DRAFT
SITE CHARACTERIZATION REPORT

UNIVERSAL RECYCLING, INC.
FAIRBANKS, ALASKA

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ADEC SPAR Term Contract: 18700026

JULY 2004

July
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DRAFT SITE CHARACTERIZATION, UNIVERSAL RECYCLING, INC., FAIRBANKS,
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Universal Recycling, Inc.
Fairbanks, Alaska

Prepared for:

ADEC Division of Spill Response and Prevention
Contaminated Sites Program
ADEC SPAR Term Contract: 18700026

July 2004

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VOLUME II

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LIST OF ACRONYMS

°C	degrees Celsius
°F	degrees Fahrenheit
µg/L	micrograms per liter
%R	percent recovery
ADEC	Alaska Department of Environmental Conservation
AOC	area of concern
ASTM	American Society for Testing and Materials
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
COC	chain-of-custody
COPC	chemicals of potential concern
CSM	conceptual site model
DQA	data quality assessment
DQO	data quality objective
DRO	diesel range organics
EB	equipment blank
EPA	Environmental Protection Agency
FID	flame ionization detector
GPS	global positioning system
GRO	gasoline range organics
HRS	hazard ranking system
IDW	investigation-derived waste
IS	Interior Services

LIST OF ACRONYMS *(continued)*

km	kilometer
LCS	laboratory control sample
MCL	maximum contaminant level
MDL	method detection limit
mg/km	milligrams per kilogram
mg/L	milligrams per liter
ml	milliliter
MS/MSD	matrix spike/matrix spike duplicate
OVM	organic vapor meter
PA	preliminary assessment
PCB	polychlorinated biphenyl
PID	photoionization detector
QA	quality assurance
QA/QC	quality assurance/quality control
QAP	Quality Assurance Program
QAPP	Quality Assurance Project Plan
QC	quality control
QPP	Quality Program Plan
RCRA	Resource Conservation and Recovery Act
RF	response factor
RL	reporting limit
RPD	relative percent difference
RRO	residual range organics

LIST OF ACRONYMS *(continued)*

RSD	relative standard deviation
RT	retention time
SD	sample duplicate
SDG	sample delivery group
SI	site investigation
SOP	standard operating procedure
SQL	sample quantitation limit
SVOC	semivolatile organic compound
TB	trip blank
TCLP	Toxicity Characteristic Leaching Procedure
TDS	total dissolved solids
TOC	total organic carbon
TSS	total suspended solids
URI	Universal Recycling, Inc.
VOC	volatile organic compound

1.0 INTRODUCTION

Weston Solutions, Inc. (WESTON) has prepared this report to present the findings of the Phase I site assessment and site characterization (SC) activities performed at the Universal Recycling, Inc. (URI) site during June 2004, under contract with the Alaska Department of Environmental Conservation (ADEC) Division of Spill Prevention and Response (SPAR) Term Contract No. 18700026. The URI site is located at 400 Sanduri Street, Fairbanks, Alaska in the Van Horn industrial area south of Fairbanks proper (Figure 2-1). The URI site has been a source of public complaint and Alaska Department of Environmental Conservation (ADEC) regulatory action for many years. Complaints and enforcement actions have generally centered on poor storage practices of waste materials at the site and a concern exists that the property is contaminated by hazardous wastes commingled with petroleum products. The site is currently owned by the Fairbanks North Star Borough (FNSB) as a result of foreclosure action in 2003. The FNSB is attempting to characterize the nature of the contamination and risks posed by the site in order to realize future development potential of the property.

1.1 Project Objectives

The following objectives were established for this project in the contract statement of work and the project-specific Quality Assurance Program Plan (QAPP):

1. Conduct a Phase I site assessment (ASTM Designation 1527-00: Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process),
2. Document and report the site environmental conditions (e.g., the presence of drums, stressed vegetation);
3. Identify potential sources of contamination (e.g., leaking drums, transformers, tanks, etc.);
4. Characterize the nature and extent of soil and groundwater contamination;
5. Assess risk to human health and the environment and identify receptors and potential exposure pathways associated with contamination in a conceptual site model (CSM);
6. Identify chemicals of potential concern (COPCs), delineate the nature and extent of on-site impacts, and calculate site-specific ADEC Method-Three alternative soil cleanup levels for identified contaminants.

The project objectives were intended to:

- Set priorities and develop recommendations for future investigations;
- Gather existing or additional data to facilitate later components of the site assessment process; including either Hazard Ranking System (HRS) evaluation or an RI/FS; and
- Determine the potential need for a removal action.

1.2 Report Organization

This report presents background information and a Phase I site assessment for the former Universal Recycling/Interior Services property located at 400 Sanduri Street in Fairbanks Alaska and data gathered during an SC conducted at URI during June 2004. Conclusions and recommended actions for further investigative activities are also provided. The report is organized in the following volumes and sections:

Volume I:

Volume II:

2.0 BACKGROUND INFORMATION

This section presents the physical setting, a detailed map, COPCs and their screening levels, and a CSM for the URI project site. Further detail regarding the site description and history are given in Section 3.0, Phase I Assessment.

2.1 Physical Setting

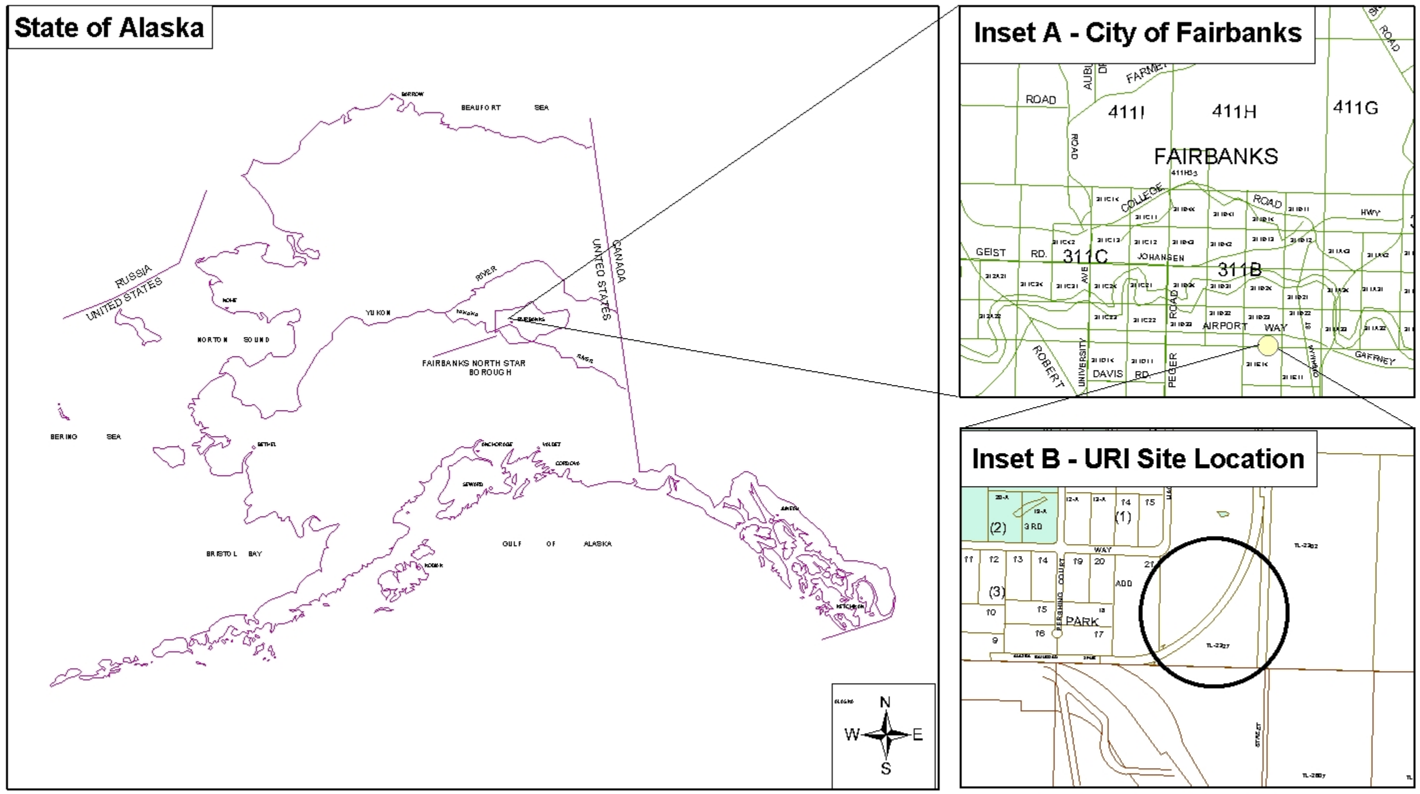
The URI site is located in the southeast Van Horn industrial area south of Fairbanks proper, in Fairbanks North Star Borough, Alaska. The area is light industrial and has both industrial and residential areas within 1,000 feet of the site. The overall site is comprised of a single lot, approximately 3.4 acres in size, mostly covered by trash and debris from former, abandoned recycling operations. The lot is bounded by Sanduri Street on the south and Easy Street to the east. A railroad spur defines the third side of the property running from the northeastern corner to the southwestern corner (Fig. 2-1).

