

#1243 Port City--5/24/92 REPORT
DRAFT Phase 1. ESA

APPENDIX I
PHASE I ESA REPORT, TAG, 1992

DRAFT

**PHASE I
ENVIRONMENTAL SITE ASSESSMENT**

**Wagstaff Battery
2124 N. Williams Street
Portland, Oregon**

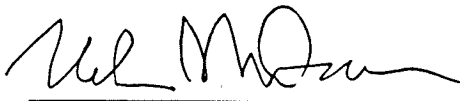
May 24, 1992

Prepared for:

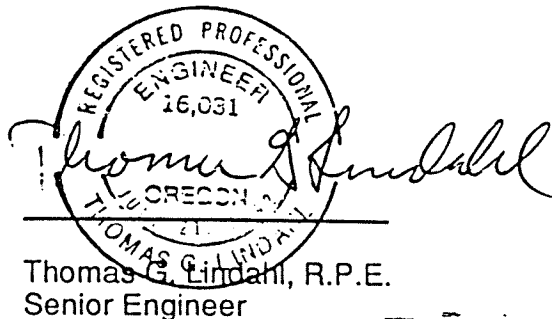
**Mr. Bruce Hindman
Wagstaff Battery Manufacturing Company
2124 N. Williams Street
Portland, Oregon 97227**

TAG PN: 92112002

TECHNICAL ACTION GROUP, INC.



Nicholas MacDonald
Project Manager



Thomas G. Lindahl, R.P.E.
Senior Engineer

DRAFT

TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	1
1.0 INTRODUCTION.....	2
1.1 PURPOSE.....	2
1.2 INVOLVED PARTIES.....	2
2.0 SCOPE OF WORK.....	3
3.0 SITE OVERVIEW.....	4
3.1 GEOGRAPHIC LOCATION.....	4
3.1.1 General Geology.....	4
3.1.2 General Hydrology.....	5
3.1.3 Water Well Data.....	5
3.1.4 National Wetland Inventory Map Review.....	5
3.2 ADJACENT PROPERTIES.....	6
3.3 PROPERTY DESCRIPTION.....	6
4.0 SITE HISTORY AND OPERATIONS.....	7
4.1 HISTORICAL REVIEW.....	7
4.1.1 General Site History.....	7
4.1.2 Aerial Photograph Review.....	7
4.1.3 Past Ownership Review.....	8
4.1.4 Building and Plumbing Permit Review.....	8
4.1.5 Historical Records Review.....	8
5.0 RESULTS OF INVESTIGATION.....	9
5.1 SITE INVESTIGATION OBSERVATIONS.....	9
5.1.1 Buildings and Structures.....	9
5.1.2 Fluorescent Light Fixtures.....	9
5.1.3 Mechanical Systems.....	10
5.1.4 Interior and Exterior Storage Areas.....	10
5.1.5 Waste Disposal Areas.....	10
5.1.6 Interior and Exterior Discharges.....	10
5.1.7 Subsurface Structures.....	11
5.1.8 Water Wells.....	11
5.1.9 Magnetometer Scan.....	11
5.1.10 Underground Storage Tanks.....	11
5.1.11 Transformers.....	12
5.1.12 Off-site Observations.....	12
5.2 LIMITED VISUAL ASBESTOS SURVEY.....	12
5.3 REGULATORY RECORDS REVIEW.....	13
5.3.1 Results of Regulatory Records Review.....	14
5.4 INTERVIEWS.....	16
6.0 CONCLUSIONS.....	17
6.1 DISCUSSION OF ENVIRONMENTAL CONCERNS.....	17
6.1.1 Drywell.....	17
6.1.2 Sumps and Separation Tanks.....	17
6.1.3 Underground Storage Tank.....	17
6.1.4 Surface Discharge Location.....	18
6.1.5 Listed Sites.....	18
6.1.6 Transformers.....	18
6.1.7 Fluorescent Light Fixtures.....	18
7.0 RECOMMENDATIONS.....	19
8.0 LIMITATIONS.....	20
9.0 RECORD OF PERSONAL COMMUNICATION.....	20

FIGURES

Figure 1	Site Vicinity Map
Figure 2	Site Map

SITE PHOTOGRAPHS

Photograph 1	Wagstaff Battery Manufacturing Co.
Photograph 2	Casting Room
Photograph 3	Waste Water Discharge Line
Photograph 4	Formation Room Floor Sump
Photograph 5	Formation Room Settling Tank and Piping
Photograph 6	92% Acid Storage Tank Enclosure
Photograph 7	Central Storage Area
Photograph 8	Formation Room; Acid and Metal Storage Area
Photograph 9	NE Corner of Casting Room
Photograph 10	Pasting Room Sump
Photograph 11	Vacant Northeastern Portion of Property
Photograph 12	Drywell Location
Photograph 13	Building II, Machine Shop
Photograph 14	Sump Building II Floor
Photograph 15	Etched Concrete Sidewalk
Photograph 16	Gasoline UST Fill Port and Pump Location

APPENDICES

Appendix A	Laboratory Documentation
Appendix B	Historical Documentation

EXECUTIVE SUMMARY

At the request of Mr. Bruce Hindman, of Wagstaff Battery Manufacturing Company, Technical Action Group, Inc. (TAG), performed a Phase I Environmental Site Assessment of the Wagstaff Battery property located at 2124 N. Williams Street in Portland, Oregon. The scope of work for this assessment consisted of an on-site inspection of the interior and exterior areas of the property and a magnetometer scan of selected exterior areas to identify evidence of the presence of buried metal debris. A review of pertinent, readily available records of local, state, and federal agencies, historical reviews, interviews, and a review of aerial photographs of the subject property were also conducted.

Subject Property:

Two pole-mounted transformer locations were observed within 100 feet of the subject property. All of the transformers appeared to be in good condition. Fluorescent light fixtures were observed in the buildings. The fixtures observed appeared to be in good condition and no leakage or staining was visible in their vicinity.

A visual asbestos assessment was conducted to identify exposed, friable asbestos-containing building materials. Suspected asbestos containing materials observed during the site inspection included floor tile located within the office area of the main Wagstaff building. A sample of this material was collected and analyzed at AMTEST Labs. Asbestos was not detected in the sample. A copy of the laboratory report is included in Appendix A of this report.

A drywell is located on the eastern portion of the subject property. The drywell has served as the discharge point for sumps and settling tanks within the southern building (Building I). Contaminants that may have entered the subsurface through the drywell include lead and sulphuric acid. In addition, the settling tanks and sumps may represent potential migration pathways for contaminants.

One 1,000-gallon underground storage tank (UST) is located on the property. This tank is registered with the DEQ, but is currently not in use.

Adjacent and Nearby Sites:

The environmental records review indicated that there are 14 sites listed on State or Federal inventories that are known or suspected of being contaminated within the limits expressed and reviewed in this report. No National Priority List sites are located within one mile of the subject property.

Conclusion:

The results of this investigation represent a review of current conditions. Based upon the results of this investigation, it appears that a potential exists for significant environmental contamination of the subject property. Recommendations are made at the conclusion of this report for further investigation.

1.0 INTRODUCTION

1.1 PURPOSE

A Phase I Environmental Site Assessment is intended to evaluate whether there is a potential of significant environmental contamination on the subject property based on available information about the site and a physical inspection. If such a potential is found to exist, additional investigation may be recommended to determine the presence, nature and extent of contamination on the site.

1.2 INVOLVED PARTIES

This report presents the results of a Phase I Environmental Site Assessment of the Wagstaff Battery property located at 2124 N. Williams Street in Portland, Oregon. TAG was retained by Mr. Bruce Hindman of Wagstaff Battery Manufacturing Company to perform the assessment to evaluate the potential for the existence of significant environmental contamination on the subject property.

2.0 SCOPE OF WORK

The TAG Phase I Environmental Site Assessment of the Wagstaff Battery property included the following services:

- A review of published literature on the site's soil, geology and hydrology, and a review of maps indicating areas of seismic distress, where applicable.
- A review of National Wetland Inventory (NWI) maps published by the United States Department of the Interior.
- A review of historical records, documents and photographs of the property and relevant on-site environmental documentation. Materials reviewed may include aerial photographs, fire insurance maps, building and utility permits and reverse index directories.
- A review of past ownership and title records for the subject property.
- A walk-through inspection of the property to identify visual evidence of potential contamination including interior and exterior storage areas, surface staining of pavement and walls, evidence of underground storage tanks (USTs), and general condition of the subject property.
- A scan of selected exterior portions of the subject property with a portable magnetometer to detect the presence of buried ferromagnetic objects such as underground storage tanks (USTs) or buried metal drums.
- An inspection of adjacent properties from public right-of-ways and from the subject property to identify activities or conditions which pose the potential of causing environmental impairment of the subject property.
- A review of environmental regulatory agency records, including: Oregon Department of Environmental Quality (DEQ) Environmental Cleanup Division (ECD) records; DEQ underground storage tank (UST) and leaking underground storage tank (LUST) lists; the DEQ lists of Oregon hazardous waste handlers notifying as small quantity and fully regulated generators of hazardous waste (FRG & SQG); City of Portland Fire Department and Oregon State Fire Marshal records of hazardous material spills and incidents on the subject property or adjacent properties; and a determination of the presence of EPA NPL hazardous waste sites within one mile and EPA CERCLIS sites within one-half mile of the subject property.
- An evaluation of any visible electrical transformers on or within 100 feet of the subject property, including their condition.
- A limited, visual assessment for asbestos-containing materials (ACM) in readily accessible areas. The condition of materials suspected of containing ACM will be noted and, where possible, samples of the materials collected. Following client authorization, collected samples will be submitted to a laboratory for asbestos analysis.
- The completion of a report describing the investigatory activities and the information collected. The report will include diagrams and photographs of the site. If warranted, conclusions and recommendations for further investigation will be made.

3.0 SITE OVERVIEW

3.1 GEOGRAPHIC LOCATION

The Wagstaff Battery property is located on the east side of N. Williams Avenue approximately three blocks to the north of the intersection of N. Williams and NE Broadway in Portland, Oregon. The general location of the subject property is indicated in Figure 1.

3.1.1 General Geology

The following information is based on data from the U.S. Geological Survey, the Oregon Departments of Geology, Mineral Industries, and Water Resources, and on field observations recorded by TAG personnel.

The subject property is located on the floor of the Portland basin in the northern portion of the Lower Willamette drainage basin which is part of the Puget Trough in the Pacific Border physiographic province. The area lies between the Coast Range to the west and the Cascade Range to the east. The subject property is situated approximately one-half of a mile to the northeast of the Willamette River, at the southeast corner of the intersection of N. Williams Avenue and Northeast Thompson Street. The subject property elevation appears to be approximately 145 feet above mean sea level (msl) and slopes gently to the south-southwest. The subject property appears to be situated over coarse sand to silt deposited in the Pleistocene (2 to 0.010 million years ago) by catastrophic flooding due to failure of glacial ice dams. Between 160,000 and 10,000 years ago, catastrophic flooding inundated the Portland area to depths up to 400 feet above sea level. Mudstone and other soft, unconsolidated sediments were eroded significantly. In places the land surface was scoured down to bedrock.

