PRELIMINARY SITE INVESTIGATION

Bowers Road Extension Right-of-Way

Project Number 06-059

April 24, 2006

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1.0 INTRODUCTION

On January 11, 2006, Fulcrum Environmental Consulting, Inc. (Fulcrum) completed a preliminary site inspection to assess current and historic conditions on the Bowers Road Extension Right-of-Way (Bowers Road ROW). The Bowers Road ROW is located along the south boundary of the Bowers Airport north of Ellensburg, Washington. The center of the right-of-way is located approximately 400-feet north of the shooting stations at the Ellensburg Trap & Skeet Club. The Ellensburg Trap & Skeet Club is located at 3102 North Airport Road, in Ellensburg, Washington.

Separately, the County retained Huibregtse Louman Associates (HLA) to assist in construction document preparation, contractor solicitation and bidding, and project inspection. Upon inspection of the right-of-way, the County and HLA identified suspect lead shot associated with the Ellensburg Trap & Skeet Club. Purpose of the inspection was to assist the County in the assessment and evaluation of potential lead hazards associated with historic site use for recreational clay pigeon target shooting.

1.1 Background

The Bowers Road ROW is a portion of the current Club range. Under pending development of the site, the Bowers Road ROW will be currently operated by the Club. Under the current site use agreement with the County, the Club must cease trap shooting operations at the site. Separately, the County anticipates relocation of the Club to a separate location.

The County's road building funding source requires the identification and remediation of environmental hazards that may affect road construction.

2.0 SCOPE OF WORK

Fulcrum was retained by the County to assist in evaluation of potential lead contamination present on the Bowers Road ROW. The intent of this project is to assist the County in site activities to remove lead shot contaminated overburden from the ROW. Fulcrum's scope of work includes assisting the County in providing appropriate awareness training to employees, identifying appropriate safety and health precautions, completing testing to demonstrate that worker protection levels are appropriate, and complete visual inspection and confirmatory testing of the road bed.

Fulcrum's scope of work for this phase of the project was limited to the following services:

- Review of environmental regulations specific to shooting ranges.
- Complete a preliminary site investigation, including assessment of in-situ conditions and evaluation of lead shot composition.

Fulcrum's tasks were limited to the ROW and did not include evaluation of potential contaminate sources or concentrations on the range property.

3.0 GENERAL ENVIRONMENTAL REGULATIONS

In March of 1989, the Model Toxics Control Act (MTCA) went into effect in Washington State. The MTCA regulations set standards to ensure quality of cleanup and protection of human health and the environment. A major portion of the MTCA regulation (completed in 1991) was the development of numerical cleanup standards and requirements for cleanup actions. Three options were established under MTCA for site-specific cleanup levels: Method A, B, and C. Method A defines cleanup levels for 25 of the most common hazardous substances found at sites. Method B levels are set using a site risk assessment, which enables consideration of site-specific characteristics. Method C is similar to Method B, however the individual substance's cancer risk portion of the assessment is set at 1 in 100,000 rather than 1 in 1,000,000.

4.0 PERTINENT REGULATIONS AND GUIDANCE

Fulcrum completed a review of the pertinent regulations from Washington State Department of Ecology (Ecology) and other state agencies and publicly available best management practices (BMP) for the ongoing management and reclamation of firing range sites from the Interstate Technology Regulatory Council and Environmental Protection Agency. Under current Ecology regulations and guidance reviewed from other state agencies, firing ranges under normal operation are not considered to be hazardous waste sites. Rather, the intentional firing of lead shot or bullets is regarded as the intended use of the product. Under existing guidance, a shooting range completes regular mining or reclamation of lead shot from the field and target areas. Reclamation and mining activities are regarded under Ecology's regulations as recycling, rather than hazardous waste disposal.

When a firing range is closed, Ecology's regulations consider residual lead waste to be a hazardous material, which is regulated under MTCA. Regulatory cleanup limits for the contaminant of concern, lead, are provided under MTCA Method A as 250 parts per million (ppm). A concentration of 250 ppm is equivalent 0.025% lead in soil.