The site consists of a concrete pad in the southeast, a scale house in the southwest, and extensive debris spread across the site. FNSB Assessors records indicate that the approximately 10,000 square feet concrete pad is the remains of the main building which housed a shop, bailer/sorting area, and an incinerator. This building was destroyed in a 1996 fire. ADEC Solid Waste files indicate the bailer/sorting area housed waste-to-energy treatment operations from 1988 through 1991 and sorting of recyclables from 1988 through 1997. The shop was used for general mechanical maintenance. An incinerator was used to burn cable and wire in the main building. The concrete pad is currently used to stage drums recovered from the site after a second fire that occurred in 2003. The scale house is approximately 1,000 square feet with a wooden scale comprising half of the floor plan and a break room/office on the other half (FNSB, 2003b).

A large pile of paper and debris fills the area between the concrete pad and the scale house and runs north about halfway along the rail spur. Automotive parts, bailed and sorted recyclables, drums, propane tanks, wire, and various other debris are staged and littered across the site with limited ground surface accessible near the center and north end of the lot. A schematic of the site is presented in Figure 2-2.

Figure 2-1 Universal Recycling, Inc., Site Location

FIGURE 2-1: Universal Recycling, Inc., Site Location



Tax Lot 2327, Universal Recycling, Inc. Site is located in Fairbanks North Star Borough, Alaska in the southeast corner of the Van Horn industrial area. The URI site is bounded by Easy Street to the eat and Sanduri Street to the south with an active rail spur comprising the third side of the 3.4 acre site.

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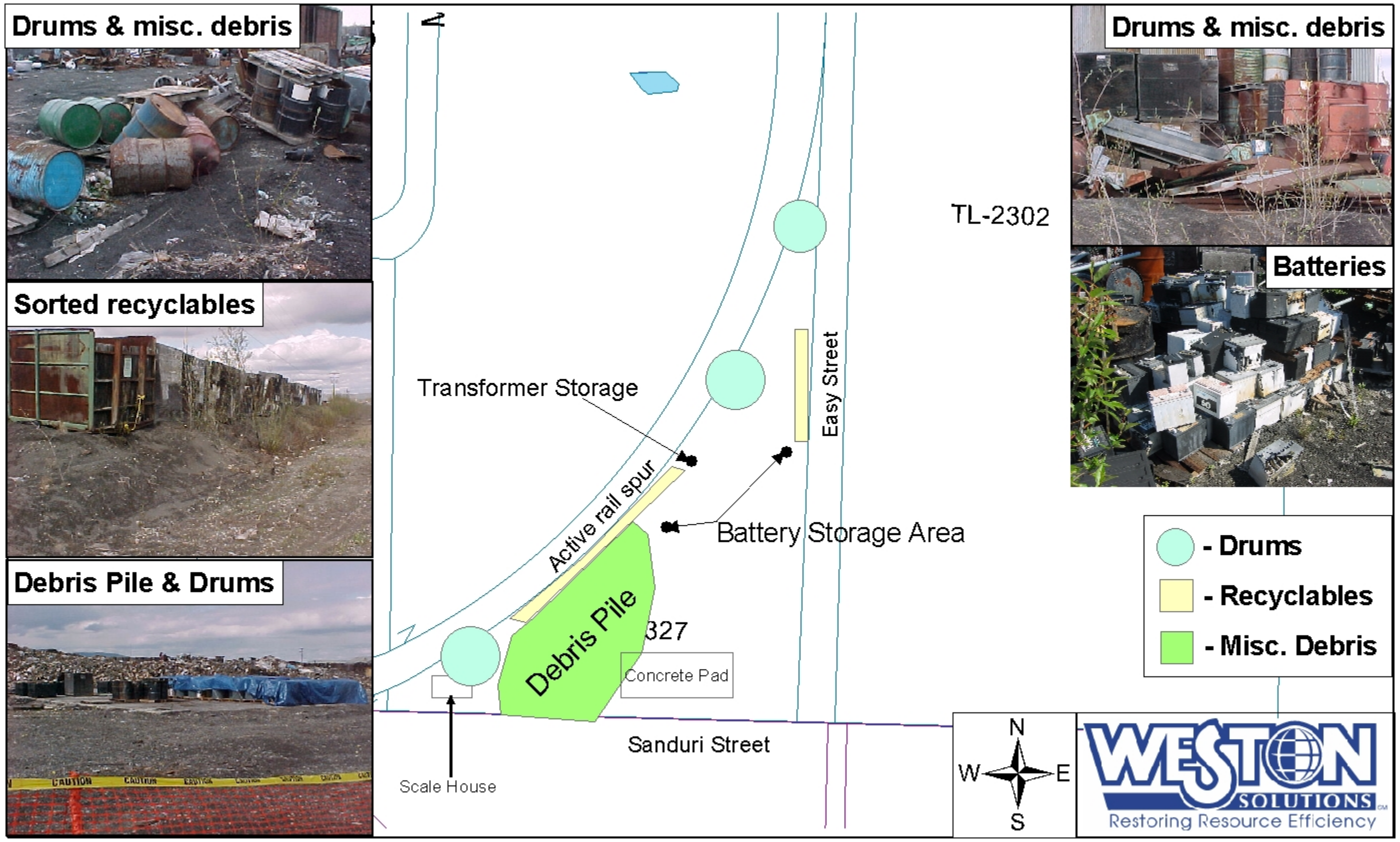
Figure 2-2 Site Schematic



2.2 Chemicals of Potential Concern

Numerous potential hazardous wastes have historically been stored on site. Suspected petroleum products were observed from leaking 55-gallon drums and lead batteries were noted during past inspections. Transformers and other electrical components have been noted at the URI site. Wire burning was a historical practice and the resulting ash may have been stored on the site. The presence of discarded plastic containers of solvents and antifreeze was noted in the past and observed scattered among the debris during the June 2004 site visit.

Based on the historical information obtained and the observations made during the site visit, chemical groups of concern at the URI site include:

- gasoline range organics (GRO),
- diesel range organics (DRO),
- residual range organics (RRO),
- volatile organic compounds (VOCs),
- semivolatile organic compounds (SVOCs),
- polychlorinated biphenyls (PCBs),
- dioxins, and
- RCRA metals.

2.3 Screening Levels

Prior to the field investigation, screening levels for the groups of chemicals in the preceding section were established in order to provide a means of reference for the analytical results. The specific constituents analyzed for within the chemical groups noted above are the chemicals considered to be within a typical site characterization suite. The potentially affected media include surface and subsurface soils to approximately 10 feet below ground surface (bgs) and groundwater.

The ADEC cleanup levels in 18 AAC 75 Tables B1 and B2 for soils and Table C for Drinking Water are potentially applicable to the URI site and were presented in the project work plan as the most likely requirements to be met for future site cleanup. The analytical results presented in Section 4.0 are tabulated and compared to the respective cleanup values. Since it is unlikely that the near surface aquifer will ever be utilized as a drinking water source, it may be reasonable to assume a groundwater cleanup concentration based on the 10x rule contained in 18 AAC 75.345 (b)(2). In order to adopt this revised cleanup standard a groundwater use determination in accordance with 18 AAC 75.350 would need to be coordinated with ADEC officials.

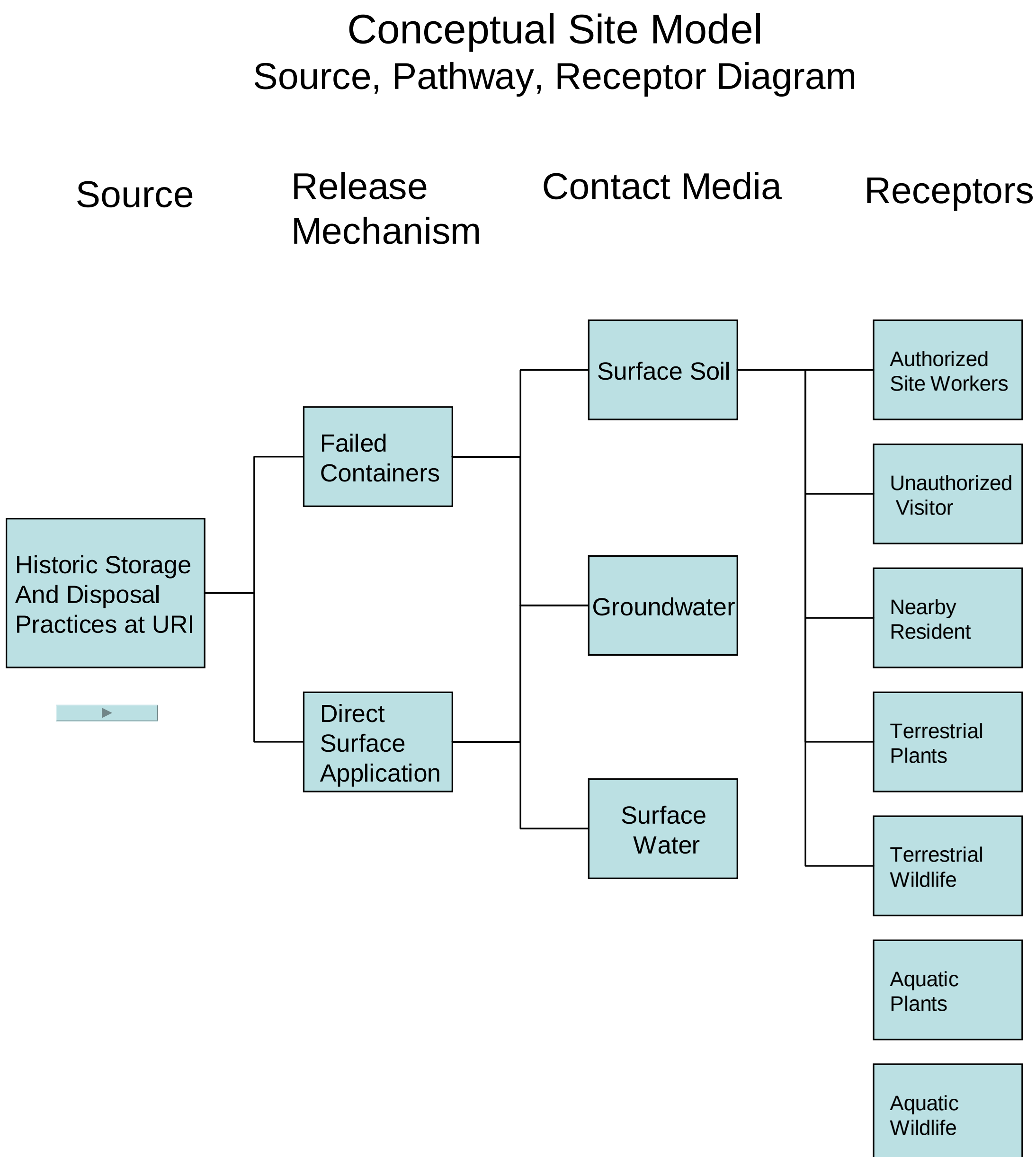
It should be noted that some naturally-occurring inorganic chemicals may be present at concentrations that exceed the applicable risk screening values or standards. Therefore, it is appropriate to compare the concentrations of inorganic chemicals detected in site soil, sediment, and surface water to naturally-occurring background levels. Where appropriate, this is discussed in Section 5.0.

