

Removal Action Work Plan

BNSF SANGAMON RIGHT-OF-WAY CHICAGO, COOK COUNTY, ILLINOIS

March 2016

Prepared for:



BNSF Railway Company
Minneapolis, Minnesota

Prepared by:



Chicago, Illinois

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**BNSF Railway Company
Minneapolis, Minnesota**

Prepared by:



**TRC Environmental Corporation
230 West Monroe Street, Suite 2300
Chicago, Illinois 60606**

TRC Project No. 230807

March 2016

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- Attachment B. Transportation Management Plan
- Attachment C. Fugitive Dust Control Plan
- Attachment D. Air Monitoring Plan
- Attachment E. Sampling and Analysis / Quality Assurance Project Plan
- Attachment F. Schedule for Completion with Major Milestones
- Attachment G. Selection of Removal Contractor with Certifications and Training Certificates

LIST OF ACRONYMS

bgs	below ground surface
BMPs	best management practices
BNSF	BNSF Railway Company
CFR	Code of Federal Regulations
cw	construction worker
EQ	EQ Illinois, Inc.
HASP	health and safety plan
JULIE	Joint Utility Locating Information for Excavators
Loewenthal	former Loewenthal Metals facility
mg/kg	milligrams per kilogram
$\mu\text{g}/\text{m}^3$	microgram per meter cubed
mg/L	milligram per liter
NPDES	National Pollution Discharge Elimination System
OSHA	Occupational Safety and Health Administration
PCBs	polychlorinated biphenyls
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
ROW	right-of-way
SROs	Soil Remediation Objectives
SVOCs	semi-volatile organic compounds
TACO	Tiered Approach to Corrective Action Objectives
TCLP	toxic characteristic leaching procedure
TRC	TRC Environmental Corporation
US EPA	United States Environmental Protection Agency
VOCs	volatile organic compounds
Work Plan	Removal Action Work Plan

1.0 INTRODUCTION

On behalf of BNSF Railway Company (BNSF), TRC Environmental Corporation (TRC) prepared this Removal Action Work Plan (the RAWP) for the property along the railroad right-of-way (ROW) east of Sangamon Street between 21st Street to the south and West 16th Street to the north in Chicago, Illinois (the Site). The removal action will be conducted to address lead –impacted surface soils and characteristically hazardous waste lead-impacted areas at the Site.

The RAWP is based on the analytical results outlined in the December 1, 2014 *Soil Sampling Results Letter*. Prior soil investigations identified areas with lead concentrations above the most stringent Tier 1 soil remediation objectives (SROs) established in 35 Illinois Administrative Code Part 742 – Tiered Approach to Corrective Action Objectives (TACO) for industrial/commercial and residential properties, and above the characteristic hazardous waste criteria (5 milligrams per liter [mg/L] for toxic characteristic leaching procedure [TCLP] analysis). This RAWP outlines the scope to address the isolated soil areas with characteristically hazardous lead concentrations as well as the areas with lead concentrations in soil above Tier 1 TACO SROs.

1.1 Site Description

The Site is located in Section 20, Township 39N, Range 14E in Chicago, Cook County, Illinois. The Site is located in a predominantly residential area with outlying industrial properties east of the BNSF ROW (Figure 1).

The former Loewenthal Metals facility (Loewenthal) is located to the west of the BNSF ROW at the southwest corner of Cullerton Street and Sangamon Street (Figure 1). Removal activities will take place between West 18th Street to the north and West 21st Street to the south as shown on Figures 2 and 3. The characteristically hazardous lead remediation activities that will take place between West 18th Street to the north and Cullerton Street to the south as shown on Figure 3. Note, a former National Lead facility was located to the east of the BNSF ROW between West 18th Street and West 16th Street. A fence will be installed to restrict access of the BNSF ROW between West 18th Street and West 16th Street (Figure 4).

1.2 Background and Previous Sampling Results

The United States Environmental Protection Agency (US EPA) conducted subsurface investigations and remediation at Loewenthal located at 947 West Cullerton Street in Chicago, Illinois (Figure 1). Based on information obtained from the US EPA’s website, a cleanup was completed from September 30 to October 11, 2013 at this former smelting facility to remove high concentrations of lead in the soil for potential residential use

in the future. A total of 4,800 tons of impacted soil and debris were excavated, treated with a stabilizer agent, and transported to Republic Services Newton County landfill in Indiana, where it was disposed of as non-hazardous material. The site was replaced with clean soil and seeded to prevent erosion. The site is currently vacant, unfenced and vegetated with grass.

As part of the investigation phase of the US EPA remediation project, US EPA approached BNSF to sample soil on BNSF ROW property, east of Loewenthal. It was agreed that on behalf of the US EPA, BNSF would collect the necessary soil samples at the designated US EPA sampling locations. These sampling locations are shown on Figure 2 and are designated as LM-SB-24 to LM-SB-35. The LM-series samples were collected on June 21, 2013. In addition to the US EPA sampling activities, on the same day, TRC collected three additional soil samples, one block north of the US EPA sampling locations (north of Cullerton Street) along the BNSF ROW and east of Sangamon Street. These samples are designated as GP-1 to GP-3 (Figure 3).

Based on the results of the US EPA off-site sampling, one sample location (LM-SB-24), located on City of Chicago ROW property had a TCLP lead concentration of 56 mg/L, which is above the characteristic hazardous waste limit of 5 mg/L. According to the US EPA Loewenthal website, the City of Chicago conducted its own cleanup of the area encompassing location LM-SB-24 (Figure 2). Based on the review of City of Chicago documentation, dated January 17, 2014, and provided on the US EPA website, the cleanup was conducted between September 30 and October 11, 2013 to address the characteristically hazardous lead levels in the soil. Based on the website information, the City's contractor, SET Environmental, Inc. excavated 64 cubic yards of characteristically hazardous soil and hauled it off-site for treatment and disposal. Geotextile fabric was placed on the bottom of the excavation and the excavated areas were filled with clean soil.

Based on the results of the BNSF and US EPA initial sampling, TRC completed additional soil sampling. TRC returned to the area on November 12, 2013 and advanced an additional 21 soil borings (P-1 to P-21). On October 7-8, 2014, TRC advanced an additional 28 soil borings (A-1 to A-28) to further characterize lead levels along the BNSF ROW. Samples were collected and analyzed for total and TCLP lead (Figures 1 and 2).

