CON 12-15
Doc # 10906

7/15

For your review. Would you please copy Tracy Roberts on your approval letter as soon as possible. I'll call tomorrow to make sure you rec'd.

Thanks
Carla

ADDITIONAL INVESTIGATION

FOR THE

MILWAUKEE RAILROAD ROUNDHOUSE

CITY OF SIOUX CITY

WORK PLAN

JULY 1998

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SECTION 1.0
WORK PLAN

1.1 Introduction

HDR Engineering, Inc. (HDR) has prepared the following Work Plan to describe additional environmental investigation activities at the former Milwaukee Road Roundhouse (Chicago, Milwaukee, St. Paul and Pacific Railroad) in Sioux City. The City of Sioux City is administering the project for the Siouxland Historic Railroad Association (SHRA). The SHRA has plans to restore the site of the former Milwaukee Road Railroad complex (Site) in Sioux City, Iowa as a museum. Previous investigations have focused on sampling in areas of visible contamination and likely source areas based on limited historical knowledge of the Site. The objective of this additional investigation is to evaluate the extent of free product and to further evaluate the presence of petroleum hydrocarbon surface soil contamination so that a decision regarding further action can be made. The Iowa Department of Natural Resources (IDNR) has regulatory authority on this site.

This Work Plan addresses data needs, summarizes existing data, identifies data gaps, presents a Sampling and Analysis Plan (SAP) to address the identified data gaps, and presents a Health and Safety Plan (HASP) to protect HDR site investigation personnel and to prevent release of contaminants of concern during implementation of the SAP. The Work Plan focuses on 1) locating areas of the largest quantities of free product; 2) determining whether or not free product recovery is achievable/feasible at the Site; 3) identifying the approximate extent of petroleum hydrocarbon contamination at identified hot spot locations; 4) identifying, sampling, and identifying the approximate extent of petroleum hydrocarbon contamination (if present) for surface soils in areas where exposure to the public is likely.

1.2 Work Plan Rationale

This section defines the rationale used to identify the questions to be answered, identify data needed to answer the questions, summarize existing data, identify data gaps and subsequently develop a SAP and HASP to address the identified data gaps. The data needs are divided into three categories: free product, petroleum hydrocarbon surface soil hot spots, and potential areas of exposure to petroleum

hydrocarbons. The existing data will be reviewed to identify information that pertains to fulfilling data needs in each of these categories. Data gaps will then be identified and will provide the basis for the SAP. This Work Plan and the findings of the Work Plan will be reviewed by the IDNR. Asbestos and lead paint issues will be handled by the architect and therefore are not part of this Work Plan.

1.3 Questions to be Answered

The questions to be answered at the Site at this stage of site development are:

- Is the free product recoverable and if so, is there an economically feasible method to recover it?
- In areas where the public will be exposed to surface soils, are petroleum hydrocarbons present at concentrations greater than human health risk criteria?
- What is the approximate extent of impact by petroleum hydrocarbons in the hot spot areas located near SB-05 and SB-06 and other areas where concentrations are present at concentrations greater than human health risk criteria?

1.4 Data Needs

This section identifies the data needs for the Site. Data needs are categorized by free product, petroleum hydrocarbon surface soil hot spots, and potential areas of exposure to petroleum hydrocarbons. Table 1.1 presents a summary of the data needs.

1.5 Data Gaps

Data gaps are identified based on the data needs and existing data. These data gaps will define the work to be completed in the SAP. Table 1.1 presents a summary of the data gaps.

1.6 Existing Data

This section briefly summarizes past investigation activities. A summary of selected findings from the two previous investigations is presented in Table 1.2.

An initial Phase I Environmental Site Assessment (initial Phase I ESA) was conducted by Siouxland Engineering Associates, P.C., of Sioux City, Iowa during the summer of 1993. Two areas of environmental concern were identified in the Preliminary Report for the Phase I ESA, dated August 24, 1993 pertaining to asbestos containing material (ACM) within the roundhouse and petroleum products in one shallow soil boring located between the rail lines leading to the roundhouse. Soils were sampled and

analyzed for total petroleum hydrocarbons as gasoline and as diesel from one shallow boring at depths of one and three feet. Petroleum contaminated soils as gasoline and diesel were detected at each of these depths.

A Phase I and II Environmental Site Assessment (Phase I and II ESA) was conducted by HDR Engineering, Inc. in June of 1997. The purpose of this investigation was to establish the environmental condition of the site. The Phase I and II ESA included the following key elements:

- Visual survey of the site.
- Interview of former Milwaukee Road (Chicago, Milwaukee, St. Paul and Pacific Railroad employee.
- Review of regulatory agency file information.
- Review of initial Phase I ESA findings by Siouxland Engineering Associates.
- Subsurface investigation at selected locations on site.

Based on the results of the Phase I and II ESA activities conducted during this ESA, several areas of environmental concern were identified at the site and included the following: UST and former AST locations; roundhouse; on-site drums; and lead paint.

Table 1.1
Data Needs

Data Needs	Existing Data Satisfies Data Needs	Existing Data Partially Satisfies Data Needs	Data Gap Exists	Comments
1) Free Product				
Approximate Extent of Free Product Plume		X	X	Three monitoring wells with free product. One monitoring well located between free product and Big Sioux River with no detectable TVPH to TEPH in soil or water.
Locate Areas of Largest Quantities of Free Product		X	X	Three monitoring wells with free product.
Determine Feasibility of Free Product Recovery (Short Term Pilot Study)		X	X	
Determine Groundwater Flow Direction		X	X	Three monitoring wells exist. No surveyed elevations to date.
2) Petroleum Hydrocarbon Surface Soil Hot Spots				
Determine Extent of Impacted Area		X	X	
Determine Action Required		X	X	
3) Areas of Potential Exposure to Petroleum Hydrocarbons				
Excursion Railroad Track		X	X	Two hot spots identified at SB-05 and SB-06
Roundhouse Railroad Track			X	
Former Fueling Area			X	
Determine Action Required		X	X	

