

#1243 - PORT CITY DEVELOPMENT CTR.  
MULTNOMAH  
CLOSURE RPT.

REPORT  
04/02/97



#1243

# InterMountain West, Inc.

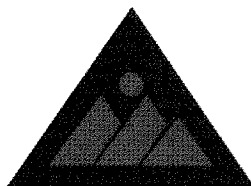
## Wagstaff Battery Manufacturing Closure Report

2124 N Williams  
Portland, Oregon

# Wagstaff Battery Manufacturing Closure Report

**2124 N Williams  
Portland, Oregon**

Submitted By:



**INTERMOUNTAIN WEST, INC.  
Remedial Services Backed By Experience!**

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DEPT OF ENVIRONMENTAL QUALITY  
RECEIVED

APR - 2 1997

NORTHWEST REGION

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## 1.0 Introduction

**InterMountain West, Inc. (IMW)** has been contracted by Wagstaff Battery Manufacturing Company to provide environmental services at their Portland, Oregon site.

### 1.1 Site Location and Description

The site is located at 2124 N. Williams Avenue, Portland Oregon. (Refer to Figure One – Site Location Map). The area of concern is a soil stockpile located on a dirt lot on the east side of the Wagstaff facility. The legal description of the property is Albina, Lot 4, Block 24, City Of Portland, County Of Multnomah, State Of Oregon.

The site is zoned industrial and is surrounded by residential properties to the north, west, and east.

### 1.2 Site History

The Wagstaff facility operated at the site approximately 30 years. Industrial batteries were manufactured onsite from (approximately) 1965 until 1991. Currently, the facility performs servicing of batteries and acts as a collection point for batteries designated for scrap. Wastewater from the manufacturing process was disposed into an onsite sump of solids, and the sump was used to remove lead oxide from waste water through settling. The waste water was then pumped into a drywell. Testing of the drywell in 1993 indicated lead contamination, and approximately 100 tons of contaminated soil were excavated from the drywell and stockpiled onsite.

Subsequent testing of excavation confirmation samples indicated contamination levels in the north, east and south sidewalls and bottom were below established action levels. The west wall had contamination exceeding action levels at a depth of eight feet; however, the proximity to the building foundation prohibited further westward advancement of the excavation.

Analytical testing of the stockpiled soil indicated total lead concentrations of 48,000 mg/kg and soluble lead concentrations (TCLP) of 160 mg/l. Wagstaff Battery made a decision to treat the contaminated soils onsite by chemical fixation and stabilization in order to remove the characteristic waste code (D007).

InterMountain West, Inc. (IMW) was contracted by Wagstaff battery in April of 1995 to perform onsite treatment of the lead contaminated soils. IMW's "Scope of Work" included onsite stabilization of 100 tons of lead contaminated soil and confirmation testing that TCLP levels of lead are less than 5 ppm.

An initial round of treatment of contaminated soils in April 1995 with Cement Kiln Dust was found to be ineffective. Subsequent bench-scale treatability testing with Portland Cement indicated that successful reduction of soluble lead levels could be reached utilizing a 25% mix. Further detail on the treatability study can be found in section 2.0.

Based on the treatability study results, IMW conducted additional rounds of treatment with Portland cement on 12/12/95 and 12/22/95. Confirmation sampling from the treated soil piles found that soluble lead levels are below 1.0 mg/l, and the soils are suitable for onsite disposal. The treatment methodology and the results achieved are outlined in sections 3.0. and 4.0. Upon DEQ approval, the treated soils will be backfilled into the drywell excavation and original grade re-established. The area shall then be capped with a 3 inch asphalt layer to reduce infiltration of precipitation and eliminate the possibility of site workers coming in direct contact with treated soils

*Indicated to  
6 mil plastic  
2 layers*

## 2.0 Soil Stabilization Treatability Study

Upon contract signing, IMW obtained representative soil samples from the site and began bench-scale testing of the proposed stabilization methodology. These tests were used to confirm the effectiveness and required quantities of the proposed stabilization reagents. Treatability studies were conducted by qualified persons using EPA-prescribed stabilization methodologies for listed land ban waste streams.

In July IMW conducted bench scale tests utilizing Portland cement as the stabilization reagent. These tests were successful in reducing leachable lead levels to below the regulatory limits of 5 mg/l using a 25% Portland Cement mix. At Wagstaff Battery's request, IMW duplicated these tests in September at a different laboratory. The purpose of the second testing was to verify a second time that Portland cement at concentrations of 25-30% would be effective in lowering leachable lead levels to less than 5 mg/l.

