APPENDIX C

IEM FIELD SCREENING MEMO

ISO 9001:2000
Integrated Environmental Management, Inc.
Certificate No. 08.062.1

IEM
Integrated Environmental Management, Inc.

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MEMO

To: File 94005.29
From: R. Alan Duff
Subject: Storage Yard Sampling/Screening at the Shieldalloy Site
Date: August 6, 2008

This memo serves to document the activities performed during my visit to the Shieldalloy Metallurgical Corporation (SMC) facility in Newfield, New Jersey on June 16 through June 20, 2008 as they relate to the campaign to characterize the stockpiles currently located in the SMC Storage Yard. This campaign was a joint effort between TRC Environmental, Inc. (TRC) and Integrated Environmental Management, Inc. (IEM). Personnel from TRC performed visual observations of the materials in the Storage Yard, collected samples from several locations therein, and submitted them to IEM for field screening pursuant to IEM Procedure No. RSP-106, "Radionuclide Screening of Slag and Baghouse Dust at Newfield", Rev. 0, June 12, 2008.[1]

Attachment A contains my qualifications to complete this work for SMC. Attachment B contains a copy of the Field Activity Daily Logs maintained for the duration of the on-site effort. Attachment C contains the Radiation Work Permit and training documentation for the sampling/screening effort.

Instrumentation
The instruments used during this effort were a Ludlum Model 19 Microrem Meter for ambient gamma measurements and a Ludlum Model 12 rate meter with a Ludlum 44-9 pancake GM probe for surface contamination measurements. Field screening pursuant to RSP-106 was performed using a Ludlum Model 2241 rate meter with a Model 44-10 sodium iodide detector.

As required in RSP-008, each instrument was checked prior to use to ensure proper function, response checked to a reference gamma source (beta source for the contamination detector), and inspected for physical damage.[2] Background measurements were performed in the parking lot of the facility near the south west access gate, with the following average results:

- Model 19 - Approximately six (6) microR/hr.
- Model 2241/44-10 - Approximately 4n000 cpm.

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[1] A detailed description of the samples that were collected, including photographs and collection locations, appears elsewhere.

[2] Integrated Environmental Management, Inc., RSP-008, "Instrumentation", Rev. 5, September 18, 2007.

- Model 12/44-9 - Approximately 55 cpm in Building D117 ("the Cave") and in the site parking lot, and up to 300 cpm near the Storage Yard access.

A separate background for the Model 2241/44-10 was obtained in the Cave where samples were field screened. This value was approximately 5,500 cpm. Attachment D contains the records for the instruments used for this campaign.

Procedure

On June 17-18, 2008, a total of 93 samples were collected by TRC from several locations within the Storage Yard, placed into ziploc bags, and then placed into sample coolers. On June 19, 2008, portions of each rock or slag sample were downsized using a steel sledge hammer until they could be placed into a one-liter Marinelli beaker with minimal void spaces. The downsizing took place in the Storage Yard on top of a large steel table that was positioned near the vehicle entrance gate.

In the Cave, two processing areas were designated. The first was for sample storage, and the second was for sample handling and screening. A baseline contamination survey was performed in each area in order to characterize the pre-work radiological conditions (see Attachment E). After the survey was complete, the floors were covered with plastic sheeting.

Each sample delivered to the Cave was weighed, photographed, and then field screened pursuant to RSP-106. Ambient exposure rates were monitored at least hourly during the screening process. Attachment F contains the results of the field screening.

Once the screening of each sample was complete, the aliquot was returned to its respective ziploc bag (or re-bagged as necessary), labeled, and placed into a sample coolers. Sample chain-of-custody forms were then completed for each filled cooler (see Attachment G).

Project Close-Out

At the completion of on site work, custody of the samples was relinquished to the SMC Radiation Safety Officer, at which time the coolers were moved to a locked room adjacent to the Cave. A post-operational contamination survey was performed and documented for the work areas, demonstrating that no radiological impact resulted from the field screening (see Attachment F).

ATTACHMENT A
Qualifications

R. Alan Duff

Professional Qualifications

Mr. Duff has over 29 years of experience in nuclear and hazardous materials project management, design support, surveillance, operational health physics, training, and decommissioning activities. He has prepared numerous plans, procedures, and license documents for U. S. Department of Energy facilities, U. S. Department of Defense facilities, U. S. Nuclear Regulatory Commission licensees, and commercial client facilities that are regulated by agreement states. Mr. Duff is well versed in the area of civilian and government radioactive and mixed waste transport and disposal requirements. He is registered by the National Registry of Radiation Protection Technologists (NRRPT).

Education

Advanced Radioactive Material Transportation and Disposal Classes, 1989, 1993, 2003, and 2007.

GPS/GIS Backpack Survey Training Classes, 2007.

IT Corporation Project Management Course (40 hours), 1992.

40-Hour OSHA HAZWOPER (29 CFR 1910.120) Training, 1987.

Eight-hour Supervisor Training, 1990

Eight-hour OSHA Annual Refresher (29 CFR 1910.120), 2008.

Operational Water Chemistry and Radiological Controls, U.S. Navy, 1982

Engineering Laboratory Technician School, U.S. Navy, 1980.

Nuclear Power Training Unit (prototype), U.S. Navy, 1980.

Naval Nuclear Power School, U.S. Navy, 1978.

Registrations/Certifications

Registered Radiation Protection Technologist (RRPT), National Registry of Radiation Protection Technologists

Radiation Safety Officer - MDE Radioactive Materials License No. MD-31-281-01.

Authorized User - MDE Radioactive Materials License No. MD-31-281-01.

Experience and Background

2002-Present *Vice President of Nuclear Services, Integrated Environmental Management, Inc., Knoxville, Tennessee* - As the director of IEM's Nuclear Services Division, which operates as a compliment to our consulting capability by providing support services and on-site project management for major client initiatives, Mr. Duff is responsible for turn-key decontamination and decommissioning of nuclear facilities - including the preparation of all planning documentation, characterization surveys and sampling, facility and equipment decontamination, final status survey performance, waste packaging/transport/disposal coordination, routine facility surveillance services, emergency response, leak testing of sealed sources, instrument rental, employee monitoring services for internal and/or external exposures, training, and a host of other applied health physics operations. Mr. Duff also serves as the Radiation Safety Officer (RSO) for IEM operations pursuant to Maryland Department of the Environment Radioactive Materials License No. MD-31-281-01.

1995-2002 *Program/Project Manager, Integrated Environmental Management, Inc., Knoxville, Tennessee* - Provided high-quality project management and remediation services to commercial and government clients. As a member of the client's response team, worked with clients to: Develop scopes-of-work and bid packages for specialty subcontractors handling highly focused assignments; identify those subcontractors who will provide the greatest value to the client; manage teams of specialty subcontractors to ensure that the client's goals and expectations (technical, regulatory, and financial) are met from the beginning until project completion; provide insights into future regulatory issues and their impact as input to the client's long-range business planning and cost forecasting process; provide site remediation/decommissioning services for radioactive and hazardous materials; advise and train clients on waste transportation and disposal issues; and develop project specific plans and procedures to conduct on site activities.

1994-1995 *Senior Environmental Specialist, AWK Consulting Engineers, Inc., Pittsburgh, Pennsylvania* While assigned to the Oak Ridge, Tennessee office, was responsible for performing technical and administrative duties required to satisfy customer needs on site characterization and pre-remedial design support projects and for all aspects of D&D projects. Responsible for preparing project plans, project work plans, task specific Health & Safety Plans, and budgets/schedules for these projects. Also responsible for identifying and implementing decommissioning and decontamination methods for these projects.

1987-1994 *Project Manager, Health Physics Supervisor, Nuclear/Mixed Waste Engineering Services, IT Corporation, Knoxville, Tennessee.* Provided project management and health physics support services for nuclear and mixed waste projects throughout the United States.

1978-1987 *Engineering Laboratory Technician (ELT), Leading Petty Officer, Radiological Controls Shift Supervisor*, United States Navy Supervised a division of 40 personnel, provided support for nuclear powered submarines, and performed over 250 error-free shipments of radioactive materials. Served as Leading ELT and Engine Room Supervisor on the USS Grayling, SSN 646.

Professional Society Memberships

Health Physics Society (Plenary Member)

American Nuclear Society

Conference of Radiation Control Program Directors (Advisor to the Radioactive Waste Management Committee E-5 and to the D&D Committee E-24)

Awards

Navy Achievement Medal for conducting the first Trident Class submarine ion exchange resin discharge and solidification.

IT Corporation Project Management Associate

Example Project Descriptions

Project Manager for health physics field activities during characterization, remediation and survey of several oil production sites with soil contaminated with Naturally-Occurring Radioactive Materials (NORM) for multiple clients in support of litigation defense.

Project Manager for the radiological characterization (MARSSIM surveys) of a facility that manufactured thorium fluoride for use as an optical surfacing product. Conducted radiation and contamination surveys and obtained analytical samples of building materials. Returned to the facility to conduct surveys in support of property ownership transfer. Supervised radiological remediation of facility including floor and wall contamination, underground tank removal, drain line removal, roof decontamination, and equipment demolition including ventilation systems, fume hoods, and scrubber systems. Responsible for coordination for treatment and disposal of radioactive and mixed wastes generated during the project and conducted final status surveys at the facility upon completion of work.

Project Manger for Phase 1 Environmental Assessments conducted at five radioactive waste processing and disposal facilities.

Radioactive waste broker and DOT shipper for multiple client sites for shipping and disposal of client's sealed sources and radioactive process wastes.

Project Manager and Health Physicist for the remediation and final status surveys/sampling of a former oilfield pipe scale facility. Supervised the demolition of the

site building, excavation and disposal of twelve truckloads of NORM- contaminated soil, and excavation and release of over 175 truckloads of clean soil. Interfaced with the client and state regulators on the planning and final release of the facility. Work performed under the terms/conditions of License No. MD-31-281.01.

Project Manager and Health Physicist for the remediation and final status survey of a pharmaceutical company's radiological laboratories contaminated with Hydrogen-3 and Carbon-14. Supervised the on site demolition of the labs including fume hoods, lab furniture and ventilation systems. Supervised the disposal of radioactive and mixed wastes from the site and the performance of the final status survey of the facility.

Project Manager for the decommissioning of an oven contaminated with mercury and thorium (mixed waste). Arranged for subcontractors to conduct decontamination and disposal activities, prepared project plans, supervised all field activities, and conducted all radiological surveys during the decommissioning. Responsible for coordination for treatment and disposal of mixed and hazardous wastes generated during the project. Later conducted removal of a central vacuum system that was contaminated with mercury and thorium at the same facility.

Conducted audits of a client's radiation protection program including tour of the site, interviews with employees to verify radiological and respirator training, review of shipping, waste disposal, sealed source, training, and survey records. Also conducted leak tests of client's radioactive sealed sources.

Project Manager for escalated decommissioning a State-licensed site that manufactured, tested, and distributed gauging devices in anticipation of the sale of the company and the possibility of its moving its operations to another location. Responsible for preparation of work plans, negotiations with regulatory agencies, decontamination of indoor and outdoor areas, performance and documentation of a final status survey, shipment of waste, and project-specific health and safety.

Project Manager and health physicist for the remediation of a building foundation drainage system and the processing of over 100,000 gallons of water contaminated with cobalt-60 up to levels of one (1) microcurie per liter for a commercial client. Responsible for coordination of a water processing subcontractor, an excavation subcontractor, and off-site analytical laboratory activities. Also interfaced with on-site U. S. Nuclear Regulatory Commission, U. S. Environmental Protection Agency, and a variety of state and local agencies. Follow up work at the same facility included development of decommissioning funding plans and site decommissioning plans.

Technical writer for the development of a logic flow diagram for identifying radioactive and mixed wastes at the U. S. Department of Energy's Portsmouth (Ohio) Gaseous Diffusion Plant.

Technical writer for the Fernald Remedial Investigation/Feasibility Study (RI/FS). Provided technical guidance to engineering staff, generated reports on radioactive and mixed waste packaging, transport, and disposal.

Site Manager for the characterization survey of an EPA Superfund site three story warehouse that had been used in the past as a lantern mantle manufacturing facility and had been contaminated with thorium. Assisted in the development of project plans and final reports, supervised a crew of Health Physics technicians performing characterization surveys, interfaced with the facility owner and EPA personnel while on site.

Project Manager for the decommissioning and decontamination of three facilities at Sandia National Laboratory contaminated with radioactive and mixed waste. Responsible for the coordination of resources for the development of project plans, development of Project Work Plan, and maintaining project budget and schedule commitments.

Health Physics Supervisor for a transuranic (TRU) waste repackaging project. Supervised the characterization, repackaging and shipment of 130 containers of high-activity americium-241 and plutonium-238 hot cell waste. The waste was packaged to meet the WIPP waste acceptance criteria and was transported (highway route controlled quantity) to the Idaho National Engineering Laboratory (INEL) for storage.

Project Manager for the excavation and disposal of radium waste cells for the Corps of Engineers at Bergstrom Air Force Base in Austin, TX. Developed all project plans, supervised field efforts, and coordinated waste transport and disposal activities.

Project Manager for the decontamination and final release survey of a 70,000 ft^2 facility that manufactured cesium-137 level gauges. Decontamination efforts involved overhead areas, work area concrete floors, and removal of soil under the floor slab. Facility was released from their license following a verification survey by the state radiological licensing agency. Developed state approved decommissioning plan and final status survey report.

Project Manager for the packaging and disposal of 55,000 Curies of cobalt-60 teletherapy sources. Sources were loaded into cask liners in the facility hot cell and loaded into Type B casks for shipment for disposal. Also supported the packaging and disposal of several low level waste drums and HEPA filters that required the use of shielded Type A and B shipping containers.

Project Manager for the decommissioning and decontamination of IT Corporation's Oak Ridge Mixed Waste Analytical Laboratory. Developed the decommissioning and decontamination plan that was approved by the State of Tennessee. Also supervised the field crew during final surveys of facility.

Project Manager for the decommissioning and decontamination of a magnesium-thorium waterfall grinding booth at Tinker Air Force Base in Oklahoma. Responsible for the development of project plans, schedule and budget management, and disposal of radioactive and mixed wastes.

Project Manager for the decommissioning of a commercial facility which had previously processed ores containing uranium and thorium. Generated the decommissioning plan submitted to and approved by the U. S. Nuclear Regulatory Commission, and was responsible for schedule, budget, and on site activities.

Project Manager for the removal of a 22 MeV particle accelerator from a major university medical center. Developed State-approved decommissioning and decontamination plans, arranged for waste disposal and transfer of the accelerator to a university in Beijing, China, and was responsible for budget, schedule and all on site activities.

Project Manager for the decommissioning and decontamination of two radioactive source manufacturing laboratories at Chevron Research and Technology. The laboratories housed a neutron generator and were contaminated with tritium, carbon-14, cesium-134, and cobalt-60. Negotiated plan approvals with the State agency, and was responsible for budget, schedule, and all on site activities including waste transport and disposal.

Project Manager for the routine quarterly surveillance and special radiological projects at a metallurgical facility licensed by the NRC. Conducted radiation, contamination, and airborne radioactivity surveys as well as personnel bioassay and dosimetry program and environmental monitoring program each quarter. Provided health physics coverage for non-routine activities such as baghouse and stack testing, heats of specialty materials, final release surveys of an excavated road area, storage yard, and a warehouse formerly used for storage of radioactive materials, and recovery of radioactively contaminated equipment improperly released from site. Responsible for the generation of quarterly surveillance reports.

Project Manager for the development of a conceptual decommissioning plan for a maintenance facility located in South Carolina. The plan was generated to provide support for the facility's decommissioning funding plan.

Health and Safety Manager/Project Manager at the U. S. Department of Energy's Fernald site thorium silo and bins decommissioning and decontamination project. Developed the project-specific health and safety plan, and interfaced with the client on health physics and health/safety issues. This project received safety and quality awards from the client.

Health Physics Supervisor responsible for the sampling of underground storage tanks with radioactive and mixed wastes at Brookhaven National Laboratory.

Health and Safety Manager for the U. S. Department of Energy's Fernald Plant K-65 Silo sampling project. Developed the health/safety and sampling plans. The silos contained up to 0.5 microcurie of Radium-226 per gram and were the largest single source of radon gas in the U.S.

D&D Technical Manager for the decommissioning of the U. S. Department of Energy's LEHR facility at the University of California at Davis. Developed project decommissioning and decontamination plans and field procedures.

Health Physics Supervisor for the excavation of waste materials which included mixtures of uranium and explosives.

Project Manager for the MARSSIM type final status survey of a potentially contaminated 10 acre property on Staten Island, New York. Developed site characterization/survey plans, supervised the on site characterization survey and soil sampling at the site, and developed the project report for submittal to regulators.

Developed numerous business proposals for nuclear decommissioning and decontamination projects including job walk downs, cost estimation, scheduling, and technical content of proposals.

While in the US Navy, acted as radioactive materials shipper for the Trident Submarine Refit Facility. Performed over 250 error-free shipments of radioactive materials including Type B quantity radiography source shipments and radioactive waste shipments to the naval shipyard.

ATTACHMENT B
Field Activity Daily Logs

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
FIELD ACTIVITY DAILY LOG

Facility: Shieldalloy Metallurgical Corp.	
Date: 6/16/08	Job/Task Number: 94005.2901
Client Name: Shieldalloy	
Address of Work Site: West Blvd. Newfield, NJ	
Description of Work: Collection of Samples in Storage Yard	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

Arrived on site at (insert date and time): 6/16/08 1340

1340 - Arrived on site, met w/ Dave Smith, David White & Larry Butlien to discuss project, picked up material/equipment.

1445 - Went to storage yard to prepare for sampling, TRC using GPS to ~~locatly~~ locate & mark sample map/grid lines. Duff performed general area radiation survey in areas to be sampled. Dose rates ranged from 0.5 mr/hr on access roads & near baghouse dust pile, up to 2 mr/hr near Columbium oxide piles.

1750 Lightning in the general vicinity, secured work for the day.

No Further Entries

Departed site at (insert date and time): 6/16/08 1750

Changes from Plans and Specifications, and Other Special Orders and Important Decisions:

None

Weather Conditions: Afternoon thunderstorm, otherwise partly cloudy, warm, wind	Important Telephone Calls and Interactions: None
Personnel on Site: Duff (IEM), L. Butlien, B. Smith, D. White (SMC), Chris Carlson, Brian Ross (TRC).	
Name (print): R. Alan Duff	Signature:

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INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
FIELD ACTIVITY DAILY LOG

Facility: Shieldalloy Metallurgical Corp.	
Date: 6/17/08	Job/Task Number: 94005.2901
Client Name: Shieldalloy	
Address of Work Site: West Blvd., New Field, NJ.	
Description of Work: Collection of samples in storage yard	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

Arrived on site at (insert date and time): 6/17/08 0700

0700 On site, preparing to collect samples.
0730 TRC using GPS to locate sample points inside of area grids.
0800-0930 Sampled misc. biased samples from Area 7 w/L. Butlien.
1045-1230 Sampled misc. biased samples from Area 5 w/L. Butlien
1045-1230 TRC sampling BH dust pile, Areas 8&9 (Carlson & Ross)
1245 Broke for lunch.
1345 Returned from lunch, Carlson & Ross sampling in Area 8
1415-1450 Collected biased samples from Area 2 w/L. Butlien
1450-1530 Collected biased samples from Area 1 w/L. Butlien
1500-1520 Carlson & Ross sampled Area 3
1530 Screened samples w/ 2"x2" NaI to ensure sufficient radioactivity was present in the collected sample for lab analysis. Carlson & Ross went back to resample in locations that initially had insufficient counts present.
1800 Moved collected samples to storage area near office bldg.
1840 Completed work, left site.

No Further Entries

Departed site at (insert date and time): 6/17/08 1840

Changes from Plans and Specifications, and Other Special Orders and Important Decisions:
None

Weather Conditions: Clear warm, wind breezy	Important Telephone Calls and Interactions: None
Personnel on Site: DuFF (IEM), L. Buttlien (TRC), D. Smith, Chris Carlson, & Brian Ross	
Name (print): R. Alan DuFF	Signature:

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INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
FIELD ACTIVITY DAILY LOG

Facility: Shieldalloy Metallurgical Corp.	
Date: 6/18/08	Job/Task Number: 94005.2901
Client Name: Shieldalloy	
Address of Work Site: West Blvd., Newfield, NJ	
Description of Work: Collection of samples in storage Yard.	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

Arrived on site at (insert date and time): 6/18/08 0700

0700 On site preparing to continue collecting samples
0730 Carlson & Ross collecting 17 Area 4 grid samples, Duff & L. Butlin in Area 6 collecting samples.
0945 NRC on site to observe sampling.
1215 Broke for lunch.
1325 Back on site, taking random samples in Area 8 & 9
1530 NRC left site.
1610 In area 4, taking random samples.
1730 Completed work in storage Yard, placed samples in storage.
1800 Completed work, left site.

No Further Entries

Departed site at (insert date and time): 6/18/08 1800

Changes from Plans and Specifications, and Other Special Orders and Important Decisions:

None

Weather Conditions: Sunny, warm, wind calm.	Important Telephone Calls and Interactions: None
Personnel on Site: Duff (IEM), Carlson, Ross, & Butlin (TRC), Dave Smith, Robert Johnson & Allen Fetter (NRC)	
Name (print): R. Alan Duff	Signature:

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INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
FIELD ACTIVITY DAILY LOG

Facility: Shieldalloy Metallurgical Corp.	
Date: 6/19/08	Job/Task Number: 94005.2901
Client Name: Shieldalloy	
Address of Work Site: West Blvd., Newfield, NJ	
Description of Work: Collection of samples in storage yard.	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

Arrived on site at (insert date and time): 6/19/08 0700

0700 On site, TRC collecting miscellaneous samples.
0900-1200 Duff & Ross breaking up samples of slag so they will fit into Marinelli beakers.
1215 Lunch
1245 Returned to site, Duff counting samples in Marinelli beakers in cave area. TRC personnel describing samples.
1710 Duff left site.