Cleanup levels in soil can also be potentially modified using sitespecific characteristics that influence fate and transport of contaminants in the environment. ADEC's Method Three Calculator was utilized to perform an initial calculation of modified cleanup levels that may apply to the URI site. The results of this exercise are presented as Appendix C.

2.4 Conceptual Site Model

A CSM is a basic description of how contaminants enter a system, how they are transported within the system, and probable point of exposure to organisms and humans. As such, it provides an essential framework for assessing risks from contaminants, determining remedial strategies, developing source control requirements, and how to address risks. A CSM for the URI site is presented in Figure 2-3. This figure is not all-inclusive and should be considered only a synopsis of the most likely site exposure scenarios.

Figure 2-3 Source, Pathway Receptor Diagram



Notes: Contact with surface soils is considered the primary exposure route. A remote possibility of off-site or on-site exposure exists due to run-off from a storm event. Groundwater in the upper aquifer is considered not known to be a drinking water source. Exposure routes and receptors should be revised if/when available data dictate.

3.0 PHASE 1 SITE ASSESSMENT

3.1 Purpose

The purpose of the Phase 1 site assessment is to identify, to the extent feasible, recognized environmental conditions at the property. Four components describe the Phase 1 assessment:

1.) Records Review
2.) Site Reconnaissance
3.) Interviews
4.) Evaluation and Report

These components are discussed separately below within the context and format of ASTM's Designation E1527-00.

3.2 Site Description

3.2.1 Location and Legal Description

The formal legal description for the URI site is Tax Lot 2327, Section 23, Township 1 South, Range 1 West, Fairbanks Meridian. The parcel size is 149,470 square feet or approximately 3.4 acres. It is located in the southeast Van Horn industrial area south of Fairbanks proper, in Fairbanks North Star Borough, Alaska (Figure 2-1). The area is light industrial and has both industrial and residential areas within 1,000 feet of the site.

The overall site is mostly covered by trash and debris from former, abandoned recycling operations. The lot is bounded by Sanduri Street on the south and Easy Street to the east. A railroad spur defines the third side of the property running from the northeastern corner to the southwestern corner.

3.2.2 Current Use

The site is currently owned by the FNSB as a result of foreclosure action in June 2003. The FNSB is attempting to characterize the nature of the contamination and risks posed by the site in order to realize future development potential of the property.

3.2.3 Descriptions of Structures, Roads, and Utilities

Coordination with the various Public Service industries in Fairbanks including Fairbanks Natural Gas, the Alaska Railroad, GCI Telephone and ACS Telephone services revealed no active utilities or utility lines buried on the property. Overhead electric was supplied in the past. Fuel for heating was supplied via an onsite heating oil tank and water via an onsite well, though this could not be physically located. Potential evidence of a well (unknown use but probably not drinking water) was noted by a broken casing near the geographic center of the site.

3.2.4 Current Uses of Adjoining Properties

Alaska Railroad property and a railroad spur define the northern boundary of the property running from the northeastern corner to the southwestern corner. Across the railroad tracks is a metals recycling firm named C&R Pipe. The FNSB landfill is located across Sanduri Street to the south. The boundary of Fort Wainwright Army base is located approximately 2 miles southeast of the URI site. A mobile home park with approximately 175 mobile homes and a population of 460 residents exists 1 mile to the east of the site.

3.3 User Provided Information

The Fairbanks Northstar Borough is a Municipal Corporation organized under the laws of the State of Alaska. As such, it is charged with the enforcement of property tax collection. In order to fulfill tax foreclosure obligations under FNSB and State of Alaska laws, the FNSB acquired a tax deed to the former solid waste recycling center on June 3, 2003.

The FNSB has worked with the ADEC in order to establish a draft Prospective Purchaser Agreement to encourage and facilitate the sale and redevelopment of the site. The property was offered at an annual tax foreclosure sale on August 17, 2003 but there were no bidders. The FNSB believe that potential purchasers were discouraged due to the uncertainties regarding potential contamination and the uncharacterized nature of the associated risks and liabilities.

3.4 Records Review

3.4.1 Environmental Records

Pertinent information regarding the historical ownership and operation of the URI site was contained primarily in these ADEC files. These included:

- ADEC Northern Solid Waste Program Files, Solid Waste Permit #8631-BA001
- ADEC Records, File # 100.15.018 Interior Services, Inc.
- ADEC Records, File # 100.38.125, Interior Services, Inc.

The information contained in these files is summarized below in section 3.4.4.

A database search of the following federal and state environmental records was also conducted:

- National Priorities List (NPL) Sites
- Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Files
- Resource Conservation and Recovery Act (RCRA) treatment, storage, and disposal (TSD) sites
- RCRA Generators
- ADEC spill sites
- ADEC Contaminated Sites List

- ADEC Registered UST sites
- ADEC LUST sites

The site does not appear on any of these lists except the ADEC contaminated sites list under the names Universal Recycling, Inc., Interior Services, or Alaska Solid Waste, Inc.

A minimum search distance of 1 mile was utilized to ascertain nearby known or suspected contaminated sites. The results of the database search are shown in Appendix D.

An aerial photograph circa 1993 was obtained from Aeromap, Inc. to establish trends in debris accumulation and movement over a ten year period. Comparison with another historical photograph circa 1986 shows a significant change in the appearance of the property from a relatively pristine state in 1986 to a large accumulation of material and debris in 1993. The 1993 photograph and associated CD are included in Appendix E.

3.4.2 Additional Sources

In addition to the standard environmental database sources listed above, the following records and reports were also reviewed in order to better understand area environmental, public health, or socioeconomic concerns that might affect the URI property:

- Agency for Toxic Substances and Disease Registry (ATSDR), 2003 Public Health Assessment, Fort Wainwright, Fairbanks North Star Borough, Alaska, Agency for Toxic Substances and Disease Registry September, 2003

- Fairbanks North Star Borough, 2003a, Brownfields Assessment Grant Proposal, Fairbanks North Star Borough, AK, FNSB, December 2003

- Fairbanks North Star Borough, 2003b, Tax Assessment Record, FNSB Assessor, Weston Site Visit, May 2003

- Shannon & Wilson, 2003, Second Semiannual Sampling Event Results, Fall 2003, December 2003

- United States Geological Survey, Groundwater Level Data for Wells between Fairbanks Airport and Chena River, Fairbanks, Alaska, March 1991

- U.S. Department of the Army, Environmental Impact Statement, Transformation of U.S. Army Alaska, 2004

3.4.3 Environmental Setting

The URI site is approximately 3.4 acres in area and is located south of the Fairbanks city limits in a developing industrial area. There is road access and utility service to the property. The topography is flat and approximately 2 miles to the north of the Tanana River. It is bordered to the north and west by an active rail spur, to the south by Sanduri Street and the FNSB Landfill, and to the east by Easy Street and a mobile home park. Soils are typical of the area and consist largely of Chena Alluvium formed in unconsolidated silt-gravel mixtures with a high organic content. Groundwater varies seasonally between approximately 5-15 feet bgs based on a records search of USGS monitoring wells in the area. Shannon and Wilson (S&W, 1993) conducted a groundwater level survey in 1993 at the nearby FNSB landfill and observed groundwater levels ranging from about 6.4 to 11.8 feet. Historic groundwater flow is in a west–northwest direction. (See also local United States Geologic Survey [USGS] water level data in Appendix D.) Due to its highly developed nature, the site does not provide critical habitat for sensitive or endangered species. A large population of ravens, however, does frequent both the URI site and the FNSB landfill.

3.4.4 Historical Use on URI Site

Interior Services, Inc. (IS) initially developed the site in 1985 with construction of the scale house and main building (FNSB, 2003b). IS was issued a solid waste permit (8631-BA001) by the ADEC Division of Solid Waste for waste-to-energy treatment facility in 1986 (ADEC, 1986). The site was used to process paper to create fuel pellets for industrial furnaces. ADEC files indicate IS staged batteries, used oil drums, glass, plastic and other various materials on the site and periodically shipped the materials out via the adjoining rail spur. An incinerator was used for burning cable and wire at the main building.