Purpose of this Preliminary Site Investigation is to review existing site conditions and provide necessary information to facilitate development of a Work Plan. Results are not appropriate for direct comparison to identified regulatory cleanup levels and are intended only to provide information necessary for the development of a Work Plan.

When a range is closed, Ecology's regulations no longer regard the site as residual lead presence at closure is regulated under MTCA. Regulatory cleanup limits are provided under MTCA Method A as cleanup levels of Unrestricted or Industrial landuse. Based on the subject site's use as a ROW, potential also exists for evaluation under Method B or C. However, as a conservative screening threshold, Method A Cleanup Levels of 250 ppm has been selected as the most conservative criteria for evaluating the environmental conditions at this site.

5.0 PRELIMINARY SITE INVESTIGATION

Fulcrum completed a review of site conditions to assess the potential for lead shot accumulation on the ROW. Beginning near the east extent of the ROW and extended west, lead shot was

visibly observed on surface soils. Areas north and south of the ROW were observed to provide review of relative density within the ROW as compared to adjacent areas.

5.1 Sampling Plan

Fulcrum prepared a sampling plan at the site to evaluate conditions of lead shot presence. Conditions of interest included relative concentration, weight based measure, within the soil; depth of impact; and relative concentration of lead within surface soils and near surface soil (8 to 10-inches in depth).

Interviews with representatives for the Club identified the second trap station, as counted from the east, as the station most used. Observations of surface lead shot accumulations were consistent with these statements. Fulcrum identified a single north-south transect through the ROW and adjacent areas to evaluate the relative impact of lead shot in site soils. Beginning at the primary shooting station, Fulcrum marked the transect at an approximately perpendicular line from the shooting station. Sampling locations were identified beginning at 250-feet from the shooting station and were marked with fiberglass stakes. Additional sampling locations were identified at 300, 350, 375, 400, 425, 450, 475, 500, 525, and 550-feet from the shooting station. See Figure 1 for sample locations.

At each sampling location, Fulcrum performed two types of analysis, X-Ray Fluorescence testing and soil sample collection. Both tests were designed to be qualitative in nature and were not designed to evaluate the potential for achievement of state cleanup standards.

5.2 In-Situ XRF Analysis

Fulcrum utilized a Metals Analysis Probe (MAP) 4 XRF Spectrum Analyzer, manufactured by EDAX, Inc., model number C1, serial number M41471, with a May 2005 radioactive source, to test for lead in painted or stained surfaces. The MAP 4 instrument measures the energy level and quantity of returning x-ray photons to determine the amount of lead present at the sample point.

All in-situ lead in soil testing was tested with an analytical prevision level of +/- 0.4 milligrams per square centimeter (mg/cm^2). Calibration samples collected per regulations were within acceptable ranges. Attachment B provides detailed information on identified materials, sample locations, and analytical results.

At each sampling location the following process was completed:

1. Near the fiberglass marking stake, the concentration of lead in soil as measured by direct reading from the instrument was collected (center sub-sample).
2. From the center sub-sample location, ranging from 4-ft. to 5-ft. in each cardinal direction, the lead concentration in the surface soil was measured.
3. At the center sub-sample location, the surface soils were removed until no lead shot was observed. Depth of soil removal was about 6-inches, though variation was encountered and is discussed in Section 6.0. Removed surface soil was retained as a sample for additional analysis and is discussed in Section 5.3.

4. Within the cleared area, the concentration of lead in soil was tested. Test results below 0.5 mg/cm^2 were determined to be representative of non-impacted soil conditions. If lead concentration was measured at more than 0.5 mg/cm^2, additional soil was removed and additional testing was completed.

5.3 Percent-by-Weight Soil Analysis

Soil samples were collected at each distance interval for use in percent-by-weight analysis. Surface soils were collected from surface to a depth of approximately 3-inches and placed into 4-ounce glass jars. Soil was tightly packed into each jar and the jars were individually labeled. Samples were packaged and transported to Fulcrum's office for sample analysis.

