

#1243 Port City--11/23/99 REPORT
Phase 1. ESA

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Former Manufacturing Facility
2110 - 2156 North Williams Avenue
Portland, Oregon

Prepared for:

PORT CITY DEVELOPMENT CENTER
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Project 938-01

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EXECUTIVE SUMMARY

PNG Environmental, Inc. (PNG) conducted a Phase I Environmental Site Assessment (ESA) at the subject property. The project site is located at 2110-2156 North Williams Avenue, between Thompson and Tillamook Streets in Portland, Oregon. The unoccupied site covers approximately 0.5 acres, and includes three industrial-use buildings. The following summary is intended for introductory and reference use only, and should not be relied upon without reading this report in its entirety.

Site Description

The site includes three buildings and four physical addresses (2110, 2124, 2152, and 2156 North Williams), covering two contiguous tax parcels. The site is currently unoccupied, but portions of the northern and southern buildings are used for storage. The southern warehouse building (2110 North Williams) was constructed as an addition to the older adjoining manufacturing building (2124 North Williams). The other industrial building (2152-2156 North Williams) is located on the northwestern corner of the site. All three buildings include office space. Paved storage and parking areas are located on the central and southern portion of the site. The eastern margin of the site, which borders several residential properties, is a narrow unpaved lot extending from NE Tillamook to NE Thompson Street.

Site History

The site was originally developed for residential use around 1900. In 1901, at least eight residences were located on the site. Industrial development began in 1926, with the construction of the main manufacturing building at 2124 North Williams. This building was used for metal fabrication and furniture making until purchased by the former owners for use as Wagstaff Battery Manufacturing in the early 1960s. The manufacturing building was occupied by Wagstaff until the mid-1990s. A concrete tilt-up warehouse was added to the southern portion of the Wagstaff manufacturing building in the early 1970s, and was leased to several manufacturing-use tenants through the 1990s. The northern site building was constructed in the 1930s and has been occupied by industrial-use tenants since that time. All residences had been removed from the site by the early 1980s. The vacant site was purchased by its current owner, Port City Development Center, in September 1998.

Geology and Hydrogeology

The site is located on a considerable thickness of unconsolidated silts, sands, and gravels associated with the Portland Basin. The sediments are underlain by the Columbia River Basalt Group. No site-specific groundwater evaluation has been conducted, but local water well logs indicate that first occurring (perched) groundwater is expected within approximately 50-75 feet of the ground surface. Productive water wells are installed in the regional Troutdale Aquifer at depths greater than 100 feet below ground surface (bgs).

Environmental Records Review

The subject site is located in a mixed industrial- and residential-use neighborhood. PNG's research identified numerous off-site facilities within approximately one mile of the subject site where contamination sources are known and suspected to exist. PNG's review of available information indicates that none of the nearby facilities appears to pose a significant risk of environmental impairment to the subject property because of their distances and positions relative to the site, and because the depth to groundwater in the site vicinity appears deep enough to minimize contaminant migration to the site.

PNG's research indicates that the subject property has a high potential for adverse environmental impact from historical operations. This judgment is based on known and potential impacts from historical industrial use on the site dating to 1926. Regulatory actions and cleanup activities identified to date include:

Regulatory Actions

- The site came under Oregon Department of Environmental Quality (DEQ) scrutiny beginning in 1992 for potential lead dust contamination and hazardous waste generation associated with the battery manufacturing operations.
- In 1993, the site was added to the DEQ's Environmental Cleanup Site Information System. Independent assessment and cleanup activities began at the site in 1993.
- The site was placed on DEQ's Confirmed Release List in 1997 and the site owners entered into the DEQ's Voluntary Cleanup Program in an effort to expedite regulatory review and closure during property sale negotiations.
- The current site owners (PCDC) agreed to the terms of a Prospective Purchaser's Agreement with the DEQ in September 1998. The PPA requires PCDC to conduct various assessment and cleanup actions under DEQ oversight, as necessary, during site redevelopment and future site operations.

Cleanup Activities

- A 1,000-gallon gasoline UST was decommissioned in 1993. No evidence of a release from the UST was identified.
- Lead-contaminated soil from the on-site drywell area was excavated, treated, and returned to the excavation between 1993 and 1995.
- In 1997, nearly 300 cubic yards of lead-contaminated soil from the on-site drywell area was re-excavated and disposed at an approved landfill in Arlington, Oregon.
- Small volumes of accessible highly contaminated soils were manually removed from two interior sump locations in 1997. Residual lead and hydrocarbon contamination exists in the Sump 1 area beneath the northeastern margin of the main building. A small volume of lead-contaminated soil also remains in place beneath the eastern portion of the building, near the former drywell location.

Conclusions and Recommendations

PNG's review of historical site operations indicates that several areas of environmental concern are known and suspected to be present at the site. Note that the Prospective Purchaser Agreement requires DEQ review and approve of all investigation and development plans for the site. PNG recommends that the following site-specific issues be considered:

- Conduct a subsurface exploration in the paved yard area located between the two manufacturing buildings, including the area near the former pasting room, to evaluate former battery manufacturing practices.
- Conduct a subsurface exploration in the paved yard areas located to the east and west of the southern building (Building 1A) to evaluate potential releases associated with historical operations, including the former plating facility.
- Conduct a subsurface exploration in the areas of Sump 1/1A and Sump 2, depending on development plans for the site.
- Sample and test interior and exterior building surfaces for lead to evaluate worker safety requirements during renovation and demolition, as well as demolition debris disposal issues.
- Sample and test potential asbestos-containing building materials (overhead ducting and potential asbestos floor tiles in Buildings 1B and 2) to evaluate worker safety and demolition disposal issues.

- Conduct a geophysical survey using ground-penetrating radar and an electromagnetometer to attempt to locate underground structures (e.g., USTs, septic systems, trenches, and drywells).
- Consider a groundwater characterization study to (1) attempt to determine if previous site operations affected groundwater quality in an effort to establish potential liabilities; and (2) provide a baseline of groundwater quality at this time, for possible comparison to future studies conducted by site tenants, site owners, or other property owners.

1 INTRODUCTION

1.1 PURPOSE AND SCOPE

PNG Environmental, Inc. (PNG) performed a Phase I Environmental Site Assessment (ESA) at the former Wagstaff Battery Manufacturing Facility, located at 2110 – 2156 North Williams Avenue in Portland, Oregon (Figure 1). The purpose of the Phase I ESA was to document current and historical information on-site and vicinity property usage, to evaluate the risk of adverse environmental impact to the site based upon those usages, and to identify “recognized environmental conditions” as defined by the American Society for Testing and Materials (ASTM). The project conforms to general standards established in 1997 by the ASTM (ASTM E-1527-97). The scope of work for the Phase I ESA includes:

- A physical reconnaissance of the site and observation of surrounding properties for unusual land colorations, stressed vegetation, physical irregularities, and noticeable refuse piles as well as an observation of current land use in the immediate vicinity.
- A review of available information on the soils, geology, and hydrogeology in the vicinity of the site.
- A review of available environmental documentation for the site and vicinity properties from local, state, and federal environmental agencies.
- A review of available historical data pertaining to site and adjacent property use.
- A review of available prior environmental assessment reports conducted at the subject property.
- A review of the information obtained and an assessment of the potential for impact by toxic, hazardous, or otherwise regulated materials.

2 SITE DESCRIPTION AND RECONNAISSANCE

2.1 GENERAL SITE DESCRIPTION

The subject site covers approximately 0.5 acres located on the east side of North Williams Avenue, between NE Thompson and Tillamook Streets, in Portland, Oregon. The site includes three buildings and four physical addresses (2110, 2124, and 2152-2156 North Williams), covering two contiguous tax parcels. The site is located in the northeast quarter of Section 27, Township 1 North, Range 1 East, of the Willamette Meridian, in Multnomah County.

At the time of PNG's site visit on November 10, 1999, the subject site was unoccupied. The site is located along the eastern frontage of North Williams Avenue, a major local industrial arterial street. Northeast Thompson and Tillamook Streets, which border the site to the north and south, respectively, are primarily residential streets. The site surrounds a single-family residence on three sides along NE Thompson Street; that residence address is 20 NE Thompson.

2.2 SITE RECONNAISSANCE

PNG personnel conducted a site reconnaissance on November 10, 1999. Access to the site was provided by Mr. George Scott, Executive Director of Port City Development Center ("PCDC," the current site owner). Figure 2 provides a site plan for the primary observed (and historical) site features. Photographs of major site features are presented as Appendix A. The investigation was conducted on foot. The following observations were noted:

2.2.1 Buildings

Three buildings are present on the subject site. No basement areas were identified in any of the site buildings. From south to north, the buildings are described below.

Building 1A - 2110 N. Williams. This concrete tilt-up building was constructed as an addition to the site's main manufacturing building (2124 N. Williams) in approximately 1970 (see Sections 3.2 and 3.4). A large doorway joins this building with the main manufacturing building to the north (Building 1B). This building appears to have been used primarily as a warehouse and shipping facility. The building includes open floor space covering approximately 4,750 square feet. PNG observed that portions of the concrete floor were discolored. A small loft formerly used for offices, and two restrooms on the ground level, are located on the southern margin of this building. A strip drain was observed in the central portion of the building's concrete floor, draining westwards into a paved loading dock area. At the time of PNG's visit, the warehouse was being used for storage of bulk clothes hangers and boxes belonging to PCDC (Photo 1, Appendix A). The warehouse opens to a covered and paved loading dock to the west. The loading dock was occupied by equipment and supplies which, according to Mr. Scott, belonged to a landscaping contractor and current tenant. The southwestern portion of the adjoining paved parking area was used for limited vehicle storage by a garbage hauler, a second tenant.

Building 1B - 2124 N. Williams. This vacant, L-shaped wood-frame building was the main manufacturing facility at the site, and was originally constructed beginning in 1926. The original site address was 452-454 N. Williams, according to building permit records (see Section 3.4). The concrete-floored single-story building covers approximately 8,200

square feet. The west-central portion of this building (approximately 500 square feet) was used for office space. All manufacturing equipment had been removed from the building at the time of PNG's visit (Photo 2). Some newer overhead ducting remained in place, and portions of an older ducting system, including numerous roof vents, are also present. PNG observed dust throughout much of the manufacturing area (Photo 3). Much of the floor in the manufacturing area is discolored and pitted. A subfloor structure resembling a covered trench was observed along the southern margin of the manufacturing area. Portions of this trench were covered with wood planking; eastern portions of the trench were paved. The use and specific location of the trench were not determined by PNG. Metallic splatter was observed on a portion of the southern wall, west of the doorway to Building 1A (Photo 4).

An interior loading dock area (referenced as the "pasting room" in previous reports; see Section 3.8) is located immediately north of the office, with a door opening to N. Williams. A catch basin ("Sump 2;" see Section 3.8) is located in the concrete floor of this loading area (Photo 5). A second small in-floor structure (approximately one square foot) is located north of the catch basin along the north wall of this room. The small structure appears to provide access to a subfloor water valve (Photo 6). Because there was no lighting in this area, PNG did not determine whether this structure had a sealed bottom surface. Overhead ducting is present in this area.

A processing room is located east of this loading bay area, in the northern portion of the building. The concrete floor in this area of the building is severely pitted and degraded. Two catch basins ("Sump 1" and "Sump 1A") are located in the north-central portion of this area, both in corroded and poor condition (Photo 7). Pavement surrounding the two catch basins appeared to have been patched asphalt in poor condition, and was covered with a yellow crust. The western catch basin is covered by a rectangular steel lid measuring approximately two by three feet, and the basin itself is circular. This resembles "Sump 1" as photographed in the 1997 InterMountain West Report (Photo 8; also see Section 3.8.4). A second, larger catch basin is located approximately ten feet east of the first. This second basin measured approximately four by six feet, with a steel grate below grade (Photos 7 and 9). PNG did not determine whether the basin floor surfaces were sealed. Sump 1A was photographed during a 1992 DEQ site inspection, and appears to have been used to contain acids and process wastewater during the battery manufacturing and repair operations (Section 3.8.1 and Appendix H). Sheets of degraded plywood covered the floor along the northeastern wall of the building. Two large exhaust fans are located along the eastern wall of this area. Several patched holes in the floor, resembling previous drilling locations, are located west of the southern exhaust fan.

A wooden loft of approximately 2,000 square feet (Photo 2) was added to the western portion of this building in 1941. The loft appears to have been used for storage, office space, a kitchen, and locker room areas. A paved yard area is located north of the loading bay area, immediately south of Building 2 (described below).