River basins are typically filled with several hundred feet of sedimentary and catastrophic flood deposits consisting of boulders and gravels in a matrix of interbedded clay, silt, and sand. Boulders and gravels consist of Columbia River basalt clasts and represent high-energy deposition caused by repeated failures of glacial ice dams and subsequent catastrophic flooding. In addition to deposition during flooding, glacial outwash and alluvial debris was consistently being deposited. The gently sloping topography in the vicinity of the subject property is due to erosion of fine-grained unconsolidated basin sediments by the Willamette River, Johnson Creek and Crystal Springs.

A pebble to boulder gravel with silt and coarse sand matrix is located approximately one and one-half miles to the northeast of subject property. This material is representative of the same depositional event that laid down the material upon which the subject property is situated.

The Tualatin Mountains/Portland Hills west and south of the subject property are composed of a portion of the Columbia River Basalt Group (CRBG). The CRBG, Miocene in age (16.2 to 12 mybp), is made up of fine grained plateau basalt flows that erupted from long fissures systems located in northeast Oregon, eastern Washington, and western Idaho. Individual flows cover tens of thousands of square miles and range up to hundreds of cubic miles in volume. Stratigraphic units in the vicinity of the subject property belonging to the Wanapum and Grande Ronde formations. The two units have a collective thickness of over 670 feet west of the subject property and dip about three degrees to the south.

Mantling the area are poorly consolidated, loamy, micaceous, fine grained sand and silt that were deposited by the multiple phases of catastrophic glacial outburst floods. The thickness of this unit was dependent on the pre-glacial topography. Typically 30 to 60 feet can be found in low lying areas where it was deposited beneath regionally ponded flood waters.

3.1.2 General Hydrology

The water resources in the Willamette river basin occur as surface water in the rivers and associated tributary streams, and as groundwater in the subsurface alluvial deposits and consolidated rocks. The Willamette and Tualatin Rivers and nearby Bull Run and Columbia River watersheds provide the major surface water drainage for the Portland water management area. To meet peak demand for water during periods of heavy usage, the Tualatin, Willamette, Columbia and Bull Run watersheds are augmented by groundwater.

Locally some groundwater production is acquired through fractured basalt. Perched conditions are evident in near surface, shallow unconfined and semi-confined aquifers. The overall direction of shallow groundwater flow in the vicinity of the subject property is toward the west-southwest into the Willamette River approximately one-half of a mile southwest of the subject property. Regionally, groundwater flow is to the north and west following the flow of the Columbia River. Variations in subsurface materials, fluctuations of water levels in streams and rivers within the basin, and precipitation combine to influence groundwater flow direction, depth and rate. In the Portland Metropolitan area, depth to groundwater at a site may vary by as much as 20 feet, depending on the season.

3.1.3 Water Well Data

According to Rob Carter, Well Construction Specialist at the Oregon Water Resources Department, there is one well of unspecified use and one test well documented within an approximately one mile radius of the subject property. The water well is documented as producing approximately 30 gallons per minute (gpm) from a total depth of 83 feet below ground surface.

The one well of unspecified use is located north-northwest of the subject property. The information in the file showed a static groundwater level of 55 feet below ground surface. The water bearing zone for this well is indicated as existing between 70 feet below ground surface to at least 83 feet below ground surface; the maximum depth of the well.

The one test well is located north-northwest of the subject property. Information in the well log indicates that no hydrologic data was recorded. Stratigraphic information indicates that the well was drilled to a total depth of 400 feet below ground surface and immediately sealed.

3.1.4 National Wetland Inventory Map Review

Purpose and Scope: National Wetland Inventory Maps published by the United States Department of the interior were reviewed to determine if wetlands in the inventory are located on or in the vicinity of the subject property. It should be noted that these maps do not provide an absolute determination of the presence or absence of wetlands at a given location. Such a determination would require the performance of a wetlands survey.

Observations: According to the Portland, Oregon NWI Map, no wetlands are located on or in the vicinity of the subject property.

3.2 ADJACENT PROPERTIES

Purpose and Scope: The condition of adjacent properties may pose a significant potential for environmental contamination of the subject property. Lateral migration of surface or subsurface contaminants from adjoining properties may cause environmental contamination to the subject property.

Observations: The area in which the subject property is located is occupied primarily by mixture of residential and commercial properties.

North: The properties to the north of the subject property are occupied by single-family residential structures along NE Thompson Street, and a commercial business on the northeast corner of the intersection of N. Williams Avenue and NE Thompson Street.

South: The properties immediately to the south of the subject property are occupied by single-family residential structures.

East: The properties to the east of the subject property are occupied by a vacant field (southeast) and single-family residential structures.

West: The properties to the west of the subject property are occupied by Portland Packaging company (due west), and by MIRA, a film and video production studio.

A map of the subject property and its immediate environs is included in Figure 2.

3.3 PROPERTY DESCRIPTION

The Wagstaff Battery property occupies an area on the western portion of the block located between N. Williams avenue to the west, NE Rodney Street to the east, NE Thompson Street to the north, and NE Tillamook Street to the south. The property is occupied by two structures: Building I, located on the southern portion of the property, was constructed in C. 1925 and 1972, and currently houses an office area, storage areas, and a warehouse (the 1972 structure). Building II, located on the northwestern corner of the subject property, was constructed in 1936 and is currently occupied by a machine shop.

Paved parking areas are located on the southeastern corner of the property, the southwestern corner and on the middle area of the property, between the buildings. The central and northeastern portion of the property along the eastern property boundary is vacant and covered with grass. A single-family dwelling is located on NE Thompson Street, between the vacant field and Building II. This dwelling and associated land are not part of the Wagstaff Battery property.

4.0 SITE HISTORY AND OPERATIONS

4.1 HISTORICAL REVIEW

A historical review of records related to the subject property was conducted to ascertain whether evidence exists that prior usage may have contributed a potential risk for environmental contamination. The review included examination of readily available aerial photographs taken over a period of years, fire insurance maps, ownership records, and building and utility permits, when available.

4.1.1 General Site History

The two buildings occupy the Wagstaff property: Building I was constructed in 1926 and expanded with a warehouse addition in 1972; and Building II was constructed in 1936. Prior to 1960 (circa) Building I appears to have been occupied by a furniture warehouse and Building II by a furniture upholstering business, and later, by an automotive repair shop. Since 1963 the property has been occupied by the Wagstaff Battery Manufacturing Company. Wagstaff has produced, rebuilt and stored commercial batteries on the property. For approximately one year, Building II has been occupied by a machine shop.

4.1.2 Aerial Photograph Review

Aerial photographs for the years 1940, 1956, 1961, 1964, 1968, 1971, 1973, 1977, 1980, 1984, 1986, 1988, 1990 and 1992 were reviewed by TAG personnel at Northern Light Studio in Portland, Oregon.

Subject Property: The subject property was occupied by the original, northern portion of Building I, Building II, and residential structures on the north and southeastern corners in the 1940 photograph. The area between Buildings I and II appeared to be grass-covered, and the southwestern portion of the property appeared to be vacant. A small structure was visible between Buildings I and II in the 1956 through 1973 photographs. No other significant changes were visible to the subject property in the 1961 and 1964 photographs.

An addition was visible to Building I in the 1971 photograph, extending southward from the southeast corner. In addition, the formerly vacant area on the southwest corner appeared to have been paved, and the vacant area on the southeast corner appeared to have been bulldozed. In the 1973 photograph the bulldozed area was paved.

The small building located between Buildings I and II, and the single-family dwelling previously located on the northeast corner of the property, were no longer present in the 1977 photograph. Evidence of demolition at both locations was visible. In addition, discoloration was visible adjacent to the east wall of Building I (drywell location). No significant changes to the subject property were visible in the remaining photographs reviewed.

Adjacent Properties: The properties to the east of the subject property were occupied predominantly by single-family dwellings in all of the photographs reviewed. The properties to the west of the subject property were occupied by two large warehouse structures in all of the photographs reviewed (Portland Packaging Co., and MIRA Studios). A small structure located to the south of the Portland Packaging building was demolished and the Portland Packaging building was extended in the 1968 photograph.

The properties to the north and south of the subject property were occupied primarily by residential structures (to the east of N. Williams Avenue) and by small commercial buildings (fronting on N. Williams Avenue) in all of the photographs reviewed.

4.1.3 Past Ownership Review

Title records pertaining to the subject property were reviewed at the Multnomah County Tax Assessor's Office. The subject property is comprised of lots 1, 2 and 3 of Block The following information was recorded:

LOT #1 - R009608210		
	1984 to present	Alice, Charles C., & Marjorie G. Hindman
	1969 to 1984	Wagstaff Battery Manufacturing Co.
LOT #2 - R009608220		
	1984 to present	Alice, Charles C., & Marjorie G. Hindman
	1976 to 1984	Wagstaff Battery Manufacturing Co.
LOT #3 - R009608230		
	1970 to present	Alice, Charles C., & Marjorie G. Hindman

4.1.4 Building and Plumbing Permit Review

Building and plumbing permit records were reviewed at the Permit Center in the City of Portland Office Building.

#312795	April 18, 1988	Install exhaust fan
#88-102686	July 1, 1988	Install HVAC support system
#453838	February 20, 1970	Construct building addition
#485133	June 27, 1974	Install chain link fence
#436017	July 27, 1967	Install chain link fence
#395405	March 7, 1962	Asphalt parking area
#257285	May 24, 1941	Install balcony
#177144	December 26, 1926	Construct building

4.1.5 Historical Records Review

Sanborn Fire Insurance Maps were reviewed at the Oregon Historical Society Library. The maps reviewed were corrected to 1936, 1954 and 1965. According to the maps, the property was occupied by a furniture warehouse, a sheet metal fabrication business, an automotive repair business, and a battery manufacturing company.

City of Portland Reverse index directories were reviewed at the Oregon Historical Society Library. According to the directories, the subject property was vacant in 1961, occupied by Rampke Upholstery between 1936 and 1938, by Portland Lounge Chair between 1939 and 1960, was vacant in 1961, and has been continuously occupied by Wagstaff Battery from 1962 to the present.

5.0 RESULTS OF INVESTIGATION

5.1 SITE INVESTIGATION OBSERVATIONS

A site inspection of the subject property was performed by Nicholas MacDonald, William I. Hayes and Julian Baker of TAG on March 5, 1993. Mr. Bruce Hindman (owner and President), Mr. Chad Hindman (owner), and Mr. Doug Thompson (Director of Operations) were present during the majority of the inspection.