Table 1.2
Previous Investigation Data

Identified Data Need	Existing Data
1) Free Product	
Identify Approximate Extent of Free Product Plume	During Phase I and II ESA, free product was detected in 3 mws at approximate locations of 2 ASTs and 1 UST. An additional MW west of this area, located between the area of free product and Big Sioux River had no TVPH or TEPH in soil or groundwater.
Locate Areas of Largest Quantities or Free Product	Three MWs contained free product ranging from a sheen to 0.13 feet.
Determine Feasibility of Free Product Recovery	Soil boring logs from Phase I and II ESA
Determine Groundwater Flow Direction	Three triangulated MWs are present on site from Phase I and II ESA.
2) Petroleum Hydrocarbon Surface Soil Hot Spots	
Identify Extent of Hot Spots	SB-05 from Phase I and II ESA. Location between tracks leading to roundhouse in area of previous AST. TEPH detected as diesel. 0-2 feet sampling interval had highest concentration of 9,200 ug/g which exceeded the Iowa RBCA Tier 1 Look-Up Table value for diesel.
	SB-06 from Phase I and II ESA. Location between tracks leading to roundhouse near Engineer's Tool Storage. Strong petroleum odors and visible staining. TEPH detected as diesel and motor oil. Contamination limited to top 3 feet in this boring with concentration of TEPH of 600 ug/g.
3) Areas of Potential Exposure to Petroleum Hydrocarbons	
Identify Areas of Potential Exposure	Two hot spots identified between tracks planned for excursion trains. No further data on remaining areas along track where public may be exposed to soil.
	No soil data in area of roundhouse tracks.
	No soil data in the former fueling area east of Oil House in location of fueling nozzles identified in historic photos.

SECTION 2.0
SAMPLING AND ANALYSIS PLAN

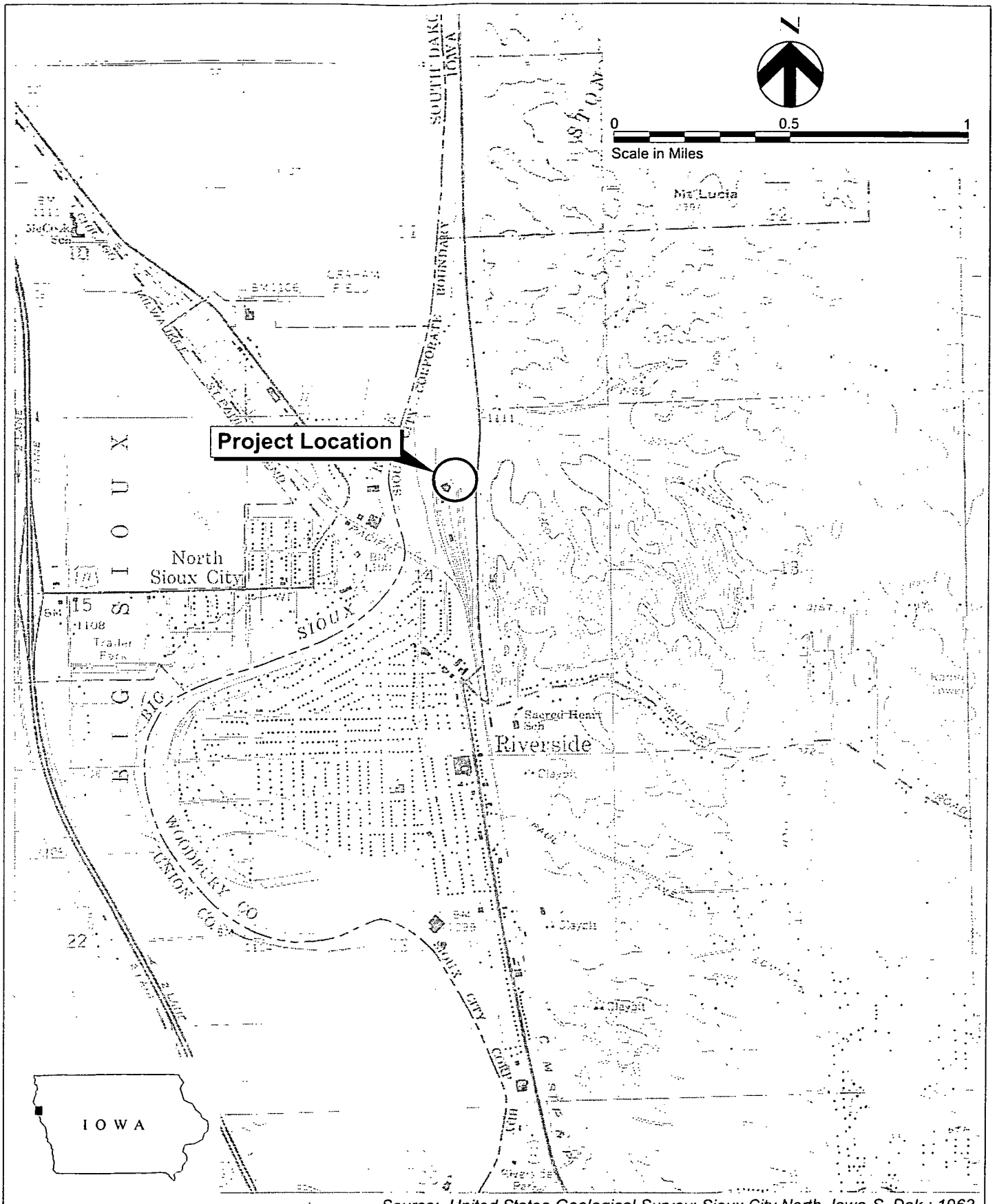
2.1 Background

The SHRA has proposed to restore the site of the former Milwaukee Road Roundhouse property in Sioux City, Iowa as a museum. Currently the Site includes a roundhouse and five outbuildings in various states of disrepair. The removal of the UST noted in the ESA Summary Report has been arranged by the City of Sioux City. Figure 2-1 is a map showing the location of the site.