Characteristic Hazardous Waste TCLP Lead Soil Results

The following soil samples have TCLP lead results above the characteristic hazardous waste criteria:

Sample ID	Depth (Feet below grade surface [bgs])	TCLP Lead Result (mg/L)	Total Lead Result (mg/kg)
LM-SB-24 **	0-1	56	6,300
GP-3	0-2	49.8	3,190
P-5	0-2	8.0	5,010
P-19	0-2	13.6	3,180

** As noted above, according to information obtained on the US EPA website for the former Loewenthal Metals, the City of Chicago conducted its own cleanup of the area around sample location LM-SB-24 due to the hazardous waste level of lead. This area is depicted on Figure 2.

Based on the analytical results, three sample locations have TCLP lead concentrations above 5 mg/L. The elevated concentrations are limited to the upper 2 feet and are horizontally defined (Figure 2).

Total Lead Soil Results

Based on the results of the soil samples collected and analyzed for total lead, several soil boring locations on the BNSF ROW have total lead concentrations above 800 mg/kg, the industrial/commercial ingestion SRO for lead. The sample results above 800 mg/kg are shaded in green on Figures 2 and 3. Sample results above the construction worker ingestion SRO (700 mg/kg) are depicted with a “cw” designation. Samples results identified above 400 mg/kg, the residential ingestion SRO for lead, are shaded in yellow (Figures 2 and 3)

2.0 SITE PREPARATION FOR FIELD WORK

2.1 Health and Safety

A site-specific *Health and Safety Plan* (HASP) has been prepared to establish general site operating procedures, safety guidelines and contingency plans for all proposed work to be performed on the Site. A copy of the HASP is included as Attachment A of this Work Plan. The HASP is dynamic in nature, and may be revised as Site conditions change. The HASP and any subsequent addenda will apply to all personnel who are involved with removal activities at the Site. All work will be conducted in compliance with applicable Occupational Safety and Health Administration (OSHA) regulations, including 29 Code of Federal Regulations (CFR) 1910 (General Industry Standards), and 29 CFR 1926 (Construction Industry Standards).

All personnel who will be directly involved in the removal activities will have received the appropriate hazardous waste site worker and e-RAILSAFE training. In addition, all personnel will be trained in general and Site-specific health and safety procedures, as well as quality assurance (QA) and quality control (QC) procedures. TRC and their subcontractors will have completed the BNSF Railway Company Contractor Orientation course prior to coming onto the Site.

The ROW is not active; as such, track protection is not required.

2.2 Property Survey

Prior to mobilization and excavation activities a property survey will be conducted by a licensed surveyor and the BNSF ROW property lines and hazardous excavation areas will be delineated with stakes.

2.3 Utility Clearance

The excavation contractor will contact the Joint Utility Location Information for Excavators (JULIE) hotline and a request for the location and markings for all utilities for which JULIE is responsible. TRC will contact BNSF's personal utility locate and on Site personnel to locate and mark all utilities located in the BNSF ROW. In addition, TRC will contract a private utility locator to ensure all boring locations are clear of underground utilities.

2.4 Hazardous Waste Profile Sampling

The hazardous waste material will either be disposed of at Peoria Disposal Company (PDC) or at EQ Illinois, Inc. (EQ). Hazardous waste profiling will be completed prior to the removal activities. This composite sample will be collected prior to excavation and disposal

activities. In addition, an EPA-assigned hazardous waste generator number will be required prior to disposal activities.

2.5 Special Waste Profile Sampling

Although a previous disposal profile was completed for special waste along the BNSF ROW, based on discussions with Waste Management Laraway Landfill, the profile has expired. As such, this profile will be renewed. According to Waste Management, additional sampling for profiling is not required.

2.6 Site Preparation

Prior to beginning the soil excavation activities, the Site will be prepared for removal activities. A survey will be conducted identified the BNSF ROW property boundaries and the anticipated limits of the excavations will be measured and marked with stakes by the licensed surveyor. In addition, temporary fencing will be placed around the hazardous waste soil excavation limits. Work zones will be identified and delineated as well as staging areas for vehicles and equipment. Vehicles and other equipment will remain staged adjacent and west to the ROW on Sangamon Street or on the adjacent property east of the ROW. A decontamination station for equipment will be established outside the work zone but adjacent to each excavation and on BNSF ROW property. Street Sweeping will be made available if there is any dirt tracking out at the equipment access roads.

Appropriate traffic patterns for field personal and equipment will also be identified and marked in the field prior to beginning removal efforts as appropriate. Prior to mobilization to the Site, any field equipment to be used during soil removal will be cleaned.

A Transportation Management Plan is included as Attachment B of this Work Plan.

2.7 Soil Erosion and Sediment Control

Erosion and sediment controls will be installed prior to any soil removal activities. The contractor must follow best management practices (BMPs) in accordance with typical conditions of a National Pollution Discharge Elimination System (NPDES) construction site erosion and storm water discharge regulations. If needed, filter fabric fences will be placed around excavations; however, fabric fences are not anticipated. No storm water conveyances, surface water bodies, or surface water drainages are present in the immediate vicinity of the soil excavation areas as such a NPDES permit is not anticipated to be required.

2.8 Air Monitoring

Air monitoring will be performed and documented throughout the entire soil removal activities due to the toxicity of lead dust. Specifics are provided in the *Air Monitoring Plan* included as Attachment C of this Work Plan. Air quality will be continuously monitored

with a minimum of 3 particulate meter within the work zone (2 downwind and 1 upwind) to evaluate potential worker exposure to airborne particulate concentrations. The meter will be placed in the immediate vicinity of the active excavation area. Air quality will be monitored with measurements of total particulate concentration, date, time, and wind direction recorded on air monitoring logs or in the field log book. The frequency of the monitoring will depend on the activities being conducted and the predominant wind direction, but no less than every 5 minutes. The action level for nuisance dust will be 500 micrograms per meter cubed ($\mu\text{g}/\text{m}^3$). The results of the air monitoring will be recorded in a log book and/or electronically recorded and kept as part of the Site documentation.

2.9 Dust Suppression

If the action level ($500 \mu\text{g}/\text{m}^3$) is exceeded during field activities, a stop to excavation activities will be initiated so dust control measures can be implemented. These measures may include, but are not limited to, spraying the excavations lightly with water to minimize dust emissions. Details are provided in the *Fugitive Dust Control Plan* included as Attachment D of this Work Plan.

2.10 Rail and Tie Removal

Prior to soil excavating, any existing rail and associated railroad ties will be removed and placed above ground, on the BNSF ROW for future disposal or recycling by BNSF. If appropriate, the rails should be cut in manageable lengths, stockpiled and as an option transported to a BNSF-owned property located no farther than 10 miles away from the Site. BNSF will not remove or replace the concrete curbing or the rails/ties or soil beneath the City of Chicago roads. Refer to the *Transportation Management Plan* for the staging location of the rail and ties if these materials are not directly loaded onto trucks.