Independent analysis was completed on each sample, by the following process:

1. The samples were each weighed to establish the weight of the jar contents (soil and lead shot).
2. Jar contents were removed from the jar and sieved using a 60-mesh screen, retaining lead shot and any gravels within the sieve and allowing fines to pass through the sieve. Any material not appearing to be lead shot was individually sorted from the sieve and was placed with the soil fines.
3. Lead shot was returned to the sample jar and weighed. To determine the weight of the lead within the jar.
4. The weight of the lead shot was used to determine the percentage, by weight, of the lead in the soil.

$$\text{Percent-by-Weight} = \frac{\text{Grams Lead Shot}}{\text{Total Grams of Sample}}$$

5. Sieves were dry decontaminated between each separation event.

Following percent-by-weight analysis, soil which had been separated from lead shot was analyzed by XRF to determine extent to which lead shot remained in the soil.

6.0 SAMPLING RESULTS

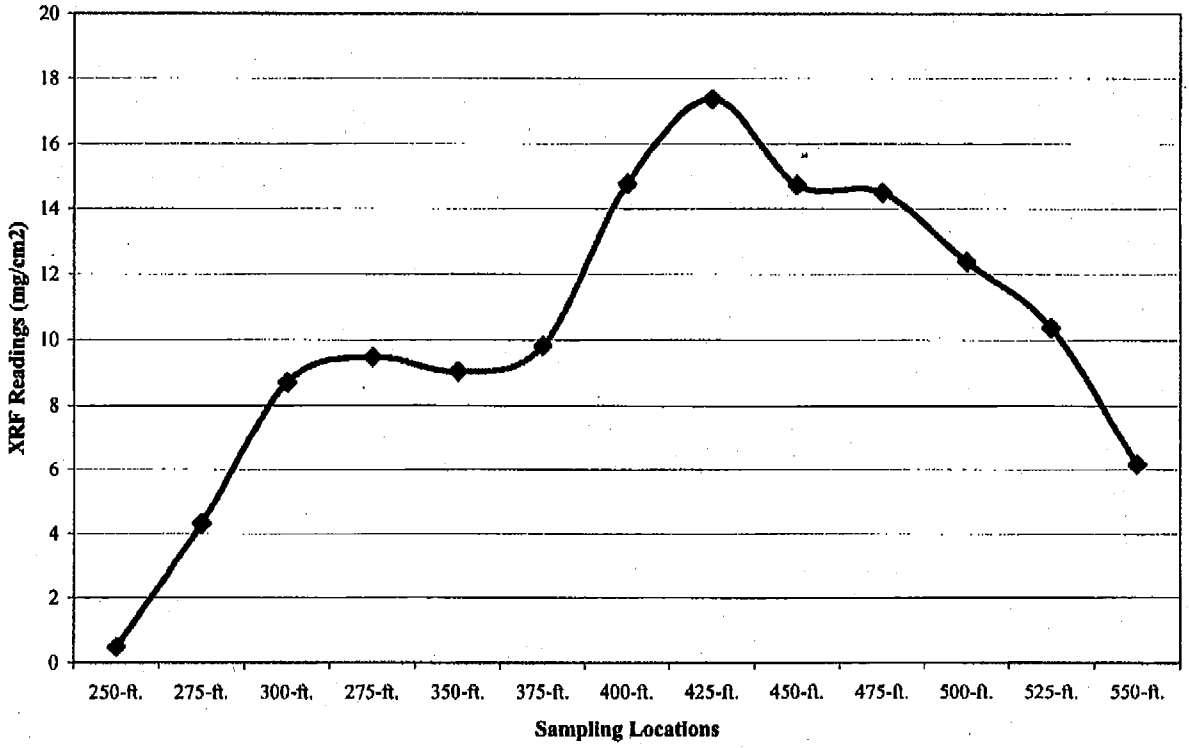
In-situ testing of surface soils and visual observations confirmed presence of lead shot at each of the sample locations and in all sub-samples. For purposes of data analysis, the lead in soil concentrations at 275-feet (ft.) was interpreted to be the simple average between the 250-ft. and 300-ft. sample results and the 325-ft. to be the simple average between the 300-ft. and the 350-ft. results.