No further entries RD

Departed site at (insert date and time): 6/19/08 1710

Changes from Plans and Specifications, and Other Special Orders and Important Decisions: None

Weather Conditions: Clear, cool, wind calm	Important Telephone Calls and Interactions: None
Personnel on Site: Duff (IEM), Butlin, Ross, & Carlson (TRC), D. Smith	
Name (print): R. Alan Duff	Signature: [signature]

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INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
FIELD ACTIVITY DAILY LOG

Facility: Shieldalloy Metallurgical Corp.	
Date: 6/20/08	Job/Task Number: 94005.2901
Client Name: Shieldalloy	
Address of Work Site: West Blvd., Newfield, NJ	
Description of Work	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

Arrived on site at (insert date and time): 6/20/08 0700

0700 On site, preparing to count & package samples.
0730 Counting ~~stopped~~, packaging & labeling samples.
1200 Lunch
1230 Returned from lunch.
1300 Counting/packaging/labeling samples.
1500 Completed counting storage yard samples.
1930 Completed on site work, packaged up equipment/materials & left site. 1600-1615 Conducted walkover gamma survey by North Fenceline (cerium oxide Area)

No Further Entries
RAD

Departed site at (insert date and time): 6/20/08 1930

Changes from Plans and Specifications, and Other Special Orders and Important Decisions:

None

Weather Conditions: Clear, warm, wind calm.	Important Telephone Calls and Interactions: None
Personnel on Site: Duff (IEM), Carlson & Ross (TRC), D. Smith	
Name (print): R. Alan Duff	Signature: RAD

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ATTACHMENT C
RWP and Training Records

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

RADIOLOGICAL WORK PERMIT

Permit No: 2008-01	Type: ☒ Job Specific ☐ Extended ☐ Routine
Expiration Date: 6/28/08	IEM Project No.: 94005.2901

Description and Location of Work: SMC Newfield Storage Yard, Sampling of Slag + Baghouse Dust ☒ See Work Plan

SURVEY INFORMATION

General Area Exposure Rates (mR/hr): 0.2-0.5 mr/hr Access Roads + >10' from slag piles	☐ See Map
Maximum Accessible Exposure Rates (mR/hr): 2.0-2.5 mr/hr ON COLUMBIUM OXIDE SLAG PILES	☐ See Map
Removable Contamination (dpm/100 cm²): N/A	☐ See Map

ALARA REVIEW

Estimated Total Dose (Maximum Individual): 40 mr/job ☐ TBD Attached	Actual Total Dose (Maximum Individual):
Pre-job Briefing by: R. Alan Duff	Post-job Briefing by:
Dose Reduction Techniques to be Employed: Minimize time in higher dose areas (as identified by the HP technician prior to work start), exit storage yard when not performing work	

DOSIMETRY REQUIREMENTS

☒ TLD/Film Badge (one sample team member)	☐ Finger Ring	☐ SRPD	☒ BZA	☐ Alarming Dosimeter
☐ Stay-Time Estimate:	☐ Other (Specify):		(if necessary during slag sampling, dusty conditions)	

PROTECTIVE EQUIPMENT

☐ Coveralls	☐ Lab Coat	☐ Hood	☒ Rubber Gloves	☐ Booties
☐ Rubbers	☐ Respirator	☐ Taped Seams	☒ HP Coverage	☐ Stationary Air Sampler
☐ Pre-job Bioassay	☐ Post-job Bioassay	☒ Special Briefing in: High dose/lower dose locations		
Other Precautions and Special Instructions: Difficult footing on piles				

Authorized by (signature of RSO): [signature]	Date: 6/16/08
Authorized by (signature of CHP):	Date:
Terminated by (signature of RSO): [signature]	Date: 6/20/08

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
RADIOLOGICAL WORK PERMIT ACCESS LOG
IEM Project No.: 94005.2901 Permit No. 2008-01

My signature below attests to the fact that I have reviewed this Radiological Work Permit (RWP), I understand its requirements, I will comply with its requirements, and that I will maintain my own radiation exposure "as low as reasonably achievable" when I am in the work area covered by this RWP. I also agree to stop work in this area (see RSP-017) if radiological conditions deviate significantly from those reflected on the RWP or if conditions may violate regulatory or IEM requirements for radiological protection.

Printed Name	Signature	Period of Entry into Work Area					SRPD Total	Dosimetry Confirmed
		Date	In		Out			
			Time	SRPD	Time	SRPD		
R. Alan Duff	[signature]	6/16/08	N/A	N/A	N/A	N/A	N/A	✓ no
Larry Butlin	[signature]	6/16/08	↓	↓	↓	↓	↓	N/A
Chris Carlson	[signature]	6/16/08	↓	↓	↓	↓	↓	↓
Brian Ross	[signature]	6/16/08	↓	↓	↓	↓	↓	↓

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
TAILGATE SAFETY MEETING DOCUMENTATION

Facility/Location: SMC Newfield - Storage Yard		
Date: 6/16/08	Time: 1500	Job Number: 94005.2901
Client Name: SMC Newfield		
Address of Work Site: West Blvd., Newfield, NJ		
Type of Work: Storage Yard Sampling		
Hazardous/Radioactive Materials Used: None		

SAFETY TOPICS PRESENTED

Protective Clothing/Equipment: Steel toes, safe glasses, gloves in slag piles		
Chemical Hazards: None		
Radiological Hazards: 1-2 mr/hr on slag piles, Potential U+Th contamination		
Physical Hazards: Slip, trip, + fall, poison ivy, insects		
Emergency Procedures: Stop work, exit area, notify IEM, TRC, + SMC personnel		
Hospital/Clinic: SJH Regional	Phone: (856) 641-8000	Paramedic Phone: 911
Hospital Address: 1505 W. Sherman Ave., Vineland, NJ 08360		
Special Equipment: None		
Other: Initial project briefing		

ATTENDEES

NAME PRINTED	SIGNATURE
Larry Butlier	Larry Butlier
Chris Carlson	[illegible]
Brian Ross	[illegible]

Meeting Conducted by:	R. Alan Duff
Signature:	[illegible]

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
TAILGATE SAFETY MEETING DOCUMENTATION

Facility/Location: SMC-New Field Storage Yard		
Date: 6/17/08	Time: 0700	Job Number: 94005.2901
Client Name: SMC NewField		
Address of Work Site: West Blvd., New Field, NJ		
Type of Work: Storage Yard Sampling		
Hazardous/Radioactive Materials Used: None		

SAFETY TOPICS PRESENTED

Protective Clothing/Equipment: Steel toes, Safety glasses, gloves in slag piles		
Chemical Hazards: None		
Radiological Hazards: 1-2 mr/hr on slag piles, Potential natTh contamination		
Physical Hazards: Slip, trip, & fall, poison ivy, insects		
Emergency Procedures: Stop work, exit area, notify IEM, TRC, & SMC personnel		
Hospital/Clinic: SJH Regional	Phone: (856) 641-8600	Paramedic Phone: 911
Hospital Address: 1505 W. Sherman Ave., Vineland, NJ 08360		
Special Equipment: None		
Other: Difficult footing, move to lower dose areas when not sampling.		

ATTENDEES

NAME PRINTED	SIGNATURE
Larry Butlien	Larry Butlien
Chris Carlson	[illegible]
Brian Ross	[illegible]

Meeting Conducted by:	R. Alan Duff
Signature:	[illegible]

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
TAILGATE SAFETY MEETING DOCUMENTATION

Facility/Location: SMC Newfield / Storage Yard		
Date: 6/18/08	Time: 0700	Job Number: 94005.2901
Client Name: SMC Newfield		
Address of Work Site: West Blvd., Newfield, NJ		
Type of Work: Storage Yard Sampling		
Hazardous/Radioactive Materials Used: None		

SAFETY TOPICS PRESENTED

Protective Clothing/Equipment: steel toes, safety glasses, gloves in slag piles		
Chemical Hazards: None		
Radiological Hazards: 1-2 mr/h on piles, potential U/Th contamination		
Physical Hazards: slip, trip, & fall		
Emergency Procedures: Stop work, exit area, notify RSO & SMC personnel		
Hospital/Clinic: SJH Regional	Phone: (856) 641-8000	Paramedic Phone: 911
Hospital Address: 1505 W. Sherman Ave., Vineland, NJ 08360		
Special Equipment: None		
Other: Grinding of slag samples, slip/trip/fall		

ATTENDEES

NAME PRINTED	SIGNATURE
Larry Butlien	[signature]
Chris Carlson	[signature]
Brian Ross	[signature]

Meeting Conducted by:	R. Alan Duff
Signature:	[signature]

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
TAILGATE SAFETY MEETING DOCUMENTATION

Facility/Location: SMC Newfield / Storage Yard		
Date: 6/19/08	Time: 0700	Job Number: 94005.2901
Client Name: SMC Newfield		
Address of Work Site: West Blvd., Newfield, NJ		
Type of Work: Storage Yard Sampling		
Hazardous/Radioactive Materials Used: None		

SAFETY TOPICS PRESENTED

Protective Clothing/Equipment: Steel toes, safety glasses, gloves		
Chemical Hazards: None		
Radiological Hazards: 1-2 mr/hr on Slag piles, Potential U+Th contamination		
Physical Hazards:		
Emergency Procedures: Stop work, exit area, notify IEM, TRC, + SMC personel		
Hospital/Clinic: SJH Regional	Phone: (856) 641-8000	Paramedic Phone: 911
Hospital Address: 1505 W. Sherman Ave., Vineland, NJ 08360		
Special Equipment: Hammer Drill for crushing samples		
Other: Missile Hazards, Noise protection during sample downsizing, proper sample handling		

ATTENDEES

NAME PRINTED	SIGNATURE
Larry Butlien	Larry Butlien
Chris Carlson	[illegible]
Brian Ross	[illegible]

Meeting Conducted by:	R. Alan Duff
Signature:	[illegible]

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
TAILGATE SAFETY MEETING DOCUMENTATION

Facility/Location: SMC Newfield / Storage Yard & Bldg. D117		
Date: 6/20/08	Time: 0720	Job Number: 94005.2901
Client Name: SMC Newfield		
Address of Work Site: West Blvd., Newfield, NJ		
Type of Work: Storage yard sampling.		
Hazardous/Radioactive Materials Used: None		

SAFETY TOPICS PRESENTED

Protective Clothing/Equipment: steel toes, safety glasses, gloves for samples		
Chemical Hazards: None		
Radiological Hazards:		
Physical Hazards: 1-2 mr/hr on Slag piles, potential U&TH contamination		
Emergency Procedures: Stop work, exit area, Notify IEM, TRC & SMC personnel		
Hospital/Clinic: SJH Regional	Phone: (856) 641-8000	Paramedic Phone: 911
Hospital Address: 505 W. Sherman Ave., Vineland, NJ.		
Special Equipment: ~~None~~ Backhoe		
Other: None.		

ATTENDEES

NAME PRINTED	SIGNATURE
Chris Carlson	
Brian ROSS	

Meeting Conducted by: R. Alan Duff

Signature:

ATTACHMENT D
Instrument Records

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
EXPOSURE RATE SURVEY INSTRUMENT DATA SHEET

Project No. 94605.2901	Detector		Meter		
Site Location/Background Location: SMC Newfield / Parking lot at site entrance	Type: N/A	Serial No. N/A	Type: Ludlum 19	Serial No: 182648	Operating Voltage: SAT

Check Source Number	Radionuclide:	Calibration Activity and Date:
#3347	Cs-137	11/97 1uC

Date	Units	Start of Shift Background				End of Shift Background				Daily Response (µR/hr)	Initials
		1	2	3	Avg.	1	2	3	Ave.		
6/16/08	uR/hr	6	6	5	6	6	6	7	6	180	[illegible]
6/17/08	uR/hr	6	5	6	6	6	6	6	6	180	[illegible]
6/18/08	uR/hr	6	6	6	6	6	6	6	6	180	[illegible]
6/19/08	uR/hr	6	6	6	6	6	6	6	6	180	[illegible]
6/20/08	uR/hr	6	6	6	6	6	6	6	6	180	[illegible]

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
CONTAMINATION SURVEY INSTRUMENT DATA SHEET

Project No: 94005.2901	Detector			Meter		
Site Location/Background Location: SMC New Field / Parking lot at site entrance	Type: Ludlum 44-9	Serial No. 131464	Probe Area (cm²) 15	Type: Ludlum 12	Serial No: 121268	Operating Voltage: SAT
Check Source No: 2398-98	Check Source No:			Check Source No:		
Radionuclide: Tc-99 / Activity: 14,200 dpm ~~2398 dpm~~ / Date: 8/6/96	Radionuclide:	Activity:	Date:	Radionuclide:	Activity:	Date:

Date	Start of Shift Background (cpm for a N/A minute count)								End of Shift Background (cpm for a N/A minute count)								Daily Source Check (α)		Daily Source Check (β)		MDA** - Scaler Mode (dpm)		Bat - OK	HV OK	Initials
	Alpha				Beta				Alpha				Beta												
	1	2	3	Av.	1	2	3	Av.	1	2	3	Av.	1	2	3	Av.	Source (cpm)	Eff.	Source (cpm)	Eff.	α	β			
6/16	← N/A →				50	40	30	40	← N/A →				50	50	40	47	N/A	N/A	2800	66	N/A	N/A	✓	✓	MS
6/17					50	50	40	47					60	80	40	60			2800				✓	✓	M
6/18					50	60	40	50					60	70	60	63			2800				✓	✓	MS
6/19					60	70	80	70					50	60	80	63			2800				✓	✓	M
6/20					60	80	60	68					60	60	60	60			2800				✓	✓	MS

** $MDA = \frac{2.71 + 4.65\sqrt{BKG_{avg} \times t}}{t \times E \times \frac{A}{100}}$, where MDA = the activity level (dpm/100 cm²), BKG_{avg} = the background count rate for this measurement type (cpm), t = the sample measurement duration (min), E = the 4-π instrument efficiency, and A = the physical probe area (cm²).

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
EXPOSURE RATE SURVEY INSTRUMENT DATA SHEET

Project No. 94005.2901	Detector		Meter		
Site Location/Background Location: SMC Newfield / Parking lot at site entrance	Type: Ludlum 44-10	Serial No. 151704	Type: Ludlum 2241	Serial No: 143562	Operating Voltage: SAT

Check Source Number	Radionuclide:	Calibration Activity and Date:
#3347	Cs-137	11/97 / 4C:

Date	Units	Start of Shift Background				End of Shift Background				Daily Response (µR/hr) cpm	Initials
		1	2	3	Avg.	1	2	3	Ave.		
6/16/08	cpm	4K	4K	5K	4K	4K	4K	4K	4K	210	[illegible]
6/17/08	↓	4K	4K	4K	4K	4K	4K	4K	4K	205	[illegible]
6/18/08		4K	4K	4K	4K	4K	4K	4K	4K	208	[illegible]
* 6/19/08		11,523	11,481	11,289	11,431				*	208	[illegible]
* 6/20/08		11,230	11,315	11,262	11,269				*	209	[illegible]

* Performed 3 2-min counts to determine bkgd. prior to counting samples in Marinelli beakers. Several 2-min. counts were performed throughout the day to ensure there was not a significant change in the bkgd. Samples & bkgd. were counted in D117, "the cave".

GRIFFIN INSTRUMENTS

CALIBRATION CERTIFICATE FOR 2241 SERIAL# 143562

Owner: IEM

DATE: 02/07/08 LOCATION: Griffin Inst

TECH: Joanne Glenn DATE LAST CAL EXPIRES: 03/27/08

Reason For Calibration: (●) Due For Calibration ( ) Repair (See Remarks) ( ) Other (See Remarks) ( ) Due and Repair (See Remarks)

NIST TRACEABLE EQUIPMENT USED DURING CALIBRATION

MODEL:	M-500	SERIAL #:	114512	CAL. DUE:	12/20/08
MODEL:		SERIAL #:		CAL DUE:	

[x] Fast/Slow Switch working properly [x] Audio Response [ ] Geotropism CABLE LENGTH 39"

CONDITION: Sat

NEW BATTERIES: ( ) Yes (●) No BATTERY CHECK: Sat

HV TEST ( ) N/A (●) Sat ( ) Unsat

AF INPUT SENSITIVITY (mV) #1:	35	AL INPUT SENSITIVITY (mV) #1:	A.F.
AF INPUT SENSITIVITY (mV) #2:	N/A	AL INPUT SENSITIVITY (mV) #2 :	N/A
AF INPUT SENSITIVITY (mV) #3:	N/A	AL INPUT SENSITIVITY (mV) #3:	N/A
AF INPUT SENSITIVITY (mV) #4:	N/A	AL INPUT SENSITIVITY (mV) #4:	N/A

RATE CPM	AS FOUND		% ERROR	AS LEFT	% ERROR
250	250		0.0%	A.F.	
2500	2502		0.1%	A.F.	
25K	25.021	K	0.1%	A.F.	
250K	250.254	K	0.1%	A.F.	

Is the As Found Data Within 2% of the Set Point?: (●) Yes ( ) No

DETECTOR 1:		DETECTOR 2:		DETECTOR 3:		DETECTOR 4:	
AF 1-6	AL 1-6	AF 1-6	AL 1-6	AF 1-6	AL 1-6	AF 1-6	AL 1-6
0006 S-6	A.F.	N/A	N/A	N/A	N/A	N/A	N/A
0100 -2	A.F.	N/A	N/A	N/A	N/A	N/A	N/A
c/	A.F.	N/A	N/A	N/A	N/A	N/A	N/A
m	A.F.	N/A	N/A	N/A	N/A	N/A	N/A
1	A.F.	N/A	N/A	N/A	N/A	N/A	N/A
000 s	A.F.	N/A	N/A	N/A	N/A	N/A	N/A

REMARKS: Calibrated w/44-10 #PR151704.

Does Instrument Meet Final Acceptance Criteria?: (●) Yes ( ) No

Calibration Sticker Attached?: (●) Yes ( ) No

Date Instrument is Due For Next Calibration: 02/07/09

Performed/Reviewed by: Joanne Glenn Date: 2/7/2008 Entered by: ____ Initials

Calibrations performed to ANSI N323A-1997 standards.

GRIFFIN INSTRUMENTS

CALIBRATION CERTIFICATE FOR 44-10 PROBE # PR151704

Owner: IEM

DATE: 02/07/08 LOCATION: Griffin Inst
TECH: Joanne Glenn DATE LAST CAL EXPIRES: 03/22/08

○ Due For Calibration ○ Other (See Remarks) Cable Length: 39"
○ Repair (See Remarks) ◉ Due and Repair I.S.: 10 mV

NIST TRACEABLE EQUIPMENT AND STANDARDS USED DURING CALIBRATION

MODEL: 2241 SERIAL #: 143562 CAL. DUE: 02/07/09
MODEL: SERIAL #: CAL. DUE:

SOURCE #: Other ISOTOPE: ACTIVITY: ASSAY DATE:
SOURCE #: 99-1816 ISOTOPE: Cs137 ACTIVITY: 1.23 uCi ASSAY DATE: 08/12/99

GEOMETRY: Jig upside down with source underneath, activity side up.

Physical Condition: ◉ Sat ○ Unsat

Efficiency From Last Calibration: 5.7% Previous HV Set Point: 1000 V

Counts (CPM)	Background (CPM)	Net CPM:	Decay (yrs):	8.50
0	0	0	AF Efficiency:	0.00%

Is the AF efficiency within 20% of the efficiency from the last calibration? ○ Yes ◉ No

Reproducibility: 139650 140910 138420 Average: 139660.00

Are the individual counts within 10% of the average? ◉ Yes ○ No

High Voltage:	Source Response (CPM):	Background (CPM):	Net CPM:
750	112030	5020	107010
800	121860	7800	114060
850	130130	7880	122250
900	134570	8340	126230
950	139070	8620	130450
1000	141900	8610	133290
1050	138930	9260	129670

HV	RESPONSE	BACKGROUND	NET CPM	Decay (yrs):	8.50
1000 V	139650	8770	130880	Efficiency:	5.83%

REMARKS: Replaced broken PM Tube. Calibrated w/2241 #143562.

Does Instrument Meet Final Acceptance Criteria?: ◉ Yes ○ No

Calibration Sticker Attached?: ◉ Yes ○ No

Date Instrument is Due For Next Calibration: 02/07/09

Performed/Reviewed by: Joanne Glenn Date: 2/7/2008 Entered by: _____ Initials

Calibrations performed to ANSI N323A-1997 standards

GRIFFIN INSTRUMENTS
Calibration Certificate

Serial #	182648	Model	19	Owner	IEM
Probe #	N/A	Model	N/A	PO #	IEM
Source Used	10250	Model	28-6A	Cert Date	6/25/04
Pulser Serial	114512	Model	500	Cal Due	12/11/07
Temperature	71.6 F	Pressure	30.06"	Humidity	57%

Batteries: Sat (√) Unsat ( ) Desiccant: Sat ( ) Unsat ( ) N/A (√)

Saturation: Sat (√) Unsat ( ) Geotropism: Sat (√) Unsat ( )

Mechanical Zero: As Found: 0 As Left: 0 HV = A.F.=800V A.L.=800V

Scale	Units		As Found	As Left
5000	mR/hr	4.0	3.5	3.75
5000	mR/hr	2.5	2.3	2.5
5000	mR/hr	1.0	1.0	1.1
500	uR/hr	400*	360	395
500	uR/hr	250*	230	250
500	uR/hr	100*	90	100
250	uR/hr	200*	185	200
250	uR/hr	125*	115	125
250	uR/hr	50*	45	50
50	uR/hr	40*	36	39.5
50	uR/hr	25*	23	25
50	uR/hr	10*	9	10
25	uR/hr	20*	18.5	20
25	uR/hr	12.5*	12	12.5
25	uR/hr	5*	4.5	5

*Pulsed

Are As Left readings w/in 10% of the Set Point? Yes No

Remarks: 142 cpm/uR/hr.

Performed/Reviewed By: Jesse Dean Date: 7/12/07.

Calibration Due Date: 7/12/08.

GRIFFIN INSTRUMENTS

CALIBRATION CERTIFICATE FOR 12 NS SERIAL# 121268

Owner: IEM

DATE: 02/07/08 LOCATION: Griffin Inst

TECH: Joanne Glenn DATE LAST CAL EXPIRES: 04/05/08

Reason For Calibration: ○ Due For Calibration ○ Repair (See Remarks) ○ Other (See Remarks) ◉ Due and Repair (See Remarks)

NIST TRACEABLE EQUIPMENT USED DURING CALIBRATION

MODEL: M-500 SERIAL #: 114512 CAL. DUE: 12/20/08

MODEL: SERIAL #: CAL DUE:

☑ Fast/Slow Switch working properly ☑ Audio Response ☑ Geotropism CABLE LENGTH 39"

CONDITION: Sat AF MECHANICAL ZERO: 0 AL MECHANICAL ZERO: 0

NEW BATTERIES: ○ Yes ◉ No BATTERY CHECK: Sat

HV RANGE 400 - 1500 VOLTS ◉ N/A ○ Sat ○ Unsat

HV		AS FOUND HV	AS LEFT HV
500 V:		500	A.F.
1250 V:	1000 V for 177s	1250	A.F.
2000 V:	1500 V for 177s	1950	A.F.