5.1.1 Buildings and Structures

Purpose and Scope: A general description of buildings and structures on the property is given. The location, size, and apparent usage is discussed. Observations on the general condition of the buildings as related to potential environmental contamination such as staining and cracks are made. Construction features such as ceiling and floor surfaces and lighting fixtures are noted.

Observations: The property is occupied by two structures: Building I, located on the southern portion of the property, was constructed in C. 1925-6 and 1971-2, and currently houses an office area, terminal production areas, storage areas, and a warehouse (the 1971-2 structure). Building II, located on the northwestern corner of the subject property, was constructed in 1936 and is currently occupied by a machine shop.

The older portion of Building I is a wood-framed structure erected on a concrete foundation. Interior construction materials observed within the office area included plaster walls and floor tile. The production and storage areas of the building were unfinished. The warehouse portion of Building I constructed in 1971-2 is of concrete tilt-wall construction erected on a concrete foundation with a laminated wood truss roof.

Building II is a concrete-walled structure erected on a concrete foundation and includes a finished office area and shop area. Interior construction materials observed included plaster wall, floor tile and concrete block. A chimney that previously served a natural gas furnace is located in the center of the building.

5.1.2 Fluorescent Light Fixtures

Purpose and Scope: The presence of fluorescent light fixtures is recorded because they have ballasts which may contain polychlorinated biphenyls (PCBs). The Toxic Substances Control Act (TSCA) generally prohibited the domestic manufacture of PCBs after 1979. Light fixtures manufactured prior to that date may contain PCBs.

Observations: Fluorescent light fixtures were observed within both of the buildings on the subject property during the site inspection.

5.1.3 Mechanical Systems

Purpose and Scope: The presence of mechanical systems such as hydraulic elevators and pumps is recorded. Oils within systems installed prior to the early 1980s may contain polychlorinated biphenyls.

Observations: Mechanical systems observed on the subject property included various machine tools located in Building II (machine shop), and tools located in the casting room in Building I.

5.1.4 Interior and Exterior Storage Areas

Purpose and Scope: Floors of storage areas are examined for staining or rust rings which may indicate signs of former activities that could present a potential for contamination. Containers of chemicals are examined for content and usage. Trash or rubbish accumulation is noted.

Observations: Large areas of the interior of Building I are used for the storage of materials related to the reconstruction of batteries. Stored materials include acid (sulfuric, stored in 55-gallon drums as well as an above ground tank), batteries, and battery housings. At the time of the inspection, the southern, warehouse portion of Building I was largely empty.

5.1.5 Waste Disposal Areas

Purpose and Scope: Designated waste disposal areas and areas conducive to waste disposal are examined for stained surfaces, discarded empty containers, and indications of improper disposal. Restrooms, drains, exterior doors, and secluded closets are among the areas examined.

Observations: Several dumpsters were observed located in the paved area between Buildings I and II. All of the dumpsters appeared to be in good condition. No significant staining or evidence of spillage was observed in their vicinity. In addition, recycling drums containing waste and scrap metal (lead) were observed at several locations.

5.1.6 Interior and Exterior Discharges

Purpose and Scope: Examples of discharge areas are drainage areas, pipe discharges, and air emission generators. Areas with evidence of potential surface contamination are noted.

Observations: A drywell is located approximately 10 feet to the east of the old portion of Building I. According to a schematic dated April, 1972, the drywell extends to 18 feet below ground surface, is three feet in diameter and is set in "drain rock fill". The drywell is connected by three two inch PVC pipes to sumps located within the old section of building two. These sumps are in turn connected to settling tanks intended to remove solids from the waste waters used in the reconstruction of batteries.

An exhaust fan is located directly above the drywell location. At the time of the inspection, vegetation on the ground surface above the drywell location appeared to have been severely impacted either by the air emission discharge, the process water discharge, or a combination of both. In addition, paint on the shingle wall beneath the fan had been entirely removed and the wooden shingles were discolored.

5.1.7 Subsurface Structures

Purpose and Scope: Surface evidence of subsurface structures such as drains and sumps are observed and their condition recorded.

Observations: Two sumps are located in the old portion of Building I, in the pasting and formation rooms. Both sumps serve as collection points for spilled waste waters pumped from above-ground settling tanks located in the northern and western areas of the old portion of Building I.

Two inground, resin-lined settling tanks are located adjacent to the north wall of the formation room. The purpose of these tanks is to remove solids from the acidified waste water prior to discharge to the drywell.

In addition, a catch basin is located in the floor of Building II. According to Mr. Chad Hindman, this catch basin discharges to the city sanitary sewer.

5.1.8 Water Wells

Purpose and Scope: The presence of water wells is noted because wells represent potential migration pathways for surface contaminants to reach groundwater.

Observations: No evidence of the presence of water wells was observed on the subject property during the site inspection.

5.1.9 Magnetometer Scan

Purpose and Scope: A magnetometer is an instrument that can detect the presence of buried ferromagnetic items such as steel underground storage tanks, metal drums, and other metal containers.

Observations: The vacant northwest corner of the subject property was scanned with the magnetometer in an attempt to determine if a heating oil UST existed related to the past presence of a house at this location. No readings of the size, shape, strength, or uniformity typical of underground storage tanks or buried drums were recorded during the magnetometer survey.

5.1.10 Underground Storage Tanks

Purpose and Scope: Underground storage tanks (USTs) are recognized as a major potential source of environmental contamination. Contamination of soils and/or groundwater may occur as a result of spills, overfills, or releases from the tank system. Such contamination would require cleanup, with the cleanup costs potentially being the responsibility of the property owner.

Underground storage tank systems typically have one vent pipe and one fill pipe associated with each UST. These are usually visible in the vicinity of the UST and serve as one of the indicators that a UST is present. Other structures indicative of USTs are product dispensers or pumps and concrete pads.

Observations: A single 1000-gallon UST and a fuel pump are located in the paved loading area on the southwest corner of the property. According to the Hindmans, this UST was installed when the warehouse portion of Building I was constructed (1972). This UST is registered with the DEQ, but is not currently in use.

5.1.11 Transformers

Purpose and Scope: The presence of electrical transformers on or adjacent to the property was noted to determine the potential for environmental contamination by polychlorinated biphenyls (PCBs). According to the Oregon Administrative Rules, Chapter 340, Division 108, Section 070, the utility company is generally responsible for cleanup of any environmental contamination which results from leakage or failure of the transformers.

Observations: Two pole-mounted transformer locations were observed within 100 feet of the subject property during the site inspection. All of the transformers were labeled as the property of Portland General Electric (PGE). All of the other transformers appeared to be in good condition and no leakage, staining, soil discoloration, or stressed vegetation was observed on the ground surface around any of the transformers.

5.1.12 Off-site Observations

Purpose and Scope: Surface water runoff areas, drainage ditches, streams, outfalls, storage areas on adjacent properties, air emission fallout sources, and railroad tracks are among items serving as potential sources and/or migration pathways for environmental contaminants of the ground surface. If evidence of a potential source of surface contamination is identified, a more detailed investigation of this migration pathway may be recommended.

Observations: No off-site conditions were observed during the site inspection that appeared to pose a potential risk of significant environmental contamination to the subject property.

5.2 LIMITED VISUAL ASBESTOS SURVEY

Purpose and Scope: Construction completed prior to 1980 may include materials which contain friable asbestos. Friable is defined as material which may easily be crumbled or pulverized by hand pressure, thus releasing potential airborne asbestos fibers. The asbestos assessment consisted of visual observation of the accessible structural areas and exposed material which most commonly contain asbestos. The asbestos material is sometimes concealed in areas which can only be inspected by structural disassembly or other intrusive means.

Observations: One material was identified during the inspection as suspected asbestos-containing material: Floor tile located in the office area of Building I.

A sample was collected of this material, labeled and submitted to an off-site, independent laboratory which participates in the National Institute of Standards and Technology (NIST) Quality Assurance program for bulk asbestos determinations. Polarized light microscopy was the analytical technique utilized. This method allows the type and percentage of asbestos to be determined. A complete asbestos survey was not performed. A copy of the laboratory report is included in Appendix A.

Laboratory results of the submitted material are as follow:

Sample Number	Material Sampled	Results
Sample #1	Floor Tile	<1% Asbestos

5.3 REGULATORY RECORDS REVIEW

The following regulatory agency records were reviewed by TAG:

- The Oregon State Fire Marshal's office list of emergency hazardous material responses dating to November 1, 1992.
- The Department of Environmental Quality (DEQ) Underground Storage Tank Facilities List dated December 15, 1993.
- The January 12, 1993, DEQ Cleanup List of sites with leaking underground storage tank (LUSTs).
- The US Environmental Protection Agency's (US EPA) National Priority List (NPL) of hazardous waste sites, dated February 7, 1992 (for listed sites within a one-mile radius of the subject property).
- The US EPA Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) inventory, as of January 26, 1993, of potential hazardous waste sites under investigation (for listed sites within a one-half mile radius of the subject property).
- The DEQ Environmental Cleanup Division (ECD) Environmental Cleanup Site Information System (ECSIS) dated February 16, 1993 of sites within a one-half-mile radius of the subject property (appearance on this list neither confirms or denies the release of a hazardous substance at the facility, nor if cleanup is necessary, currently underway or completed).
- The US Environmental Protection Agency Region 10 Report of Total RCRA Notifiers dated February 10, 1993 (this is a database of facilities that generate, transport, store, treat or dispose of hazardous wastes).
- The DEQ Closure and Regular Solid Waste Active Disposal Permits list dated November 23, 1992 (for the subject and adjacent properties).
- The DEQ Solid Waste Disposal Permit Mailing List dated November 23, 1992 (for the subject and adjacent properties).

- The Thomas L. Tucker, PAC/West Glass site is located at 723 N. Tillamook, approximately 0.35 miles to the west of the subject property.
- The Stilson Property is located at 665 N. Tillamook, approximately 0.28 miles to the west of the subject property (this site is listed as NFA).
- The Emmanuel Hospital Property is located at the intersection of N. Williams and N. Knott, approximately 0.24 miles to the north of the subject property (this site is listed as NFA).
- The Williamson and Bleidier site is located at 270 N. Hancock, approximately 0.2 miles to the southwest of the subject property (investigation and/or remediation at this site is ongoing).
- The Blanchard Educational site is located at 301 N. Dixon, approximately 0.35 miles to the southwest of the subject property (investigation and/or remediation at this site is ongoing).
- BP Station # 11033 is located at 425 NE Broadway, approximately 0.3 miles to the southeast of the subject property (investigation and/or remediation at this site is ongoing).
- The Broadway Chevron Station site is located at 329 NE Broadway, approximately 0.27 miles to the southeast of the subject property (this site is listed as NFA).
- The Broadway Texaco Station is located at 519 NE Broadway, approximately 0.3 miles to the southeast of the subject property (investigation and/or remediation at this site is ongoing).
- Panaco Station #40 is located at 1525 NE Union, approximately 0.4 miles to the southeast of the subject property (this site is listed as NFA).
- Broadway Toyota is located at 307 NE Broadway, approximately 0.27 miles to the southeast of the subject property (investigation and/or remediation at this site is ongoing).

