

***Final
Hazardous Material Removal Summary
Report, Red Top Retort Site, Alaska***



Prepared for:
BLM, Anchorage Field Office



Prepared by:
North Wind Services, LLC



March 2012

**Final
Hazardous Material Removal Summary Report
Red Top Retort Site, Alaska**

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Contract No. L11PX00872

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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
bgs	below ground surface
BLM	Bureau of Land Management
°C	degrees Celsius
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	Environmental Protection Agency
GPS	global positioning system
mg/Kg	milligrams per Kilogram
mg/L	milligrams per Liter
North Wind	North Wind Services, LLC
ppm	parts per million
RTRS	Red Top Retort Site
TCLP	toxicity characteristic leaching procedure
µg/L	micrograms per Liter
XRF	x-ray fluorescence

Final Hazardous Material Removal Summary Report Red Top Retort Site, Alaska

1. INTRODUCTION

The Bureau of Land Management, Alaska (BLM) tasked North Wind Services, LLC (North Wind) with conducting remediation activities associated with the former Red Top Retort Site (RTRS) located near Dillingham, Alaska under Contract Number L11PX00872.

1.1 Objective and Scope of Work

The performance objective of the remedial action was to remove mercury contaminated soil from the former RTRS along the Wood River near Aleknagik, Alaska in order to achieve cleanup complete status of the site under Alaska Department of Environmental Conservation (ADEC) 18 Alaska Administrative Code (AAC) 75 Method 2 cleanup goals. The activities conducted under the project scope of work included the following:

- **Preparation of an ADEC and BLM approved Work Plan and preparation of a Health and Safety Plan.**
- **Clearing and Grubbing of the RTRS:** Removal of the vegetation and near surface clean soils to expose the existing liner in the area (approximately 40-feet × 60-feet) and the underlying mercury impacted soils.
- **Excavation and Removal of Mercury Contaminated Soil:** Excavation and containerization (in supersacks) of approximately 40 cubic yards of mercury-contaminated soil that previous sampling activities indicated exceeds the ADEC cleanup level of 1.4 milligrams per Kilogram (mg/Kg).
- **Confirmation Sampling:** Collect confirmation samples to determine if sufficient mercury-contaminated soils have been removed to achieve ADEC Cleanup Complete status.
- **Site Restoration:** Backfill and restoration of the excavation once the cleanup levels have been achieved; based on results of confirmation sampling.
- **Summary Report:** Preparation of a summary report to document the field activities and to report analytical data.

1.2 Site History

The former RTRS (Parcel USS-12403) is located on the northeast bank of the Wood River, approximately 2 miles downstream from the village of Aleknagik in Section 32, Township 10 South, Range 55 West, Seward Meridian (Figure 1). The site is generally level with no local access restrictions.

The parcel of land the former RTRS sits on is administered by the BLM and is priority selected for conveyance to Aleknagik Natives, Ltd. (surface estate) and Bristol Bay Native Corporation (subsurface estate) under authority of the Alaska Native Claims Settlement Act. All of the surrounding lands are privately owned or owned by the Aleknagik Natives, Ltd.



Figure 1. Red Top Retort Site Location.

1.3 Background

Cinnabar was discovered on Marsh Mountain in 1941. A retort furnace formerly located at the RTRS processed the mercury ore from the nearby Red Top Mine between 1952 and 1955. In 1985, the BLM issued abandoned and void decisions for the mining claims and the mill site for failure to file assessment work for 1979 through 1981 and 1984. The surrounding land has been conveyed to the Aleknagik Natives, Ltd. The mill-site parcel has been surveyed and excluded from the conveyance (USS 12403).

BLM became aware of hazardous material issues at the site in 1992 and initiated a voluntary cleanup action. Site characterization, interim removal activities, and site remediation began in 1994, and petroleum- and mercury-contaminated soil was stockpiled on-site. The excavation was lined and backfilled. Work progressed in stages with some periods of inactivity. The Environmental Protection Agency (EPA) placed the site on the Federal Agency Hazardous Waste Compliance Docket (Docket) on June 27, 1997. In 1998, work was completed on a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-based Emergency Removal Action at the retort site. During that summer, stockpiled mercury and petroleum contaminated soils were removed from the site. The materials were loaded on a barge, taken to Dillingham, and shipped to a disposal facility in the lower 48 states.

1.4 Cleanup Levels for the RTRS

Cleanup levels are derived from 18 AAC 75, "Oil and Other Hazardous Substances Pollution Control." The soil cleanup level for mercury, as specified in 18 AAC 75.341, Table B1, is 1.4 mg/Kg based upon the most stringent value for the "Migration to Groundwater" pathway. Since it is the most stringent, the "Migration to Groundwater" pathway cleanup level will protect future users from contamination migrating to groundwater where groundwater is used as a drinking water source as well as direct contact (which included ingestion) and outdoor inhalation pathways. Additionally, since the most stringent of the Table B1 cleanup levels is being applied to this parcel, the appropriate future land use would be unrestricted. The groundwater cleanup level for mercury, as specified in 18 AAC 75.345, Table C, is 2.0 micrograms per Liter ($\mu\text{g/L}$).

2. HISTORICAL DATA

2.1 Soil

Soil samples were collected in 1998 and 1999 following the excavation of soils at the site (Harding Lawson, 2000). The locations of these previous soil samples, the depth of collection, and the mercury concentrations are shown in Figure 2. The data from these sample locations indicated that the site contains residual mercury contamination exceeding the ADEC soil migration to groundwater cleanup level (1.4 mg/Kg). The mercury contamination was characterized as burned cinnabar ore, unburned cinnabar ore, and native soil that may have been contaminated with elemental mercury that was released from the piping associated with the retort chamber.

Analytical data indicated that the residual mercury contamination ranged from a low of 0.1 mg/Kg to a high of 108 mg/Kg directly below the location of the former retort chamber. Most of the mercury contamination identified above ADEC cleanup levels was located at a depth of approximately 1 foot below ground surface (bgs). However, in small areas, contamination above the ADEC cleanup levels appeared to extend to a maximum depth of approximately 3 feet bgs. The sampling data from 1998 and 1999 are presented in Table 1.

Table 1. Previous Sampling Results.

Sample Number	Location	Year Sampled	Depth Sampled (feet bgs*)	Mercury Concentration (mg/Kg)
99RTEI1SL	EI-01	1999	3.7	0.636
99RTEI2SL	EI-02	1999	3.5	0.778
98RTRIS1SL	IS-01	1998	1.0	0.483
98RTRIS2SL	IS-02	1998	1.0	0.129
98RTRIS3SL	IS-03	1998	1.0	0.118
98RTRIS4SL	IS-04	1998	1.0	0.27
98RTRIS5SL	IS-05	1998	1.0	0.096
98RTRIS6SL	IS-06	1998	1.0	40.1
99RT19SL	IS-06	1999	3.0	0.098
99RT20SL	IS-06	1999	3.0	0.143
98RTRIS7SL	IS-07	1998	1.0	0.246
99RT22SL	IS-07	1999	3.0	0.129
98RTRIS8SL	IS-08	1998	1.0	2.87
99RT01SL	IS-08	1999	3.0	1.15
98RTRIS9SL	IS-09	1998	1.0	0.512
98RTRIS10SL	IS-10	1998	1.0	0.041
98RTRIS11SL	IS-11	1998	1.0	3.47
99RT05SL	IS-11	1999	3.0	0.09
98RTRIS12SL	IS-12	1998	1.0	2.03
98RTRIS13SL	IS-13	1998	1.0	0.139

Table 1. (continued).

Sample Number	Location	Year Sampled	Depth Sampled (feet bgs*)	Mercury Concentration (mg/Kg)
98RTRIS14SL	IS-14	1998	1.0	0.365
98RTRIS15SL	IS-15	1998	1.0	0.32
98RTRIS16SL	IS-16	1998	1.0	0.072
98RTRIS17SL	IS-17	1998	1.0	0.222
99RT02SL	IS-17	1999	3.0	0.1
98RTRIS18SL	IS-18	1998	1.0	40.6
98RTRIS19SL	IS-19	1998	1.0	3.22
98RTRIS20SL	IS-20	1998	1.0	2.14
98RTRIS21SL	IS-21	1998	1.0	2
98RTRIS22SL	IS-22	1998	1.0	1.15
98RTRIS23SL	IS-23	1998	1.0	0.285
98RTRIS24SL	IS-24	1998	1.0	3.15
99RT14SL	IS-24	1999	3.2	0.0836
99RT16SL	IS-24	1999	3.2	0.205
98RTRIS25SL	IS-25	1998	1.0	7.47
98RTRIS26SL	IS-26	1998	1.0	0.764
98RTRIS27SL	IS-27	1998	1.0	0.107
98RTRIS28SL	IS-28	1998	1.0	0.111
99RT23SL	IS-29	1999	1.0	0.0558
99RT24SL	IS-29	1999	3.0	0.0819
99RT17SL	IS-30	1999	1.5	12
99RT18SL	IS-30	1999	3.5	0.353
99RT12SL	IS-31	1999	1.5	29
99RT13SL	IS-31	1999	3.2	0.195
99RT08SL	IS-32	1999	1.8	14.9
99RT09SL	IS-32	1999	3.5	0.068
99RT10SL	IS-33	1999	2.0	108
99RT11SL	IS-33	1999	3.0	2.38
99RT03SL	IS-34	1999	1.5	0.129
99RT04SL	IS-34	1999	3.0	0.154
* bgs references the historical ground surface at the time of sampling. Values in red exceed the ADEC migration to groundwater pathway cleanup level of 1.4 mg/Kg.				

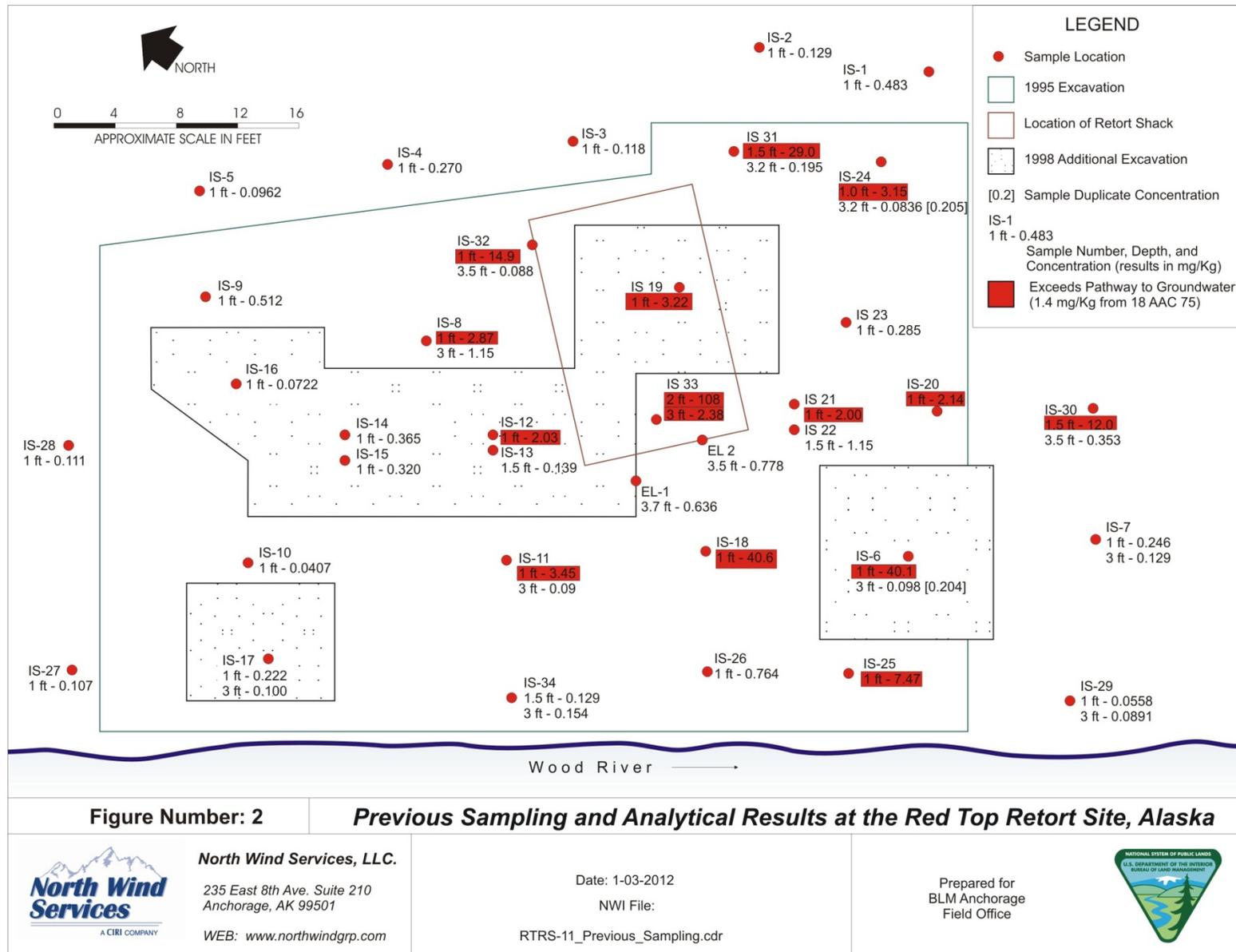


Figure 2. Previous Mercury Sample Locations and Results.