Building 2 - 2152-2156 N. Williams. This masonry-frame building ("Building 2") was constructed in the late 1930s (Section 3.4). Original plans show the building measures 67 feet by 70 feet (4,690 square feet). A small empty office area covering approximately 300 square feet is located in the northwestern corner of the building (2156 N. Williams). The L-shaped former shop area has a concrete floor, with a bay door access near the northeast and southeast building corners (2152 N. Williams). At the time of PNG's site visit, approximately 70% of the building was used for storage of what appeared to be bulk shoe boxes (Photo 10). Two exhaust chimneys are present near the center of the building, one of masonry construction and the other of sheet metal (Photo 11). The furnace or boiler system was not accessible during PNG's visit. PNG's interior

observations were limited because the building's lighting system was inoperative, and numerous stacked boxes covered most of the shop's floor area. PNG observed one indoor catch basin in the northeast corner of the former shop area (Photo 12). This basin was referenced in previous reports as "Sump 3" (see Section 3.8). The floor surface surrounding the catch basin was cracked and discolored. A fenced and paved yard area separates Building 2 from Building 1B to the south.

2.2.2 Fuel Storage Tanks

No above ground fuel storage tanks (ASTs) were observed on the site. No visual evidence of underground fuel storage tanks (USTs), such as fill or vent pipes, was observed by PNG. One 1,000-gallon gasoline UST was formerly located in the parking area immediately west of the warehouse (Building 1A). According to a report provided to PNG from the former property owner, Mr. Charles Hindman, the UST was decommissioned by removal in 1993. Portland Fire Marshal records also confirm the removal of the single UST in 1993. No evidence of a release from the UST was reported. UST closure records are provided as Appendix B.

A single-family residence at 20 N. Thompson Street is located between Building 2 (to the west) and the on-site grass yard (to the east), although the residence is excluded from the subject property. PNG observed vent and fill piping; this is likely associated with a basement heating oil AST along the western wall of this residence.

2.2.3 Chemical Materials

The site is currently vacant, and appears to be used only for storage. Although PNG did not identify evidence on the site indicating current generation or storage of chemical materials, the site's historic industrial operations since the 1920s are consistent with significant chemical use and on-site disposal. PNG's historical review (Section 3) indicates that former operations included battery manufacturing and recycling, metal plating, cabinet manufacturing, air compressor repair, gas station equipment sales and repair, upholstery and furniture manufacturing, metal fabrication, and range manufacturing.

Based on the site's historical operations, it is likely that numerous chemical materials and wastes were used and generated on-site. Some wastes, including fuel hydrocarbons, acids, and lead, are known to have been incorporated into liquid wastes and disposed in the on-site drywell during the 1970s and 1980s. Other chemical materials are suspected to have been used on-site based on normal manufacturing processes. Additional chemicals of potential concern (COPCs) include parts cleaners and solvents, paints/varnishes, and plating metals.

2.2.4 Refuse and Debris

PNG observed several areas of refuse and debris on the southern portion of the site. One of the site tenants is storing miscellaneous equipment and materials in the paved loading dock area west of Building 1A. These materials include small volumes of paints and lubricants and exposed mechanical equipment. Landscaping supplies and wastes are also stored in the southeastern portion of the site on paved and unpaved surfaces.

2.2.5 Site Drainage

The subject site is located on flat-lying urban topography. Surface drainage appears to be directed towards the surrounding roadways (Williams, Thompson, and Tillamook

Streets). The southeastern corner of the site is elevated approximately five feet above NE Tillamook Street.

Interior drainage and wastewater in Building 1B was directed into sumps, which discharged to an on-site drywell between approximately 1970 and 1991. According to a Phase I ESA conducted by Technical Action Group (TAG) in 1992, historical wastewater discharges from the battery manufacturing facility (Building 1B) were released onto surrounding surfaces which drained to N. Williams Avenue (Section 3.8.1). Charles Hindman disputed TAG's statement, and told PNG that wastewater discharges prior to installation of the drywell in 1970 were directed into the city sanitary sewer. Mr. Hindman stated that the catch basin located in Building 2 ("Sump 3") has always discharged to sanitary sewer.

2.2.6 Fill Areas

PNG observed recent end-dumped soil and rock material in the yard area on the eastern portion of the site. The fill appeared to be associated with the landscaping tenant's business, and included approximately 20- to 30-cubic yards of material. No other evidence of recent fill activity was identified on the site.

2.2.7 Water Wells and Water Service

Water service at the site is provided by the City of Portland. According to Mr. Todd Aschoff of the Portland Water Bureau (823-7368), no records were available indicating the original date of water connection. PNG did not identify visual evidence of any water wells at the subject site. PNG conducted a review of available local water well logs through the Oregon Water Resources Department, and no domestic wells within approximately one-mile of the site were identified.

2.2.8 Sewer and Septic Systems

No septic systems are known to be located at the site. According to Mr. Scott Bryan of the Portland Bureau of Environmental Services (823-7761), the main manufacturing building at 2124 N. Williams (Building 1B) was originally connected to city sanitary sewer in the 1920s, and then expanded on NE Tillamook (for Building 1A) in 1970. Mr. Bryan said that sanitary service for 2152-2156 N. Williams (Building 2) was first installed in 1926. Mr. Bryan said that he did not identify any information describing or permitting industrial wastewater discharge for any of the site addresses.

2.2.9 Electrical Utilities and Transformers

Electrical service is provided to the site by Pacific Power (PP&L) from power poles located along the east side of N. Williams Avenue. Two power poles abutting the site support a total of five electrical transformers. Pole number 0101/277313 is located southwest of Building 2, and carries transformers 22-28680-NMT50, 22-23954-25, and a third unit that could not be identified. Pole number 0101/277314 is located west of Building 1B, and carries transformers 22-35787, 22-35788, and 22-35789, all of which included blue labels identifying them as non-PCB containing transformers. In addition to the service power lines described above, high-power transmission electrical lines border the site along N. Williams.

As specified by EPA regulations (40 CFR 761.30), any release of PCB-containing oil from electrical transformers, should any be present, would be the responsibility of the transformer owner (PP&L).

2.2.10 Surface Vegetation

Surface vegetation can be indicative of subsurface conditions, and may show signs of stress where contaminants have been discarded. On-site vegetation was limited to grass and blackberry brush around the north and east sides of Building 1B, and grass located on the vacant parcel immediately east of Building 2. No unusual or stressed vegetation was observed by PNG.

2.2.11 Adjoining Properties

Surrounding and vicinity usage consists of mixed industrial and residential properties (see Figure 2). The site surrounds a single-family residence on three sides along NE Thompson Street; that residence address is 20 NE Thompson. Other than a basement heating oil AST at the adjoining residence, no obvious evidence of operating ASTs or USTs was noted near the site, and no obvious spillage or storage of chemicals was observed at adjoining properties.

3 SITE HISTORY

The site history was documented through a review of tax assessment records, historical aerial photographs, historical maps, fire department records, building permit records, previous site assessment reports, and personal interviews.

3.1 TAX ASSESSMENT RECORDS

Multnomah County Tax Assessment records indicate the subject property is described as Accounts R-00960-8230 (2110-2124 N. Williams Avenue) and R-00960-8270 (2156 N. Williams Avenue). Tax Lots include 1N1E27DA-10400 and -13400, respectively. The site is currently owned by The Port City Development Center. Tax Assessment information is presented in Appendix C.

3.2 AERIAL PHOTOGRAPH REVIEW

PNG reviewed aerial photographs in an effort to identify the history of development at the site and the surrounding area. The reviewed photographs cover the years 1936, 1944, 1948, 1955, 1959, 1963, 1970, 1972, 1979, 1986, 1991, and 1999. A discussion of the photos is presented below. References to street names, addresses, and occupants are summarized in Section 3.3. Aerial photographs from selected years are attached in Appendix D. Obvious site features are also illustrated on the Site Plan (Figure 2).

1936

In the 1936 aerial photograph, the subject site is occupied by several buildings in a developed urban setting. Buildings include what appear to be two residences along NE Tillamook Street, the main (L-shaped "Building 1B") manufacturing building at 2124 N. Williams Avenue, a residence immediately north of the manufacturing building, and approximately two additional residences fronting NE Thompson Street. The corner lots at Tillamook/Thompson and N. Williams appear to be vacant. Surrounding and vicinity properties are residential and commercial/industrial in use but cannot easily be resolved in this photograph.

1944

A large square industrial-type building has been constructed on the northwest corner of the site (2152-2156 N. Williams). A structure resembling a billboard is located on the southwest corner of the site. Five residential-type buildings are located elsewhere on the site, in the locations described above. Trees are visible along the eastern margin of the site. No obvious changes to the surrounding area are visible.

1948

An industrial-type building has been constructed west of the site, along the western margin of N. Williams Avenue. No other obvious changes to the site or surrounding area are visible.

1955

No obvious changes to the site or surrounding area are visible.

- 1959 Additional development continues in the site vicinity. No obvious changes to the site are visible.
- 1963 Interstate-5 has been constructed approximately three blocks to the west of the site. No other obvious changes to the site or surrounding area are visible.
- 1970 The two residences along NE Tillamook Street, on the southern margin of the site, have been removed and replaced by the southern expansion of the site's main manufacturing building. This new warehouse building (currently addressed as 2110 N. Williams) is bordered by open yard areas to the east and west. No other obvious changes to the surrounding area are visible.
- 1972 The 1972 photo clearly shows the recent warehouse addition described above. An awning has been installed in the paved loading dock (western) portion of the warehouse. A small yard area, which appears to be associated with outdoor storage for the industrial building (2124 N. Williams), is located along the northern margin of that building, immediately south of the residence (2142 N. Williams). The yard area to the east of the main building appears to be unpaved.
- 1979 The 1979 photo shows that the 2142 N. Williams residence had been removed, and replaced by a cluttered outdoor storage yard. Discolored or wet surfaces are visible in this yard area, located between the site's two industrial-use buildings. The residence formerly located on the northeastern corner of the site has been removed. The eastern portion of the site is completely cleared, with the southeastern corner by the warehouse being used for vehicle access or loading. A small unidentified solitary structure is located on the central eastern margin of the site.
- 1986 A large circular dark-discolored area is located immediately east of the center portion of the main building, in the vicinity of the (former) drywell. Small objects continue to be located in the storage yard between the site's two manufacturing buildings. The industrial-type building to the west of the site (on the west side of N. Williams Avenue) has been expanded southwards to Tillamook Street. No other obvious details are visible in this small-scale photograph.
- 1991 The 1991 photo shows that the yard area east of the warehouse appears to have been paved. The circular area east of the main building appears light-colored in this photo. The yard area between the two manufacturing buildings appears to be used for parking or loading. No other obvious changes to the site or surrounding areas are visible.
- 1999 A small circular dark-discolored area is present near the northeastern corner of the southern warehouse building (Building 1A). No other obvious changes to the site or surrounding areas are visible.

3.3 HISTORIC CITY DIRECTORIES

PNG reviewed available historic City Directories covering the subject site in an effort to identify current and former site occupants. PNG reviewed the published City Directories at the Multnomah County Library, covering the years 1920, 1925, 1930, 1935, 1940, 1943-44, 1950, 1955, 1960, 1961, 1962, 1965, 1970, 1975, 1980-81, 1985, 1990, 1995, and 1998-99. Site occupants and historic site addresses are summarized below.

ON-SITE ADDRESSES & OCCUPANTS NORTH WILLIAMS AVENUE

DIRECTORY DATE	ADDRESS	OCCUPANT
1998-99	2110 N. Williams	Resource Revival (recycled materials re-manufacturing)
	2124 N. Williams	Wagstaff Battery & Service
	2156 N. Williams	American Relocation Managers
1995	2110 N. Williams	Adam Systems Inc. Portland Plating Co.
	2124 N. Williams	Wagstaff Battery Manufacturing
	2156 N. Williams	Amcor Western Inc.
1990	2124 N. Williams	Wagstaff Battery Manufacturing
	2156 N. Williams	Industrial Battery Co.
1985	2124 N. Williams	Wagstaff Battery Manufacturing
	2156 N. Williams	Vacant
1980-81	2124 N. Williams	Wagstaff Battery Manufacturing
	2156 N. Williams	Vacant
1975	2124 N. Williams	Wagstaff Battery Manufacturing
	2156 N. Williams	Wood Arts Co. (cabinetmakers)
1970	2124 N. Williams	Wagstaff Battery Manufacturing
	2142 N. Williams	Vacant
	2156 N. Williams	A. Lister Co. Air Compressors (distribution and repair)
1965	2124 N. Williams	Wagstaff Battery Manufacturing
	2142 N. Williams	Otto C. Oliver
	2156 N. Williams	A. Lister Co. Air Compressors (distribution and repair)
1962	2124 N. Williams	Wagstaff Battery Manufacturing
	2142 N. Williams	Otto C. Oliver
	2156 N. Williams	A. Lister Co. (gas station equipment)