3.0 REMOVAL PLAN

The following sections outline the removal actions designed to address the isolated areas with lead concentrations above the characteristically hazardous waste criteria and the non-hazardous waste criteria. Attachment G provides removal contractor's removal and training certificates.

3.1 Hazardous Soil Excavation and Disposal

Prior to the actual soil excavation activities; the Site will be further prepared by removal of trees, as needed, signal boxes, unused power poles, and other miscellaneous structures.

Three separate areas have TCLP lead concentrations above the characteristically hazardous criteria of 5 mg/L between West 18th Street to the north, and Cullerton Street to the south. These three areas are depicted on Figure 1. The areas surround sampling locations (from south to north) P-5, GP-3 and P-19. The soil from each area will be excavated to the nearest delineation borings in each direction with concentrations below the characteristically hazardous criteria. Based on the soil analytical results, each excavation is estimated to measure approximately 20 feet by 20 feet by 2 feet bgs. No excavations will be conducted beyond BNSF ROW property boundaries (Figure 2). Excavation will be limited to an approximate 5 feet set back zone from off-site buildings, large vegetation or active underground utilities (manholes, electric, sewers, etc.). Note, the 5 foot set back zone is not anticipated to be required as part of the hazardous waste excavations.

Based on the analytical results, the excavation and disposal of hazardous soil are not expected to extend deeper than 2-feet bgs. The estimated in-place volume per excavation of characteristically hazardous soil to be excavated and disposed is approximately 30 in-place cubic yards, or approximately 45 tons. The total volume for the three excavations will be approximately 90 cubic yards, or 135 tons.

The bottom and side walls of each excavation area will be field screened with x-ray fluorescence (XRF) equipment to screen for total lead levels. However, confirmation soil samples will be collected for TCLP lead at the boundaries of the anticipated final excavation(s) limits (sidewalls and floor) for a total of five confirmation samples per excavation. Refer to Attachment E for a copy of the *Sampling and Analysis Plan / Quality Assurance Project Plan* (SAP/QAPP).

A demarcation fabric will be anchored down at the bottom of each of the excavation areas to prevent dust and will prevent future excavation beyond this barrier. The barrier will be marked with a Caution Excavation beyond this depth may encounter lead contaminated soil (or similar warning).

The soils excavated from these three areas will be loaded directly into plastic lined semi-trucks, tarped and transported to either PDC located in Peoria, Illinois or EQ located in Harvey, Illinois. If the soil is sent to EQ, the material will be treated to non-hazardous levels. After treatment, the non-hazardous soils will be transported to and disposed at the Waste Management Laraway Landfill located in Joliet, Illinois. In order to properly profile the material for disposal, an additional composite sample may be required. Refer to Section 2.3 above.

3.2 Non-Hazardous Soil Excavation and Disposal

Soil lead concentrations were identified above IEPA TACO Tier 1 SROs in the ROW area between West 18th Street to the north, and West 21st Street, to the south. US EPA Removal Management Levels are consistent with the TACO Tier 1 SROs. These areas are depicted on Figures 2 and 3. Based on estimates, this area contains approximately 65,967 square feet. US EPA is requiring two feet of soil be removed in the BNSF ROW area. US EPA indicated that the previous data collected has shown, in most cases, that at a two foot excavation the lead levels will be below the US EPA Removal Management Levels. Excavation will be limited to an approximate 5 feet set back zone from off-site buildings, large vegetation or active underground utilities (manholes, electric, sewers, etc.).

A demarcation fabric will be anchored down at the bottom of the excavation area to prevent dust and will prevent future excavation beyond this barrier. The barrier should be marked with a Caution Excavation beyond this depth may encounter lead contaminated soil (or similar warning).

Two feet of material will be removed from the ROW area, loaded directly onto semi-trucks and disposed of as a special waste material at the Waste Management Laraway Landfill located in Joliet, Illinois. If appropriate, the soil may be stockpiled prior to loading. Any stockpile will be tarped, as necessary to limit dust. The estimated in-place volume of special waste soil to be excavated and disposed is approximately 4,800 in-place cubic yards or approximately 7,200 tons.

3.3 Decontamination

Heavy equipment (i.e. excavator and/or backhoe) utilized for excavation activities will be visually inspected prior to, and at the completion of each excavation area (hazardous and non-hazardous areas). If the tracks on the heavy equipment become soiled, the driver will physically clean the tracks of soil with a shovel and place the material within the last truck-load of soil going off for treatment and disposal prior to leaving the excavation area and the Site. The driver of heavy equipment will inspect his/her vehicle for loose soil hanging off the truck, truck tracks, and bucket prior to leaving an excavation area.

Decontamination water, if generated will be mixed to the impacted soil and placed within the last truck-load of soil going off for treatment and disposal.

Trucks and equipment will use the equipment access road to the excavation area. Trucks will be lined, tarped and inspected prior to leaving the excavation area. Street sweeping shall be made available to keep streets and curbs clean in the exit of the haul road and beyond.

A truck route has been prepared and adhered to for the drivers to minimize travel on the side roads near the community and will bypass the local grammar school two blocks to the east and south of the BNSF ROW. Main City of Chicago roads will be utilized with proper weight limits and overhead clearances to the main interstate roads. Refer to the *Transportation Management Plan* included as Attachment B.

3.4 Site Restoration

Prior to backfilling the soil excavations, a demarcation barrier indicating caution “Do Not Dig” or other demarcation will be placed at 2 foot below grade or at the final depth of excavation. The excavations will be backfilled to grade and compacted, if necessary. Backfill will consist of at least 6 inches of topsoil at the surface. Backfill below the topsoil may consist of crushed stone or topsoil depending on the depth of the excavation.

3.5 Fence Installation South of 16th Street and North of 18th Street

An 8-foot high (2 by 9 gage) chain-link fence with wind screen, and a 1-5/8 inch top rail will be constructed along the ROW corridor south of the bridge at 16th Street and north of West 18th Street (Figure 3). The length of fence and/or gate is expected to extend approximately 100 feet on the south side of 16th Street connecting to the west BNSF property line to a concrete piling to the east. The fence is expected to extend approximately 38 feet on the north side of West 18th Street connecting already existing fence. Fence posts will be dug to 3 feet bgs and emplaced in concrete. Three strands of barbed wire will be installed at the top of the fence. The soil material removed to install the fence posts will be placed inside the fence.