2.2 Ground Water

Groundwater samples were collected and analyzed for mercury in 1994 and again in 2007. The location and results of these sampling events are shown in Figure 3. Three groundwater samples were collected in 1994 by Quest Environmental (Quest Environmental, 1994) at the RTRS. The results of these samples indicated mercury concentrations in groundwater of 0.97 µg/L from a point 9 feet south (downstream) of the retort shack (Sample No. 5001), 1.4 µg/L from a point 25 feet south (downstream) of the retort shack (Sample No. 5002), and 0.99 µg/L from a point 100 feet upstream of the retort shack (Sample No. 5005).

In August of 2007, three temporary well points were installed along the bank of the Wood River adjacent to the RTRS, as shown in Figure 3 (Shannon and Wilson, 2008). The temporary wells were installed to assess the potential for the presence of mercury in the groundwater. The temporary well points were constructed of 3/4-inch-diameter stainless steel pipe with a 1-foot long stainless steel screen at the end. The groundwater samples collected from the three well points were all found to have non-detect concentrations of mercury at a practical quantification limit of 0.2 µg/L.

All groundwater samples collected in 1994 and 2007 were less than the groundwater cleanup level of 2.0 µg/L for mercury, as specified in 18 AAC 75.345, Table C. The temporary groundwater sampling points were removed following the 2007 sampling event.

Since all previously detected groundwater concentrations were found to be below the groundwater cleanup level for mercury of 2.0 µg/L (as specified in 18 AAC 75.345, Table C), groundwater sampling was not conducted as part of the 2011 removal action. The historical groundwater sampling results were provided in this report to present a complete summary of the site soil and groundwater conditions and to further justify the final cleanup determination.

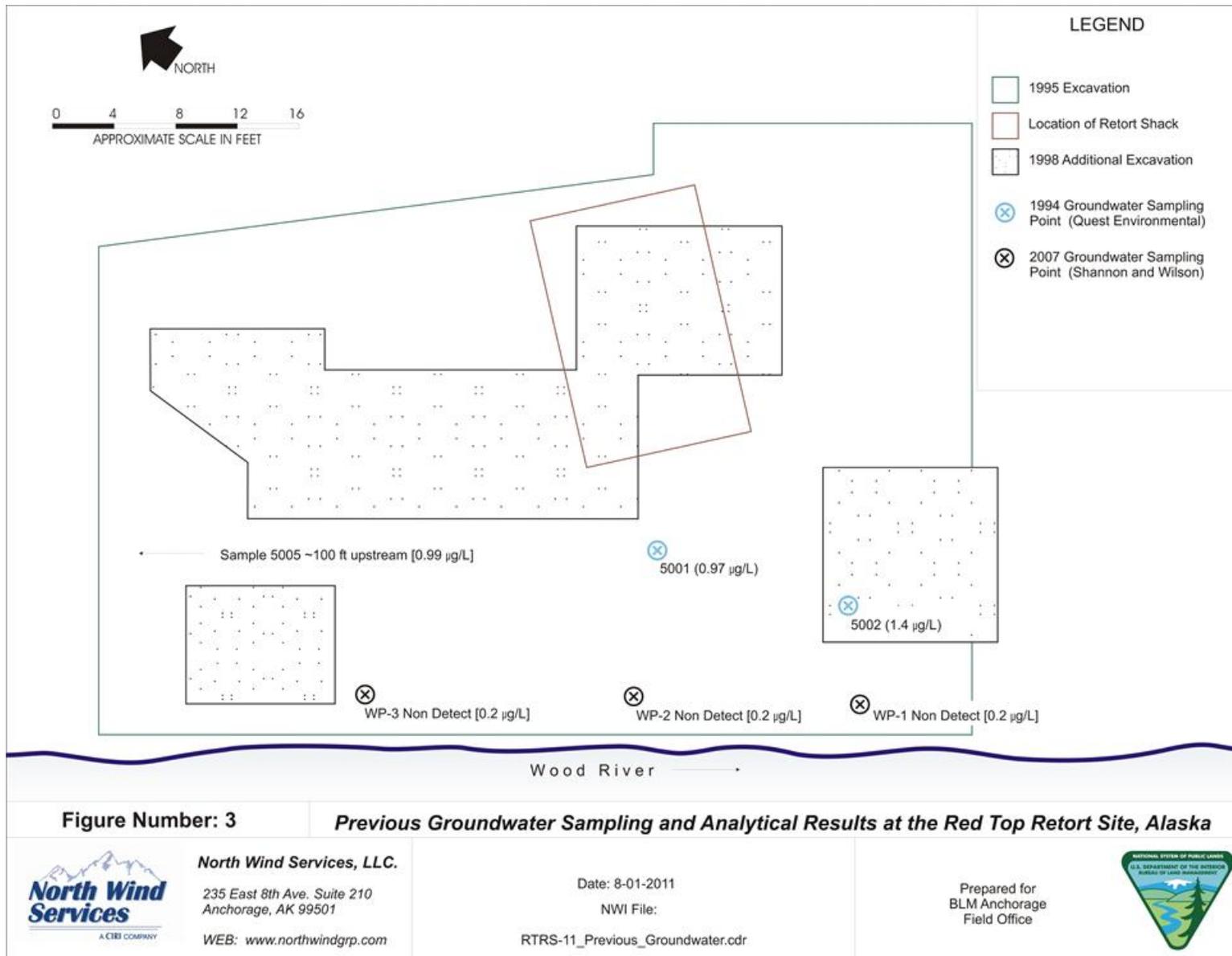


Figure 3. Previous Groundwater Sample Locations.

3. REMOVAL ACTION

Field work for this 2011 remedial action commenced on September 6, 2011 with the mobilization of the crew and equipment to the RTRS. North Wind sub-contracted a local Dillingham company, Dillingham Construction & Equipment Company, to conduct the field work. A North Wind ADEC qualified person was on site to provide oversight. The resume of North Wind's qualified person is provided in Appendix A. All field activities were documented in the field logbook included as Appendix B. Photographs of significant project events were taken during the field activities (see Appendix C).

3.1 Mobilization

Prior to mobilizing to the site, all vehicles, transport equipment, and construction equipment were decontaminated to ensure that they were weed and weed seed free. Decontamination of site equipment was accomplished by pressure washer.

Mobilization of equipment and/or materials was accomplished from Dillingham, Alaska or Smith Point near the native village of Aleknagik. Equipment and materials originating in Dillingham were barged up the Wood River directly to the RTRS. The barge then continued up river to Smith Point, where the remainder of the equipment and materials that had been transported from Dillingham via roadway, were loaded onto the barge and transported down river to RTRS.

Two separate launches were used to mobilize personnel. Both launches were aluminum hulled boats with outboard motors. These same vessels were used for transporting the crew to RTRS on a daily basis.

3.2 Clearing and Grubbing of the Retort Site

3.2.1 Vegetation Removal

Site clearing commenced on September 6, 2011 by cutting all vegetation near ground level with a chain saw. Next, the root mass was scraped from the ground surface by means of the front bucket on the Bobcat. All vegetation was carefully stockpiled to the side of RTRS for re-vegetation activities at the completion of the project.

3.2.2 Removal of Former Excavation Liner

After the vegetation had been cleared, the crew began removing the top soil from above the former excavation liner using the front bucket of the Bobcat. As the excavation neared the liner, soils were removed using hand shovels in order to prevent damage to the liner. Soils in contact with the liner were screened for mercury contamination using an Innov-X Delta model DP-4000 x-ray fluorescence (XRF) unit to ensure the overburden was clean. All measurements from soils above the liner were non-detect for mercury on the XRF. Depths of topsoil above the liner were approximately a foot.

3.3 Excavation and Removal of Mercury Contaminated Soil

Excavation activities commenced on September 8, 2011.

3.3.1 Excavation of Soils

Excavation began at the southeastern lobe of the contamination area in the vicinity of historical sample location IS-30 because it was not located under the liner and it was the furthest point from the exclusion zone entry/exit point. Historical sample results at sample location IS-30 were 12 mg/Kg at 1.5 feet bgs.

Using the backhoe attachment of the Bobcat, soil was removed to a depth of 2.5 feet bgs, at which point readings recorded on the XRF were non-detect for mercury. The highest reading recorded on the XRF unit during excavation activities in this area was 10.8 parts per million (ppm) at a depth of approximately 6 inches bgs.

The next step was to delineate the area of contamination for excavation to 8 inches for under the liner. The plan was to use swing-ties from a known datum to plot the historical sample locations. After the sample locations were plotted, the area of excavation would be drawn out on the ground using surveyor's paint, as referenced in the Work Plan (North Wind Services, 2011 [Figure 4]). The eastern rebar reference point depicted in Figure 4 of the *2000 Data Summary Report* (Harding Lawson, 2000) was identified during clearing activities and used as the datum for the swing ties. A surveyor's stake was found at the site identifying the IS-3 sample location. The distance between the IS-3 sample point and the eastern rebar marker measured 24 feet, which agreed with the map scale to within a foot.

However, when checking the distance between the eastern rebar marker and the south corner of the liner (approximately where the northwestern rebar marker was placed), the measured distance of 51.7 feet did not match scale measurements of 44 feet. To remedy this deficiency, the map was stretched in the northeast, southwest direction to reflect the actual scale. Using the corrected map and swing-ties, another attempt was made to plot historical sample points; however, the measurements were not matching up with the splices in the tarp. Using the eastern edge and southern edge of the previous excavation, the tarp and patches in the tarp finally matched on the map. Once this was determined, the tarp was removed, the historical sample locations were plotted, and the delineated area of contamination was marked with surveyor's paint.

Once the area to be excavated was delineated, soil was removed by scraping with the backhoe attachment on the Bobcat. Soil removal began in the southwest corner near historical sample location IS-25 and continued in the northeastern direction. The previous analytical result at IS-25 was 7.45 mg/Kg at 1 foot bgs. XRF field screening measurements were taken to guide the direction and extent of the excavation. XRF readings were conducted by laying down a plastic sheet on the ground at the sample location and placing the XRF unit on top of the sheeting. The reading was then taken through the plastic sheet in order to protect the XRF unit from contamination, damage, or both. Excavation continued until mercury contamination was no longer detected on the XRF unit, which resulted in an average depth of 8 inches for the shallow excavation. The average 8-inch excavation depth was measured from the location of the former liner (approximately 1 foot bgs).

Field screening measurements identified mercury contamination outside of the plotted contamination area in the vicinity of IS-24. The historical analytical result at IS-24 was 3.15 mg/Kg at 1 foot bgs. The contamination area was extended in the eastern direction approximately 1 foot and contaminated soil was removed. Excavation to approximately 8 inches below the former liner continued with concurrent field screening measurements on the XRF unit.