AF INPUT SENSITIVITY (mV): 33 AL INPUT SENSITIVITY (mV) : 35

RATE METER							SCALER			
SCALE	RATE CPM	AS FOUND	% ERROR	AS LEFT	% ERROR		AS FOUND	% ERROR	AS LEFT	% ERROR
x.1 or x1	100	100	0.0%	A.F.						
	250	250	0.0%	A.F.						
	400	400	0.0%	A.F.						
x1 or x10	1000	1000	0.0%	A.F.						
	2500	2500	0.0%	A.F.						
	4000	4000	0.0%	A.F.						
x10 or x100	10K	10 K	0.0%	A.F.						
	25K	25 K	0.0%	A.F.						
	40K	40 K	0.0%	A.F.						
x100 or x1000	100K	100 K	0.0%	A.F.						
	250K	250 K	0.0%	A.F.						
	400K	400 K	0.0%	A.F.						

Is the As Found Data Within 20% of the Set Point?: ◉ Yes ○ No

REMARKS: Replaced broken reset switch. Married w/44-9 #PR131864.

Does Instrument Meet Final Acceptance Criteria?: ◉ Yes ○ No

Calibration Sticker Attached?: ◉ Yes ○ No

Date Instrument is Due For Next Calibration: 02/07/09

Performed/Reviewed by: Joanne Glenn Date: 2/7/2008 Entered by: ____ Initials

Calibrations performed to ANSI N323A-1997 standards.

GRIFFIN INSTRUMENTS

CALIBRATION CERTIFICATE FOR 44-9 PROBE # PR131864

Owner: IEM

DATE:	02/07/08	LOCATION:	Griffin Inst
TECH:	Joanne Glenn	DATE LAST CAL EXPIRES:	04/05/08

REASON FOR CALIBRATION:

(●) Due For Calibration ( ) Repair (See Remarks) ( ) Other (See Remarks) ( ) Due and Repair

CABLE LENGTH: 39" INPUT SENSITIVITY: 35 mV

NIST TRACEABLE EQUIPMENT USED DURING CALIBRATION

MODEL:	12	SERIAL #:	178479	CAL. DUE:	12/31/08
MODEL:		SERIAL #:		CAL. DUE:	

NIST TRACEABLE SOURCES

SOURCE #:	99TC470-1814	SOURCE #:	
ISOTOPE:	Tc99	ISOTOPE:	
ACTIVITY (dpm):	37300	ACTIVITY:	
ASSAY DATE:	08/03/99	ASSAY DATE:	

PHYSICAL CONDITION: Sat EFF. FROM LAST CAL.: 13.05% AF BKG: 67 HV 900V

3 ONE MINUTE COUNTS: 4319 4251 4227 AVERAGE: 4265.7

TC-99 EFFICIENCY: 11.26% *18.02%* SR-90 COUNT: SR-90 EFF:

AS LEFT ONE MINUTE COUNTS: AVERAGE:

TC-99 EFFICIENCY: SR-90 COUNT: SR-90 EFF:

Is the as found efficiency within 20% of eff. from last cal.?	(●) Yes	( ) No *See Remarks
Saturation Test Satisfactory	(●) Yes	( ) No
Reproducibility: Are the individual counts within 10% of the average?	(●) Yes	( ) No
Does the probe meet final acceptance criteria?	(●) Yes	( ) No
Calibration sticker attached?	(●) Yes	( ) No

Remarks: Married w/12 #121268.

DATE PROBE IS DUE FOR NEXT CALIBRATION: 02/07/09

Performed/Reviewed by: Joanne Glenn Date: 2/7/2008 Entered by: _____ Initials

Geometry: Flat surface unless otherwise noted. 2 pi efficiencies italicized.

Calibrations performed to ANSI N323A-1997 standards

ATTACHMENT E
Survey Records

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

RADIOLOGICAL SURVEY FORM

Survey Number Storage Yard Access/ Exit

Page 1 of 1

Instrument/SN:	Calibration Due:	Site Name: SMC Lowfield	Date: 6/16-6/20/08 Time:
Instrument/SN	Calibration Due:	Location: SMC Storage Yard	
Instrument/SN	Calibration Due:	Purpose: Daily Exit from area, Survey of vehicles/equipment.	
Survey Performed By (Print): R. Alan Duff		Survey Performed By (Signature):	
☒ Battery OK ☒ HV OK ☒ Source Check OK		Grid Dimensions: N/A x ☐ meters ☐ feet ☐ inches ☐ centimeters	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2	6/16/08 - Performed direct frisk of vehicle tires, sampling																									
3	equipment used, personnel hands + feet upon																									
4	exit at the end of the work day, no counts > bkgd. noted.																									
5	6/17/08 - Performed direct frisk of vehicle tires, used sampling																									
6	equipment, personnel hands + feet upon exit of the																									
7	storage yard at lunch and at end of the work day,																									
8	no counts > bkgd. noted.																									
9	6/18/08 - Performed direct frisk of vehicle tires, used sampling																									
10	equipment, personnel hands + feet upon exit of the																									
11	storage yard at lunch & at end of the work day, no counts																									
12	> bkgd. noted.																									
13	6/19/08 - Performed direct frisk of vehicle tires, used sampling																									
14	equipment, personnel hands + feet upon exit of the Storage																									
15	yard at lunch + at the end of the work day, no counts																									
16	> bkgd. noted.																									
17	6/20/08 - Performed direct frisk of vehicle tires, used sampling																									
18	equipment, personnel hands + feet upon exit of the																									
19	storage yard, no counts > bkgd. noted.																									
20																										
21																										
22																										
23																										
24																										
25																										

Notes:

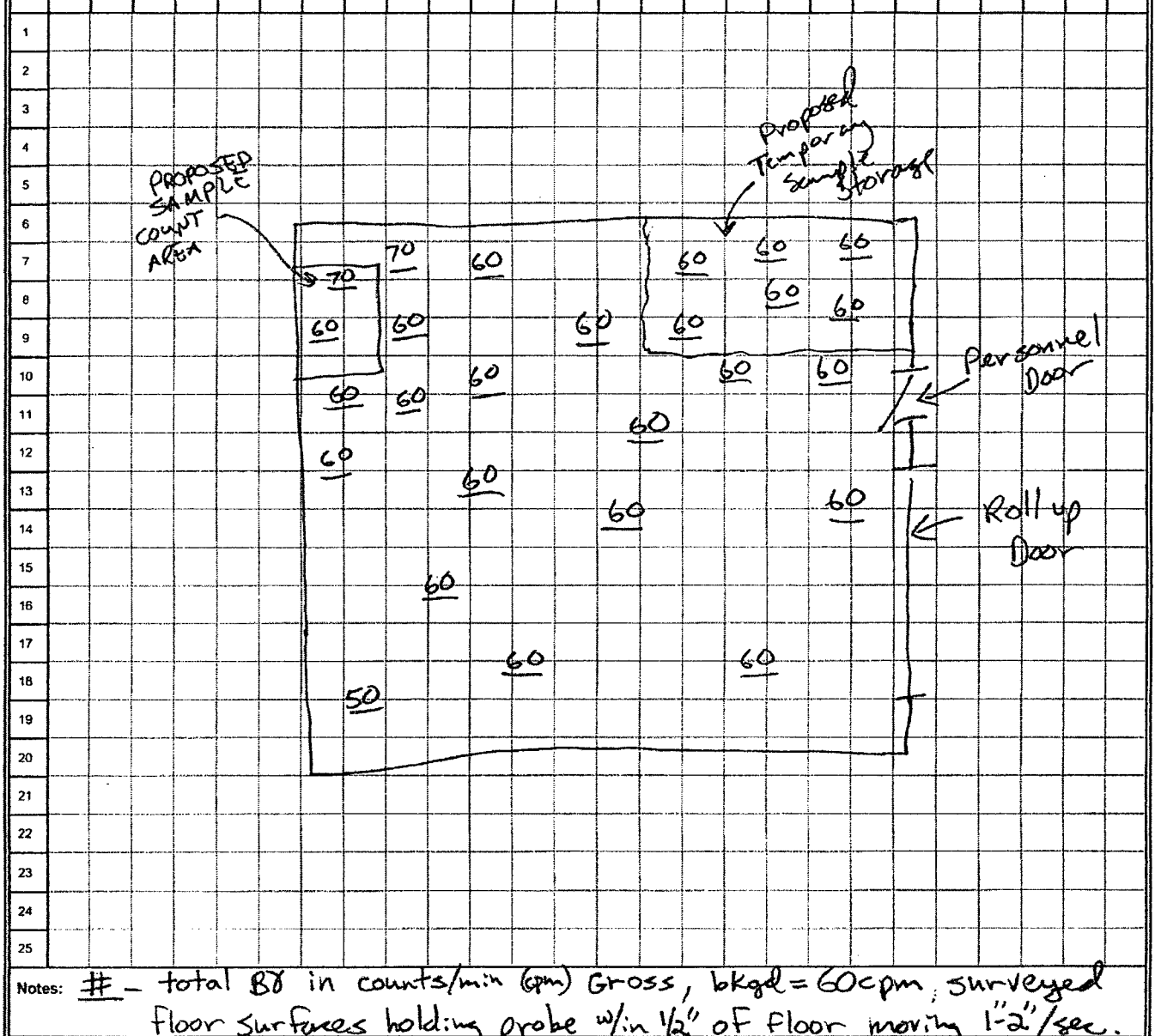
INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

RADIOLOGICAL SURVEY FORM

Survey Number D117/The Cave-Pre

Page 1 of 1

Instrument/SN:	Calibration Due:	Site Name: SMC Newfield	Date: 6/19/08	Time: 1200
Instrument/SN	Calibration Due:	Location: D117/The Cave		
Instrument/SN Ludlum Model 12/ #4-9 121268/131864	Calibration Due: 2/7/09	Purpose: Pre-work survey		
Survey Performed By (Print): R. Alan Duff		Survey Performed By (Signature): [signature]		
☒ Battery OK ☒ HV OK ☒ Source Check OK		Grid Dimensions: N/A x ☐ meters ☐ feet ☐ inches ☐ centimeters		



Notes: # - total βγ in counts/min (cpm) Gross, bkgd = 60cpm; surveyed floor surfaces holding probe w/in 1/2" of floor moving 1"-2"/sec. Covered areas where samples will be handled with plastic sheeting.

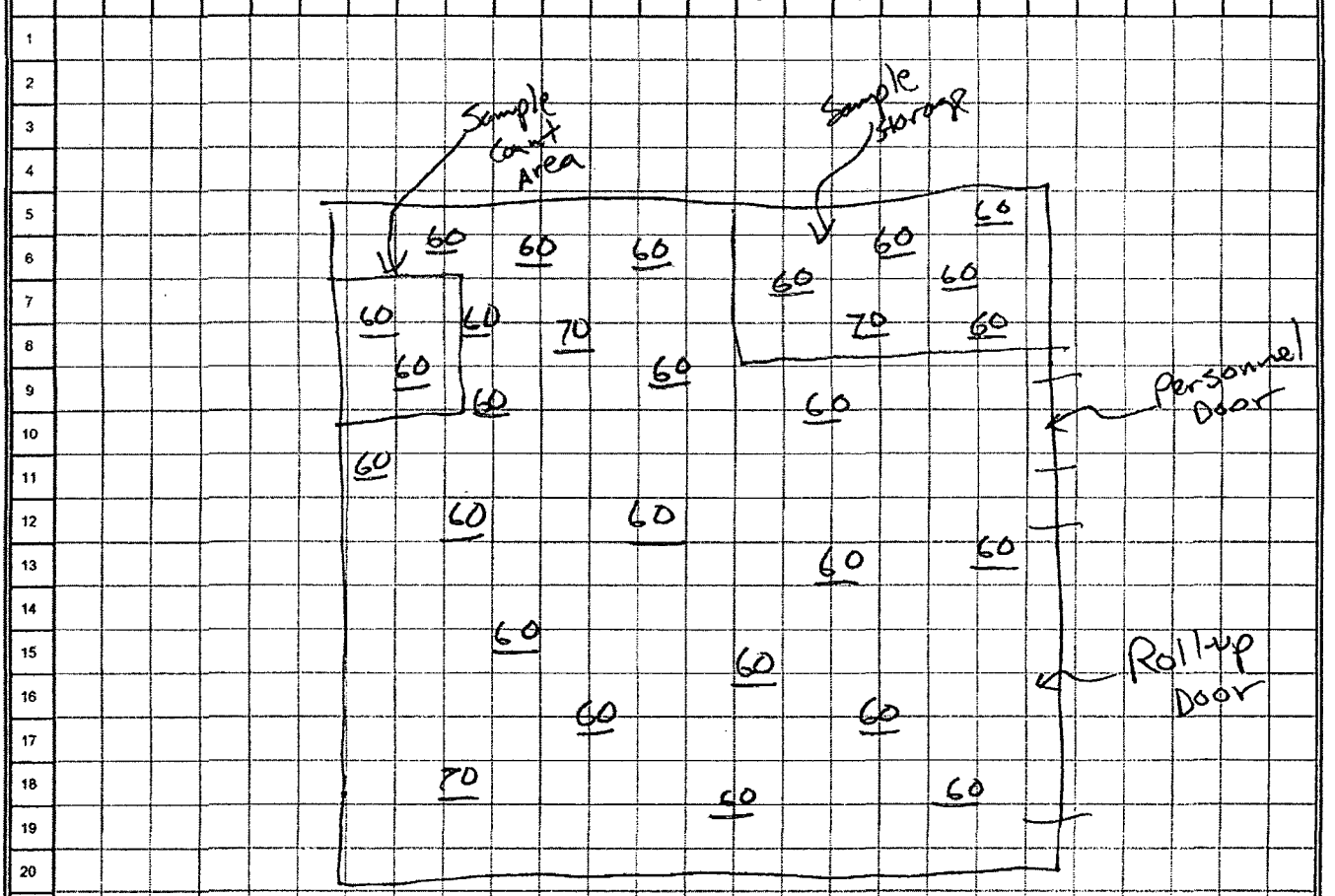
INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

RADIOLOGICAL SURVEY FORM

Survey Number D117/The Cave-Post

Page 1 of 1

Instrument/SN:	Calibration Due:	Site Name: SMC Newfield / Date: 6/20/09 / Time: 1830
Instrument/SN	Calibration Due:	Location: D117/The Cave
Instrument/SN Indian Model 12/44-9 121268/131864	Calibration Due: 2/7/09	Purpose: Post-Work Survey
Survey Performed By (Print): R. Alan Duff		Survey Performed By (Signature): [signature]
☒ Battery OK ☒ HV OK ☒ Source Check OK		Grid Dimensions: N/A ☐ meters ☐ feet ☐ inches ☐ centimeters



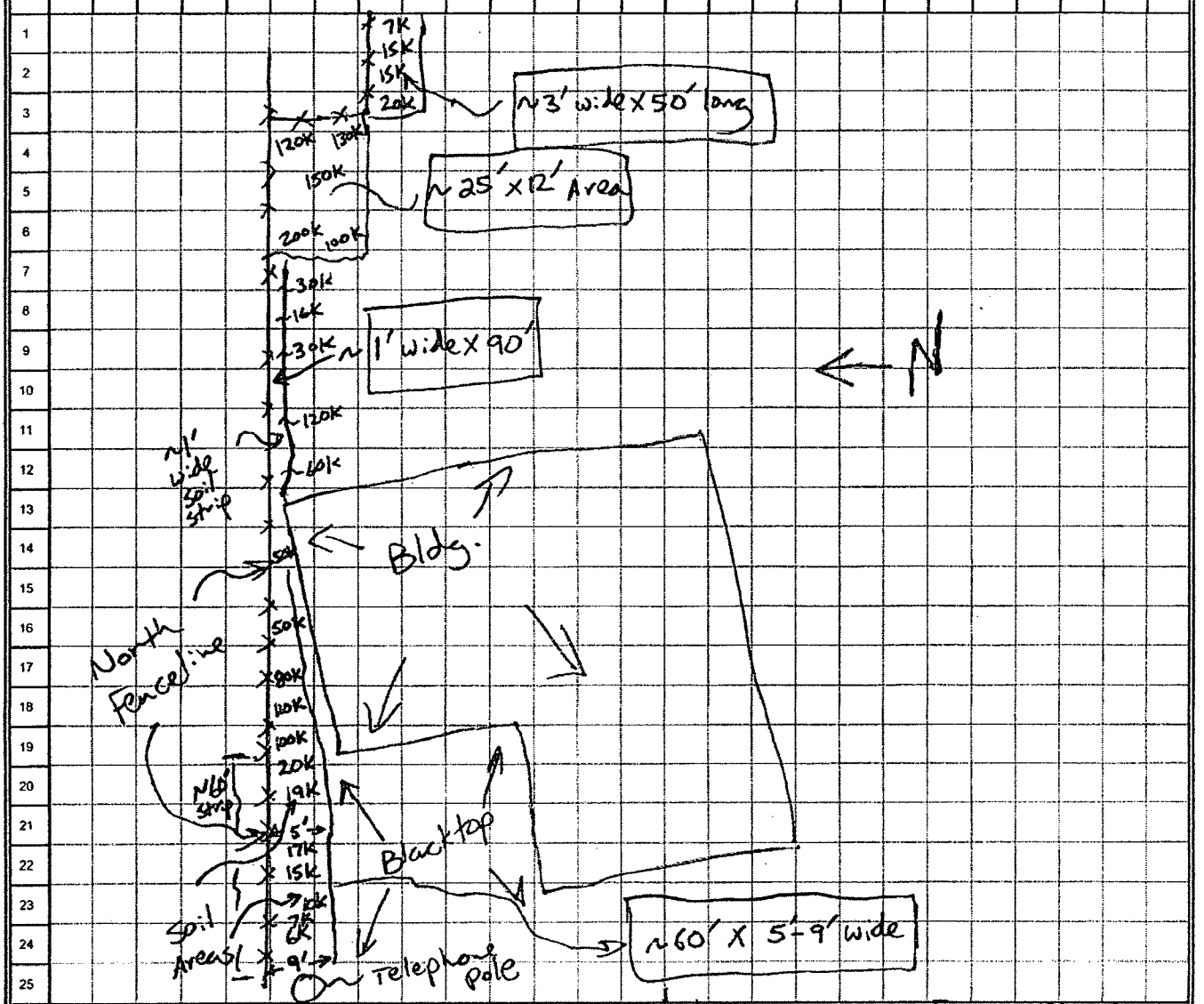
Notes: # - total BR in counts/min (cpm) Gross, bkgd. = 60 cpm, surveyed released & disposed of plastic sheeting, surveyed floor surfaces, scanned with probe w/in 1/2" of floor surface moving 1"-2"/sec.

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

RADIOLOGICAL SURVEY FORM

Survey Number 062008-01 Page 1 of 1

Instrument/SN:	Calibration Due:	Site Name: SMC Newfield Date: 6/10/08 Time: 1600
Instrument/SN	Calibration Due:	Location: North Fenceline/Cerium Oxide Area
Instrument/SN Ludlum 2241/47-10 # 151704/143562	Calibration Due: 2/7/09	Purpose: Verify radiation levels
Survey Performed By (Print): R. Alan Duff		Survey Performed By (Signature):
☒ Battery OK ☒ HV OK ☒ Source Check OK		Grid Dimensions: N/A ☐ meters ☐ feet ☐ inches ☐ centimeters



Notes: Conducted walkover gamma survey to determine area of ~~area~~ soil impacted by cerium oxide production inside fence area. Walked over soil areas w/probe w/in 1" of soil surface at a rate of 1'-2'/sec.

ATTACHMENT F
Field Screening Records

ATTACHMENT 8.1
SCREENING LOG

Counted on 6/19/08
BKgd = 11,431 counts/2 min

Sample No.	Collection Date	Collection Location	Sample Description	Measured Exposure Rate ~~(cpm)~~ counts/2 minutes	Analytical Result (pCi/g) Ac-228	Bi-214	Th-234
1A	6/17/08 1500	See TRC Data	Green Slag	10,402			
1B	6/17/08 1510		Dark Brown Slag	9662			
1C	6/17/08 1515		Light Gray Slag	18,971			
2A	6/17/08 1440		Greenish Soil & Slag	25,840			
2B	6/17/08 1445		Sandy Soil	11,220			
3-120	6/17/08 1515		Crushed CANAL Slag	732,562			
3-121	6/17/08 1505			837,985			
3-122	6/17/08 1510			868,712			
4A	6/18/08 1610		Gray Slag (Russian)	19,664			
4B	1700		Slag	12,750			
4C	0815		Slag	589,891			
4-69	0745			492,515			
4-70	0750			899,117			
4-71	0755			748,625			
4-72	0800			558,976			
4-73	0805			789,288			
4-74	0810			814,330			
4-75	0820			589,315			
4-76	0825			528,116			
4-77	0840			440,139			
4-78	0845			662,535			
4-79	0850			548,309			
4-80	0855			547,608			
4-81	0905			691,127			
4-82	0925			795,285			
4-83	0930			672,919			
4-84	0900			466,640			
4-85	6/18/08 0910		Slag	829,315			

ATTACHMENT 8.1
SCREENING LOG

Counted on 6/20/08,
Bkgd. = 11,269 counts/2min

Sample No.	Collection Date	Collection Location	Sample Description	Measured Exposure Rate ~~(cpm)~~ counts/2 minutes	Analytical Result (pCi/g) Ac-228	Bi-214	Th-234
5A	6/17/08 1045	See TRC Data	Brown/Green Soil 10% Rocks	123,267			
5B	1050		Refractory Brick	18,972			
5C	1100		Soil/50% Rock	22,159			
5D	1110		Soil/50% River pebbles	12,956			
5E	1124		50% Soil/50% Slag	277,858			
5F	1132		Refractory Brick	11,719			
5G	1140		Slag/Purple Color	12,511			
5H	1201		Black Slag	167,572			
5I	1215		Slag	235,898			
5J	6/17/08 1220		Black Soil	12,898			
5K	6/18/08 1155		White, limestone (damp)	11,447			
6A	0920		Green + Pitted Slag	96,766			
6B	0955		outer crust of rock	17,678			
6C	1120		Silver, metallic Slag	440,267			
6D	6/18/08 1135		White/yellow refractory brick	13,003			
6-86	6/17/08 1540		Slag	114,582			
6-87	1547			257,438			
6-88	1605			1,073,907			
6-89	1700			385,696			
6-90	1705			510,794			
6-91	1710			575,420			
6-92	1617			732,875			
6-93	1715			680,894			
6-94	1623			627,272			
6-95	1625			700,643			
6-96	1630			816,581			
6-97	1632			810,979			
6-98	1635			223,110			
6-99	1637			514,840			
6-100	1720			195,337			
6-101	1641			230,395			
6-102	6/17/08 1644		Slag	520,886			

