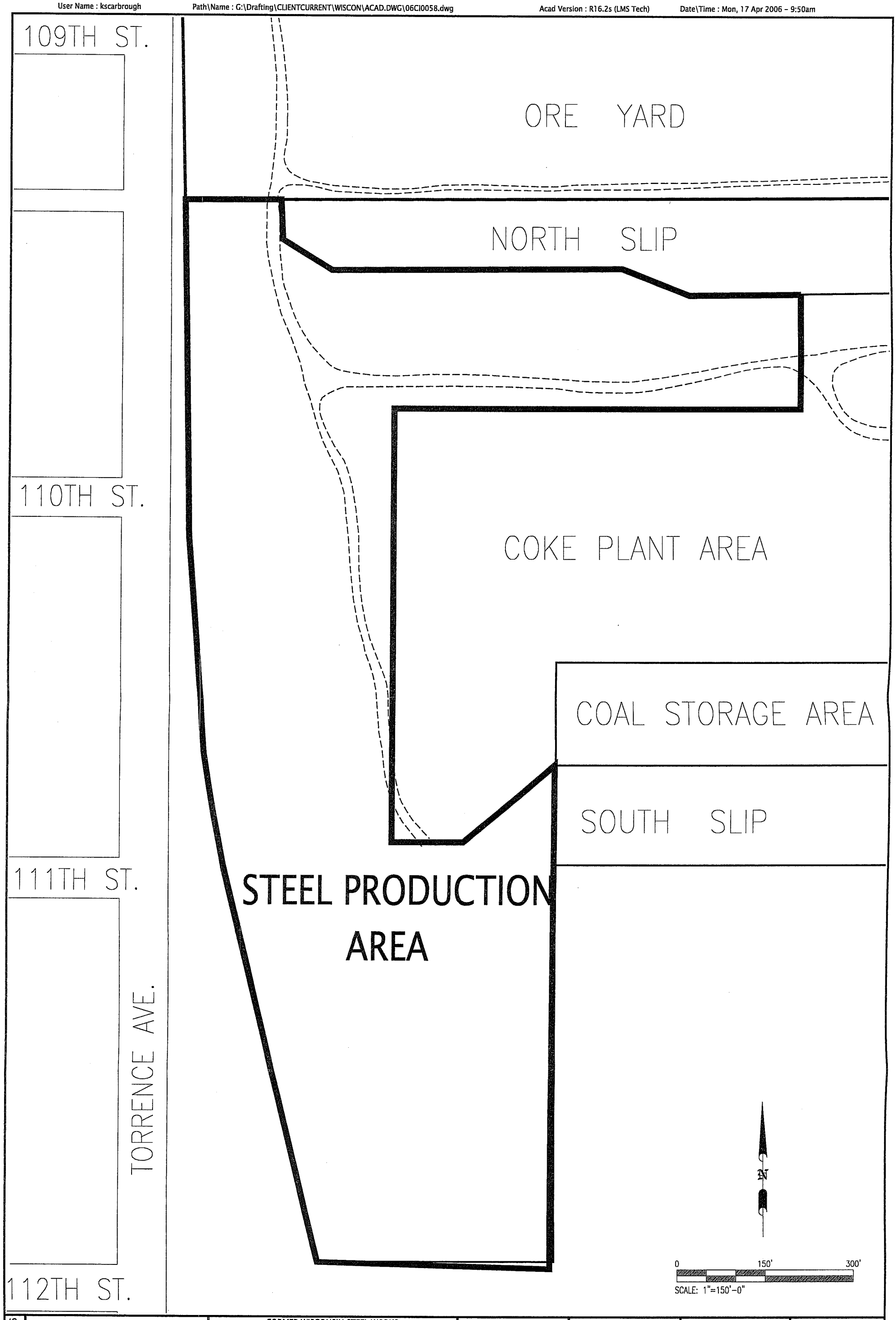

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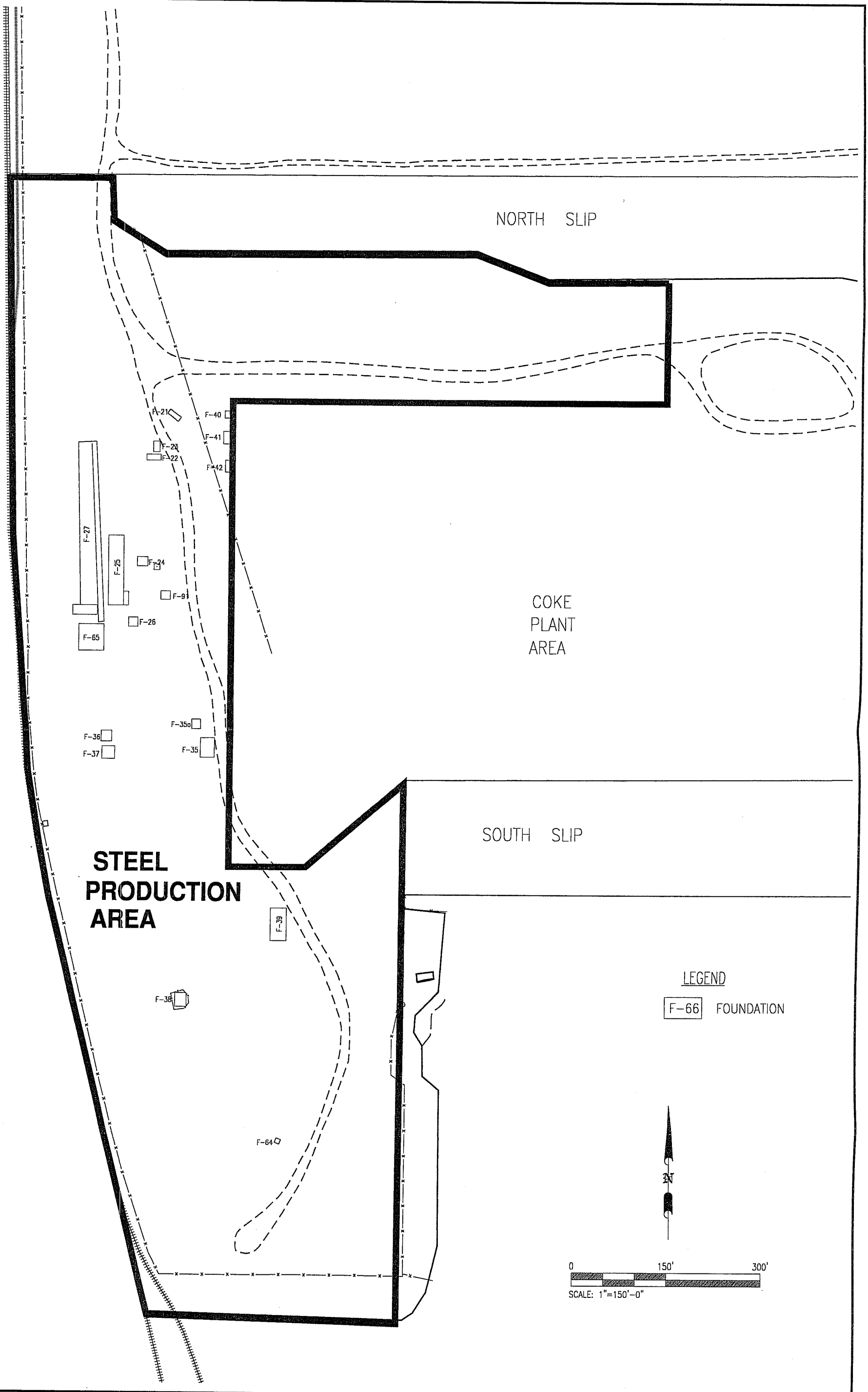
FORMER WISCONSIN STEEL WORKS

STEEL PRODUCTION AREA LAYOUT

CHICAGO, ILLINOIS

Checked By	Drawing Date	File Name	File Location
T. GRANZEIER	2/23/06	06CI0058.DWG	G:\drafting\WisconsinSteel
Drawn BY	**Project Manager**	**Project Number**	**Figure**
FS	G. VANDERLAAN	CI000664.0009	3