4.0 REPORTING

TRC will oversee the excavation subcontractor and document these activities. A weekly summary of work completed and work planned will be prepared and presented and discussed with US EPA and BNSF. The documentation will include manifests, dimensions of the soil excavations, volumes of soil removed, and excavation procedures and air monitoring data. Site activities will be recorded in a field log book and on appropriate log forms, as needed. Photographic documentation of the excavation activities and air monitoring results will also be documented by TRC. Upon completion of the excavation activities, a *Removal Action Completion Report* will be prepared for BNSF and submitted to US EPA, as required under the Consent Order.

5.0 SCHEDULE

A schedule for completion shall be prepared with major milestones noted and projected time frames. Weekly meetings will be held on site to go over the completed and projected tasks.

Event	Estimated Schedule Start or Due	Estimated Time to Complete (Working Days)	Responsible Party
Topographic Survey		Completed	TRC-selected surveyor
Fence Installation (16 th Street Bridge – 18 th Street)	March 2016	2 days	Contractor/TRC
Composite Sampling for Hazardous Waste Profiling	March 2016	1 day	TRC
Issue Invitation to Bid / Request for Proposals (RFP)	March 2016	10 working days	BNSF / TRC
Profiling Hazardous and Nonhazardous Disposal Paperwork	March 2016	10 working days	TRC
Contractor Mandatory Pre-Bid Meeting	April 2016	1 day	Contractors
Prepare RFP Addenda / Respond to Contractor Questions	April 2016	1 day	BNSF / TRC
Contractor Notice of Award	May 2016	1 day	BNSF
City of Chicago Permitting	May 2016	30 days	Contractor/TRC
Staking of Excavation and BNSF-ROW Property Boundaries	May 2016	2 days	TRC-selected surveyor
Mobilization for Work to Begin at Site	June 2016	5 days	NA
Removal of Existing Out-Of-Service Railroad Tracks / Ties	June 2016	10 days	Contractor
Removal and Disposal of 90 CY of Hazardous Soil	June 2016	2 days	Contractor with TRC oversight
Confirmation Soil Sampling and Laboratory Analysis	June 2016	10 day TAT (lab turnaround time)	TRC/Laboratory
Installation of Fencing on Northern Portion of Site	June 2016	5 days	
Removal and Disposal of 4,000 CY of Nonhazardous Soil	June – July 2016	20 days	Contractor with TRC oversight
Placement of Demarcation Barrier and Backfilling (begins concurrent to excavation)	July 2016	5 days (beyond excavation completion)	Contractor with TRC oversight
Restoration of Excavated Areas (grading and seeding; begins concurrent to earthwork)	July 2016	5 days (beyond earthwork completion)	Contractor with TRC oversight

Event	Estimated Schedule Start or Due	Estimated Time to Complete (Working Days)	Responsible Party
Installation and/or Repair of Public Infrastructure, if required (e.g., roadways, curb and gutter, and sidewalk)	July - August 2016	TBD	Contractor with TRC oversight
Data validation and evaluation	July - August 2016	30 days	TRC
Reporting	August - October 2016	60 days	TRC

Note:

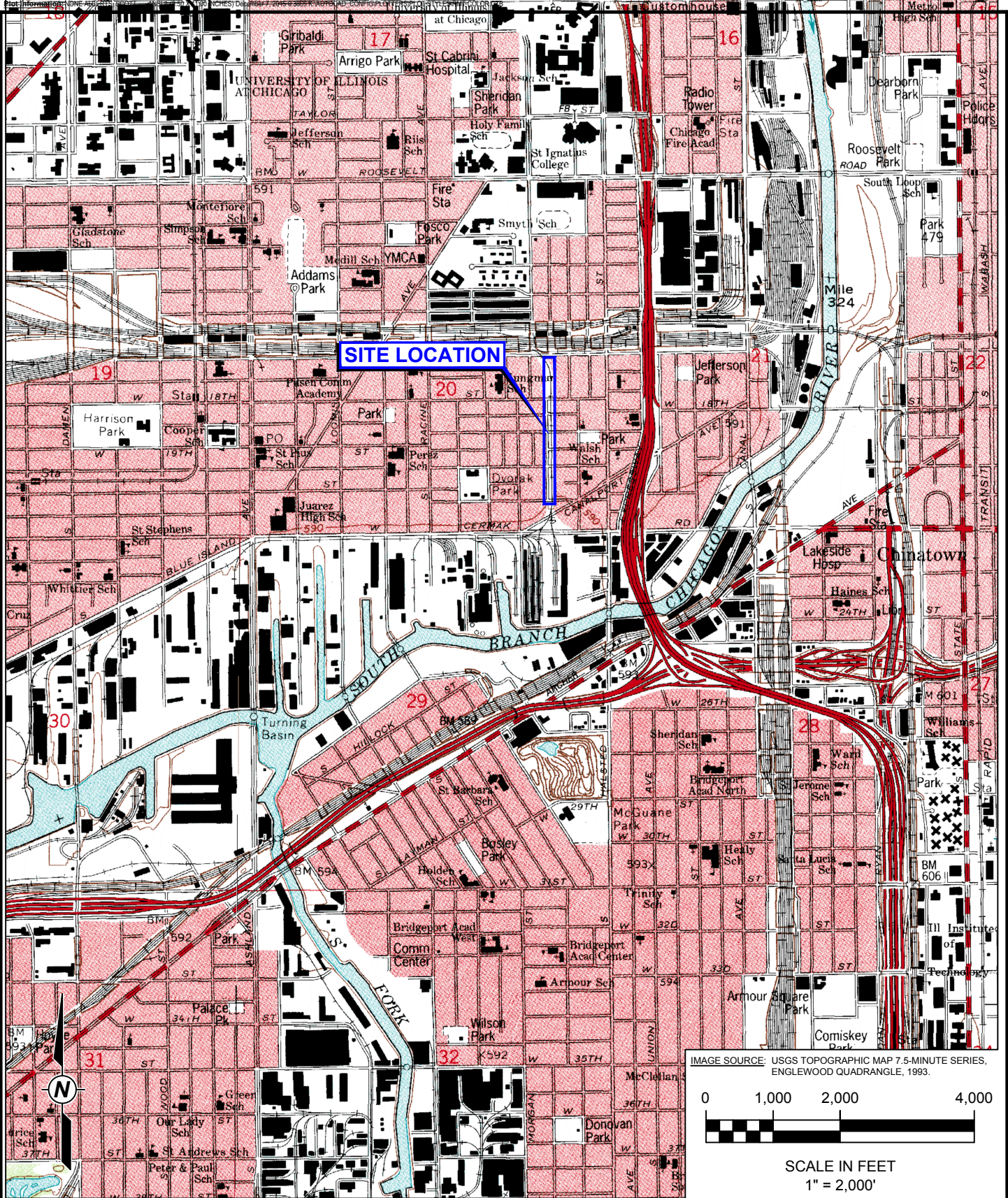
The schedule is dependent on joint coordination efforts with the City of Chicago.