For the duplication test, the soil sample from the stockpile was transported to a certified laboratory under proper chain of custody and there broken into three aliquots. One aliquot was subjected to TCLP and Total Lead testing without treatment, the other two aliquots were mixed with 25% Portland cement and 30% Portland cement, respectively. A quantity of water equal to 10% by weight was then added to the samples and they were thoroughly mixed and allowed to cure for 72 hours. All samples were then tested by EPA Method 1311 TCLP for leachable lead, and the untreated sample for total lead. The untreated sample showed a total lead content of 47,000 mg/kg and a leachable lead concentration of 420 mg/l. The samples treated with Portland cement had leachable lead levels of 0.27 mg/l and 1.2 mg/l for the 25% and 30 % mixes, respectively. The results are summarized in Table I

Table I - Summary of Analytical Results Treatability Testing

| <b>SAMPLE # IMW 1174<br/>RESULTS IN PPM</b> |                   |                  |
|---|-------------------|------------------|
| <b>Sample Description</b>                   | <b>Total Lead</b> | <b>TCLP Lead</b> |
| Untreated Soil                              | 47,000            | 420              |
| 25% Portland Mix                            | N/A               | 0.27             |
| 30% Portland Mix                            | N/A               | 1.2              |

N/A=Not Analyzed

Based on the results obtained, IMW proceeded with treatment of soils onsite in December of 1995 utilizing a 30 % Portland cement mix.

### 3.0 Stabilization Process Description and Justification

Treatment consists of the blending of contaminated soils with precise amounts of reagent(s) to cause fixation, stabilization, and solidification of the soluble fraction of the contaminant. Conversion (through chemical reactions) of soluble lead compounds to less soluble compounds such as lead hydroxide is accomplished via chemical precipitation. Fixation (absorption / adsorption) is a function of reagent type and pore diameter. Encapsulation also occurs as a function of material curing.

The intermediate product should be granular, non-monolithic and soil-like in appearance. Theoretical/technical justification of treatment claims are fully discussed in the EPA handbook for Stabilization / Solidification of Hazardous waste, 1986 (EPA/540/42-86/001).

#### 4.0 Onsite Stabilization Processing

IMW's onsite stabilization process involves the controlled blending of sized inorganic contaminated soils with various ingredients to produce a soil mixture resistant to chemical leaching. The target contaminant for stabilization for this project was inorganic lead. Typical stabilization processes depend on a semi homogeneous or uniform contaminant concentration for effective processing as well as controlled pH, moisture content, soil size and cohesiveness. The material treated at the Wagstaff Battery site appeared to be a homogeneous fill sand free of debris. Stabilization processing proceeded as follows:

##### 4.1 Initial Processing

On December 12, 1995 IMW mobilized a track-hoe, water truck, and 31.34 tons of Portland cement to the Wagstaff site. The reagent was slowly introduced via pneumatic hoses into the stockpiled soil. The pile was tarped and watered to control dust emissions. The trackhoe mixed stockpiled soils with the reagent and water for approximately three hours. Two abutting fifty ton stockpiles (North and South Stockpiles) were created and a composite sample, consisting of 5 grab samples, was taken from each pile. Samples were transported under Chain of Custody to a certified analytical laboratory for analysis of TCLP lead levels.

##### 4.2 Laboratory Results - Initial Processing

The confirmation samples taken from the treated soil stockpiles were analyzed by EPA methods 1311/3010 (extraction) and 1311/6010 (lead analysis) for soluble lead. The results indicated that soluble lead concentrations in the North Stockpile were 0.014 mg/l, but lead levels in the South Stockpile were 110 mg/l. An examination of the South Stockpile indicated that further mixing of the pile was required, and reprocessing was scheduled for the week of December 22-29.

##### 4.3 South Stockpile Reprocessing

On December 22, 1995, IMW remobilized a track-hoe and water truck to the Wagstaff site. Examination of the South Stockpile indicated that the failure to achieve treatment goals could best be attributed to two causes: inadequate mixing and the placement of drop box residue on the pile (The drop box which was used for soil processing in April 1995 had been cleaned of remaining residue on December



12,1995 and the residue placed on the top of the South Stockpile). IMW's Director of Field Operations and its Waste Stream Manager inspected the South Stockpile and concluded that it was not as well mixed and homogenous as the North Stockpile. The trackhoe was used to reprocess the South Stockpile. The pile was mixed for approximately 3 hours and additional water was added to the soil with a water truck. Afterwards, the pile appeared extremely uniform in color, and particle size. The pile odor was consistent with that of curing concrete. A composite sample was taken from the pile and transported to a certified laboratory for analysis.