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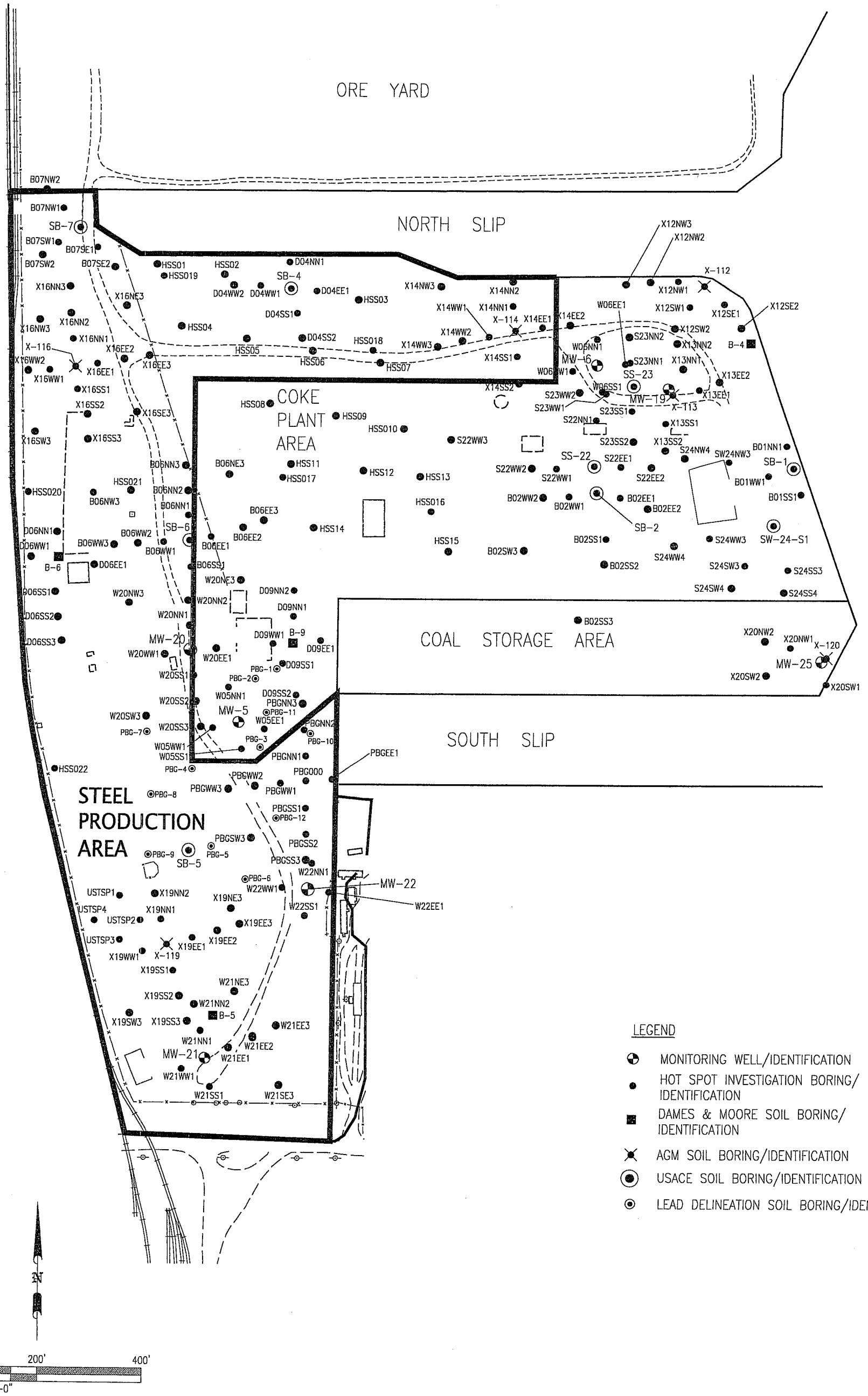
FORMER WISCONSIN STEEL WORKS

STEEL PRODUCTION AREA FOUNDATIONS

CHICAGO, ILLINOIS

Checked By	Drawing Date	File Name	File Location
T. GRANZEIER	2/23/06	04CI0044.DWG	G:\drafting\WisconsinSteel
Drawn BY	Project Manager	Project Number	Figure
FS	G. VANDERLAAN	CI000664.0009	4



LEGEND

- MONITORING WELL/IDENTIFICATION
- HOT SPOT INVESTIGATION BORING/ IDENTIFICATION
- DAMES & MOORE SOIL BORING/ IDENTIFICATION
- AGM SOIL BORING/IDENTIFICATION
- USACE SOIL BORING/IDENTIFICATION
- LEAD DELINEATION SOIL BORING/IDENTIFICATION

0 200' 400'

SCALE: 1"=200'-0"

Basemap Source: ABRAMS AERIAL SURVEY CORPORATION, Lansing, Michigan, A.A.S.C. #27143, Date of Photography September 4, 1997, Sheets 2 and 3 of 3.

NOTE: Manganese is present throughout the Steel Production Area at concentrations exceeding the construction worker remediation objective

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FORMER WISCONSIN STEEL WORKS

STEEL PRODUCTION AREA SOIL SAMPLING LOCATIONS

CHICAGO, ILLINOIS

Checked By	Drawing Date	File Name	File Location
T. GRANZEIER	2/23/06	04CI0047.DWG	G:\DRAFTING\WISCONSINSTEEL
Drawn BY	Project Manager	Project Number	Figure
FS	G. VANDERLAAN	CI000664.0009	5

NORTH SLIP

SP-2

SP-3

COKE PLANT AREA

SP-1

SOUTH SLIP

STEEL
PRODUCTION
AREA

SP-5

LEGEND

SP-1 DEBRIS PILE LOCATION/DESIGNATION

SP-3 FORMER DEBRIS PILE LOCATION

N

0 200' 400'

SCALE: 1"=200'-0"