6.0 REFERENCES


TRC. 2014. *Soil Sampling Results*. TRC Environmental Corporation. December 1.

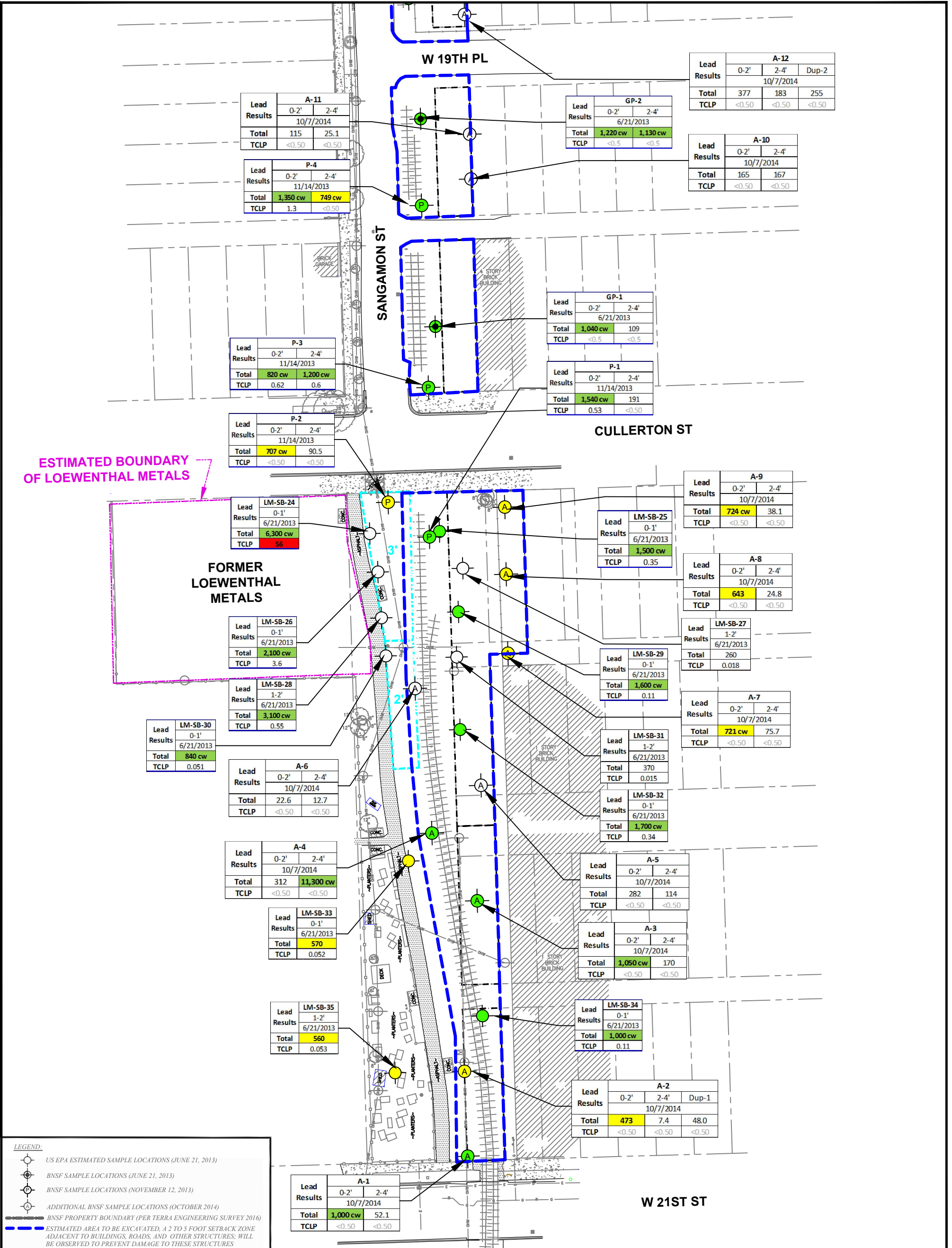
US EPA. 2015. Loewenthal Website; <http://www.epa.gov/region5/cleanup/loewenthal/>

FIGURES



SOURCE: USGS 7.5 MINUTE SERIES TOPOGRAPHIC MAP, CHICAGO LOOP AND ENGELWOOD QUADRANGLES

 <p>230 WEST MONROE ST SUITE 2300 CHICAGO, IL 60606 P: 312.578.0870</p>	PROJECT: BNSF RIGHT-OF-WAY SAMPLING EAST OF LOEWENTHAL METALS CHICAGO, COOK COUNTY, ILLINOIS	DRAWN BY: S.ALBERTS APPROVED BY: L.MEAGHER
	SHEET TITLE: FIGURE 1 SITE LOCATION MAP	PROJ. NO. 230807 FILE NO. 230807-04.dwg DATE: DECEMBER 2015



LEGEND:
 ○ US EPA ESTIMATED SAMPLE LOCATIONS (JUNE 21, 2013)
 ⊙ BNSF SAMPLE LOCATIONS (JUNE 21, 2013)
 ⊙ BNSF SAMPLE LOCATIONS (NOVEMBER 12, 2013)
 ⊙ ADDITIONAL BNSF SAMPLE LOCATIONS (OCTOBER 2014)
 --- BNSF PROPERTY BOUNDARY (PER TERRA ENGINEERING SURVEY 2016)
 --- ESTIMATED AREA TO BE EXCAVATED, A 2 TO 5 FOOT SETBACK ZONE ADJACENT TO BUILDINGS, ROADS, AND OTHER STRUCTURES; WILL BE OBSERVED TO PREVENT DAMAGE TO THESE STRUCTURES DURING EXCAVATION ACTIVITIES.

Soil depths are measured in feet below ground surface (bgs).

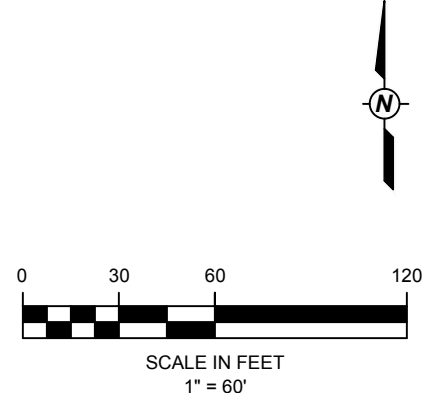
mg/L Milligrams per liter
 mg/kg Milligrams per kilogram
 TACO Tiered Approach to Corrective Action Objectives
 SRO Soil remediation objective
 TCLP Toxicity characteristic leaching procedure
 < Less than
 Dup Duplicate
 cw Exceeds construction worker SRO (700 mg/kg)

56 Indicates concentration above the characteristically hazardous waste level (5 mg/L).
 1,000 Indicates concentration above the most stringent industrial/commercial TACO SRO.
 520 Indicates concentration above the most stringent residential TACO SRO.

