Team 9, a Joint Venture
3700 Industry Avenue, Suite 102
Lakewood, CA 90712
Tel: (562) 989-8494
Fax: (562) 989-8537

May 28, 2008

TDD No. TO5-09-07-04-0002
Contract No. EP-S9-06-01

Tom Dunkelman, Federal On-Scene Coordinator
United States Environmental Protection Agency
Emergency Response Office
901 South Stewart Street
Carson City, Nevada 89701

**Subject: Anaconda Ponds Assessment Report**
**Former Anaconda Copper Mine**
**102 Burch Drive**
**Yerington, Nevada 92274**
**Latitude 38.994° North; Longitude 119.198° West**

Dear Mr. Dunkelman,

The Team 9 Superfund Technical Assessment and Response Team is pleased to provide the following Anaconda Ponds Assessment Report describing sampling activities conducted at the Anaconda Ponds site in July and August 2007.

If you have any questions or require any additional information regarding this submittal, please do not hesitate to contact me at 415-828-9419.

Sincerely,

Mike Schwennesen
Team 9 Project Manager

cc: Electronic Deliverable Systems 2
START Project File

# Anaconda Ponds Assessment Report

## INTRODUCTION

The United States Environmental Protection Agency, Region 9, Emergency Response Section (U.S. EPA) tasked Team 9's Superfund Technical Assessment and Response Team (START) to conduct soil sampling at leach ponds located at the former Anaconda copper mine in Yerington, Lyon County, Nevada. Over the period July 30 through August 1, 2007, the START and personnel from the U.S. EPA Environmental Response Team's Response Engineering and Analytical Contract (REAC) utilized direct-push drilling equipment to collect samples from the surface and from discrete depths below each of eight leach ponds. This report describes the field sampling activities conducted, and presents the analytical results for the sampling.

## SITE LOCATION AND DESCRIPTION

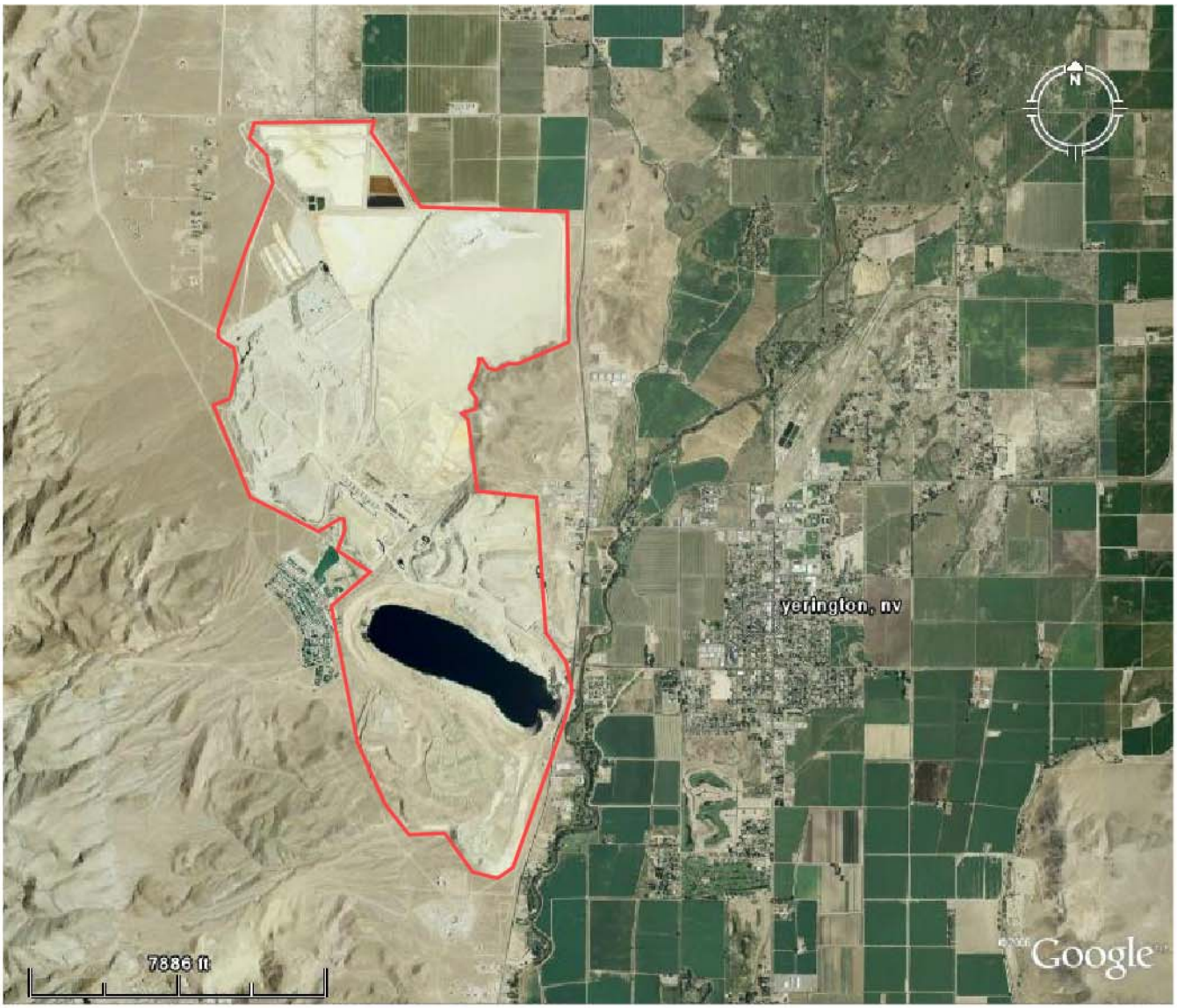
The former Anaconda mine site is an open-pit copper mine and related processing areas, evaporation ponds, and stockpiles comprising an area of more than 3400 acres. Mining operations at the site began in approximately 1918, and ceased in 2000. The mine is located at 102 Burch Drive, off Highway 95 approximately two miles west of the town of Yerington, Lyon County, Nevada (Figure 1). The geographic coordinates for the site are 38.994° North latitude and 119.198° West longitude. The mine site is bordered to the north by agricultural land, to the east by Highway 95, to the west and southwest by the Singatse mountain range and the town of Weed Heights, and to the south by United States Bureau of Land Management land.

## PURPOSE OF SAMPLING

A copper recovery process employed at the site from approximately 1988 to 2000 involved the leaching of dilute sulfuric acid through spent mine tailings and the subsequent collection of the copper-rich acidic leachate in ponds which were lined with a synthetic membrane. As a first step toward the removal and closure of the ponds, U.S. EPA federal On-Scene Coordinator (FOSC) Tom Dunkelman requested that the START and REAC conduct stratified soil sampling below the ponds to determine whether metals, acids, or other contaminants have infiltrated below the pond liner barriers. Such an infiltration could adversely affect the groundwater in the area.

## LEACH POND SOIL SAMPLING

Soil sampling at the site was conducted according to a START-prepared sampling plan, *EPA Emergency Response Section (ERS) And Superfund Technical Assessment and Response Team (START) Emergency Response and Time Critical Quality Assurance Sampling Plan For Soil, Water and Miscellaneous Matrix Sampling*, July 6, 2007 (QASP)(Attachment 1). All ponds were dry or nearly dry at the time of sampling. All of the ponds had dried leachate sludge contained above the pond liner, which was sampled in addition to sub-liner soil samples. The U.S. EPA's Emergency and Rapid Response Services (ERRS) removal contractor provided personnel to operate an excavator, which was used to construct ramps for the direct-push drill rig to enter some of the ponds that had steep sidewalls. The excavator was also used to create stepped platforms on some pond sidewalls, from which the drill rig could operate.




Approximate Boundary
of Mine Site


**Figure 1**
**Site Location Map**
**Former Anaconda Copper Mine**
**Yerington, Nevada**

**Ponds Sampled**

Eight leach ponds were designated for sampling by FOSC Dunkelman: South Slot, Mega, Phase 1, Phase 1 Sediment, Bathtub, Old Raffinate, New Raffinate, and Plant Feed. The locations of the leach ponds are shown on Figure 2.

**Analytical Parameters Investigated**

The analytical parameters investigated and the analytical methods employed for the samples were determined by consensus of the U.S. EPA, the START, and REAC prior to the initiation of the field work. The parameters and analytical methods are presented below. Target analyte list metals were investigated, and because historically an extractant product called ACORGA® was mixed with kerosene and the solution used in the Raffinate ponds in a solvent-extraction process to recover copper, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and total petroleum hydrocarbons (TPH, both as kerosene and motor oil) were also investigated. A photoionization detector and flame ionization detector were used to scan all soil cores from all leach ponds for any volatile organic compounds. Only the Old Raffinate and New Raffinate pond soils showed detectable readings with the instruments, and therefore only the samples from those two ponds were analyzed for VOCs, SVOCs, and TPH.