NO.	DATE	REVISION DESCRIPTION	BY	CKD	NO.	DATE	REVISION DESCRIPTION	BY	CKD

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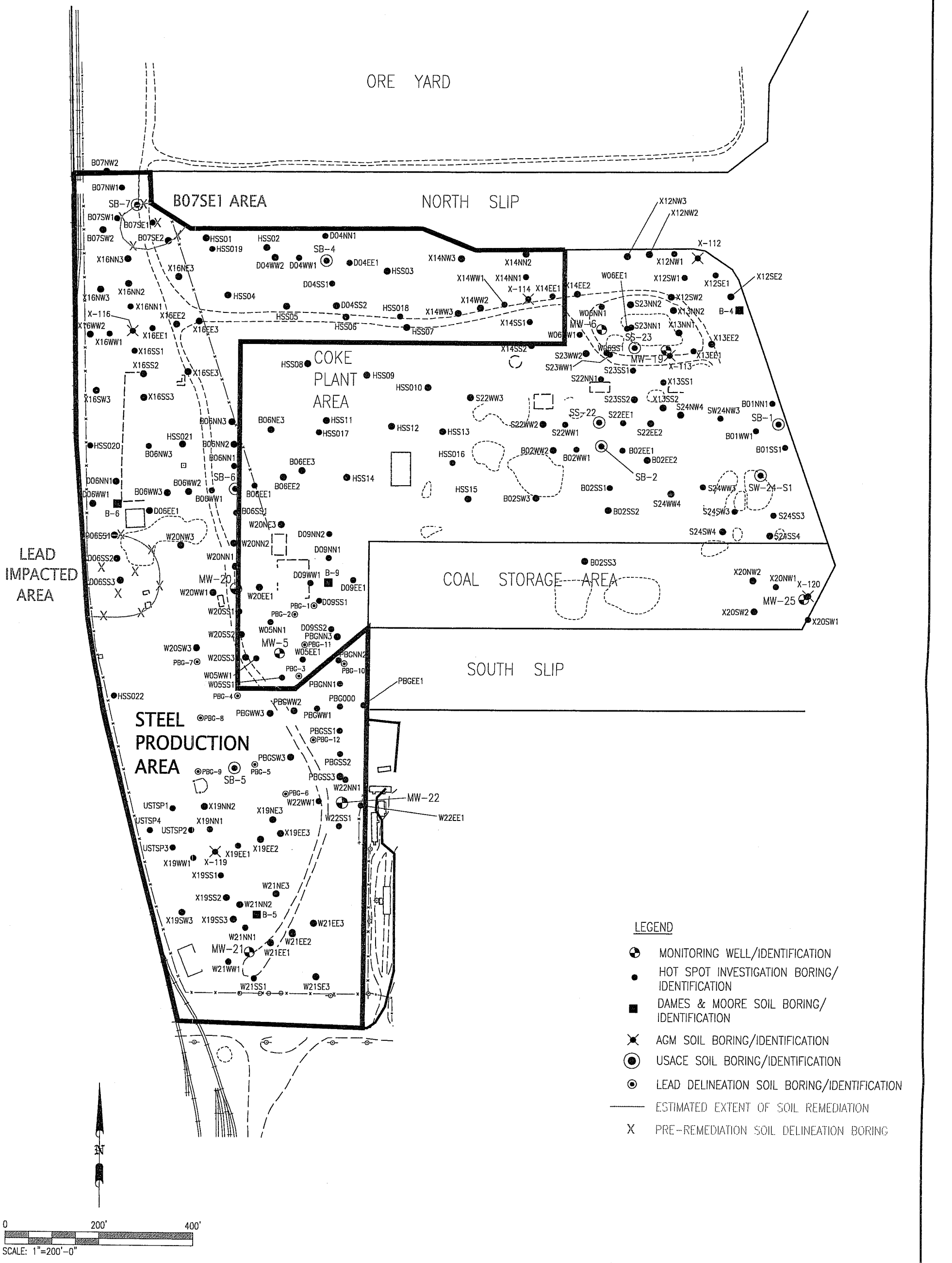
FORMER WISCONSIN STEEL WORKS SITE

STEEL PRODUCTION AREA
DEBRIS PILE LOCATIONS

CHICAGO, ILLINOIS

Checked By	Drawing Date	File Name	File Location
T. GRANZEIER	4/06/06	06CI0061.DWG	G:\drafting\WSW
Drawn BY	**Project Manager**	**Project Number**	**Figure**
KS	G. VANDERLAAN	CI000664.0009	6



LEGEND

- MONITORING WELL/IDENTIFICATION
- HOT SPOT INVESTIGATION BORING/ IDENTIFICATION
- DAMES & MOORE SOIL BORING/ IDENTIFICATION
- AGM SOIL BORING/IDENTIFICATION
- USACE SOIL BORING/IDENTIFICATION
- LEAD DELINEATION SOIL BORING/IDENTIFICATION
- ESTIMATED EXTENT OF SOIL REMEDIATION
- PRE-REMEDIATION SOIL DELINEATION BORING

Basemap Source: ABRAMS AERIAL SURVEY CORPORATION, Lansing, Michigan, A.A.S.C. #27143, Date of Photography September 4, 1997, Sheets 2 and 3 of 3.