Three sites listed in the DEQ ECD Environmental Cleanup Site Information System are located within 0.5 miles of the subject property. Two of the sites are also listed on the US EPA Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) inventory.

- Cascade Brake Products is located at 698 N. Page Street, approximately 0.4 miles to the west of the subject property. Cascade Brake was listed because of the potential for improper disposal of wastes at the facility. No evidence was found in the DEQ file that a release of hazardous materials has occurred at this site. DEQ considers this site a low priority for follow up because of the limited quantities of hazardous materials handled at the Cascade Brake facility.
- The Mammal Survey and Control site is located at 216 N. Tillamook, approximately 0.3 miles to the west of the subject property. In correspondence dated July 10, 1984 DEQ personnel stated that "no threat to the public or the environment exists at this facility".
- The Masterchem site is located at 642 N. Tillamook, approximately 0.4 miles to the west of the subject property. In correspondence dated July 27, 1984 DEQ personnel stated that "there is no hazardous waste problem at the facility and no further action is required".

The following sites listed in the US EPA Region 10 Report of Total RCRA Notifiers are located within 0.5 miles of the subject property: It should be noted that presence on this list only indicates if facility generates, transports, stores, treats or disposes of hazardous wastes, and does not indicate that a release of hazardous substances has occurred. None of the facilities listed below are located within one block of the subject property.

Gould, Inc., 1733 NE 7th
Abbott & Lind, 1909 NE Union
Roth Motors Co., 211 NE Union
Halder Mechanical, 2148 NE Union
Medical Laboratory, 220 NE Russell
Union Avenue Spill Site, 2200 Block of NE Union
Helfrich Equipment Co., 425 NE Tillamook
Careco, 2045 NE Union (transporter)
PPG Industries, 2030 NE Williams
City of Portland Fleet Station, 2835 N. Kerby
Multnomah County Storage, 296 NE Hancock
Portland Public Schools, 301 N. Dixon
Western Metals Co., Inc. 400 N. Thompson
WM Pilip & Son, 687 N. Tillamook
Pro Ad Co., 655 N. Tillamook

5.4 INTERVIEWS

Mr. Bruce Hindman and Mr. Charles C. Hindman were interviewed. Mr. Bruce Hindman is the current operator of the Wagstaff facility with Alice and Marjorie Hindman. Mr. Charles Hindman is the past operator of the facility and owner of the property. Much of the information in this report concerning past site activities was derived from these interviews.

Mr. Doug Thompson was interviewed. Mr. Thompson is the Director of Operations for Wagstaff Battery Manufacturing Company. Mr. Thompson stated that, prior to surfacing of the area between Buildings I and II with asphalt, waste water was discharged to the surface at this location and allowed to run into the street.

Mr. Don Kintz was interviewed. Mr. Kintz is the proprietor of Kintz Machine, Inc. the current tenant in Building II. Mr. Kintz stated that he had occupied the property for approximately one year, and was unaware of any conditions on the property of environmental concern.

*oliver
property
purchase
1973*

6.0 CONCLUSIONS

6.1 DISCUSSION OF ENVIRONMENTAL CONCERNS

During the performance of this assessment seven areas of potential environmental concern were identified on or adjacent to the subject property. These areas of potential environmental concern are discussed below.

6.1.1 Drywell

A drywell is located approximately 10 feet to the east of the old portion of Building I. According to a schematic dated April, 1972, the drywell extends to 18 feet below ground surface, is three feet in diameter and is set in "drain rock fill". The drywell is connected by three two inch PVC pipes to a sump and settling tank located within the old section of Building I. These sumps are in turn connected to settling tanks intended to remove solids from the acidified process waters used in the reconstruction of batteries.

Contaminants that may have been discharged into the subsurface through the drywell include lead, sulfuric acid, and solvents. Because the solubility of lead in water is increased with the introduction of acid (low pH), the possibility that significant quantities of lead have been released is of concern.

6.1.2 Sumps and Separation Tanks

Three sumps are located within the structures on the subject property. The sumps located in the formation room in Building I and in the shop area of Building II discharge waste water to the city sewer. The sump located in the formation room floor in Building I discharges to the drywell to the east of Building I.

In addition, two separation tanks intended to remove solids from the waste water discharged to the drywell are located in the floor of the formation room.

With the exception of the sump in Building I, all of the vessels described above have contained waste water carrying sulfuric acid and lead. Depending on integrity, each of the sumps and separation tanks may represent a potential migration pathway by which contaminants may reach the subsurface.

6.1.3 Underground Storage Tank

A single 1000-gallon UST and associated fuel pump are located in the paved loading area on the southwest corner of the property. According to the Hindmans, this UST was installed when the warehouse portion of Building I was constructed (1972). This UST is registered with the DEQ.

Underground storage tanks (USTs) are recognized as a major potential source of environmental contamination, whether they are functioning or abandoned. Contamination of soils and/or groundwater may have occurred as a result of spills, overfills, or releases from this tank system. In addition, the DEQ requires that USTs out of service for more than one year be decommissioned.

6.1.4 Surface Discharge Location

According to Doug Thompson (Director of Operations), waste water had been discharged to ground surface between the two buildings and allowed to run onto N. Williams Avenue. During the site inspection, the concrete sidewalk at this location was observed to have been etched so that the gravel aggregate was visible. According to Mr. Thompson, a portion of the area where the discharge occurred was not paved.

*removed sidewalk & paved site before 1970
1960
purchased from PGE since 1970
further paved sidewalk*

6.1.5 Listed Sites

Twenty-nine sites on state and federal environmental regulatory lists are located within 0.5 miles of the subject property. None of the sites are located within one block of the property. In addition, based upon a review of published well information, groundwater is believed to be in excess of 50 feet below ground surface.

6.1.6 Transformers

The Toxic Substances Control Act (TSCA) generally prohibited the domestic manufacture of PCBs after 1979. There is a potential for the dielectric fluid in transformers manufactured prior to that date to contain PCBs. A request can be made to PGE to replace the transformers or test them for PCB content. The utility company will determine whether the level of risk is sufficient to warrant performance of the requested work. PGE will charge a fee for any testing done.

PGE representatives have acknowledged that the utility company will be responsible for cleanup of any environmental contamination which results from leakage or failure of the transformers owned by PGE. Additionally, it has been stated that any and all cleanups would be accomplished according to Oregon Department of Environmental Quality (DEQ) and US Environmental Protection Agency (EPA) specifications.

No staining or stressed vegetation which might indicate the presence of contamination was observed around the base of the transformers inspected during the site assessment of the subject property.

Although the transformers identified were within one-hundred feet of the subject property, it is TAG's opinion that, due to their apparent condition and/or locations, they do not present a significant risk of potential environmental contamination to the subject property.

6.1.7 Fluorescent Light Fixtures

Fluorescent light fixtures were observed within the buildings on the subject property. Current PCB regulations do not require the removal of non-leaking ballasts/capacitors. The EPA does, however, recommend that ballasts in older light fixtures be removed and disposed of as part of a regular maintenance program. Current EPA established policy is that anyone disposing of more than four small capacitors per year must send them to a permitted chemical waste landfill or approved high temperature incinerator.

Fluorescent light fixtures in good repair which contain PCBs do not ordinarily represent a significant environmental hazard. However, any leakage of fluid from such fixtures should be treated with extreme caution and should be cleaned up by qualified personnel. Based on the construction dates of the buildings (pre-1972), it is possible that the fluorescent light fixtures at this site would contain PCBs. Individual fixtures were not inspected in this survey, and it is not considered necessary at this time.

7.0 RECOMMENDATIONS

The results of this investigation represent a review of current conditions. Based upon the results of this investigation, the following recommendations are made:

- Subsurface soil samples should be collected from the discharge point of the drywell and analyzed for Hydrocarbons, pH, TCLP (Eight Metals,) and volatile organics by EPA Method 8240. Following a determination of the contaminants present, the drywell should be decommissioned and contaminated soils disposed of or remediated in accordance with applicable regulations.
- Subsurface soil samples should be collected from beneath the sump and separation tanks in Building I. Following removal of stored materials in the formation room, the floor should be examined for cracks and holes and other potential migration pathways to the subsurface. If such pathways are found to exist, subsurface soil samples should be collected from beneath those locations.
- The underground storage tank on the property should be decommissioned by removal in accordance with DEQ regulations.
- Subsurface soil samples should be collected from beneath the paved areas between Buildings I and II and analyzed to determine if subsurface contamination has resulted from activities in that area.