Complaints regarding the storage practices, blowing litter, open burning of debris and smoke from the incinerator began in 1989 and generally came from nearby residents. The solid waste permit was renewed in 1991 (9131-BA004) (ADEC, 1991). Inspections by ADEC identified lead-batteries improperly stored, 55-gallon drums improperly stored and leaking, and uncontrolled debris piles creating litter on and off-site from 1989-1998. ADEC Solid Waste program files contained multiple notices of violation. In 1992, ADEC issued a non-compliance report stating that lead-acid batteries were being improperly stored at the site and in 1993, ADEC observed several more leaking 55 gallon drums that had caused a sheen on a surrounding puddle. Interior Service's permit (9131-BA004) was suspended by ADEC in May 1993 (ADEC, 1993). ADEC records indicate barrels of unknown, potentially hazardous substances and evidence of an incinerator used for wire burning. A 1996 fire destroyed the main building and burned some of the debris. At least two other fires have occurred on the property. IS's owner filed for bankruptcy in 1997.

URI took control of the site through the bankruptcy court proceedings in 1998 (FNSB, 2003c). They became an unrecorded property owner and took over the operation of the facility. In January 1998, ADEC conducted an inspection of the property in response to potential contamination, under the authority of the Property Trustee as appointed by the bankruptcy court (ADEC, 1998). ADEC notified URI of measures needed on the property in April 1998 including: removal and proper disposal of all debris, drums and containers, batteries, transformers, ash and an assessment of any potential contamination (ADEC, 1998). Records indicate operations ceased shortly after, and the FNSB took ownership through tax foreclosure in

June 2003. A serious fire occurred in 2003 after the FNSB took ownership requiring the response action of 6 area fire departments and over 12 hours of fire fighting response to extinguish. The FNSB and Emergency Management hazardous materials (HAZMAT) Response Team have over-packed forty drums, and placed batteries and an empty transformer in fish totes (FNSB, 2003a). These were all staged on the concrete pad located in the southeast. After the 2003 fire the FNSB landfill personnel moved the debris into the large consolidated pile covering the southern portion of the site (FNSB, 2003d).

Reviewing aerial photos revealed that prior to IS purchasing and developing the site in 1986, a 1985 photo indicates the site had trees, shrubs and a relatively unused appearance. A 1993 photo reveals the presence of the two buildings, debris piles scattered throughout the site, and paper piles were stored around the main building. Drums and containers were present along the south side and in the northern quadrant. It appears that miscellaneous metal and nonmetal debris may also have been buried in the north end of the site evidenced by the presence of mounded dirt piles in the 1993 aerial photo.

FNSB Tax Assessor’s records indicate two buildings were constructed on the southern side of the site parallel to Sanduri Street. The scale-house was constructed of mostly concrete, wood and metal. The 504 square foot building stands at approximately 16 feet high with an open ceiling over the drive-through weigh station on the northern half (12ft x 42ft), and two eight foot floors with walls on the southern half of the building (14ft x 42ft). The foundation is concrete with a wood and concrete on grade floor, wood framing constructed walls, sheet metal and wood constructed exterior, and a hip roof constructed of steel and insulation. The weigh station was not heated, although a small wood burning stove was noted on the ground floor. The weigh station survived both the 1997 and 2003 fires. The second building was lost in the 1997 fire. This 13,380 square foot building was recorded as industrial for tax purposes. It was constructed similarly to the weigh station utilizing concrete, wood and metal. There are no indications of asbestos containing materials from the Assessor’s records. Lead-based paints are generally not associated with post-1980 construction. Therefore the risk of hazardous building materials associated with these two structures is low.

Insulation is present on the URI site and the adjacent C&R Pipe property. These materials are similar to tank covering foam insulation which can contain ACM. There are indications of construction type debris mixed into the large debris pile.

The historical use of the URI site indicates that numerous potential hazardous wastes were stored on-site. Suspected petroleum products have been observed from leaking 55-gallon drums and lead-batteries were noted during past inspections. Dioxins have been associated with wire burning practices and the resulting ash. The presence of discarded plastic containers of solvents and antifreeze was noted in the past and during the site visit scattered among the debris.

Based on the historical information obtained and the observations made during the site visit, contaminants of potential concern at the URI site include gasoline range organics (GRO), diesel range organics (DRO), residual range organics (RRO), volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), dioxins and metals.

ADEC records indicate that there are no ongoing or anticipated environmental enforcement actions pertaining to this site.

The State Office of History and Archeology reached a finding of No Historic Properties Affected when consulted about investigative activities at the site.

3.5 Site Reconnaissance

Accompanied by officials from the FNSB Land Management Division and the ADEC, Weston conducted a site visit on May 11th and 12th, 2004. During the site visit, a large pile of paper and mixed debris, a truck, various metal debris, and auto parts, numerous containers of recyclables, numerous drums, trash, a large storage tank, and other miscellaneous items were observed accumulated across the site. The site currently has construction fencing and caution tape around the open sides of the property. The western edge is accessible from the railroad and adjoining property.

The majority of the property is covered by debris. The debris consists of numerous types of metal, 55-gallon drums, propane tanks, glass, plastic, paper, cardboard and various other materials. The exposed area in the center of the site is stained from the fire with debris scattered throughout. A second open area to the north is grey and finer, and may be related to incinerator ash. The concrete pad is stained from past operations and the staged drums.

Additional wastes are still being added to the site as it is not secured against trespass. Bags of garbage and a Zenith television were deposited on the site during the period 12-16 June 2004 during site characterization activities and several would-be dumpers were directed to the FNSB landfill across the street.

A general map of the current site layout was presented in Figure 2-2.

3.6 Interviews

Attempts were made to contact historic owners/operators of the URI site in order to obtain information about the previous history of the area including past land uses and/or disposal of any wastes. Though attempts were made, none of the past owners could be contacted. An attempt was also made to find regulators who were involved in site inspections but current contact information could not be found.

One member of the HAZMAT response team that addressed drums and other containers at the site after a 2003 fire was interviewed regarding the materials and containers. He recalled that leaking and bulging drums were placed in over-packs and staged on the concrete pad of the former storage building. Lead acid batteries were stored in plastic fish totes. At least two transformers were placed in over-pack drums but he did not recall whether or not they were labeled "non-PCB."

Personal contact was also made with the adjacent landowner - C&R Pipe- during site characterization activities. Personnel stated they had little knowledge of the site in terms of buried debris, but had watched the debris pile up around the site over time, and tried to remain "un-involved" with the site and operations.

3.7 Evaluation and Report

3.7.1 Findings

The Universal Recycling, Inc. site has an approximately 20 year history of questionable use and material storage practices. It has been the subject of public complaint and governmental regulatory action during a significant portion of that time. In addition, observed releases of potentially hazardous substances indicate a high likelihood of environmental contamination. The ADEC has adapted their Hazard Ranking Model to the site and determined that the Overall Site Risk Value is Medium. This ranking was assigned without the benefit of any analytical site characterization. It should be noted that the ranking in the categories of Site Access and Population Proximity were High and that during the recent field investigation at the site, incursions and attempted incursions were noted by site personnel.

Outside of the ADEC files and property and tax records there is not much historical information regarding the URI site. Furthermore, past landowners and operators are not reachable using conventional methods of contact. Observational techniques are the most valuable means of gathering information at this point. Even these methods have been compromised, however, by the fact that large-scale material movements have occurred in the recent past and that wastes continue to be added to the site. Complicating the matter is the tremendous amount of debris that exists at the site and may mask numerous sources of environmental contamination and potential health risks.

During the site reconnaissance, drums and containers of potentially hazardous waste were noted at various locations around the property. Most of these were empty and some still contained liquids. Others were impossible to access without risk and were not checked. Evidence (soil staining) of past leaks and releases was observed in many locations. Attempts were made to identify the contents or past contents of containers by reading labels affixed or stenciled to the containers. A partial list of labels observed is provided in Figure 4-1. Transformers and light ballasts were also observed on site even though some cleanup of these types of materials occurred in 2003. The historical presence of batteries and an incinerator operation along with the aforementioned contaminant sources suggest a diverse source area that is largely uncharacterized at the present time.

3.7.2 Conclusions

Based on the ADEC hazard ranking and the observations in the preceding paragraph, the most immediate need at the URI site is a method of securing the property. Without proper security, any present characterization activities will be of dubious quality in the future as additional wastes and potential contamination are added to the site. Also, vandalism targeting any of the various and sundry uncharacterized drums and containers on the site would compromise both the quality the current investigative activities and the value of the property and would potentially increase risks to public health and the environment.

Another high priority is the characterization, removal, and proper disposal of all liquid wastes that are scattered around the property as mentioned above. Even the staged drums are a potential source of environmental and financial liability for the property owner. It should be noted that once the wastes are characterized and determined hazardous, that under RCRA there is a specified time frame by which the owner or generator must remove and properly dispose of these wastes.

The bulk of the debris at the URI site is undoubtedly non-hazardous. However, it does preclude access to a large portion of the site and potentially masks physical hazards to would-be workers attempting to characterize the site. A means of screening and separating this debris from hazardous or unknown wastes is essential to both site characterization and site cleanup. Only after the non-hazardous debris has been relocated and disposed of properly, can a full site characterization take place.

A thorough site characterization utilizing a combination of field screening techniques and surface and subsurface investigative methods should be performed once access is provided to the areas currently obscured by debris.

3.7.3 References

References are provided in Section 6.0 of this document

3.7.4 Photographs

A photographic log of the site is presented in Appendix A and photos delivered digitally in Compact Disc format.