In the vicinity of historical sample location IS-33, free mercury was discovered with an XRF reading of 130 ppm. The previous analytical result at IS-33 was 108 mg/Kg and 2.38 mg/Kg at 2.0 and 3.0 feet bgs respectively. The crew proceeded to excavate in that area to a depth of approximately 3 feet below the liner in order to remove all of the mercury contaminated soil above the ADEC cleanup level. Field screenings of the side-wall and bottom of the excavated area indicated that the west side of the 3 foot excavation still had readings on the XRF of 13.7 ppm. The excavation was then extended in a westward direction to an approximate depth of 3 feet below the liner. The crew continued to excavate near the southwestern boundary of the contamination area.

Between historical sample locations IS-18 and IS-26, XRF readings ranged from 10 to 58 ppm to a depth of about 1 foot below the liner. From there, the excavation activities continued near IS-33 progressing north. Occasional free mercury was discovered near IS-33, with XRF measurements recorded in the range of 80 to 90 ppm. The excavation, to an average depth of 8 inches, was completed north of historical sample location IS-8.

Initial confirmation samples for the area on the western boundary of the excavation returned results that were close to regulatory cleanup limits. For this reason, a second excavation event occurred west of the 3-foot excavation down to an approximate depth of 2 feet. Figure 4 depicts the final area and depths of the 2011 excavation activities at the RTRS.

As mentioned above, there was some difficulty aligning the global positioning system (GPS) data collected in 2011 with the map of historical sample points. However, an accurate visual depiction of the excavation to the previous samples was developed by aligning the map from the Data Summary Report (Harding Lawson, 2000) with the 2011 GPS data using the following control points:

1. Southeast rebar monument,
2. Scoop found at sample location IS-33,
3. Scoop found at sample location IS-11, and
4. Edge of the blue liner.

The total volume of soil removed from RTRS was approximately 39 cubic yards, plus an additional cubic yard of liner. The liner was not sampled for contamination per the Work Plan (North Wind Services, 2011), as it was determined that the best management practice would be to dispose of the liner with the soils instead of characterizing it and possibly disposing of it in the local solid waste landfill. According to Waste Management, Inc.'s waste acceptance criteria, 10% of the soil could be comprised of liner, so the liner was dispersed amongst the supersacks of contaminated soil to meet this requirement.

All excavation boundaries were documented using a global positioning system (GPS) unit. The GPS unit used was a Trimble Pro XRS, which has sub-meter accuracy and conforms to the requirements of the Work Plan (North Wind Services, 2011).

3.3.2 XRF Field Screening

Field screening of the bottom and side-walls of the excavation occurred concurrently with soil removal to guide the direction of the excavation activities. A final field screening was conducted after all soil removal was complete. The final screening was conducted on a 1-meter grid on the bottom of the excavation and a 2-meter linear interval on the side-wall of the excavation. The field screening interval adopted was more conservative than the ADEC cleanup requirements obtained from Table 2B of the "Draft Field Sampling Guidance" (ADEC, 2010), which are 1 screening per 100 square feet for the bottom of the excavation and 1 screening per 10 linear feet on the sidewall. The final area and perimeter for the excavation was approximately 1,100 square feet and 130 feet, respectively. The ADEC field screening guidance required 11 bottom samples and 13 sidewall samples. During the final confirmation screening of the excavation, approximately 90 bottom samples and 20 sidewall samples were screened. All final field screening results for mercury, using the XRF unit, were non-detect. The XRF unit was checked daily using the check source per manufacturer's instructions and documented in the field logbook.

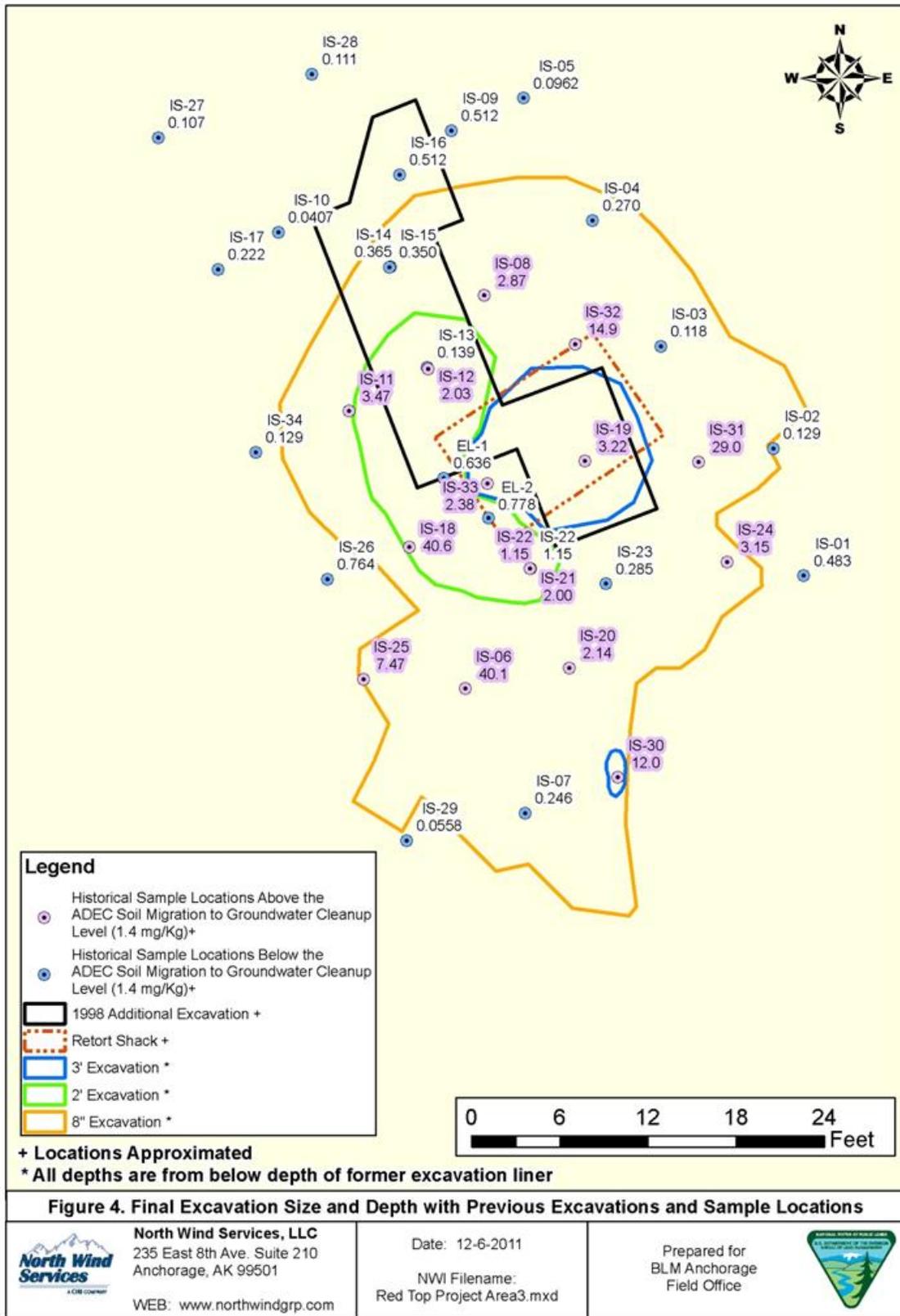


Figure 4. Final Excavation Size and Depth with Previous Excavations and Sample Locations.

3.4 Confirmation Sampling

Following the excavation of the contaminated soils and confirmatory screening of the excavation with the XRF, confirmation samples were collected to determine if sufficient mercury-contaminated soils were removed to achieve ADEC Cleanup Complete status. Sampling was conducted by an ADEC qualified person. Samples were analyzed by SGS Laboratories in Anchorage, Alaska.

Confirmation sampling was conducted at the frequency and locations specified in Table 2B of the “Draft Field Sampling Guidance” (ADEC, 2010). The guidance requires collection of confirmation samples on a frequency of one sample per every 250 square feet of excavation bottom. The confirmation sample from each 250-square foot area will be collected from the location that field screening indicates has the highest level of contamination. The excavation sidewalls will also be sampled in accordance with ADEC sampling guidance. ADEC guidance requires that confirmation sampling be conducted at a minimum of once for every 20 linear feet of excavation sidewall.

3.4.1 Initial Confirmation Sampling

On September 11, 2011, initial confirmation grab samples were obtained and sent to SGS Laboratories for analysis for total mercury (EPA Method SW7471B). Samples were obtained following the guidance detailed in the “Draft Field Sampling Guidance” (ADEC, 2010), as well as in the Work Plan (North Wind Services, 2011). The final area of the excavation was approximately 1,100 square feet, which would require five confirmation samples per ADEC guidance. Six samples were obtained from the excavation bottom, plus a duplicate sample, to ensure appropriate quality control requirements were being met. The final perimeter of the excavation was 130 feet, which would require seven confirmation samples per ADEC guidance. Seven samples were obtained from the excavation sidewall plus a duplicate sample. All sample locations are detailed on Figure 5.

In addition to the confirmation samples, two grab samples were taken from the local backfill source and sent in for analysis for total mercury (Method SW7471B) to ensure the material intended to be used as backfill was clean.

3.4.2 Follow-up Confirmation Sampling

The initial confirmation samples arrived at the laboratory with the temperature blank measuring 7 degrees Celsius (°C), which is outside the allowable temperature preservation range of 4°C (plus or minus 2 degrees). After discussions with the BLM representative, it was decided that re-collecting the confirmation samples was warranted. This decision was based upon the fact that the results from the west side of the excavation were close to the regulatory cleanup levels, and the sample results would be qualified as estimates because of the temperature deviation. To ensure that the mercury concentrations were unequivocally below the cleanup level, additional quantities of soil would require removal and additional confirmation samples would require collection.

On September 16, 2011, the team returned to RTRS to remove additional mercury contaminated soil from the western section of the excavation. West of the 3-foot excavation area, approximately 1 foot of soil was removed (see Figure 5). The handheld XRF unit was used to guide the excavation effort and to ensure that all contamination above the cleanup level was removed. After the additional excavation effort, another confirmation sampling event occurred and consisted of six grab samples from the floor of the excavation plus one duplicate. Seven grab samples were taken from the sidewalls of the excavation. All follow-up samples were collected from the same locations as the initial samples. All soil samples were analyzed for mercury (EPA Method SW7471B). One grab sample from the decontamination water rinsate was submitted with this sample group and analyzed for total mercury (EPA Method SW7470A/E245.1). All new sample locations were documented using a GPS unit.