Previous investigations have focused on sampling in areas of visible contamination and likely source areas based on limited knowledge of the Site. Figure 2-2A and 2-2B show the sampling locations from the two previous investigations.

In May 1998, the City of Sioux City retained the services of HDR Engineering, Inc. (HDR) to complete a Work Plan for an additional investigation. The City of Sioux City is administering the project for the SHRA per Federal Highway Administration Federal Aid reimbursement guidelines. The objective of the additional investigation is to conduct a minimal free product investigation and to provide the IDNR with sufficient information on surface soils potentially contaminated with petroleum hydrocarbons to approve the Site for use as a museum.

A screening level risk-based approach will be used for the development of the surface soil sections of this Work Plan. It is intended that data obtained from this additional investigation will be compared to the Iowa RBCA Tier 1 Look-Up Table. Should analytical results be less than values presented in this table, and the laboratory reporting limits are below threshold values, a no further action recommendation will be made. The surface soil sampling strategy developed for this Work Plan is based on the five necessary elements for a complete exposure pathway (a source of chemicals, a mechanism of chemical release to the environment, an environmental transport medium (soil, air, etc.,), an exposure point where receptors contact contaminated media, and an intake route (inhalation, dermal, etc.)). Should one of these elements not exist or be eliminated, the exposure pathway will be considered incomplete and no longer a concern.



Source: United States Geological Survey; Sioux City North, Iowa-S. Dak.; 1963

HDR Engineering, Inc.

Site Location Map

Work Plan - Milwaukee Road Railroad Roundhouse
Additional Investigation
City of Sioux City, Sioux City, Iowa

Date: July 1998

Figure: 2-1

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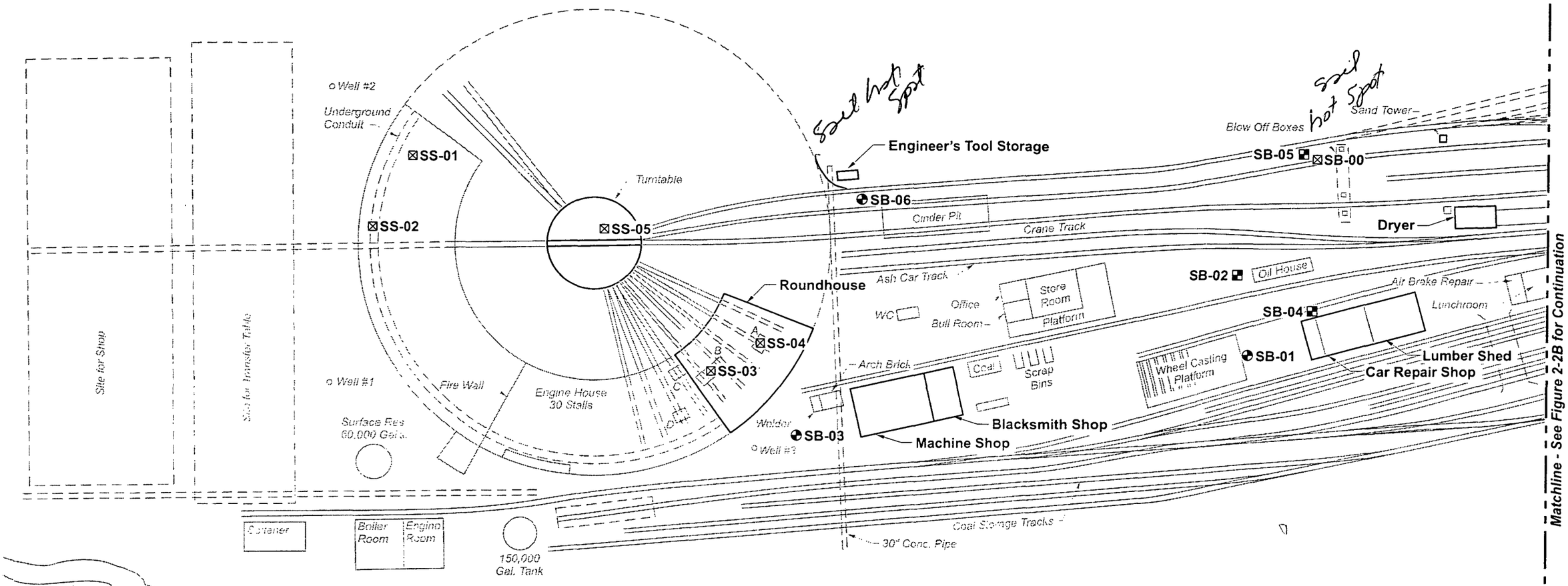

Notes

1. The following buildings were present on the site as of the June 1997 field sampling activities, the building numbers referenced in the Initial Phase I are in parentheses: Six stalls of the Roundhouse (Building No. 1); Machine Shop/Blacksmith Shop (Building No. 2); Car Repair Shop/Lumber Shed (Building No. 3); WC (Building No. 4); Dryer (Building No. 5); Engineers Tool Storage (Building No. 6).
2. Site Plan supplied by Siouxland Historic Railroad Association. Dated September 14, 1917. Not to scale. This figure was generated from the best available copy. See Appendix L for the best available copy of the 1917 Site Plan.
3. Refer to pages 30-32 of logbook presented in Appendix F for surface soil sample, soil boring and monitoring well locations as measured from existing structures.
4. SS-02 was obtained from an underground conduit manhole located at the approximate location of former Roundhouse Stall 25.
5. SB-00 was the sample location from the initial Phase I limited ESA. All other sample locations were from the Phase I and Phase II ESA.