Table 1: Surface Soil Sampling Results

Sampling Location	XRF Result (average) mg/cm^2	Total Jar Weight Grams	Percent-by-Weight
250-ft.	0.48	7.35	1.6 %
300-ft.	8.03	10.85	3.7 %
350-ft.	9.04	10.05	3.4 %
375-ft.	8.20	7.9	12 %
400-ft.	12.40	10.35	16.9 %
425-ft.	14.03	11.45	22.4 %
450-ft.	12.33	10.7	22.1 %
475-ft.	12.15	11.15	11.7 %
500-ft.	10.72	9.85	8.5 %
525-ft.	8.76	10.25	4.8 %
550-ft.	5.20	9.9	3.4 %

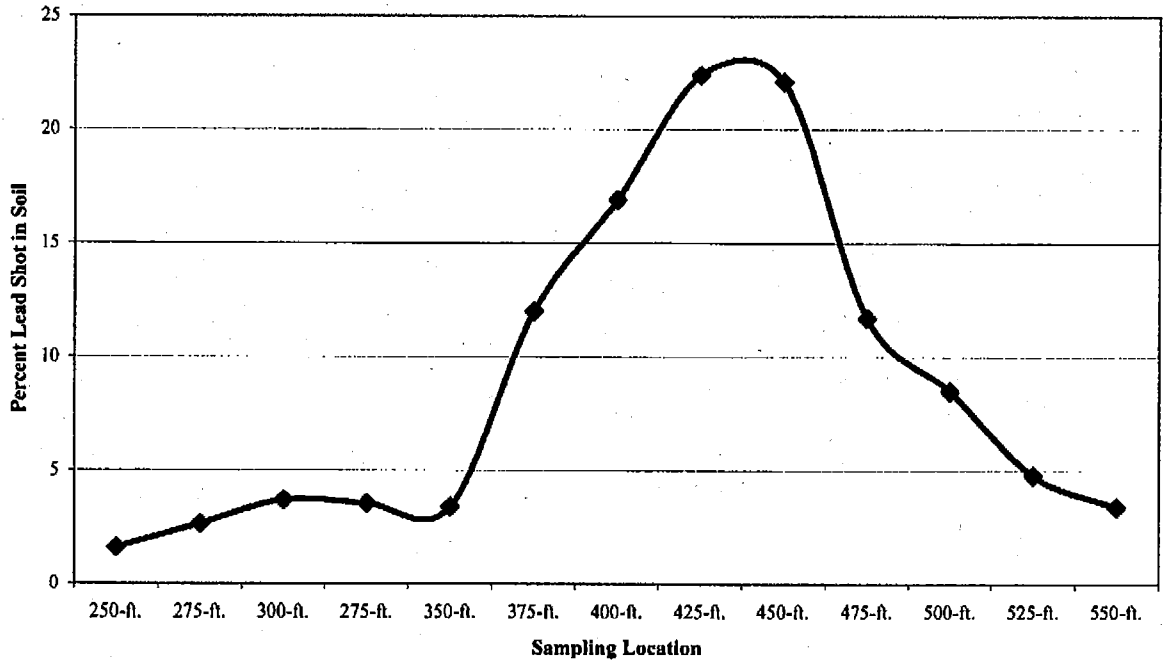
The XRF data suggests that the highest concentration of lead shot is located between 400-ft. and 450-ft. from the Station 2 shooting location. Highest identified concentrations are located within the ROW. Based on in-situ soil XRF measurements, lead concentrations were measured at about 12 to 14 mg/cm^2 at sampling locations from 400-ft. to 475-ft.

Chart 1: Bowers Road Extension ROW
X-Ray Fluorescence Lead Shot Concentrations



Lead concentrations increase from the 250-ft. sampling location to the ROW. Similarly, lead concentrations decreased with distance from the 450-ft. sample location.