1961	2124 N. Williams	Vacant
	2142 N. Williams	Otto C. Oliver
	2156 N. Williams	A. Lister Co. (gas station equipment)
1960	2124 N. Williams	Portland Lounge & Chair Co. (upholstery & furniture manufacturing)
	2142 N. Williams	Otto C. Oliver
	2156 N. Williams	A. Lister Co. (gas station equipment)
1955	2124 N. Williams	Portland Lounge & Chair Co. (upholstery & furniture manufacturing)
	2142 N. Williams	Lorenzo Hunter
	2156 N. Williams	Portland Lounge & Chair Co. (warehouse)
1950	2124 N. Williams	Portland Lounge & Chair Co. (upholstery & furniture manufacturing)
	2142 N. Williams	Mrs. M. E. Bryant
	2156 N. Williams	Portland Lounge & Chair Co. (warehouse)
1943-44	2124 N. Williams	Portland Lounge & Chair Co. (upholstery & furniture manufacturing)
	2142 N. Williams	Mrs. M. E. Bryant
	2156 N. Williams	Acme Metal Works
1940	2124 N. Williams	Portland Lounge & Chair Co. (upholstery & furniture manufacturing)
	2142 N. Williams	Mrs. M. E. Bryant
	2156 N. Williams	Acme Metal Works
1935	2124 N. Williams	Ramke & Grass (upholstery)
	2142 N. Williams	Vacant
	2148 N. Williams	Mrs. Sine M. Tuggle
1930	452 N. Williams	Acme Metal Works, Inc. Theo A. Newholm (public accountant) Oregon Range Manufacturing Co.
	458 N. Williams	Vacant
	460 N. Williams	Arthur Bourgo
	462 N. Williams	Mrs. Clara Anderson
1925	No listing by street (Acme Metal Works is listed at 475 N. Williams, north of Eugene (Thompson) Street)	n/a

ON-SITE ADDRESSES & OCCUPANTS
(offsite in italics)
NE THOMPSON (Formerly Eugene Street) and NE TILLAMOOK STREETS

DIRECTORY DATE	ADDRESS	OCCUPANT
1990	<i>20 NE Thompson</i> <i>(excluded from site)</i>	<i>Eddie Mears, Attorney</i>
	NE Tillamook	No on-site addresses
1980-81	14 NE Thompson	Farris Collins
	<i>20 NE Thompson</i>	<i>Wm. N. Bowen</i>
	NE Tillamook	No on-site addresses
1970	14 NE Thompson	James Coleman
	<i>20 NE Thompson</i>	<i>Wm. N. Bowen</i>
	26 NE Thompson	Vacant
	13 NE Tillamook	Mrs. Lottie Powell
1960	14 NE Thompson	James Coleman
	<i>20 NE Thompson</i>	<i>Wm. N. Bowen</i>
	26 NE Thompson	Dennis Albert
	13 NE Tillamook	Carl Powell
	23 NE Tillamook	Roy V. Blair
1950	14 NE Thompson	James Coleman
	<i>20 NE Thompson</i>	<i>Susan F. Lum</i>
	26 NE Thompson	Mrs. M. E. Banks Roosevelt Lewis
	13 NE Tillamook	Carl Powell
	23 NE Tillamook	R. V. Blair
1940	14 NE Thompson	Frank Janisch
	<i>20 NE Thompson</i>	<i>Edward L. Keins</i>
	26 NE Thompson	Vacant
	13 NE Tillamook	RV Winchester (building contractor)
	23 NE Tillamook	Roy V. Blair
1930	286 Eugene (to become 14 NE Thompson)	Frank J. Janisch Anton F. Usselman
	<i>288 Eugene</i> <i>(to become 20 NE Thompson)</i>	<i>Edward L. Keins</i>

1930 (cont.)	290 Eugene (to become 26 NE Thompson)	Robert T. Spitznagel
	287 Tillamook (to become 13 NE Tillamook)	John F. Herrold Joseph G. Howe (watchmaker)
	291 Tillamook (to become 23 NE Tillamook)	Roy Blair

3.4 BUILDING PERMITS AND PLANNING RECORDS

PNG identified numerous building permit records and plans for the subject site at the City of Portland's Permit Center. The permit files included the following items, some of which are presented in Appendix E:

BUILDING 1A - 2110 N. Williams

- Original building permit for the 50' x 95' concrete tilt-up building dated February 20, 1970.

BUILDING 1B - 2124 N. Williams (originally 452-454 N. Williams)

- Original construction permit, dated November 26, 1926.
- Other miscellaneous permits for balcony/loft construction (1941); parking lot paving in 1962 (34' x 85') and 1972; fence installation (1967 and 1974); and exhaust system modification (1989).
- Construction plans for exhaust system modification (1989).

BUILDING 2 - 2156 N. Williams (originally 2152-2156 N. Williams)

- Original building plans attached to construction bid documents for "Garage Building," April 1936.
- Other miscellaneous permits for change of occupancy to cabinet shop (1971).

3.5 SANBORN FIRE INSURANCE MAPS

PNG subcontracted a search for Sanborn Fire Insurance Maps covering the subject site. The Sanborn map search was performed by Environmental Data Resources, Inc. (EDR, Southport, Connecticut). According to EDR documents, Sanborn Fire Insurance Maps covering the site were published for the years 1901, 1909, 1924, 1950, and 1969. The available maps are described below and are presented as Appendix F.

1969

The most recent (1969) available Sanborn Map shows the site's two manufacturing buildings (Buildings 1B and 2) in their current locations at 2124 and 2152-2156 N. Williams Avenue. The use of the 2124 address is illustrated as "Battery Manufacturing," and the map illustrates the L-shaped original building before the addition of the warehouse (Building 1A). The map indicates that the 2152 address includes the larger manufacturing portion of Building 2; the 2156 address is for the office portion of the same building. Rectangular structures in the shop area are described by an EDR representative as wired glass skylights. The 1969 map shows that Building 2 was used for "Gas Station Equipment

Service." A total of four residences were located on the site including one immediately south of Building 1B (13 NE Tillamook); one between Building 1B and Building 2 (2142 N. Williams), and three to the east of Building 2 (14 NE Thompson, 20 NE Thompson (excluded from the site), and 26 NE Thompson). Vacant lots were located on the southeast and southwest corners of the site, and between Building 1B and the residence to its north.

1950

The 1950 map shows that the 2124 N. Williams building was used as a "furniture factory and upholstery" facility, with a furniture warehouse located in the northern portion of the building. Building 2 is shown to have been used for "furniture upholstery." A total of five residences are illustrated on the site, including 13 NE Tillamook (south of Building 1B) and 23 NE Tillamook (southeast of building 1B); 2142 N. Williams; and 14, 20 (excluded), and 26 NE Thompson.

1924

The site was not occupied by any large manufacturing facilities in 1924. At that time, the area's street numbering system was different from the current system, and NE Thompson Street was named Eugene Street. A total of seven residences are shown on the site, including 287 and 291 Tillamook (later 13 and 23 NE Tillamook); 458, 460, and 462 N. Williams; and 286, 288 (excluded), and 290 Eugene (later 14, 20, and 26 NE Thompson).

1909

The site configuration in 1909 is similar to that described in 1924. A small unidentified structure (not labeled as a residence) was located at 452 N. Williams, near the center of the current Building 1B.

1901

In 1901, a total of five main structures were present on the site, with associated small garages and sheds. A residence was located at 287 Tillamook, with another building (likely to be a garage or stable) on the same parcel with an address of 287 ½ Tillamook. The small structure at 452 N. Williams was present, as was the residence at 458 N. Williams. One residence was present along the north margin of the site, at 290 Eugene. Other lots on the site were vacant at this time.

3.6 FIRE DEPARTMENT RECORDS

According to a representative of the City of Portland Fire Marshal's Department, the only record for the subject property was a permit filed in 1993 for decommissioning one 1,000 gallon unspecified fuel UST. Details regarding the UST decommissioning are provided in Section 5.2.2 and Appendix B.

3.7 PERSONAL INTERVIEWS

In addition to personal interviews conducted during the preparation of this report and cited in the report, PNG provided written environmental use and history questionnaires to Mr. George Scott of PCDC (the current site owner), and to Mr. Charles Hindman (the former site owner). Copies of the questionnaires are provided in Appendix G. Both Mr. Scott and Mr. Hindman acknowledged the historical use of the site for industrial battery manufacturing. Mr. Hindman added that on-site chemical use included solvents and paints, and storage and use of industrial (55-gallon) drums. See Section 3.8 and Appendix G for more detail.

3.8 PREVIOUS ENVIRONMENTAL ASSESSMENT REPORTS

3.8.1 DEQ File Review

PNG reviewed available documents at DEQ's Northwest Region office in an effort to determine site usage history and the site's regulatory status. Copies of selected documents obtained from DEQ's ECSI file for the site are attached in Appendix H. Additional details regarding the site's regulatory status are provided in Section 5.

According to DEQ files, Wagstaff Battery Manufacturing Company manufactured industrial batteries on the site between the 1960s and 1991, using antimony, arsenic, cadmium, and lead as main constituents. The manufacturing operation ceased in 1991, switching to battery service and repair between 1991 and approximately 1996, when business operations at the site ceased altogether. DEQ reported that Wagstaff produced approximately 800 batteries per year in 1973, using 240 tons of lead ingot. In 1986, a DEQ Air Quality inspector reported similar site operations, with estimated annual production of 500 batteries from 70 tons of lead and 100 tons of lead oxide. Wagstaff notified DEQ in 1991 that all battery manufacturing at the site had ceased. At the time of a DEQ inspection in 1992, the facility used four above ground sulfuric acid storage tanks, located in the northeastern portion of the building (Building 1B). Total acid storage capacity was reported by DEQ to be 3,200 gallons. Wastewater associated with process acids, metals, sludges, and other materials was routinely discharged to two sumps in the building. Prior to approximately 1972, the sumps were reportedly connected to the municipal sanitary sewer. In approximately 1972, the sumps were re-plumbed to a 15-foot deep on-site drywell, located immediately east of Building 1B, according to a construction drawing of the drywell dated April 5, 1972 (Appendix H). The environmental permitting history of the site was described in DEQ's File Review Memo dated June 19, 1997 (Appendix H).

DEQ conducted site inspections in 1992 and 1994, documenting several issues of environmental concern at the site, including the historical drywell usage, storage of potentially hazardous materials and wastes in outdoor yard areas, interior and exterior lead dust emissions, and the presence of an out-of-service gasoline UST. Based on this information, the site was added to the DEQ's suspected release list (the Environmental Cleanup Site Information (ECSI) System) in September 1993. On April 7, 1997, the property owner, Mr. Charles Hindman, entered the DEQ's Voluntary Cleanup Program in an effort to expedite Agency review and regulatory closure for the site. The site was added to the DEQ's Confirmed Release List on July 23, 1997, and a conditional No Further Action decision was issued for the site on February 24, 1998. The NFA acknowledged the presence of residual lead-contaminated soil at Sump 1 and beneath the eastern portion of Building 1B, adjoining the former drywell. The NFA indicated that lead dust was not a contaminant of concern for shallow outdoor soils at the site. The property was then sold to Port City Development Center on about September 2, 1998. PCDC signed a Prospective Purchasers Agreement (PPA) with the DEQ on September 10, 1998, agreeing to various environmental notification and cleanup obligations associated with future use of the site.

Additional regulatory details are provided in Section 5.

3.8.2 Phase I Environmental Site Assessment (Technical Action Group, Inc., May 1992)

Mr. Hindman provided PNG with a copy of a Phase I ESA conducted at the site by Technical Action Group, Inc. (TAG), dated May 24, 1992. At the time that work was conducted, the Wagstaff Battery Manufacturing facility was in operation. The Phase I ESA report concluded that several issues of environmental concern were identified, and recommended further characterization as summarized below. A copy of the TAG report is presented as Appendix I.

1. Lead- and acid-containing wastewater was historically discharged into the on-site drywell, located immediately east of Building 1B. Subsurface characterization was recommended in this area.
2. Indoor sumps were used to hold and discharge wastewater to sanitary sewer and to the on-site drywell. Subsurface characterization was recommended in these areas.
3. The 1,000-gallon gasoline UST was reported to be out of service in 1992. TAG recommended decommissioning the UST.
4. TAG stated that Wagstaff had discharged or spilled acidic wastewater onto the site surface, draining towards N. Williams Avenue. Subsurface characterization in the storage yard area was recommended.
5. TAG identified 29 known or suspected facilities of environmental concern within 0.5 miles of the subject site. Given a depth to groundwater estimated at over 50 feet, TAG did not recommend further inquiry regarding off-site contaminant sources.
6. Electrical transformers located within 100 feet of the subject site were determined not to be a significant environmental risk to the site.
7. TAG stated that light ballasts at the site potentially contained PCBs, but no further characterization of light fixtures was recommended.

3.8.3 1,000 Gallon Underground Storage Tank Decommissioning Report (Environmental Investigation Corporation, October 1993)

Environmental Investigation Corporation (EIC) directed the decommissioning of the site's registered 1,000-gallon gasoline UST in September 1993. The steel UST, which was reportedly installed in 1974 to fuel Wagstaff equipment, was located immediately west of Building 1A. The tank system, including steel piping and the fuel dispenser, was decommissioned by removal from the site. In a report dated October 14, 1993, EIC documented that no fuel hydrocarbons were detected in soil samples collected from beneath the eastern and western ends of the tank. Following receipt of laboratory confirmation, the tank cavity was backfilled and paved. A copy of the EIC report is attached in Appendix B.