The TCLP lead results were not compared to the soil component of groundwater ingestion route SRO because the City of Chicago has a groundwater ordinance.

According to 40 CFR Part 261, the USEPA's Identification and Listing of Hazardous Waste, TCLP lead samples with concentrations greater than 5 mg/L will be classified as hazardous waste. The soil borings for the LM series samples were advanced by TRC and provided to the US EPA's consultant immediately upon advancement. As such, the analytical soil sampling depths and intervals were decided by the US EPA's consultant. The US EPA samples were also analyzed for additional parameters; however, this data is not included in this summary table. Refer to the laboratory report in Appendix A for this information.

SOURCE NOTE: AERIAL IMAGERY FROM GOOGLE EARTH AERIAL IMAGERY



NO.	BY	DATE	REVISION	APPD.
3.				
2.				
1.				

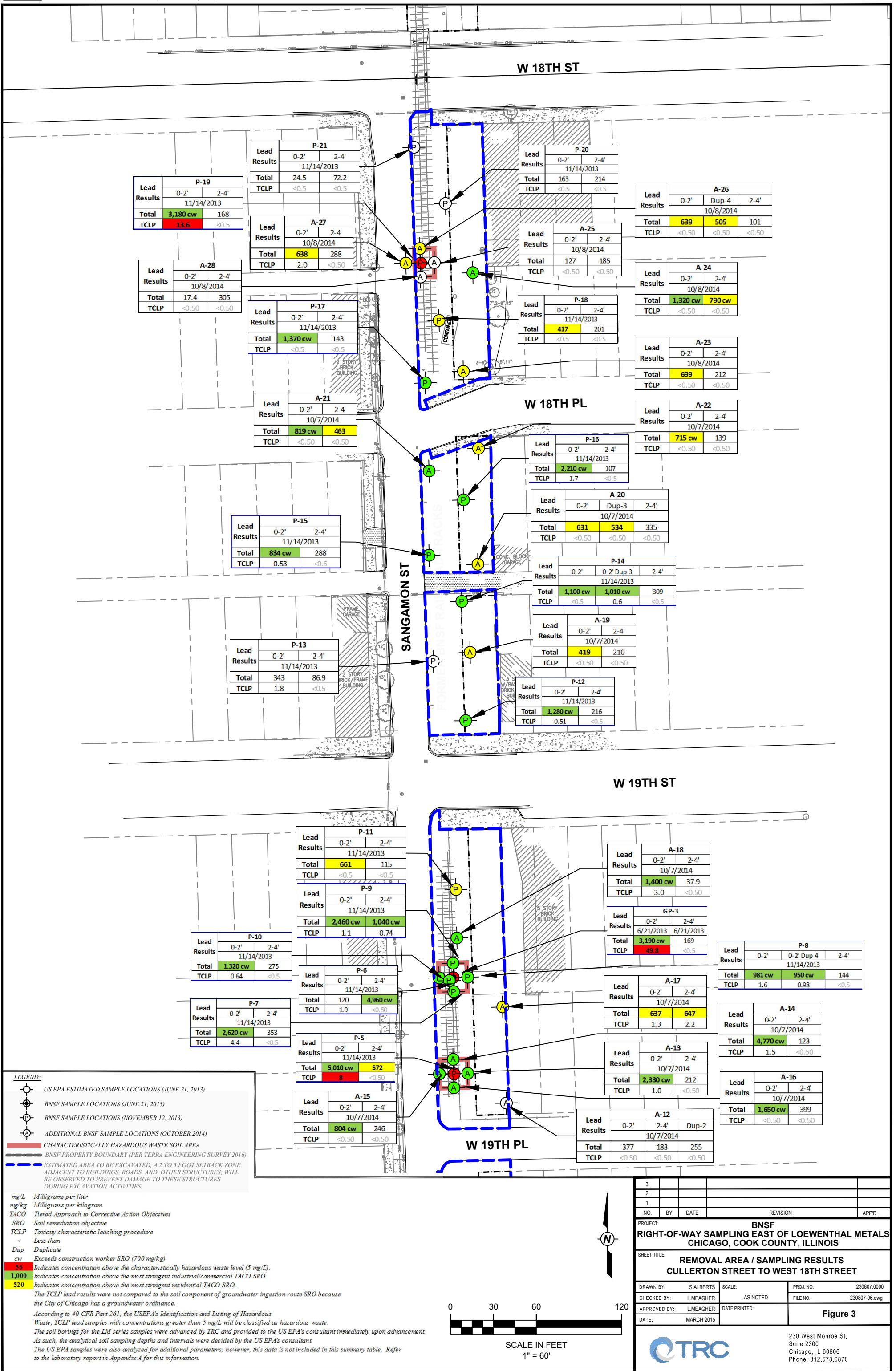
PROJECT: **BNSF RIGHT-OF-WAY SAMPLING EAST OF LOEWENTHAL METALS CHICAGO, COOK COUNTY, ILLINOIS**

SHEET TITLE: **REMOVAL AREA / SAMPLING RESULTS WEST 21ST STREET TO CULLERTON STREET**

DRAWN BY: S.ALBERTS	SCALE: AS NOTED	PROJ. NO. 230807.0000
CHECKED BY: L.MEAGHER	DATE PRINTED:	FILE NO. 230807-06.dwg
APPROVED BY: L.MEAGHER		
DATE: MARCH 2015		

Figure 2

230 West Monroe St.
 Suite 2300
 Chicago, IL 60606
 Phone: 312.578.0870



Lead Results	P-19	
	0-2'	2-4'
	11/14/2013	
Total	3,180 cw	168
TCLP	13.6	<0.5

Lead Results	P-21	
	0-2'	2-4'
	11/14/2013	
Total	24.5	72.2
TCLP	<0.5	<0.5

Lead Results	P-20	
	0-2'	2-4'
	11/14/2013	
Total	163	214
TCLP	<0.5	<0.5

Lead Results	A-26		
	0-2'	Dup-4	2-4'
	10/8/2014		
Total	639	505	101
TCLP	<0.50	<0.50	<0.50