One sample from each soil boring was also collected for radiological parameters analysis. The soil samples collected for radiological parameters analyses were maintained under REAC chain of custody, and were analyzed by a REAC laboratory.

| **Analytical Parameters Investigated<br>Anaconda Ponds Assessment** | |
|---|---|
| **Parameter** | **Analytical Method** |
| Target Analyte List metals (23 metals) plus boron and molybdenum | U.S. EPA Method 6010B, 7471A |
| Volatile Organic Compounds (VOCs)<br>(Old and New Raffinate ponds, below the liner only) | U.S. EPA Method 8260B |
| Semivolatile Organic Compounds (SVOCs)<br>(Old and New Raffinate ponds) | U.S. EPA Method 8270C |
| pH (Soil) | U.S. EPA Method 9045 |
| Total Petroleum Hydrocarbons (TPH)<br>(as kerosene and motor oil) | U.S. EPA Method 8015m |
| **Radiological Parameters:** | |
| Radium-226 | Radon Emanation following U.S. EPA 903.0 |
| Gross Alpha and Beta | U.S. EPA 900.0 (modified) |
| Gamma-Emitting Radionuclides | U.S. EPA 901.1 (modified) |

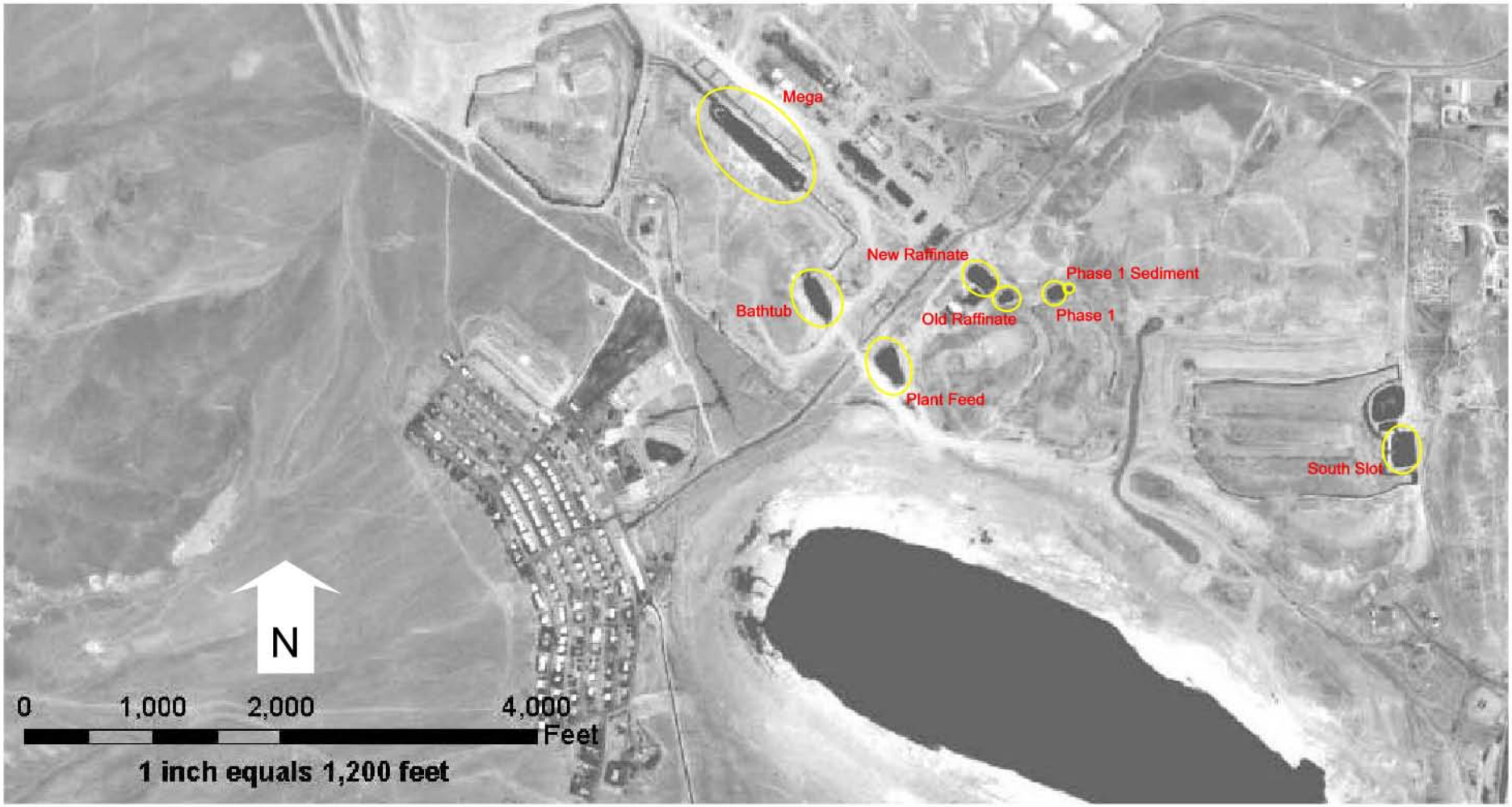



Figure 2
Leach Ponds Sampled by the START and REAC
Anaconda Ponds Assessment
July-August 2007

**Action Levels**

Site-specific action levels have not been determined. However, potential site-specific action levels are discussed below.

Potential site-specific action levels for metals, VOCs, and SVOCs analytes are the 2004 U.S. EPA Preliminary Remediation Goals (PRGs) for industrial soil or residential soil. However, in the case of the metal arsenic, the industrial PRG of 1.6 milligrams per kilogram (mg/kg) is well below the typical concentration of arsenic found at the site. For the arsenic parameter, background studies will likely be required in order to establish an appropriate action level.

The potential site-specific action level for total petroleum hydrocarbons (TPH) is 100 mg/kg, of either kerosene or motor oil, which is the Nevada Department of Environmental Protection (NDEP) corrective action level.

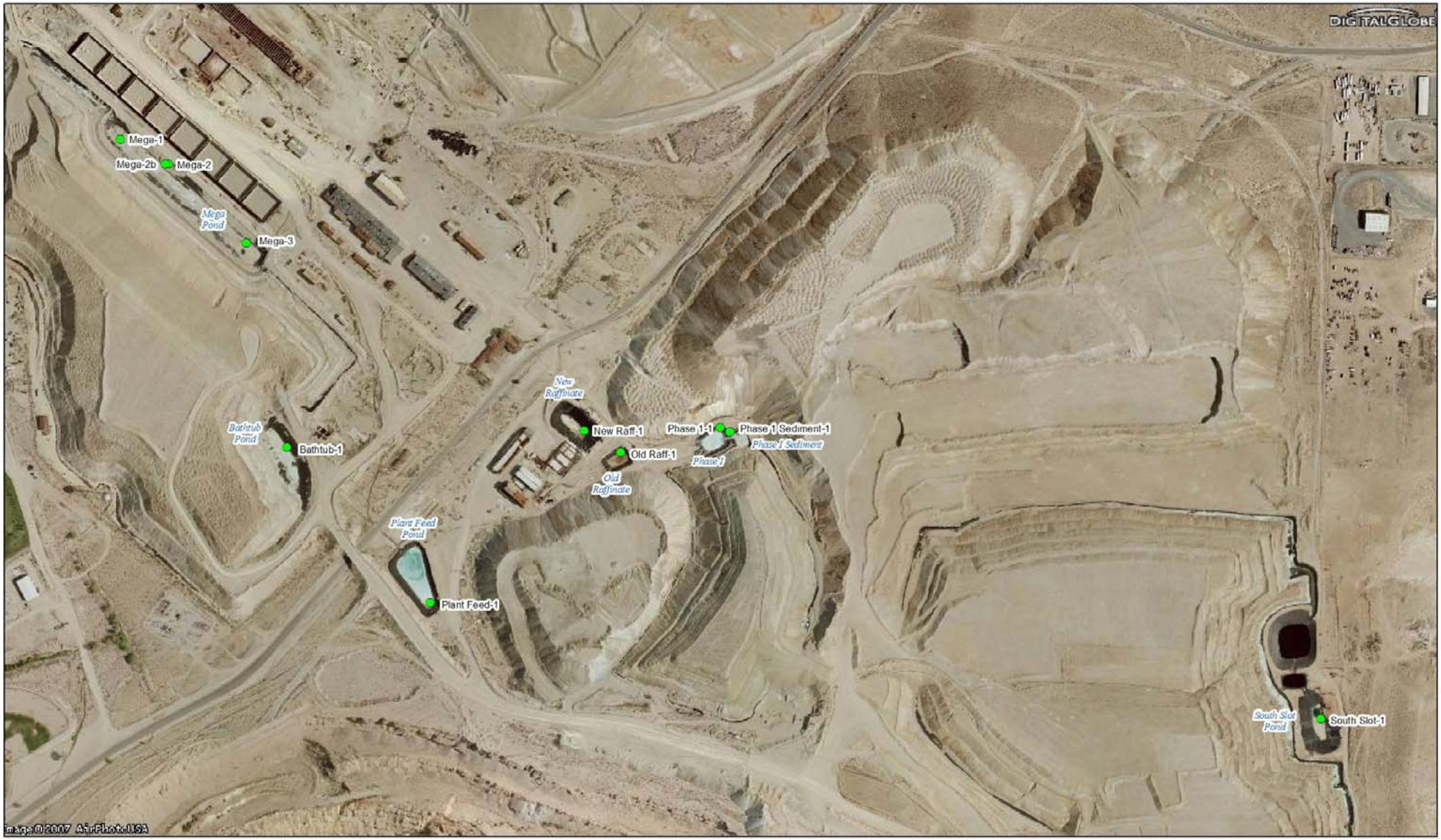
There are currently no site-specific action levels for the radiological parameters. Potential action levels for non-radiological analyses are included with the tabulated analytical results which are presented in Attachment 2, Tables 1-4.