NOTE: Manganese is present throughout the Steel Production Area at concentrations exceeding the construction worker remediation objective

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FORMER WISCONSIN STEEL WORKS

STEEL PRODUCTION AREA
SURFACE SOIL REMEDIATION AREAS

CHICAGO, ILLINOIS

Checked By	Drawing Date	File Name	File Location
T. GRANZEIER	2/23/06	04CI0047.DWG	G:\DRAFTING\WISCONSINSTEEL
Drawn BY	**Project Manager**	**Project Number**	**Figure**
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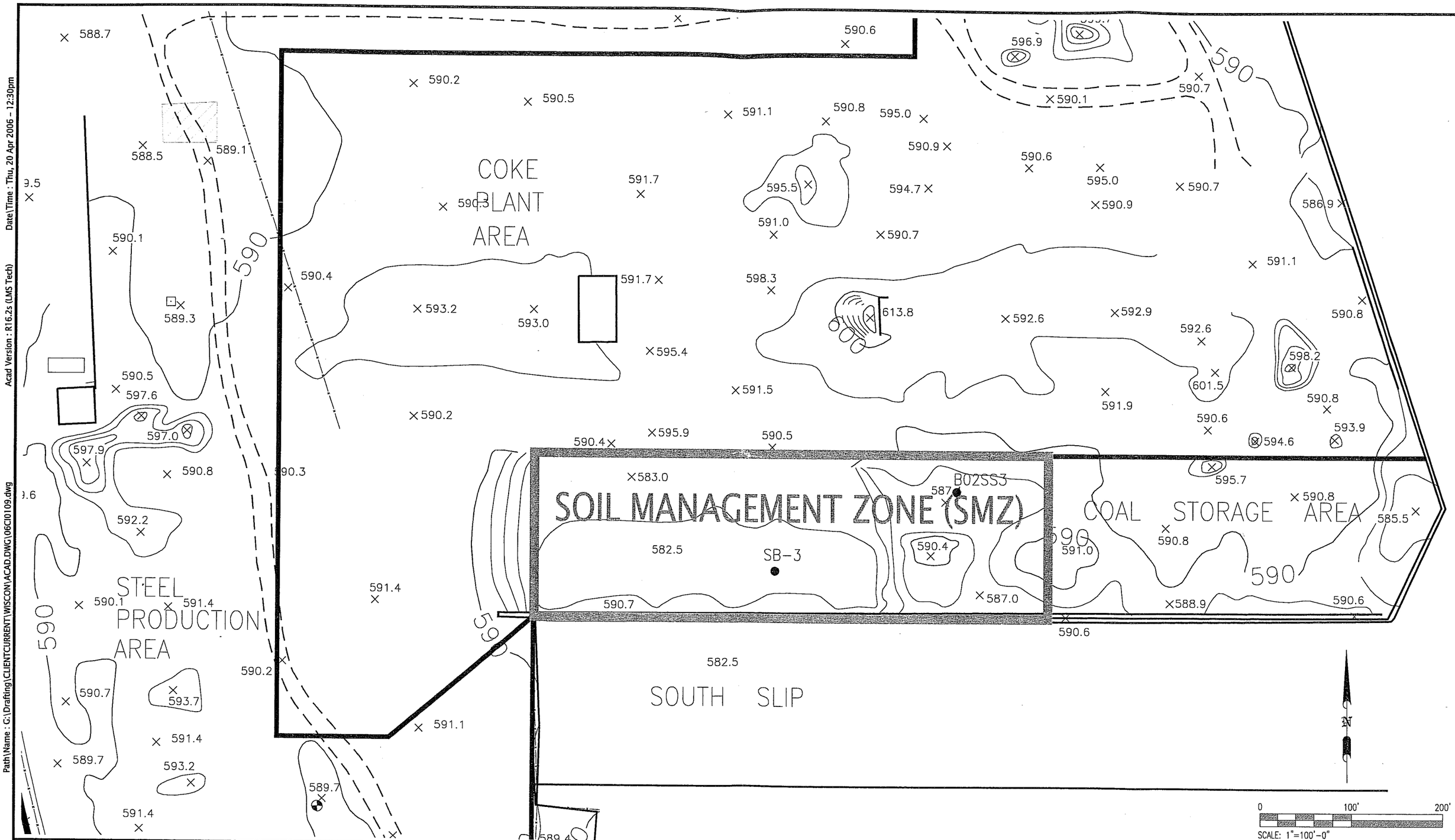

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Path\Name : G:\Drafting\CLIENTCURRENT\WISCON\ACAD.DWG\06CI0109.dwg

User Name : fsoto

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NO.	DATE	REVISION DESCRIPTION	BY	CKD

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WISCONSIN STEEL WORKS SITE

SOIL MANAGEMENT ZONE LOCATION

CHICAGO, ILLINOIS

Checked By: H. HILCHEY	Drawing Date: 4/10/06	File Name: 06CI0109.DWG	File Location: G:\drafting\WisconsinSteel
Drawn BY: FS	Project Manager: T. GRANZEIER	Project Number: CI000664.0009	Figure: 8

STEEL PRODUCTION AREA

COKE PLANT AREA

178'

A

SOIL MANAGEMENT ZONE (SMZ)

A'

COAL STORAGE AREA

SOUTH SLIP

A

380'

180'

SURFACE

A'

3'

ENGINEERED BARRIER

5.5'

AVAILABLE FOR
PLACEMENT OF IMPACTED SOLIDS
(ESTIMATED AT 17,000 CUBIC YARDS)

560'

SMZ BOTTOM

SMZ CROSS-SECTION

N

0 100' 200'

SCALE: 1"=100'-0"