ATTACHMENT 8.1
SCREENING LOG

Counted on 6/20/08
Bkgd = 11,269 counts/2min

Sample No.	Collection Date	Collection Location	Sample Description	Measured Exposure Rate ~~(cpm)~~ counts/2minutes	Analytical Result (pCi/g) Ac-228	Bi-214	Th-234
7A	6/17/08 0803	See TRC Data	Fine Slag	25,189			
7B	0810		Slag	12,182			
7C	0818		Slag	16,933			
7D	0827		Slag	851,863			
7E	0840		Soil/Rock	34,976			
7F	0845		Yellowish Concrete	11,605			
7G	0848		Black Slag	168,841			
7H	0905		Fine Black Material	12,679			
7I	0907		Metallic Slag	10,766			
7J	0915		Concrete	12,019			
7K	0928		Soil	34,068			
7L	6/17/08 0930		Slag	21,694			
8A	6/18/08 1345		Baghouse/Gunnite	14,158			
8-103	6/17/08 1155		Baghouse Dust	29,730			
8-104	1130			33,702			
8-105	1120			45,405			
8-106	1200			26,912			
8-109	1210			59,924			
8-110	1225			51,485			
8-112	1215			47,250			
8-113	1230			56,518			
8-114	1410			40,926			
8-115	1415			31,206			
8-116	1430			34,392			
8-117	1435			77,200			
8-118	1145			26,309			
8-119	6/17/08 1150			20,493			
9A	6/18/08 1425		Slag (obsidian)	66,620			
9B	6/18/08 1500		Black Slag	175,853			
9-123	6/17/08 1725		Slag	148,635			
9-124	1730		Slag	228,927			
9-125	1735		Baghouse Dust	39,859			
9-126	6/17/08 1740		Baghouse Dust	60,299			

ATTACHMENT G
Chain of Custody Forms

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference No 94005.2901

(1) Client Name SMC - Newfield	(7) Samples Shipment Date	(5) Bill to: IEM Attn: Carol Berger
(2) Collected By: R. Alan Duff	(8) Lab Destination Outreach - Broken Arrow	8 Brookes Ave., Ste. 205
(3) Job/Task No: 94005.2901	(9) Lab Contact Ron Eidson	Gaithersburg, MD 20877
(4) Project Manager: Carol Berger	(12) IEM Technical Contact/Phone Carol Berger (240) 632-8990	(10) Report to: SAME
(6) Purchase Order No.	(13) Carrier/Waybill No.	As
(11) Required Report Date		ABOVE

ONE CONTAINER PER LINE

(14) Sample Number	(15) Sample Description/Type	(16) Date/Time Collected	(17) Container Type	(18) Sample Volume	(19) Preservative	(20) Requested Testing Program
1C			Ziploc Bag	~1Kg	None	
2A						
3-120						
3-121						
3-122						
4A						
4B						
~~5A~~ 4C						
5A						

(23) Special Instructions Potential Uranium &/or Thorium Contamination

(24) Possible Hazard Identification
Non-hazard ☒ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

(25) Sample Disposal
Return to Client ☐ Disposal by Lab ☐ Archive _____ months

(26) Turnaround Time Required: Normal ☐ Rush ☐

(27) QC Level: I ☐ II ☐ III ☐ Project Specific _____

(28) Relinquished by: (signature, date, time): [signature] 6/20/08 1800	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)

(See Reverse for Instructions)

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference No 94005.2901

(1) Client Name SMC-Newfield	(7) Samples Shipment Date	(5) Bill to: IEM, Attn: Carol Berger
(2) Collected By: R. Alan DuFF	(8) Lab Destination Outreach-Broken Arrow	8 Brookes Ave., Ste. 205
(3) Job/Task No: 94005.2901	(9) Lab Contact Ron Eidson	Gaithersburg, MD 20877
(4) Project Manager: Carol Berger	(12) IEM Technical Contact/Phone Carol Berger (240) 631-8990	(10) Report to: SAME
(6) Purchase Order No.	(13) Carrier/Waybill No.	As
(11) Required Report Date		ABOVE

ONE CONTAINER PER LINE

(14) Sample Number	(15) Sample Description/Type	(16) Date/Time Collected	(17) Container Type	(18) Sample Volume	(19) Preservative	(20) Requested Testing Program
5B			Ziploc Bag	~1 Kg	None	
5C						
5E						
5H						
5I						
6A						
6C						
4-78						
4-79						

(23) Special Instructions Potential Uranium &/or Thorium Contamination

(24) Possible Hazard Identification
Non-hazard ☒ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

(25) Sample Disposal
Return to Client ☐ Disposal by Lab ☐ Archive _____ months

(26) Turnaround Time Required: Normal ☐ Rush ☐

(27) QC Level: I ☐ II ☐ III ☐ Project Specific _____

(28) Relinquished by: (signature, date, time): [signature] 6/20/08 1800	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)

(See Reverse for Instructions)

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference No 94005.2901

(1) Client Name SMC-New Field	(7) Samples Shipment Date	(5) Bill to: IEM, Attn: Carol Berger
(2) Collected By: R. Alan Duff	(8) Lab Destination Outreach - Broken Arrow	8 Brookes Ave., Ste. 205
(3) Job/Task No: 94005.2901	(9) Lab Contact Ron Eidson	Gaithersburg, MD 20877
(4) Project Manager: Carol Berger	(12) IEM Technical Contact/Phone Carol Berger (240) 631-8990	(10) Report to: SAME AS ABOVE
(6) Purchase Order No.	(13) Carrier/Waybill No.	
(11) Required Report Date		

ONE CONTAINER PER LINE

(14) Sample Number	(15) Sample Description/Type	(16) Date/Time Collected	(17) Container Type	(18) Sample Volume	(19) Preservative	(20) Requested Testing Program
6-86			Ziploc Bag	~1 Kg	None	
6-87						
6-88						
6-89						
6-90						
6-91						
6-92						
6-93						
6-94						

(23) Special Instructions Potential Uranium &/or Thorium Contamination

(24) Possible Hazard Identification
Non-hazard ☒ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

(25) Sample Disposal
Return to Client ☐ Disposal by Lab ☐ Archive _____ months

(26) Turnaround Time Required: Normal ☐ Rush ☐

(27) QC Level: I ☐ II ☐ III ☐ Project Specific _____

(28) Relinquished by: (signature, date, time): [signature] 6/20/08 1800	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)

(See Reverse for Instructions)

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference No 94005.2901

(1) Client Name	(7) Samples Shipment Date	(5) Bill to:
(2)Collected By: SEE	(8) Lab Destination SEE PG. 1 of 3	SEE PG. 1 of 3
(3) Job/Task No:	(9) Lab Contact	
(4) Project Manager: PG. 1 of 3	(12) IEM Technical Contact/Phone	(10) Report to:
(6) Purchase Order No.	(13) Carrier/Waybill No.	
(11) Required Report Date		

ONE CONTAINER PER LINE

(14) Sample Number	(15) Sample Description/Type	(16) Date/Time Collected	(17) Container Type	(18) Sample Volume	(19) Preservative	(20) Requested Testing Program
6-95						
6-96						
6-97						
6-98						
6-99						
6-100						
6-101						
6-102						
4-80						

(23) Special Instructions Potential U+Th contamination

(24) Possible Hazard Identification
Non-hazard ☒ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

(25) Sample Disposal
Return to Client ☐ Disposal by Lab ☐ Archive _____ months

(26) Turnaround Time Required: Normal ☐ Rush ☐

(27) QC Level: I ☐ II ☐ III ☐ Project Specific _____

(28) Relinquished by: (signature, date, time): [signature] 6/20/08 1800	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)

(See Reverse for Instructions)

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference No 94005.290

(1) Client Name	(7) Samples Shipment Date	(5) Bill to: SEE PG. 1 of 3
(2)Collected By: SEE PG. 1 of 3	(8) Lab Destination	
(3) Job/Task No:	(9) Lab Contact	
(4) Project Manager:	(12) IEM Technical Contact/Phone	(10) Report to:
(6) Purchase Order No.	(13) Carrier/Waybill No.	
(11) Required Report Date		

ONE CONTAINER PER LINE

(14) Sample Number	(15) Sample Description/Type	(16) Date/Time Collected	(17) Container Type	(18) Sample Volume	(19) Preservative	(20) Requested Testing Program
4-81			Ziplock Bag	~1Kg	None	
4-82			↓	↓	↓	
4-83						
4-84						
4-85						

(23) Special Instructions: Potential Nat Th Contamination

(24) Possible Hazard Identification
Non-hazard ☒ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

(25) Sample Disposal
Return to Client ☐ Disposal by Lab ☐ Archive _____ months

(26) Turnaround Time Required: Normal ☐ Rush ☐

(27) QC Level: I ☐ II ☐ III ☐ Project Specific _____

(28) Relinquished by: (signature, date, time): [signature] 6/20/98 1800	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)

(See Reverse for Instructions)

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference No 94005.2901

(1) Client Name SMC-Newfield	(7) Samples Shipment Date	(5) Bill to: IEM - Attn: Carol Burger
(2) Collected By: R. Alan Duff	(8) Lab Destination Outreach	8 Brookes Ave. Ste. 205
(3) Job/Task No: 94005.2901	(9) Lab Contact Ron Eidson	Gaithersburg, MD 20877
(4) Project Manager: Carol Burger	(12) IEM Technical Contact/Phone Carol Burger (240) 631-8990	(10) Report to: SAME
(6) Purchase Order No.	(13) Carrier/Waybill No.	As
(11) Required Report Date		ABOVE

ONE CONTAINER PER LINE

(14) Sample Number	(15) Sample Description/Type	(16) Date/Time Collected	(17) Container Type	(18) Sample Volume	(19) Preservative	(20) Requested Testing Program
7A			Ziploc Bag	1 kg	None	
7D						
7E						
7G						
7K						
7L						
8-103						
8-104						
8-105						

(23) Special Instructions Potential uTh contamination

(24) Possible Hazard Identification
Non-hazard ☒ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

(25) Sample Disposal
Return to Client ☐ Disposal by Lab ☐ Archive _____ months

(26) Turnaround Time Required: Normal ☐ Rush ☐

(27) QC Level: I ☐ II ☐ III ☐ Project Specific _____

(28) Relinquished by: (signature, date, time): [signature] 6/20/08 1800	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)

(See Reverse for Instructions)

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference No 9400S.2901

(1) Client Name	(7) Samples Shipment Date SEE	(5) Bill to: SEE
(2)Collected By: SEE	(8) Lab Destination	
(3) Job/Task No: PG.	(9) Lab Contact PG.	PG.
(4) Project Manager:	(12) IEM Technical Contact/Phone	(10) Report to:
(6) Purchase Order No. 1 of 2	(13) Carrier/Waybill No. 1 of 2	1 of 2
(11) Required Report Date		

ONE CONTAINER PER LINE

(14) Sample Number	(15) Sample Description/Type	(16) Date/Time Collected	(17) Container Type	(18) Sample Volume	(19) Preservative	(20) Requested Testing Program
8-106			Ziploc Bag	~1 kg	None	
8-109						
8-110						
8-112						
8-113						
8-114						
8-115						
8-116						

(23) Special Instructions Potential U & Th Contamination

(24) Possible Hazard Identification
Non-hazard ☒ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

(25) Sample Disposal
Return to Client ☐ Disposal by Lab ☐ Archive _____ months

(26) Turnaround Time Required: Normal ☐ Rush ☐

(27) QC Level: I ☐ II ☐ III ☐ Project Specific _____

(28) Relinquished by: (signature, date, time): [signature] 6/20/08 1800	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)

(See Reverse for Instructions)

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference No 94005.290

(1) Client Name: SMC-Newfield	(7) Samples Shipment Date	(5) Bill to: IEM. Attn: Carol Berger
(2) Collected By: R. Alan Duff	(8) Lab Destination: Outreach-Broken Arrow	8 Brooke Ave. Ste. 205
(3) Job/Task No: 94005.2901	(9) Lab Contact	Gaithersburg, MD 20877
(4) Project Manager: Carol Berger	(12) IEM Technical Contact/Phone	(10) Report to: SAME AS ABOVE
(6) Purchase Order No.	(13) Carrier/Waybill No.	
(11) Required Report Date		

ONE CONTAINER PER LINE

(14) Sample Number	(15) Sample Description/Type	(16) Date/Time Collected	(17) Container Type	(18) Sample Volume	(19) Preservative	(20) Requested Testing Program
8-117			Ziploc Bag	~1 Kg	None	
8-118						
8-119						
9B						
9-123						
9-124						
9-125						
9-126						
9-A						

(23) Special Instructions: Potential Ut Th Contamination

(24) Possible Hazard Identification: Non-hazard ☒ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

(25) Sample Disposal: Return to Client ☐ Disposal by Lab ☐ Archive _____ months

(26) Turnaround Time Required: Normal ☐ Rush ☐

(27) QC Level: I ☐ II ☐ III ☐ Project Specific _____

(28) Relinquished by: (signature, date, time): [signature] 6/20/08 1800 — Received by: (signature, date, time)

Relinquished by: (signature, date, time): — Received by: (signature, date, time)

Relinquished by: (signature, date, time): — Received by: (signature, date, time)

(See Reverse for Instructions)

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference No 94005.290

(1) Client Name	(7) Samples Shipment Date	(5) Bill to:
(2)Collected By: SEE	(8) Lab Destination SEE	SEE
(3) Job/Task No: Page	(9) Lab Contact Pg.	Pg.
(4) Project Manager:	(12) IEM Technical Contact/Phone	(10) Report to:
(6) Purchase Order No. 1 of 2	(13) Carrier/Waybill No. 1 of 2	1 of 2
(11) Required Report Date		

ONE CONTAINER PER LINE

(14) Sample Number	(15) Sample Description/Type	(16) Date/Time Collected	(17) Container Type	(18) Sample Volume	(19) Preservative	(20) Requested Testing Program
4-69			Ziplock Bag	N/Ky	None	
4-70						
4-71						
4-72						
4-73						
4-74						
4-75						
4-76						
4-77						

(23) Special Instructions Potential Ud Th Contamination

(24) Possible Hazard Identification
Non-hazard ☒ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

(25) Sample Disposal
Return to Client ☐ Disposal by Lab ☐ Archive _____ months

(26) Turnaround Time Required: Normal ☐ Rush ☐

(27) QC Level: I ☐ II ☐ III ☐ Project Specific _____

(28) Relinquished by: (signature, date, time): [signature] 9/20/08 1800	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)
Relinquished by: (signature, date, time):	Received by: (signature, date, time)

(See Reverse for Instructions)

APPENDIX D

LEACHABILITY TESTING RESULTS

APPENDIX D
Initial Leachability Testing Results

The leach potential of the various materials present in the Shieldalloy Metallurgical Corporation (SMC) Storage Yard in Newfield, New Jersey is being determined. Because of the physical parameters of the materials present in the Storage Yard and its contents (i.e., very large blocks) do not permit conventional determination of the distribution coefficients (Kd) is inappropriate. Therefore, modifications to the industry-standard Synthetic Precipitation Leaching Procedure, or SPLP, were proposed and approved for implementation by the U. S. Nuclear Regulatory Commission (USNRC).[1,2,3] Included in the modified protocol was a requirement for preliminary testing of selected material types in order to determine the optimum test duration and test sample particle size.

To that end, preliminary testing was performed on samples of slag (i.e., one each from Areas 3 and 6 and two from Area 4 of the Storage Yard) and baghouse dust (i.e., three samples from Area 8). The leach solutions for each particle size and leach duration, along with the corresponding reaction chamber post-test solids, were analyzed for the following radiochemicals:

- Uranium isotopes (U-238, U-235 and U-234)
- Thorium isotopes (Th-232, Th-228, Th-230)
- Radium isotopes (Ra-226 and Ra-228)
- Lead-210

In addition, each sample was analyzed for the following parameters:

- Total alkalinity
- Bicarbonate and carbonate alkalinity
- Conductivity

---

[1] Distribution coefficients, or Kds, can be determined from the SPLP results by simply dividing the concentration of the element in the reaction chamber post-test solid by the concentration in the leach solution, then applying the appropriate conversion factors such that the results are displayed in units of milliliters per gram.

[2] U.S. EPA, 1990. Method 1312: Synthetic Precipitation Leaching Procedure, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods (SW846), Vol. IC, 3rd Ed.

[3] Shieldalloy Metallurgical Corporation, "Proposal to Utilize a Modified EPA Method 1312 for Kd Determination for Shieldalloy Metallurgical Corporation Storage Yard Materials", September 4, 2008.

- Eh
- pH

Finally, each sample was analyzed for the presence of following metals:

- Aluminum
- Calcium
- Magnesium
- Silicon

The preliminary testing was comprised of 19 separate analytical procedures performed on each of six (6) solid samples, and the same 19 procedures performed on 55 liquid fractions. Attached are the Certificates of Analysis from the off-site analytical laboratory that performed the work, as well as a tabular listing of results. The following subsections present the findings in regard to the various topical areas, along with recommendations for the testing of additional samples of Storage Yard materials for leachability.

Elements of Interest

From the attached table of results, it is clear that the test procedures applied to the various sample types induced leaching of radium isotopes only from the slag samples in concentrations that were significant relative to the solid concentrations. All other radionuclides are tightly bound within the solid matrix. Thus the associated Kds for all leach durations and all particle sizes would be exceedingly high. Therefore, subsequent testing of leachability need be for isotopic radium only, with the inclusion of calcium, aluminum and conductivity analyses in order to facilitate equilibrium determination.

Exclusion of Baghouse Dust

The attached table also demonstrates that radionuclides did not leach from the baghouse dust (Area 8 materials) during the preliminary testing in concentrations of significance relative to the concentrations in the solids. Kds determined from the resulting data would range from hundreds to thousands of milliliters per gram. That information, coupled with the relatively low radionuclide concentration in baghouse dust as compared to other materials in the Storage Yard (i.e., slag) results in little or no radiation dose potential; thus testing of additional samples of baghouse dust is not warranted.

Particle Size Dependence

The leachability data shown in the attached table were plotted with respect to the size of the particles used for the testing in order to determine whether there is a relationship between these two parameters. For all isotopes, there is a general trend towards lower leach potential with increasing particle size. However, as shown in Figure D-1, which presents data for one of the slag samples

from Area 4 after a leach duration of seven (7) days, the concentration differences of radioactivity in the leach fluids for the isotopes shown are too small to provide statistical significance for the particle size/leachability relationship:[4]

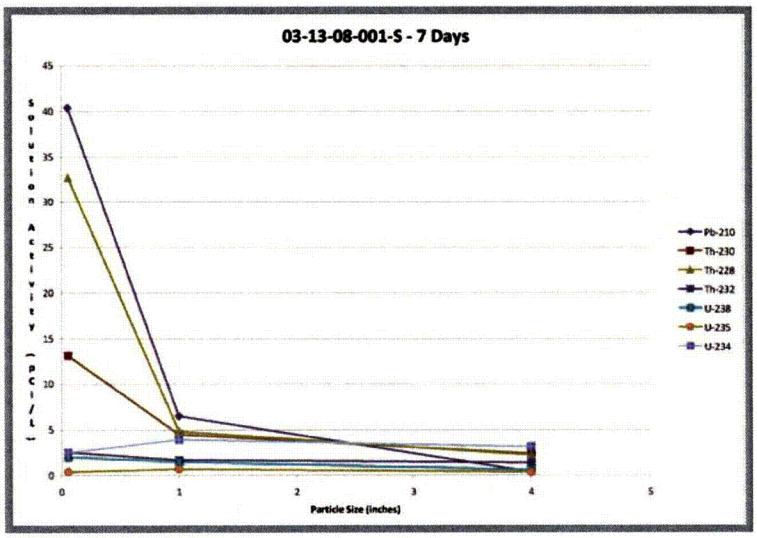


Figure D-1

For the radium isotopes on the other hand, have leach solution concentrations that are significant with respect to the concentration in the solids. Figures D-2, D-3 and D-4 show results for slag samples from Areas 4 and 6, which clearly demonstrate that the leachability decreases as the particle size increases:[5]

---

[4] Similar trends are evident for leach durations of 1, 3 and 14 days.

[5] The baghouse dust samples were downsized to 12-mesh as required by the SPLP procedure. No large particle sizes are available in this material.

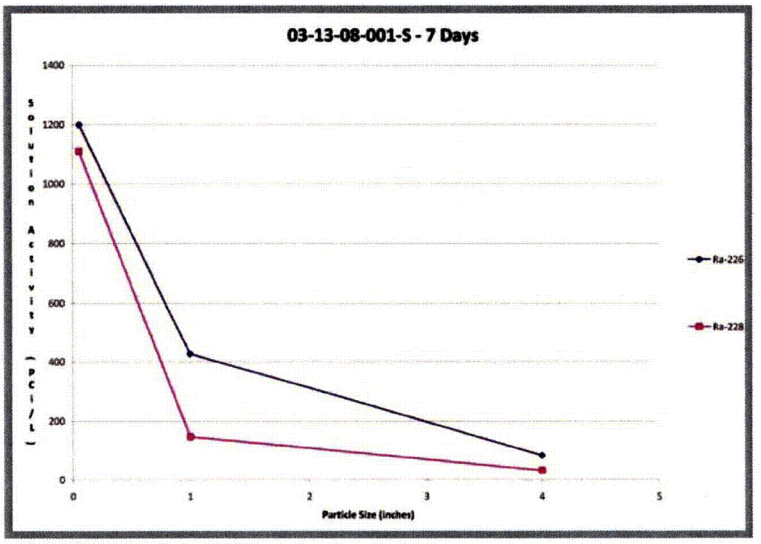


Figure D-2

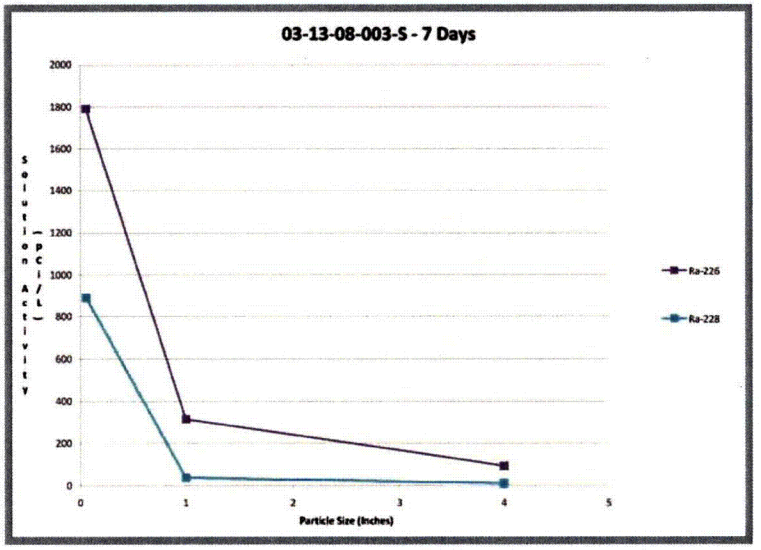


Figure D-3

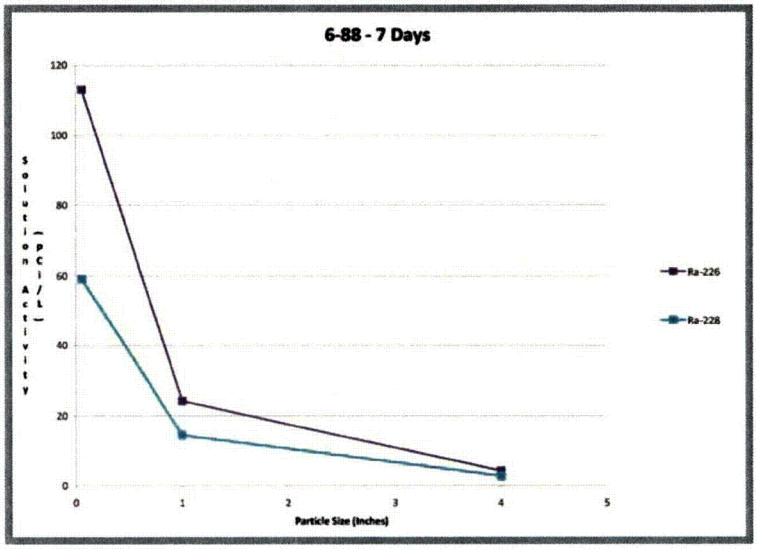


Figure D-4

The same relationship between leached radium concentration and particle size can be seen for the slag sample collected from Area 3, as shown in Figure D-5, below:[6]

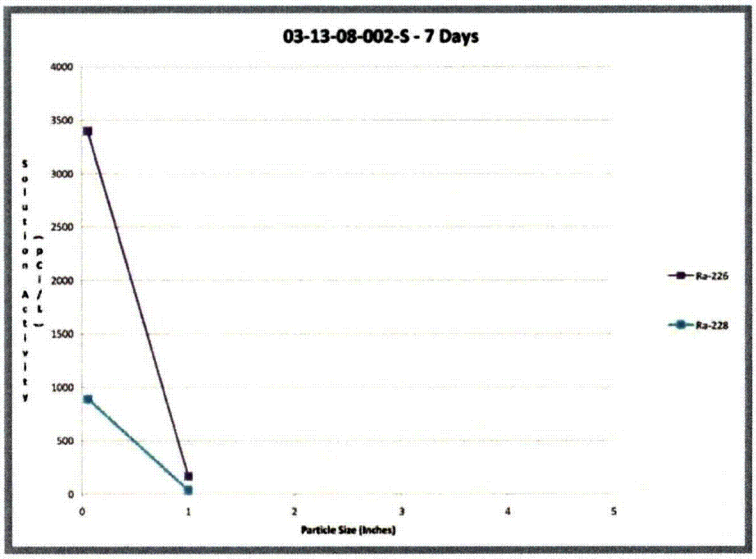


Figure D-5

This information demonstrates that additional testing of slag from Areas 4 and 6 should be limited to tests on four-inch particle sizes in order to obtain results that are as representative of overall conditions in the Storage Yard as possible. The results from testing of four inch particles will

[6] Because Area 3 slag is comprised of Area 4 slag that was down-sized to one-inch and smaller, only two particle size data points for each isotope were acquired.

conservatively over-estimate the leach potential of Area 4 and 6 materials, because the actual size of the materials in these areas is much larger than four inches, as the following photographs show:

Area 4

Area 6

Additional testing on Area 3 samples will be performed on an "as received" basis, with no further downsizing.