**Sampling Procedures**

At every leach pond sampled, the START first collected a sample of the dried pond sludge above the synthetic pond liner. Direct-push drilling equipment was then used to push through the synthetic pond liner and drill to a maximum 30-foot depth below the pond liner, or until the direct-push equipment could go no further. Continuous sample cores were collected in acrylic sleeves and temporarily stored pending completion of sampling. Soil samples were collected from the acrylic sample cores at 1-, 2-, 5-, 10-, 20-, and 30-foot depths. In some cases the 30-foot depth could not be achieved, and a sample was collected at the refusal depth. Upon completion of the boring to the 30-foot depth or to refusal depth, a polyvinyl chloride (PVC) pipe was temporarily placed down-hole and a gamma radiation detection instrument was slowly dropped down through the PVC to determine the depth of highest gamma-radiation count. A sample was then collected out of the stored sample cores from the depth of highest gamma reading, or, if a sample had already been collected from that depth for chemical analysis, the radiological sample was collected from an interval as close to that depth as possible. When all sampling had been completed in a soil boring, the soil boring was backfilled with bentonite grout. A global positioning system instrument was then used to document the soil boring location.

Figure 3 presents the locations of the soil borings in each of the eight ponds. One soil boring was drilled into each leach pond, with the exception of the Mega leach pond, at which three soil borings were drilled and sampled.

The Mega leach pond contained several feet of dried sludge which had to be penetrated to reach the pond liner. At the first Mega leach pond soil boring, Mega-1, sampling was discontinued at 10 feet below the surface of the liner when liquid began infiltrating the hole. As a result, the Mega-1 soil boring was immediately sealed with bentonite grout. It is suspected that the dried sludge above the liner actually had a liquid component at depth, which was released when the pond liner was punctured. Because of the liquid infiltration, the second and third soil boring locations in the Mega pond were drilled from steps constructed on the sidewall of the pond. When the drill rig was




**LEGEND**

- Soil boring location

N

400 0 400 Feet

| | | | |
|---|---|---|---|
| START REGION 9 | Anaconda Ponds Assessment | Leach Pond<br>Soil Boring Locations | *Figure 3* |
| | 28067219 | | *January 2008* |

URS Corporation\L:\Projects\USEPA_Start9_Projects\MXD\Current Working Documents\Anaconda_Mine\All_Data.mxd Date: 3/8/2007 8:06:09 PM Name: akleese8

operated from a stepped sidewall of any pond, measurements were obtained in order to determine the vertical depth to the pond floor. That depth was then used as the starting point for the collection of sub-pond-floor samples. At the Mega-2 soil boring, refusal was reached at approximately 20 feet below the pond liner. An adjacent soil boring, Mega-2B, was therefore drilled, and the 20-foot and 30-foot samples were successfully collected in this adjacent soil boring.

Subsurface soil and dried pond sludge samples were collected into 8-ounce glass jars using disposable trowels. Blind duplicate samples were prepared by placing a double-volume of soil from a soil core into a baggie, homogenizing the soil, and then splitting the soil between two jars. One jar was then identified with the appropriate sampling interval in the sample name, while the other was given a fictitious sample name. Additional samples were therefore at times analyzed in addition to the 1-, 2-, 5-, 10-, 20-, and 30-foot depths. The sample results for blind duplicate samples with fictitious sample names are not included in the Attachment 2 tables, but they were an important element in the data validation process conducted by the START on all generated leach pond data.

All soil samples except the radiological samples were shipped to the U.S. EPA's Region 9 laboratory in Richmond, California for analysis. The radiological samples were maintained under REAC custody and analyzed by a REAC laboratory. The laboratory data reporting sheets are appended to this report in Attachment 3. All results, including the radiological sample results, were validated by a START chemist following *Quality Assurance/ Quality Control Guidance for Removal Activities, Sampling QA/QC Plan Validation Procedures*, OSWER Directive 9360.4-1, April 1990. The START data validation reports are submitted under separate cover. The data were found to be acceptable as definitive category data, and determined to be usable to meet project use objectives.

Three sample jars were broken during transit to the laboratory, and could not be analyzed. The samples lost were Mega-2-1', Mega-2-10', and Mega-2-30'.

## ANALYTICAL RESULTS

Results for the non-radiological samples are presented in Attachment 2, Tables 1-4. Table 1 presents the total metals and pH results; Table 2 presents the TPH results; Table 3 presents the SVOC results, and Table 4 presents the VOC results. When applicable, more-stringent U.S. EPA residential PRGs are included in the tables along with the industrial PRGs.

Radiological sample results are presented in Attachment 2, Table 5. For comparative purposes, results for three background samples collected by a separate START team on August 7, 2007 are also included in the table.

### Non-Radiological Parameters

Volatile Organic Compounds

No START-investigated VOC analytes were detected, in any of the samples collected, at concentrations above their respective residential or industrial PRGs, which are potential site-specific action levels.

Semivolatile Organic Compounds

No START-investigated SVOC analytes were detected, in any of the samples collected, at concentrations above their respective residential or industrial PRGs, which are potential site-specific action levels. Tentatively-identified hydrocarbon compounds identified by the SVOC analytical method did exceed the NDEP TPH action level, and this data was corroborated by the TPH analysis discussed below.

Total Petroleum Hydrocarbons

TPH (as kerosene) was found in the Old Raffinate leach pond at concentrations that exceeded the NDEP action level of 100 mg/kg, at all depths from the surface down to 23 feet below ground surface. A 30-foot-depth sample from this pond indicated a TPH concentration of 5 mg/kg.

TPH (as kerosene) was also found in the surface sample of the New Raffinate pond, which was collected above the pond liner. All samples collected below the liner indicated TPH concentrations well below the NDEP action level of 100 mg/kg.

The TPH analyses were conducted by a gas chromatography (GC) technique. Tentatively identified compounds (TICs) were found in some of the Old Raffinate and New Raffinate leach pond samples analyzed for VOCs and SVOCs by gas chromatography/mass spectrometry (GC/MS). These TICs are listed with other analytes in the individual sample data reporting sheets (Attachment 3). Because these compounds are only tentatively identified (no calibration standards were used by the laboratory to confirm their identification), Tables 3 and 4 in Attachment 2 present the TICs as a total hydrocarbon component. The TIC concentrations support the TPH (by GC) analytical finding that TPH contamination in the Old Raffinate leach pond extends to at least 23 feet below the surface of the pond.

Metals

Three metals, copper, iron, and lead, were found at concentrations exceeding a potential site-specific action level. A fourth metal, thallium, is also discussed below.

Copper was found in five samples from five different ponds at concentrations exceeding the residential PRG potential site-specific action level. These five samples were all collected from the surfaces of the ponds, above the pond liners. In no case was a concentration of copper found in a sample collected below a pond liner that exceeded a potential site-specific action level. None of the samples collected exceeded the industrial PRG for copper.

Iron concentrations exceeding the residential PRG potential site-specific action level were found in two ponds (Bathtub and South Slot) at one and two feet below the pond surface. These samples were collected below the pond liners. Concentrations of iron typically dropped with depth. None of the samples collected exceeded the industrial PRG for iron.

Lead concentrations exceeding either the residential or industrial PRG potential site-specific action levels were found in the surface samples (above the pond liner) of the Old Raffinate, New Raffinate, and Phase 1 ponds. In no case was a concentration of lead found in a sample collected below a pond liner that exceeded a potential site-specific action level.

Thallium was not found to exceed its industrial PRG potential site-specific action level in any of the samples collected. However, the residential PRG concentration for thallium is near or below the detection limit achievable for the samples, and therefore it is uncertain whether the thallium residential PRG potential site-specific action level has been exceeded.

pH

The pH analytical results indicate that the dried surface sludge from each leach pond has a pH of between 2 and 3. The pH of the subsurface soils then generally rises with depth. Although near-neutral soils were expected to be found below the synthetic liner, they were not. This indicates that the synthetic leach pond liners may not have provided a complete barrier for this parameter.

**Radiological Parameters**

Attachment 2, Table 5 presents the results of the radiological analyses conducted on one sample collected from each pond. For comparative purposes, data for background samples collected from other areas of the mine site on August 7, 2007 are also presented. The background samples were collected as part of a separate U.S. EPA investigation, and the radiological methods used were not always identical.

The background samples were investigated for gross alpha and gross beta parameters by U.S. EPA Method 900.0; and for element-specific parameters by the U.S. EPA National Air and Radiation Environmental Laboratory, gamma spectroscopy analysis (GAM-01) method and the U.S. Department of Energy, Environmental Measurements Laboratory, Health and Safety Laboratory HASL-300, 4.5.2.3 method.

The pond samples were investigated for gross alpha and gross beta parameters by U.S. EPA Method 900.0, and for element-specific parameters by U.S.EPA Methods 901.1 and 903.0.

Gross Alpha

Gross alpha concentrations in all samples (including background samples) except the Bathtub pond sample were similar and indicate no significant elevated levels. The Bathtub pond sample contains a relatively greater concentration of gross alpha than the other samples; however, the START forwarded the data to a U.S. EPA radiation expert and a U.S. EPA-contracted radiation expert for review, and their consensus was that the difference was not significant.