3.8.4 Phase II Site Investigation (InterMountain West, Inc., March 1997)

In early 1997, InterMountain West, Inc. (IMW) performed initial characterization of soils underlying the site's three identified sumps. The report concluded that several issues of environmental concern were identified, and recommended further characterization as summarized below. A copy of the IMW report is presented in Appendix J.

Sump 1. This sump is located in the northeastern portion of Building 1B. During the period of Wagstaff Battery's operations, used battery washing solutions were reportedly drained into this sump. After solids settled, the wastewater was discharged to the sanitary sewer (prior to 1972), or to the on-site drywell (1972-1993). IMW transferred liquids and sludges from the sump to a steel drum, and measured the sump to be 24 inches in diameter and 36 inches deep. The deteriorated concrete floor of the sump was removed in order to sample underlying soils. IMW conducted three sampling events at this location during January and February 1997. Analytical testing results indicated that volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs) were not detected. Total lead and total petroleum hydrocarbons in the gasoline and diesel fuel range were detected and determined to decrease with depth below approximately 4.5 feet bgs. IMW manually removed soil from beneath the sump to a total depth of six feet bgs. The disposition of the contaminated soil was not discussed in the IMW report. Laboratory testing results are summarized below. Soil samples were not tested for leachable (TCLP) lead. IMW concluded that additional characterization for hydrocarbons was necessary in this area.

SAMPLE DEPTH (feet bgs)	TOTAL LEAD (mg/kg)	TPH (EPA Method 418.1) (mg/kg)
3.5	350	15,000
4.5	1,900	17,000
5.0	23	Not Measured
6.0	19	9,000

Note that IMW did not discuss the presence of a second sump in this area. PNG observed a second, larger sump located approximately 15 feet east of Sump 1. Based on a review of DEQ site photographs from 1992, it appears that Sump 1A was used to contain battery overflow or rinseate. PNG assumes that the second sump was also plumbed to the drywell, but no previous investigations have described or investigated Sump 1A to our knowledge.

Sump 2. This sump is located in the northwestern portion of Building 1B, in the former loading dock or lead oxide "pasting room" area. During the period of Wagstaff Battery's operations, floor and battery washing solutions were reportedly drained into this sump. After solids settled, the wastewater was discharged to the sanitary sewer (prior to 1972), or to the on-site drywell (1972-1993). IMW measured the sump to be 24 inches in diameter and 36 inches deep. The deteriorated steel floor of the sump was removed in order to sample underlying soils. IMW conducted three sampling events at this location during January and February 1997. Analytical testing results indicated that VOCs, PCBs, and fuel hydrocarbons were not detected. Total lead was detected and determined to decrease with depth below approximately four feet bgs. IMW removed soil from beneath the sump to a total depth of four feet bgs. The disposition of the contaminated soil was not discussed in the IMW report. Laboratory testing results are summarized below. Soil samples were not tested for leachable (TCLP) lead. IMW concluded that no additional characterization was necessary in this area.

SAMPLE DEPTH (feet bgs)	TOTAL LEAD (mg/kg)	TPH (EPA Method 418.1) (mg/kg)
3.2	5,700	Not Detected
4.0	34,000	Not Measured
4.2	15	Not Measured

Sump 3. This sump is located in the northeastern portion of Building 2, in the former workshop area. The sump appears to collect surface water from the concrete-floored work area, and is reportedly connected to sanitary sewer (Section 2.2.8). IMW measured the sump to be 24 inches in diameter and 36 inches deep. The intact steel floor of the sump was cut in order to sample underlying soils. IMW conducted one sampling event at this location in January 1997. Analytical testing results indicated that VOCs, PCBs, and fuel hydrocarbons were not detected. A low concentration of total lead was detected at 21 mg/kg at a depth of 3.2 feet bgs, and no further sampling was conducted or recommended in this area.

3.8.5 Remedial Investigation Final Report (Philip Environmental Services Corporation, December 1997)

In October 1997, Wagstaff's owners (Charles and Bruce Hindman) authorized Philip Environmental Services Corporation (PES) to characterize and remediate four identified areas of concern. The areas of concern included: (1) determining the extent of residual hydrocarbon impact beneath Sump 1; (2) removing and disposing offsite of cement-treated lead contaminated soil in the former drywell area, immediately east of Building 1B; (3) determining the extent of lead contamination beneath the eastern portion of Building 1B, adjacent to the former drywell; and (4) characterizing lead in surface soil on the unpaved eastern yard area. Since the site had been listed by the DEQ for known hazardous material releases (see Section 5.2.1), the purpose of PES's work was to satisfy identified data gaps and to gain regulatory closure of the site. PES work tasks and findings are summarized below. A copy of the PES report is attached in Appendix K.

Exploration of Sump 1. Previous work at the site by IMW indicated the presence of residual gasoline and diesel fuel impact in Sump 1 at depths below five feet bgs. Use of the sump reportedly discontinued prior to 1993, and above ground plumbing from the sump was removed at that time. PES advanced a soil boring directly beneath Sump 1 to identify the extent of hydrocarbon impact. PES reported a total petroleum hydrocarbon concentration of 13,100 mg/kg (using EPA Method 418.1) at a depth of nine feet bgs. TPH levels diminished to 334 mg/kg at 12 feet bgs, and no TPH was detected at 15 feet bgs. Although no polynuclear aromatic hydrocarbons (PAHs) were detected at nine and 15 feet bgs, one PAH constituent (phenanthrene) was detected at a low concentration of 22 micrograms per kilogram (ug/kg) at 12 feet bgs. PES measured pH in this depth interval at concentrations between 3.39 and 3.56. PES concluded that the volume of residual TPH-impacted soil beneath Sump 1 is 10.5 cubic yards, and recommended no further action based on the judgment that the impacted soil poses no significant risk of migration or threat to groundwater. Again, there was no exploration or discussion of adjoining Sump 1A.

Excavation and Disposal of Lead-Contaminated Drywell Soils. PES reported that soil surrounding the former drywell contained leachable lead in excess of 5 milligrams per liter (mg/L), indicating the excavated soil would be considered a hazardous waste by characteristic. Approximately 100 tons of lead-contaminated soil was reportedly excavated from the former drywell by others in 1993 and stockpiled east of Building 1B. PNG did not identify any written documentation of the 1993 removal activity. Visibly discolored soil associated with the drywell was observed to extend westwards beneath the building. PES reported that the stockpiled soil was cement-treated in April and December 1995 in an effort to raise soil pH and to stabilize the leachable lead content. Wagstaff reportedly received DEQ approval in 1996 to return the treated soil to the former drywell excavation. PES did not indicate whether feasibility testing or risk evaluations were conducted for the treated soil to determine long-term stability and acceptable risk scenarios.

PES reported that after joining the DEQ's Voluntary Cleanup Program in 1996, the DEQ determined that inadequate feasibility testing had been conducted on the treated drywell soils. DEQ required Wagstaff either to perform a risk assessment or to remove the drywell soils for off-site disposal. Wagstaff then directed PES to remove the accessible drywell soils for offsite disposal at an approved landfill facility. PES excavated approximately 362.2 tons of soil from the former drywell area in October 1997. The excavated soil was transported to the Waste Management Columbia Ridge Landfill in Arlington, Oregon. Final excavation dimensions were reported to be 26 by 28 feet, and up to 24 feet deep. Confirmation soil sampling reported by PES indicates that accessible lead-contaminated soil was successfully removed from the excavation. A small volume of inaccessible impacted soil was left in place along the eastern margin of the building. One soil sample collected from the west wall of the excavation at a depth of 10 feet bgs yielded a lead concentration of 383 mg/kg. PES estimated the volume of residual lead-impacted soil to be approximately 22 cubic yards, and recommended leaving the pocket of contamination in place to avoid damage to the building structure.

Indoor Exploration Beneath East Margin of Building 1B. In an effort to determine the extent of residual lead-contaminated soil beneath Building 1B, PES advanced three indoor soil borings within approximately 10 feet of the former drywell location. PES collected soil samples at depths between two and ten feet bgs in each boring location, and submitted the samples for lead testing. Total lead concentrations in the sampled areas ranged between 5.51 and 8.37 mg/kg. PES concluded that no contaminants associated with the former drywell extended beneath the eastern portion of the building. Although PES measured a lead concentration of 3,750 mg/kg at 19 feet bgs in the drywell excavation, indoor soil borings were completed to maximum depths of 10 feet. It is possible that additional lead impact is present in this area at depths below 10 feet bgs.

Surface Soil Characterization East of Building 1B. PES collected surface soil samples from three locations east of Building 1B to determine if lead dust emissions from the Wagstaff operation had impacted surrounding soils. The soil samples, which were reportedly collected at maximum depths of two inches bgs, yielded lead concentrations between 1.39 and 27.5 mg/kg. No further assessment was recommended in this area.

Based on the results of these explorations, PES concluded that all necessary remedial actions had been completed at the site. PES recommended that the DEQ be petitioned for a "No Further Action" ruling.

4 GEOLOGIC AND HYDROGEOLOGIC SETTING

Our understanding of subsurface conditions is based on the results of PNG's experience in the site vicinity, as well as supporting documentation concerning regional, local, and on-site subsurface conditions.

4.1 GEOLOGY AND SOILS

The subject site is located in the Portland Basin, a structural basin filled with up to 1,000 feet of primarily fluvial deposits. Vicinity water well logs indicate that near-surface soils consist of unconsolidated silts, sands, and gravels which extend at least to several hundred feet in depth. The fine-grained surficial Quaternary Alluvium is underlain by Pleistocene catastrophic flood deposits, which include boulders and gravel deposits. Unconsolidated deposits are underlain at considerable depth by Plio-Miocene basalts of the Columbia River Basalt Group.

4.2 HYDROGEOLOGY

PNG obtained water well log information from the Oregon Water Resources Department (WRD) for the site and vicinity, described as Township 1 North, Range 1 East, Section 27. WRD records indicate that 116 well records are filed for this area, all but three of which are described as geotechnical exploration holes or shallow groundwater monitoring wells. All of the three identified water wells are located at distances greater than approximately 0.5 miles from the subject site. None of the three water wells in Section 27 appears to be used for domestic (drinking) use.

PNG obtained a monitoring well log for what appears to be the nearest water bearing well, located approximately 0.5 miles north of the site at 3237 N. Williams Avenue. This monitoring well was completed at 177 feet bgs, with static water measured at 163 feet bgs. The well appears to have been installed in 1995 and abandoned in 1997, when static water level was reported to be 12.8 feet bgs. Other wells in the search area reported various static water levels ranging between 11 and 163 feet bgs. Water well log data are provided in Appendix L.

According to information extrapolated from the USGS 7.5 Minute Portland Quadrangle map and from aerial photographs, the regional groundwater aquifer is estimated to flow to the west or northwest, towards the Willamette River Basin. Where present, perched groundwater is expected to follow local topography, flowing generally to the west or southwest. At this time, however, no site-specific groundwater flow direction or gradient has been calculated.

5 ENVIRONMENTAL DATABASES AND OTHER RECORDS

A review was made of selected public environmental records, which are readily available for the subject site and vicinity. The reviewed records include databases and files available from the DEQ and the EPA. The records search was performed in general accordance with standards established in 1997 by the ASTM (ASTM E-1527-97). The reviewed records include:

Federal Lists

- EPA National Priority List (NPL)
- Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCLIS - State and Federal Superfund)
- U.S. EPA Resource Conservation and Recovery Act (RCRA) Databases:
 - RCRA Large Quantity and Small Quantity Generators
 - RCRA Treatment, Storage, and Disposal (TSD) Facilities, including Corrective Action Sites (CORRACTS) and non-CORRACTS facilities
- Emergency Response Notification System (ERNS)
- Toxic Release Inventory System (TRIS)
- PCB Activity Database System (PADS)
- Facility Index System (FINDS)

Oregon State Lists

- DEQ Environmental Cleanup Site Information System (ECSIS) and Confirmed Release List (CRL)
- DEQ list of Registered USTs
- DEQ UST Cleanup List (LUST)
- Oregon HAZMAT Database
- Oregon Spills Database
- Oregon State Listing of Solid Waste Disposal Permits

PNG's primary environmental records review is based on computerized data compiled by EDR, dated November 1, 1999. These lists are not necessarily complete or fully up-to-date. A copy of the EDR database search report is provided in Appendix M.

PNG has attempted to evaluate the sites identified on these lists, based on their distance from and location relative to the subject site. Known and potential on-site contamination appears to represent the site's greatest environmental liability, and PNG's research efforts have focussed mainly on historical site operations and site-specific (rather than off-site) contaminant sources. Our identification of "upgradient", "downgradient" or "cross-gradient" facility location is based on the anticipated west- or southwest-trending shallow (perched) groundwater gradient. Local and seasonal fluctuations are likely to affect actual groundwater flow conditions.

5.1 RESULTS OF FEDERAL ENVIRONMENTAL DATABASE REVIEW

5.1.1 National Priorities List

The NPL is a list compiled by the EPA, pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The NPL contains sites with the highest priority for cleanup as dictated by EPA's Hazard Ranking System.

- The subject property is not included on the NPL database.
- No off-site facilities within approximately one-mile of the subject site were identified on this list.