Chart 2: Bowers Count Right-of-Way
Percent-by-Weight Lead Shot Concentrations in Surface Soils



The highest percent lead shot in soil concentrations, measured at greater than 25% by weight, were identified at 425-ft. and 450-ft. Concentrations in excess of 15% by weight were identified at 400-feet, the approximate center line of the ROW. Lead concentrations increase from the 250-ft. sampling location to the ROW. Similarly, lead concentrations decreased with distance from the 450-ft. sample location.

7.0 CONCLUSIONS

Preliminary site investigation results indicate a high concentration of lead in soil located at the approximate location of the Bowers Road Extension Right-of-Way. Lead shot distribution appears consistent with reference materials for the expected concentrations of lead shot at a trap range.

Field analysis suggests that lead shot is contained primarily to the upper 4-inches of the surface soils, however lead shot was observed beyond this soil horizon. Additionally, Fulcrum found that dry sieving did not eliminate the presence of all lead shot in the collected soil samples.

These results are not appropriate for direct comparison to identified regulatory cleanup levels, but are intended to provide assistance in development of a Work Plan.

8.0 RECOMMENDATIONS

Fulcrum recommends that the County consider the following tasks to address lead shot identified on the Bowers Road Extension Right-of-Way:

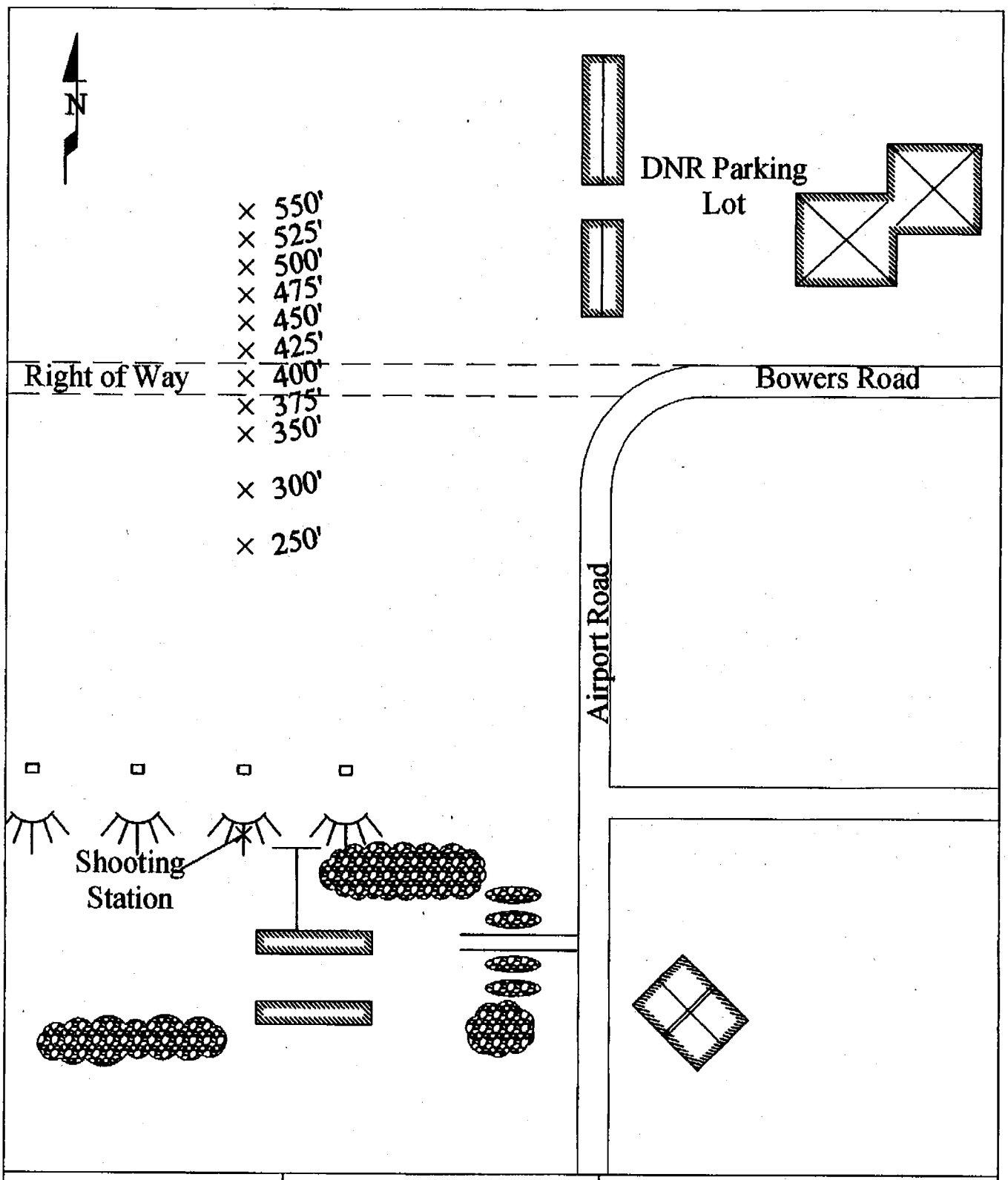
- Prepare a work plan to address lead shot presence prior to pending ROW grading.
- Prepare a health and safety plan for use during impact of identified lead shot soils.
- Complete 2-hour lead awareness training.
- Conduct onsite monitoring/observation of lead impacting activities.
- Complete confirmatory soil sampling.