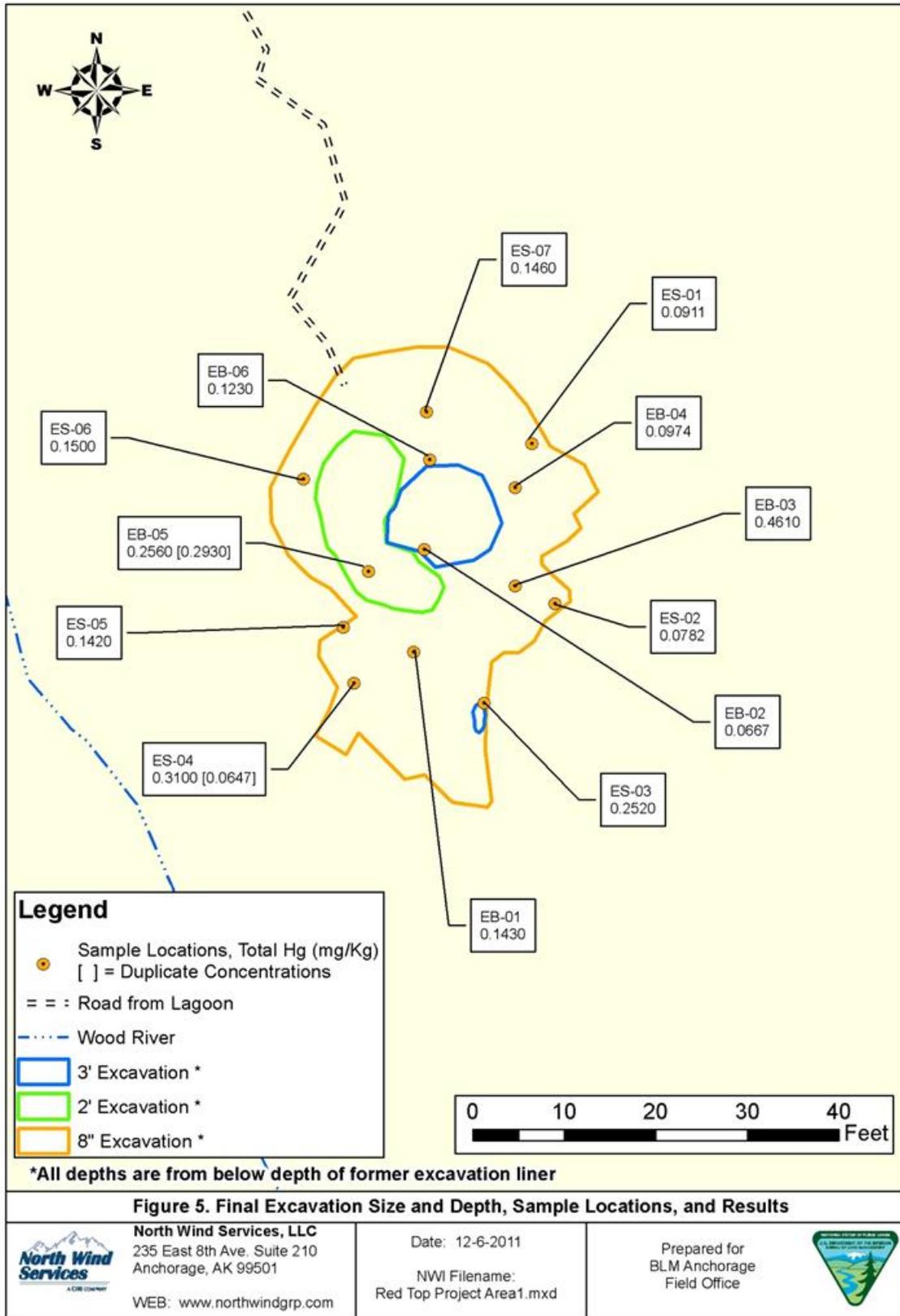


Figure 5. Final Excavation Size and Depth, Sample Locations, and Results.

The samples from the backfill source and supersacks were not resampled because the results came back as non-detect or showed very low levels of mercury, and it was decided that having these results estimated would not impact the intended use of the data.

3.5 Results

This section presents the results of the confirmation sampling and discusses the results with respect to site cleanup under ADEC 18 AAC 75 Method 2 cleanup goals.

3.5.1 Confirmation Samples Results

Results of the final confirmation samples came back under the ADEC 18 AAC 75 Method 2 cleanup goal of 1.4 mg/Kg of mercury. The six bottom samples had mercury concentrations between 0.0667 and 0.461 mg/Kg. The seven sidewall samples had with mercury concentrations between 0.0782 and 0.310 mg/Kg. The initial confirmation samples are not discussed in this report because they are not relevant for the cleanup determination; however, the laboratory data may be referenced in Appendix D. The results for final confirmatory samples are summarized in Table 2. Sample result locations can be viewed on Figure 5.

Table 2. Summary of Confirmation Sample Results.

Sample Number	Sample Location	Sample Depth (feet bgs*)	Mercury Concentration (mg/Kg)
11RTREB002S01	EB-01	0.66	0.1430
11RTREB002S02	EB-02	4.0	0.0667
11RTREB002S03	EB-03	0.66	0.4610
11RTREB002S04	EB-04	0.66	0.0974
11RTREB002S05	EB-05	4.0	0.2560
11RTREB002S95 ^a	EB-05	4.0	0.2930
11RTREB002S06	EB-06	3.0	0.1230
11RTRES002S01	ES-01	0.0	0.0911
11RTRES002S02	ES-02	0.66	0.0782
11RTRES002S03	ES-03	0.0	0.2520
11RTRES002S04	ES-04	0.66	0.3100J
11RTRES002S94 ^b	ES-04	0.66	0.0647J
11RTRES002S05	ES-05	0.0	0.1420
11RTRES002S06	ES-06	0.66	0.1500
11RTRES002S07	ES-07	0.0	0.1460
11RTRBF001S01	Backfill Source	0.0	0.1730
11RTRBF001S02	Backfill Source	0.0	0.1330
*= bgs references depth interval directly below former excavation linter. ^a = Quality control duplicate sample of sample no. 11RTREB002S05. ^b = Quality control duplicate sample of sample no. 11RTRES002S04.			

Sample results of the proposed backfill material came back with mercury concentrations of 0.173 and 0.133 mg/Kg, which were well below the identified cleanup level of 1.4 mg/Kg.

3.5.2 Data Validation

After receipt of the final confirmation data from the project laboratory, the data were reviewed by a third-party data validator. The Data Validation Report, which was prepared by Kestrel Environmental Technologies, Inc., is provided in Appendix E. The review of the data indicated no significant systematic problems and that usable results were obtained for all requested sample analyses, and no results were rejected. The mercury results for side-wall samples 11RTRES002S04 and 11RTRES002S94 were qualified as estimates due to the potential for uncertainty indicated by the field duplicate results.

3.6 Site Restoration

Site restoration occurred on September 18, 2011.

3.6.1 Excavation Backfill

The excavation was backfilled after the cleanup levels were achieved, as evidenced by the confirmation sample results discussed in the previous section. The certified clean fill material was obtained locally from within the BLM property southwest of RTRS. Two samples were taken from the fill source, as detailed in Section 3.5.1 and analyzed as discussed in Section 3.6.1.

The surface of the excavation area was restored to the approximate grade and appearance as it was prior to 2011 field activities.

3.6.2 Re-vegetation

Re-vegetation of the excavation area was accomplished by placing a layer of alders and vegetative material over the backfill soil for sprout material for regrowth. The root material stockpiled during the grubbing activities covered the bed of alders and served as ground cover.

3.6.3 Shipping of Excavated Soils

Shipment of the soil began at RTRS with the supersacks being loaded onto a barge for transport up the Wood River to Smith Point near the native village of Aleknagik. Upon arrival at Smith Point, the sacks were off-loaded from the barge and loaded onto a transport trailer using an extend-a-boom forklift and a pallet jack. The supersacks were then shipped via roadway down to the Port of Dillingham for temporary storage. At the Port of Dillingham, the supersacks were loaded into conexes.

The four conexes were loaded onto the first available barge for transport to Seattle, Washington. The conexes were then shipped via the Union Pacific Railroad to the Waste Management Columbia Ridge Landfill in Arlington, Oregon. Forty supersacks were disposed of by burial on November 16, 2011. The Certificates of Disposal are provided in Appendix F.

Prior to transport of the supersacked soils, characterization samples were taken to ensure that the levels of mercury were low enough to ship and dispose of the soils as a non-hazardous waste. Eight composite soil samples were taken from the super sacks and submitted to SGS Laboratories in Anchorage, Alaska for mercury (EPA Method SW7470A Toxicity Characteristic Leaching Procedure [TCLP]) analysis. Seven of the eight results came back as non-detects for mercury at a practical quantification limit of 0.00124 milligrams per Liter (mg/L). One sample reported a mercury concentration of 0.0279 mg/L. These levels are well below the non-hazardous materials level of 0.2 mg/L for mercury according to 40 CFR 261.24, "Toxicity Characteristic." All analytical data results are provided in Appendix D.

3.7 Demobilization

Equipment was decontaminated on a lined decontamination area at the RTRS. First, the equipment was cleaned of large debris using shovels to remove the mud and vegetation. After the major debris was removed from the equipment, the equipment was decontaminated by use of a pressure washer. The decontamination rinsate was sampled for mercury, as described in Section 3.5.2. The concentration of mercury in the rinsate was found to be 25.4 µg/L, which is above the ground discharge standards for mercury, as specified in 18 AAC 75.345, Table C, of 2.0 µg/L.

Since the mercury concentration in the rinsate significantly exceeded the ADEC standard, the liquid was containerized in a 55-gallon drum and shipped along with the soil supersacks to the waste management facility for disposal. The rinsate was collected into 5-gallon containers from the lined decontamination area. The liquid was decanted into a 55-gallon drum for shipment to the landfill. The sediment at the bottom of the 5-gallon containers was deposited with the contaminated soil in the supersacks. Appendix F contains the disposal certificates for the rinsate.

4. CONCLUSIONS

All work was completed in accordance with the Work Plan (North Wind Services, 2011) on September 18, 2011, with the exceptions listed in Section 4.2.

4.1 Work Completed

All mercury contaminated soils were removed from the former RTRS using ADEC field sampling guidance (ADEC, 2010) to meet ADEC 18 AAC 75 Method 2 cleanup levels. All soils with a mercury contamination of greater than 1.4 mg/Kg were removed, as determined by the laboratory based confirmation sample results. The contaminated soils were disposed of at the Waste Management Columbia Ridge Landfill, as documented by the certificate of disposal (Appendix F). The site was backfilled with clean soil and contoured to blend with the existing landscape. The RTRS was then re-vegetated to promote natural growth of native species in order to prevent erosion.

4.2 Deviations from the Work Plan

4.2.1 Additional Sampling

According to the Work Plan (North Wind Services, 2011), three samples were to be taken for analysis using a five-step sequential extraction process. The planned samples were to be used to understand the portion of the mercury contamination at the site that was leachable to groundwater versus mercury that was bonded strongly within the cinnabar ore in the event that the cleanup levels were not realized. Once the soil samples results came back under the total mercury cleanup concentration, it was decided by the project team that the five-step sequential extraction process was not necessary. Therefore, the testing was not conducted.

4.3 Findings

Based on the analytical results of the excavation confirmation samples, it is concluded that the former RTRS has achieved ADEC cleanup complete status in accordance with 18 AAC 75. No further remedial actions are recommended for this site.

5. REFERENCES

- 18 AAC 75, "Oil and Other Hazardous Substances Pollution Control," Alaska Department of Environmental Conservation, *Alaska Administrative Code*, as amended through October 9, 2008.
- 40 CFR 261.24, *Code of Federal Regulations*, Title 40, "Protection of Environment," Part 261, "Identification and Listing of Hazardous Waste," Subpart C, "Characteristics of Hazardous Waste," Section 261.24, "Toxicity Characteristic," Office of the Federal Register.
- ADEC, 2010, "Draft Field Sampling Guidance," Division of Spill Prevention and Response Contaminated Sites Program, State of Alaska Department of Environmental Conservation, May 2010.
- Harding Lawson, 2000, *2000 Data Summary Report, Red Top Retort Site*, Harding Lawson Associates-Wilder Construction Company Joint Venture, Anchorage, Alaska, April 2000.
- North Wind Services, 2011, *Final Hazardous Material Removal Work Plan, Red Top Retort Site, Alaska*, NWS-11-20025-002, North Wind Services, LLC., Anchorage, AK, August 2011.
- Quest Environmental, 1994, *Site Assessment Report: BLM Red Top Retort Site, Wood River, Alaska*, Quest Environmental, Anchorage, AK, August 1994.
- Shannon and Wilson, 2008, *Red Top Mill Assessment, Aleknagik, Alaska*, Shannon and Wilson, Inc., Fairbanks, Alaska, April 2008.

Appendix A
Resume of ADEC Qualified Person

ARDEN BAILEY

Field Team Leader



EDUCATION

B.S., Geology, North Dakota State University, Fargo, North Dakota

SUMMARY OF QUALIFICATIONS

Mr. Bailey has more than 20 years of environmental investigations and geologic exploration where he has served in various capacities including site geologist, field team leader, site supervisor, and health and safety supervisor. His experience includes rock core logging, soil boring/split spoon sampling, installation of piezometers, environmental sampling to meet RCRA and CERCLA requirements, installation and refurbishment of monitoring wells, well development, pump tests, geotechnical testing, and geologic mapping. He has supervised field operations involving multiple drill rigs and field geologists and coordinated all logistical support.