5.1.2 CERCLIS

The CERCLIS database is a compilation by the EPA of sites EPA has investigated or is currently investigating for a release or threatened release of hazardous substances pursuant to the Comprehensive Environmental Response, Compensation, and Liability Information Act of 1980 (CERCLA or Superfund Act).

- The subject property is not included on the CERCLIS database.
- No offsite facilities within approximately 0.5 miles of the subject site were identified on this list.

Two CERCLIS "NFRAP" (No Further Remedial Action Planned) facilities, which have been removed from the CERCLIS list, were identified within approximately 0.25 miles of the site. Both facilities (Mammal Survey & Control Services and Master Chemical Inc.) are referenced in Section 5.2.1.

5.1.3 Resource Conservation and Recovery Information System

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities databases are a compilation by the EPA of reporting facilities that generate, transport, treat, store or dispose of hazardous waste. The nature of the hazardous waste is not defined in the Resource Conservation and Recovery Information System (RCRIS) database.

The RCRIS database identifies large quantity generators (RCRIS-LQG, generating greater than 1,000 kg hazardous waste per month), small quantity generators (RCRIS-SQG, generating between 100 and 1,000 kg hazardous waste per month), and conditionally exempt generators, which generate less than 100 kg hazardous waste per month. This database also includes non-regulated generators, non-regulated transporters, treatment storage and disposal (TSD) facilities, and non-regulated burner-blender facilities.

- The Wagstaff Battery Manufacturing (subject) property registered as a Small Quantity Hazardous Waste Generator because of one-time shipments in 1995 of battery processing wastes and generation of lead-contaminated soil. The hazardous wastes were generated on-site and reportedly shipped to licensed disposal facilities. These issues are discussed in Section 5.2.1.
- An on-site tenant at Building 1A (2110 N. Williams) in approximately 1994-1996, Portland Plating Company was registered as a Conditionally Exempt Hazardous Waste Generator in 1994. In 1995, Portland Plating Company (PPC) was cited

for numerous violations of hazardous waste rules, particularly storage and waste determination for accumulated hazardous wastes on the subject site. According to the DEQ complaint, the PPC facility used copper, zinc, nickel, and cadmium plating metals. DEQ determined that the facility had no wastewater discharge permit from the City of Portland, and the facility apparently went out of business and abandoned all equipment and materials on the site in early 1995. DEQ issued a Notice of Noncompliance (NON) for these violations on October 19, 1995 (to Portland Development Commission, PPC's lender) and January 19, 1996 (to PPC and Bruce/Charles Hindman). DEQ identified the waste streams as including electroplating sludges, acids, caustics, plating solutions, and electroplating wastewaters. DEQ and PPC then prepared a Mutual Agreement and Order (MAO) requiring PPC to comply with corrective actions at the site. The MAO was signed on June 20, 1996. According to Ms. Deborah Nesbitt with DEQ's Enforcement Section, the MAO was completed and closed on October 16, 1996. Copies of the MAO and DEQ's inspection summary are provided in Appendix N.

- Five additional off-site facilities within approximately 0.25 miles of the subject site were identified on the RCRIS SQG list.
- Two off-site facilities within approximately 0.25 miles of the subject site were identified on the RCRIS LQG list.
- No RCRIS TSD facilities were identified within approximately 0.5 miles of the subject site.

5.1.4 Resource Conservation and Recovery Act Corrective Action List

The EPA's RCRA CORRACTS List identifies hazardous waste handlers with corrective action activity.

- The subject property is not listed on the CORRACTS database.
- No off-site facilities within approximately one-mile of the subject site were identified on this list.

5.1.5 Emergency Response Notification System

The Emergency Response Notification System (ERNS) is a national database used to collect information on reported releases of oil and hazardous substances. The database contains information from spill reports made to federal authorities including the EPA, the U.S. Coast Guard, the National Response Center, and the Department of Transportation.

- The subject property is not listed on the ERNS database.

5.1.6 Toxic Release Inventory System

The Toxic Release Inventory System (TRIS) database identifies facilities that release toxic chemicals to the air, water, and land in reportable quantities under SARA Title III Section 313.

- The subject property is not listed on the TRIS database.

5.1.7 PCB Activity Database System

The PCB Activity Database System (PADS) database identifies generators, transporters, commercial stores, and/or brokers and disposers of PCBs which are required to notify the EPA of related activities.

- The subject property is not listed on the PADS database.

5.1.8 Facility Index System

The Facility Index System (FINDS) database identifies chemical user facility information and links to other sources of detailed information. This is often a redundant database, which lists facilities described elsewhere in the EDR report.

- The subject property is listed on the FINDS database, in association with other listings (RCRIS SQG; UST Facility; and ECSI) detailed in the appropriate portions of Section 5.

5.2 RESULTS OF STATE ENVIRONMENTAL DATABASE REVIEW

5.2.1 Environmental Cleanup Site Information System List

The DEQ Environmental Cleanup Site Information (ECSI) System database is a list of sites with reported or confirmed evidence of a release of hazardous materials (EDR refers to this list as the "State Hazardous Waste" database). The ECSI is comprised primarily of non-UST sources that may represent a possible threat to human health and the environment. These sources are generally listed by the state to notify the public or as a part of an investigation and cleanup program managed by the state.

- A total of 19 off-site facilities within approximately one mile of the subject site were identified on this list. Three ECSI facilities are located within approximately 0.25 miles of the subject property, all of which are located west (downgradient) of the site. PNG's review of available DEQ files indicates that none of the three nearby ECSI facilities appears to pose a significant risk of environmental impairment to the subject property, for the following reasons: (1) the facilities are not expected to be located in an upgradient location relative to the subject site; and (2) no impacts to groundwater have been identified at any of the three sites.
- The subject site is listed on the ECSI database. Details regarding the regulatory history of the site are provided below, based in part on DEQ's File Review Memo dated June 19, 1997 (Appendix H).

Air Quality: In March 1974, DEQ issued an Air Contaminant Discharge Permit for Wagstaff's operations. The permit allowed a total of 100 pounds annual lead particulate discharge. DEQ conducted another inspection in 1986 and noted that no dust buildup was observed inside the building. DEQ collected three surface soil samples around the Wagstaff building, with total lead concentrations ranging between 840 and 4,000 mg/kg. DEQ later installed air monitoring stations near the Wagstaff facility; no elevated lead levels were reported by DEQ for the area discharge.

Solid Waste: Wagstaff excavated and treated lead-contaminated soil associated with the on-site drywell in 1993-1995 (see Section 3.8.5). In April 1996, Wagstaff obtained a Solid Waste Letter Authorization Permit from the DEQ which authorized on-site burial of the cement-treated soil.

Water Quality: In 1986, DEQ sampled wastewater from an interior sump at Wagstaff. The water was found to contain 28 mg/L total lead, with 0.3 mg/L leachable lead. These levels were determined to be in excess of the DEQ's drywell lead discharge limit of 0.05 mg/L. The DEQ had no record of any water discharge permit for on-site or off-site discharge.

Underground Fuel Storage Tanks: The 1,000 gallon gasoline UST was installed at the site in the early 1970s, west of Building 1A. The regulated UST was registered in 1989, and was removed in 1993. No evidence of a release from the UST was reported. No other USTs are known to exist on the site.

Hazardous Waste: In September 1993, Wagstaff excavated approximately 130 tons of lead-contaminated soil from the former drywell and stockpiled the soil on-site pending treatment or disposal (PNG has not obtained a copy of any report from this period of site excavation). The stockpiled soil contained leachable lead in excess of hazardous waste criteria, and Wagstaff acquired a Hazardous Waste Generator Number for the waste (ORD987181146). In September 1994, DEQ issued a Notice of Noncompliance (NON) for improper storage of the hazardous soil. This issue was referred to DEQ's Enforcement Section, which issued a Compliance Order and assessed a civil penalty against Wagstaff in February 1995. In June 1995, Bruce Hindman signed a Mutual Agreement Order (MAO) which directed Wagstaff to recycle and dispose potentially hazardous materials and other wastes at the site

Regulatory Oversight & Closure: On April 7, 1997, the property owner, Mr. Charles Hindman, entered the DEQ's Voluntary Cleanup Program in an effort to expedite Agency review and regulatory closure for the site. The site was added to the DEQ's Confirmed Release List on July 23, 1997, and a conditional "No Further Action" decision was issued for the site on February 24, 1998. The NFA acknowledged the presence of residual lead and TPH contaminated soil at Sump 1 and beneath the eastern portion of Building 1B, adjoining the former drywell. The NFA indicated that lead dust was not currently a contaminant of concern for shallow outdoor soils at the site. The property was then sold to Port City Development Center on or about September 2, 1998. PCDC signed a Prospective Purchasers Agreement (PPA) with the DEQ on September 10, 1998, agreeing to various environmental notification and cleanup obligations associated with future use of the site. The terms of the PPA require PCDC to conduct the following actions:

- Ensure that the pocket of residual lead-contaminated soil in the former drywell area remains isolated from human contact.
- Construct a protective concrete cap over Sump 1 to minimize potential contact with and migration from the residual contamination among soils beneath the sump.
- Investigate and remediate any residual impacted soils if site conditions change to allow access to the impacted soil areas.
- Notify DEQ of proposed site redevelopment plans, and submit all pertinent planning documents to DEQ for review and approval. PCDC will also require all employees and tenants at the site to comply with this restriction.
- Comply with certain land-use restrictions detailed in the PPA.

5.2.2 Registered Underground Fuel Storage Tanks

The DEQ maintains a list of registered USTs in the state. This list does not include non-regulated or unreported USTs.

- The subject property is listed on the registered UST database (File No. 943). One registered 1,000-gallon gasoline UST was formerly located in the parking area immediately west of the warehouse (Building 1A). According to a report provided to PNG from the former property owner, Mr. Charles Hindman, the UST was decommissioned by removal in 1993. This report was submitted to the DEQ and was present in the DEQ's file for the site. Portland Fire Marshal records also confirm the removal of the single UST in 1993. No evidence of a release from the UST was reported. UST closure records are provided in Appendix B.
- No off-site facilities within approximately 0.25 miles of the subject site were identified on this list.

5.2.3 Leaking Underground Storage Tank List

The Leaking Underground Storage Tank List (LUST) database is maintained by the DEQ and lists suspected or confirmed sites with leaking USTs.

- The subject property is not listed in the LUST database.
- A total of 55 LUST facilities were identified within approximately 0.5 miles of the subject property, eight of which are located within 0.25 miles. Six of those eight LUST facilities have been formally closed by the DEQ, indicating that the agency determined no risk to human health or the environment. The remaining nearby sites include:
 - Hoggins Heating Oil LUST, 47 NE Tillamook Street (100 yards southeast).
 - Williamson & Bleid, Inc., 270 N. Hancock Street (0.2 miles southwest).

PNG's review of available DEQ files indicates that neither of the two remaining LUST sources appear to pose a significant risk of environmental impairment to the subject property, for the following reasons: (1) neither site is expected to be located in an upgradient location relative to the subject site; (2) no impacts to groundwater have been identified at either site; (3) primary contaminant sources (USTs and impacted cavity soils) have been removed at both sites, and residual contamination in both cases appears to be relatively immobile.

5.2.4 Oregon HAZMAT Database

This database contains Fire Department response to spills as reported by the Oregon State Fire Marshal's office. No details concerning the HAZMAT responses are available in the EDR report.

- The subject site is not listed on the Oregon HAZMAT Database.

5.2.5 Oregon Spills Database

This Oregon (OR) Spills database is maintained by the DEQ and/or the state Fire Marshal. No details concerning spill responses are available in the EDR report.

- The subject site is not listed on the OR Spills Database.

5.2.6 Oregon Confirmed Release List

The DEQ Oregon Confirmed Release List (CRL) database is a list of sites with confirmed evidence of a release of hazardous materials that may require cleanup.

- A total of five off-site facilities within approximately one mile of the subject site were identified on this list, all at distances greater than 0.25 miles from the site. None of the identified facilities appears to be located upgradient of the subject property, and none of these distant facilities therefore appears to pose a significant environmental risk to the subject site.
- The subject site is listed on the CRL database. See Section 5.2.1 for details.

5.2.7 Permitted Solid Waste Disposal Facilities/Landfills

The DEQ Solid Waste Disposal (SWF) database is a list of permitted solid waste landfill sites in Oregon.

- The subject site was not listed on the SWF database.
- One off-site facility within approximately 0.5 miles of the subject site was identified on this list. Lighting Recyclers, located greater than 0.25 miles to the southwest, is not expected to pose an environmental risk to the subject site because of its distant downgradient location.