9.0 LIMITATIONS

Fulcrum Environmental Consulting, Inc. has performed professional services in accordance with generally accepted professional consulting principles and practices. No other warranty, expressed or implied, is made. The conclusions and recommendations are based upon our field observations, field screening, and independent laboratory analysis. The scope of services for this project was limited to the observation of site conditions at the Bowers Road Extension Right-of-Way, in Ellensburg, Washington.

Site review and inspection services included observation of site conditions, site investigation, and sample analysis. Fulcrum makes no warranties expressed or implied as to the accuracy or completeness of other's work included or referenced herein, nor the use of segregated portions of this report. This document does not imply that the property is free of other environmental concerns. This report is solely for the use and information of our client. Any reliance on this report by a third party is at that party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing at the time services were performed. Fulcrum Environmental Consulting, Inc. is not responsible for the impact of changes in environmental standards, practices, or regulations subsequent to the performance of services. Fulcrum Environmental Consulting, Inc. assumes no liability for conditions that were excluded in our scope of services, or conditions not generally recognized as predictable when services were performed.



Legend

Structures

Trees:

Scale: NTS

Figure 1
Site Location Map

Kittitas County Trap Range
Right of Way Project

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Drawn by: AMP	Project Number: 06-059
Date: 02/13/2006	File Name: Kittitas Co. Trap Range

APPENDIX A

Professional Certifications

STATE OF WASHINGTON

Department of Community, Trade and Economic Development
Lead-Based Paint Program

Fulcrum Environmental Consulting Inc

Has fulfilled the certification requirements of Washington Administrative code (WAC) 365-230 and has been certified to conduct lead-based paint activities pursuant to WAC 365-230-200:

Certification #	Issuance Date	Expiration Date
0376	4/22/2005	4/22/2008

STATE OF WASHINGTON

Department of Community, Trade and Economic Development
Lead-Based Paint Program

Ryan K Mathews

Has fulfilled the certification requirements of Washington Administrative code (WAC) 365-230 and has been certified to conduct lead-based paint activities pursuant to WAC 365-230-200 as a:

Risk Assessor

Certification #	Issuance Date	Expiration Date
0158	1/13/2006	12/16/2008

STATE OF WASHINGTON

Department of Community, Trade and Economic Development
Lead-Based Paint Program

Travis L Trent

Has fulfilled the certification requirements of Washington Administrative code (WAC) 365-230 and has been certified to conduct lead-based paint activities as required by WAC 365-230-200 as a:

Risk Assessor

Certification #	Issuance Date	Expiration Date
0165.	8/20/2004	2/8/2007