Gross Beta

Background samples and the Bathtub sample contained elevated concentrations of the gross beta parameter relative to other samples. However, as with the gross alpha parameter, the START had the data reviewed by U.S. EPA experts who determined that the differences were not significant.

Radioactive Elements

Radioactive elements investigated showed no elevated or significant concentrations.

## CONCLUSIONS

A START investigation of subsurface soils below eight leach ponds has indicated that seven of the ponds showed no significant contamination below their synthetic liners, with the exception of the parameters iron and pH. One leach pond, the Old Raffinate pond, was found to have TPH contamination down to at least 23 feet below ground surface.

While it is clear that low-pH fluids have migrated to the subsurface in the ponds, it does not appear that other contaminants (such as metals) have migrated significantly into the subsurface.

The data presented in this report support closure of seven of the eight ponds in place, and suggest that additional investigation or remediation may be necessary in the case of the Old Raffinate pond.

# ATTACHMENT 1

# Quality Assurance Sampling Plan

# ATTACHMENT 2

# Tables

Table 1
Validated Soil Sample Results
Total Metals and pH
USEPA 6000/7000 Series Methods and 9045C Method
Anaconda Ponds Assessment
Metals Concentrations in Milligrams per Kilogram, dry weight
Samples Collected 7/30/07 - 8/1/07