#### 4.2 Laboratory Results - South Stockpile Reprocessing

The confirmation sample taken from the South Stockpile were analyzed by EPA methods 1311/3010 (extraction) and 1311/6010 (lead analysis) for soluble lead. The results indicated that soluble lead concentrations in the South Stockpile were below method detection limits (0.01 mg/l) . Analytical results are summarized in Table 2. Complete analytical results and chain of custody can be found in Appendix A.

Table II - Summary of Confirmation Sampling Treated Soils Stockpiles

#### **SUMMARY OF CONFIRMATION SAMPLING**

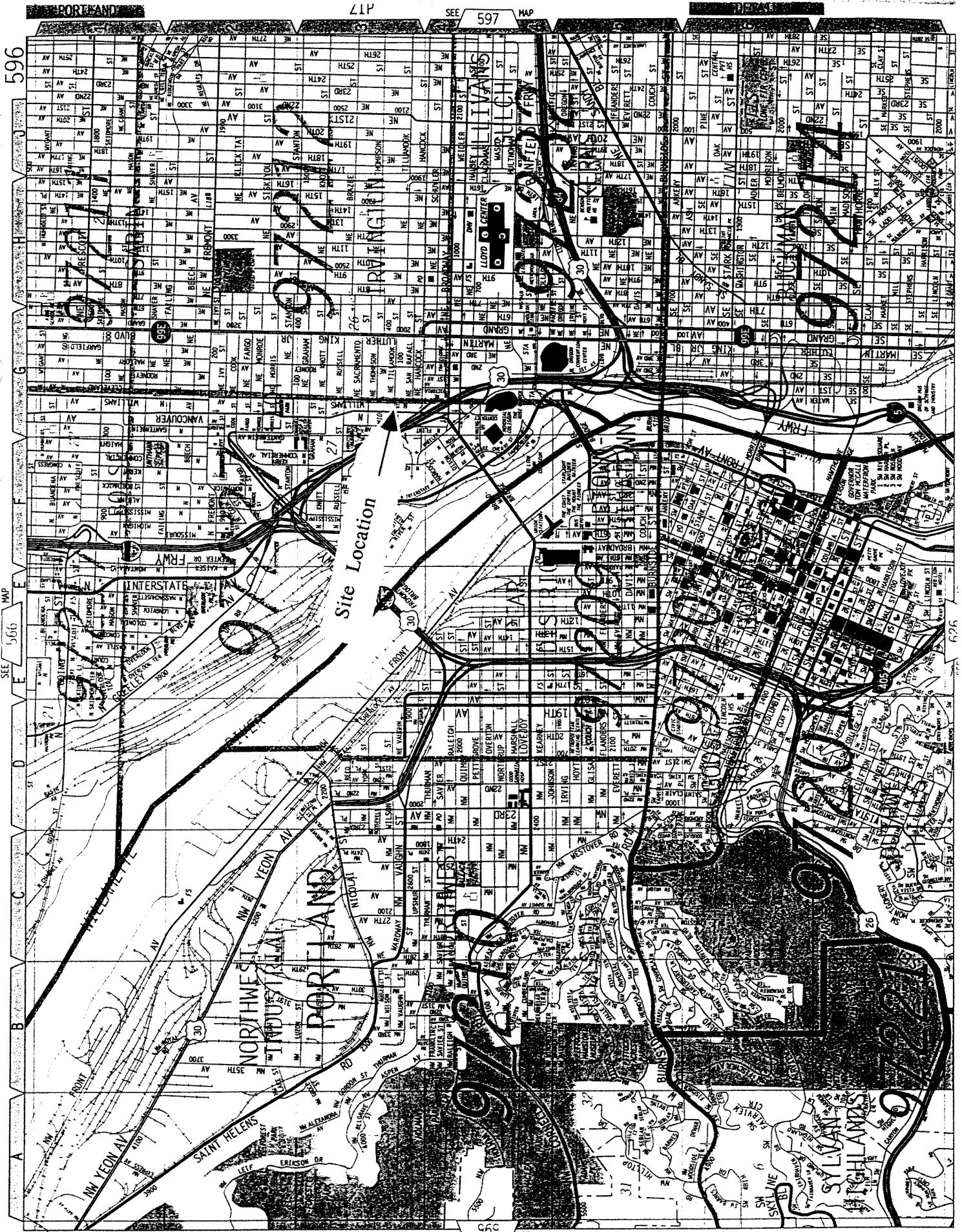
| <b>Date</b> | <b>IMW Sample #</b> | <b>Location</b> | <b>Lead Concentration</b> |
|-------------|---------------------|-----------------|---------------------------|
| 12/12/95    | 1210                | North Stockpile | 0.014 mg/l                |
| 12/22/95    | 1212                | South Stockpile | N/D                       |

#### 5.0 Conclusions

Laboratory analysis of treated soils at the Wagstaff Battery site have indicated that leachable lead levels are below the regulatory limit of 5 mg/l and suitable for backfill onsite. Wagstaff Battery has received approval from the City of Portland for backfill of treated soils and will proceed upon authorization by the Oregon Department of Environmental Quality.