8.0 LIMITATIONS

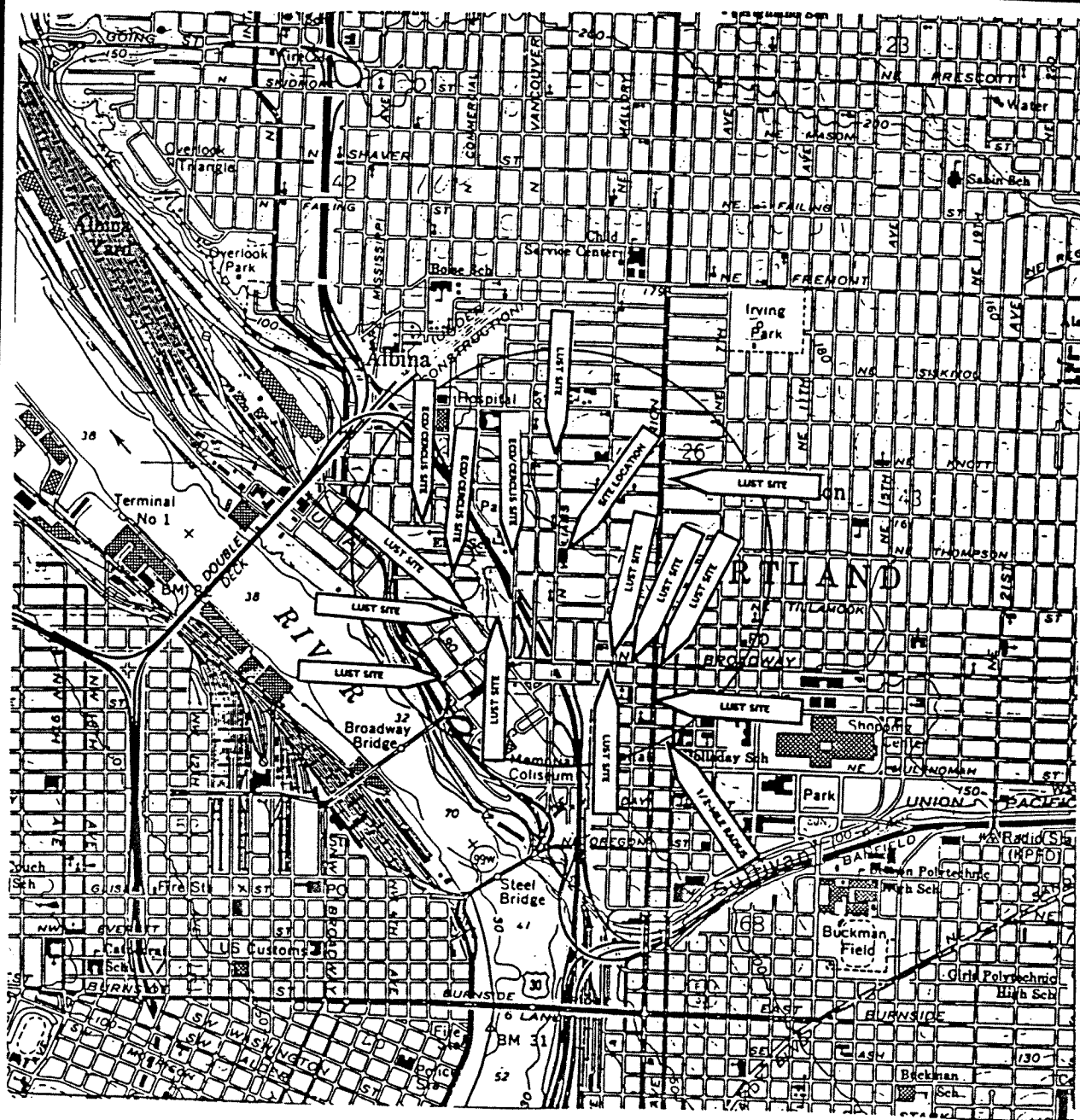
The conclusions presented in this report are professional opinions based on data described in this report. They are intended only for the purpose, site location, and project indicated. The conclusions presented in this report are based on the assumption that site conditions do not deviate from those observed during our study and as described in this report. This report is not a definitive study of contamination at the site and should not be interpreted as such. An evaluation of subsurface soil and groundwater conditions was not performed as part of this investigation. No sampling or chemical analyses were performed or assessment of asbestos-containing materials was completed as part of this study unless explicitly stated.

This report has been prepared for Mr. Bruce Hindman of Wagstaff Battery Manufacturing Company, pursuant to an agreement with Technical Action Group, Inc. and is accurate to the best of TAG's knowledge and belief. This report is based, in part, on unverified information supplied to TAG by third-party sources. While efforts have been made to substantiate this third-party information, TAG cannot guarantee its completeness or accuracy.

TAG staff participating in this environmental site assessment are engineers, scientists and assessors, not attorneys. Therefore, it must be clear to all parties that this report does not offer any legal opinion, representation, or interpretation of environmental laws, rules, regulations, or policies of federal, state, or local governmental agencies.

9.0 RECORD OF PERSONAL COMMUNICATION

Name:	Relationship:
Mr. Bruce Hindman	President, Wagstaff Battery Manufacturing Co.
Mr. Charles C. Hindman	Owner, Wagstaff Property, and Past Proprietor
Mr. Doug Thompson	Director of Operations, Wagstaff Battery Manufacturing



Scale: 1 = approximately 2000'
 Contour Intervals = 10'

BASE: Portions of U.S. Geological Survey maps, 7.5 minute quadrangle of
 Portland, Oregon; 1961 (photorevised 1978),



Environmental Services

Project No: 92112002

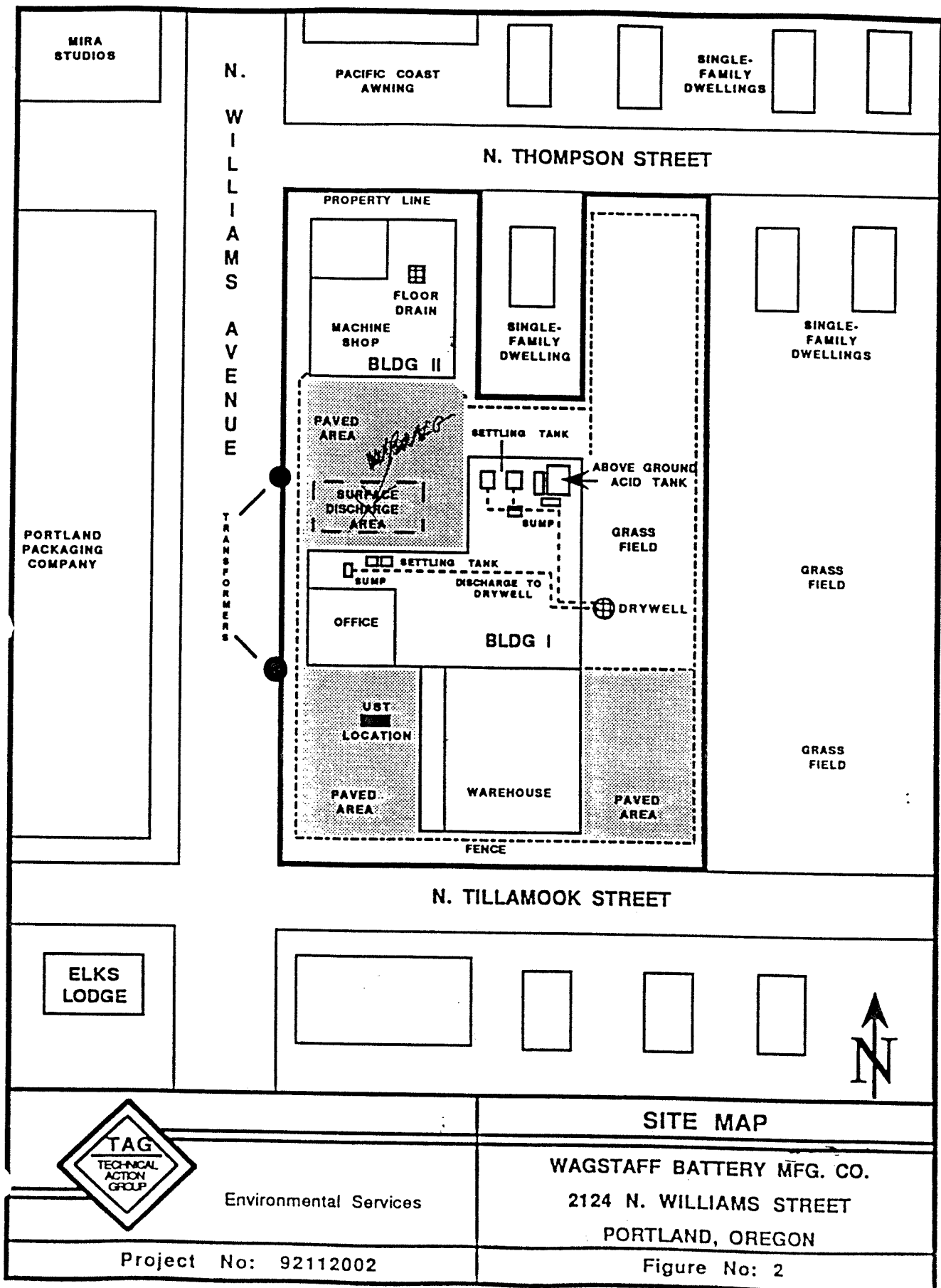
SITE VICINITY MAP

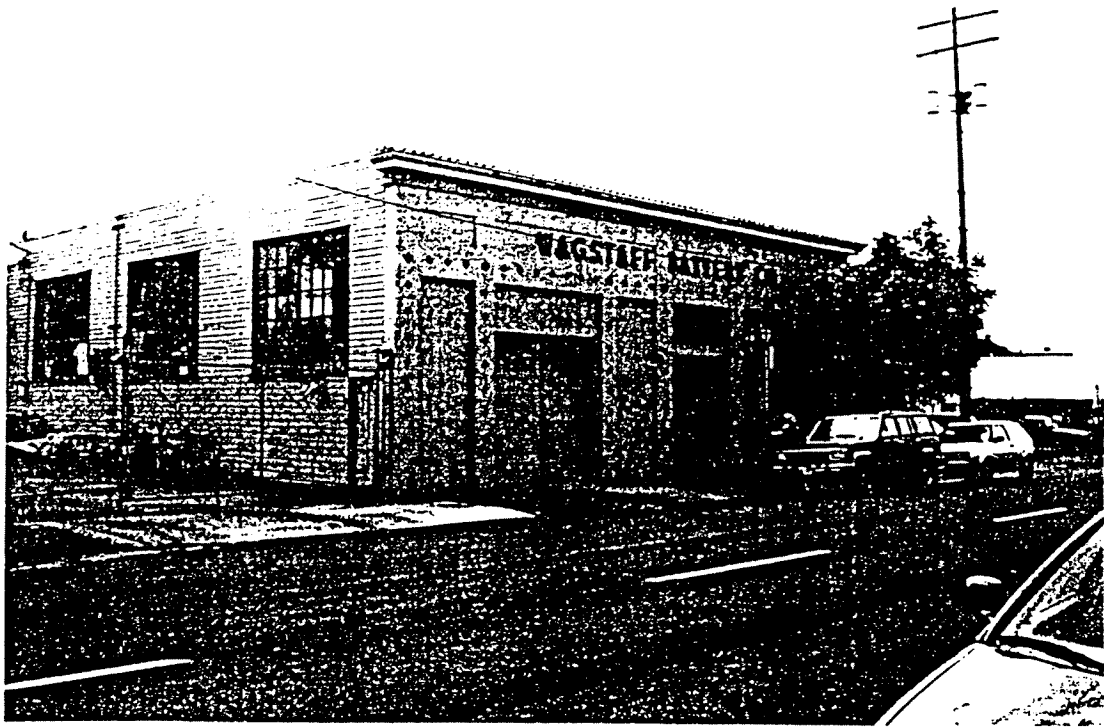
WAGSTAFF BATTERY MFG. CO.