RELEVANT EXPERIENCE

Site Supervisor; North Wind, Inc.; INL, Idaho Falls, ID

Mr. Bailey provides site supervision for North Wind, Inc. projects involving drilling operations for multiple environmental characterization, sampling, and geotechnical and hydrologic field evaluations and tests. Mr. Bailey has overall responsibility for directing and coordinating the execution of these projects, directing a multidiscipline team comprised of engineers, field technicians, and specialty subcontractors. Mr. Bailey is currently directing a site investigation at Taku Gardens, Fort Wainwright, Alaska, under contract with the U.S. Army Corps of Engineers, Alaska District. Under this contract, Mr. Bailey is responsible for overseeing a large-scale site characterization to determine the extent of PCB soil and groundwater contamination at the 52-acre site.

Advisory Scientist, PS2 Associates LLC; INL, Idaho Falls, ID

Mr. Bailey supported Remedial Investigation and Feasibility Studies at the INL RWMC and INTEC facilities, including serving as the Field Team Leader Support for the WAG 3 Group 4 and Group 5 Monitoring Well Installations, OU 3-14 Tank Farm Characterization, OU 3-13 post ROD characterization activities, OU 7-13/14 Probehole Installation Project, and OU 7-08 Vadose Zone Monitoring and Extraction Wells. He provided project readiness assessment support for the startup of field activities at the RWMC and INTEC facilities and served as the field geologist for the OU 10-08 Aquifer Deep Wells.

Mr. Bailey's experience includes applying Integrated Safety Management System core functions and guiding principles to all aspects of field work at the INL and applying Conduct of Operations to drilling activities, including the development of work control documentation for the project. He provided project readiness assessment support for the startup of field activities at the RWMC and INTEC facilities and served as the field geologist for the OU 10-08 Aquifer Deep Wells.

TRAINING

OSHA Supervisor Course: Hazardous Waste Operations
OSHA 40 Hour Safety and Health Course (per 29 CFR 1940.120)
Current annual OSHA Refresher
Current DOE Radiation Worker II Certification
NRC Certified Nuclear Gauge Use and Safety
Current Standard Medic First Aid and CPR
(Detailed training records available through INL TRAIN S# 69092)

Appendix B

Field Logbook

9-6-2011-

logbook opened for Red Top Retort soil excavation. North Wind site superintendent will be Arden Bailey - BLM project manager will be Larry Beck who will also be onsite. Logbook will be maintained by Arden Bailey unless otherwise noted.

0800- Weather: 45°F, light breeze, high overcast with occasional patches of clear - Jack Libby and crew will load barge - they plan on leaving for site at high tide between 10:00 & 11:00 AM

0840 Beck & Bailey to office at Beaver Creek cabins to finalize lodging arrangements

0930 - Check on Jack Libby and crew at dock - they are loading barge -

1020 - Pallets and palletized equipment loaded - crew will load Bob-cat next -

1040 - Johnathan Libby departs boat harbor with barge - headed for site

1045 - Jack and Duddy will continue getting equipment ready - will load on Lowboy and then drive to Aleknagik - then cross-dock to Barge there after Johnathan drops off equipment that is now on barge - at the retort site -

1230 - Depart Dillingham for Aleknagik

1340 - Depart Aleknagik by boat for retort

1400 - onsite at Retort -

1418 - Barge arrives at RTRS - start to unload Bobcat

1715 - on unloaded and staged - start clearing alders from site

1900 - Have cleared most of sites - will finish for day - load boat head up/secur

1930 - At Aleknagik - will drive to town

1810 - Back at Dillingham -

[Signature]
9-6-2011

②

9-7-2011

0805 - Depart Dillingham for Aleknagik.
 0840 - Loading Boat for rip down river.
 0915 - At site.
 0940 - Start excavating to find liner.
 1045 - liner depth varies from 1 to 2 ft in by 14 continue excavating - repairs to Bobcat -
 1215 - Depart site for Aleknagik.
 1240 - Return to site with tools - start going for bolt
 1345 - Return to digging -
 1400 - start XRF of soils - every liner to insure
 swab steel disc then - shoot caliber from
 standard 2710 - checks of -
 1435 continue to excavate to liner - metal
 is to excavate close to liner with
 shot bucket and then clean liner with
 hand shovels -
 1608 continue excavating - almost all of liner
 is exposed to liner
 1610 - measure distance between SW and SE
 corners as 51.7 ft.
 1620 - measure distance between stake for IS-3
 and corner rebar at 34 ft.
 1630 - Just Lily & crew continue to excavate
 clean soil above liner - shoot soil
 with XRF and find non-detect for mercury -
 end for today
 1710 - Excavation to liner is almost complete
 loading boat
 and trucks -
 1730 - Return to Aleknagik -
 1810 - Return to Dillingham -
 2000 - start working with map - to figure swing
 ties for all sample locations - found that
 the map in the 2000 summary report
 was accurate (scale wise) in left to right axis -
 however we showed 25 ft between IS-3 and
 SE corner rebar - actual distance is 24 -
 However, map was 44 feet between SE and
 SW corners - actual measured distance is
 51.7. Map smoothed to be the right scale -
 and then swing tie distances measured
 9-7-2011

③

9-8-2011

0600 - Pick up supplies at Hardware store in
 Dillingham -
 0610 - Weather, overcast - light rain 50°F slight
 breeze. Rain overnight
 0815 - Depart for site.
 0845 - load boat at Aleknagik
 0910 - on site - Jonathan, Ryan, Tony, and Andy
 Jonathan Lily and Ryan start working on
 Subject reports -
 1030 - Bobcat at excavation - will remove material from
 IS-30 4:161 - then start working under liner
 1135 - set up at IS-30. Jonathan removes 4 inches
 of overburden from IS-30 area - XRF
 indicated ND at surface -
 1140 - XRF shows ND at 8 inches
 1145 - XRF indicates 10% at 6 inches - start to
 set up to bag waste. some evidence
 at small pieces of circular in soil -
 1230 - Have excavated location IS-30 to 2 1/2 ft -
 in to distinctly fluvial sands and gravels -
 XRF shows ND for Mg
 1330 - start attempting to lay out points -
 distances do not measure right with
 splices in tarp -
 1420 - laying out grid points sample location points
 by measuring distance from east edge and
 south edge of previous excavation - this
 method matches perfectly with tarp and
 patches in tarp -
 1544 - points all laid out - draw outline
 of containment area that reveals skin
 1553 - start excavating - 1 ft skin in SW corner
 1700 - working back to north. finding some sand/gravel
 fluvial inside layer about 1 ft down - XRF indicates
 that the sand/gravel is clean.
 1715 - finish for day - crew starts feeling Robert and Tony
 soils -


17-9-2011 - Weather: clear but foggy, 36°F, calm
 0820: Depart Dillingham for Aleknagik
 0835: Start loading boats for trip down west
 River.
 0855: on River - travel to site
 0910: unloading at AKRS
 0940: start excavating - start XRF - start calibration
 disc and on standard - start XRF - start calibration
 1015: and continue to XRF excavation bottom sidewalk,
 and surface outside of excavation.
 1111: Have located additional area of Hg
 contamination to SE of area of excavation
 west IS-23 - on new surface - extend 1 ft
 excavation in that direction -
 1145: Have now located 11 bags - continue excavating -
 1243: Dissolve mercury beads at approximately IS-23 - extract
 material down to 3 to 4 ft below ground
 surface. Put waste bag for "hotest" contamination
 and take sample for TLP assay for shipping -
 1335: find additional contamination (approximately 15 ppm)
 to the west of the "hottest" shaped excavation
 1405: continue excavating - screen bottom of hole
 where quicksilver was removed - N/A on XRF -
 shoot standard for XRF.
 1415: edgewall (west side) of deep portion IS-33 excavate
 still reads 132 so will extend excavation to
 depth on that side -
 1420 - crew continues to excavate closer to river with
 Hg levels ~ 10 to 14. Contamination only extends
 to 8 inches in that area - This is in the
 area between IS-18 and IS-26. Some
 areas near IS-18 showed Hg at
 up to 58 ppm at a depth of 1 ft.
 1425 Have completed screen on one meter grid in the
 IS-31 to IS-32 area - XRF shows non detects
 on floor and wall screening - wall screened at
 the IS-6 and IS-25 areas with all XRF
 results for mercury as non-detects.
 1500: Junction bags being destroyed and tracks it in
 The lagoon at north end of site -
 1510: continue excavating -

9-9-2011 continued -
 weather - 60°F, calm, lots of white socks, cloudy so
 partly cloudy with high thin clouds -
 1555: Have now packed 19 total yards -
 1645: Starting to pack up for day -
 1715: Depart site by boat for Aleknagik
 1730: Loading truck
 1810: Back to Dillingham - plan on taking tomorrow off


 9-9-2011

6

9-11-2011 - weather: high clouds 40%, calm, humid with patches of fog and very occasional rain drizzle

0800 - Depart Dillingham

0840 - loading boat

0910 - on-site - crew being reunit on equipment

0930 - start excavating - continue excavation at IS-33

0940 - very occasional heavy drizzle in soil near IS-33. XRF indicates ≈ 80 to 90 ppm

0958 - Take 5 step sequential extraction sample at soil near IS-33

1036 - collect 5 step sequential extraction sample at soil north of IS-32 - by about 4 ft

1130 - continue excavating towards north and beyond IS-8 - start collecting samples - sample times will be recorded on chain of custody - sample locations shown on map on following page and will be GPSed

1130 - Jonathan Lilly brings barge downriver with boat "Spot Cash" and pushed barge into small barge at upstream and pushed barge into small barge barge ashore by pulling with extraction facilities - (Lull)

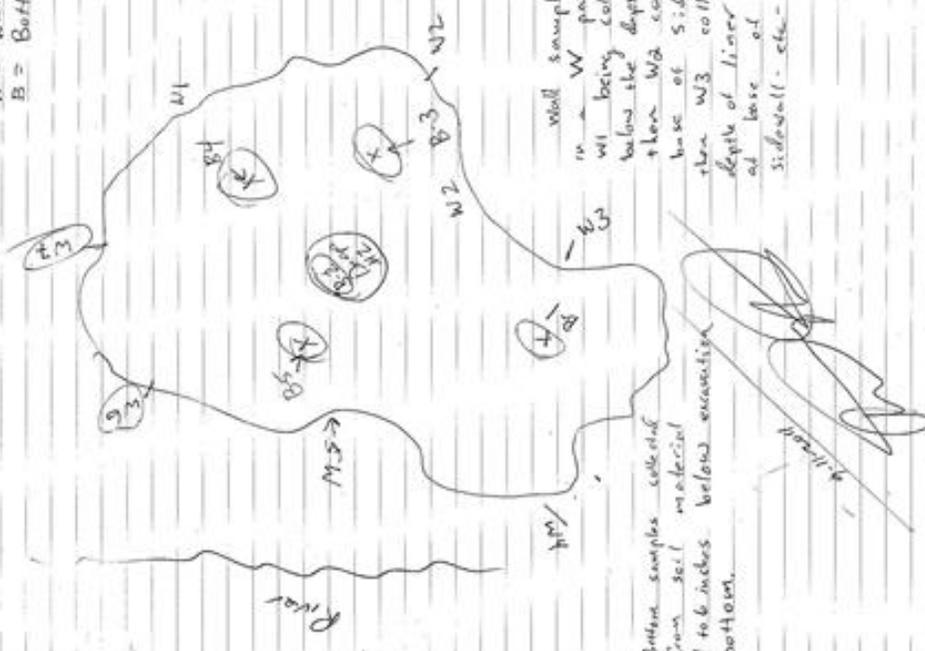
1600 - Have loaded supersacks - River higher - Spot cash pulls on barge and will position to get barge off at the barge with 8 sacks - Total of 29 supersacks of soil and 1 sack of liner to ship -

1900 - All offsite - head back upriver to Akleagvik - samples collected - will ship. Pen pack tonight.