Optimum Leach Durations

Figures D-6, D-7 and D-8, below, are plots of time versus solution activity for one of the slag samples (four-inch particle size):

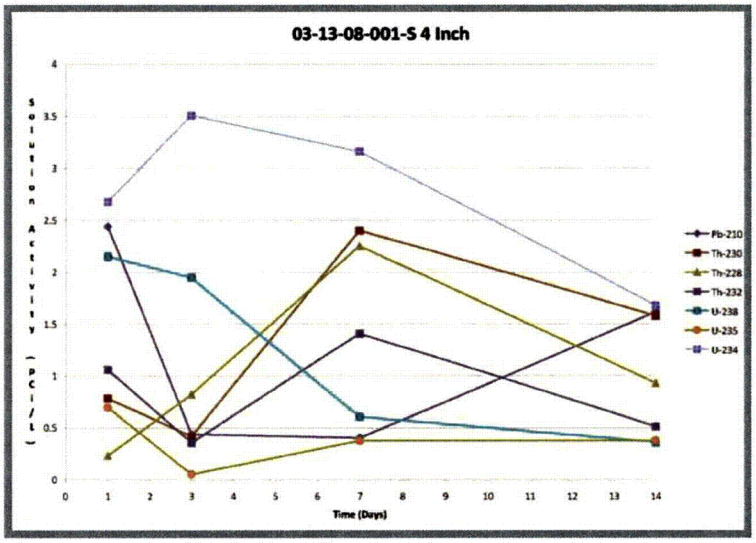


Figure D-6

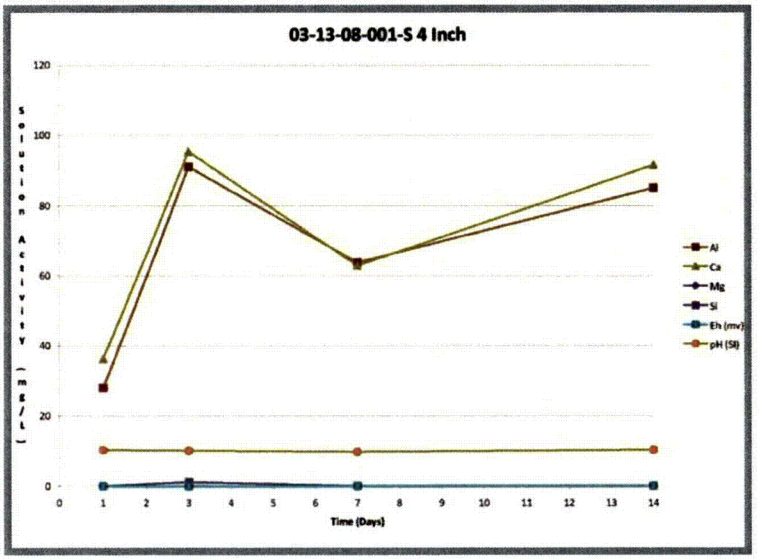


Figure D-7

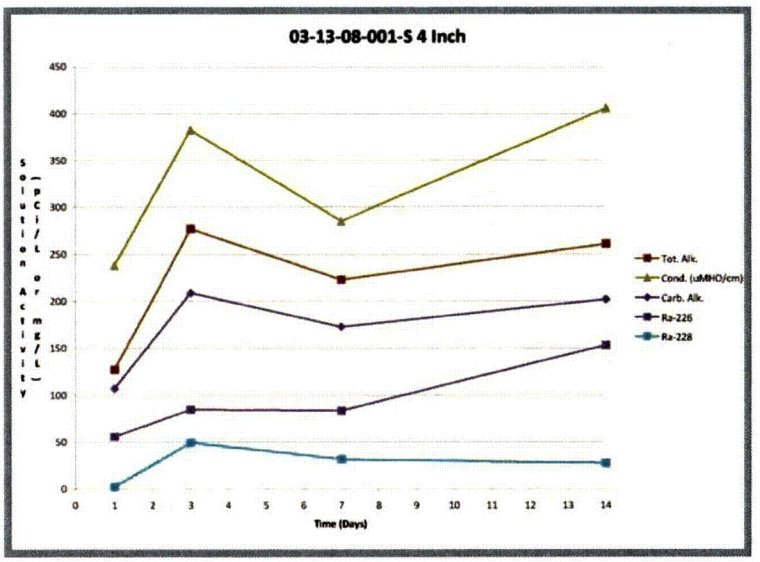


Figure D-8

These figures show no clear trend with time, which is attributed to the necessity of using a separate reaction chamber, each with its own solid aliquot, had to be used for each of the leach durations (i.e., 24-hours, 3 days, 7 days, and 14 days).[7] The solution concentrations are quite variable, and relative concentrations among pairs of analytes are variable, suggesting that heterogeneity of the slag at the scale (size) of the solid aliquots may be a contributor.

[7] Because there were so many analytes for each sample, all of the solution in the reaction chamber was utilized for analysis.

The occurrence of a large amount of glass in a slag sample could result in significantly lower Kds than those calculated from the initial test data. Glass, however, is a minor component in Storage Yard materials. Conceptually, assuming the glass has a non-uniform distribution within the slag as a function of it representing the last liquid to cool, it could represent a larger percentage of a small sample size than a large sample size. Testing of four-inch particles, therefore, is less likely to result in the skewing effects of the presence of any glass. Irrespective of this potential, Kds for uranium, thorium, and lead calculated from the results of initial testing are high for the small particle sizes, and the Kds increase with increasing particle size. Likewise, the Kds for radium from the large particle sizes are higher than from the small particle sizes.

The small-scale heterogeneity of the slag does not alter the conclusions about the leachability of radium versus uranium, thorium, and lead, nor the conclusions about leachability as a function of particle (test sample) size. The solid mineral phases in the slag primarily control the partitioning of the elements to the solution phase for the slag materials of the Storage Yard. Uranium, thorium, and lead greatly prefer the solid phases over the solution. In summary, it was not possible, with the initial testing, to definitively determine the optimum testing duration to ensure equilibrium between the solids and the liquids. Therefore, subsequent testing for assessment of equilibrium should utilize a *single* solid and a *single* solution in one reaction chamber, with liquid aliquots withdrawn for analysis at the time periods of interest, or until equilibrium becomes clear from the time series data.[8]

Analyzing only for radium isotopes, calcium and aluminum on samples with four-inch particle sizes, as recommended above, will eliminate the need to use multiple solid aliquots for the time series data. Likewise, the concentration of these elements in the test chamber solids will be determined as the last step in the protocol (i.e., after leaching is complete). The concentrations of radium isotopes, calcium and aluminum in the liquids will be determined after one, three, seven and 14 days, and every seven days thereafter, or until equilibrium between the solids and the liquids can be clearly established.

[8] If subsequent testing is limited to radium isotopes, calcium and aluminum, there will be fewer analytes than the initial testing, and little solution will be utilized for analysis at each test duration, permitting the test to continue with the same solid aliquot and solution.

CERTIFICATES OF ANALYSIS

Outreach Laboratory
311 North Aspen
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
Page Number:	1 of 66

Analytical Report

Lab ID: 20080782-01
Client ID: 03-13-08-001-S
Date Sampled:
Matrix: Solid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
K-40	HASL 300*	52.4 +/- 21.6	pCi/g	25.8		12/18/2008	SD
Tl-208	HASL 300*	316 +/- 17.0	pCi/g	3.46		12/18/2008	SD
Bi-212	HASL 300*	433 +/- 39.9	pCi/g	17.9		12/18/2008	SD
Pb-212	HASL 300*	925 +/- 71.3	pCi/g	5.4		12/18/2008	SD
Bi-214 (Ra226)	HASL 300*	409 +/- 23.3	pCi/g	5.1		12/18/2008	SD
Pb-214	HASL 300*	397 +/- 19.1	pCi/g	5.6		12/18/2008	SD
Ac-228 (Ra228)	HASL 300*	832 +/- 34.2	pCi/g	11.2		12/18/2008	SD
Lead-210	EML HASL 300-Pb-01-RC	332 +/- 6.60	pCi/g	0.428	12/15/2008	12/16/2008	RE
Radium-226	SM 7500 Ra B (M)*	407 +/- 5.7	pCi/g	0.3	12/9/2008	12/12/2008	RE
Radium-228	EPA 904*/9320*	455 +/- 18.9	pCi/g	8.24	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	378 +/- 12.6	pCi/g	0.897	12/8/2008	12/9/2008	SD
Thorium-230	LANL ER 200 M*	200 +/- 9.3	pCi/g	4.0	12/8/2008	12/9/2008	SD
Thorium-228	LANL ER 200 M*	360 +/- 12.3	pCi/g	2.0	12/8/2008	12/9/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	230 +/- 6.45	pCi/g	0.234	11/21/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	9.04 +/- 1.28	pCi/g	0.145	11/21/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	213 +/- 6.21	pCi/g	0.286	11/21/2008	12/2/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	183000	mg/kg as CaCO3	1680		12/9/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/kg as CaCO3	1680		12/9/2008	RT
Carbonate Alkalinity	SM 2320 B	164000	mg/kg as CaCO3	1680		12/9/2008	RT
Conductivity	EPA 120.1/SM 2510 B	2510	uMHO/cm	20		12/8/2008	RT
Eh	SM 2580 B	-239	mv			12/8/2008	RT
Eh-Temp		21.5	degrees C				RT
pH	EPA 9045B	11.4	SI			12/8/2008 2:29:00 PM	RT
Metals Analyses							
Aluminum	EPA 6010B*	159000	mg/kg	17.1	12/4/2008	12/8/2008	RE
Calcium	EPA 6010B*	189000	mg/kg	85	12/4/2008	12/8/2008	RE
Magnesium	EPA 6010B*	36900	mg/kg	25.6	12/4/2008	12/8/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Silicon	ICP	2950	mg/kg	43.1	12/4/2008	12/8/2008	RE

Lab ID: 20080782-02
Client ID: 03-13-08-001-S (SPLP 12 Mesh/ 24 HR)
Date Sampled:
Matrix: Liquid

Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.970 +/- 0.484	pCi/l	0.530	12/4/2008	12/5/2008	RE
Radium-226	SM 7500 Ra B (M)*	1950 +/- 24.4	pCi/l	1.7	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	751 +/- 15.6	pCi/l	4.77	12/8/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.617 +/- 0.369	pCi/l	0.438	11/21/2008	11/26/2008	SD
Thorium-230	LANL ER 200 M*	14.1 +/- 1.37	pCi/l	1.16	11/21/2008	11/26/2008	SD
Thorium-228	LANL ER 200 M*	21.2 +/- 1.58	pCi/l	0.535	11/21/2008	11/26/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.32 +/- 0.860	pCi/l	0.848	11/21/2008	11/25/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.661 +/- 0.835	pCi/l	1.14	11/21/2008	11/25/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	5.95 +/- 1.69	pCi/l	1.36	11/21/2008	11/25/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	846	mg/L as CaCO3	10		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	10		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	584	mg/L as CaCO3	10		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	1490	uMHO/cm	20		11/14/2008 3:30:00 PM	RT
Eh	SM 2580 B	33.6	mv			11/14/2008	RT
Eh-Temp		22.2	degrees C			11/14/2008	RT
pH	SM 4500-H+ B	11.4	SI			11/14/2008 6:23:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	90	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1800	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	188	mg/l	1.1	11/13/2008	11/20/2008	RE
Calcium	EPA 6010B*	135	mg/l	1.1	11/13/2008	11/20/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/20/2008	RE
Silicon	ICP	1.83	mg/l	1.00	11/13/2008	11/20/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
Page Number:	3 of 66

Analytical Report

Lab ID: 20080782-03
Client ID: 03-13-08-001-S (SPLP 12 Mesh/ 3 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	31.3 +/- 2.06	pCi/l	0.542	11/30/2008	12/3/2008	RE
Radium-226	SM 7500 Ra B (M)*	2480 +/- 29.6	pCi/l	2.0	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	306 +/- 4.04	pCi/l	1.57	12/8/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	7.00 +/- 0.953	pCi/l	0.342	11/24/2008	11/30/2008	SD
Thorium-230	LANL ER 200 M*	15.7 +/- 1.48	pCi/l	1.13	11/24/2008	11/30/2008	SD
Thorium-228	LANL ER 200 M*	91.2 +/- 3.39	pCi/l	0.756	11/24/2008	11/30/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	14.7 +/- 2.45	pCi/l	0.882	11/24/2008	11/29/2008	SD
U[illegible]m-235	ASTM D 3972/DOE U-02*	1.90 +/- 1.11	pCi/l	1.19	11/24/2008	11/29/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	16.8 +/- 2.69	pCi/l	1.41	11/24/2008	11/29/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	2360	mg/L as CaCO3	40		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	40		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	1890	mg/L as CaCO3	40		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	1580	uMHO/cm	20		11/18/2008	RT
Eh	SM 2580 B	59.0	mv			11/18/2008	RT
Eh-Temp		22.0	degrees C				RT
pH	SM 4500-H+ B	11.4	SI			11/18/2008 4:14:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	90	g			11/14/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1800	ml			11/14/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	227	mg/l	1.1	11/14/2008	11/21/2008	RE
C[illegible]m	EPA 6010B*	167	mg/l	1.1	11/1/143	11/21/2008	RE
M[illegible]sium	EPA 6010B*	1.81	mg/l	0.22	11/14/2008	11/21/2008	RE
Silicon	ICP	3.55	mg/l	1.00	11/14/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
Page Number:	4 of 66

Analytical Report

Lab ID: 20080782-04
Client ID: 03-13-08-001-S (SPLP 12 Mesh/ 7 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	40.4 +/- 2.28	pCi/l	0.339	12/3/2008	12/12/2008	RE
Radium-226	SM 7500 Ra B (M)*	1200 +/- 18.2	pCi/l	2.1	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	1110 +/- 7.34	pCi/l	0.918	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	2.55 +/- 0.613	pCi/l	0.359	11/26/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	13.1 +/- 1.36	pCi/l	0.785	11/26/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	32.7 +/- 2.08	pCi/l	0.359	11/26/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	2.02 +/- 0.893	pCi/l	0.591	11/26/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.386 +/- 0.406	pCi/l	0.331	11/26/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	2.52 +/- 1.02	pCi/l	0.744	11/26/2008	12/2/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	814	mg/L as CaCO3	10		12/3/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	10		12/3/2008	RT
Carbonate Alkalinity	SM 2320 B	670	mg/L as CaCO3	10		12/3/2008	RT
Conductivity	EPA 120.1/SM 2510 B	1580	uMHO/cm	20		11/21/2008	RT
Eh	SM 2580 B	31.3	mv			11/21/2008	RT
Eh-Temp		19.2	degrees C			11/21/2008	RT
pH	SM 4500-H+ B	11.5	SI			11/21/2008 10:45:00 AM	RT
SPLP - Extraction Sample Weight	SW 1312 M	90	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1800	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	112	mg/l	1.1	11/13/2008	11/21/2008	RE
Calcium	EPA 6010B*	110	mg/l	1.1	11/13/2008	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/21/2008	RE
Silicon	ICP	1.05	mg/l	1.00	11/13/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
Page Number:	5 of 66

Analytical Report

Lab ID: 20080782-05
Client ID: 03-13-08-001-S (SPLP 12 Mesh/ 14 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	2.58 +/- 0.537	pCi/l	0.311	12/7/2008	12/9/2008	RE
Radium-226	SM 7500 Ra B (M)*	3200 +/- 35.2	pCi/l	0.9	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	2600 +/- 19.9	pCi/l	1.37	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.960 +/- 0.383	pCi/l	0.395	12/3/2008	12/4/2008	SD
Thorium-230	LANL ER 200 M*	0.388 +/- 0.540	pCi/l	1.01	12/3/2008	12/4/2008	SD
Thorium-228	LANL ER 200 M*	19.3 +/- 1.39	pCi/l	0.437	12/3/2008	12/4/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.91 +/- 0.846	pCi/l	0.562	12/3/2008	12/4/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.283 +/- 0.349	pCi/l	0.314	12/3/2008	12/4/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	2.48 +/- 0.980	pCi/l	0.706	12/3/2008	12/4/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	1150	mg/L as CaCO3	20		12/5/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	20		12/5/2008	RT
Carbonate Alkalinity	SM 2320 B	659	mg/L as CaCO3	20		12/5/2008	RT
Conductivity	EPA 120.1/SM 2510 B	2520	uMHO/cm	20		11/26/2008	RT
Eh	SM 2580 B	28.3	mv			11/26/2008	RT
Eh-Temp		22.1	degrees C				RT
pH	SM 4500-H+ B	11.4	SI			11/26/2008 3:09:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	90	g			11/12/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1800	ml			11/12/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	156	mg/l	10	11/12/2008	12/16/2008	RE
Calcium	EPA 6010B*	225	mg/l	10	11/12/2008	12/16/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	2	11/12/2008	12/16/2008	RE
Silicon	ICP	BDL	mg/l	10	11/12/2008	12/16/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-06
Client ID: 03-13-08-001-S (SPLP 1" dia./ 24 HR)
Date Sampled:
Matrix: Solid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.395 +/- 0.327	pCi/l	0.436	12/4/2008	12/5/2008	RE
Radium-226	SM 7500 Ra B (M)*	202 +/- 4.9	pCi/l	0.3	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	44.4 +/- 2.84	pCi/l	2.07	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.745 +/- 0.376	pCi/l	0.358	11/21/2008	11/26/2008	SD
Thorium-230	LANL ER 200 M*	3.86 +/- 0.861	pCi/l	1.11	11/21/2008	11/26/2008	SD
Thorium-228	LANL ER 200 M*	1.05 +/- 0.425	pCi/l	0.358	11/21/2008	11/26/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.444 +/- 0.545	pCi/l	0.608	11/21/2008	11/25/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.161 +/- 0.306	pCi/l	0.312	11/21/2008	11/25/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	1.05 +/- 0.829	pCi/l	0.905	11/21/2008	11/25/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	556	mg/L as CaCO3	4		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	4		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	351	mg/L as CaCO3	4		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	978	uMHO/cm	2		11/14/2008 3:30:00 PM	RT
Eh	SM 2580 B	-94.5	mv			11/14/2008	RT
Eh-Temp		22.2	degrees C			11/14/2008	RT
pH	SM 4500-H+ B	11.1	SI			11/14/2008 6:27:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	102	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2040	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	138	mg/l	1.1	11/13/2008	11/20/2008	RE
Calcium	EPA 6010B*	163	mg/l	1.1	11/13/2008	11/20/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/20/2008	RE
Silicon	ICP	1.75	mg/l	1.00	11/13/2008	11/20/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-07
Client ID: 03-13-08-001-S (SPLP 1" dia/ 3 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	2.35 +/- 1.88	pCi/l	0.980	11/30/2008	12/3/2008	RE
Radium-226	SM 7500 Ra B (M)*	326 +/- 6.6	pCi/l	0.9	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	89.7 +/- 5.20	pCi/l	2.46	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.449 +/- 0.308	pCi/l	0.340	11/24/2008	11/30/2008	SD
Thorium-230	LANL ER 200 M*	0.125 +/- 0.487	pCi/l	1.08	11/24/2008	11/30/2008	SD
Thorium-228	LANL ER 200 M*	1.19 +/- 0.431	pCi/l	0.340	11/24/2008	11/30/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	3.30 +/- 1.79	pCi/l	1.69	11/24/2008	11/29/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	2.63 +/- 1.50	pCi/l	1.17	11/24/2008	11/29/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	15.1 +/- 3.30	pCi/l	1.43	11/24/2008	11/29/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	923	mg/L as CaCO3	10		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	10		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	697	mg/L as CaCO3	10		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	1270	uMHO/cm	20		11/18/2008	RT
Eh	SM 2580 B	-39.0	mv			11/18/2008	RT
Eh-Temp		22.4	degrees C				RT
pH	SM 4500-H+ B	11.1	SI			11/18/2008 4:17:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	100	g			11/14/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2000	ml			11/14/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	266	mg/l	1.1	11/14/2008	11/21/2008	RE
Calcium	EPA 6010B*	272	mg/l	1.1	11/1/143	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/14/2008	11/21/2008	RE
Silicon	ICP	3.79	mg/l	1.00	11/14/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-08
Client ID: 03-13-08-001-S (SPLP 1" dia./ 7 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	6.49 +/- 0.897	pCi/l	0.311	12/3/2008	12/12/2008	RE
Radium-226	SM 7500 Ra B (M)*	426 +/- 6.6	pCi/l	0.7	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	148 +/- 5.46	pCi/l	2.15	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	1.71 +/- 0.509	pCi/l	0.349	11/26/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	4.49 +/- 0.832	pCi/l	0.772	11/26/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	4.81 +/- 0.807	pCi/l	0.349	11/26/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.51 +/- 0.756	pCi/l	0.598	11/26/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.700 +/- 0.505	pCi/l	0.377	11/26/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	3.93 +/- 1.13	pCi/l	0.575	11/26/2008	12/2/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	845	mg/L as CaCO3	10		12/3/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	10		12/3/2008	RT
Carbonate Alkalinity	SM 2320 B	608	mg/L as CaCO3	10		12/3/2008	RT
Conductivity	EPA 120.1/SM 2510 B	1390	uMHO/cm	20		11/21/2008	RT
Eh	SM 2580 B	16.8	mv			11/21/2008	RT
Eh-Temp		19.3	degrees C			11/21/2008	RT
pH	SM 4500-H+ B	11.4	SI			11/21/2008 10:50:00 AM	RT
SPLP - Extraction Sample Weight	SW 1312 M	105	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2100	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	218	mg/l	1.1	11/13/2008	11/21/2008	RE
Calcium	EPA 6010B*	239	mg/l	1.1	11/13/2008	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/21/2008	RE
Silicon	ICP	2.55	mg/l	1.00	11/13/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
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Analytical Report