NO.	DATE	REVISION DESCRIPTION	BY	CKD

NO.	DATE	REVISION DESCRIPTION	BY	CKD

ARCADIS
35 East Wacker Drive, Suite 1000
Chicago, IL 60601
Tel:(312)263-6703 Fax:(312)263-7897

WISCONSIN STEEL WORKS SITE

SOIL MANAGEMENT ZONE SCHEMATIC DIAGRAM

CHICAGO, ILLINOIS

Checked By	Drawing Date	File Name	File Location
H. HILCHEY	4/10/06	06CI0116.DWG	G:\drafting\WisconsinSteel
Drawn BY	Project Manager	Project Number	Figure
FS	G.VANDERLAAN	CI000664.0009	9

Appendix A

Licensed Professional Engineer
Affirmation / DRM-2 Form Submittal

Illinois Environmental Protection Agency
Bureau of Land
Remedial Project Management Section
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

FOR ILLINOIS EPA USE:
LOG NO. _____

Site Remediation Program Form (DRM-2)
(To Be Submitted with all Plans and Reports)

I. Site Identification:

Site Name: Former Wisconsin Steel Works - Steel Production Area

Street Address : 2701 East 106th St.

City: Chicago Illinois Inventory I. D. Number: _____

IEMA Incident Number: _____

II. Remediation Applicant:

Applicant's Name: Edith M. Ardiente,PE,QEP Company: International Truck & Engine corporation

Street Address: 4201 Winfield Road

City: Warrenville State: IL ZIP Code: 60555 Phone: 312-836-3920

I hereby request that the Illinois EPA review and evaluate the attached project documents in accordance with the terms and conditions of the Environmental Protection Act (415 ILCS 5), implementing regulations, and the review and evaluation services agreement.

Remediation Applicant's Signature: Edith M Ardiente Date: 4/27/06

III. Contact Person:

Contact's Name: Gregory A. Vanderlaan Company: ARCADIS G&M, Inc.

Street Address: 35 East Wacker Drive, Suite 1000

City: Chicago State: IL ZIP Code: 60601 Phone: 312.263.6703

IV. Review & Evaluation Licensed Professional Engineer or Geologist ("RELPEG"), if applicable:

RELPEG's Name: _____ Company: _____

Street Address: _____

City: _____ State: _____ ZIP Code: _____ Phone: _____

Registration Number: _____ License Expiration Date: _____

All information submitted is available to the public except when specifically designated by the Remediation Applicant to be treated confidentially as a trade secret or secret process in accordance with the Illinois Compiled Statutes, Section 7(a) of the Environmental Protection Act, applicable Rules and Regulations of the Illinois Pollution Control Board and applicable Illinois EPA rules and guidelines. The Illinois EPA is authorized to require this information under Sections 415 ILCS 5/58 - 58.12 of the Environmental Protection Act and regulations promulgated thereunder. Disclosure of this information is required as a condition of participation in the Site Remediation Program. Failure to do so may prevent this form from being processed and could result in your plan(s) or report(s) being rejected. This form has been approved by the Forms Management Center.

V. Project Documents Being Submitted:

Document Title: Steel Production Area Date of Preparation of Plan or Report: 04/2006

Prepared by: ARCADIS G&M, Inc. Prepared for: International Truck & Engine Corporation

Type of Document Submitted:

- Site Investigation Report - Comprehensive
- Site Investigation Report - Focused
- Remediation Objectives Report-Tier 1or 2
- Remediation Objectives Report-Tier 3
- Remedial Action Plan
- Remedial Action Completion Report
- Sampling Plan
- Health and Safety Plan
- Community Relations Plan
- Risk Assessment
- Contaminant Fate & Transport Modeling
- Environmental Remediation Tax Credit - Budget Plan Review
- Other: _____

Document Title: _____ Date of Preparation of Plan or Report: _____

Prepared by: _____ Prepared for: _____

Type of Document Submitted:

- Site Investigation Report - Comprehensive
- Site Investigation Report - Focused
- Remediation Objectives Report-Tier 1or 2
- Remediation Objectives Report-Tier 3
- Remedial Action Plan
- Remedial Action Completion Report
- Sampling Plan
- Health and Safety Plan
- Community Relations Plan
- Risk Assessment
- Contaminant Fate & Transport Modeling
- Environmental Remediation Tax Credit - Budget Plan Review
- Other: _____

VI. Professional Engineer's or Geologist's Seal or Stamp:

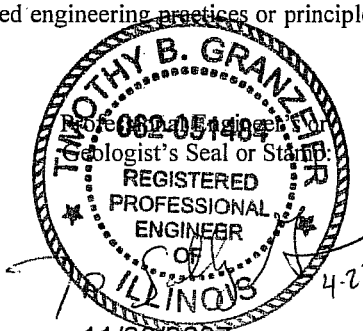
I attest that all site investigations or remedial activities that are the subject of this plan(s) or report(s) were performed under my direction, and this document and all attachments were prepared under my direction or reviewed by me, and to the best of my knowledge and belief, the work described in the plan and report has been designed or completed in accordance with the Illinois Environmental Protection Act (415 ILCS 5), 35 Ill. Adm. Code 740, and generally accepted engineering practices or principles of professional geology, and the information presented is accurate and complete.