| | Mercury | Aluminum | Antimony | Arsenic | Barium | Beryllium | Boron | Cadmium | Calcium | Chromium (III) | Cobalt | Copper | Iron | Lead | Magnesium | Manganese | Molybdenum | Nickel | Potassium | Selenium | Silver | Sodium | Thallium | Vanadium | Zinc | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2004 USEPA PRG (Residential)*→ | 23 | 76000 | 31 | 0.39** | 5400 | 150 | 16000 | 37 | - | 100000 | 900 | 3100 | 23000 | 400 | - | 1800 | 390 | - | - | 390 | 390 | - | 5.2 | 78 | 23000 | - |
| 2004 USEPA PRG (Industrial)*→ | 310 | 100000 | 410 | 1.6** | 67000 | 1900 | 100000 | 450 | - | 100000 | 1900 | 41000 | 100000 | 800 | - | 19000 | 5100 | - | - | 5100 | 5100 | - | 67 | 1000 | 100000 | - |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Old Raff 1-Surface | 6.8 | 13000 | <2.7 | 7.9 | 140 | 0.92 | 12 | <0.67 | 910 | 21 | 20 | 2800 J | 6600 | **46000** | 7900 J | 270 J | 7 | 23 | 1200 | 3.3 | 0.74 | 1500 J | <6.7 | 8.9 | 29 | 2.3 J |
| Old Raff 1-1' | 0.053 | 12000 | <2.2 | 5.2 | 72 | 0.37 | <11 | <0.54 | 10000 J | 11 | 4.8 | 440 | 16000 | 4.7 | 4700 J | 140 | <5.4 | 6.7 | 1900 | <2.2 | <1.1 | 270 | <5.4 | 41 | 25 | 4.0 J |
| Old Raff 1-2' | 0.070 | 11000 | <2.1 | 4.8 | 84 | 0.33 | <11 | <0.53 | 6900 J | 12 | 4.5 | 400 | 21000 | 4.4 | 4500 J | 130 | <5.3 | 6.9 | 2400 | <2.1 | <1.1 | 250 | <5.3 | 59 | 27 | 3.7 J |
| Old Raff 1-5' | 0.097 | 11000 | <2.2 | 4.4 | 54 | 0.36 | <11 | <0.54 | 9900 J | 8.1 | 4.5 | 460 | 12000 | 3.5 | 3600 J | 120 | <5.4 | 7.7 | 1400 | <2.2 | <1.1 | 220 | <5.4 | 28 | 27 | 4.2 J |
| Old Raff 1-10' | 0.021 | 18000 | <2.2 | 6.0 | 48 | 0.70 | 9.5 | <0.55 | 13000 J | 12 | 10 | 680 | 19000 | 4.2 | 5000 J | 240 | <5.5 | 10 | 2600 | <2.2 | <1.1 | 280 | <5.5 | 44 | 37 | 4.3 J |
| Old Raff 1-20' | 0.10 | 13000 | <2.2 | 6.5 | 89 | 0.52 | 13 | <0.56 | 8200 J | 10 | 12 | 97 | 17000 | 5.8 | 6000 J | 460 | <5.6 | 12 | 2100 | <2.2 | <1.1 | 460 | <5.6 | 40 | 30 | 7.3 J |
| Old Raff 1-22' | <0.028 | 14000 | <2.3 | 9.1 | 110 | 0.28 | 14 | <0.57 | 28000 J | 9.1 | 6.5 | 220 | 9100 | 5.3 | 7600 J | 470 | <5.7 | 8.4 | 2800 | <2.3 | <1.1 | 560 | <5.7 | 41 | 34 | 7.7 J |
| Old Raff 1-30' | <0.027 | 780 | <2.1 | 6.9 | 60 | 0.14 | 9.2 | <0.53 | 9400 J | 6.8 | 4.7 | 59 | 6500 | 5.1 | 4700 J | 180 | <5.3 | 5.6 | 1500 | <2.1 | <1.1 | 290 | <5.3 | 35 | 20 | 8.1 J |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| New Raff 1-Surface | 17 | 10000 | <2.1 | 4.7 | 100 | 0.64 | <10 | <0.52 | 4000 | 36 | 15 | 2100 J | 9100 | **7500** | 6000 J | 200 J | 6.5 | 33 | 5000 | 1.2 | <1.0 | 2100 J | <5.2 | 11 | 24 | 2.5 J |
| New Raff 1-1' | 0.38 | 3600 | <2.2 | <2.2 | 49 | 0.05 | <11 | <0.54 | 7000 J | 2.0 | 1.5 | 360 | 1400 | 3.3 | 1300 J | 19 | 2.8 | <5.4 | 1200 | <2.2 | <1.1 | 290 | <5.4 | 8.0 | <8.6 | 2.4 J |
| New Raff 1-2' | 0.13 | 5700 | <2.2 | 2.6 | 45 | 0.04 | <11 | <0.54 | 5300 J | 8.1 | 3.2 | 450 | 1200 | <3.2 | 4700 J | 39 | 4.5 | 5.7 | 3900 | 2.2 | <1.1 | 670 | <5.4 | 20 | 11 | 2.8 J |
| New Raff 1-5' | <0.26 | 6900 | <2.0 | <2.0 | 66 | 0.11 | <9.9 | <0.50 | 4100 J | 7.4 | 3.0 | 68 | 6700 | 3.5 | 3500 J | 72 | <5.0 | 4.6 | 1700 | <2.0 | <0.99 | 180 | <5.0 | 34 | 17 | 3.4 J |
| New Raff 1-10' | 0.014 | 11000 | <2.1 | 6.7 | 80 | 0.23 | 6.0 | <0.53 | 11000 J | 14 | 5.7 | 200 | 9900 | 5.0 | 4000 J | 140 | <5.3 | 9.0 | 2000 | <2.1 | <1.1 | 520 | <5.3 | 56 | 28 | 3.7 J |
| New Raff 1-20' (refusal depth) | <0.07 | 15000 | <2.2 | 7.2 | 83 | 0.36 | 11 | <0.54 | 21000 J | 8.3 | 11 | 240 | 7000 | 3.2 | 6200 J | 260 | <5.4 | 14 | 2000 | <2.2 | <1.1 | 580 | <5.4 | 37 | 35 | 6.8 J |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bathtub 1-Surface | 0.043 | 26000 | <2.8 | <2.8 | 16 | 2.0 | <14 | 0.37 | 4700 | 7.4 | 47 | **5600 J** | 4900 | <4.2 | 22000 J | 550 J | <6.9 | 35 | 950 | <2.8 | <1.4 | 3600 J | <6.9 | 9.4 | 67 | 2.2 J |
| Bathtub 1-1' | 0.46 | 15000 | <2.5 | 14 | 77 | 0.53 | <13 | <0.63 | 8000 | 15 | 11 | 630 J | **24000** | 3.2 | 10000 J | 130 J | <6.3 | 13 | 3500 | 2.4 | <1.3 | 500 J | 6.3 | 40 | 23 | 2.9 J |
| Bathtub 1-2' | 0.033 | 11000 | <2.2 | 9.1 | 69 | 0.38 | <11 | <0.55 | 7900 | 14 | 6.2 | 460 J | **27000** | 4.9 | 4900 J | 110 J | <5.5 | 7.5 | 2700 | <2.2 | <1.1 | 1400 J | <5.5 | 56 | 25 | 3.1 J |
| Bathtub 1-5' | <0.027 | 11000 | <2.0 | 6.9 | 72 | 0.43 | 7.1 | <0.50 | 14000 | 16 | 5.8 | 360 J | 20000 | 3.7 | 5200 J | 120 J | <5.0 | 7.2 | 2200 | <2.0 | <1.0 | 500 J | <5.0 | 65 | 26 | 3.4 J |
| Bathtub 1-10' | 0.12 | 20000 | 1.5 J | 14 | 95 | 1.2 | 13 | 0.28 | 10000 | 12 | 11 | 2400 J | 20000 | 5.4 | 4800 J | 260 J | <5.4 | 11 | 2400 | <2.2 | <1.1 | 370 J | <5.4 | 36 | 30 | 4.0 J |
| Bathtub 1-12' | 0.045 | 18000 | <2.2 | 8.8 | 91 | 1.0 | 10 | <0.54 | 11000 | 11 | 13 | 1400 J | 16000 | 4.3 | 5100 J | 290 J | <5.4 | 11 | 2300 | <2.2 | <1.1 | 390 J | <5.4 | 37 | 37 | 4.0 J |
| Bathtub 1-20' | <0.027 | 9000 | <2.1 | 4.5 | 64 | 0.36 | 5.8 | <0.53 | 6500 | 7.6 | 4.5 | 72 J | 12000 | 3.8 | 5200 J | 270 J | <5.3 | 7.5 | 2200 | <2.1 | <1.1 | 380 J | <5.3 | 31 | 22 | 8.1 J |
| Bathtub 1-30' | <0.026 | 7600 | <2.1 | 5.3 | 65 | 0.30 | <10 | <0.52 | 5900 | 7.9 | 4.4 | 60 J | 12000 | 3.4 | 4800 J | 220 J | <5.2 | 6.2 | 1200 | <2.1 | <1.0 | 640 J | <5.2 | 31 | 20 | 8.1 J |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Plant Feed 1-Surface | 0.36 | 17000 | <2.1 | 2.4 | 24 | 1.1 | 5.3 | <0.53 | 27000 J | 8.9 | 34 | 2200 | 8500 | 30 | 12000 | 410 J | <5.3 | 23 | 1600 | <2.1 | <1.1 | 1500 | <5.3 | 14 | 39 | 2.9 J |
| Plant Feed 1-1' | 0.45 | 9700 | <2.2 | 4.8 | 56 | 0.31 | <11 | <0.56 | 6600 J | 15 | 5.7 | 370 | 18000 | 3.6 | 7400 | 77 J | <5.6 | 10 | 2900 | 1.1 | <1.1 | 250 | <5.6 | 34 | 17 | 3.2 J |
| Plant Feed 1-2' | 0.060 | 11000 | <2.2 | 5.6 | 65 | 0.45 | <11 | <0.54 | 9200 J | 8.3 | 11 | 650 | 12000 | 4.3 | 4600 | 210 J | <5.4 | 8.3 | 1800 | <2.2 | <1.1 | 370 | <5.4 | 31 | 28 | 3.6 J |
| Plant Feed 1-5' | 0.016 | 8900 | <2.1 | 7.1 | 44 | 0.34 | 8.0 | <0.52 | 8100 J | 7.4 | 4.6 | 82 | 12000 | 4.0 | 5200 | 230 J | <5.2 | 6.3 | 1600 | <2.1 | <1.0 | 530 | <5.2 | 34 | 24 | 8.1 J |
| Plant Feed 1-10' | <0.026 | 7800 | <2.0 | 6.7 | 87 | 0.36 | 7.4 | <0.50 | 6400 J | 7.3 | 3.9 | 79 | 11000 | 4.3 | 3300 | 190 J | <5.0 | 5.0 | 1400 | <2.0 | <0.99 | 1100 | <5.0 | 31 | 22 | 8.9 J |
| Plant Feed 1-20' | <0.027 | 8100 | <2.1 | 9.7 | 67 | 0.38 | 11 | <0.53 | 13000 J | 6.5 | 4.5 | 110 | 11000 | 3.9 | 4700 | 160 J | <5.3 | 6.0 | 1600 | <2.1 | <1.1 | 1100 | <5.3 | 32 | 19 | 9.0 J |
| Plant Feed 1-27' | <0.027 | 9300 | <2.1 | 6.0 | 66 | 0.37 | 11 | <0.53 | 7000 J | 7.6 | 5.0 | 81 | 12000 | 4.9 | 4500 | 240 J | <5.3 | 6.2 | 1700 | <2.1 | <1.1 | 1100 | <5.3 | 34 | 24 | 8.5 J |
| Plant Feed 1-30' | <0.028 | 15000 | <2.2 | 12 | 100 | 0.55 | 21 | <0.56 | 28000 J | 9.4 | 5.9 | 95 | 16000 | 5.0 | 6600 | 300 J | <5.6 | 7.8 | 3100 | <2.2 | <1.1 | 1600 | <5.6 | 39 | 33 | 8.5 J |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S. Slot-1-Surface | 0.58 | 29000 | <2.1 | 8.2 | 47 | 1.9 | 14 | 0.50 | 8300 | 9.8 | 67 | 2700 | 13000 | <3.2 | 25000 | 710 | <5.3 | 44 | 2400 | <2.1 | <1.1 | 3200 | <5.3 | 36 | 78 | 2.8 J |
| S. Slot 1-1' | 0.033 | 33000 | <2.4 | 31 | 170 | 1.3 | 85 | 0.66 | 33000 | 18 | 12 | 390 | **30000** | 11 | 15000 | 620 | 4.1 | 17 | 8100 | <2.4 | <1.2 | 3400 | <6.0 | 90 | 69 | 7.9 J |
| S. Slot 1-2' | <0.030 | 30000 | <2.4 | 17 | 160 | 1.2 | 42 | 0.57 | 49000 | 15 | 11 | 300 | **27000** | 9.6 | 14000 | 520 | <6.0 | 14 | 6200 | <2.4 | <1.2 | 3800 | <6.0 | 69 | 62 | 8.8 J |
| S. Slot 1-5' | <0.030 | 17000 | <2.4 | 10 | 86 | 0.72 | 26 | 0.36 | 38000 | 14 | 9.1 | 120 | 19000 | 6.5 | 6800 | 310 | <6.0 | 10 | 4400 | <2.4 | <1.2 | 2200 | <6.0 | 57 | 40 | 9.2 J |
| S. Slot 1-10' | <0.028 | 17000 | <2.2 | 5.9 | 100 | 0.63 | 19 | <0.56 | 4500 | 11 | 5.9 | 170 | 18000 | 5.1 | 6300 | 220 | <5.6 | 10 | 3800 | <2.2 | <1.1 | 2200 | <5.6 | 43 | 35 | 8.4 J |
| S. Slot 1-20' | <0.027 | 11000 | <2.2 | 6.9 | 89 | 0.73 | 7.6 | <0.55 | 5300 | 8.3 | 4.8 | 350 | 12000 | 3.5 | 5000 | 150 | <5.5 | 7.2 | 1700 | <2.2 | <1.1 | 360 | <5.5 | 34 | 20 | 6.1 J |
| S. Slot 1-24' (refusal depth) | <0.026 | 11000 | <2.1 | 1.4 | 9.5 | 0.33 | <10 | <0.62 | 2900 | 1.6 | 2.5 | 96 | 2600 | <3.1 | 14000 | 26 | <5.2 | 5.0 | 990 | <2.1 | <1.0 | 61 | <5.2 | 5.8 | 5.5 | 5.0 J |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mega-1-Surface | 0.063 | 43000 | <5.7 | 3.0 | 26 | 4.9 | <57 | 0.85 | 4300 | 17 | 98 | **6100** | 9700 | 11 | 32000 | 1500 | <14 | 54 | <2900 | <5.7 | <2.9 | 4400 | <14 | 14 | 100 | 2.7 J |
| Mega-1-1' | 0.18 | 7900 | <2.1 | 7.5 | 50 | 0.50 | <10 | <0.52 | 5600 | 9.8 | 3.8 | 500 | 11000 | <3.1 | 5200 | 79 | <5.2 | 8.3 | 1900 | 4.2 | <1.0 | 130 | <5.2 | 38 | 16 | 4.0 J |
| Mega-1-2' | 0.18 | 7800 | <2.1 | 9.8 | 70 | 0.30 | <10 | <0.52 | 5500 | 7.4 | 4.6 | 260 | 14000 | 4.2 | 3400 | 170 | <5.2 | 5.8 | 1500 | 5.1 | <1.0 | 300 | <5.2 | 34 | 20 | 7.8 J |
| Mega-1-3' | <0.026 | 7900 | <2.1 | 5.4 | 60 | 0.33 | 6.0 | <0.52 | 5700 | 7.1 | 3.6 | 31 | 12000 | 3.6 | 2900 | 210 | <5.2 | 4.9 | 1400 | <2.1 | <1.0 | 430 | <5.2 | 34 | 24 | 8.7 J |
| Mega-1-5' | <0.026 | 7400 | <1.9 | 4.9 | 55 | 0.32 | 6.3 | <0.49 | 5000 | 6.4 | 3.3 | 31 | 11000 | 4.0 | 2700 | 220 | <4.9 | 4.4 | 1200 | <1.9 | <0.97 | 360 | <4.9 | 29 | 22 | 8.9 J |
| Mega-1-10' (end depth)*** | <0.026 | 5500 | <2.1 | 4.5 | 56 | 0.27 | <10 | <0.52 | 4400 | 5.1 | 2.7 | 56 | 9400 | 2.8 | 2100 | 160 | <5.2 | 3.8 | 950 | <2.1 | <1.0 | 330 | <5.2 | 23 | 17 | 8.9 J |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mega-2-Surface | 0.017 | 44000 | <2.8 | <2.8 | <14 | 2.9 | <28 | 0.46 | 480 | 10 | 130 | **7500** | 3000 | <4.2 | 54000 | 1000 | <6.9 | 84 | <1400 | <2.8 | <1.4 | 6500 | <6.9 | 8.9 | 150 | 3.0 J |
| Mega-2-1' | No analytical results. Sample jar broken during shipment to laboratory. | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mega-2-2' | <0.026 | 6400 | <2.1 | 5.1 | 41 | 0.26 | <10 | <0.52 | 5600 | 6.0 | 3.6 | 60 | 10000 | 2.8 | 3000 | 160 | <5.2 | 4.5 | 1300 | <2.1 | <1.0 | 200 | <5.2 | 29 | 17 | 8.3 J |
| Mega-2-5' | <0.026 | 7200 | <2.1 | 4.5 | 52 | 0.27 | <10 | <0.52 | 3900 | 8.1 | 3.8 | 48 | 11000 | 3.6 | 2900 | 190 | <5.2 | 5.1 | 1400 | <2.1 | <1.0 | 280 | <5.2 | 33 | 20 | 8.0 J |
| Mega-2-10' | No analytical results. Sample jar broken during shipment to laboratory. | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mega-2-20' | 0.062 | 19000 | <2.2 | 8.9 | 110 | 0.82 | 12 | 0.39 | 7200 J | 14 | 7.4 | 110 | 22000 | 8.0 | 6800 J | 390 | <5.6 | 11 | 3900 J | <2.2 | <1.1 | 530 | <5.6 | 52 | 48 | 8.2 J |