Lab ID: 20080782-09
Client ID: 03-13-08-001-S (SPLP 1" dia./ 14 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.340 +/- 0.372	pCi/l	0.490	12/7/2008	12/10/2008	RE
Radium-226	SM 7500 Ra B (M)*	402 +/- 6.3	pCi/l	0.3	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	227 +/- 5.10	pCi/l	1.113	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.156 +/- 0.286	pCi/l	0.412	12/3/2008	12/4/2008	SD
Thorium-230	LANL ER 200 M*	1.94 +/- 0.706	pCi/l	1.01	12/3/2008	12/4/2008	SD
Thorium-228	LANL ER 200 M*	2.11 +/- 0.613	pCi/l	0.412	12/3/2008	12/4/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.74 +/- 0.800	pCi/l	0.597	12/3/2008	12/4/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.466 +/- 0.431	pCi/l	0.376	12/3/2008	12/4/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	1.99 +/- 0.839	pCi/l	0.574	12/3/2008	12/4/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	399	mg/L as CaCO3	5		12/5/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	5		12/5/2008	RT
Carbonate Alkalinity	SM 2320 B	227	mg/L as CaCO3	5		12/5/2008	RT
Conductivity	EPA 120.1/SM 2510 B	1230	uMHO/cm	20		11/26/2008	RT
Eh	SM 2580 B	10.1	mv			11/26/2008	RT
Eh-Temp		21.0	degrees C				RT
pH	SM 4500-H+ B	11.2	SI			11/26/2008 3:12:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	103	g			11/12/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2060	ml			11/12/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	81.4	mg/l	10	11/12/2008	12/16/2008	RE
Calcium	EPA 6010B*	154	mg/l	10	11/12/2008	12/16/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	2	11/12/2008	12/16/2008	RE
Silicon	ICP	BDL	mg/l	10	11/12/2008	12/16/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
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Analytical Report

Lab ID: 20080782-10
Client ID: 03-13-08-001-S (SPLP 4" dia/ 24 HR)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	2.44 +/- 1.16	pCi/l	1.38	12/4/2008	12/5/2008	RE
Radium-226	SM 7500 Ra B (M)*	56.0 +/- 2.1	pCi/l	0.2	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	1.97 +/- 0.927	pCi/l	0.957	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	1.06 +/- 0.503	pCi/l	0.618	11/21/2008	11/26/2008	SD
Thorium-230	LANL ER 200 M*	0.783 +/- 0.568	pCi/l	1.08	11/21/2008	11/26/2008	SD
Thorium-228	LANL ER 200 M*	0.235 +/- 0.245	pCi/l	0.312	11/21/2008	11/26/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	2.15 +/- 1.26	pCi/l	0.785	11/21/2008	11/25/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.696 +/- 0.782	pCi/l	0.704	11/21/2008	11/25/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	2.68 +/- 1.44	pCi/l	1.05	11/21/2008	11/25/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	127	mg/L as CaCO3	1		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	1		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	107	mg/L as CaCO3	1		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	238	uMHO/cm	2		11/14/2008	
Eh	SM 2580 B	-35.6	mv			11/14/2008	RT
Eh-Temp		22.0	degrees C			11/14/2008	RT
pH	SM 4500-H+ B	10.4	SI			11/14/2008 6:31:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	1117	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	22,300	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	27.9	mg/l	1.1	11/13/2008	11/20/2008	RE
Calcium	EPA 6010B*	36.3	mg/l	1.1	11/13/2008	11/20/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/20/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/20/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-11
Client ID: 03-13-08-001-S (SPLP 4" dia/ 3 Day)
Date Sampled:
Matrix: Solid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.442 +/- 0.484	pCi/l	0.635	11/30/2008	12/3/2008	RE
Radium-226	SM 7500 Ra B (M)*	84.9 +/- 3.1	pCi/l	0.4	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	49.4 +/- 2.11	pCi/l	1.60	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.358 +/- 0.314	pCi/l	0.378	11/24/2008	11/30/2008	SD
Thorium-230	LANL ER 200 M*	0.419 +/- 0.557	pCi/l	1.14	11/24/2008	11/30/2008	SD
Thorium-228	LANL ER 200 M*	0.823 +/- 0.403	pCi/l	0.378	11/24/2008	11/30/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.95 +/- 1.20	pCi/l	1.48	11/24/2008	11/29/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.055 +/- 0.832	pCi/l	1.39	11/24/2008	11/29/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	3.51 +/- 1.61	pCi/l	1.96	11/24/2008	11/29/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	277	mg/L as CaCO3	2		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	2		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	209	mg/L as CaCO3	2		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	383	uMHO/cm	2		11/18/2008	RT
Eh	SM 2580 B	-18.3	mv			11/18/2008	RT
Eh-Temp		23.3	degrees C				RT
pH	SM 4500-H+ B	10.2	SI			11/18/2008 4:21:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	710	g			11/14/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	14, 200	ml			11/14/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	91.1	mg/l	1.1	11/14/2008	11/21/2008	RE
Calcium	EPA 6010B*	95.4	mg/l	1.1	11/1/143	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/14/2008	11/21/2008	RE
Silicon	ICP	1.17	mg/l	1.00	11/14/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-12
Client ID: 03-13-08-001-S (SPLP 4" dia./ 7 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.405 +/- 0.742	pCi/l	1.11	12/3/2008	12/5/2008	RE
Radium-226	SM 7500 Ra B (M)*	83.8 +/- 3.2	pCi/l	0.9	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	31.6 +/- 1.80	pCi/l	1.14	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	1.41 +/- 0.474	pCi/l	0.355	11/26/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	2.40 +/- 0.661	pCi/l	0.780	11/26/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	2.25 +/- 0.577	pCi/l	0.355	11/26/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.608 +/- 0.525	pCi/l	0.498	11/26/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.378 +/- 0.374	pCi/l	0.257	11/26/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	3.16 +/- 1.09	pCi/l	0.740	11/26/2008	12/2/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	223	mg/L as CaCO3	1		12/3/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	1		12/3/2008	RT
Carbonate Alkalinity	SM 2320 B	173	mg/L as CaCO3	1		12/3/2008	RT
Conductivity	EPA 120.1/SM 2510 B	285	uMHO/cm	2		11/21/2008	RT
Eh	SM 2580 B	-6.2	mv			11/21/2008	RT
Eh-Temp		18.8	degrees C			11/21/2008	RT
pH	SM 4500-H+ B	9.89	SI			11/21/2008 10:53:00 AM	RT
SPLP - Extraction Sample Weight	SW 1312 M	729	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	14, 600	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	63.9	mg/l	1.1	11/13/2008	11/21/2008	RE
Calcium	EPA 6010B*	63.0	mg/l	1.1	11/13/2008	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/21/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-13
Client ID: 03-13-08-001-S (SPLP 4" dia./ 14 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	1.62 +/- 1.23	pCi/l	1.75	12/7/2008	12/10/2008	RE
Radium-226	SM 7500 Ra B (M)*	153 +/- 4.3	pCi/l	0.4	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	27.2 +/- 1.57	pCi/l	0.652	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.514 +/- 0.321	pCi/l	0.340	12/3/2008	12/4/2008	SD
Thorium-230	LANL ER 200 M*	1.58 +/- 0.597	pCi/l	0.902	12/3/2008	12/4/2008	SD
Thorium-228	LANL ER 200 M*	0.931 +/- 0.393	pCi/l	0.340	12/3/2008	12/4/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.363 +/- 0.445	pCi/l	0.500	12/3/2008	12/4/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.379 +/- 0.375	pCi/l	0.257	12/3/2008	12/4/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	1.68 +/- 0.848	pCi/l	0.742	12/3/2008	12/4/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	261	mg/L as CaCO3	2		12/5/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	2		12/5/2008	RT
Carbonate Alkalinity	SM 2320 B	202	mg/L as CaCO3	2		12/5/2008	RT
Conductivity	EPA 120.1/SM 2510 B	406	uMHO/cm	2		11/26/2008	RT
Eh	SM 2580 B	-57.5	mv			11/26/2008	RT
Eh-Temp		21.4	degrees C				RT
pH	SM 4500-H+ B	10.4	SI			11/26/2008 3:15:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	709	g			11/12/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	14,200	ml			11/12/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	85.1	mg/l	10	11/12/2008	12/16/2008	RE
Calcium	EPA 6010B*	91.6	mg/l	10	11/12/2008	12/16/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	2	11/12/2008	12/16/2008	RE
Silicon	ICP	BDL	mg/l	10	11/12/2008	12/16/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-14
Client ID: 03-13-08-002-S
Date Sampled:
Matrix: Solid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
K-40	HASL 300*		pCi/g			12/18/2008	SD
Tl-208	HASL 300*	328 +/- 17.7	pCi/g	3.70		12/18/2008	SD
Bi-212	HASL 300*	450 +/- 37.9	pCi/g	12.0		12/18/2008	SD
Pb-212	HASL 300*	812 +/- 62.7	pCi/g	1.55		12/18/2008	SD
Bi-214 (Ra226)	HASL 300*	409 +/- 22.9	pCi/g	3.09		12/18/2008	SD
Pb-214	HASL 300*	82.2 +/- 4.56	pCi/g	3.52		12/18/2008	SD
Ac-228 (Ra228)	HASL 300*	829 +/- 33.1	pCi/g	6.44		12/18/2008	SD
Lead-210	EML HASL 300-Pb-01-RC	112 +/- 4.04	pCi/g	0.310	12/15/2008	12/16/2008	RE
Radium-226	SM 7500 Ra B (M)*	468 +/- 7.2	pCi/g	0.7	12/9/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	164 +/- 7.23	pCi/g	4.41	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	553 +/- 19.9	pCi/g	1.23	12/8/2008	12/9/2008	SD
Thorium-230	LANL ER 200 M*	349 +/- 16.0	pCi/g	5.8	12/8/2008	12/9/2008	SD
Thorium-228	LANL ER 200 M*	545 +/- 19.8	pCi/g	1.2	12/8/2008	12/9/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	255 +/- 6.65	pCi/g	0.252	11/21/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	13.4 +/- 1.53	pCi/g	0.170	11/21/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	243 +/- 6.50	pCi/g	0.244	11/21/2008	12/2/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	154000	mg/kg as CaCO3	2120		12/9/2008	RT
Bicarbonate Alkalinity	SM 2320 B	13100	mg/kg as CaCO3	2120		12/9/2008	RT
Carbonate Alkalinity	SM 2320 B	141000	mg/kg as CaCO3	2120		12/9/2008	RT
Conductivity	EPA 120.1/SM 2510 B	2480	uMHO/cm	20		12/8/2008	RT
Eh	SM 2580 B	-264	mv			12/8/2008	RT
Eh-Temp		21.6	degrees C				RT
pH	EPA 9045B	11.4	SI			12/8/2008 2:36:00 PM	RT
Metals Analyses							
Aluminum	EPA 6010B*	133000	mg/kg	19.5	12/4/2008	12/8/2008	RE
Calcium	EPA 6010B*	154000	mg/kg	98	12/4/2008	12/8/2008	RE
Magnesium	EPA 6010B*	63500	mg/kg	29.3	12/4/2008	12/8/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
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Client:	IEM
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	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Silicon	ICP	2320	mg/kg	49.3	12/4/2008	12/8/2008	RE

Lab ID: 20080782-15
Client ID: 03-13-08-002-S (SPLP 12 Mesh/ 24 HR)
Date Sampled:
Matrix: Liquid

Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.965 +/- 0.520	pCi/l	0.700	12/4/2008	12/5/2008	RE
Radium-226	SM 7500 Ra B (M)*	2280 +/- 35.9	pCi/l	2.1	12/10/2008	12/15/2008	RE
Radium-228	EPA 904*/9320*	109 +/- 7.59	pCi/l	6.57	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.434 +/- 0.226	pCi/l	0.221	11/21/2008	11/26/2008	SD
Thorium-230	LANL ER 200 M*	1.17 +/- 0.478	pCi/l	0.854	11/21/2008	11/26/2008	SD
Thorium-228	LANL ER 200 M*	12.8 +/- 1.05	pCi/l	0.533	11/21/2008	11/26/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.52 +/- 1.11	pCi/l	1.43	11/21/2008	11/25/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.053 +/- 0.802	pCi/l	1.34	11/21/2008	11/25/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	4.35 +/- 1.65	pCi/l	1.89	11/21/2008	11/25/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	969	mg/L as CaCO3	10		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	10		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	564	mg/L as CaCO3	10		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	1590	uMHO/cm	20		11/14/2008	RT
Eh	SM 2580 B	-45.0	mv			11/14/2008	RT
Eh-Temp		22.0	degrees C			11/14/2008	RT
pH	SM 4500-H+ B	11.39	SI			11/14/2008 6:35:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	90	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1800	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	256	mg/l	1.1	11/13/2008	11/20/2008	RE
Calcium	EPA 6010B*	188	mg/l	1.1	11/13/2008	11/20/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/20/2008	RE
Silicon	ICP	2.84	mg/l	1.00	11/13/2008	11/20/2008	RE

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Client:	IEM
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Analytical Report

Lab ID: 20080782-16
Client ID: 03-13-08-002-S (SPLP 12 Mesh/ 3 Day)
Date Sampled: 6/20/2008 6:00:00 PM
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0 +/- 1.11	pCi/l	0.949	11/30/2008	12/3/2008	RE
Radium-226	SM 7500 Ra B (M)*	2370 +/- 25.5	pCi/l	1.0	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	2690 +/- 27.9	pCi/l	3.18	12/8/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.498 +/- 0.287	pCi/l	0.294	11/24/2008	11/30/2008	SD
Thorium-230	LANL ER 200 M*	0.734 +/- 0.515	pCi/l	0.994	11/24/2008	11/30/2008	SD
Thorium-228	LANL ER 200 M*	18.0 +/- 1.39	pCi/l	0.294	11/24/2008	11/30/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.611 +/- 0.675	pCi/l	0.883	11/24/2008	11/29/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.241 +/- 0.417	pCi/l	0.543	11/24/2008	11/29/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	5.24 +/- 1.42	pCi/l	1.06	11/24/2008	11/29/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	979	mg/L as CaCO3	10		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	10		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	830	mg/L as CaCO3	10		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	1440	uMHO/cm	20		11/18/2008	RT
Eh	SM 2580 B	-4.4	mv			11/18/2008	RT
Eh-Temp		23.1	degrees C				RT
pH	SM 4500-H+ B	11.3	SI			11/18/2008 4:24:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	90	g			11/14/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1800	ml			11/14/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	250	mg/l	1.1	11/14/2008	11/21/2008	RE
Calcium	EPA 6010B*	157	mg/l	1.1	11/1/143	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/14/2008	11/21/2008	RE
Silicon	ICP	3.03	mg/l	1.00	11/14/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
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Analytical Report

Lab ID: 20080782-17
Client ID: 03-13-08-002-S (SPLP 12 Mesh/ 7 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	1.21 +/- 0.437	pCi/l	0.379	12/3/2008	12/5/2008	RE
Radium-226	SM 7500 Ra B (M)*	3400 +/- 45.1	pCi/l	2.0	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	699 +/- 6.18	pCi/l	1.04	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.950 +/- 0.410	pCi/l	0.359	11/26/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	1.45 +/- 0.564	pCi/l	0.785	11/26/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	23.3 +/- 1.75	pCi/l	0.359	11/26/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	2.00 +/- 0.897	pCi/l	0.459	11/26/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.592 +/- 0.522	pCi/l	0.412	11/26/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	2.88 +/- 1.09	pCi/l	0.610	11/26/2008	12/2/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	716	mg/L as CaCO3	10		12/3/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	10		12/3/2008	RT
Carbonate Alkalinity	SM 2320 B	649	mg/L as CaCO3	10			RT
Conductivity	EPA 120.1/SM 2510 B	1640	uMHO/cm	20		11/21/2008	RT
Eh	SM 2580 B	-5.3	mv			11/21/2008	RT
Eh-Temp		19.6	degrees C			11/21/2008	RT
pH	SM 4500-H+ B	11.5	SI			11/21/2008 10:56:00 AM	RT
SPLP - Extraction Sample Weight	SW 1312 M	90	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1800	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	139	mg/l	1.1	11/13/2008	11/21/2008	RE
Calcium	EPA 6010B*	141	mg/l	1.1	11/13/2008	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/21/2008	RE
Silicon	ICP	1.36	mg/l	1.00	11/13/2008	11/21/2008	RE

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Client:	IEM
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Analytical Report

Lab ID: 20080782-18
Client ID: 03-13-08-002-S (SPLP 12 Mesh/ 14 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	1.34 +/- 0.527	pCi/l	0.542	12/7/2008	12/10/2008	RE
Radium-226	SM 7500 Ra B (M)*	1800 +/- 24.4	pCi/l	1.7	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	2090 +/- 13.7	pCi/l	2.87	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.375 +/- 0.271	pCi/l	0.306	12/3/2008	12/4/2008	SD
Thorium-230	LANL ER 200 M*	1.23 +/- 0.527	pCi/l	0.849	12/3/2008	12/4/2008	SD
Thorium-228	LANL ER 200 M*	15.7 +/- 1.33	pCi/l	0.306	12/3/2008	12/4/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.13 +/- 0.648	pCi/l	0.373	12/3/2008	12/4/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.481 +/- 0.488	pCi/l	0.488	12/3/2008	12/4/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	0.241 +/- 1.01	pCi/l	0.814	12/3/2008	12/4/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	1050	mg/L as CaCO3	10		12/5/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	10		12/5/2008	RT
Carbonate Alkalinity	SM 2320 B	567	mg/L as CaCO3	10		12/5/2008	RT
Conductivity	EPA 120.1/SM 2510 B	2410	uMHO/cm	20		11/26/2008	RT
Eh	SM 2580 B	-1.8	mv			11/26/2008	RT
Eh-Temp		22.4	degrees C				RT
pH	SM 4500-H+ B	11.5	SI			11/26/2008 3:19:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	90	g			11/12/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1800	ml			11/12/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	155	mg/l	10	11/12/2008	12/16/2008	RE
Calcium	EPA 6010B*	184	mg/l	10	11/12/2008	12/16/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	2	11/12/2008	12/16/2008	RE
Silicon	ICP	BDL	mg/l	10	11/12/2008	12/16/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
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Analytical Report

Lab ID: 20080782-19
Client ID: 03-13-08-002-S (SPLP 1" dia./ 24 HR)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.131 +/- 0.212	pCi/l	0.305	12/4/2008	12/5/2008	RE
Radium-226	SM 7500 Ra B (M)*	666 +/- 8.8	pCi/l	0.3.	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	22.1 +/- 1.51	pCi/l	1.12	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.575 +/- 0.359	pCi/l	0.380	11/21/2008	11/26/2008	SD
Thorium-230	LANL ER 200 M*	1.60 +/- 0.690	pCi/l	1.15	11/21/2008	11/26/2008	SD
Thorium-228	LANL ER 200 M*	0.683 +/- 0.541	pCi/l	0.753	11/21/2008	11/26/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	2.96 +/- 1.13	pCi/l	0.874	11/21/2008	11/25/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	2.25 +/- 0.951	pCi/l	0.607	11/21/2008	11/25/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	13.6 +/- 2.21	pCi/l	0.741	11/21/2008	11/25/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	219	mg/L as CaCO3	4		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	4		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	180	mg/L as CaCO3	4		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	332	uMHO/cm	2		11/14/2008	RT
Eh	SM 2580 B	-14.7	mv			11/14/2008	RT
Eh-Temp		22.0	degrees C			11/14/2008	RT
pH	SM 4500-H+ B	10.5	SI			11/14/2008 6:39:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	104	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2080	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	58.5	mg/l	1.1	11/13/2008	11/20/2008	RE
Calcium	EPA 6010B*	62.4	mg/l	1.1	11/13/2008	11/20/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/20/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/20/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
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Lab Number:	20080782
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Analytical Report

Lab ID: 20080782-20
Client ID: 03-13-08-002-S (SPLP 1" dia./ 3 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	3.67 +/- 0.828	pCi/l	0.548	11/30/2008	12/3/2008	RE
Radium-226	SM 7500 Ra B (M)*	88.6 +/- 3.0	pCi/l	0.5	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	28.1 +/- 1.86	pCi/l	1.34	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.357 +/- 0.313	pCi/l	0.377	11/24/2008	11/30/2008	SD
Thorium-230	LANL ER 200 M*	1.09 +/- 0.634	pCi/l	1.14	11/24/2008	11/30/2008	SD
Thorium-228	LANL ER 200 M*	1.11 +/- 0.448	pCi/l	0.377	11/24/2008	11/30/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.875 +/- 0.577	pCi/l	0.428	11/24/2008	11/30/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.308 +/- 0.455	pCi/l	0.574	11/24/2008	11/30/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	2.82 +/- 1.20	pCi/l	1.28	11/24/2008	11/30/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	321	mg/L as CaCO3	3		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	3		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	231	mg/L as CaCO3	3		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	465	uMHO/cm	2		11/18/2008	RT
Eh	SM 2580 B	20.7	mv			11/18/2008	RT
Eh-Temp		23.6	degrees C				RT
pH	SM 4500-H+ B	10.6	SI			11/18/2008 4:28:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	114	g			11/14/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2280	ml			11/14/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	95.9	mg/l	1.1	11/14/2008	11/21/2008	RE
Calcium	EPA 6010B*	95.8	mg/l	1.1	11/1/143	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/14/2008	11/21/2008	RE
Silicon	ICP	1.43	mg/l	1.00	11/14/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
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Analytical Report