6 CONCLUSIONS AND RECOMMENDATIONS

PNG performed a Phase I Environmental Site Assessment at the subject site located in Portland, Oregon. Portions of the site were originally developed for residential usage prior to 1901, and as many as seven residences were located on the site in the early 1900s. The main manufacturing building at the site was constructed at 2124 N. Williams Avenue in 1926. Until the early 1960s, that building was used for manufacturing processes including metal fabrication, and upholstery and furniture making. Wagstaff Battery Manufacturing purchased the site in approximately 1961 or 1962, and occupied the main building until ceasing operations in approximately 1995. The second industrial building, located at 2152-2156 N. Williams, was constructed in the late 1930s. This building was used for metal fabrication, furniture warehousing, gas station equipment sales and service, cabinet manufacturing, and other mechanical repair services. A warehouse building was added to the south side of the main plant, at 2110 N. Williams, in approximately 1970. The only known industrial use of that building to date was a brief occupancy as a plating facility in 1994-1996, with actual plating operations apparently limited to late 1994. The site is currently unoccupied, but is used for storage by its current owner and several tenants. The site is located in a mixed-use industrial and residential neighborhood in North/Northeast Portland.

Based on PNG's site reconnaissance, review of regulatory environmental records, personal interviews, and historical data review, the site has a high potential for adverse environmental impact from historical operations. This judgment is based on known and potential impacts from historical industrial use on the site dating to 1926.

The subject site was placed on DEQ's Confirmed Release List in 1997 for known impacts to underlying soils during a 30-year period of lead-battery manufacturing and processing. Nearly 300 cubic yards of lead-contaminated soil was excavated from an on-site wastewater drywell area in 1997, and disposed at an approved landfill in Arlington, Oregon. Small volumes of accessible highly contaminated soils were manually removed from two interior sump locations in 1997; these wastes are assumed to have been incorporated into the drywell soils and disposed offsite. Residual lead and hydrocarbon contamination exists in the Sump 1 area beneath the northeastern margin of the main building. A small volume of lead-contaminated soil also remains in place beneath the eastern portion of the building, near the former drywell location.

PNG's review of historical site operations indicates that additional areas of environmental concern may also be present at the site. These issues of concern may affect potential ownership liabilities and construction issues. Note that the Prospective Purchaser Agreement requires DEQ review and approval of all investigation and development plans for the site. PNG recommends that the following site-specific issues be considered:

- A paved storage yard is located between Building 1B (2124 N. Williams) and Building 2 (2152-56 N. Williams). Both industrial-use buildings open onto the yard area and it is clear from historical aerial photographs and site photographs that the yard has been used for storage of industrial wastes and potentially hazardous wastes. PNG did not determine when the yard was paved, but pavement cracks and patched areas were observed during our site visit. In addition, PNG observed a small opening in the adjacent concrete floor of the former lead battery "pasting room." This opening provides access to a subfloor water valve, and is located approximately 15 feet north of Sump 2, where lead contamination in shallow soil was measured at levels as high as 34,000 mg/kg in 1997. Since Sump 2 was contaminated by floor and equipment washing

activities in this area, it is possible that soils underlying this nearby floor opening were impacted by the same activities. PNG recommends that subsurface exploration be conducted in several locations in this yard, including areas near the pasting room.

- Additional paved yard areas located to the east and west of Building 1A (2110 N. Williams) are likely to have been used for storage of batteries and other industrial equipment during site operations. These surfaces were not paved until the early 1970s. In addition, Building 1A was used as a plating facility, and used plating materials and wastes were stored inside and outside the building between 1994 and 1996. Although no releases were reported, the facility's tenant has been cited by the DEQ for numerous hazardous waste violations. PNG recommends a limited subsurface exploration be conducted in these yard areas.
- Development plans for the site should be evaluated from an environmental perspective. The PPA requires Sump 1 to be capped, and Sumps 2 and 3 should either be capped or evaluated by an engineer to determine if they are constructed in accordance with current design requirements. If the area near Sumps 1 and 1A will be disturbed by redevelopment activities, additional characterization could be conducted inside the building to determine the extent and magnitude of lead and hydrocarbon impact in this area. Information from this assessment would be used to plan for remedial actions, soil disposal options, health and safety precautions, and construction scheduling. Other development issues include:
 - Interior and exterior building surfaces should be sampled and tested for lead because of worker safety requirements during renovation and demolition, as well as possible demolition debris disposal issues.
 - Widespread and affected building materials should be evaluated prior to renovation as possible hazardous or regulated wastes. For example, floor and wall surfaces in the northeastern portion of Building 1B are visibly contaminated and degraded because of the battery processing operations. Overhead ducting is visibly coated with dust, and what appeared to be lead overspray covered a portion of the southern wall. Ducting and floor tiles should also be tested for possible asbestos-containing materials. Worker safety and disposal issues should be considered prior to disturbing and disposing of these materials.
- Given the history and nature of site usage, it is possible that various buried or obscured structures of potential environmental concern may be present at the site. Typical structures may include (but not be limited to) USTs, septic systems, trenches, and drywells. A geophysical survey using ground-penetrating radar and an electromagnetometer could be used to attempt to locate such structures on the site.

- At this time, no groundwater characterization has been conducted at the site. The potential for groundwater impacts from the site have been minimized during previous site assessments because the depth to water, which is estimated at over 50 feet, has been assumed to be protective. This is supported by data from excavation of the drywell, where the vertical extent of impact was measured to be approximately 24 feet. It is also true that potential groundwater impacts are not expected to affect site redevelopment. Primary reasons to conduct groundwater characterization at the site at this time include: (1) attempting to determine if previous site operations affected groundwater quality in an effort to establish liability; and (2) providing a baseline of groundwater quality at this time, for possible comparison to future studies conducted by site tenants, site owners, or other property owners.

7 LIMITATIONS

Environmental impairment of a property may result from activities such as illegal or unreported dumping, or the spilling of hazardous wastes or materials. It should be noted that the presence of contaminants at a particular property may not always be apparent, and the completion of a Phase I ESA in accordance with the specified work scope cannot provide a guarantee that chemical wastes, materials, or other impacts do not exist. The scope of services executed for this project does not comprise an audit for regulatory compliance, nor does it comprise a detailed condition survey for asbestos, lead paint, radon, naturally occurring materials, wetlands, or other conditions or potential hazards not outlined in PNG's Work Scope.

This report has been prepared for the exclusive use of Port City Development Center and its lenders and agents, in accordance with generally accepted professional consulting practices. No warranty, expressed or implied, are made. The findings contained herein are relevant to the dates of PNG's site visits and should not be relied upon to represent conditions at later dates. In the event that changes in the nature, usage or layout of the property or nearby properties are made, the conclusions and recommendations contained in this report may not be valid. If additional information becomes available, it should be provided to PNG so that the original conclusions and recommendations can be modified as necessary.

PNG ENVIRONMENTAL, INC.



Paul Ecker, R.G.
Project Manager



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Senior Geologist

**1,000 Gallon Gasoline
Underground Storage Tank (UST)
Decommissioning Report
for
Wagstaff Battery Manufacturing Co.**

October 14, 1993

**Prepared for:
Mr. Bruce Hindman, President
Wagstaff Battery Manufacturing Co.
2124 N Williams Avenue
Portland, Oregon 97227**

*BRUCE HINDMAN
PROPERTY OWNER*

**Prepared by:
Environmental Investigation Corporation
1835 SE 143rd Avenue
Portland, Oregon 97233**

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FIGURES

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Figure 2	Site Map

SITE PHOTOGRAPHS

Photograph 1	Top and side of T-1 after excavation.
Photograph 2	Inspecting bottom of Steel UST.
Photograph 3	Looking west into excavation after removal of T-1.
Photograph 4	Backfilled and compacted excavation.

APPENDICES

Appendix A	Laboratory Documentation
Appendix B	Licenses and Permits
Appendix C	Disposal Receipts

EXECUTIVE SUMMARY

The Purpose of this report is to obtain closure for the location of a decommissioned 1,000-gallon gasoline underground storage tank (UST) based on current Department of Environmental Quality (DEQ) regulations, laboratory analysis, and observations made by Environmental Investigation Corporation (EIC) personnel.

A 1,000-gallon gasoline motor fuel UST was installed at Wagstaff Battery Manufacturing Co. in 1974 to supply fuel for the company fleet. Prior to decommissioning activities, EIC acquired all necessary permits from appropriate State and City of Portland agencies. Department of Environmental Quality (DEQ) notification for UST change of service was given 30 days prior to the removal. Also, a fire permit was obtained from the City of Portland Fire Bureau to perform the decommissioning. As the UST was not located on City of Portland right-of-way no street opening permit was required by the City of Portland.

On September 10, 1993, the UST was decommissioned by removal in accordance with all current City, State, and Federal regulations.

On September 10, 1993, two samples were collected from the native soil beneath the former gasoline UST location and analyzed by hydrocarbon identification scan (HCID) by Oregon DEQ methods. The laboratory report indicated that no petroleum hydrocarbons had been released to native soil beneath the former UST location. Groundwater was not encountered at any time during the decommissioning project.

As no release of petroleum hydrocarbons has occurred to sub-surface soil beneath the former UST location, EIC recommends no further investigatory action be performed at the former gasoline UST location.

1.0 INTRODUCTION

Environmental Investigation Corporation (EIC) is pleased to submit this report concluding the underground storage tank (UST) decommissioning activities performed at Wagstaff Battery Manufacturing Co. located at 2124 N Williams Avenue in Portland, Oregon.

Decommissioning activities were performed on September 10, 1993, at the request of Wagstaff Battery Manufacturing Co. in accordance with Oregon Department of Environmental Quality (DEQ) regulations concerning out of service motor fuel UST's. Photographs, Site Maps, and laboratory reports are included at the end of this report.

2.0 GEOGRAPHIC LOCATION

Wagstaff Battery Manufacturing Co. occupies approximately 0.5 acres of commercial business property on the east side of N Williams Avenue, located between N Tillamook street and N Thompson street in Portland, Oregon. The subject property lies approximately one-half mile northeast of the Willamette River. The general location of the subject property is indicated in Figure 1 at the end of this report. A detailed map showing the area of the former UST location is indicated in Figure 2 and 3 at the end of this report.

2.1 Site Geology

The following information is based on data from the US. Geological Survey, the Oregon Departments of Geology, Mineral Industries, and Water Resources, and on field observations made by EIC 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. The subject property elevation is 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 gravel's in a matrix of interbedded clay, silt, and sand. Boulders and gravel's 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.

2.2 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.

3.0 PERMITS AND LICENSES

Notice of Underground Storage Tank Permanent Decommissioning/Service Change was submitted to the DEQ on March 12, 1993. On September 7, 1993, three day notice of intent to decommission the gasoline UST was given to Sheila Monroe of the northwest region of the DEQ and logged as decommissioning number 26-3D-93-71. As required, a fire permit was obtained from the City of Portland Fire Bureau prior to removal of the UST. As the UST was located on private property and not on City of Portland property or right-of-way, a street opening permit was not required by the city.

EIC and its field representatives are licensed to perform UST decommissioning services in the State of Oregon. Copies of the licenses and permits are included in Appendix B of this report.

4.0 UST DECOMMISSIONING ACTIVITIES

After all permits were acquired, the 1,000-gallon gasoline UST was decommissioned by removal using proper industry standard protocols described in the following section.

4.1 UST Pumping and Triple Rinsing Activities

On September 10, 1993, a vacuum truck was used to pump approximately 100 gallons of degraded gasoline from the UST interior after all electrical lines were disconnected from the fuel pump. After the initial pumping of the UST, the fuel pump was removed from the product line and set aside. A foot valve used to maintain the pump prime was present in the UST interior and prevented the product lines from draining into the UST. Using the vacuum truck, the product line was sucked dry of remaining gasoline from the union previously attached to the pump.

After all gasoline was removed from the product line the UST interior was rinsed with a jet nozzle attached to a 90 degree fitting which allowed the top and sides to be tank to be cleaned. After rinsing the interior the resulting rinsate was pumped into the vacuum truck. This procedure was repeated three times to insure that the majority of gasoline was removed from the UST interior. All gasoline and generated rinsate was disposed of at Sunwest Energy Corporation in Portland, Oregon. A disposal receipt for the product and rinsate is included in Appendix C.

4.2 Purging Flammable Atmosphere from UST Interior

On September 10, 1993, approximately 50 pounds of dry ice (carbon dioxide in solid state) was introduced into the fill pipe of the UST to displace any flammable atmosphere within. A sensor attached to an Industrial Scientific OX 231 Oxygen Meter with a hand aspirator was then lowered into the UST to determine the presence or absence of a combustible atmosphere. The atmosphere within the UST was determined to be 8% Oxygen, within safe limits for removal. As the UST contained an Oxygen deficient atmosphere the lower explosive limit (LEL) could not be tested.

4.3 UST Removal

After the tank was purged of flammable atmosphere the asphalt and earth backfill was removed from the top of the tank. The top of the UST was located approximately three feet below ground surface (BGS). The vent and product piping were then removed from the tank. The UST was then removed from the excavation. The UST was observed to be in good condition with no excessive corrosion or pit-holes observed. Following inspection, the atmosphere within the UST was again analyzed. After the atmosphere was observed to be safe, a hole was cut in the end of the UST to render it permanently unusable. The UST was disposed of as scrap metal at Schnitzer Steel Products Company in Portland, Oregon on October 1, 1993. The scrap receipt for the UST has been included in Appendix C.