Lead Results	A-28	
	0-2'	2-4'
	10/8/2014	
Total	17.4	305
TCLP	<0.50	<0.50

Lead Results	A-27	
	0-2'	2-4'
	10/8/2014	
Total	638	288
TCLP	2.0	<0.50

Lead Results	A-25	
	0-2'	2-4'
	10/8/2014	
Total	127	185
TCLP	<0.50	<0.50

Lead Results	A-24	
	0-2'	2-4'
	10/8/2014	
Total	1,320 cw	790 cw
TCLP	<0.50	<0.50

Lead Results	P-17	
	0-2'	2-4'
	11/14/2013	
Total	1,370 cw	143
TCLP	<0.5	<0.5

Lead Results	P-18	
	0-2'	2-4'
	11/14/2013	
Total	417	201
TCLP	<0.5	<0.5

Lead Results	A-23	
	0-2'	2-4'
	10/8/2014	
Total	699	212
TCLP	<0.50	<0.50

Lead Results	P-15	
	0-2'	2-4'
	11/14/2013	
Total	834 cw	288
TCLP	0.53	<0.5

Lead Results	P-16	
	0-2'	2-4'
	11/14/2013	
Total	2,210 cw	107
TCLP	1.7	<0.5

Lead Results	A-22		
	0-2'	2-4'	
	10/7/2014		
Total	715 cw	139	
TCLP	<0.50	<0.50	

Lead Results	P-13	
	0-2'	2-4'
	11/14/2013	
Total	343	86.9
TCLP	1.8	<0.5

Lead Results	A-20		
	0-2'	Dup-3	2-4'
	10/7/2014		
Total	631	534	335
TCLP	<0.50	<0.50	<0.50

Lead Results	P-14		
	0-2'	0-2' Dup 3	2-4'
	11/14/2013		
Total	1,100 cw	1,010 cw	309
TCLP	<0.5	0.6	<0.5

Lead Results	P-11	
	0-2'	2-4'
	11/14/2013	
Total	661	115
TCLP	<0.5	<0.5

Lead Results	P-9	
	0-2'	2-4'
	11/14/2013	
Total	2,460 cw	1,040 cw
TCLP	1.1	0.74

Lead Results	A-18	
	0-2'	2-4'
	10/7/2014	
Total	1,400 cw	37.9
TCLP	3.0	<0.50

Lead Results	P-10	
	0-2'	2-4'
	11/14/2013	
Total	1,320 cw	275
TCLP	0.64	<0.5

Lead Results	GP-3	
	0-2'	2-4'
	6/21/2013 6/21/2013	
Total	3,190 cw	169
TCLP	49.8	<0.5

Lead Results	P-8		
	0-2'	0-2' Dup 4	2-4'
	11/14/2013		
Total	981 cw	950 cw	144
TCLP	1.6	0.98	<0.5

Lead Results	P-6	
	0-2'	2-4'
	11/14/2013	
Total	120	4,960 cw
TCLP	1.9	<0.50

Lead Results	A-17	
	0-2'	2-4'
	10/7/2014	
Total	637	647
TCLP	1.3	2.2

Lead Results	A-14	
	0-2'	2-4'
	10/7/2014	
Total	4,770 cw	123
TCLP	1.5	<0.50

Lead Results	P-5	
	0-2'	2-4'
	11/14/2013	
Total	5,010 cw	572
TCLP	8	<0.50

Lead Results	A-13	
	0-2'	2-4'
	10/7/2014	
Total	2,330 cw	212
TCLP	1.0	<0.50

Lead Results	A-16	
	0-2'	2-4'
	10/7/2014	
Total	1,650 cw	399
TCLP	<0.50	<0.50

Lead Results	A-15	
	0-2'	2-4'
	10/7/2014	
Total	804 cw	246
TCLP	<0.50	<0.50

Lead Results	A-12		
	0-2'	2-4'	Dup-2
	10/7/2014		
Total	377	183	255
TCLP	<0.50	<0.50	<0.50

LEGEND:

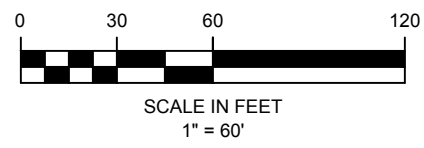
- US EPA ESTIMATED SAMPLE LOCATIONS (JUNE 21, 2013)
- BNSF SAMPLE LOCATIONS (JUNE 21, 2013)
- ⊙ BNSF SAMPLE LOCATIONS (NOVEMBER 12, 2013)
- ⊙ ADDITIONAL BNSF SAMPLE LOCATIONS (OCTOBER 2014)
- CHARACTERISTICALLY HAZARDOUS WASTE SOIL AREA
- BNSF PROPERTY BOUNDARY (PER TERRA ENGINEERING SURVEY 2016)
- - - ESTIMATED AREA TO BE EXCAVATED, A 2 TO 5 FOOT SETBACK ZONE ADJACENT TO BUILDINGS, ROADS, AND OTHER STRUCTURES; WILL BE OBSERVED TO PREVENT DAMAGE TO THESE STRUCTURES DURING EXCAVATION ACTIVITIES.

mg/L Milligrams per liter
 mg/kg Milligrams per kilogram
 TACO Tiered Approach to Corrective Action Objectives
 SRO Soil remediation objective
 TCLP Toxicity characteristic leaching procedure
 < Less than
 Dup Duplicate
 cw Exceeds construction worker SRO (700 mg/kg)

56 Indicates concentration above the characteristically hazardous waste level (5 mg/L).
 1,000 Indicates concentration above the most stringent industrial/commercial TACO SRO.
 520 Indicates concentration above the most stringent residential TACO SRO.

The TCLP lead results were not compared to the soil component of groundwater ingestion route SRO because the City of Chicago has a groundwater ordinance.

According to 40 CFR Part 261, the USEPA's Identification and Listing of Hazardous Waste, TCLP lead samples with concentrations greater than 5 mg/L will be classified as hazardous waste. The soil borings for the LM series samples were advanced by TRC and provided to the US EPA's consultant immediately upon advancement. As such, the analytical soil sampling depths and intervals were decided by the US EPA's consultant. The US EPA samples were also analyzed for additional parameters; however, this data is not included in this summary table. Refer to the laboratory report in Appendix A for this information.