Legend

- ⊠ Surface/Shallow Subsurface Sample
- ◕ Soil Boring/Temporary Monitoring Well
- ◾ Soil Boring/Monitoring Well
- A Engine Truck Drop Pit
- B Double Driver Removal Pit
- C Tender Truck Wheel Removal Pit
- D Engine Truck Wheel Removal Pit

HDR Engineering, Inc.

Previous Investigation Sample Locations

Work Plan - Milwaukee Road Railroad Roundhouse Environmental Site Assessment
City of Sioux City, Sioux City, Iowa

Date: July 1998

Figure: 2-2A

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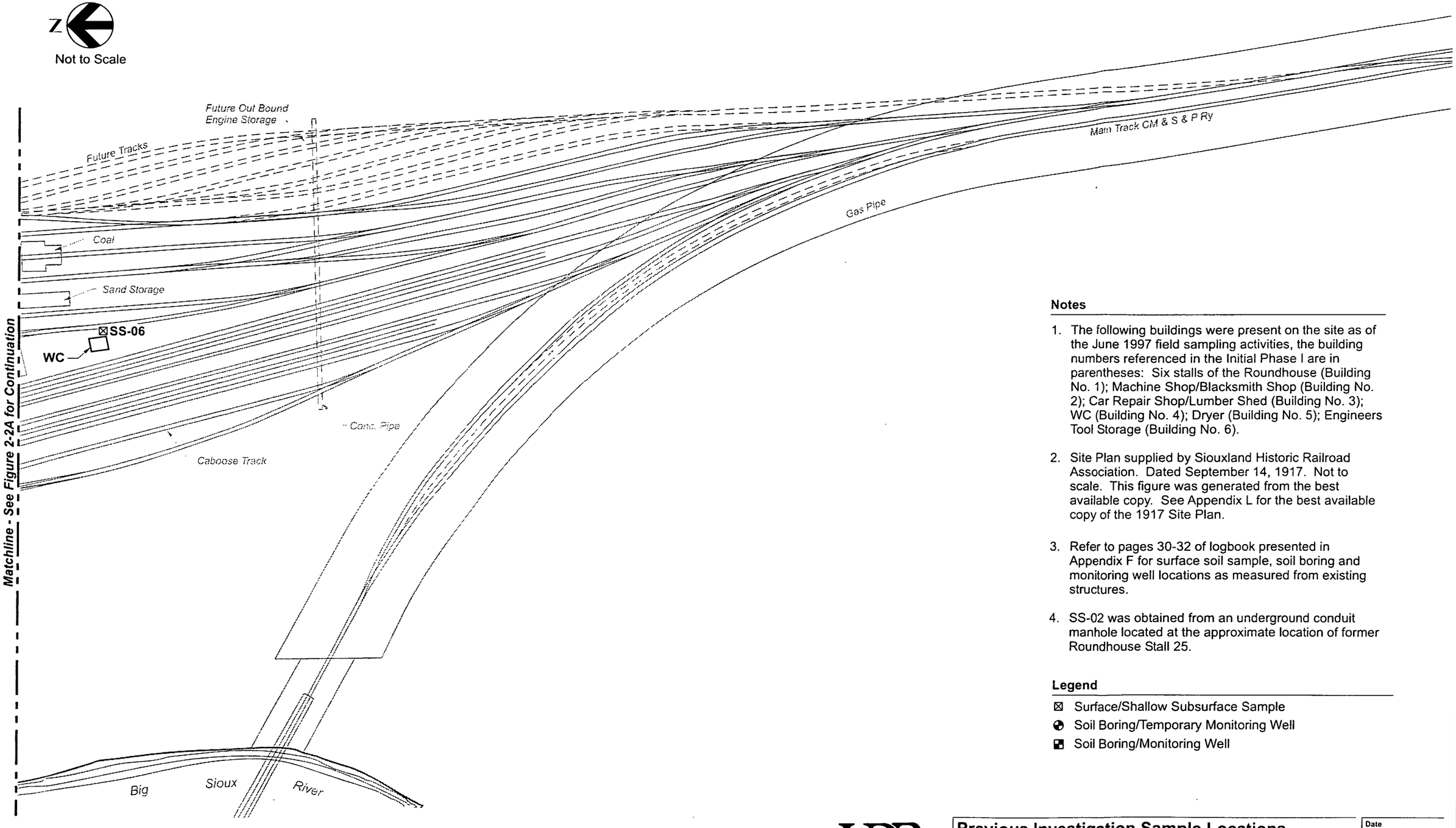

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3. Refer to pages 30-32 of logbook presented in Appendix F for surface soil sample, soil boring and monitoring well locations as measured from existing structures.

4. SS-02 was obtained from an underground conduit manhole located at the approximate location of former Roundhouse Stall 25.

Legend

- ⊠ Surface/Shallow Subsurface Sample
- ◔ Soil Boring/Temporary Monitoring Well
- ◪ Soil Boring/Monitoring Well

HDR

HDR Engineering, Inc.

Previous Investigation Sample Locations

Work Plan - Milwaukee Road Railroad Roundhouse Environmental Site Assessment
City of Sioux City, Sioux City, Iowa

Date: July 1998

Figure: 2-2B

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2.2 Purpose and Scope

This SAP has been developed for the activities associated with the additional investigation. The purpose of conducting the activities presented in the SAP is to address the identified data gaps presented in Section 1.4 which focus on three categories of data needs: free product, petroleum hydrocarbon surface soil hot spots, and areas of potential exposure to petroleum hydrocarbon via surface soil. For purposes of this additional investigation, surface soil will be defined as soil from zero to six (0-6) inches below ground surface. Activities for the free product investigation will include the use of a hydraulic push method to obtain samples to visually define the free product plume, installation and development of three to four (3-4) monitoring wells in areas of hot spots identified by the hydraulic push method, installation and development of one (1) recovery well if a pilot study is conducted, an optional short term pilot study to determine the feasibility of free product recovery, a survey of all monitoring well elevations to determine groundwater flow direction, and measurements of groundwater elevations to determine groundwater flow direction. Activities for the petroleum hydrocarbon surface soil hot spots and areas of potential exposure to petroleum hydrocarbons will include screening using an organic vapor analyzer (OVA), and obtaining limited soil samples and analyzing for petroleum hydrocarbons.