By [Signature]
 north
 11/02/11-b

7

W = wall samples
 B = Bottom samples



Wall samples collected in W pattern with W1 being collected at depth below the depth of liner - then W2 collected at base of side wall and then W3 collected at depth of liner then W4 at base of excavation sidewall - etc.

Bottom samples collected from soil material 1 to 6 inches below excavation bottom.

8

9-12-2011
 0930 - crew onsite at Smith Point - start unloading of 8 super sacks of soil brought over yesterday evening at high tide.
 1130 - need downstream to pick up more super sacks of soil
 1545 - Janina pushes barge into shore with "Spot Cash" boat - will start loading
 1635 - Tide coming up - almost loaded - plan on taking 11 bags of soil today and then pickup the other 10 tomorrow
 1720 - loaded - Jack pushes barge with extend a-bay Sol 114 and Janina pulls with the tug - "Spot Cash"
 1730 - Barge off of the beach and headed
 1830 - All winter to Aleknagik - crew to follow Smith Point -

[Signature]
 9-12-2011

9

9-13-2011 -
 0930 - unload barge at Smith Point - placing super sacks on Seal trailer to haul to Dillingham -
 1100 - Depart for site - to haul lost soil
 super sacks - will leave the bag at river at site in case the excavation needs to be extended -
 1448 - Barge beached - starting to load -
 1600 - Barge pushed off - headed up river -
 1730 - All back to Smith Point at Aleknagik -
 haul back to Dillingham -

[Signature]
 9-13-2011

(10)

9-14-2011

Awaiting Sample Data - No work at site



9-14-2011

(11)

9-15-2011

Travel back to Dillingham to continue work at the Red Top Retort Site -

Sample data from SCS indicates that:

1. The area planned for backfill excavation is open
2. The sidewalls and bottom meet AOC levels -
3. The super-sacks can be shipped as ver-baz

However,

1. The samples arrived at the lab at ~ 7°C so will be flagged as estimates -
Analytical and BUL before it will be OK but would like to have no issues with samples so will resample -
2. Levels on the west side of the excavation are still very close to regulatory levels so will excavate additional soil in that direction -



9-15-2011

(12)

9-16-2011. weather - cloudy light breeze, light rain, 50° of Libby's ship - Libby crew working on getting ready to go to site
 0945: Depart for Alakagik for ATRS by boat
 1030: Arrive ATRS Start unloading gear
 1050: Start excavating additional soil - will save on the western edge where levels were still elevated.
 1135: Start to collect soil samples from areas as they are excavated or in most cases from previous areas - excavation is continuing in a westerly direction toward the river - Jack Libby is skimming - 1 ft soil layer in that direction -

1300: Find another white plastic scoop left over from the 198 sampling event - It appears that the contractor dropped the scoops down the sample hole after completing sampling - These scoops have been found within approx 1 ft of where the previous holes should be based on our measurements from the map.

1345 Find A-B Nishimura - leader of the village of Alakagik arrives on site for tour. The native village of Alakagik will be the only that remains the land from BLM when the site is finalized as clean -

1530: Crew moving sacks to loading area and planning on backfill operations -
 1600: Jonathan Libby brings barge and rig down river to site - pushes barge onto shore - crew starts loading sacks on barge - will be 11 additional super sacks of soil for a total of 40 bags which include 1 bag of liner scattered into the soil

2000 - Arrive Smith Point with supersacks -
 2010 - hand to Milling bag
 9-16-2011

(13)

9-17-2011
 0500 - meet at Libby's shop -
 0550 - Depart for site (Alakagik) by truck
 0945 - Start downriver to re-ent site -
 1030 - warning up equipment - site is muddy due to rain - will start to place the clean soil that was above the liner into the excavation hole first - then place in a layer of Alder branches to provide "spout" material for future growth and then a layer of clean backfill excavated from the area that the backfill samples showed was clean - The final layer will be a layer of top soil with root mass included - This top soil was removed from the site the first day and has been stockpiled separately -
 1600 - Backfill complete - as planned above except that fill dirt was mixed in with topsoil - because top soil pile blocked road
 1700 - Depart

[Signature]
 9-19-2011

(14) 9-14-2011

0800 - L. Beck and A. Bailey check on shipping containers
in dock storage area - bags or located in
4 containers -

1000 - travel to site -

1400 - packing equipment - and decon of Bobcat -

1430 - have finished decon of Bobcat -

picked clean with dry decon - all soil
placed into supersacks - Then pressure
washed with pressure washer on plastic
liner - all water collected and placed
into 5 gallon buckets - ~ 30 gallons
total.

1450 - collect sample of decon water

1500 - crew loads last of gear. Fork lift
will be driven to Atkasgik and
loaded there

1700 - Off site

~~9-14-2011~~

Shannon + Wilson Report:

METERS

BLM corners -
 1- 586687.522 467491.897
 2- 586716.180 467549.367
 Lot 1
 3- 586643.583 467585.511
 4- 586618.374 467522.921
 Lot 2
 3- 586687.521 467617.940
 4- 586515.039 467490.614



Linear Corners

FEET

N
 SW- 1924411.278 1533727.342
 SE- 1924428.986 1533767.233
 NW- 1924472.042 1533763.731
 NE- 1924454.889 1533737.757
 SE-NE 1924447.042 1533742.214

IS - 31	IS - 32	IS - 33	IS - 34	IS - 35	IS - 36	IS - 37	IS - 38	IS - 39	IS - 40	IS - 41	IS - 42	IS - 43	IS - 44	IS - 45	IS - 46	IS - 47	IS - 48	IS - 49	IS - 50
28	26	40	43	35	31	28	40	43	49	29	49	26	8	17 N	40 E	170	100	100	100

SW of Line

E-28 S-40 scoop in. blue tarp #12

≡ Mark Browning - 425-638-9739

~~888-356-~~

Anne Marie

907-303-0323

907-766-3184

⇒ Arctic Fire + Safety -

- Booking Number - 842-5516-

Appendix C

Photographic Log



Photograph 1. MOBILIZATION. Loading barge with equipment and supplies at Dillingham, AK.



Photograph 2. MOBILIZATION. Towing barge down the Wood River to Red Top Retort Site.



Photograph 3. MOBILIZATION. The vessels used for transporting personnel to and from the site.



Photograph 4. MOBILIZATION. Off-loading Bobcat excavator from the barge at the lagoon upriver from Site.



Photograph 5. SITE CLEARING. Cutting down and clearing vegetation at the Site.



Photograph 6. SITE CLEARING. Stock piling cut vegetation for site restoration activities.



Photograph 7. SITE CLEARING. Grubbing root layer from the soil surface.



Photograph 8. SITE CLEARING. Removing clean soil overburden from top of liner.



Photograph 9. EXCAVATION. Excavating soil from historical sample location IS-30.



Photograph 10. EXCAVATION. Previous sample locations and outline of the approximate excavation area are marked.



Photograph 11. EXCAVATION. Begin 8-inch excavation at the south-west corner of the excavation area.



Photograph 12. EXCAVATION. Layout of XRF field screening locations in one meter grids.



Photograph 13. EXCAVATION. Continue to excavate the top 8 inches of soil.



Photograph 14. EXCAVATION. Expanding the contamination boundary to include historical sample location IS-24 due to contamination.



Photograph 15. EXCAVATION. Free mercury near historical sample location IS-33. Note tip of glove in the photograph for scale.



Photograph 16. EXCAVATION. Remove contaminated soil at IS-33 and containerization in a 1-cubic yard supersack.



Photograph 17. EXCAVATION. XRF field screening locations in the south-east quadrant of the excavation.



Photograph 18. EXCAVATION. Field screening for mercury using a hand held XRF unit.



Photograph 19. SHIPPING OF EXCAVATED SOILS. Barge loaded with supersacks of contaminated soil.



Photograph 20. SHIPPING OF EXCAVATED SOILS. Towing of barge up the Wood River to Smith Point, near Aleknagik, AK.



Photograph 21. SHIPPING OF EXCAVATED SOILS. Load transport trailer using extend-a-boom.



Photograph 22. SHIPPING OF EXCAVATED SOILS. Arrangement of supersacks in the conexas.



Photograph 23. SITE RESTORATION. Grade and appearance of site after backfill and re-vegetation.



Photograph 24. SITE RESTORATION. Source of backfill on BLM property.

Appendix D
Analytical Data Packages
(included on CD)

Appendix E
Data Validation Report
(included on CD)

Appendix F

Certificates of Disposal

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number AK0001413822	2. Page 1 of 2	3. Emergency Response Phone 425-638-9739	4. Waste Tracking Number RTR1001
5. Generator's Name and Mailing Address US DOI BLM RED TOP RETORT SITE BLM Anchorage, 4700 BLM Rd., Attn: Larry Beck ANCHORAGE, AK 99507			Generator's Site Address (if different than mailing address) NORTH BANK WOOD RIVER ALEKNAGIK, AK 99555		
Generator's Phone: 907-267-1246			U.S. EPA ID Number WAD981773005		
6. Transporter 1 Company Name NORTHLAND SERVICES, INC.			U.S. EPA ID Number NED001792910		
7. Transporter 2 Company Name UNION PACIFIC RAILROAD			U.S. EPA ID Number ORD987172467		
8. Designated Facility Name and Site Address COLUMBIA RIDGE LANDFILL 18177 CEDAR SPRINGS LANE ARLINGTON, OR 97812			Facility's Phone: (581) 454-2030		
9. Waste Shipping Name and Description			10. Containers		11. Total Quantity
			No.	Type	12. Unit WL/Vol.
1. NON-HAZARDOUS WASTE SOLID (CONTAMINATED SOIL)				BA	P
2.					
3.					
4. TTNU 387013					
13. Special Handling Instructions and Additional Information 1) PROFILE # 109151OR, non-hazardous mercury contaminated soil CERTIFICATES OF DISPOSAL REQUIRED.					
I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and re-labeled/certified, and are in all respects in proper condition for transport, according to applicable international and national governmental regulations.					
14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.					
Generator's/Officer's Printed/Typed Name Dan W. McCauley			Signature <i>Dan McCauley</i>		Month Day Year 9 27 11
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:					
16. Transporter Acknowledgment of Receipt of Materials					
Transporter 1 Printed/Typed Name Dean Heyano			Signature <i>Dean Heyano</i>		Month Day Year 9 27 2011
Transporter 2 Printed/Typed Name Trevor Stephens			Signature <i>Trevor Stephens</i>		Month Day Year
17. Discrepancy					
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
17b. Alternate Facility (or Generator) Manifest Reference Number: U.S. EPA ID Number					
17c. Signature of Alternate Facility (or Generator) Month Day Year					
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a					
Printed/Typed Name Sullie Valdez			Signature <i>Sullie Valdez</i>		Month Day Year 11 16 11

169-BLC-G 5 11977 (Rev. 8/06)

DESIGNATED FACILITY TO GENERATOR

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)		19. Generator ID Number AK0001413822	20. Page 2	21. Waste Tracking Number RTR 1001	
22. Generator's Name 450 East Elm Road, Red Top Retort Site BLM Anchorage, 4700 Elm Rd., Attn: Lany Beck ANCHORAGE, AK 99507					
23. Transporter Company Name COLUMBIA RIDGE LANDFILL			U.S. EPA ID Number 173457		
24. Transporter Company Name			U.S. EPA ID Number		
GENERATOR	25. Waste Shipping Name and Description	26. Containers		27. Total Quantity	28. Unit Wt./Vol.
		No.	Type		
	TTNU 387013				
	29. Special Handling Instructions and Additional Information				
TRANSPORTER	30. Transporter Acknowledgment of Receipt of Materials		Signature		Month Day Year
	Printed/Typed Name G. A. ROSTER		[Signature]		11-14-11
	31. Transporter Acknowledgment of Receipt of Materials		Signature		Month Day Year
Printed/Typed Name Kendra Cyr UP		[Signature]		11/19/11	
DESIGNATED FACILITY	32. Discrepancy				