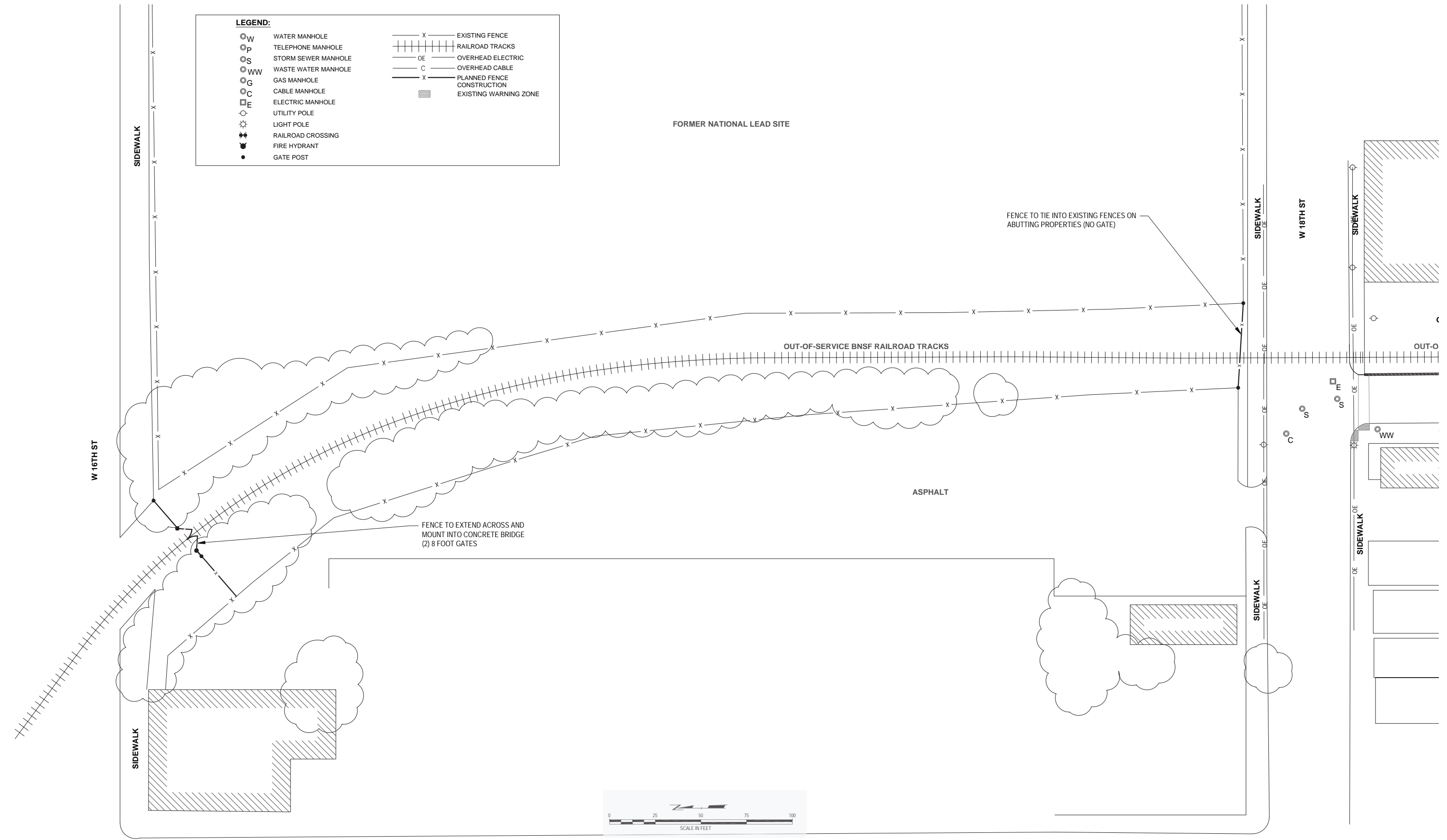


3.				
2.				
1.				
NO.	BY	DATE	REVISION	APPD.
PROJECT: BNSF RIGHT-OF-WAY SAMPLING EAST OF LOEWENTHAL METALS CHICAGO, COOK COUNTY, ILLINOIS				
SHEET TITLE: REMOVAL AREA / SAMPLING RESULTS CULLERTON STREET TO WEST 18TH STREET				
DRAWN BY:	S.ALBERTS	SCALE:	AS NOTED	PROJ. NO. 230807.0000
CHECKED BY:	L.MEAGHER	DATE PRINTED:		FILE NO. 230807-06.dwg
APPROVED BY:	L.MEAGHER			
DATE:	MARCH 2015			
				Figure 3
				230 West Monroe St. Suite 2300 Chicago, IL 60606 Phone: 312.578.0870

File Location: S:\PROJECTS\BNSF\Sangamon ROW\Loewental Metals Chicago\Cad Files - 230807\Excavation and Construction\230807-01(for bid).dwg
 Plotted: 3/8/2016 9:50:14 AM By: ALBERTS, SCOTT

LEGEND:

⊙W	WATER MANHOLE	— X —	EXISTING FENCE
⊙P	TELEPHONE MANHOLE		RAILROAD TRACKS
⊙S	STORM SEWER MANHOLE	— OE —	OVERHEAD ELECTRIC
⊙WW	WASTE WATER MANHOLE	— C —	OVERHEAD CABLE
⊙G	GAS MANHOLE	— X —	PLANNED FENCE CONSTRUCTION
⊙C	CABLE MANHOLE	▨	EXISTING WARNING ZONE
⊙E	ELECTRIC MANHOLE		
○	UTILITY POLE		
○	LIGHT POLE		
⊕	RAILROAD CROSSING		
⊕	FIRE HYDRANT		
●	GATE POST		



REV.	DATE	DESCRIPTION	BY	APP

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DESIGNED BY
J.ROBINSON
 DRAWN BY
S.ALBERTS
 CHECKED BY
B.VOSS
 APPROVED BY
L.MEAGHER
 DATE
NOVEMBER 2015

BNSF RAILWAY

OTRC 230 WEST MONROE ST. SUITE 2300 CHICAGO, IL 60606 P: 312.578.0870 F: 312.578.0877

NOT FOR CONSTRUCTION

BNSF RAILWAY
SANGAMON RIGHT OF WAY EXCAVATION
CHICAGO, COOK COUNTY, ILLINOIS

FENCE LOCATION MAP -
WEST 18TH STREET TO WEST 16TH STREET

CONTRACT NO.	
DRAWING NO.	230807-01(for bid).dwg
SHEET NO.	FIGURE 4
SCALE	AS NOTED

ATTACHMENT A

Site-Specific Health and Safety Plan

ATTACHMENT B

Transportation Management Plan

ATTACHMENT C

Fugitive Dust Control Plan

ATTACHMENT D

Air Monitoring Plan

ATTACHMENT E

Sampling and Analysis / Quality Assurance Project
Plan

ATTACHMENT F

Schedule for Completion with Major Milestones

ATTACHMENT G

Selection of Removal Contractor with Certifications
and Training Certificates