The SAP defines the procedures to be used for the following areas:

- Sampling Points - Identifies approximate sample locations, estimated number of samples, sample matrices, and approximate sample depths.
- Field Measurements - Identifies field measurements which will be obtained during sampling.
- Sample Collection - Describes the procedures which will be utilized during the sampling process for sample collection, preservation, and labeling; includes order of collection and type of containers.
- Sample Delivery - Describes how samples will be transported to the analytical laboratory.
- Analytical Procedures - Identifies analytical methods which will be followed by the analytical laboratory.

In addition to the information presented in this SAP, a Site Specific Health and Safety Plan (HASP) is attached as Section 3.0. The HASP will govern activities conducted during the drilling and sampling portion of the additional investigation.

2.3 Sample Location Selection Criteria

2.3.1 General

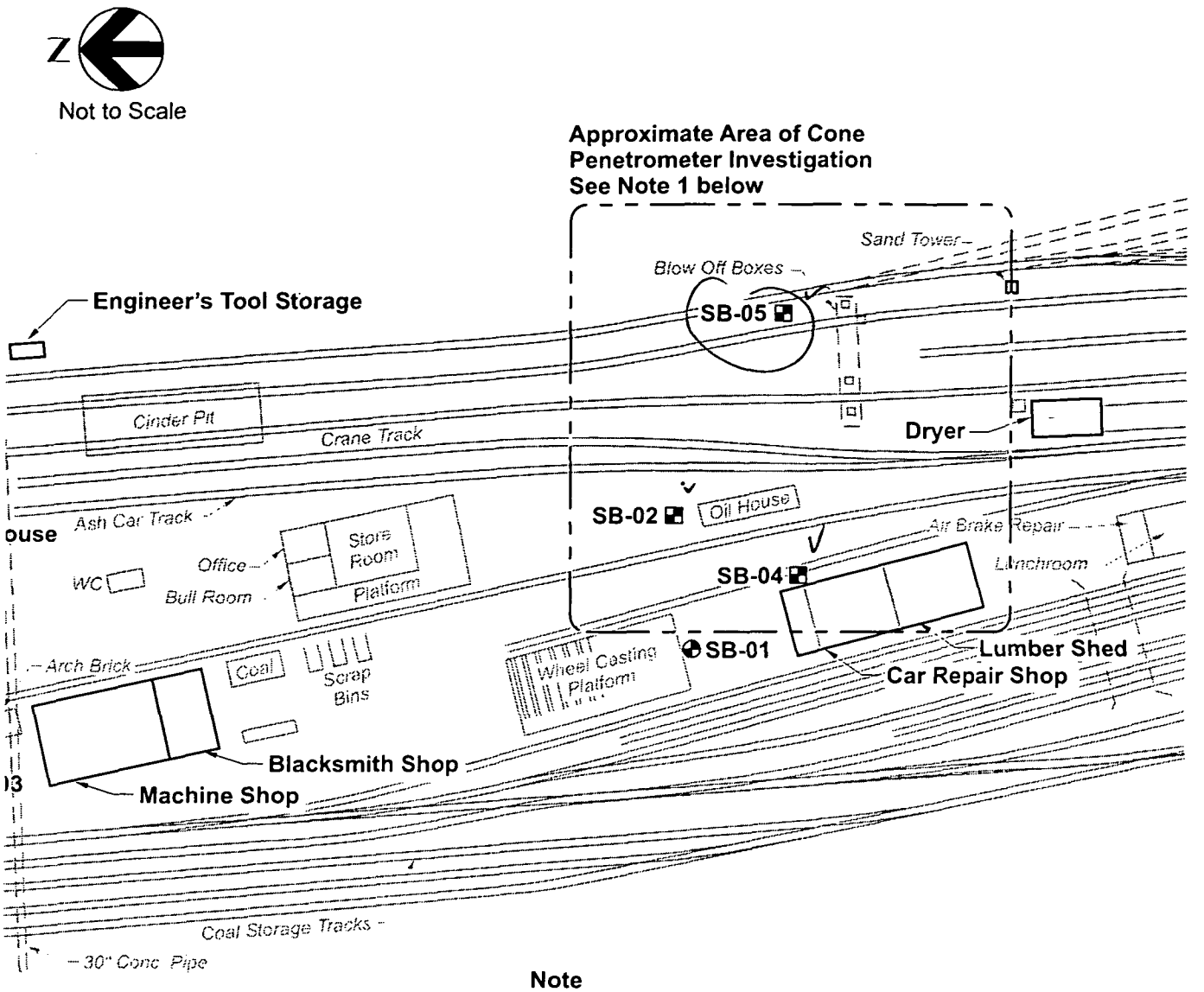
This section discusses the criteria that were used to select the approximate sample locations and required field activities related to free product and surface soils at the site. Free product sample locations were based on the findings presented in the ESA Summary Report dated September 1997. Surface soil sample locations and related activities were selected by HDR based on the findings of past investigations. Sample locations are subject to change based on site specific conditions. Justification for borehole placement and sample locations will be documented in the field logbook and will be supported by documentation of problems encountered in the field, specifically as they relate to borehole placement (e.g., underground obstacles, etc.).