Table 1
Validated Soil Sample Results
Total Metals and pH
USEPA 6000/7000 Series Methods and 9045C Method
Anaconda Ponds Assessment
Metals Concentrations in Milligrams per Kilogram, dry weight
Samples Collected 7/30/07 - 8/1/07

| | Mercury | Aluminum | Antimony | Arsenic | Barium | Beryllium | Boron | Cadmium | Calcium | Chromium (III) | Cobalt | Copper | Iron | Lead | Magnesium | Manganese | Molybdenum | Nickel | Potassium | Selenium | Silver | Sodium | Thallium | Vanadium | Zinc | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2004 USEPA PRG (Residential)*→ | 23 | 76000 | 31 | 0.39** | 5400 | 150 | 16000 | 37 | - | 100000 | 900 | 3100 | 23000 | 400 | - | 1800 | 390 | - | - | 390 | 390 | - | 5.2 | 78 | 23000 | - |
| 2004 USEPA PRG (Industrial)*→ | 310 | 100000 | 410 | 1.6** | 67000 | 1900 | 100000 | 450 | - | 100000 | 1900 | 41000 | 100000 | 800 | - | 19000 | 5100 | - | - | 5100 | 5100 | - | 67 | 1000 | 100000 | - |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mega-2-30' | No analytical results. Sample jar broken during shipment to laboratory. | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mega-3-Surface | 0.15 | 18000 | <2.1 | 2.5 | 30 | 1.5 | <11 | 0.29 | 3500 | 13 | 34 | 2500 J | 11000 | <3.2 | 14000 | 380 J | <5.3 | 25 | 1500 | <2.1 | <1.1 | 1600 | <5.3 | 18 | 43 | 2.9 J |
| Mega-3-1' | 0.014 | 8600 | <2.1 | 5.4 | 60 | 0.32 | <10 | <0.52 | 4800 | 12 | 4.4 | 81 J | 14000 | 3.6 | 3500 | 200 J | 2.8 | 6.2 | 1600 | <2.1 | <1.0 | 280 | <5.2 | 36 | 23 | 8.0 J |
| Mega-3-2' | <0.026 | 6600 | <2.1 | 4.3 | 43 | 0.24 | <10 | <0.52 | 5400 | 6.5 | 3.4 | 45 J | 12000 | 2.6 | 2800 | 170 J | <5.2 | 4.3 | 1100 | <2.1 | <1.0 | 250 | <5.2 | 31 | 19 | 8.3 J |
| Mega-3-5' | <0.026 | 5400 | <2.1 | 4.2 | 44 | 0.21 | <10 | <0.52 | 7300 | 6.4 | 2.9 | 58 J | 9600 | <3.1 | 2600 | 130 J | <5.2 | 4.7 | 920 | <2.1 | <1.0 | 220 | <5.2 | 26 | 15 | 8.7 J |
| Mega-3-10' | <0.026 | 8500 | <2.1 | 6.1 | 55 | 0.33 | 6.4 | <0.52 | 9300 | 8.6 | 4.3 | 81 J | 14000 | 3.3 | 4100 | 220 J | <5.2 | 5.9 | 1500 | <2.1 | <1.0 | 350 | <5.2 | 38 | 23 | 8.9 J |
| Mega-3-20' | <0.027 | 14000 | <22 | <22 | 99 | 1.1 | <110 | <5.4 | 5900 | 11 | <22 | 79 J | 17000 | <33 | 4500 | 330 J | <54 | <54 | 2700 | <22 | <11 | 470 | <54 | 42 | 48 | 8.6 J |
| Mega-3-30' | <0.026 | 6100 | <2.1 | 4.8 | 50 | 0.27 | <10 | <0.52 | 3700 | 5.8 | 3.5 | 48 J | 12000 | 2.6 | 2800 | 180 J | <5.2 | 4.1 | 1100 | <2.1 | <1.0 | 460 | <5.2 | 30 | 20 | 9.8 J |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Phase 1-1-Surface | 0.43 | 34000 | <4.3 | <4.3 | 30 | 2.6 | <22 | <1.1 | 1800 | 9.7 | 81 | **6200 J** | 5100 | **470** | 27000 | 890 J | <11 | 50 | 1000 | <4.3 | <2.2 | 3400 | <11 | 8.0 | 80 | 2.2 J |
| Phase 1-1-1' | 0.30 | 11000 | <2.2 | 6.8 | 57 | 0.25 | <11 | <0.54 | 5000 | 7.0 | 4.7 | 1100 J | 15000 | 2.9 | 7900 | 86 J | 3.5 | 7.6 | 1800 | 3.0 | <1.1 | 170 | <5.4 | 33 | 15 | 4.0 J |
| Phase 1-1-2' | 0.083 | 12000 | <2.2 | 4.9 | 90 | 0.40 | 6.4 | <0.54 | 6400 | 9.6 | 4.9 | 420 J | 15000 | 4.0 | 4900 | 210 J | <5.4 | 7.2 | 2100 | <2.2 | <1.1 | 320 | <5.4 | 40 | 31 | 7.7 J |
| Phase 1-1-5' | 0.022 | 8700 | <2.1 | 4.3 | 59 | 0.33 | <11 | <0.53 | 9600 | 6.9 | 4.0 | 70 J | 12000 | 3.1 | 3800 | 190 J | <5.3 | 6.2 | 1300 | <2.1 | <1.1 | 260 | <5.3 | 31 | 22 | 8.3 J |
| Phase 1-1-10' | <0.026 | 6200 | <2.1 | 5.8 | 41 | 0.38 | <10 | <0.52 | 3400 | 8.8 | 3.4 | 26 J | 18000 | 2.7 | 2500 | 190 J | <5.2 | 4.7 | 1100 | <2.1 | <1.0 | 250 | <5.2 | 43 | 22 | 8.5 J |
| Phase 1-1-15' | 0.021 | 16000 | <2.3 | 10 | 130 | 0.59 | 17 | <0.57 | 26000 | 12 | 7.2 | 78 J | 19000 | 6.2 | 7000 | 380 J | <5.7 | 10 | 3000 | <2.3 | <1.1 | 600 | <5.7 | 51 | 38 | 8.5 J |
| Phase 1-1-20' | <0.l027 | 11000 | <2.1 | 10 | 110 | 0.53 | 8.3 | <0.53 | 6700 | 7.4 | 5.6 | 100 J | 18000 | 5.4 | 4600 | 340 J | <5.3 | 6.1 | 2200 | <2.1 | <1.1 | 500 | <5.3 | 46 | 30 | 8.7 J |
| Phase 1-1-28' (refusal depth) | <0.026 | 11000 | <2.1 | 7.7 | 98 | 0.46 | 15 | <0.53 | 14000 | 7.7 | 5.1 | 100 J | 16000 | 4.5 | 4900 | 270 J | <5.3 | 6.6 | 2300 | <2.1 | <1.1 | 720 | <5.3 | 40 | 27 | 9.4 J |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Phase 1 Sediment-1-Surface | 0.067 | 40000 | <2.1 | <2.1 | 8.2 | 2.1 | <21 | 0.41 | 860 | 5.7 | 98 | **8500 J** | 3200 | 55 | 32000 | 1000 J | <5.1 | 48 | <1000 | <2.1 | <1.0 | 4500 | <5.1 | 4.9 | 93 | 2.4 J |
| Phase 1 Sediment-1-1' | 0.34 | 11000 | 1.1 J | 6.1 | 59 | 0.22 | <10 | <0.52 | 4900 | 7.2 | 4.9 | 690 J | 14000 | 4.2 | 8900 | 66 J | 3.3 | 7.8 | 1600 | 3.2 | <1.0 | 160 | <5.2 | 28 | 12 | 3.6 J |
| Phase 1 Sediment-1-2' | 0.31 | 9600 | <2.1 | 7.0 | 50 | 0.18 | <11 | <0.53 | 4900 | 6.1 | 3.3 | 680 J | 14000 | 3.1 | 7100 | 49 J | 2.7 | 6.1 | 1300 | 3.4 | <1.1 | 120 | <5.3 | 28 | 10 | 3.7 J |
| Phase 1 Sediment 1-5' | 0.015 | 16000 | <2.2 | 7.3 | 88 | 0.64 | 12 | <0.56 | 14000 | 12 | 5.9 | 74 J | 18000 | 5.7 | 5900 J | 210 J | <5.6 | 8.5 | 2700 | <2.2 | <1.1 | 1100 J | <5.6 | 42 | 35 | 8.9 J |
| Phase 1 Sediment 1-10' | <0.026 | 7700 | <2.1 | 8.1 | 59 | 0.30 | 5.8 | <0.53 | 13000 | 6.8 | 3.7 | 59 J | 11000 | 3.7 | 3700 J | 240 J | <5.3 | 5.3 | 1400 | <2.1 | <1.1 | 1000 J | <5.3 | 31 | 22 | 9.6 J |
| Phase 1 Sediment 1-20' | <0.028 | 11000 | <2.2 | 13 | 68 | 0.42 | 13 | <0.56 | 24000 | 8.3 | 6.2 | 76 J | 15000 | 5.1 | 5500 J | 260 J | <5.6 | 7.9 | 1900 | <2.2 | <1.1 | 1300 J | <5.6 | 39 | 28 | 9.5 J |
| Phase 1 Sediment 1-27' (refusal depth) | 0.014 | 12000 | <2.2 | 9.6 | 61 | 0.56 | 14 | <0.54 | 6300 | 10 | 7.9 | 270 J | 16000 | 4.3 | 4700 J | 210 J | <5.4 | 7.5 | 2100 | <2.2 | <1.1 | 510 J | <5.4 | 45 | 28 | 4.4 J |