4.0 FIELD INVESTIGATION

A field investigation was conducted at the URI site during the period 12-16 June 2004. Several field techniques were used to assess the environmental conditions at the URI site. The 2004 field investigation program included the following:

- Mobilization and demobilization;
- Site reconnaissance and field screening;
- Sampling of surface and subsurface soils and groundwater;
- Sample handling and management;
- Equipment decontamination;
- Investigation-derived waste management.

Activities were preformed in accordance with the approved Field Sampling Plan (FSP) for Universal Recycling, Inc., dated June 2004.

4.1 Mobilization and Demobilization

WESTON conducted an initial site reconnaissance on 11-12 May 2004. ADEC, FNSB and WESTON personnel completed a site walkthrough to identify initial strategies for the SC.

The field crew mobilized to the site on 12 June 2004 to conduct field screening and soil sampling activities. A drilling subcontractor mobilized to the site 14 June 2004 to conduct subsurface soil and groundwater sampling. All utility locates were coordinated ahead of time. WESTON and its subcontractor demobilized from the site on 16 June 2004.

4.2 Site Reconnaissance and Field Screening

4.2.1 Reconnaissance

Field personnel performed a site reconnaissance to visually inspect each site prior to initiating sampling activities. The purpose of the reconnaissance was to establish the investigation boundaries, and evaluate and document the site's physical condition. Characteristics such as the location of stained areas, drums, labels, and general debris were noted in the project field log.

To the extent practicable, Weston personnel tried to ascertain likely drum contents by reading legible labels. Products observed at the URI site include:

Table 4-1 Container and Product Descriptions

PRODUCT	CONTAINER TYPE	APPROXIMATE CAPACITY	DESCRIPTION
VersaWet	drum	55 gallon	Empty
Propane	Pressurized tank	5 gallon	Eleven tanks noted
Hydraulic Fluid	drum	55 gallon, 5 gal	16, 4x4 bins with 5 gal containers
Pipe Lax	drum	55 gallon	"For freeing stuck wall pipe"
Lube Oil	drum	55 gallon	Common drum label at site
Antifreeze	drum	55 gallon	Ice King brand
VersCoat	drum	55 gallon	UN 1993, methane
Transmission fluid	bottle	1 quart	10 or more full quarts noted
Anhydrous ISO Alcohol	drum	55 gallon	Empty
Rotella	drum	55 gallon	15w-40 Engine oil
Engine Oil	drum	55 gallon	15w-10

Documentation of the site's physical condition also included digital photographs (see Site Photos in Appendix A).

4.2.2 Field Screening

Locations observed during the site reconnaissance that appeared likely to be impacted by contamination (i.e., directly beneath drums, areas of disturbed soil, discoloration, odors, or stressed vegetation) were targeted for further field screening utilizing a combination of the photo-ionization detector (PID) and immunoassay test kits (Dexsil kits: Petro-Flag and Chlor-n-Soil). The PID instrument and PetroFlag analyzer were calibrated daily, and as needed, according to the manufacturer's recommendations. The historical photos and knowledge obtained during the Phase I portion of the project also directed the field team to areas that suspected to be historical storage locations of potential contaminants. Samples were collected from primarily from the upper 6 inches of soil (though some were slightly deeper) using a round-point shovel and a hand trowel that was decontaminated with Simple-Green and de-ionized water between each event. A pin flag, labeled with the sample designation in permanent marker, was placed at the sample location.

Field screening samples were given the designator FS ## (e.g. FS01) and a semi-quantitative analysis performed on each sample using the Petro-Flag and Chlor-n-Soil test kits. The sample name, GPS coordinates, rationale for location selection, and the results of the two immunoassay tests for each field sample are shown in Table 4-2. Figure 4-1 shows the field screening locations, as well as the locations of soil borings and monitoring wells superimposed on an aerial photograph of the URI site.

Table 4-2. Field Screening Locations, Descriptions, and Results

Sample Number	Location GPS NAD 27	Description	Results	
			Petroflag	Chlor-n-Soil
FS01	235416.031 3952655.000	W. end of drums along north side of scale house. Visible staining.	2098 ppm	ND
FS02	235448.453 3952643.250	Stained area at east entrance to scale house.	EEEE	ND
FS03	235772.844 3952876.000	Base of the S. side of middle roll-off dumpster.	84 ppm	ND
FS04	235727.359 3952866.250	N. side of the roll-offs near transformer and computer tape reels. Drums nearby.	193 ppm	50 ppm
FS05	235814.406 3952681.000	Hole Near E. end of concrete pad	1472 ppm	ND
FS06	235814.609 3952688.250	Crack in concrete just north of FS05 on pad.	555 ppm	ND
FS07	235909.016 3952952.750	E. border of site near burned telephone pole. Highly stained soil.	122 ppm	ND
FS08	235925.000 3953025.750	N. of FS07 on E. border of site near drums labeled “Pipe-Lax.”	EEEE	ND
FS09	235845.141 3953071.750	Near aircraft fuselage, drums, and misc. debris in N.W. portion of site.	626 ppm	ND
FS10	235858.688 3953111.500	N. side of drum pile. Over 28 drums with various labels.	128 ppm	ND
FS11	235890.453 3953191.250	W. side of suspected ash pile at extreme N. end of site.	54 ppm	ND
FS12	235451.375 3952635.750	Stained area on E. side of scale building.	EEEE	ND
FS13	235560.469 3952633.000	W. side of debris pile approximately 100’ from scale house.	43 ppm	ND
FS14	235707.844 3952603.250	S. side of debris pile between pile and Sanduri Street below drum pile.	0	ND
FS15	235773.328 3952894.250	E. side of center (green) roll-off.	60 ppm	> 50 ppm
FS16	235905.328 3952989.500	Heavily stained area N. of burned telephone pole.	11 ppm	ND
FS17	235863.938 3953074.750	Adjacent to electrical equipment piled on N.W. corner of site in discolored area.	21 ppm	ND
FS18	235874.469 3953118.500	Center of drum pile near N. end of site.	89 ppm	ND
FS19	235926.484 3953197.500	E. of stacked drums on extreme N. side of site.	66 ppm	ND
FS20	235912.469 3953256.500	W. side of stacked drums in discolored area.	431 ppm	ND
FS21	235840.266 3953064.500	Approximately 20’ N. of aircraft fuselage and drum pile in discolored area.	103 ppm	ND

Figure 4-1 Locations of Field Screening, Soil Borings, and Monitoring Wells

4.3 Sampling Soil and Groundwater

Per the project Work Plan, borings were advanced to approximately 10 feet below ground surface at ten locations on the URI site and five of these borings were converted to piezometers and left in place. Sampling locations were biased to areas having the greatest probability of detecting the highest concentrations of contaminants; or areas with the highest soil screening results. As noted in the previous section, field screening consisted of screening soil and drummed materials using a PID, PetroFlag and Chlor-N-Soil test kits. Locations where soil borings, only, were taken are designated SB ## (e.g. SB01) where as locations where both soil borings were taken and a piezometer left in the hole for a groundwater sample are designated MW ## (e.g. MW01).

Protocols for sample collection, transport, and storage were in accordance with ADEC and EPA guidelines as written in the Standard Operating Procedures (SOPs) included in the FSP for this project. Field personnel collected samples in appropriately preserved containers and adequately prepared them for transport to the laboratory. Samples were delivered to the Analytica Laboratories in Fairbanks, AK for analysis.

A GPS receiver was used to record key positions during the site survey. Table 4-3 presents the description for each boring or monitoring well along with its corresponding position reported in the WGS 84, AK NAD27 coordinates.

4.3.1 Soil Sampling

Subsurface soil samples were collected from boreholes at intervals of 2-4 feet bgs and 6-8 feet bgs. Subsurface soil samples from boreholes were collected as composite samples using a hollow stem auger and split-spoon sampler. These intervals were chosen using the rationale that 2 feet of overburden was the minimum that would have provided isobaric conditions for the volatile components of potentially contaminated soil but still be close enough to the surface to intercept more immobile compounds. The 6-8 foot sample was chosen because this interval resided just above the water pieziometric surface observed in the first boring taken. PID readings were taken frequently of drill cuttings and near the auger hole in order to identify the most contaminated interval but the readings never caused the sampler to deviate from the above strategy. Samples were collected at all intervals for VOC, SVOC, GRO, and DRO/RRO. Only the top interval was sampled for RCRA metals and for PCBs since the ionic properties and hydrophobicity of these chemicals, respectively, it would make it unlikely for them to be detected in the lower soil interval and not the upper. Excess soil was replaced in the borehole and sample locations noted using a GPS unit and marked with a pin flag labeled with the boring designation. Soil sample results are presented in Table 4-4. Note that only contaminants exhibiting a positive response above the method detection limit (MDL) in any one sample are listed in the table of analytes.

Table 4-3 Soil Boring and Monitoring Well Locations, Description, and Results

Sample Number	Location GPS NAD 27	Description
SB01	235906.125 3953136.000	N. end of site taken in a suspected incinerator ash disposal area.
SB02	235903.188 3953026.250	Near FS08, drum pile, and heavily stained area on E. border of site
SB03	235796.219 3952875.500	S. of roll-off dumpsters
SB04	235882.891 3952734.000	Approximately 15' from N.E. corner of the former warehouse concrete pad.
SB05	235462.578 3952646.500	Near FS02 on E. side of scale house
MW01	235903.813 3952642.000	S.E. corner of property – proposed as "upgradient."
MW02	235849.313 3952936.250	Near geographic center of property approximately 35' W. of heavily stained areas on E. border.
MW03	235857.219 3953056.750	Roughly in-line with MW01 and MW 02 at N. end of site near drums and suspected ash pile.
MW04	235876.359 3952723.250	W. portion of site approximately 50' E. of scale house.
MW05	235396.547 3952626.250	W. side of scale house.