2.3.2 Sample Collection Locations

The approximate area of the investigation using the hydraulic push method is identified in Figure 2-3. Approximate sample locations for the free product investigation are identified in Figure 2-3. Because monitoring well placement will be determined in the field based on the hydraulic push method results, only the general area of the investigation is indicated. New soil borings installed in this area will be identified starting with SB-07. Approximate sample areas are identified for the surface soil investigation in Figure 2-4. Ambient temperature headspace analysis using a field OVA (OVA screening) will be used as a screening tool. New surface soil samples will be identified starting with SS-07. All depths refer to feet below ground surface.

Free Product Investigation

An investigation using the hydraulic push method will be completed in the area of former soil borings SB-02, SB-04 and SB-05 to define the lateral extent of the free product plume(s) within the groundwater. Free product was detected in each of the monitoring wells installed in these soil borings during the Phase I and II ESA. Groundwater samples will be collected and analyzed on-site from a maximum of 30 locations. Initial spacing of samples will be 100 feet from the locations of soil borings SB-02, SB-04 and SB-05. Free product will be defined to an interval of 50 feet.



Note

1. A cone penetrometer investigation will be conducted in the areas of former soil borings SB-02, 04, 05 at grid spacings of approximately 100 feet initially. Free product plume will be defined to approximately 50 feet.
2. Free product was present in monitoring wells installed at former soil boring locations SB-02, SB-04, SB-05.
3. Analysis of former soil boring SB-01 indicated the absence of petroleum constituents in soil and groundwater at this location
4. New soil borings installed in this area will be identified starting with SB-07.

Legend

- ◒ Soil Boring/Temporary Monitoring Well
- ◘ Soil Boring/Monitoring Well

HDR Engineering, Inc.

Proposed Free Product Sampling Locations

Work Plan - Milwaukee Road Railroad Roundhouse
Additional Investigation
City of Sioux City, Sioux City, Iowa

Date: July 1998

Figure: 2-3

2-3.cdr
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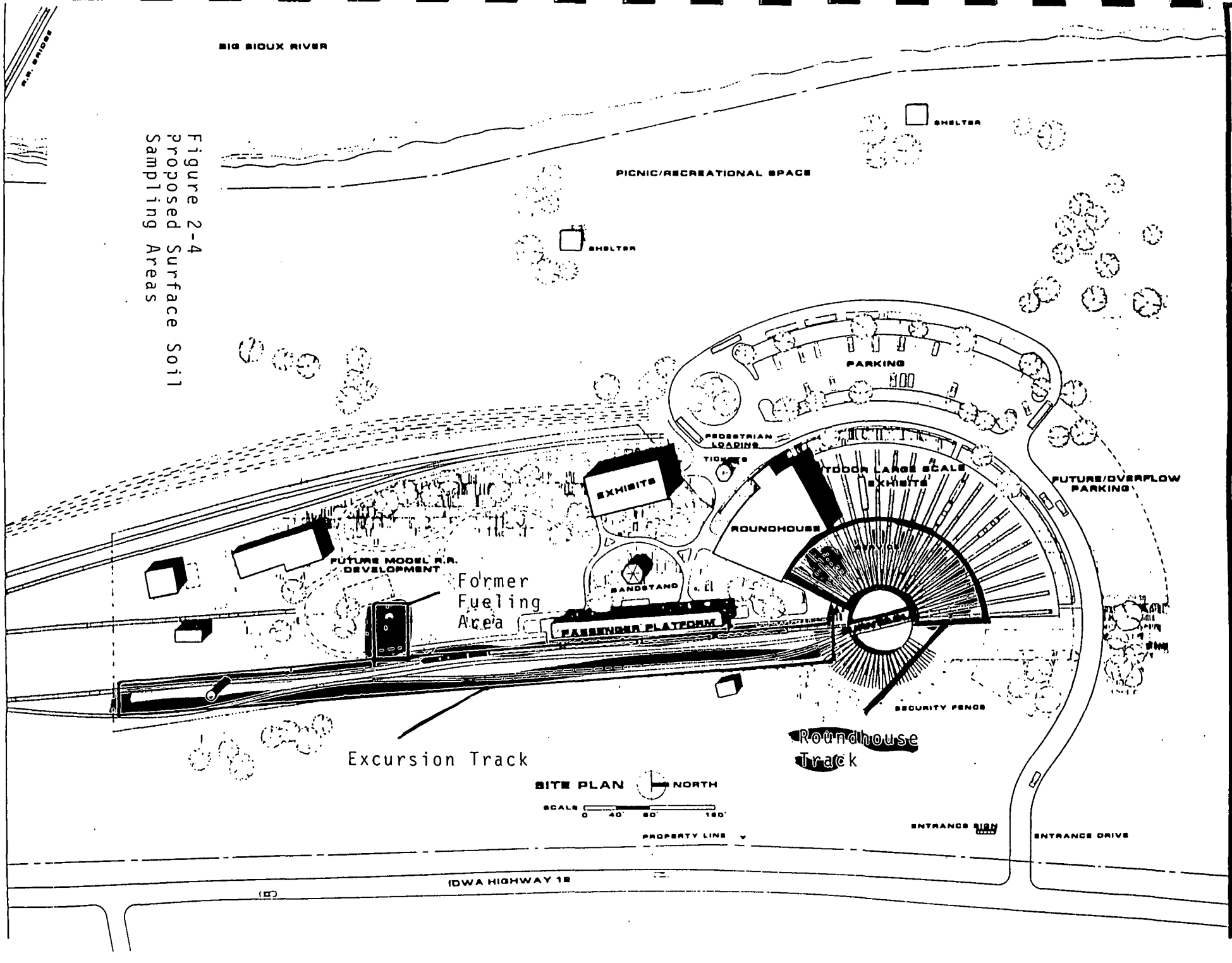
Figure 2-4
Proposed Surface Soil
Sampling Areas



Three to four (3-4) additional monitoring wells will be installed at locations with the highest levels of free product identified using the hydraulic push method. A recovery well will be installed at the optimum location for conducting the pilot study. The monitoring well and recovery well locations will be measured from existing buildings/foundations and recorded in the logbook. In addition, the existing buildings/structures in this area (Car Repair Shop, Oil House, Dryer and the Sand Tower) will be surveyed as will all monitoring well locations (former and additional). A survey of the property boundary was completed June 21, 1995 by registered land surveyor Terry Wright according to documentation in the "Statewide Transportation Enhancement Funding Application". Monitoring wells will have a 10 foot screen and 10 foot riser cut to desired height. Any exceptions will be noted as will an explanation for the exception.