2124 N. WILLIAMS STREET

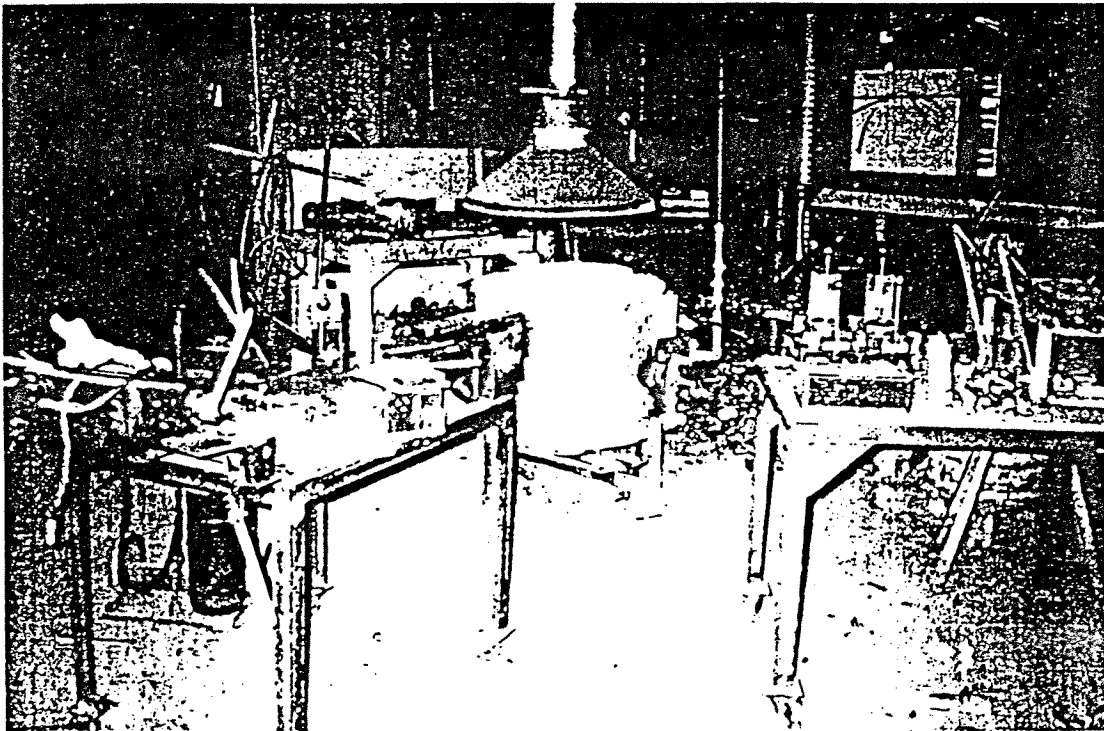
PORTLAND, OREGON

Figure No: 1

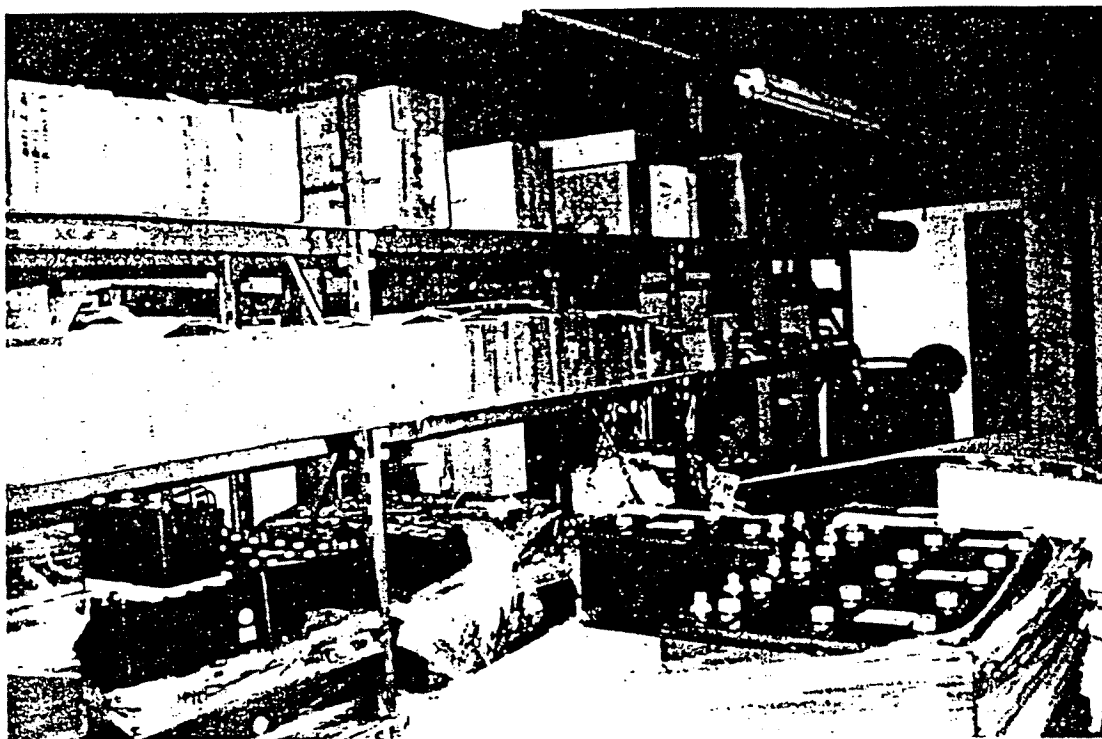




Photograph 1: Wagstaff Battery Manufacturing Company; View from northwest.



Photograph 2: Casting Room, Building I.



Photograph 7: Central Storage Area.



Photograph 8: Formation Room; Acid and Metal Storage Area.



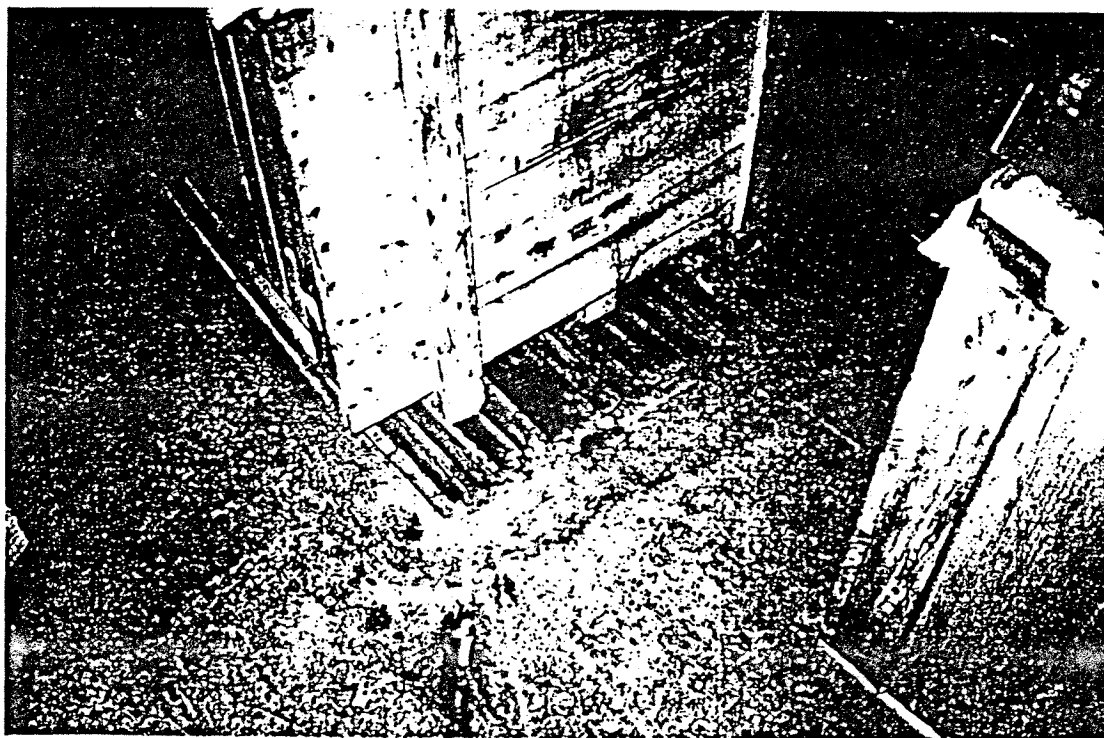
Photograph 9: NE Corner of Casting Room.



Photograph 10: Pasting Room Sump.



Photograph 13: Building II Machine Shop Interior.



Photograph 14: Sump, Building II Floor..



Photograph 15: Etched Concrete Sidewalk, N. Williams Avenue Property Boundary.



Photograph 16: Gasoline UST Fill Port and Pump Location.

APPENDIX J
PHASE II SITE INVESTIGATION
(INTERMOUNTAIN WEST, INC., MARCH 1997)



InterMountain West, Inc.

Hazardous Waste Management Specialists

March 3, 1997

Mr. Bruce Hindman
Wagstaff Battery Manufacturing
2124 N. Williams Avenue
Portland OR 97227

Dear Mr. Hindman:

The following report summarizes sump investigation activities performed in January and February of 1997 by InterMountain West, Inc. (IMW) for Wagstaff Battery Manufacturing Company. As we have discussed, soils beneath sump #1 still appear to have been impacted by petroleum contamination. Entry into the voluntary cleanup program and further sampling to delineate vertical and lateral extent of the contamination may be required before DEQ will issue a NFA letter. Please contact me at 503/682-1203 if you have any questions concerning this report.

Sincerely,

David Jacobs
Director, Field Operations

EXECUTIVE SUMMARY

Intermountain West, Inc. (IMW), an environmental services contractor was contracted by Wagstaff Battery Manufacturing Co. to perform a Phase II site investigation at their facility in Portland, Oregon. The site investigation consisted of sampling beneath three sumps on-site to determine whether underlying soils had been impacted by sump usage. IMW mobilized personnel to the site on January 9th and 10th, 1997, and obtained native soil samples from beneath the three sumps. Analytical testing revealed lead contamination in one of the soil samples (sump #2), and lead and petroleum contaminants in another sample (sump #1).

On January 31, 1997, Wagstaff Battery personnel removed contaminated soils from the two sumps utilizing a post hole digger and obtained additional samples approximately 10 inches below the original sampling points. IMW personnel packaged and transported these samples to a laboratory for analysis. The samples indicated that lead and petroleum contaminants were still present.

On February 14th and 17th, IMW personnel returned to the site and advanced the excavations 1 - 1 ½ feet. IMW noted that the previous round of sampling performed by Wagstaff personnel had most likely been cross contaminated due to improper excavation and sampling techniques. Drag down of overburden material was evident. IMW personnel carefully removed this overburden before sampling. Laboratory analysis of samples from sump #1 and #2 indicated that although lead contaminants were no longer detected at significant levels, petroleum contamination was still present in sump #1 at 9,000 mg/kg.

No further investigation or removal activities in sump #1 have been carried out as of the date of this report. Conversations with Mike Rosen of the Department of Environmental Quality (DEQ) have indicated that entry into the voluntary clean-up program would be necessary before the DEQ would render any discussions on whether further soil removal is required. It is likely however that further delineation of the vertical and lateral extent of the petroleum contamination underlying sump #1 will be required.