J - Estimated concentration or pH value

*-USEPA Preliminary Remediation Goal (PRG) for Residential/Industrial Soil

**- For the Anaconda Ponds site, which has arsenic concentrations well above the PRG, a potential action level has not yet been determined.

*** - Mega-1 boring sampling was discontinued after ten-foot depth due to pond liquids infiltrating down-hole.

Results in **bold** exceed either the industrial or residential PRG potential site-specific action level

Table 2
Validated Soil Sample Results
Total Petroleum Hydrocarbons by USEPA Method 8015B
Anaconda Ponds Assessment
Milligrams per Kilogram, dry weight
Samples Collected 8/1/07

| | TPH (as kerosene) | TPH (as motor oil) |
|---|---|---|
| Nevada Corrective Action Level→ | 100 | 100 |
| | | |
| Old Raff 1-Surface | **75000 J** | NF |
| Old Raff 1-1' | **3400** | NF |
| Old Raff 1-2' | **7200** | NF |
| Old Raff 1-5' | **5200** | NF |
| Old Raff 1-10' | **7300 J** | NF |
| Old Raff 1-20' | **5000 J** | NF |
| Old Raff 1-23' | **7200 J** | NF |
| Old Raff 1-30' | 5.0 | NF |
| | | |
| New Raff 1-Surface | **9200 J** | **5800 J** |
| New Raff 1-1' | 22 | NF |
| New Raff 1-2' | 5.9 J | NF |
| New Raff 1-5' | <5.3 UJ | NF |
| New Raff 1-10' | 3.7 J | NF |
| New Raff 1-20' | <5.4 UJ | NF |
| | | |

Results in **bold** exceed site-specific action level
J - Estimated concentration
UJ - Estimated concentration, non-detected analyte
NF - Not found

Table 3
Validated Sample Results
Semivolatile Organic Compounds by USEPA Method 8270D
Anaconda Ponds Assessment
Detected Compounds Only
Micrograms per Kilogram, dry weight (ug/kg)
Samples Collected 8-1-07

| | 2-Methyl-naphthalene | 1-Methyl-naphthalene | Fluorene | Phenanthrene | Di-n-butyl phthalate | Bis(2-ethylhexyl) phthalate | Di-n-octyl phthalate | Total Tentatively Identified Compounds (as total hydrocarbon) |
|---|---|---|---|---|---|---|---|---|
| USEPA PRG (Residential)→ | 56000 (naphthalene) | | 2700000 | -- | 6100000 | 35000 | 2400000 | 100000* |
| USEPA PRG (Industrial)→ | 190000 (naphthalene) | | 26000000 | -- | 62000000 | 120000 | 25000000 | |
| | | | | | | | | |
| Old Raff 1-Surface | <11000 R | <11000 R | 21000 J | 95000 J | <11000 R | 11000 J | <11000 R | **32000000** J |
| Old Raff 1-1' | 600 | 980 | 990 | 1700 | <350 | <350 | <350 | **980000** J |
| Old Raff 1-2' | 440 | 1200 | 1300 | 2300 | <350 | <350 | <350 | **2400000** J |
| Old Raff 1-5' | <350 | <350 | 400 J | 400 J | <350 | <350 | <350 | **1800000** J |
| Old Raff 1-10' | 370 | 2700 | 1200 | 3100 | <360 | <360 | <360 | **2200000** J |
| Old Raff 1-20' | 1000 | 2800 | 1000 | 1300 | <370 | <370 | <370 | **1900000** J |
| Old Raff 1-23' | 900 | 3300 | 1300 | 1400 | <400 | <400 | <400 | **3693000** J |
| Old Raff 1-30' | <35 UJ | <35 UJ | <35 UJ | <35 UJ | <35 UJ | <35 UJ | <35 UJ | 620 J |
| | | | | | | | | |
| New Raff 1-Surface | <1400 | <1400 | 2300 J | 9700 J | <1400 | 1500 J | 890 J | **2500000** J |
| New Raff 1-1' | <35 | <35 | <35 | <35 | 34 | <35 | <35 | 1820 J |
| New Raff 1-2' | <35 | <35 | <35 | <35 | 38 | <35 | <35 | 210 J |
| New Raff 1-5' | <35 | <35 | <35 | <35 | 30 | <35 | <35 | NF |
| New Raff 1-10' | <35 | <35 | <35 | <35 | <35 | <35 | <35 | NF |
| New Raff 1-20' | <35 | <35 | <35 | <35 | 35 | <35 | <35 | NF |
| | | | | | | | | |

* - Nevada Corrective Action Level
Results in **bold** exceed a potential site-specific action level
J - Estimated concentration
UJ - Estimated reporting limit, non-detected analyte
R - Due to poor surrogate recovery, the reported reporting limit concentration above which the analyte was not found cannot be relied upon.
NF - Not found

Table 4
Validated Soil Sample Results
Volatile Organic Compounds by USEPA Method 8260B
Anaconda Ponds Assessment
Detected Compounds Only
Micrograms per Kilogram, dry weight (ug/kg)
Samples Collected 7/30/07 - 8/1/07

| | Trichloro-fluoromethane | Acetone | Ethyl-benzene | m&p-Xylene | o-Xylene | 1,3,5-Trimethylbenzene | 1,2,4-Trimethylbenzene | Total Tentatively Identified Compounds (as total hydrocarbon) |
|---|---|---|---|---|---|---|---|---|
| USEPA PRG (Residential)→ | 390000 | 14000000 | 400000 | 270000 (total) | | 21000 | 52000 | 100000* |
| USEPA PRG (Industrial)→ | 2000000 | 54000000 | 400000 | 420000 (total) | | 70000 | 170000 | |
| | | | | | | | | |
| Old Raff-1-1' | 6.3 | <18 | <2.3 | <4.6 | <2.3 | 4.1 | 2.9 | 5800 J |
| Old Raff-1-2' | <2.2 | <18 | <2.2 | <4.4 | <2.2 | 10 | 5.9 | 8300 J |
| Old Raff-1-5' | <2.4 | <19 | <2.4 | <4.7 | <2.4 | 10 | 3.2 | 8800 J |
| Old Raff-1-10' | 3.7 | 15 | <2.4 | <4.9 | 1.4 | 42 | 14 | 10000 J |
| Old Raff-1-20' | 2.6 | 11 | <2.3 | 8.1 | 4.6 | 34 | 55 | 9400 J |
| Old Raff-1-23' | 4.3 | 15 | 1.6 | 13 | 7.4 | 63 | 100 | **150000** J |
| Old Raff-1-30' | <2.3 | <19 | <2.3 | <4.7 | <2.3 | <2.3 | <2.3 | 340 J |
| | | | | | | | | |
| New Raff 1-1' | <2.7 | 16 | <2.7 | <5.4 | <2.7 | <2.7 | <2.7 | 290 J |
| New Raff 1-2' | <2.7 | 21 J | <2.7 | <5.4 | <2.7 | <2.7 | <2.7 | 250 J |
| New Raff 1-5' | <2.6 | 35 J | <2.6 | <5.3 | <2.6 | <2.6 | <2.6 | NF |
| New Raff 1-10' | <2.3 | 20 J | <2.3 | <4.6 | <2.3 | <2.3 | <2.3 | NF |
| New Raff 1-20' | <2.3 | <18 | <2.3 | <4.5 | <2.3 | <2.3 | <2.3 | NF |
| | | | | | | | | |

* - Nevada Corrective Action Level
Results in **bold** exceed a potential site-specific action level
J - Estimated concentration
NF - Not found