Surface Soil Investigation

Surface sample locations will be determined by OVA screening. Discrete surface soil samples from a sampling interval of zero to six (0-6) inches will be screened and will be used to determine the location of surface samples to be obtained using a hand auger for submittal to the laboratory for analysis. A summary of the proposed sampling activities is presented in Table 2.1.

0-6" interval 20 in each of 3 areas

Hot Spot Locations

In the identified hot spot locations (near SB-05, SB-06), OVA screening will be used to evaluate the horizontal extent of contamination. Past investigations indicate that the depth of contamination near SB-06 is approximately three feet. An estimate of the depth of contamination near SB-05 will be made using a hand auger and OVA to a maximum depth of three feet in a location estimated to be the approximate center of the plume.

hand auger to depth 3'

Areas of Potential Exposure

The locations of samples submitted to the laboratory will be marked in the field (e.g., using flags or metal discs) and recorded in the logbook until the analytical results are received and reviewed. These field markings will remain until it is determined that concentrations in this area are no longer a concern. All field activities and results of the OVA screening will be recorded in the field logbook.

Table 2.1
Summary of Proposed Sampling Activities
for the Surface Soil Investigation

Identified Sampling Area	OVA Screening to Define Extent	OVA Screening to Determine if Contamination is Present	Obtain Sample(s) for Laboratory Analysis[1]
Hot Spot Locations			
Near SB-05	X		
Near SB-06	X		
Areas of Potential Exposure			
Roundhouse Railroad Track[2]		X	X
Excursion Railroad Track[3]		X	X
Fueling Area[4]		X	X

Notes:
(1) Sample(s) will be obtained if OVA screening indicates that contamination is present.
(2) This includes only the track area leading from the turntable pit to the roundhouse.
(3) Areas other than those identified as hot spots for main tracks slated for use by excursion trains.
(4) Fueling area is identified in historic pictures between SB-05 and the Oil House.

Three areas of potential exposure to petroleum hydrocarbons were identified by HDR from a review of the findings of past investigations and include the roundhouse railroad tracks, the main tracks planned for use by the excursion trains (areas other than hot spots located at SB-05 and SB-06), and the former fueling area. These areas were presented previously in Table 1.2 and Figure 2-4. Surface soil samples will be screened using an OVA at locations indicative of the presence of contamination, relying on the judgment and observations (e.g., visible staining, odors, lack of vegetation, etc.) of the field personnel. A maximum of 20 samples each will be screened in each area using the OVA. Of these 20 samples each, a maximum of five samples each will be obtained for laboratory analysis at locations of highest OVA readings in the areas of the roundhouse and excursion train railroad tracks. Should contamination be detected in surface soils in the former fueling area, an estimate of the depth of contamination will be made using a hand auger and OVA to a maximum depth of three feet in a location estimated to be the approximate center of the plume. In addition, one sample at the location of highest OVA reading will be sampled for laboratory analysis.

2.4 Field Procedures

2.4.1 General

This section describes the procedures that are to be followed by personnel performing field activities. The procedures presented in this section are designed so that: 1) samples obtained at the sites are consistent over time and space; 2) samples are identified, preserved, and transported in a manner such that data are representative of the actual site conditions; and 3) information is not lost as a result of sample transferral.

During all phases of field activities, trained personnel will be used. Members of the sampling team will be required to be familiar with this SAP prior to initiation of sampling activities. When available and applicable, standardized operating procedures (SOPs) will be used and referenced throughout this document (see Appendix A). In the SOPs, reference is made to a Quality Assurance Project Plan (QAPP). Preparation of a QAPP was not part of the Work Plan scope. Nevertheless, adherence to this SAP and the SOPs referenced therein will result in field activities and analytical

methods that incorporate generally accepted Quality Assurance/Quality Control (QA/QC) procedures. Any changes in procedures will be noted in the logbook and final report with the reason for the change.

2.4.2 Soil Sampling

Discrete surface soil samples from a sampling interval of zero to six (0-6) inches will be obtained for OVA screening. The soil sample will be placed in a small ziploc bag and sealed, leaving room for headspace. Following a period of five minutes (or less if documented and judged by the professional in the field to be sufficient) the soil will be kneaded, the seal will be opened slightly and an OVA reading will be obtained from the headspace. OVA readings will be recorded in the field logbook. OVA readings will be used to locate the surface soil samples which will be submitted to the laboratory for analysis and/or the extent of surface soil contamination.

A maximum of three (3) geotechnical samples will be obtained using a Shelby tube and submitted for analysis. Sieve analysis will be conducted to estimate the hydraulic conductivity. Soil porosity and bulk dry density tests will be run for soil characterization.

Once the locations of highest OVA readings are identified, surface soil samples will be obtained in accordance with SOP #202. SOPs #200 and #202 include specific procedures for mobilization, sampling, sealing borehole, sample handling, labeling and documentation, and decontamination.

There will be a total of three to five (3-5) boreholes. No soil samples will be obtained from these soil borings. OVA screening will be conducted in the work zone for purposes of health and safety. Soil from soil borings will not be monitored using an OVA.

Decontamination of the drill rig for this project will not be conducted between boreholes unless the Site Coordinator determines that it is necessary to avoid cross contamination. All sampling equipment, including augers, in direct contact with potentially contaminated soil will be decontaminated as referenced in SOP #200.