Lab ID: 20080782-21
Client ID: 03-13-08-002-S (SPLP 1" dia./ 7 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.295 +/- 0.383	pCi/l	0.571	12/3/2008	12/3/2008	RE
Radium-226	SM 7500 Ra B (M)*	170 +/- 4.3	pCi/l	0.8	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	37.8 +/- 1.43	pCi/l	0.761	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	1.00 +/- 0.498	pCi/l	0.551	11/26/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	2.50 +/- 0.709	pCi/l	0.828	11/26/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	1.89 +/- 0.654	pCi/l	0.674	11/26/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.653 +/- 0.543	pCi/l	0.488	11/26/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0 +/- 0.361	pCi/l	0.660	11/26/2008	12/2/2008	SD
[illegible]nium-234	ASTM D 3972/DOE U-02*	2.79 +/- 1.03	pCi/l	0.660	11/26/2008	12/2/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	350	mg/L as CaCO3	3		12/3/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	3		12/3/2008	RT
Carbonate Alkalinity	SM 2320 B	261	mg/L as CaCO3	3		12/3/2008	RT
Conductivity	EPA 120.1/SM 2510 B	502	uMHO/cm	2		11/21/2008	RT
Eh	SM 2580 B	37.4	mv			11/21/2008	RT
Eh-Temp		19.6	degrees C			11/21/2008	RT
pH	SM 4500-H+ B	10.7	SI			11/21/2008 11:01:00 AM	RT
SPLP - Extraction Sample Weight	SW 1312 M	103	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2060	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	94.7	mg/l	1.1	11/13/2008	11/21/2008	RE
Calcium	EPA 6010B*	102	mg/l	1.1	11/13/2008	11/21/2008	RE
[illegible]agnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/21/2008	RE
[illegible]con	ICP	BDL	mg/l	1.00	11/13/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
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Analytical Report

Lab ID: 20080782-22
Client ID: 03-13-08-002-S (SPLP 1" dia./ 14 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	1.08 +/- 0.456	pCi/l	0.485	12/7/2008	12/9/2008	RE
Radium-226	SM 7500 Ra B (M)*	132 +/- 3.8	pCi/l	0.4	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	19.7 +/- 1.14	pCi/l	0.860	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	1.08 +/- 0.490	pCi/l	0.520	12/3/2008	12/4/2008	SD
Thorium-230	LANL ER 200 M*	1.74 +/- 0.643	pCi/l	0.947	12/3/2008	12/4/2008	SD
Thorium-228	LANL ER 200 M*	1.50 +/- 0.586	pCi/l	0.636	12/3/2008	12/4/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.27 +/- 0.743	pCi/l	0.530	12/3/2008	12/4/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.786 +/- 0.676	pCi/l	0.717	12/3/2008	12/4/2008	SD
[illegible]nium-234	ASTM D 3972/DOE U-02*	4.72 +/- 1.37	pCi/l	0.717	12/3/2008	12/4/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	436	mg/L as CaCO3	3		12/5/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	3		12/5/2008	RT
Carbonate Alkalinity	SM 2320 B	302	mg/L as CaCO3	3		12/5/2008	RT
Conductivity	EPA 120.1/SM 2510 B	749	uMHO/cm	2		11/26/2008	RT
Eh	SM 2580 B	14.2	mv			11/26/2008	RT
Eh-Temp		22.1	degrees C				RT
pH	SM 4500-H+ B	10.8	SI			11/26/2008 3:22:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	105	g			11/12/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2100	ml			11/12/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	120	mg/l	10	11/12/2008	12/16/2008	RE
Calcium	EPA 6010B*	133	mg/l	10	11/12/2008	12/16/2008	RE
[illegible]gnesium	EPA 6010B*	BDL	mg/l	2	11/12/2008	12/16/2008	RE
[illegible]con	ICP	BDL	mg/l	10	11/12/2008	12/16/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-27
Client ID: 03-13-08-003-S
Date Sampled:
Matrix: Solid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
K-40	HASL 300*	56.2 +/- 19.5	pCi/g	22.3		12/18/2008	SD
Tl-208	HASL 300*	296 +/- 17.2	pCi/g	3.66		12/18/2008	SD
Bi-212	HASL 300*	468 +/- 35.6	pCi/g	16.2		12/18/2008	SD
Pb-212	HASL 300*	873 +/- 67.6	pCi/g	7.11		12/18/2008	SD
Bi-214 (Ra226)	HASL 300*	420 +/- 24.2	pCi/g	5.56		12/18/2008	SD
Pb-214	HASL 300*	412 +/- 19.9	pCi/g	6.18		12/18/2008	SD
Ac-228 (Ra228)	HASL 300*	739 +/- 33.3	pCi/g	7.21		12/18/2008	SD
Lead-210	EML HASL 300-Pb-01-RC	93.8 +/- 3.63	pCi/g	0.345	12/15/2008	12/16/2008	RE
Radium-226	SM 7500 Ra B (M)*	479 +/- 7.3	pCi/g	0.4	12/9/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	187 +/- 9.20	pCi/g	6.79	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	464 +/- 19	pCi/g	1.69	12/8/2008	12/9/2008	SD
Thorium-230	LANL ER 200 M*	367 +/- 17.3	pCi/g	7.3	12/8/2008	12/9/2008	SD
Thorium-228	LANL ER 200 M*	454 +/- 19.0	pCi/g	3.4	12/8/2008	12/9/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	357 +/- 19.9	pCi/g	1.48	11/21/2008	12/9/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	37.4 +/- 6.54	pCi/g	2.00	11/21/2008	12/9/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	354 +/- 20.0	pCi/g	4.49	11/21/2008	12/9/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	190000	mg/kg as CaCO3	1880		12/9/2008	RT
Bicarbonate Alkalinity	SM 2320 B	57700	mg/kg as CaCO3	1880		12/9/2008	RT
Carbonate Alkalinity	SM 2320 B	133000	mg/kg as CaCO3	1880		12/9/2008	RT
Conductivity	EPA 120.1/SM 2510 B	3050	uMHO/cm	20		12/8/2008	RT
Eh	SM 2580 B	-239	mv			12/8/2008	RT
Eh-Temp		21.6	degrees C				RT
pH	EPA 9045B	11.4	SI			12/8/2008 2:39:00 PM	RT
Metals Analyses							
Aluminum	EPA 6010B*	134000	mg/kg	19.1	12/4/2008	12/8/2008	RE
Calcium	EPA 6010B*	165000	mg/kg	95	12/4/2008	12/8/2008	RE
Magnesium	EPA 6010B*	82500	mg/kg	28.6	12/4/2008	12/8/2008	RE

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Silicon	ICP	2480	mg/kg	48.2	12/4/2008	12/8/2008	RE

Lab ID: 20080782-28
Client ID: 03-13-08-003-S (SPLP 12 Mesh/ 24 HR)
Date Sampled:
Matrix: Liquid

Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.198 +/- 0.503	pCi/l	0.816	12/4/2008	12/5/2008	RE
Radium-226	SM 7500 Ra B (M)*	1230 +/- 21.3	pCi/l	1.1	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	301 +/- 4.86	pCi/l	1.25	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.188 +/- 0.286	pCi/l	0.397	11/21/2008	11/26/2008	SD
Thorium-230	LANL ER 200 M*	0.180 +/- 0.590	pCi/l	1.24	11/21/2008	11/26/2008	SD
Thorium-228	LANL ER 200 M*	5.72 +/- 1.05	pCi/l	0.881	11/21/2008	11/26/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.573 +/- 0.522	pCi/l	0.493	11/21/2008	11/25/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.382 +/- 0.527	pCi/l	0.666	11/21/2008	11/25/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	3.77 +/- 1.19	pCi/l	0.666	11/21/2008	11/25/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	948	mg/L as CaCO3	10		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	10		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	636	mg/L as CaCO3	10		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	1460	uMHO/cm	20		11/14/2008	RT
Eh	SM 2580 B	-25.5	mv			11/14/2008	RT
Eh-Temp		22.0	degrees C			11/14/2008	RT
pH	SM 4500-H+ B	11.4	SI			11/14/2008 6:44:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	90	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1800	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	245	mg/l	1.1	11/13/2008	11/20/2008	RE
Calcium	EPA 6010B*	179	mg/l	1.1	11/13/2008	11/20/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/20/2008	RE
Silicon	ICP	2.50	mg/l	1.00	11/13/2008	11/20/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
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Analytical Report

Lab ID: 20080782-29
Client ID: 03-13-08-003-S (SPLP 12 Mesh/ 3 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.588 +/- 0.330	pCi/l	0.412	11/30/2008	12/3/2008	RE
Radium-226	SM 7500 Ra B (M)*	2840 +/- 31.7	pCi/l	1.9	12/10/2008	12/15/2008	RE
Radium-228	EPA 904*/9320*	972 +/- 9.21	pCi/l	1.74	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.441 +/- 0.288	pCi/l	0.311	11/24/2008	11/30/2008	SD
Thorium-230	LANL ER 200 M*	0 +/- 0.464	pCi/l	1.07	11/24/2008	11/30/2008	SD
Thorium-228	LANL ER 200 M*	6.93 +/- 0.97	pCi/l	0.689	11/24/2008	11/30/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	4.56 +/- 1.32	pCi/l	0.837	11/24/2008	11/30/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	2.52 +/- 1.00	pCi/l	0.686	11/24/2008	11/30/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	7.97 +/- 1.80	pCi/l	1.32	11/24/2008	11/30/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	917	mg/L as CaCO3	10		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	10		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	687	mg/L as CaCO3	10		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	1610	uMHO/cm	20		11/18/2008	RT
Eh	SM 2580 B	4.1	mv			11/18/2008	RT
Eh-Temp		23.5	degrees C				RT
pH	SM 4500-H+ B	11.4	SI			11/18/2008 4:31:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	90	g			11/14/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1800	ml			11/14/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	219	mg/l	1.1	11/14/2008	11/21/2008	RE
Calcium	EPA 6010B*	188	mg/l	1.1	11/1/143	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/14/2008	11/21/2008	RE
Silicon	ICP	3.00	mg/l	1.00	11/14/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20080782-30**						
Client ID:	**03-13-08-003-S (SPLP 12 Mesh/ 7 Day)**						
Date Sampled:							
Matrix:	**Liquid**						
		Radiochemical Analyses					
Lead-210	EML HASL 300-Pb-01-RC	4.80 +/- 1.45	pCi/l	1.20	12/3/2008	12/10/2008	RE
Radium-226	SM 7500 Ra B (M)*	1790 +/- 26.8	pCi/l	2.9	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	892 +/- 6.82	pCi/l	1.05	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	1.10 +/- 0.488	pCi/l	0.558	11/26/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	6.37 +/- 0.929	pCi/l	0.739	11/26/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	13.1 +/- 1.30	pCi/l	0.643	11/26/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	11.0 +/- 1.92	pCi/l	0.373	11/26/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	1.08 +/- 0.661	pCi/l	0.488	11/26/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	10.3 +/- 1.91	pCi/l	0.814	11/26/2008	12/2/2008	SD
		Inorganics Analyses					
Total Alkalinity	SM 2320 B	896	mg/L as CaCO3	10		12/3/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	10		12/3/2008	RT
Carbonate Alkalinity	SM 2320 B	659	mg/L as CaCO3	10		12/3/2008	RT
Conductivity	EPA 120.1/SM 2510 B	1480	uMHO/cm	20		11/21/2008	RT
Eh	SM 2580 B	13.8	mv			11/21/2008	RT
Eh-Temp		19.4	degrees C			11/21/2008	RT
pH	SM 4500-H+ B	11.5	SI			11/21/2008 11:04:00 AM	RT
SPLP - Extraction Sample Weight	SW 1312 M	90	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1800	ml			11/13/2008	RT
		Metals Analyses					
Aluminum	EPA 6010B*	164	mg/l	1.1	11/13/2008	11/21/2008	RE
Calcium	EPA 6010B*	218	mg/l	1.1	11/13/2008	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/21/2008	RE
Silicon	ICP	2.51	mg/l	1.00	11/13/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-31
Client ID: 03-13-08-003-S (SPLP 12 Mesh/ 14 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	4.05 +/- 1.30	pCi/l	1.32	12/7/2008	12/9/2008	RE
Radium-226	SM 7500 Ra B (M)*	1880 +/- 26.0	pCi/l	1.8	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	1140 +/- 9.21	pCi/l	2.03	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	1.32 +/- 0.470	pCi/l	0.492	12/3/2008	12/4/2008	SD
Thorium-230	LANL ER 200 M*	2.84 +/- 0.651	pCi/l	0.818	12/3/2008	12/4/2008	SD
Thorium-228	LANL ER 200 M*	15.8 +/- 1.32	pCi/l	0.567	12/3/2008	12/4/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	5.04 +/- 1.27	pCi/l	0.424	12/3/2008	12/4/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.627 +/- 0.550	pCi/l	0.569	12/3/2008	12/4/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	7.78 +/- 1.72	pCi/l	1.27	12/3/2008	12/4/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	1170	mg/L as CaCO3	10		12/5/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	10		12/5/2008	RT
Carbonate Alkalinity	SM 2320 B	773	mg/L as CaCO3	10		12/5/2008	RT
Conductivity	EPA 120.1/SM 2510 B	2110	uMHO/cm	20		11/26/2008	RT
Eh	SM 2580 B	1.9	mv			11/26/2008	RT
Eh-Temp		22.5	degrees C				RT
pH	SM 4500-H+ B	11.5	SI			11/26/2008 3:28:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	90	g			11/12/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1800	ml			11/12/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	126	mg/l	10	11/12/2008	12/16/2008	RE
Calcium	EPA 6010B*	184	mg/l	10	11/12/2008	12/16/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	2	11/12/2008	12/16/2008	RE
Silicon	ICP	BDL	mg/l	10	11/12/2008	12/16/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Analytical Report

Lab ID: 20080782-32
Client ID: 03-13-08-003-S (SPLP 1" dia./ 24 HR)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.770 +/- 0.366	pCi/l	0.381	12/4/2008	12/5/2008	RE
Radium-226	SM 7500 Ra B (M)*	556 +/- 11.2	pCi/l	0.8	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	51.0 +/- 1.65	pCi/l	0.857	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.230 +/- 0.301	pCi/l	0.405	11/21/2008	11/26/2008	SD
Thorium-230	LANL ER 200 M*	2.31 +/- 0.786	pCi/l	1.19	11/21/2008	11/26/2008	SD
Thorium-228	LANL ER 200 M*	2.23 +/- 0.621	pCi/l	0.405	11/21/2008	11/26/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.11 +/- 0.777	pCi/l	0.517	11/21/2008	11/25/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	1.04 +/- 0.798	pCi/l	0.679	11/21/2008	11/25/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	2.17 +/- 1.21	pCi/l	1.14	11/21/2008	11/25/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	480	mg/L as CaCO3	3		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	3		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	304	mg/L as CaCO3	3		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	842	uMHO/cm	2		11/14/2008	RT
Eh	SM 2580 B	-42.9	mv			11/14/2008	RT
Eh-Temp		22.0	degrees C			11/14/2008	RT
pH	SM 4500-H+ B	11.1	SI			11/14/2008 6:48:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	110	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2200	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	122	mg/l	1.1	11/13/2008	11/20/2008	RE
Calcium	EPA 6010B*	140	mg/l	1.1	11/13/2008	11/20/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/20/2008	RE
Silicon	ICP	1.24	mg/l	1.00	11/13/2008	11/20/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-33
Client ID: 03-13-08-003-S (SPLP 1" dia./ 3 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	3.84 +/- 1.16	pCi/l	1.08	11/30/2008	12/3/2008	RE
Radium-226	SM 7500 Ra B (M)*	343 +/- 10.6	pCi/l	1.3	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	33.0 +/- 2.88	pCi/l	2.45	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.417 +/- 0.341	pCi/l	0.400	11/24/2008	11/30/2008	SD
Thorium-230	LANL ER 200 M*	1.29 +/- 0.677	pCi/l	1.18	11/24/2008	11/30/2008	SD
Thorium-228	LANL ER 200 M*	1.90 +/- 0.576	pCi/l	0.400	11/24/2008	11/30/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.11 +/- 0.723	pCi/l	0.715	11/24/2008	11/30/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.719 +/- 0.737	pCi/l	0.961	11/24/2008	11/30/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	7.21 +/- 1.65	pCi/l	1.14	11/24/2008	11/30/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	555	mg/L as CaCO3	3		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	3		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	354	mg/L as CaCO3	3		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	847	uMHO/cm	2		11/18/2008	RT
Eh	SM 2580 B	14.2	mv			11/18/2008	RT
Eh-Temp		23.4	degrees C				RT
pH	SM 4500-H+ B	11.0	SI			11/18/2008 4:36:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	109	g			11/14/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2180	ml			11/14/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	162	mg/l	1.1	11/14/2008	11/21/2008	RE
Calcium	EPA 6010B*	171	mg/l	1.1	11/1/143	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/14/2008	11/21/2008	RE
Silicon	ICP	2.33	mg/l	1.00	11/14/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
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Analytical Report

Lab ID: 20080782-34
Client ID: 03-13-08-003-S (SPLP 1" dia./ 7 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
		Radiochemical Analyses					
Lead-210	EML HASL 300-Pb-01-RC	0.240 +/- 0.170	pCi/l	0.203	12/3/2008	12/10/2008	RE
Radium-226	SM 7500 Ra B (M)*	315 +/- 5.4	pCi/l	0.2	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	38.4 +/- 1.41	pCi/l	0.618	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	4.12 +/- 0.704	pCi/l	0.310	11/26/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	3.15 +/- 0.702	pCi/l	0.781	11/26/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	4.77 +/- 0.754	pCi/l	0.310	11/26/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.97 +/- 0.814	pCi/l	0.420	11/26/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	1.42 +/- 0.735	pCi/l	0.564	11/26/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	5.95 +/- 1.54	pCi/l	1.25	11/26/2008	12/2/2008	SD
		Inorganics Analyses					
Total Alkalinity	SM 2320 B	594	mg/L as CaCO3	3		12/3/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	3		12/3/2008	RT
Carbonate Alkalinity	SM 2320 B	391	mg/L as CaCO3	3		12/3/2008	RT
Conductivity	EPA 120.1/SM 2510 B	974	uMHO/cm	2		11/21/2008	RT
Eh	SM 2580 B	11.0	mv			11/21/2008	RT
Eh-Temp		19.2	degrees C			11/21/2008	RT
pH	SM 4500-H+ B	11.2	SI			11/21/2008 11:07:00 AM	RT
SPLP - Extraction Sample Weight	SW 1312 M	116	g			11/13/2008	RE
SPLP - Volume of Extraction Fluid	SW 1312 M	2320	ml			11/13/2008	RE
		Metals Analyses					
Aluminum	EPA 6010B*	152	mg/l	1.1	11/13/2008	11/21/2008	RE
Calcium	EPA 6010B*	165	mg/l	1.1	11/13/2008	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/21/2008	RE
Silicon	ICP	1.54	mg/l	1.00	11/13/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
Page Number:	31 of 66

Analytical Report

Lab ID: 20080782-35
Client ID: 03-13-08-003-S (SPLP 1" dia./ 14 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0 +/- 0.439	pCi/l	0.795	12/7/2008	12/9/2008	RE
Radium-226	SM 7500 Ra B (M)*	437 +/- 7.4	pCi/l	0.5	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	130 +/- 2.73	pCi/l	0.964	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.459 +/- 0.287	pCi/l	0.304	12/3/2008	12/4/2008	SD
Thorium-230	LANL ER 200 M*	0.483 +/- 0.474	pCi/l	0.898	12/3/2008	12/4/2008	SD
Thorium-228	LANL ER 200 M*	0.947 +/- 0.369	pCi/l	0.304	12/3/2008	12/4/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.501 +/- 0.637	pCi/l	0.837	12/3/2008	12/4/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	1.31 +/- 0.771	pCi/l	0.686	12/3/2008	12/4/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	5.04 +/- 1.51	pCi/l	1.32	12/3/2008	12/4/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	577	mg/L as CaCO3	3		12/5/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	3		12/5/2008	RT
Carbonate Alkalinity	SM 2320 B	378	mg/L as CaCO3	3		12/5/2008	RT
Conductivity	EPA 120.1/SM 2510 B	996	uMHO/cm	2		11/26/2008	RT
Eh	SM 2580 B	49.0	mv			11/26/2008	RT
Eh-Temp		22.8	degrees C				RT
pH	SM 4500-H+ B	11.0	SI			11/26/2008 3:32:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	107	g			11/12/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2140	ml			11/12/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	153	mg/l	10	11/12/2008	12/16/2008	RE
Calcium	EPA 6010B*	175	mg/l	10	11/12/2008	12/16/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	2	11/12/2008	12/16/2008	RE
Silicon	ICP	BDL	mg/l	10	11/12/2008	12/16/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-36
Client ID: 03-13-08-003-S (SPLP 4" dia./ 24 HR)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	1.87 +/- 0.549	pCi/l	0.528	12/4/2008	12/5/2008	RE
Radium-226	SM 7500 Ra B (M)*	24.4 +/- 1.5	pCi/l	0.4	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	4.18 +/- 0.617	pCi/l	0.536	12/8/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.308 +/- 0.270	pCi/l	0.326	11/21/2008	11/26/2008	SD
Thorium-230	LANL ER 200 M*	0 +/- 0.430	pCi/l	1.06	11/21/2008	11/26/2008	SD
Thorium-228	LANL ER 200 M*	0.400 +/- 0.289	pCi/l	0.326	11/21/2008	11/26/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.321 +/- 0.513	pCi/l	0.600	11/21/2008	11/25/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.551 +/- 0.682	pCi/l	0.807	11/21/2008	11/25/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	4.68 +/- 1.79	pCi/l	1.80	11/21/2008	11/25/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	80.0	mg/L as CaCO3	1		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	7.2	mg/L as CaCO3	1		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	72.8	mg/L as CaCO3	1		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	126	uMHO/cm	2		11/14/2008	RT
Eh	SM 2580 B	29.6	mv			11/14/2008	RT
Eh-Temp		22.1	degrees C			11/14/2008	RT
pH	SM 4500-H+ B	10.0	SI			11/14/2008 6:54:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	654	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	13, 100	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	15.1	mg/l	1.1	11/13/2008	11/20/2008	RE
Calcium	EPA 6010B*	20.4	mg/l	1.1	11/13/2008	11/20/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/20/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/20/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-37
Client ID: 03-13-08-003-S (SPLP 4" dia./ 3 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	1.51 +/- 0.460	pCi/l	0.226	11/30/2008	12/3/2008	RE
Radium-226	SM 7500 Ra B (M)*	63.6 +/- 2.8	pCi/l	0.3	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	10.7 +/- 1.54	pCi/l	1.49	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.494 +/- 0.357	pCi/l	0.401	11/24/2008	11/30/2008	SD
Thorium-230	LANL ER 200 M*	1.34 +/- 0.683	pCi/l	1.18	11/24/2008	11/30/2008	SD
Thorium-228	LANL ER 200 M*	0.722 +/- 0.401	pCi/l	0.401	11/24/2008	11/30/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	3.10 +/- 1.34	pCi/l	1.12	11/24/2008	11/30/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	3.12 +/- 1.26	pCi/l	0.775	11/24/2008	11/30/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	8.09 +/- 1.98	pCi/l	0.95	11/24/2008	11/30/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	90.7	mg/L as CaCO3	1		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	28.2	mg/L as CaCO3	1		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	62.5	mg/L as CaCO3	1		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	111	uMHO/cm	2		11/18/2008	RT
Eh	SM 2580 B	115	mv			11/18/2008	RT
Eh-Temp		23.4	degrees C				RT
pH	SM 4500-H+ B	9.14	SI			11/18/2008 4:41:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	686	g			11/14/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	13, 700	ml			11/14/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	19.4	mg/l	1.1	11/14/2008	11/21/2008	RE
Calcium	EPA 6010B*	24.2	mg/l	1.1	11/1/143	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/14/2008	11/21/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/14/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
Page Number:	34 of 66