Following removal of the UST, the UST excavation was inspected for evidence of contamination. No visual or olfactory evidence of contamination was observed in soil beneath the former UST location.

5.0 SOIL SAMPLING METHODOLOGIES

Immediately after the removal of the UST and inspection of the excavation, a soil sample was collected from approximately one foot beneath each end of the former tank location. A total of two samples were collected. Soil from the sample locations were subjected to a sheen test. No visual evidence of contamination was detected during the sheen test. Groundwater was not encountered at any time during excavation activities. The following sampling methodologies were employed:

5.1 Soil Sampling Methodologies. The soil samples were collected from material which had been excavated with the bucket of the backhoe. Surface soil in the backhoe bucket was scraped away to allow access to relatively undisturbed soil from the areas sampled. An eight-ounce, laboratory provided, clear glass sample jar was pressed into relatively undisturbed soils. The jar was removed from the bucket and the soil was compressed into the jar until it was full to limit headspace and possible subsequent loss of volatiles. A new pair of disposable plastic gloves was worn by the sampler when each sample was collected. When the jar was filled completely, the threads and upper lip were cleaned of excess soil, and a Teflon-lined cap was screwed firmly into place. The sample jars were placed on ice in a cooler, and transported to AmTest Laboratories in Beaverton, Oregon, for analysis. Strict Chain-of-Custody documentation was maintained throughout the sampling process.

5.2 Laboratory Results

The two samples collected from beneath the gasoline UST were submitted to AmTest laboratory in Beaverton, Oregon for analysis by Hydrocarbon Identification Scan (HCID) by Oregon DEQ methods. The analytical results are presented in the table below. Copies of the laboratory reports and related documentation are included in Appendix A.

Hydrocarbon Identification by Oregon DEQ Methods			
Sample #	Gasoline Range	Diesel Range	Oil Range
091093-T1W	ND	ND	ND
091093-T1E	ND	ND	ND

ND indicates that no petroleum hydrocarbons were detected through the analytical method.

Groundwater was not encountered during sample collection or at any other time during the decommissioning activities.

6.0 BACKFILLING EXCAVATION

After removal of the UST and all ancillary equipment and a fire inspection was performed by Mr. Mike Bell of the City of Portland Fire Bureau, the excavation was backfilled and compacted with 3/4 minus rock on September 10, 1993. The decision to backfill immediately was based on field observations that indicated no gasoline release had occurred to native soil. Also, as Wagstaff Battery Manufacturing uses the parking area to move heavy equipment with forklifts, the fill material prevented collapse of the excavation walls during these activities.

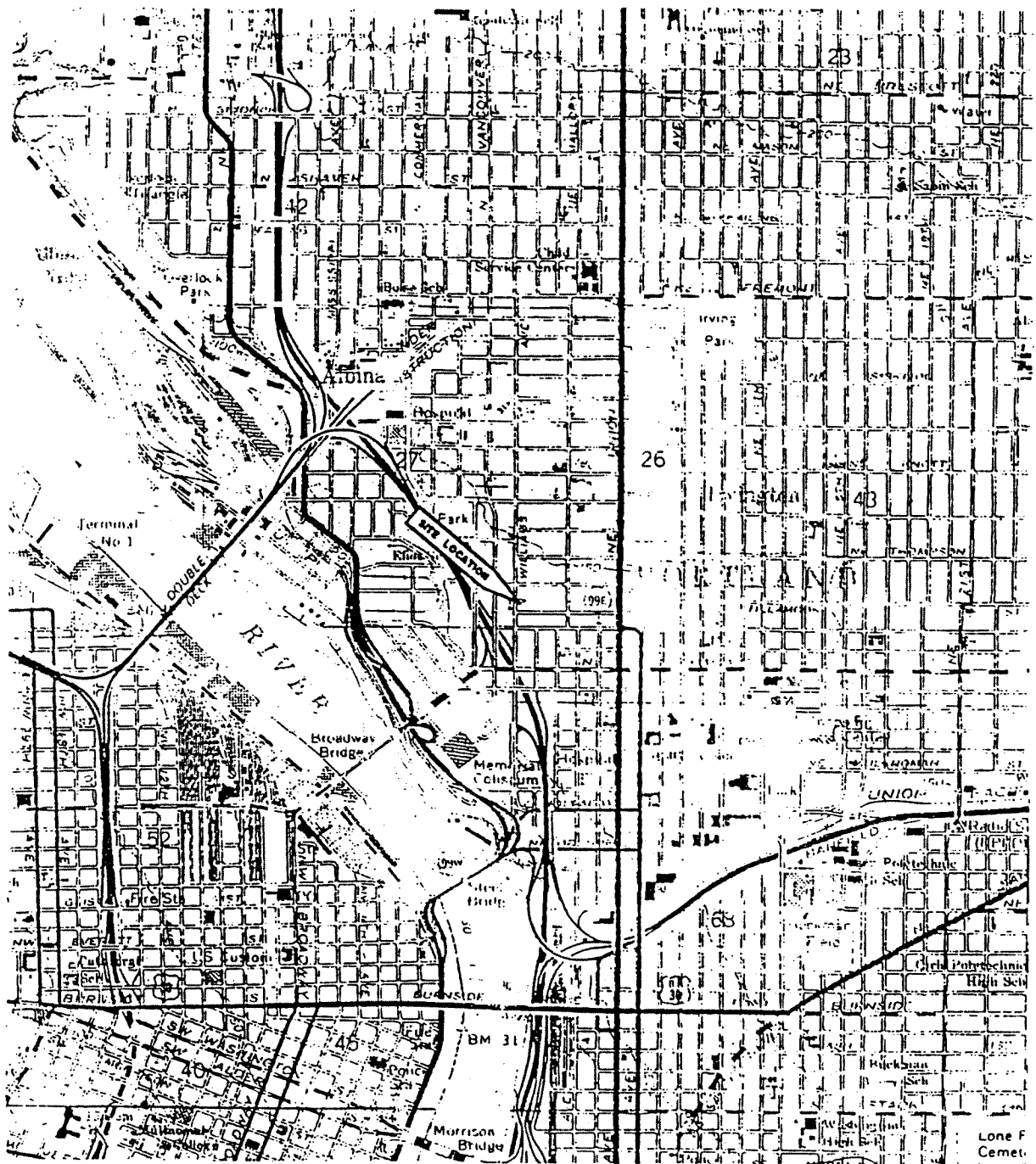
6.1 Asphaltting Excavation

On October 8, 1993, the excavation was re-surfaced with asphalt after laboratory analysis of the soil samples confirmed that a gasoline release from the decommissioned UST system had not occurred to native soil.

7.0 CONCLUSION

On September 10, 1993 one 1,000-gallon gasoline underground storage tank was decommissioned by removal at Wagstaff Battery Manufacturing Company located at 2124 North Williams Avenue in Portland, Oregon.

Soil samples collected from beneath the UST location indicated that a release of petroleum hydrocarbons had not occurred to the native soil beneath the former UST location. Based upon current DEQ regulations, laboratory analysis, and field observations, EIC recommends no further investigation of the former UST location.