1.0 INTRODUCTION

Wagstaff Battery Company contracted IMW to characterize the soils beneath three sumps at their Portland, Oregon facility located at 2124 N Williams Avenue. IMW mobilized personnel on-site January 9 and January 10, 1997 to perform initial sampling of sumps.

2.0 LOCATION

The Wagstaff Battery manufacturing facility is located at 2124 N. Williams in Portland, Oregon. It is a commercial property occupying approximately 0.5 acres and is located between N. Tillamook Street and N. Thompson Street. The property lies approximately ½ mile Northeast of the Willamette River. Refer to Figure 1 for a site location map.

3.0 SITE ACTIVITIES

3.1 Initial Sampling of Sumps

Sump #1 is a concrete sump with a plastic liner located adjacent to the above ground acid tanks in Building I. During battery reconditioning operations, the batteries were washed with soap and a dilute ammonium solution. Wash solutions were collected in the sump and pumped into a drywell outside the building. Upon initial inspection the sump contained approximately 55 gallons of liquids and sludge. All liquids were pumped into a drum. The sludges were then removed manually and packaged into the same drum. A representative sludge (5884-SL4) sample was obtained. The sump measured 24" in diameter and 36" below ground surface (BGS). IMW removed the plastic liner in the sump which exposed the concrete. The concrete appeared deteriorated, possibly from contact with acids. IMW broke the concrete at the bottom of the sump in an 8-inch diameter area, and removed concrete to expose native soil underneath. IMW pulled a 32 oz. grab sample (5884-S1) at 42" BGS and packaged it into a glass jar with a Teflon lid.

Sump #2 is a metal-lined sump containing solid material located in the pasting room in Building I. The sump was used as a receptacle for fluids generated during washing of the pasting room floor. Collected fluids were then pumped from the sump to a drywell located outside the building. The Sump measures 24" square and 36" BGS. IMW manually removed enough solid material to expose one corner of the sump bottom, approximately 8" square. The bottom of the sump was deteriorated and holes were noted in the corners. IMW removed the portion of sump bottom using a jack hammer. This proved to be difficult because away from the corners the steel was intact. Native soil was exposed and a 32 oz. grab sample (5884-S2), was pulled at 38" BGS and packaged into a glass jar with Teflon lid.

Sump #3 is a metal-lined sump located in Building II. The sump measures 24" square and 36" BGS. Sump #3 contained liquids and solids. The sump solids were mostly cigarette butts and it was determined later that this is part of the sewer system. All liquids were pumped into 55-gallon drums and sludges were then removed manually

and packaged into the same drum. Sump #3 appeared to be intact and in good working order. IMW exposed enough area from the bottom of the sump to sample, using a cutting torch. A 32 oz. Grab sample (5884-S3) was pulled at 38" BGS and packed into a glass jar with Teflon lid. After sampling, the metal removed to sample was welded back in place to secure it from leakage.

All sampling was performed using SW-846 sampling methods. IMW personnel used clean gloves between each sample. All stainless steel sampling spoons used were cleaned between each sample using deionized (DI) water/TSP mixture and then rinsed with DI water and dried. All samples were packaged in clean glass jars with Teflon Lids. All samples were submitted to Coffey Laboratories under Chain of Custody on January 13, 1997.

3.2 Second Round of Sampling of Sumps

After initial sampling, based on laboratory analytical results, it was determined that sump #1 and sump #2 required additional characterization to find the vertical extent of lead and petroleum contamination. On January 31, 1997, Wagstaff personnel re-sampled Sump#1 and Sump#2 through the same access that IMW created prior. Sump #1 was re-sampled (5885 S1-2) at approximately 54". Sump #2 was sampled (5884 S2-2) at approximately 48" BGS. Soil was removed from both sumps using a post hole digger. It is unknown what methods were used to prevent cross-contamination. IMW collected sampled soil and placed it into 32 oz. Glass jars with Teflon lids. The samples were submitted to Coffey Laboratories under Chain of Custody on January 31, 1997.

3.3 Third Round of Sampling of Sumps

Analysis of the samples obtained by Wagstaff Manufacturing on January 31, indicated that lead contamination was still present in both sumps #1 and 2, and petroleum contamination present in sump #1. These samples may have been contaminated by either cross-contamination during sampling or contamination from overburden or source material that was still in the sump, therefore, another round of sampling was scheduled. IMW personnel returned to the site on February 14 and February 17, 1997 to re-sample Sump#1 and Sump#2.

IMW personnel removed the remaining concrete from Sump#1 using a jack hammer. Concrete and soil were removed to 60" BGS. A sample (5884 S1-3) was taken at 72" BGS. A composite sample (5884 S1-4) of the sidewalls was sampled at approximately 50" BGS. A 9 oz. Sample was collected at each location and placed into a glass jar with Teflon lid. IMW removed all remaining source material from Sump #2. The bottom of the sump was removed using a cutting torch. Soil was removed to approximately the same level as Wagstaff Sample #5884-S2-2. A grab sample (5884 S2-3) was collected using a stainless steel trowel at approximately 50" BGS and packaged into a 9 oz. glass jar with a Teflon lid. IMW also pulled an additional sample from sump #2 and had the laboratory hold it pending analysis of 5884 S2-3. The sample (5884 S2-4) was taken at 60" BGS and placed into a glass jar with a Teflon lid. All samples were submitted to Coffey Laboratories under Chain of Custody on February 17, 1997.

4.0 LABORATORY ANALYTICAL RESULTS

Soil samples from sumps #1, 2, and 3 were transported under Chain of Custody to Coffey laboratories, Portland, Oregon for analysis. Samples were analyzed for total lead (EPA method) Volatile Organic Compounds, (EPA Method 8260) PCB's (EPA Method 8080), and Total Petroleum hydrocarbons (EPA Method 418.1 and TPH-HCID). No VOC's or PCB's were detected in any of the samples.

Samples from the first round of sampling on January 9th and 10th indicated lead was present in sump soils beneath sump #1, 2, and 3 at concentrations of 350 mg/kg, 5700 mg/kg, and 21 mg/kg respectively. Petroleum contamination was present beneath sump #1 at 15,000 mg/kg. Lead and petroleum contaminants were also detected in the sludge sample taken from sump #1.

The second round of sampling was performed on January 31, 1997. Soil samples were obtained from sumps #1 and 2 and analyzed for total lead and petroleum hydrocarbons (sump #1 (S1-2) only). Lead was present in both samples S1-2 and S2-2 at concentrations of 1,900 ppm and 34,000 mg/kg respectively. Petroleum compounds were found in S1-2 at 17,000 mg/kg.

A third round of sampling was performed from sumps #1 and 2 on February 14th and 17th, 1997. Samples S1-3 and 4 and S2-3 were analyzed for total lead and petroleum concentration (sump #1 S1-3 only). Total lead concentrations in sumps #1 and 2 were found to be below 25 mg/kg. However petroleum contamination was still present in sump #1 sample S1-3 at 9,000 mg/kg.

5.0 CONCLUSIONS

Initial soil sampling from sumps #1, 2, and 3 have indicated that lead contaminants had impacted soils beneath sumps #1 and 2. Petroleum contamination was also found to have impacted soils beneath sump #1.

Subsequent soil removal and sampling indicated that lead contamination beneath sump #1 and 2 had been mitigated approximately 72" and 50" BGS respectively. Petroleum contamination was still present in soils under sump #1 at 72" BGS. The source of this petroleum contamination is not known and further sampling is required to delineate its vertical and lateral extent.

TABLE I

Summary of Laboratory Analytical Results
Soil Samples
Wagstaff Battery Manufacturing Company
IMW Project #5884

Sample #	Date	Analysis	Results	Units	BGS
Sump #1					
5884-S1	1/9/97	Total Pb	350	mg/kg	42"
		VOCS 8260	ND		42"
		PCBS 8080	ND		42"
		TPH 418.1	15000	mg/kg	42"
		TPH HCID	Detected diesel/gas	mg/kg	42"
5884-S1-2	1/31/97	Total Pb	1900	mg/kg	54"
		TPH 418.1	17000	mg/kg	54"
5884-S1-3	2/17/97	Total Pb	19	mg/kg	72"
		TPH 418.1	9000	mg/kg	72"
5884-S1-4 CSS	2/17/97	Total Pb	23	mg/kg	60"

Sump #2

5884-S2	1/9/97	Total Pb	5700	mg/kg	38"
		VOCS 8260	ND		38"
		PCBS 8080	ND		38"
		TPH HCID	ND		38"
5884-S2-2	1/31/97	Total Pb	34000	mg/kg	48"
5884-S2-3	2/14/97	Total Pb	15	mg/kg	50"

Sump #3

5884-S3	1/10/97	Total Pb	21	mg/kg	38"
		VOCS 8260	ND		38"
		PCBS 8080	ND		38"
		TPH HCID	ND	mg/kg	38"

Sump #1 (Sludge Sample)

5884-SL4	1/9/97	Total Pb	3500	mg/kg	
		8260	ND		
		PCBS 8080	ND		
		TPH HCID	Detected diesel/gas		
		PH	1.17	S.U.	