A request for utility clearance for the Site was made during the previous Phase I and II ESA. No utilities were identified, however the Site location and lack of an official address made it difficult to request a utility clearance. Although it is unlikely that utilities are present in the area of the soil boreholes, care should be taken in the field to avoid possible buried lines that may not be marked.

Decontamination water will be disposed of in the area established on site for deconning. Trash from the site will be collected in trash bags and taken to a location for disposal at a sanitary landfill. Monitoring well development water and groundwater removed during the pilot study will be temporarily containerized and analyzed. Following analysis, arrangements will be made for proper disposal according to state requirements.

2.4.2 Monitoring Well Installation and Development

The installation and development of the monitoring wells in each of the boreholes will be in accordance with SOP #205, Monitoring Well Installation and Development. Monitoring wells will have a 10-foot polyvinyl chloride (PVC) screen (0.010 inch slot size) with top of screen set approximately two (2) feet above the saturated zone and a 10 foot riser cut to desired height. The recovery well screen depth will depend on pumping requirements and will be noted in the logbook. In all cases prior to being used for sampling or purging, equipment will be decontaminated with an Alconox solution followed by a potable water rinse, followed by a DI water rinse. Methanol and hexane will not be used for decontamination. Any modifications to the well development procedure will be noted in the logbook.

2.4.3 Optional Short-term Pilot Study for Free Product Removal

Site specific field data will be reviewed following the estimate of the extent of the free product plume and the installation of monitoring wells. The need for a pilot study will be evaluated based on this information. If it is determined that a pilot study would provide useful additional information regarding the recovery of free product, criteria for the pilot study will be established and the pilot study will be designed and implemented accordingly.

All groundwater removed during the pilot study will be properly disposed of in compliance with state requirements. At this time it appears that a generator will be required to supply power for the pilot study. Information pertaining to the pilot study will be recorded in the logbook.

2.5 Sample Handling

2.5.1 Sample Identification/Labeling/Packing and Shipping

Each sample is assigned a unique sample identification number to allow for proper data management. These sample numbers are included on the sample label, in the daily logbook to identify

notes pertaining to the sample, and on the Chain-of-Custody Records. Procedures for identifying samples are presented in SOP #227, Sample Identification Coding System. Procedures for labeling, packing and shipping samples are presented in SOP #204, Packing, Shipping and Labeling.

2.5.2 Sample Preservation

Field sampling personnel preserve each sample obtained for laboratory analysis according to the specific preservation requirements outlined in Table 2.2 of section 2.7. The laboratory provides the required preservatives in labeled containers designated for each specific analysis.

2.6 Documentation

2.6.1 Field Documentation

The proper completion of Chain-of-Custody Records, sampling log sheets, and a bound field notebook are required during this sampling effort, as discussed below.

Chain-of-Custody Records

Chain-of-Custody (COC) Records allow for the tracking of possession and handling of the samples from the time of field collection through laboratory analysis. The requirements for completing COC records is described in SOP #222, Project Custody Documentation.

Field Notebook/Log Sheets

A bound field notebook with sequentially numbered pages is used to document all field activities. The purpose of the bound field notebook is to provide a complete and permanent record that will allow reconstruction of field activities, thereby validating the data collected. Notebooks are kept in accordance with the requirements outlined in SOP #200, Soil Boring and SOP #204, Groundwater Sampling.

Sample Collection Field Log

The sample collection field log contains a record of all samples sent off site for analysis. Field records are kept in accordance with the requirements outlined in SOP #204, Groundwater Sampling.

2.7 Analytical Methods

This section presents the analytical methods which will be used for soil analysis and groundwater analysis. Analytical methods used by the laboratory are those detailed in EPA Methods Manual SW-846 dated November 1986, including any future revisions. Any deviations from these methods will require the

concurrence and approval of HDR's Director of Safety. Analytical methods, sample containers, holding times, and preservative requirements are outlined in Table 2.2. A sample summary is presented in Table 2.3. Soil and groundwater samples obtained will be analyzed for OA-1 and OA-2. Groundwater samples are from water collected during the pilot study to determine the proper disposal for compliance with the state.

National Environmental Testing, Inc. (NET) of Cedar Falls, Iowa is the proposed analytical laboratory to perform analyses on the soil and groundwater samples.

Table 2.2
Analytical Methodology

Matrix	Analyte	Analytical Method[1], [2]	Container	Preservative	Holding Time
Soil	BTEX[3], TVPH[4]	OA-1	4 oz. glass, wide mouth with Teflon lined lid.	Cool 4°C	14 days
	TPH	OA-2	4 oz. glass, wide mouth with Teflon lined lid.	Cool 4°C	14 days
Groundwater	BTEX[3]	OA-1	3 x 40 ml, glass vials with Teflon septa	4 drops conc. HCl Cool 4°C	14 days
	TPH	OA-2	1-one liter glass wide mouth with Teflon lined lid	HCl to ph<2 Cool 4°C	Samples must be extracted with 14 days and extracts analyzed within 40 days

Notes:
1. University Hygienic Laboratory, Iowa City, Iowa, Methods OA-1, OA-2.
2. Test Methods for Evaluating Solid Waste EPA SW-846, Third Edition, November 1986.
3. Benzene, Ethylbenzene, Toluene, Xylene.
4. Total volatile petroleum hydrocarbons.

Table 2.3
Proposed Sample Summary

Sample Area	Matrix	Maximum No. of Samples[1]	Analytes to be Sampled
Foemer Fueling Area[2]	Soil	1	OA-1/OA-2
Roundhouse Railroad Track	Soil	5	OA-1/OA-2
Excursion Railroad Track	Soil	5	OA-1/OA-2

Notes:
1. Actual no. of samples will be based on findings of OVA screening.
2. Fueling area is identified in historic pictures between SB-05 and the Oil House.

SECTION 3.0
HEALTH AND SAFETY PLAN