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



EIC

Environmental Investigation Corporation

Project No: 0005

October 14, 1993

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

UST Decommissioning

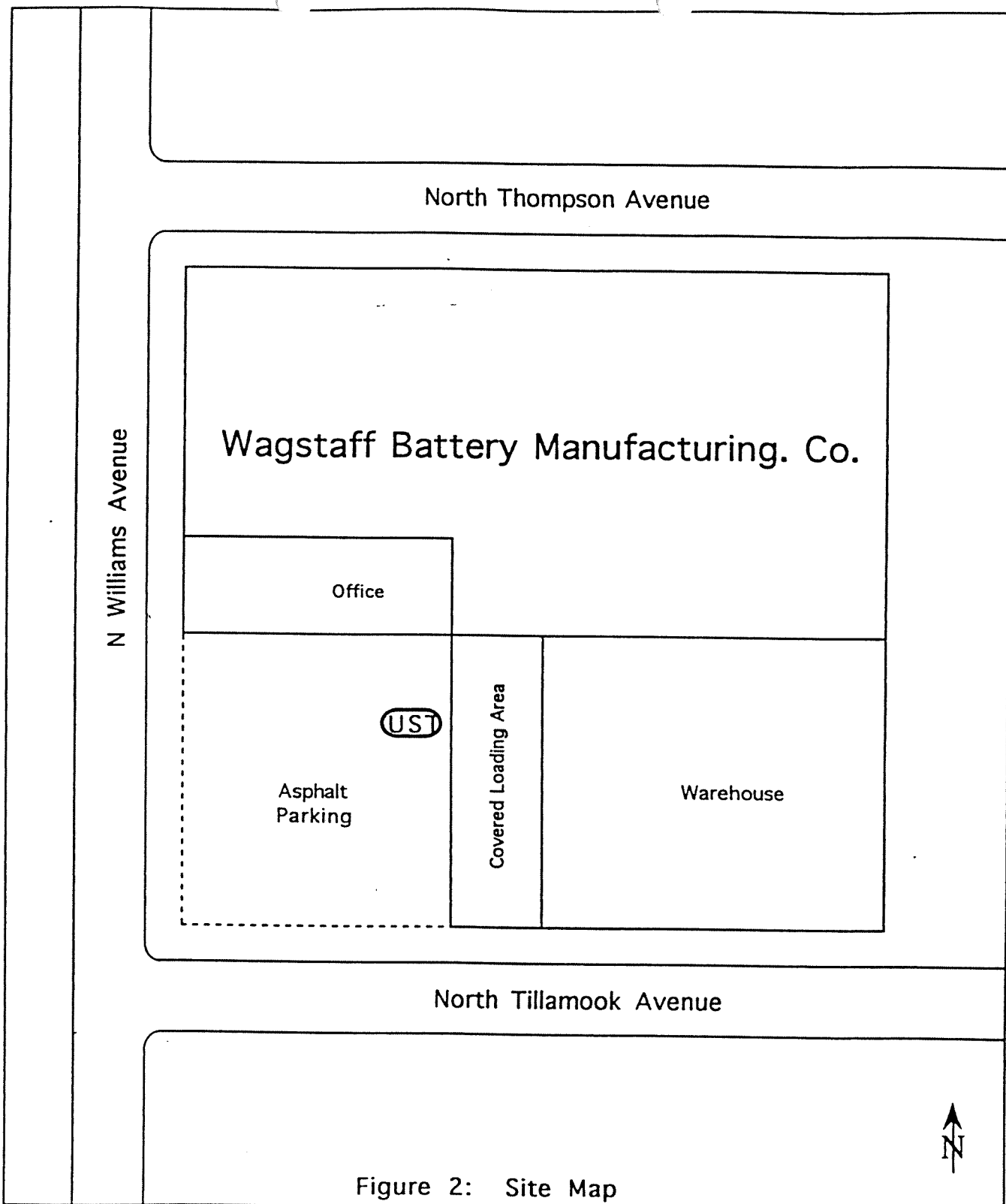


Figure 2: Site Map

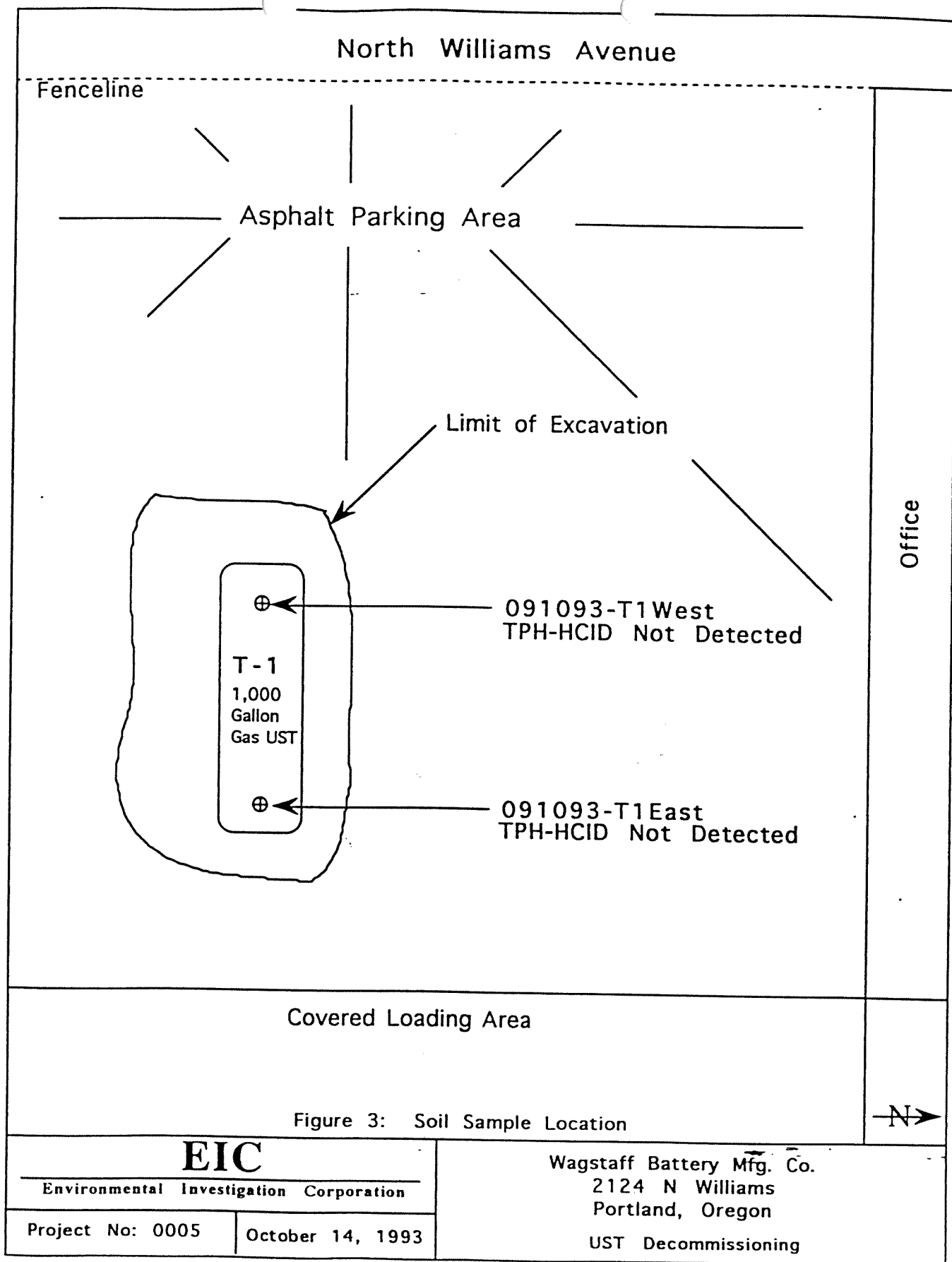
EIC

Environmental Investigation Corporation

Project No: 0005

October 14, 1993

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



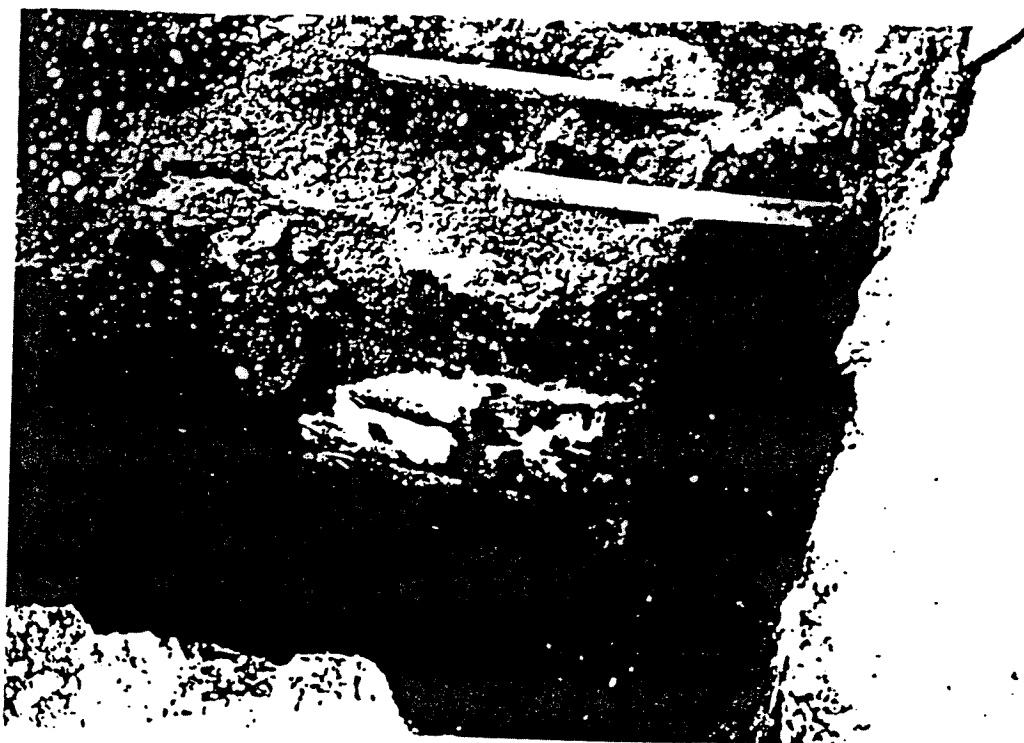
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Environmental Investigation Corporation

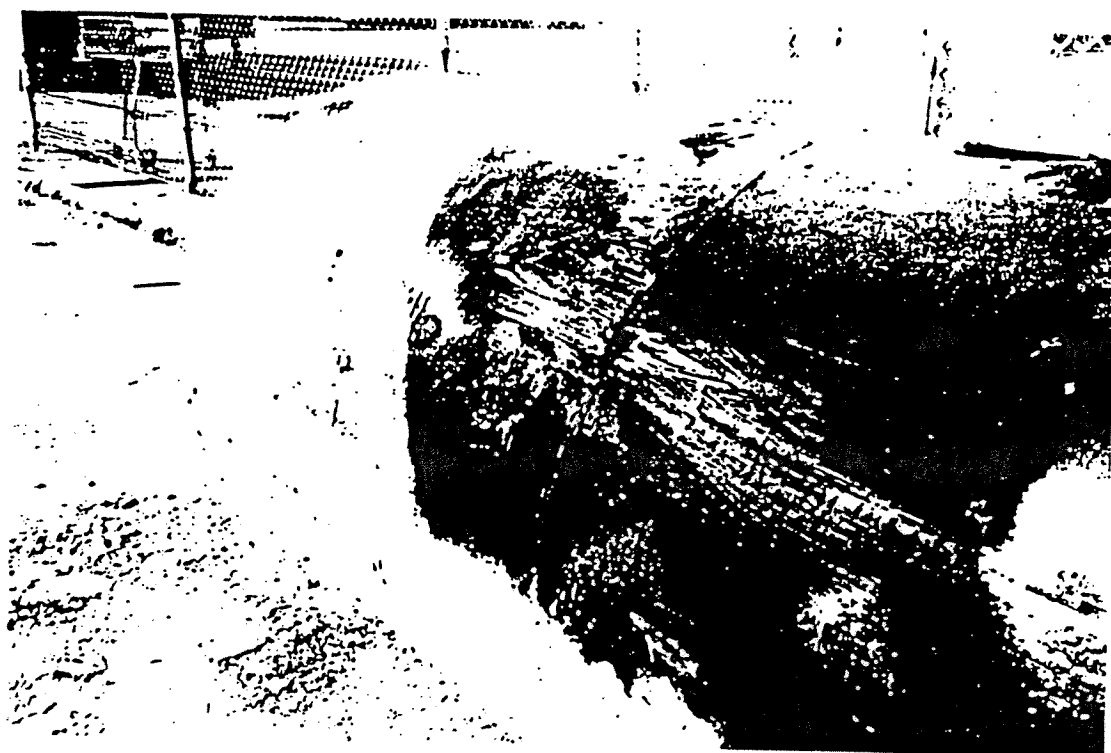
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October 14, 1993

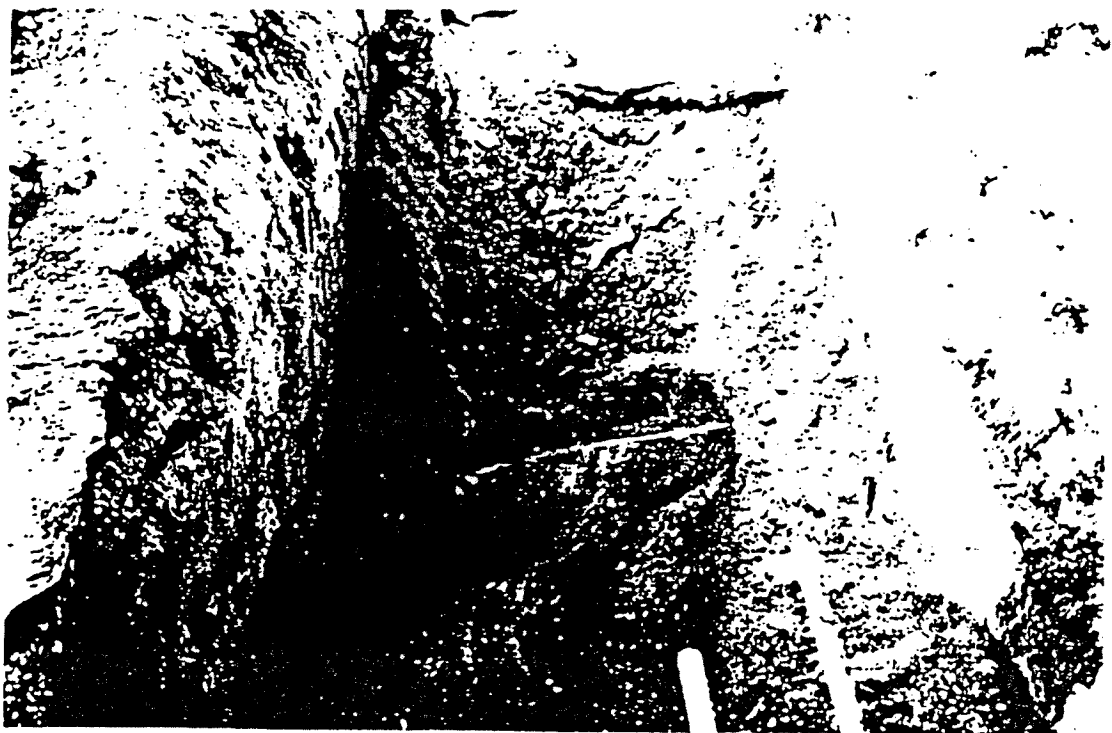
Wagstaff Battery Mfg. Co.
2124 N Williams
Portland, Oregon
UST Decommissioning



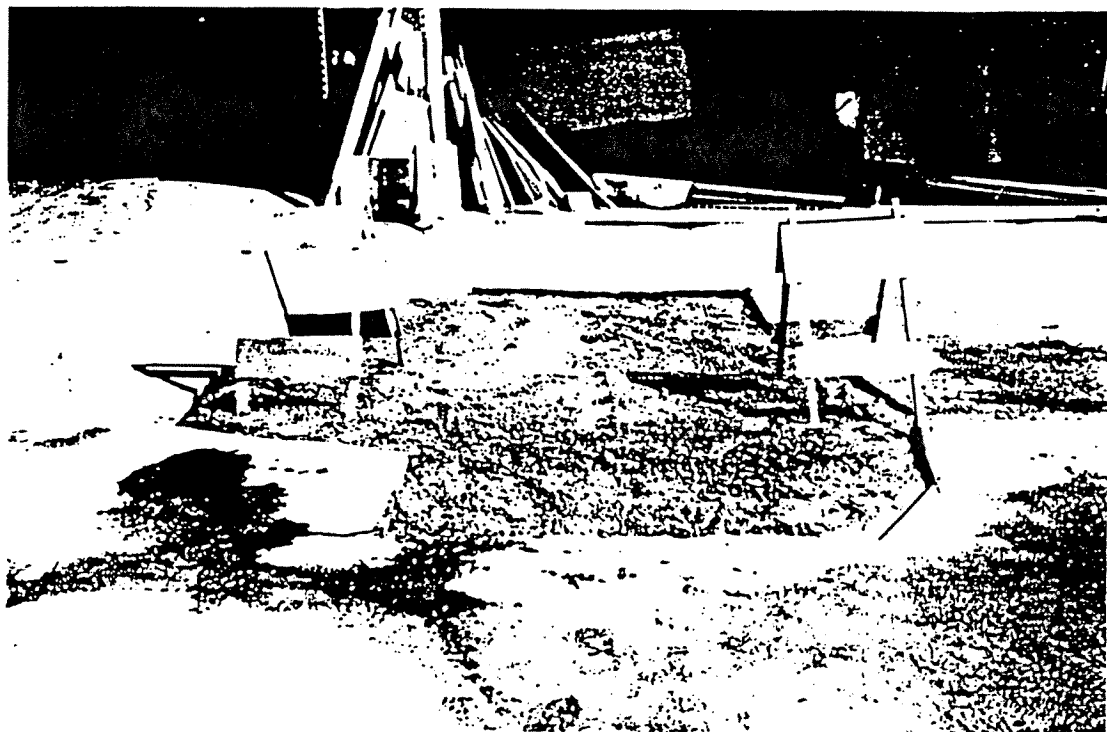
PHOTOGRAPH NUMBER 1: Looking at the top and side of T-1 after the fill material was removed. The vent pipe and product line were pulled from the excavation after the UST was removed.



PHOTOGRAPH NUMBER 2: No pitting or holes were observed in the steel surface of the UST. Note the ice formed on bottom of UST from dry ice used to purge flammable atmosphere.



PHOTOGRAPH NUMBER 3: Looking west into excavation after removal of the UST.



PHOTOGRAPH NUMBER 4: Backfilled and compacted excavation as it appeared on the afternoon of September 10, 1993.