4.3.2 Groundwater Sampling

Groundwater samples were intended to be collected as grab samples (after a 24 hour equilibration period) from the screened peizometers placed into the boreholes. Water was encountered in the first borehole at 7.5 feet bgs as verified using an air/water interface probe. The decision was made to screen intervals between 5 and 10 feet bgs. As indicated on the drilling logs (Appendix B), soils near the water table were tight fine-grained silts with interspersed organic layers. This presented two problems related to groundwater sampling - the transmissivity of the soils was very low and water that did enter the wells was extremely silty. A groundwater sample was recovered from MW01 and analyzed for VOC, SVOC, GRO, and DRO/RRO and RCRA Metals. However, none of the other piezometers installed collected enough water for sampling. A field decision was made to abandon attempts at sampling those wells and drill a deeper boring for a grab sample through the auger stem. A boring was advanced to 15 feet and a small amount of water entered the hole. Due to the small amount of water collected and the poor water quality, only samples for VOC's and GRO were collected. In order to obtain at least one "downgradient" water sample, field personnel obtained samples from the FNSB well (MW027) located approximately 150 feet to the west of the edge of the URI property. This well was sampled for the same parameters as MW01. Disposable bailers were used to collect all water samples. The peizometers remain in place for future use. Groundwater sample results are presented in Table 4-5. Note that only contaminants exhibiting a positive response above the method detection limit (MDL) in any one sample are listed in the table of analytes.

4.4 Sample Handling and Management

As indicated in the Field Sampling Plan (FSP) each sample was assigned a unique identification number immediately after collection to ensure sample identifiers were not duplicated. A list of the sample identification numbers was maintained as part of the standard record keeping process. These numbers were used to identify and track each sample collected for laboratory analysis and were also used to identify and retrieve analytical results.

All samples will consist of four components separated by a dash. These components are site ID, media code, station code, and sample type. Table 2-4 summarizes the sample tracking code and location. The sample designation scheme is as follows:

Site ID		Media Code		Station Code		Sample Type
SSS	-	MM	-	SSsss	-	t [ddd]

The four components are described below:

Site ID

The site ID component is a three-digit code that designates the specific sample. This is based on the Weston project area code. The Site ID code assigned to this investigation is URI for Universal Recycling, Inc.

Media Code

The media code is a two-character code that defines the media type of the sample. The media codes designated for this project are as follows:

GW = Groundwater
SB = Subsurface Soil
SS = Surface Soil

Station Code

The station code component is a five-character code that uniquely identifies each sampling station. The station code component has two parts: a two letter station designation XX indicating the suspected source the sample was collected from followed by a three number sequential component (i.e., 001, 002, 003). The station codes used for this project were as follows:

SB = Soil Boring
MW = Monitoring Well

Sample Type

The sample type component has two parts: a sample type field "t" and a sample depth field "ddd." The single character "t" indicates a sample type having one of the following two values:

0###	—	Field sample
2###	—	VOC trip blank
4###	—	Equipment Rinsate Blank
5###	—	Split Sample

and a three-character field to indicate depth in tenths of feet to the top of the sample:

#000	—	0 foot (surface)
#050	—	5 feet
#125	—	12.5 feet

Sample depth determinations were made to the nearest 0.5 foot.

Examples

Examples of complete sample numbers with descriptions are as follows:

URI-SB-SB003-0020:	A field soil sample collected from soil boring number 3 in the 2 foot interval beginning at 2 feet bgs.
URI-SB-MW001-0060:	Soil sample collected during the installation of MW01 in the 2 foot interval beginning at 6 feet bgs.

Table 4-4a Subsurface Soil Sample Results above MDL at URI Site, June 2004

Method	Analyte	"Under 40-inch Zone" [1]	Sample SB01		Sample SB02		Sample SB-03		Sample SB04		Sample SB05	
			2-4	6-8	2-4	6-8	2-4	6-8	2-4	6-8	2-4	6-8
Petroleum Hydrocarbons (mg/kg)												
AK101	Gasoline Range Organics	300	ND	ND	0.73	ND	ND	ND	NA	ND	ND	ND
AK102	Diesel Range Organics	250	14	ND	18	17	60	29	NA	6.4	5.2	8.4
AK103	Residual Range Organics	11000	200	43	170	160	260	260	NA	60	62	68
Metals (mg/kg)												
SW6020	Arsenic	2	ND	NA	ND	NA	ND	NA	NA	ND	ND	NA
	Barium	1100	4500 J	NA	3000J	NA	2500 J	NA	NA	140J	3600J	NA
	Cadmium	5	1.2	NA	1.1	NA	0.89	NA	NA	ND	ND	NA
	Chromium	26	46	NA	42	NA	34	NA	NA	25	49	NA
	Lead	--	ND	NA	ND	NA	7.9	NA	NA	6.8	ND	NA
SW7471A	Mercury	1.4	0.11	NA	0.062	NA	0.069	NA	NA	ND	ND	NA
PCBs (mg/kg)												
SW8082	Arochlor 1016	1	ND	NA	ND	NA	ND	NA	NA	ND	ND	NA
	Arochlor 1221	1	ND	NA	ND	NA	ND	NA	NA	ND	ND	NA
	Arochlor 1232	1	ND	NA	ND	NA	ND	NA	NA	ND	ND	NA
	Arochlor 1242	1	ND	NA	ND	NA	ND	NA	NA	ND	ND	NA
	Arochlor 1248	1	ND	NA	ND	NA	ND	NA	NA	ND	ND	NA
	Arochlor 1254	1	ND	NA	ND	NA	ND	NA	NA	ND	ND	NA
	Arochlor 1260	1	ND	NA	ND	NA	ND	NA	NA	ND	ND	NA
VOCs (mg/kg)												
SW8260B												
	2-Butanone (MEK)	--	ND	21J	ND	ND	26J	ND	NA	23J	ND	ND
	Acetone	10000	110J	34J	ND	77J	78J	130J	NA	100J	94J	ND
	Benzene	20	13J	ND	61	34J	ND	10J	NA	ND	8.8J	8.3J
	Methylene Chloride	15	81JB	73J B	96JB	26JB	22JB	100J	NA	6.4J	49JB	24JB
	m-Xylene & p-Xylene	78000	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
	Ethylbenzene	5500	ND	ND	6.1J	ND	ND	ND	NA	ND	ND	ND
	Toluene	5400	7.7J	ND	32J	15J	ND	ND	NA	ND	4J	8.7J
	Trichlorotriflouroethane	--	49	8J	54	22J	24J	ND	NA	18J	ND	47
	Trichloroflouromethane	--	32J	ND	ND	ND	ND	ND	NA	ND	70	64
SVOCs (mg/kg)												
SW8270	di-n-Butyl Phthalate	1.7E+6	97JB	83J B	100JB	ND	ND	ND	NA	ND	ND	140 JB
	Naphthalene	21000	ND	ND	94J	ND	ND	ND	NA	ND	ND	ND

[1] Soil screening criteria are the Soil Cleanup Levels presented in ADEC 18 AAC 75 for the migration to groundwater pathway.

--	=	no available standard
SW	=	SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods, Update III
ND	=	not detected above the method detection limit (MDL)
NA	=	not analyzed
B	=	analyte was detected in the laboratory method blank
J	=	the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Shaded cells	=	indicate analytical concentration exceeds the soil screening criteria

Table 4-4b Subsurface Soil Sample Results above MDL at URI Site, June 2004

Method	Analyte	“Under 40-inch Zone”[1]	Sample MW01		Sample MW02		Sample MW03		Sample MW04		Sample MW05	
			2-4	6-8	2-4	6-8	2-4	6-8	2-4	6-8	2-4	6-8
Petroleum Hydrocarbons (mg/kg)												
AK101	Gasoline Range Organics	300	2	1.6J	ND	ND	ND	0.87J	ND	ND	ND	ND
AK102	Diesel Range Organics	250	17	ND	5.1	66	26	8.4	26, 16[2]	8.6	11	5.8, 7.0[2]
AK103	Residual Range Organics	11000	97	23	50	650	220	110	75, 140[2]	76	100	55, 54[2]
Metals (mg/kg)												
SW6020	Arsenic	2	ND	NA	ND	NA	ND	NA	30, 21[2]	NA	ND	NA
	Barium	1100	560 J	NA	83J	NA	3700 J	NA	2600J, 2300J[2]	NA	3200J	NA
	Cadmium	5	0.68	NA	ND	NA	1.3	NA	1.3, 1.6[2]	NA	ND	NA
	Chromium	26	37	NA	17	NA	53	NA	57, 60[2]	NA	45	NA
	Lead	--	12	NA	5.5	NA	6.3	NA	17, 19[2]	NA	ND	NA
SW7471A	Mercury	1.4	ND	NA	ND	NA	0.044	NA	0.081, 0.051[2]	NA	0.072	NA
PCBs (mg/kg)												
SW8082	Arochlor 1016	1	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
	Arochlor 1221	1	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
	Arochlor 1232	1	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
	Arochlor 1242	1	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
	Arochlor 1248	1	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
	Arochlor 1254	1	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
	Arochlor 1260	1	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
VOCs (ug/kg)												
SW8260B	Benzene	20	21J	16J	4.5J	7.6J	8.9J	ND	13J, 3.7J[2]	ND	8.1J	11J, 5.2J[2]
	1,3,4-Trimethylbenzene	--	4.4J	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2-Butanone (MEK)	--	21J	ND	18J	35J	15J	ND	ND	29J	ND	ND
	Acetone	10,000	55J	55J	130J	71J	61J	ND	ND, 69J[2]	98J	87J	57J
	Ethylbenzene	5500	3.7J	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Methylene Chloride	15	19J	16J	19JB	29JB	20JB	57JB	ND, 59J[2]	44J	27JB	22JB, 23JB[2]
	m-Xylene & p-Xylene	78000	11J	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Idomethane	--	ND	140	ND	ND	ND	ND	ND	ND	ND	ND
	Chloroform	340	ND	7.3J	ND	ND	ND	ND	ND	ND	ND	ND
	Toluene	5400	15J	9.2J	3.3J	10J	ND	ND	ND	ND	ND	ND
	Trichlorofluoromethane	--	ND	35	ND	ND	ND	ND	ND	ND	ND	ND
	Trichlorotrifluoroethane	--	33	11J	16J	93	13J	29J	89, 30[2]	59	35J	61, 27J[2]
SVOCs (ug/kg)												
SW8270	2-Methylnaphthalene	--	44J	ND	ND	ND	ND	ND	43J	ND	ND	ND
	bis(2-Ethylhexyl)phthalate	1.2E+6	47J	ND	ND	ND	ND	ND	ND	ND	ND	ND