Engineer or Geologist Name: Tim Scully - Granzeier

Company: ARCADIS G&M, Inc. Phone: 312.263.6703

Registration Number: 062-051484

Professional Engineer's or Geologist's Seal or Stamp:



Signature: _____ License Expiration Date: 11/30/2007

Note: The authority of a Licensed Professional Geologist to certify documents submitted to the Illinois Environmental Protection Agency for review and evaluation pursuant to Title XVII of the Environmental Protection Act is limited to Site Investigation Reports (415 ILCS 58.7(f), as amended by P.A. 92-0735, effective July 25, 2002). A Licensed Professional Geologist cannot certify Remediation Objectives Reports, Remedial Action Plans or Remedial Action Completion Reports.

Appendix B

U.S. EPA Correspondence dated
February 24, 1998

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

FEB 24 1998

REPLY TO THE ATTENTION OF:

DRT-8J

RECEIVED
FEB 26 1998

Gregory A. Vanderlaan
ARCADIS Geraghty & Miller, Inc.
35 East Wacker Drive
Suite 1000
Chicago, Illinois 60601

Dear Mr. Vanderlaan;

I am responding to your January 19, 1998, letter which requests approval of the remediation objective for the Polychlorinated Biphenyl (PCB) cleanup at the Wisconsin Steel Works site at Chicago, Illinois.

Your letter states that the Illinois Environmental Protection Agency (IEPA) has informed you that site-specific remedial objectives for PCBs must be developed in cooperation with the United States Environmental Protection Agency (U.S. EPA).

The U.S. EPA's Spill Cleanup Policy (40 C.F.R. §761, Subpart G) sets out a self-implementing set of cleanup procedures and remedial objectives for spills which occurred after May 4, 1987, the effective date of this policy. For old PCB spills, those which occurred prior to May 4, 1987, the U.S. EPA's Regional Office should be contacted for a site specific determination of cleanup requirements. While most of the procedural requirements of the Spill Cleanup Policy can not be applied, in many instances the remedial objectives, or cleanup standards, in the policy can be met. Since the Spill Cleanup Policy's standards were developed to be protective of human health and the environment, it is Region 5's practice to use those standards as the initial remedial objective for old PCB spills.

Your letter seeks approval of an industrial/commercial remediation objective of 25 milligrams per kilogram (ppm). The PCB Spill Cleanup Policy allows for a 25 ppm cleanup level for soil in restricted access locations where the spill boundary is located more than 0.1 kilometers from the nearest residential/commercial area. If the spill boundary at a

restricted access location is located within 0.1 km from a residential/commercial area, the cleanup standard would then be 10 ppm covered by 10 inches of clean fill (i.e., fill containing less than 1 ppm PCBs).

Your letter states that the facility is zoned for industrial or commercial purposes and is in an area of mixed residential and industrial properties. The facility is surrounded by a fence and security guards routinely patrol the area. There are residential properties west of the facility, across Torrence Avenue. Presently there are no industrial or commercial activities being conducted at the site.

In consideration of the above factors, and assuming the site will be used as a restricted access industrial facility, the U.S. EPA is approving a cleanup objective for soil of 10 ppm covered with 10 inches of clean fill for PCB contamination found within 0.1 km of the site boundary with Torrence Avenue and 25 ppm for PCB contaminated surface soil at the remainder of the Wisconsin Steel site. If, in the future, this property is converted to residential or non-restricted access commercial use, the site should be recleaned to the 10 ppm with 10 inches of clean fill residential/commercial standard.

If you have any questions concerning this matter, please call Scott Cooper, of my staff, at (312) 886-1332.

Anthony L. Restaino, Chief
Pesticides & Toxics Enforcement Section

cc: Vickie Moy, IEPA

Appendix C

Foundation-Specific Carcinogenic Risk Assessment

F-21 Risk Calculations for Exposure to Foundation Solids, Site Worker #1, Steel Production Area

Constituent	EPCs (mg/kg)	CANCER RISK: Route-Specific Risks Oral	Dermal	Inhalation	Calculated Risk	Percent Total ELCR
Polycyclic Aromatic Hydrocarbons (PAHs)						
Benzo(a)anthracene	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	--	--	--
Dibenz(a,h)anthracene	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)						
Aroclor 1242	1.8	3.9E-07	1.7E-06	5.1E-08	2.2E-06	15%
Aroclor 1248	--	--	--	--	--	--
Aroclor 1254	--	--	--	--	--	--
Aroclor 1260	--	--	--	--	--	--
Metals						
Arsenic	39	6.3E-06	6.0E-06	2.0E-08	1.2E-05	85%
				TOTAL ELCR	1.5E-05	

F-24 Risk Calculations for Exposure to Foundation Solids, Site Worker #1, Steel Production Area