Table 5
Validated Radioactive Parameter Results
Anaconda Ponds Assessment
Picocuries per Gram (pCi/g)
Samples Collected 7/30/07-8/1/07

| Sample ID | Gross Alpha by EPA 900.0 | Gross Beta by EPA 900.0 | Radium-223 by GAM-01 | Radium-224 by GAM-01 | Radium-226 by EML HASL 300, 4.5.2.3 | Radium-226 by GAM-01 | Radium-226 by EPA 903.0 | Radium-228 by GAM-01 | Actinium-228 by EPA 901.1m | Bismuth-212 by GAM-01 |
|---|---|---|---|---|---|---|---|---|---|---|
| SS-01* | 5.86 ± 3.33 J | 28.9 ± 4.61 J | NF | 0.866 ± 0.31 | 1.06 ± 0.143 J | 2.07 ± 0.36 | NA | 1.14 ± 0.14 | NA | 1.19 ± 0.20 |
| SS-02* | 6.71 ± 3.53 J | 23.3 ± 4.45 J | 0.258 ± 0.064 | 0.729 ± 0.28 | 0.922 ± 0.144 J | 1.97 ± 0.34 | NA | 1.16 ± 0.14 | NA | 1.13 ± 0.19 |
| SS-03* | 9.57 ± 4.23 J | 30.3 ± 5.16 J | 0.198 ± 0.058 | 0.517 ± 0.25 | 1.77 ± 0.231 J | 2.27 ± 0.36 | NA | 0.899 ± 0.11 | NA | 0.909 ± 0.15 |
| South Slot 1-21.5' | 8.37 ± 1.41 | 7.96 ± 1.86 J | NA | NA | NA | NA | 2.68 ± 0.617 J | NA | 2.45 ± 0.428 | NA |
| Mega 1-10' | 3.79 ± 1.05 | 4.14 ± 1.81 J | NA | NA | NA | NA | 1.64 ± 0.438 J | NA | 1.39 ± 0.301 | NA |
| Mega 2B-14' | 5.91 ± 1.16 | 7.66 ± 1.70 J | NA | NA | NA | NA | 1.42 ± 0.399 | NA | 2.01 ± 0.283 | NA |
| Mega 3-19' | 5.72 ± 1.30 | 6.76 ± 1.89 J | NA | NA | NA | NA | 2.52 ± 0.532 | NA | 2.21 ± 0.325 | NA |
| Bathtub-1.5' | 16.5 ± 1.91 | 12.2 ± 1.92 J | NA | NA | NA | NA | 2.12 ± 0.528 | NA | 2.82 ± 0.744 | NA |
| Phase One Sediment-15' | 4.13 ± 1.17 | 2.62 ± 1.67 J | NA | NA | NA | NA | 2.60 ± 0.636 | NA | 1.88 ± 0.330 | NA |
| Phase One-17.5' | 5.18 ± 1.29 | 5.32 ± 1.87 J | NA | NA | NA | NA | 2.93 ± 0.670 | NA | 1.9 ± 0.291 | NA |
| Old Raff 1-17' | 5.15 ± 1.15 | 4.05 ± 1.64 J | NA | NA | NA | NA | 1.90 ± 0.469 J | NA | 1.65 ± 0.372 | NA |
| New Raff 1-15' | 5.17 ± 1.21 | 5.19 ± 1.69 J | NA | NA | NA | NA | 2.06 ± 0.496 J | NA | 1.98 ± 0.348 | NA |
| Plant Feed 1-10' | 3.94 ± 1.08 | 4.45 ± 1.64 J | NA | NA | NA | NA | 2.81 ± 0.814 J | NA | 1.58 ± 0.309 | NA |

Background samples SS-01 through SS-03 collected August 7, 2007
NF- Not found
J - Validator qualified as estimated
NA - Not analyzed

Table 5
Validated Radioactive Parameter Results
Anaconda Ponds Assessment
Picocuries per Gram (pCi/g)
Samples Collected 7/30/07-8/1/07

| Sample ID | Bismuth-214 by GAM-01 | Bismuth-214 by EPA 901.1m | Cesium-137 by GAM-01 | Potassium-40 by GAM-01 | Potassium-40 by EPA 901.1m | Protactinium-234m by EPA 901.1m | Uranium-235 by GAM-01 | Lead-212 by GAM-01 | Lead-212 by EPA 901.1m |
|---|---|---|---|---|---|---|---|---|---|
| SS-01* | 1.06 ± 0.12 | NA | <0.023 | 22.3 ± 2.6 | NA | NA | 0.13 ± 0.022 | 1.11 ± 0.13 | NA |
| SS-02* | 0.969 ± 0.11 | NA | 0.0572 ± 0.013 | 25.6 ± 3.0 | NA | NA | NF | 1.05 ± 0.13 | NA |
| SS-03* | 1.17 ± 0.14 | NA | 0.0177 ± 0.0079 | 19.2 ± 2.2 | NA | NA | 0.143 ± 0.022 | 0.818 ± 0.098 | NA |
| South Slot 1-21.5' | NA | 2.26 ± 0.344 | NA | NA | 45.0 ± 4.71 | <10.7 | NA | NA | 3.11 ± 0.363 |
| Mega 1-10' | NA | 1.21 ± 0.212 | NA | NA | 34.0 ± 3.21 | <5.78 | NA | NA | 1.61 ± 0.175 |
| Mega 2B-14' | NA | 1.89 ± 0.345 | NA | NA | 29.6 ± 3.26 | <7.26 | NA | NA | 1.98 ± 0.203 |
| Mega 3-19' | NA | 1.77 ± 0.242 | NA | NA | 33.7 ± 3.29 | <5.89 | NA | NA | 2.25 ± 0.222 |
| Bathtub-1.5' | NA | 2.10 ± 0.338 | NA | NA | 29.3 ± 3.49 | <9.28 | NA | NA | 2.94 ± 0.275 |
| Phase One Sediment-15' | NA | 1.79 ± 0.261 | NA | NA | 32.5 ± 3.40 | <7.27 | NA | NA | 2.08 ± 0.235 |
| Phase One-17.5' | NA | 1.63 ± 0.245 | NA | NA | 29.4 ± 3.16 | 14.1 ± 10.6 | NA | NA | 1.92 ± 0.215 |
| Old Raff 1-17' | NA | 1.66 ± 0.265 | NA | NA | 33.5 ± 3.59 | <8.72 | NA | NA | 1.69 ± 0.193 |
| New Raff 1-15' | NA | 1.56 ± 0.239 | NA | NA | 33.6 ± 3.52 | <7.75 | NA | NA | 2.18 ± 0.242 |
| Plant Feed 1-10' | NA | 1.47 ± 0.280 | NA | NA | 30.2 ± 3.32 | <7.27 | NA | NA | 1.92 ± 0.187 |

Background samples SS-01 through SS-03 collected August 7, 2007
NF- Not found
J - Validator qualified as estimated
NA - Not analyzed

Table 5
Validated Radioactive Parameter Results
Anaconda Ponds Assessment
Picocuries per Gram (pCi/g)
Samples Collected 7/30/07-8/1/07

| Sample ID | Lead-214 by GAM-01 | Lead-214 by EPA 901.1m | Thorium-234 by GAM-01 | Thorium-234 by EPA 901.1m | Thallium-208 by GAM-01 | Thallium-208 by EPA 901.1m |
|---|---|---|---|---|---|---|
| SS-01* | 1.13 ± 0.13 | NA | NF | NA | 0.358 ± 0.044 | NA |
| SS-02* | 1.01 ± 0.12 | NA | 0.442 ± 0.22 | NA | 0.325 ± 0.04 | NA |
| SS-03* | 1.25 ± 0.15 | NA | 0.401 ± 0.20 | NA | 0.256 ± 0.032 | NA |
| South Slot 1-21.5' | NA | 2.23 ± 0.269 | NA | 3.88 ± 2.79 | NA | 1.95 ± 0.394 |
| Mega 1-10' | NA | 1.47 ± 0.160 | NA | 2.64 ± 1.95 | NA | 1.38 ± 0.227 |
| Mega 2B-14' | NA | 1.86 ± 0.189 | NA | 2.09 ± 1.64 | NA | 1.57 ± 0.280 |
| Mega 3-19' | NA | 1.79 ± 0.221 | NA | 2.72 ± 2.29 | NA | 1.94 ± 0.270 |
| Bathtub-1.5' | NA | 2.50 ± 0.273 | NA | 4.85 ± 2.92 | NA | 2.33 ±0.375 |
| Phase One Sediment-15' | NA | 1.59 ± 0.256 | NA | 3.67 ± 3.03 | NA | 1.60 ± 0.266 |
| Phase One-17.5' | NA | 1.77 ± 0.242 | NA | 2.85 ± 2.16 | NA | 1.52 ± 0.245 |
| Old Raff 1-17' | NA | 1.62 ± 0.234 | NA | 5.67 ± 1.97 | NA | 1.27 ± 0.259 |
| New Raff 1-15' | NA | 1.95 ± 0.210 | NA | 3.96 ± 2.44 | NA | 1.75 ± 0.281 |
| Plant Feed 1-10' | NA | 1.45 ± 0.199 | NA | 3.95 ± 2.21 | NA | 1.68 ± 0.365 |

Background samples SS-01 through SS-03 collected August 7, 2007
NF- Not found
J - Validator qualified as estimated
NA - Not analyzed

# ATTACHMENT 3

# Laboratory Data Reporting Sheets

# ATTACHMENT 4

# Photodocumentation