Legend

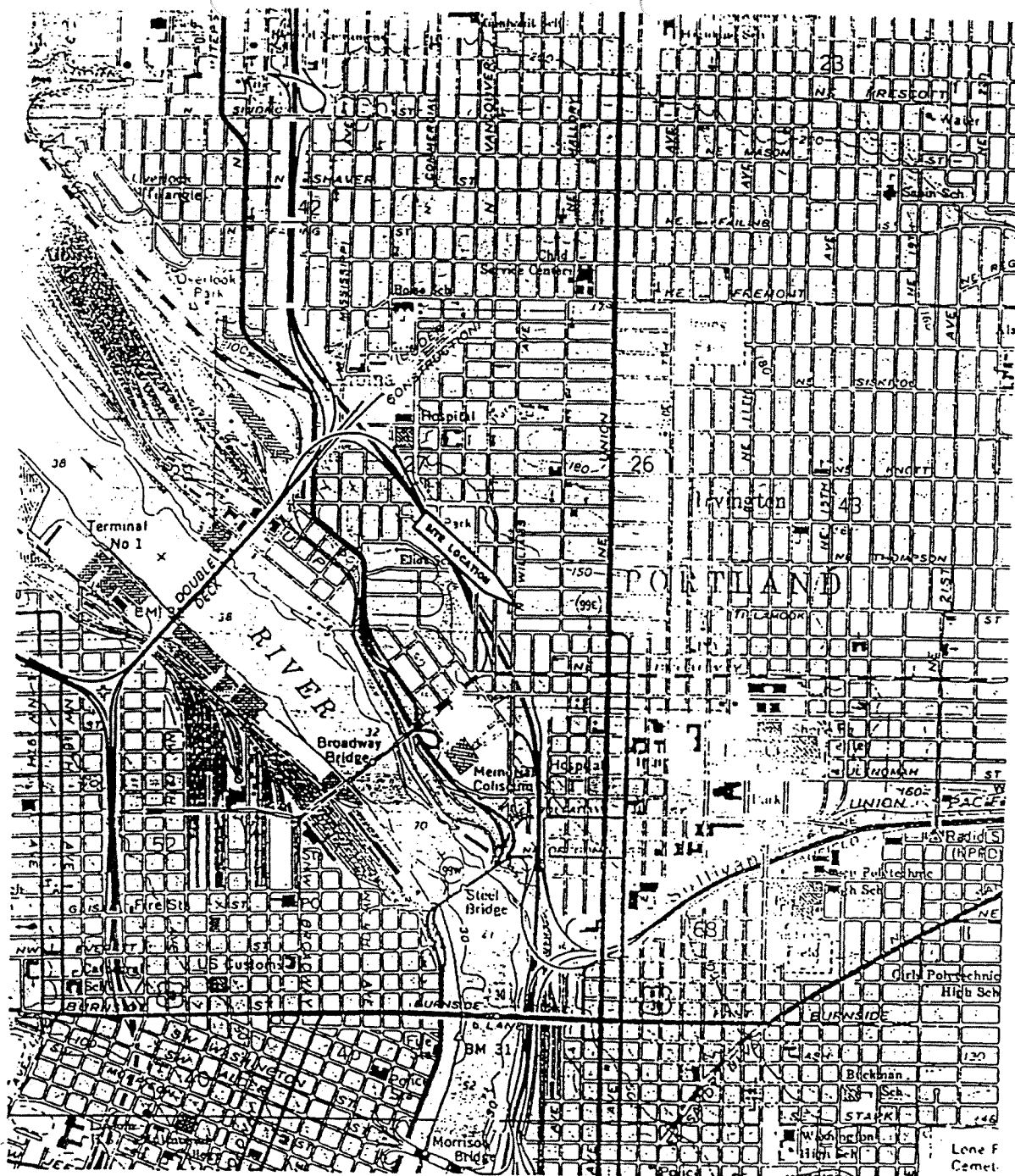
CSS Composite Sidewall Sample

BGS Beneath Ground Surface

ND None Detected

Pb Lead

mg/kg Milligrams/Kilograms

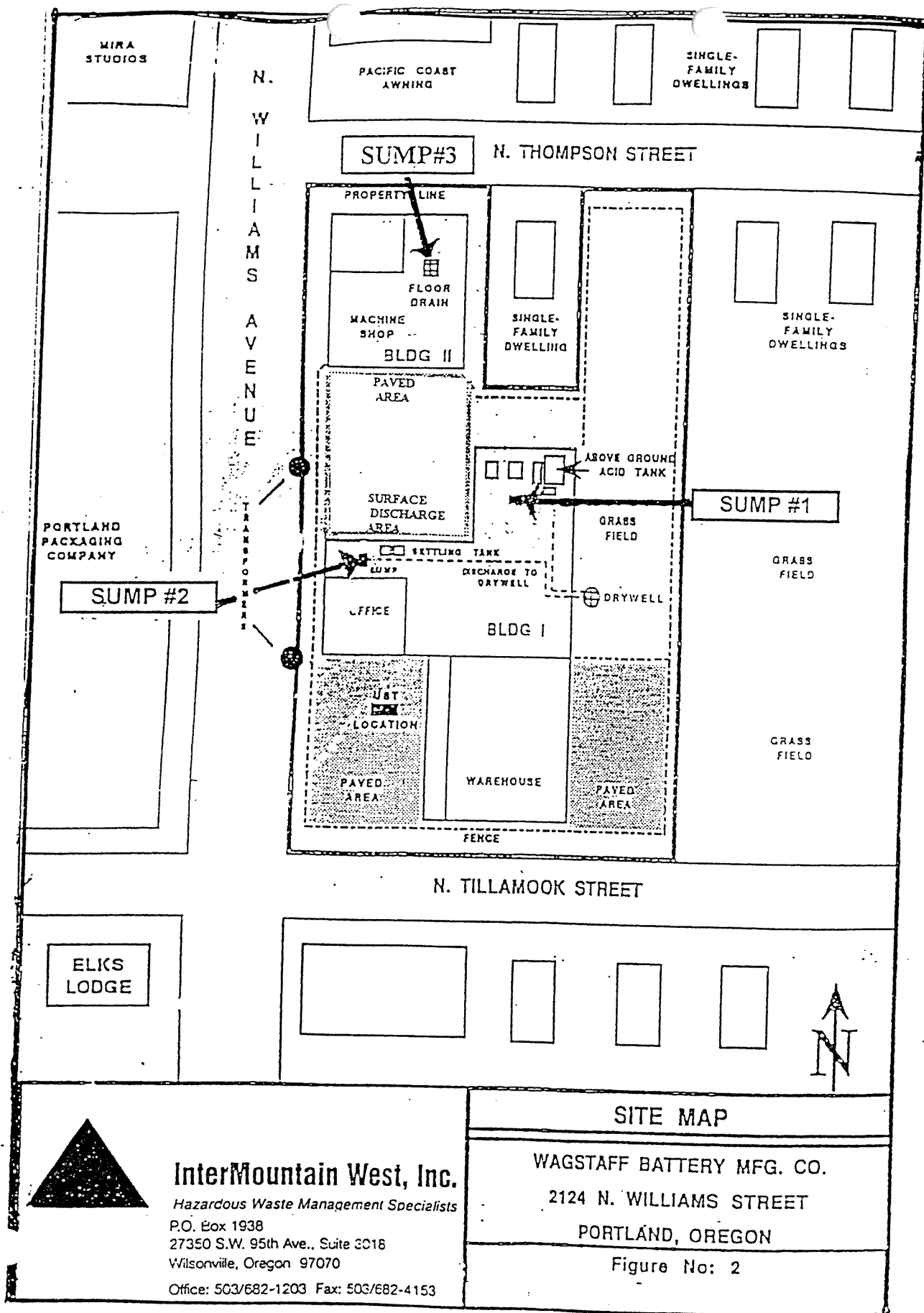


BASE: Portions of U.S. Geological
Survey map, 7.5-minute quadrangle
of Portland, Oregon.
Scale: 1" = approximately 2,000'
Contour intervals = 10'

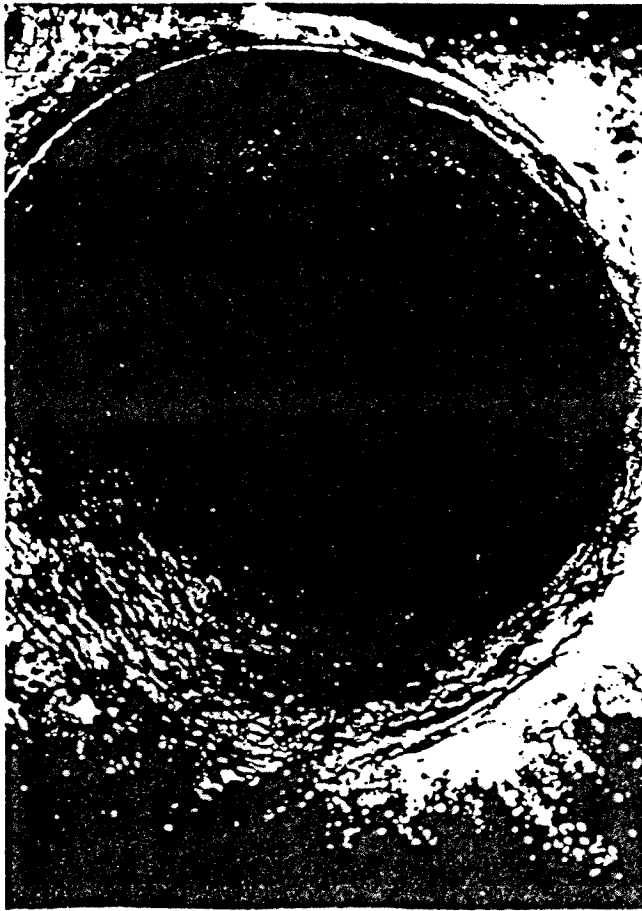
Figure 1: Site Location Map

INTERMOUNTAIN WEST, INC
IMW PROJECT # 5884

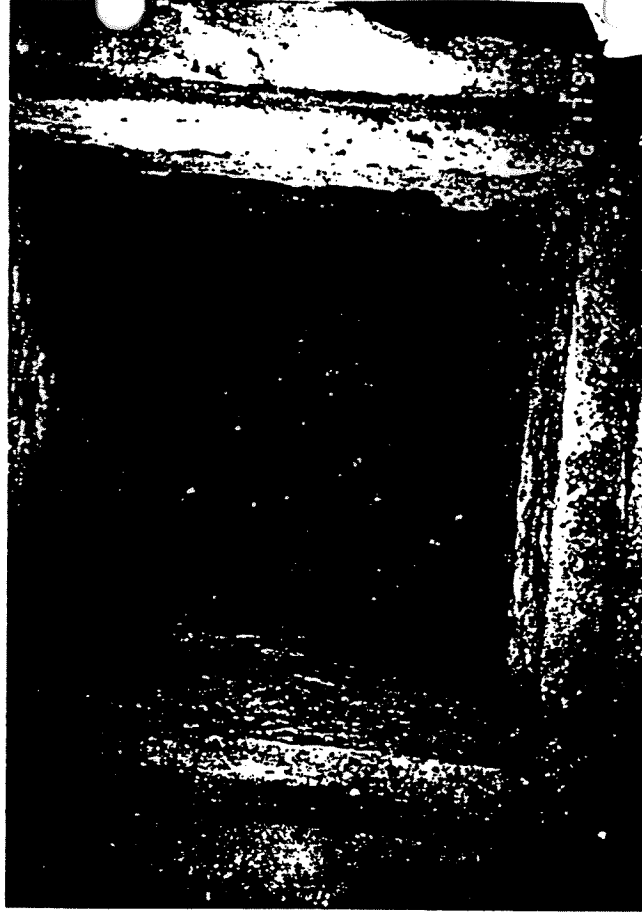
Wagstaff Battery Mfg. Co.
2124 N Williams
Portland, Oregon
UST Decommissioning



Appendix I
Photographs



Sump #1
Sample #3



Sump #2
Sample #3

APPENDIX K
REMEDIAL INVESTIGATION FINAL REPORT
(PHILIP ENVIRONMENTAL SERVICES CORPORATION,
DECEMBER 1997)