Method	Analyte	"Under 40-inch Zone" [1]	Sample MW01		Sample MW02		Sample MW03		Sample MW04		Sample MW05	
			2-4	6-8	2-4	6-8	2-4	6-8	2-4	6-8	2-4	6-8
	Diethylphthalate	190000	110J	ND	ND	ND	ND	ND	ND	ND	ND	ND
	di-n-Butyl Phthalate	1.7E+6	110JB	140JB	100JB	130JB	110JB	100JB	130JB, 160JB[2]	140JB	130JB	ND
	Naphthalene	21000	ND	ND	ND	ND	80J	ND	75J, 58J[2]	ND	ND	ND

[1] Soil screening criteria are the Soil Cleanup Levels presented in ADEC 18 AAC 75 for the migration to groundwater pathway.
[2] Duplicate sample result.
-- = no available standard
SW = SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods, Update III
ND = not detected above the method detection limit (MDL)
NA = not analyzed
B = analyte was detected in the laboratory method blank
J = the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Shaded cells = indicate analytical concentration exceeds the soil screening criteria

Table 4-5 Surface Soil Sample Results above MDL at URI Site, June 2004

Method	Analyte	Cleanup Standard (mg/kg)	Result Sample PB01 (mg/kg)
SW 8082	Arochlor 1016	1	ND
	Arochlor 1221	1	ND
	Arochlor 1232	1	ND
	Arochlor 1242	1	ND
	Arochlor 1248	1	ND
	Arochlor 1254	1	0.014
	Arochlor 1260	1	ND

[1] Soil screening criteria are the PCB Cleanup Levels for unrestricted land used presented in ADEC 18 AAC 75.340(d)(9)
ND = not detected above the method detection limit (MDL)

Table 4-6 Groundwater Sample Results at URI Site, June 2004

Method	Analyte	Ground-water[1]	Sample MW01		Sample MW027[2]		Sample GW01	
			Result	Flag	Result	Flag	Result	Flag
Petroleum Hydrocarbons (mg/kg)								
AK101	Gasoline Range Organics	1.3	0.085		ND		ND	
AK102	Diesel Range Organics	1.5	0.20		0.12		NA	
AK103	Residual Range Organics	1.1	0.34		0.29		NA	
Metals (mg/kg)								
SW6020	Arsenic	0.05	ND		ND		NA	
	Barium	2J	0.65J		0.95J		NA	
	Cadmium	0.005	0.056		0.066		NA	
	Chromium	0.1	ND		0.057		NA	
	Lead	.015	ND		ND		NA	
	Selenium	0.05	ND		ND		NA	
	Silver	0.18	ND		ND		NA	
VOCs (ug/L)								
SW8260B	2-Butanone (MEK)	--	0.7	J	ND		0.95	J
	Acetone	3650	10	J	ND		15	J
	Carbon Disulfide	--	ND	ND	1.0	J	ND	
	Cis-1,2 Dichloroethene	0.07	ND	ND	4.7		ND	
	Toluene	1	0.66	J	ND		ND	
SVOCs (mg/kg)								
SW8270	Benzyl Alcohol	--	2.6	J	ND		NA	

[1] Groundwater screening criteria are the MCL's for Drinking Water in ADEC 18 AAC 80 and 18 AAC 75, Table C.
[2] Fairbanks North Star Borough Landfill monitoring well
-- = no available standard
SW = SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods, Update III
NA = not analyzed
ND = not detected above the method detection limit (MDL)
J = the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Shaded cells = indicate analytical concentration exceeds the soil screening criteria

4.5 Equipment Decontamination

Field personnel decontaminated all non-expendable field equipment (i.e., split-spoon sampler) after use to prevent the potential spread of contamination. A decontamination station was established at each investigation site consisting of five gallon buckets to contain decon liquids, scrub brushes, and sprayers. Small sampling tools and equipment were cleaned with a solution of water and laboratory-grade detergent followed by two rinse stages using deionized (DI) water. Tools were aired dried, and placed in polyethylene bags, if not immediately used.

Hollow stem auger pieces were decontaminated after use, prior to demobilizing from the URI site and any residues left in the immediate vicinity of the investigative area.

4.6 Investigation-Derived Waste Management

IDW was minimized by careful and efficient work practices. Nearly all subsurface soil generated from boreholes was tamped back into the original borehole. A five gallon bucket of equipment decon water was staged with a subcontractor (Emerald Alaska) pending analysis. The Dexsil field screening kits were disposed of properly with the Chlor-n-Soil kit being rendered non-hazardous per the method procedures and the approximately 240 grams of methanol contaminated soil from the Petro-flag kits disposed of at the FNSB Hazardous Waste Collection center.

4.7 Data Quality Assessment

The purpose of this review was to determine if any quality control deviations affected the certainty of analytical results. Summaries of the results for method blanks, equipment blanks, field duplicates, laboratory control samples, and duplicate matrix spikes were reviewed for all analytes. Data qualifications resulting from this review are summarized in the section 4.8 below.

4.8 Data Analysis

The quality control data reviewed included method and field blanks, laboratory and field precision indicators, and laboratory accuracy information. Blank contamination impacts were assessed by comparison of the relative concentration levels in field and method blanks and samples. Laboratory precision was assessed using the relative percent differences (RPD) between matrix spike/matrix spike duplicate (MS/MSD) recoveries and when performed, laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recoveries. Field precision related to either sampling protocols or matrix homogeneity was assessed using the field duplicate RPDs. Overall analytical accuracy was evaluated using LCS percent recoveries. Sample accuracy was evaluated using both the surrogate and MS/MSD recoveries for organics and MS/MSD recoveries for inorganics.

4.8.1 Holding Times

One or more soil samples were re-extracted outside the technical holding time for SVOC analysis. No data were qualified on this basis, although the results associated with these samples may be subject to low bias.

4.8.2 Method Blanks

Method Blank Analysis – Methylene chloride was detected above the MDL in both the soil and water method blank samples. All sample concentration results less than 10-times the method blank concentration were qualified as non-detected (U).Quantitation and Sensitivity

4.8.3 Matrix Spike Samples

Recovery of silver from the water sample was less than the Lower Control Limit (LCL). However, this sample was a field QC sample (equipment blank) and as such, MS/MSD analysis is not normally reported. Recovery of lead associated with the soil analysis did not meet laboratory criteria. However, the laboratory did not report the recovery value, and the sample spiked was not associated with the URI site. No qualification of the data is possible on this basis. Several other analytes failed to meet acceptance criteria for MS/MSD analyses; however no data were qualified on this basis alone

4.8.4 Surrogates

The BFB Field Surrogate recovery was less than the LCL for all soil samples analyzed, but recovery of the optional laboratory surrogate met acceptance criteria. The laboratory did not reanalyze as specified in the method. Low recovery may be attributed to possible matrix affects. All sample results were non-detected; all sample results with BFB recovery less than 10 percent are rejected (R) for any use. The remaining sample results should be considered as non-detected at an estimated concentration (UJ), unknown bias.

4.8.5 Field Blanks

No qualifiers noted.

4.8.6 Field Duplicates

No qualifiers noted.

4.8.7 Laboratory Control Samples (LCS)

1,2,3-trichlorobenzene recovery was low in the water LCS. 1,2,3-trichlorobenzene recovery was low in both the water and soil LCS. All sample results for these analytes were qualified as estimated (J), possible low bias. Recovery of trans-1,4-dichloro-2-butene was very low in the water LCS/LCSD. Results for this analyte were rejected for any use (R) in all associated water samples. Recovery of benzidine was very low in the water LCS/LCSD. Results for this analyte were rejected for any use (R) in all associated water samples. Recovery of iodomethane and dibromomethane were low in the soil LCS. All sample results for these analytes were qualified as estimated (J).

4.8.8 Other QC

Barium exceeded the acceptance criterion for serial dilution. All barium results were qualified as estimated (J), unknown bias.

4.8.9 Chain-of-Custody

Chains-of-Custody were submitted, signed, and maintained by all parties having charge of the samples.