**FIGURE ONE**  
**SITE LOCATION MAP**



596

SEE MAP 566

Copyright 1995 Thomas Bros. Maps

SEE MAP 595

# **APPENDIX A**

## **LABORATORY ANALYTICAL RESULTS**



781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

Intermountain West  
File# 72860  
9025 SW Hillman Ct., Ste. 3126  
Wilsonville, OR 97070

12/28/95

Attn: Dave Jacobs  
503/682/1203

Project Name: Wagstaff  
Purchase Order Number 5644

Sample #: 5360184300  
Received: 12/26/95  
Type: Soil

Collector: Client  
Sampling Date & Time: 12/22/95, 1015  
Method: Delivered by Courier

I.D.: 1212 South-Stoock Pile

| CONSTITUENT            | METHOD             | RESULT   | UNIT | MDL       |
|------------------------|--------------------|----------|------|-----------|
| Extraction Method/Date | EPA 1311/3010      | 12/27/95 |      |           |
| Analysis Date          |                    | 12/28/95 |      |           |
| Lead                   | TCLP EPA 1311/6010 | ND       | mg/l | 0.01 mg/l |

Respectfully Submitted,

*Frances Fernando*  
Frances Fernando, Inorganic Supv.



**SMITH-EMERY COMPANY**  
The Full Service Analytical Testing Laboratory, Established 1964

781 East Washington Boulevard  
P.O. Box 880530, Hunter's Point Shipyard Bldg. 114  
5427 East La Palma Avenue

• Los Angeles, California 90021  
• San Francisco, California 94188  
• Anaheim, California 92807

• (213) 749-3411  
• (415) 330-3000  
• (714) 693-1026

• Fax: (213) 745-6372  
• Fax: (415) 822-5864  
• Fax: (714) 693-1034

# CHAIN OF CUSTODY AND ANALYSIS REQUEST

DATE: 12/22/95 PAGE 01 OF 01  
FILE NO. LAB NO. 1360 1843 00

CLIENT NAME INW/WAGSTAFF

PROJECT NAME: WAGSTAFF

PROJECT NO.

P.O. NO. 5644

ADDRESS

PROJECT MANAGER: David Jacobs PHONE #

FAX #

SAMPLER NAME

David Jacobs

(Printed)

David Jacobs

(Signature)

TAT (Analytical Turn Around Time) 0 = Same Day; 1 = 24 Hour; 2 = 48 Hour; (Etc.)

CONTAINER TYPES: B = Brass, G = Glass, P = Plastic, V = Vial, O = Other.

SAMPLE NO. DATE SAMPLED TIME SAMPLED SAMPLE DESCRIPTION MATRIX WATER SOIL SLUDGE OTHER TAT CONTAINER TYPE

1212 12/21/95 10:15 SOUTH-STOCK RICE X

1213 12/21/95 10:15 SOUTH-STOCK RICE X

1214 12/21/95 10:15 SOUTH-STOCK RICE X

1215 12/21/95 10:15 SOUTH-STOCK RICE X

1216 12/21/95 10:15 SOUTH-STOCK RICE X

1217 12/21/95 10:15 SOUTH-STOCK RICE X

1218 12/21/95 10:15 SOUTH-STOCK RICE X

1219 12/21/95 10:15 SOUTH-STOCK RICE X

1220 12/21/95 10:15 SOUTH-STOCK RICE X

1221 12/21/95 10:15 SOUTH-STOCK RICE X

1222 12/21/95 10:15 SOUTH-STOCK RICE X

1223 12/21/95 10:15 SOUTH-STOCK RICE X

1224 12/21/95 10:15 SOUTH-STOCK RICE X

1225 12/21/95 10:15 SOUTH-STOCK RICE X

1226 12/21/95 10:15 SOUTH-STOCK RICE X

1227 12/21/95 10:15 SOUTH-STOCK RICE X

1228 12/21/95 10:15 SOUTH-STOCK RICE X

1229 12/21/95 10:15 SOUTH-STOCK RICE X

1230 12/21/95 10:15 SOUTH-STOCK RICE X

ANALYSES REQUESTED:

8016M GAS ☐ DIESEL ☐

602/8020 BTEX

4181

7-6771

X

4181

602/8020 BTEX

4181

7-6771

X

4181

602/8020 BTEX

4181

7-6771

X

4181

602/8020 BTEX

4181

7-6771

X

4181

602/8020 BTEX

4181

7-6771

X

4181

602/8020 BTEX

4181

REMARKS:

\* Metals results sent per Jacobs to curves 12/21/95

SAMPLE CONDITION/COMMENTS:

combine jars analyzed for KLP Lead

4181

602/8020 BTEX

4181

7-6771

X

4181

602/8020 BTEX

4181

7-6771

X

4181

602/8020 BTEX

4181

7-6771

X

4181

602/8020 BTEX

4181

7-6771

X

4181

602/8020 BTEX

4181

7-6771

X

SAMPLE DISPOSITION:

1. Samples returned to client? YES NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: \_\_\_\_\_ days

Date: 12/22/95 Time: 0600

Date: 12/22/95 Time: 0600

Date: 12/22/95 Time: 0600

Date: 12/22/95 Time: 0600

Received By: (Signature and Printed Name)

Fed - Ex

Received By: (Signature and Printed Name)

David Jacobs

Received By: (Signature and Printed Name)

Intermountain West

Received By: (Signature and Printed Name)

Fed - Ex

Received By: (Signature and Printed Name)

Intermountain West

Received By: (Signature and Printed Name)

Fed - Ex

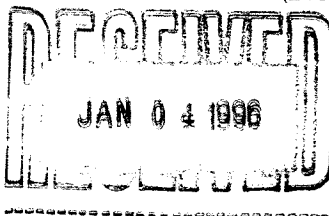
SPECIAL INSTRUCTIONS:

Date

DISTRIBUTION: WHITE YELLOW ORANGE GREEN - FOR ANALYST



781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372



Intermountain West  
File# 72860  
9025 SW Hillman Ct., Ste. 3126  
Wilsonville, OR 97070

12/21/95

Attn: Dave Jacobs  
503/682/1203

Project Name:Wagstaff Battery  
P.O. No. 5644

Sample #: 5348121301  
Received: 12/14/95  
Type: Soil

Collector: Client  
Sampling Date & Time: 12/12/95, 1230  
Method: Submitted By Client

I.D.: IMW 1209

| =====CONSTITUENT=====  | =====METHOD=====   | ==RESULT== | ===UNIT=== | ===MDL=== |
|------------------------|--------------------|------------|------------|-----------|
| Extraction Method/Date | EPA 1311/3010      | 12/18/95   |            |           |
| Analysis Date          |                    | 12/19/95   |            |           |
| Lead                   | TCLP EPA 1311/6010 | 110 mg/l   |            | 0.1 mg/l  |

Sample #: 5348121302  
Received: 12/14/95  
Type: Soil

Collector: Client  
Sampling Date & Time: 12/12/95, 1235  
Method: Submitted By Client

I.D.: IMW 1210

*NORTH PILE*

|                        |                    |            |  |           |
|------------------------|--------------------|------------|--|-----------|
| Extraction Method/Date | EPA 1311/3010      | 12/18/95   |  |           |
| Analysis Date          |                    | 12/19/95   |  |           |
| Lead                   | TCLP EPA 1311/6010 | 0.014 mg/l |  | 0.01 mg/l |

Respectfully Submitted,

  
\_\_\_\_\_  
Frances Fernando, Inorganic Supv.



781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

December 21, 1995

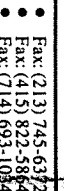
QUALITY CONTROL DATA  
PLS

CLIENT: Intermountain West  
FILE NO: 72860  
REPORT NO: 53481213  
MATRIX: Soil  
METHOD: EPA 6010-TCLP  
LAB NO: 5349141100  
BATCH NO: 53536010-TCLP  
DATE ANALYZED: 12/19/95  
DATE DIGESTED: 12/18/95

| <u>PARAMETER</u> | <u>SAMPLE RESULTS</u><br><u>(mg/kg)</u> | <u>AMOUNT SPIKED</u><br><u>(mg/kg)</u> | <u>AMOUNT RECOVERED</u><br><u>(mg/kg)</u> | <u>% REC</u> | <u>SPIKE RECOVERY ACCEPTANCE RANGE(%)</u> |
|------------------|---|--|---|--------------|---|
| Lead (PLS)       | 0.018                                   | 1.0                                    | 1.22                                      | 120          | 70-130                                    |

R.P.D. = Relative Percent Difference  
ND = None Detected  
PLS = Post Leaching Spike





## By \_\_\_\_\_ Date \_\_\_\_\_