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TRANSPORTER #1

Columbia Ridge
 18177 Cedar Springs Lane
 Arlington, OR, 97812
 Ph: (541) 454-2030

Original **209287**
 Ticket# 53728

Customer Name ELM SOLUTIONS CORPORATION ELM Carrier TTNU
 Ticket Date 11/15/2011 Vehicle# 387013 Volume
 Payment Type Credit Account Container
 Manual Ticket# 742442 Billing # 0001309
 Hauling Ticket# Manifest RTR1001
 Destination UP/CUST PD
 Profile 109151OR (NONHAZARDOUS MERCURY CONTAMINATED SOILS-OM)
 Generator OR-US DOT BLN RED TOP RETORT US DOT BLM RET TOP RETORT SITE

	Time	Scale	Operator	Inbound	Gross	72240 lb*
In	11/15/2011 10:19:48	MANUAL WT	yackinne		Tare	41700 lb*
Out	11/15/2011 10:19:48		yackinne		Net	30540 lb
			* Manual Weight		Tons	15.27

Comments Rental 9/27 - 11/16 = 50 Days

Product	LDX	Qty	UOM	Rate	Tax	Amount	Origin
1	ENVCLEANUP SPW-Ton	100	15.27	Tons			AK-ALEKNAG
2	FEE T SPW-FUEL, ENV	100	15.27	Tons			AK-ALEKNAG
3	RAIL U SPW-RAIL UN	100	1	Load			AK-ALEKNAG
4	PICK FEE SPW-PICK	100	1	Load			AK-ALEKNAG
5	RENT SPW DAILY-CAN	100	50	Each			AK-ALEKNAG
6	LINER SPW-LINER UN	100	1	Each			AK-ALEKNAG



COLUMBIA RIDGE LANDFILL & RECYCLING CENTER
A WASTE MANAGEMENT COMPANY

18177 Cedar Springs Lane
Arlington, OR 97812
(541) 454-2030
(541) 454-3312 Fax

November 17, 2011

Elm Solutions Corporation
17701 108th Ave. SE, Suite 427
Renton, WA 98055

CERTIFICATE OF DISPOSAL

Waste Management, Inc. dba Columbia Ridge Landfill has received NON HAZARDOUS Waste material from US DOT BLM Red Top Retort Site on behalf of Elm Solutions Corporation.

Date of Disposal: November 16, 2011
Profile #: 109151OR
Manifest #: RTR1001
Container #: TTNU387013
Total Disposed: 30540 lbs.
Waste Type: Non-Haz Mercury

I certify, on behalf of the above listed facility, that the above-described NON Hazardous waste was managed in compliance with all applicable laws.

Victoria McKinney
Special Waste Billing Dept.

A Division of Oregon Waste Systems

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number AK0001413822	2. Page 1 of 2	3. Emergency Response Phone 425-638-9739	4. Waste Tracking Number RTR1002
5. Generator's Name and Mailing Address US DOI BLM RED TOP RETORT SITE BLM Anchorage, 4700 BLM Rd., Attn: Larry Beck ANCHORAGE, AK 99507			Generator's Site Address (if different than mailing address) NORTH BANK WOOD RIVER ALEKNAGIK, AK 99555		
Generator's Phone: 907-267-1246			U.S. EPA ID Number		
6. Transporter 1 Company Name NORTHLAND SERVICES, INC.			U.S. EPA ID Number WAD981773005		
7. Transporter 2 Company Name UNION PACIFIC RAILROAD Roadlink			U.S. EPA ID Number WAH00016693 NE0001702018		
8. Designated Facility Name and Site Address COLUMBIA RIDGE LANDFILL 18177 CEDAR SPRINGS LANE ARLINGTON, OR 97812			U.S. EPA ID Number		
Facility's Phone: (581) 454-2030			ORD987172457		
GENERATOR	9. Waste Shipping Name and Description	10. Containers		11. Total Quantity	12. Unit WL/Vol.
		No.	Type		
	1. NON-HAZARDOUS WASTE SOLID (CONTAMINATED SOIL)		BA		P
	2.				
	3.				
13. Special Handling Instructions and Additional Information 1) PROFILE # 109151OR, non-hazardous mercury contaminated soil CERTIFICATES OF DISPOSAL REQUIRED I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/certified, and are in all respects in proper condition for transport, according to applicable international and national governmental regulations.					
14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.					
Generator's Office's Printed/Typed Name Dan W. McGowan		Signature <i>Dan W. McGowan</i>		Month 9	Day 27
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit: Date leaving U.S.:		Year 2011	
16. Transporter Acknowledgment of Receipt of Materials					
Transporter 1 Printed/Typed Name Dan Heyano		Signature <i>Dan Heyano</i>		Month 9	Day 27
Transporter 2 Printed/Typed Name Devar Stephens		Signature <i>Devar Stephens</i>		Month 11	Day 14
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection		Manifest Reference Number:			
17b. Alternate Facility (or Generator)		U.S. EPA ID Number			
Facility's Phone:					
17c. Signature of Alternate Facility (or Generator)				Month 11	Day 16
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a		Signature <i>Julie Valdez</i>		Month 11	Day 16
Printed/Typed Name Julie Valdez				Year 11	

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DESIGNATED FACILITY TO GENERATOR

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)		19. Generator ID Number AK0001413022	20. Page 2	21. Waste Tracking Number RTR 1002	
22. Generator's Name US DCA BLM RSC TOP RETORT SITE BLM Anchorage, 4700 BLM Rd., Attn: Larry Beck ANCHORAGE, AK 99507					
23. Transporter <u>3</u> Company Name Colombia Ridge Landfill North Wind Services, LLC			U.S. EPA ID Number NC0001712710		
24. Transporter <u>4</u> Company Name Colombia Ridge Landfill			U.S. EPA ID Number OR D067173457		
GENERATOR	25. Waste Shipping Name and Description	26. Containers		27. Total	28. Unit
		No.	Type	Quantity	Wt./Vol.
29. Special Handling Instructions and Additional Information					
TRANSPORTER	30. Transporter <u>3</u> Acknowledgment of Receipt of Materials				
	Printed/Typed Name Anne Nicole Waterhill	Signature <i>[Signature]</i>	Month 11	Day 10	Year 11
DESIGNATED FACILITY	31. Transporter <u>4</u> Acknowledgment of Receipt of Materials				
	Printed/Typed Name Setro	Signature <i>[Signature]</i>	Month 11	Day 14	Year 11
32. Discrepancy					

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TRANSPORTER #1

Columbia Ridge
 18177 Cedar Springs Lane
 Arlington, DR, 97812
 Ph: (541) 454-2030

Original **209285**
 Ticket# 53716

Customer Name ELM SOLUTIONS CORPORATION ELM Carrier TTNU
 Ticket Date 11/16/2011 Vehicle# 245603 Volume
 Payment Type Credit Account Container
 Manual Ticket# 742440 Billing # 0001309
 Hauling Ticket# Manifest RTR1002
 Destination UP/CUST PO
 Profile 1091510R (NONHAZARDOUS MERCURY CONTAMINATED SOILS-CM)
 Generator CR-US DOT BLM RED TOP RETORT US DOT BLM RET TOP RETORT SITE

	Time	Scale	Operator	Inbound	Gross	
In	11/16/2011 10:13:16	MANUAL WT	vackinne		74400 lb*	
Out	11/16/2011 10:13:16		vackinne		Tare 42200 lb*	
			* Manual Weight		Net 32200 lb	
Comments	Rental 9/27 - 11/16 = 50 Days				Tons 16.10	

Product	LDX	Qty	UOM	Rate	Tax	Amount	Origin
1 ENVCLEANUP SPW-Ton	100	16.10	Tons				AK-ALEKNAG
2 FEA T SPW-FUEL, ENV	100	16.10	Tons				AK-ALEKNAG
3 RAIL U SPW-RAIL UN	100	1	Load				AK-ALEKNAG
4 PICK FEE SPW-PICK	100	1	Load				AK-ALEKNAG
5 RENT SPW DAILY-CAN	100	50	Each				AK-ALEKNAG
6 LINER SPW-LINER UN	100	1	Each				AK-ALEKNAG



COLUMBIA RIDGE LANDFILL & RECYCLING CENTER
A WASTE MANAGEMENT COMPANY

18177 Cedar Springs Lane
Arlington, OR 97812
(541) 454-2030
(541) 454-3312 Fax

November 17, 2011

Elm Solutions Corporation
17701 108th Ave. SE, Suite 427
Renton, WA 98055

CERTIFICATE OF DISPOSAL

Waste Management, Inc. dba Columbia Ridge Landfill has received NON HAZARDOUS Waste material from US DOT BLM Red Top Retort Site on behalf of Elm Solutions Corporation.

Date of Disposal: November 16, 2011
Profile #: 109151OR
Manifest #: RTR1002
Container #: TTNU245603
Total Disposed: 32200 lbs.
Waste Type: Non-Haz Mercury

I certify, on behalf of the above listed facility, that the above-described NON Hazardous waste was managed in compliance with all applicable laws.

Victoria McKinney
Special Waste Billing Dept.

A Division of Oregon Waste Systems

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number AK0001413822	2. Page 1 of 2	3. Emergency Response Phone 425-638-9700	4. Waste Tracking Number RTR1063
5. Generator's Name and Mailing Address US COBALT RED TOP RETORT SITE BLM Anchorage, 4760 BLM Rd., Atz/Lam/Beck ANCHORAGE, AK 99517			Generator's Site Address (if different than mailing address) NORTH BANK WOOD RIVER ALEKNAGIK, AK 99555		
Generator's Phone: 907-267-1246					
6. Transporter 1 Company Name NORTHLAND SERVICES INC.			U.S. EPA ID Number WA0981773665		
7. Transporter 2 Company Name UPON PACIFIC RAILROAD			U.S. EPA ID Number NE0001792916		
8. Designated Facility Name and Site Address COLUMBIA RIDGE LANDFILL 15177 CEDAR SPRINGS LANE ARLINGTON, OR 97112			U.S. EPA ID Number OR0987172457		
Facility's Phone: (503) 454-2050					
9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit Wt./Vol.
		No.	Type		
1.	NON-HAZARDOUS WASTE SOLID (CONTAMINATED SOIL)		2A		P
2.					
3.					
4.					
13. Special Handling Instructions and Additional Information (1) PROFILE # 10915 FOR non-hazardous mercury contaminated soil CERTIFICATES OF DISPOSAL REQUIRED I hereby declare that the contents of this consignment are fully and accurately described above and by the proper shipping name and are classified, packaged, marked and certified/labelled and are in full compliance with applicable international and national government regulations.					
14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.					
Generator's/Officer's Printed/Typed Name Dan W. McGunney		Signature <i>Dan W. McGunney</i>		Month 9	Day 27
				Year 11	
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:					
16. Transporter Acknowledgment of Receipt of Materials					
Transporter 1 Printed/Typed Name Dean Heyano		Signature <i>Dean Heyano</i>		Month 9	Day 27
				Year 2011	
Transporter 2 Printed/Typed Name Taylor Stephens		Signature <i>Taylor Stephens</i>		Month	Day
				Year	
17. Discrepancy					
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
17b. Alternate Facility (or Generator) Manifest Reference Number: U.S. EPA ID Number					
17c. Signature of Alternate Facility (or Generator) Month Day Year					
18. Designated Facility Owner or Operator. Certification of receipt of materials covered by the manifest except as noted in Item 17a					
Printed/Typed Name Julie Valdez		Signature <i>Julie Valdez</i>		Month 11	Day 16
				Year 11	

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TRANSPORTER #1

Columbia Ridge
 18177 Cedar Springs Lane
 Arlington, OR, 97812
 Ph: (541) 454-2030