4.8.10 Sample Preservation and Integrity

One or more soil samples were re-extracted outside the technical holding time. No data were qualified on this basis, although the results associated with these samples may be subject to low bias.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Screening of surface soils at the URI site indicates a high likelihood of widespread surficial petroleum hydrocarbon contamination at levels above ADEC cleanup standards. Additionally, two field screening samples had positive indications for chlorinated compounds. Given the historical storage of transformers and the fact that transformers and light ballasts are still present at the site, it is a significant possibility that the source of this contamination is PCBs. In general, however, it is difficult to correlate the contaminated soils with their source due to the extent of material movement that has occurred in recent years. Predominantly, this was related to the fire fighting activities in 2003. Most of the material relocation appears to have occurred along the southern and eastern half to two-thirds of the site. Contamination in the far northern section and western boundary of the site may still be near its source area. A major limitation to both the qualification and quantification of contamination at the URI site is that fully one-half of the surface area of the site is buried in debris and surface screening of soils is not possible. Source areas could be buried in the debris and contributing to on-going contaminant releases.

Analytical results for the subsurface soil samples collected at URI indicated concentrations above the MDL for petroleum hydrocarbons, metals, VOCs, and SVOCs. With the exception of the metals Barium and Chromium, however, levels of contamination were low - generally below the practical quantitation limit (PQL). These values are therefore considered only estimates. In most cases, when the detected value was below the PQL, the estimated value was also below the ADEC cleanup standard for that contaminant. Samples which do exceed the soil screening criteria established are highlighted in Tables 4-4, 4-5, and 4-6 respectively.

The metals Barium and Chromium were exceeded the ADEC cleanup standard in 7 of ten and 8 of ten samples respectively. It should be noted that in all cases, the values were still below the EPA's risk based concentrations for both industrial and residential classifications. It is unclear whether or not the elevated levels of these metals are necessarily related to site activities. USGS Professional Paper 1548 (Gould et. Al., 1988) gives naturally occurring Barium and Chromium levels in Alaska (soil) as 595 mg/kg and 50 mg/kg respectively. Chromium levels measured during the URI Site Characterization were not statistically different from this reference value with a maximum measured value of 60 mg/kg.. Barium concentrations were significantly higher, however, with an extreme measured value of 4,500 mg/kg. Barium is a common trace metal found in Healy coal ash and it is likely that the source of the elevated Barium concentrations relates to the historical practice in the Fairbanks area of applying coal ash to road surfaces as a treatment process.

As previously noted, attempts at collecting groundwater samples were largely unsuccessful. Four of the five piezometers installed failed to collect water even though it was felt they penetrated the water table. Three samples however were collected by utilizing a nearby monitoring well installed by the FNSB landfill and by drilling a sixth, deep hole and obtaining a grab sample through the auger. Two of these (MW001 and FNSB MW027) were analyzed for metals. Both samples returned a Cadmium concentration above the screening value. Naturally occurring Cadmium in Alaskan soils is approximately 4 times that of other areas in the country and it is not surprising to see this level dissolved in groundwater. The organic contaminant Cis-1,2 Dichloroethene was identified in MW027 at levels exceeding the screening value in 18 AAC 75, Table C. This well is downgradient from the URI site but also serves as a sentry well for the FNSB landfill. It is difficult to draw any conclusions about the source of this contaminant based a single well and on this lone sampling event.

By using the ADEC Method 3 calculator, it may be determined that less stringent cleanup standards may be required for this site. TOC samples were collected from SB05 at the 2-4 foot interval and SB06 at the 4-6 foot interval to be used in the calculations. The average fractional organic carbon content was calculated to be 0.0365 (dimensionless) based on these two samples. Using this value in the ADEC Method 3 calculator, cleanup levels for specific chemicals and pathways were determined for the URI site. Table 5-1 lists the calculated cleanup levels for the chemicals identified at the URI site above the most stringent ADEC screening value. Only the metals barium and chromium and the organic chemical benzene were evaluated using the Method 3 calculator. Though methylene chloride was elevated in almost all samples, as noted above, it is believed that this was a laboratory contaminant and not present at the URI site. The table also lists the previously established cleanup levels, from 18 AAC 75 Table A2 and Table B1, Under 40-inch Zone, Migration to Groundwater Criteria, in order to compare to the Method 3 calculated levels. As Table 5-1 shows, the Method 3 calculated cleanup level for benzene is only raised nearly an order of magnitude to 0.158 parts per million compared to the established cleanup level of 0.02 mg/kg. Barium and chromium cleanup as inorganic materials are essentially unaffected by the high fractional carbon content of the soils and the cleanup values of 1100 mg/kg and 26 mg/kg, are unchanged. Appendix C includes the Method 3 calculation web screens.

Table 5-1 Method 3 Calculated Cleanup Levels

Chemical Name	Ingestion (mg/Kg)	Inhalation (mg/Kg)	Migration to Groundwater (mg/Kg)	Previously Established Cleanup Standard (mg/Kg)
Benzene	151	29.1	0.158	.02
Barium	7100	--	1100	200
Chromium (total)	304	--	25.6	5.5

The on-line computational screen shots used in this calculation are provided at Appendix C.

5.2 Recommendations

Table 5-2 provides a list of recommendations for future characterization of the URI site.

Table 5-2 Recommendations for Future Site Characterization

RECOMMENDATION	PURPOSE/RATIONALE
Provide Site Security	There are several reasons for providing a secure perimeter at the URI site. Material is still being placed there illegally by “midnight dumpers.” Some of this material could be hazardous. There is a large quantity of uncharacterized liquid contained in drums and other containers on the site. Acts of vandalism could release this material into the environment and exacerbate the difficulties of both characterizing and remediating the URI site.
Characterize, remove, and properly dispose of drums and all containers containing free liquids on the site.	As indicated above, many containers of free liquids exist at the site. Vandalism is not the only means by which a release might occur. Bulging and rusting drums can fail on their own or a natural event such as an earthquake may topple or otherwise damage containers. In any event, a release of uncharacterized free liquids compromises and complicates further investigation.
Remove non-hazardous materials (paper - misc. debris) to facilitate soil and groundwater investigation.	Non-hazardous debris such as paper, plastic, ferrous and non-ferrous metals, glass, and other recyclable material may cover greater than 50% of the URI site. While a full removal is not necessary for further site characterization, access to the ground surface incidental to sampling soils and groundwater is essential.
Perform surface soil screening and sampling in areas revealed after moving debris.	With improved access to the site, more complete sampling of surface soils, sub-surface soils, and groundwater should occur in order to complete the site characterization and refine the conceptual site model.
Conduct an electromagnetic or ground penetrating radar (GPR) survey.	There is a high likelihood of unregistered buried tanks, drums, or other containers at the URI site. Two borings attempted during the site characterization failed at a relatively shallow depth (<3 feet) because they encountered a solid material. Any buried containers could still possible contain liquid and be both a source of contamination and a safety issue for drillers and other workers attempting to characterize the site. An electromagnetic or GPR survey should be conducted before attempting further subsurface investigation.
Remove ferrous materials to facilitate the survey and cleanup the site.	Much of the debris on the URI site is ferrous (iron containing) in nature and has the potential to interfere with the survey. In addition, it is a significant surface obstruction. A metals recycler exists just across the railroad track boundary has expressed an interest in the ferrous metals on the URI site. Much of the material may even be reachable via their crane mounted electromagnet. It is suggested that this recycler or similar be allowed to collect and remove this material for salvage. An environmental professional or someone trained in the recognition of chemical and environmental hazards should be present to ensure no liabilities of that nature are transferred to the salvage operator.
Remove “sorted” recyclables from the	In addition to ferrous metals, there is a large volume of sorted

property.	recyclable material that could go to other operators. These materials have potential economic value but, more importantly, clear the site for further investigative activity.
Containerize remaining electrical equipment such as transformers and light ballasts.	Even though records indicate that a number of transformers were containerized during limited site cleanup activities in 2003, at least 3 transformers were noted as still existing on the site. Two of them were labeled "non-PCB." Light ballasts were scattered in isolated areas of the site as well. These types of materials should be collected in order to prevent degradation of their casings and a release of potential PCB's into the environment.
Sample suspect ash piles and soils beneath for dioxins.	Dioxins are a result of incomplete combustion of some chlorinated compounds. Given the historical operation of an incinerator at URI and a purported "wire burning" operation, it is possible that dioxins could have existed in the resultant ash. Dioxin sampling was not part of the scope of work for this project but should be accomplished at some point in order to ascertain whether or not dioxin contamination exists at the site.
Abandon broken well found on site.	A 4 inch PVC pipe extending approximately 6.5 feet into the ground was located near the geographic center of the site and was broken off at ground level. This pipe provides a direct conduit from the surface to the vadose zone and greatly increases the possibility of contamination from the URI site impacting the groundwater.
Verify with more exhaustive characterization the extent of areas identified as contaminated in this report.	The 2004 Site Characterization was limited in scope and schedule. As indicated in Section 4.0, areas of suspected contamination were identified during the 2004 Site Characterization. The aerial extent of these should be more fully delineated in order to develop estimates of the amount of contamination and understand the potential risks that exist to human health and the environment.
Install properly developed monitoring wells on the property.	The fine grained silty soils in the area of the URI site make grab samples of groundwater difficult due to both low transmissivity and high turbidity. Monitoring wells installed, properly developed, and left to equilibrate with the surrounding groundwater will provide the most accurate assessment of groundwater quality beneath the URI site.

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