Constituent	EPCs (mg/kg)	CANCER RISK				Percent Total ELCR
		Route-Specific Risks			Calculated Risk	
		Oral	Dermal	Inhalation		
Polycyclic Aromatic Hydrocarbons (PAHs)						
Benzo(a)anthracene	--	--	--	--	--	--
Benzo(b)fluoranthene	15	1.2E-06	4.9E-06	NA	6.1E-06	8%
Benzo(k)fluoranthene	--	--	--	--	--	--
Benzo(a)pyrene	13	1.0E-05	4.2E-05	3.3E-08	5.3E-05	67%
Dibenz(a,h)anthracene	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)						
Aroclor 1242	--	--	--	--	--	--
Aroclor 1248	11	2.4E-06	1.1E-05	3.3E-07	1.3E-05	17%
Aroclor 1254	--	--	--	--	--	--
Aroclor 1260	--	--	--	--	--	--
Metals						
Arsenic	22	3.6E-06	3.4E-06	1.1E-08	7.0E-06	9%
				TOTAL ELCR	7.9E-05	

F-35a Risk Calculations for Exposure to Foundation Solids, Site Worker #1, Steel Production Area

Constituent	EPCs (mg/kg)	CANCER RISK Route-Specific Risks Oral	Dermal	Inhalation	Calculated Risk	Percent Total ELCR
Polycyclic Aromatic Hydrocarbons (PAHs)						
Benzo(a)anthracene	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	--	--	--
Dibenz(a,h)anthracene	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)						
Aroclor 1242	6	1.3E-06	5.8E-06	1.7E-07	7.2E-06	34%
Aroclor 1248	--	--	--	--	--	--
Aroclor 1254	--	--	--	--	--	--
Aroclor 1260	--	--	--	--	--	--
Metals						
Arsenic	45	7.3E-06	6.9E-06	2.3E-08	1.4E-05	66%
				TOTAL ELCR	2.1E-05	

F-35 Risk Calculations for Exposure to Foundation Solids, Site Worker #1, Steel Production Area

Constituent	EPCs (mg/kg)	CANCER RISK: Route-Specific Risks Oral	Dermal	Inhalation	Calculated Risk	Percent Total ELCR
Polycyclic Aromatic Hydrocarbons (PAHs)						
Benzo(a)anthracene	47	3.7E-06	1.5E-05	NA	1.9E-05	6%
Benzo(b)fluoranthene	76	6.0E-06	2.5E-05	NA	3.1E-05	9%
Benzo(k)fluoranthene	29	2.3E-07	9.4E-07	NA	1.2E-06	0%
Benzo(a)pyrene	60	4.7E-05	1.9E-04	1.5E-07	2.4E-04	74%
Dibenz(a,h)anthracene	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	44	3.5E-06	1.4E-05	NA	1.8E-05	5%
Polychlorinated Biphenyls (PCBs)						
Aroclor 1242	--	--	--	--	--	--
Aroclor 1248	8	1.7E-06	7.7E-06	2.4E-07	9.6E-06	3%
Aroclor 1254	--	--	--	--	--	--
Aroclor 1260	--	--	--	--	--	--
Metals						
Arsenic	21	3.4E-06	3.2E-06	1.1E-08	6.7E-06	2%
				TOTAL ELCR	3.3E-04	

F-38 Risk Calculations for Exposure to Foundation Solids, Site Worker #1, Steel Production Area

Constituent	EPCs (mg/kg)	CANCER RISK				Percent Total ELCR
		Route-Specific Risks			Calculated Risk	
		Oral	Dermal	Inhalation		
Polycyclic Aromatic Hydrocarbons (PAHs)						
Benzo(a)anthracene	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	--	--	--
Dibenz(a,h)anthracene	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)						
Aroclor 1242	13	2.8E-06	1.2E-05	3.7E-07	1.6E-05	80%
Aroclor 1248	--	--	--	--	--	--
Aroclor 1254	--	--	--	--	--	--
Aroclor 1260	--	--	--	--	--	--
Metals						
Arsenic	12	1.9E-06	1.8E-06	6.3E-09	3.8E-06	20%
				TOTAL ELCR	1.9E-05	

F-91 Risk Calculations for Exposure to Foundation Solids, Site Worker #1, Steel Production Area

Constituent	EPCs (mg/kg)	CANCER RISK				Percent Total ELCR
		Route-Specific Risks			Calculated Risk	
		Oral	Dermal	Inhalation		
Polycyclic Aromatic Hydrocarbons (PAHs)						
Benzo(a)anthracene	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	--	--	--
Dibenz(a,h)anthracene	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)						
Aroclor 1242	--	--	--	--	--	--
Aroclor 1248	15	3.2E-06	1.4E-05	4.5E-07	1.8E-05	74%
Aroclor 1254	4.3	9.3E-07	4.1E-06	7.4E-08	5.1E-06	21%
Aroclor 1260	1.1	2.4E-07	1.1E-06	1.2E-08	1.3E-06	5%
Metals						
Arsenic	--	--	--	--	--	--
				TOTAL ELCR	2.5E-05	