Original 209284
 Ticket# 53717

Customer Name ELM SOLUTIONS CORPORATION ELM Carrier TTN:
 Ticket Date 11/16/2011 Vehicle# 244261 Volume
 Payment Type Credit Account Container
 Manual Ticket# 742439 Billing # 0001309
 Hauling Ticket# Manifest RTR1003
 Destination UP/COST RD
 Profile 1091510R (NONHAZARDOUS MERCURY CONTAMINATED SOTLS-CM)
 Generator OR-US DOT BLM RED TOP RETORT US DOT BLM RET TOP RETORT SITE

Type	Scale	Operator	Inbound	Gross	75000 10*
In 11/16/2011 09:56:55	MANUAL WT	vsckinne		Tare	42240 1b*
Out 11/16/2011 09:56:55		vsckinne		Net	32760 1b
		* Manual Weight		Tons	16.39

Comments Rents 9/27 - 11/16 = 50 Days

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1 ENVCLEANUP SPW-Ton	100	16.39	Tons				AK-ALEKNAG
2 FER T SPW-FUEL, ENV	100	16.39	Tons				AK-ALEKNAG
3 RAIL U SPW-RAIL UN	100	1	Lead				AK-ALEKNAG
4 PICK FEE SPW-PICK	100	1	Lead				AK-ALEKNAG
5 RENT SPW DAILY-CAN	100	50	Each				AK-ALEKNAG
6 LINER SPW-LINER UN	100	1	Each				AK-ALEKNAG



COLUMBIA RIDGE LANDFILL & RECYCLING CENTER
A WASTE MANAGEMENT COMPANY

18177 Cedar Springs Lane
Arlington, OR 97812
(541) 454-2030
(541) 454-3312 Fax

November 17, 2011

Elm Solutions Corporation
17701 108th Ave. SE, Suite 427
Renton, WA 98055

CERTIFICATE OF DISPOSAL

Waste Management, Inc. dba Columbia Ridge Landfill has received NON HAZARDOUS Waste material from US DOT BLM Red Top Retort Site on behalf of Elm Solutions Corporation.

Date of Disposal: November 16, 2011
Profile #: 109151OR
Manifest #: RTR1003
Container #: TTNU244261
Total Disposed: 32780 lbs.
Waste Type: Non-Haz Mercury

I certify, on behalf of the above listed facility, that the above-described NON Hazardous waste was managed in compliance with all applicable laws.

Victoria McKinney
Special Waste Billing Dept.

A Division of Oregon Waste Systems

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number AK0001413822	2. Page # of 2	3. Emergency Response Phone 425-638-9739	4. Waste Tracking Number RTR 1004
5. Generator Name and Site Address RED TOP RETORT SITE BLM Anchorage 4700 BLM Rd., Attn: Larry Beck ANCHORAGE, AK 99507			Generator City, State, and ZIP Code (if different than shipping address) NORTH BANK WOOD RIVER ALEKNAGIK, AK 99555		
Generator's Phone: 907-267-1248			U.S. EPA ID Number WAD981773005		
6. Transporter 1 Company Name NORTHLAND SERVICES, INC.			U.S. EPA ID Number NED001792910		
7. Transporter 2 Company Name UNION PACIFIC RAILROAD			U.S. EPA ID Number ORD987172457		
8. Designated Facility Name and Site Address COLUMBA RIDGE LANDFILL 18177 CEDAR SPRINGS LANE ARLINGTON, OR 97812			Facility's Phone: (581) 454-2030		
9. Waste Shipping Name and Description			10. Containers No. Type	11. Total Quantity	12. Unit Wt./Vol.
1. NON-HAZARDOUS WASTE SOLID (CONTAMINATED SOIL)					P
13. Special Handling Instructions and Additional Information 1) PROFILE # 109151OR, non-hazardous mercury contaminated soil CERTIFICATES OF DISPOSAL REQUIRED I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled in accordance with applicable international and national governmental regulations.					
14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.					
Generator's/Officer's Printed/Typed Name Dan W. McQuibney			Signature <i>Dan W. McQuibney</i>		Month Day Year 9 27 11
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____					
16. Transporter Acknowledgment of Receipt of Materials					
Transporter 1 Printed/Typed Name Dean Heyano			Signature <i>Dean Heyano</i>		Month Day Year 9 27 2011
Transporter 2 Printed/Typed Name Trevor Stephens			Signature <i>Trevor Stephens</i>		Month Day Year
17. Discrepancy					
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
17b. Alternate Facility (or Generator) Manifest Reference Number: _____ U.S. EPA ID Number _____					
17c. Signature of Alternate Facility (or Generator) _____ Month Day Year _____					
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a					
Printed/Typed Name Sulte Valdez			Signature <i>Sulte Valdez</i>		Month Day Year 11 16 11

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DESIGNATED FACILITY TO GENERATOR

Columbia Ridge
 18177 Cedar Springs Lane
 Arlington, DR, 97812
 Ph: (541) 454-2030

Original **209286**
 Ticket# 53724

Customer Name ELM SOLUTIONS CORPORATION ELM Carrier TTNU
 Ticket Date 11/16/2011 Vehicle# 279160 Volume
 Payment Type Credit Account Container
 Manual Ticket# 742441 Billing # 0001309
 Hauling Ticket# Manifest RTR1004
 Destination UP/CUST PD
 Profile 1091510R (NONHAZARDOUS MERCURY CONTAMINATED SOILS-CM)
 Generator OR-US DOT BLM RED TOP RETORT US DOT BLM RET TOP RETORT SITE

	Time	Scale	Operator	Inbound	Gross	
In	11/16/2011 10:14:40	MANUAL WT	vackinne		73980 lb*	
Out	11/16/2011 12:14:40		vackinne		42040 lb*	
			* Manual Weight		Net	31840 lb
					Tons	15.92

Comments Rental 9/27 - 11/16 = 50 Days

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1 ENVIRONMENTAL SPW-Ton 100		15.92	Tons				AK-ALEKNAS
2 FEA T SPW-FUEL, ENV 100		15.92	Tons				AK-ALEKNAS
3 RAIL U SPW-RAIL UN 100		1	Load				AK-ALEKNAS
4 PICK FEE SPW-PICK 100		1	Load				AK-ALEKNAS
5 RENT SPW DAILY-CAN 100		50	Each				AK-ALEKNAS
6 LINER SPW-LINER UN 100		1	Each				AK-ALEKNAS



COLUMBIA RIDGE LANDFILL & RECYCLING CENTER
A WASTE MANAGEMENT COMPANY

18177 Cedar Springs Lane
Arlington, OR 97812
(541) 454-2030
(541) 454-3312 Fax

November 17, 2011

Elm Solutions Corporation
17701 108th Ave. SE, Suite 427
Renton, WA 98055

CERTIFICATE OF DISPOSAL

Waste Management, Inc. dba Columbia Ridge Landfill has received NON HAZARDOUS Waste material from US DOT BLM Red Top Retort Site on behalf of Elm Solutions Corporation.

Date of Disposal: November 16, 2011
Profile #: 109151OR
Manifest #: RTR1004
Container #: TTNU279160
Total Disposed: 31840 lbs.
Waste Type: Non-Haz Mercury

I certify, on behalf of the above listed facility, that the above-described NON Hazardous waste was managed in compliance with all applicable laws.

Victoria McKinney
Special Waste Billing Dept.

A Division of Oregon Waste Systems

417460

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number AK0001413822	2. Page 1 of 2	3. Emergency Response Phone 425-638-9739	4. Waste Tracking Number RTR 1005	
5. Generator's Name and Mailing Address US DOI BLM Red Top Retort Site 4700 BLM Road, ATTN: Larry Beck Anchorage, AK		Generator's Site Address (if different than mailing address) US DOI BLM Red Top Retort Site N. Bank Wood River Aleknagik, AK 99555			
Generator's Phone: (907) 287-1246					
6. Transporter 1 Company Name NORTHLAND SERVICES		U.S. EPA ID Number WAD981773005			
7. Transporter 2 Company Name ROADLINK		U.S. EPA ID Number WAH000016683			
8. Designated Facility Name and Site Address CWMNW - ARLINGTON 17629 CEDAR SPRINGS LANE ARLINGTON, OR 97812		U.S. EPA ID Number ORD089452353			
Facility's Phone: (541) 454-2843					
GENERATOR	9. Waste Shipping Name and Description	10. Containers		11. Total Quantity	12. Unit Wt./Vol.
		No.	Type		
	1. NON-HAZARDOUS WASTE, LIQUID (CONTAMINATED WATER)	1	DM	55 30	G
	2.			5-2-1412	
	3.				
13. Special Handling Instructions and Additional Information 1) PROFILE # OR308198, NonHazardous contaminated Water CERTIFICATES OF DISPOSAL REQUIRED WMXU0707 I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.					
14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.					
Generator's/Officer's Printed/Typed Name Dan W. McLaughlin					
Signature <i>Dan W. McLaughlin</i>					
Month Day Year 9 27 11					
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:					
16. Transporter Acknowledgment of Receipt of Materials					
Transporter 1 Printed/Typed Name Dean Heyano					
Signature <i>Dean Heyano</i>					
Month Day Year 9 27 2011					
Transporter 2 Printed/Typed Name Trevor Stephens Yanda Evans & Associates					
Signature <i>Trevor Stephens</i>					
Month Day Year 1 26 12					
17. Discrepancy					
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection Received a 30g per Mark Browning / ELM solutions and 2/1-12.					
Manifest Reference Number:					
17b. Alternate Facility (or Generator) U.S. EPA ID Number					
Facility's Phone:					
17c. Signature of Alternate Facility (or Generator) Month Day Year					
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a					
Printed/Typed Name Shanna Cronquist					
Signature <i>Shanna Cronquist</i>					
Month Day Year 12 8 12					

169-BLC-O 5 11977 (Rev. 8/06) DESIGNATED FACILITY TO GENERATOR

AMS

477460

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)		19. Generator ID Number AK0001413822	20. Page 2 of 2	21. Waste Tracking Number RTR1005		
22. Generator's Name US DOI BLM RED TOP RETORT SITE						
23. Transporter 3 Company Name UNION PACIFIC RAILROAD			U.S. EPA ID Number NED001792910			
24. Transporter 4 Company Name COLUMBIA RIDGE LANDFILL			U.S. EPA ID Number ORD987173457			
GENERATOR	25a. HM	25b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	26. Containers No. Type		27. Total Quantity	28. Unit Wt./Vol.
29. Special Handling Instructions and Additional Information CONTAINER # WMXU 970717						
TRANSPORTER	30. Transporter 3 Acknowledgment of Receipt of Materials					
	Printed/Typed Name Seth	Signature <i>Seth</i>	Month 1	Day 12	Year 12	
TRANSPORTER	31. Transporter 4 Acknowledgment of Receipt of Materials					
	Printed/Typed Name A Timmerman	Signature <i>A Timmerman</i>	Month 1	Day 28	Year 12	
DESIGNATED FACILITY	32. Discrepancy					

170-BLC-O 6 10502

DESIGNATED FACILITY TO GENERATOR



CHEMICAL WASTE MANAGEMENT OF THE NW

17629 Cedar Springs Lane
Arlington, OR 97812
(541) 454-2643
(541) 454-3279 Fax

US DOI BLM RED TOP RETORT SITE
AK0001413822
N BANK WOOD RIVER
ALEKNAGIK AK 99555

CERTIFICATE OF DISPOSAL

Chemical Waste Management of the Northwest, Inc., ORD089452353, has received the following waste material:

GENERATOR:	US DOI BLM RED TOP RETORT SITE
MANIFEST #:	RTR1005
CWM TRACKING ID:	417460-01
PROFILE #:	OR306198
LINE ITEM:	9.1
QUANTITY:	1 DM
RECEIVED DATE:	02/08/12
DISPOSAL PROCESS(ES):	SOLIDIFICATION FOLLOWED BY LANDFILL
FINAL DISPOSAL LOCATION:	LANDFILL 14
DISPOSAL DATE:	02/14/12

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste material was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.



CWMNW RECORDS DEPARTMENT
Date: 03/06/12