Analytical Report

Lab ID: 20080782-38
Client ID: 03-13-08-003-S (SPLP 4" dia./ 7 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0 +/- 0.346	pCi/l	0.587	12/3/2008	12/10/2008	RE
Radium-226	SM 7500 Ra B (M)*	93.2 +/- 3.5	pCi/l	0.5	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	11.2 +/- 0.720	pCi/l	0.610	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	3.64 +/- 0.770	pCi/l	0.405	11/26/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	6.19 +/- 1.08	pCi/l	1.02	11/26/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	3.68 +/- 0.773	pCi/l	0.405	11/26/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.45 +/- 0.849	pCi/l	0.837	11/26/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	2.09 +/- 0.923	pCi/l	0.686	11/26/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	5.13 +/- 1.52	pCi/l	1.32	11/26/2008	12/2/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	111	mg/L as CaCO3	1		12/3/2008	RT
Bicarbonate Alkalinity	SM 2320 B	19.1	mg/L as CaCO3	1		12/3/2008	RT
Carbonate Alkalinity	SM 2320 B	91.7	mg/L as CaCO3	1		12/3/2008	RT
Conductivity	EPA 120.1/SM 2510 B	161	uMHO/cm	2		11/21/2008	RT
Eh	SM 2580 B	72.4	mv			11/21/2008	RT
Eh-Temp		19.8	degrees C			11/21/2008	RT
pH	SM 4500-H+ B	9.34	SI			11/21/2008 11:10:00 AM	RT
SPLP - Extraction Sample Weight	SW 1312 M	506	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	10, 100	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	26.7	mg/l	1.1	11/13/2008	11/21/2008	RE
Calcium	EPA 6010B*	31.5	mg/l	1.1	11/13/2008	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/21/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
311 North Aspen
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-39
Client ID: 03-13-08-003-S (SPLP 4" dia./ 14 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0 +/- 0.705	pCi/l	1.21	12/7/2008	12/9/2008	RE
Radium-226	SM 7500 Ra B (M)*	303 +/- 6.4	pCi/l	0.7	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	45.8 +/- 1.33	pCi/l	0.864	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.76 +/- 0.475	pCi/l	0.501	12/3/2008	12/4/2008	SD
Thorium-230	LANL ER 200 M*	3.32 +/- 1.02	pCi/l	1.33	12/3/2008	12/4/2008	SD
Thorium-228	LANL ER 200 M*	1.14 +/- 0.544	pCi/l	0.501	12/3/2008	12/4/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.778 +/- 0.643	pCi/l	0.710	12/3/2008	12/4/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.632 +/- 0.714	pCi/l	0.953	12/3/2008	12/4/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	7.71 +/- 1.69	pCi/l	1.13	12/3/2008	12/4/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	219	mg/L as CaCO3	1		12/5/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	1		12/5/2008	RT
Carbonate Alkalinity	SM 2320 B	169	mg/L as CaCO3	1		12/5/2008	RT
Conductivity	EPA 120.1/SM 2510 B	443	uMHO/cm	2		11/26/2008	RT
Eh	SM 2580 B	-20.6	mv			11/26/2008	RT
Eh-Temp		23.1	degrees C				RT
pH	SM 4500-H+ B	10.7	SI			11/26/2008 3:35:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	544	g			11/12/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	10, 900	ml			11/12/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	54.3	mg/l	10	11/12/2008	12/16/2008	RE
Calcium	EPA 6010B*	66.2	mg/l	10	11/12/2008	12/16/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	2	11/12/2008	12/16/2008	RE
Silicon	ICP	BDL	mg/l	10	11/12/2008	12/16/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-40
Client ID: 6-88
Date Sampled: 6/20/2008 6:00:00 PM
Matrix: Solid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
K-40	HASL 300*	1180 +/- 238	pCi/g	222		12/18/2008	SD
Tl-208	HASL 300*	5940 +/- 312	pCi/g	38.1		12/18/2008	SD
Bi-212	HASL 300*	8910 +/- 744	pCi/g	243		12/18/2008	SD
Pb-212	HASL 300*	15300 +/- 1180	pCi/g	49.1		12/18/2008	SD
Bi-214 (Ra226)	HASL 300*	881 +/- 52.3	pCi/g	35.2		12/18/2008	SD
Pb-214	HASL 300*	842 +/- 44.2	pCi/g	33.8		12/18/2008	SD
Ac-228 (Ra228)	HASL 300*	15500 +/- 618	pCi/g	59.7		12/18/2008	SD
Lead-210	EML HASL 300-Pb-01-RC	1290 +/- 13.6	pCi/g	0.249	12/15/2008	12/16/2008	RE
Radium-226	SM 7500 Ra B (M)*	1340 +/- 13.4	pCi/g	0.4	12/9/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	96.8 +/- 4.78	pCi/g	2.88	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	1140 +/- 43	pCi/g	3.54	12/8/2008	12/9/2008	SD
Thorium-230	LANL ER 200 M*	165 +/- 18.2	pCi/g	17.4	12/2/2008	12/9/2008	SD
Thorium-228	LANL ER 200 M*	1220 +/- 45.1	pCi/g	7.9	12/8/2008	12/9/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	143 +/- 13.0	pCi/g	2.61	11/21/2008	12/9/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	33.6 +/- 6.59	pCi/g	3.52	11/21/2008	12/9/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	145 +/- 13.2	pCi/g	4.19	11/21/2008	12/9/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	29200	mg/kg as CaCO3	1900		12/9/2008	RT
Bicarbonate Alkalinity	SM 2320 B	23400	mg/kg as CaCO3	1900		12/9/2008	RT
Carbonate Alkalinity	SM 2320 B	5850	mg/kg as CaCO3	1900		12/9/2008	RT
Conductivity	EPA 120.1/SM 2510 B	9960	uMHO/cm	20		12/8/2008	RT
Eh	SM 2580 B	-279	mv			12/8/2008	RT
Eh-Temp		21.9	degrees C				RT
pH	EPA 9045B	11.8	SI			12/8/2008 2:43:00 PM	RT
Metals Analyses							
Aluminum	EPA 6010B*	57000	mg/kg	17.0	12/4/2008	12/8/2008	RE
Calcium	EPA 6010B*	47200	mg/kg	85	12/4/2008	12/8/2008	RE
Magnesium	EPA 6010B*	239	mg/kg	25.5	12/4/2008	12/8/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Silicon	ICP	1060	mg/kg	42.9	12/4/2008	12/8/2008	RE

Lab ID: 20080782-41
Client ID: 6-88 (SPLP 12 Mesh/ 24 HR)
Date Sampled:
Matrix: Liquid

		Radiochemical Analyses					
Lead-210	EML HASL 300-Pb-01-RC	0.736 +/- 0.408	pCi/l	0.479	12/4/2008	12/9/2008	RE
Radium-226	SM 7500 Ra B (M)*	41.2 +/- 3.5	pCi/l	2.0	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	88.3 +/- 3.40	pCi/l	1.86	12/8/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.234 +/- 0.306	pCi/l	0.412	11/21/2008	11/26/2008	SD
Thorium-230	LANL ER 200 M*	0.150 +/- 0.552	pCi/l	1.21	11/21/2008	11/26/2008	SD
Thorium-228	LANL ER 200 M*	2.07 +/- 0.608	pCi/l	0.412	11/21/2008	11/26/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.447 +/- 0.642	pCi/l	0.847	11/21/2008	11/25/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.544 +/- 0.551	pCi/l	0.549	11/21/2008	11/25/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	3.51 +/- 1.23	pCi/l	0.770	11/21/2008	11/25/2008	SD
		Inorganics Analyses					
Total Alkalinity	SM 2320 B	1100	mg/L as CaCO3	10		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	308	mg/L as CaCO3	10		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	789	mg/L as CaCO3	10		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	1450	uMHO/cm	20		11/14/2008	RT
Eh	SM 2580 B	-59.7	mv			11/14/2008	RT
Eh-Temp		21.8	degrees C			11/14/2008	RT
pH	SM 4500-H+ B	11.2	SI			11/14/2008 6:58:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	70	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1400	ml			11/13/2008	RT
		Metals Analyses					
Aluminum	EPA 6010B*	152	mg/l	1.1	11/13/2008	11/20/2008	RE
Calcium	EPA 6010B*	6.14	mg/l	1.1	11/13/2008	11/20/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/20/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/20/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Analytical Report

Lab ID: 20080782-42
Client ID: 6-88 (SPLP 12 Mesh/ 3 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	1.26 +/- 0.477	pCi/l	0.462	11/30/2008	12/3/2008	RE
Radium-226	SM 7500 Ra B (M)*	44.5 +/- 4.6	pCi/l	1.6	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	125 +/- 9.32	pCi/l	6.74	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.377 +/- 0.330	pCi/l	0.398	11/24/2008	11/30/2008	SD
Thorium-230	LANL ER 200 M*	0.521 +/- 0.587	pCi/l	1.18	11/24/2008	11/30/2008	SD
Thorium-228	LANL ER 200 M*	1.92 +/- 0.577	pCi/l	0.398	11/24/2008	11/30/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.54 +/- 0.915	pCi/l	0.962	11/24/2008	11/30/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.438 +/- 0.515	pCi/l	0.591	11/24/2008	11/30/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	4.57 +/- 1.41	pCi/l	1.15	11/24/2008	11/30/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	1240	mg/L as CaCO3	10		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	241	mg/L as CaCO3	10		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	1000	mg/L as CaCO3	10		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	1860	uMHO/cm	20		11/18/2008	RT
Eh	SM 2580 B	9.2	mv			11/18/2008	RT
Eh-Temp		23.7	degrees C				RT
pH	SM 4500-H+ B	11.3	SI			11/18/2008 4:44:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	70	g			11/14/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1400	ml			11/14/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	190	mg/l	1.1	11/14/2008	11/21/2008	RE
Calcium	EPA 6010B*	5.56	mg/l	1.1	11/1/143	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/14/2008	11/21/2008	RE
Silicon	ICP	1.64	mg/l	1.00	11/14/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
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Analytical Report

Lab ID: 20080782-43
Client ID: 6-88 (SPLP 12 Mesh/ 7 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	2.54 +/- 0.477	pCi/l	0.308	12/3/2008	12/10/2008	RE
Radium-226	SM 7500 Ra B (M)*	113 +/- 9.9	pCi/l	6.2	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	59.2 +/- 2.43	pCi/l	1.62	12/8/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	2.56 +/- 0.652	pCi/l	0.508	11/26/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	6.02 +/- 1.03	pCi/l	1.00	11/26/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	5.80 +/- 0.946	pCi/l	0.621	11/26/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	4.40 +/- 1.34	pCi/l	0.874	11/26/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	3.69 +/- 1.18	pCi/l	0.607	11/26/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	7.93 +/- 1.71	pCi/l	0.741	11/26/2008	12/2/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	1540	mg/L as CaCO3	10		12/3/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	10		12/3/2008	RT
Carbonate Alkalinity	SM 2320 B	1510	mg/L as CaCO3	10		12/3/2008	RT
Conductivity	EPA 120.1/SM 2510 B	3120	uMHO/cm	20		11/12/2008	RT
Eh	SM 2580 B	-7.0	mv			11/21/2008	RT
Eh-Temp		20.5	degrees C			11/21/2008	RT
pH	SM 4500-H+ B	11.8	SI			11/21/2008 11:13:00 AM	RT
SPLP - Extraction Sample Weight	SW 1312 M	70	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1400	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	197	mg/l	1.1	11/13/2008	11/21/2008	RE
Calcium	EPA 6010B*	4.77	mg/l	1.1	11/13/2008	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/21/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
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Analytical Report

Lab ID: 20080782-44
Client ID: 6-88 (SPLP 12 Mesh/ 14 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	1.73 +/- 0.635	pCi/l	0.576	12/7/2008	12/9/2008	RE
Radium-226	SM 7500 Ra B (M)*	1.3 +/- 0.3	pCi/l	0.3	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	115 +/- 2.97	pCi/l	1.35	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.50 +/- 0.487	pCi/l	0.703	12/3/2008	12/4/2008	SD
Thorium-230	LANL ER 200 M*	3.81 +/- 0.84	pCi/l	0.988	12/3/2008	12/4/2008	SD
Thorium-228	LANL ER 200 M*	1.44 +/- 0.478	pCi/l	0.354	12/3/2008	12/4/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	4.13 +/- 1.30	pCi/l	0.874	12/3/2008	12/4/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	3.78 +/- 1.20	pCi/l	0.607	12/3/2008	12/4/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	10.3 +/- 1.93	pCi/l	0.741	12/3/2008	12/4/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	1640	mg/L as CaCO3	10		12/5/2008	RT
Bicarbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	10		12/5/2008	RT
Carbonate Alkalinity	SM 2320 B	1170	mg/L as CaCO3	10		12/5/2008	RT
Conductivity	EPA 120.1/SM 2510 B	3860	uMHO/cm	20		11/26/2008	RT
Eh	SM 2580 B	-14.6	mv			11/26/2008	RT
Eh-Temp		23.4	degrees C				RT
pH	SM 4500-H+ B	11.8	SI			11/26/2008 3:44:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	70	g			11/12/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	1400	ml			11/12/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	230	mg/l	10	11/12/2008	12/16/2008	RE
Calcium	EPA 6010B*	BDL	mg/l	10	11/12/2008	12/16/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	2	11/12/2008	12/16/2008	RE
Silicon	ICP	BDL	mg/l	10	11/12/2008	12/16/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
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Analytical Report

Lab ID: 20080782-45
Client ID: 6-88 (SPLP 1" dia./ 24 HR)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	2.30 +/- 0.603	pCi/l	0.340	12/4/2008	12/15/2008	RE
Radium-226	SM 7500 Ra B (M)*	22.6 +/- 1.6	pCi/l	0.3	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	5.46 +/- 1.05	pCi/l	1.05	12/8/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.532 +/- 0.391	pCi/l	0.495	11/21/2008	11/26/2008	SD
Thorium-230	LANL ER 200 M*	1.03 +/- 0.605	pCi/l	1.10	11/21/2008	11/26/2008	SD
Thorium-228	LANL ER 200 M*	0.399 +/- 0.422	pCi/l	0.605	11/21/2008	11/26/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.660 +/- 0.817	pCi/l	1.00	11/21/2008	11/26/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.025 +/- 0.334	pCi/l	0.543	11/21/2008	11/26/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	1.29 +/- 1.05	pCi/l	1.16	11/21/2008	11/26/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	70.2	mg/L as CaCO3	1		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	40.5	mg/L as CaCO3	1		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	29.7	mg/L as CaCO3	1		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	163	uMHO/cm	2		11/14/2008	RT
Eh	SM 2580 B	-43.5	mv			11/14/2008	RT
Eh-Temp		21.9	degrees C			11/14/2008	RT
pH	SM 4500-H+ B	9.77	SI			11/14/2008 7:11:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	129	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2580	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	6.65	mg/l	1.1	11/13/2008	11/20/2008	RE
Calcium	EPA 6010B*	2.00	mg/l	1.1	11/13/2008	11/20/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/20/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/20/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-46
Client ID: 6-88 (SPLP 1" dia./ 3 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0 +/- 0.146	pCi/l	0.257	11/30/2008	12/6/2008	RE
Radium-226	SM 7500 Ra B (M)*	17.6 +/- 1.7	pCi/l	0.6	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	54.0 +/- 3.86	pCi/l	2.13	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.477 +/- 0.327	pCi/l	0.360	11/24/2008	11/29/2008	SD
Thorium-230	LANL ER 200 M*	0.837 +/- 0.590	pCi/l	1.11	11/24/2008	11/29/2008	SD
Thorium-228	LANL ER 200 M*	0 +/- 0.412	pCi/l	0.714	11/24/2008	11/29/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.939 +/- 0.469	pCi/l	0.550	11/24/2008	11/28/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.732 +/- 0.358	pCi/l	0.337	11/24/2008	11/28/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	2.02 +/- 0.632	pCi/l	0.660	11/24/2008	11/28/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	150	mg/L as CaCO3	1		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	71.8	mg/L as CaCO3	1		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	77.9	mg/L as CaCO3	1		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	278	uMHO/cm	2		11/18/2008	RT
Eh	SM 2580 B	-36.6	mv			11/18/2008	RT
Eh-Temp		23.5	degrees C				RT
pH	SM 4500-H+ B	9.76	SI			11/18/2008 4:55:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	108	g			11/14/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2160	ml			11/14/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	17.1	mg/l	1.1	11/14/2008	11/21/2008	RE
Calcium	EPA 6010B*	3.70	mg/l	1.1	11/1/143	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/14/2008	11/21/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/14/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20080782-47**						
Client ID:	**6-88 (SPLP 1" dia./ 7 Day)**						
Date Sampled:							
Matrix:	**Liquid**						
	Radiochemical Analyses						
Lead-210	EML HASL 300-Pb-01-RC	4.66 +/- 0.691	pCi/l	0.311	12/3/2008	12/10/2008	RE
Radium-226	SM 7500 Ra B (M)*	24.3 +/- 2.9	pCi/l	0.9	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	14.6 +/- 0.805	pCi/l	0.514	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	2.54 +/- 0.738	pCi/l	0.495	11/26/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	5.85 +/- 1.12	pCi/l	0.959	11/26/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	1.55 +/- 0.605	pCi/l	0.495	11/26/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.13 +/- 0.960	pCi/l	1.29	11/26/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.366 +/- 0.787	pCi/l	1.21	11/26/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	2.57 +/- 1.34	pCi/l	1.70	11/26/2008	12/2/2008	SD
	Inorganics Analyses						
Total Alkalinity	SM 2320 B	225	mg/L as CaCO3	2		12/3/2008	RT
Bicarbonate Alkalinity	SM 2320 B	70.0	mg/L as CaCO3	2		12/3/2008	RT
Carbonate Alkalinity	SM 2320 B	155	mg/L as CaCO3	2		12/3/2008	RT
Conductivity	EPA 120.1/SM 2510 B	408	uMHO/cm	2		11/21/2008	RT
Eh	SM 2580 B	-54.1	mv			11/21/2008	RT
Eh-Temp		20.3	degrees C			11/21/2008	RT
pH	SM 4500-H+ B	10.4	SI			11/21/2008 11:25:00 AM	RT
SPLP - Extraction Sample Weight	SW 1312 M	120	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2400	ml			11/13/2008	RT
	Metals Analyses						
Aluminum	EPA 6010B*	23.9	mg/l	1.1	11/13/2008	11/21/2008	RE
Calcium	EPA 6010B*	6.14	mg/l	1.1	11/13/2008	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/21/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
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Analytical Report

Lab ID: 20080782-48
Client ID: 6-88 (SPLP 1" dia./ 14 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	7.39 +/- 1.03	pCi/l	0.409	12/7/2008	12/9/2008	RE
Radium-226	SM 7500 Ra B (M)*	33.8 +/- 3.0	pCi/l	1.1	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	9.86 +/- 0.925	pCi/l	0.757	12/9/2008	12/13/2008	SD
Thorium-232	LANL ER 200 M*	1.43 +/- 0.445	pCi/l	0.316	12/3/2008	12/4/2008	SD
Thorium-230	LANL ER 200 M*	1.25 +/- 0.539	pCi/l	0.865	12/3/2008	12/4/2008	SD
Thorium-228	LANL ER 200 M*	0.805 +/- 0.545	pCi/l	0.765	12/3/2008	12/4/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.836 +/- 0.713	pCi/l	0.828	12/3/2008	12/4/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.07 +/- 0.65	pCi/l	1.08	12/3/2008	12/4/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	3.14 +/- 1.29	pCi/l	1.34	12/3/2008	12/4/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	273	mg/L as CaCO3	2		12/5/2008	RT
Bicarbonate Alkalinity	SM 2320 B	106	mg/L as CaCO3	2		12/5/2008	RT
Carbonate Alkalinity	SM 2320 B	167	mg/L as CaCO3	2		12/5/2008	RT
Conductivity	EPA 120.1/SM 2510 B	417	uMHO/cm	2		11/26/2008	RT
Eh	SM 2580 B	-65.4	mv			11/26/2008	RT
Eh-Temp		23.5	degrees C				RT
pH	SM 4500-H+ B	9.95	SI			11/26/2008 3:48:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	105	g			11/12/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2100	ml			11/12/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	38.1	mg/l	10	11/12/2008	12/16/2008	RE
Calcium	EPA 6010B*	BDL	mg/l	10	11/12/2008	12/16/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	2	11/12/2008	12/16/2008	RE
Silicon	ICP	BDL	mg/l	10	11/12/2008	12/16/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
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Analytical Report

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Lab ID:	**20080782-49**						
Client ID:	**6-88 (SPLP 4" dia./ 24 HR)**						
Date Sampled:							
Matrix:	**Liquid**						
		Radiochemical Analyses					
Lead-210	EML HASL 300-Pb-01-RC	1.01 +/- 0.559	pCi/l	0.590	12/4/2008	12/5/2008	RE
Radium-226	SM 7500 Ra B (M)*	30.9 +/- 2.7	pCi/l	0.8	12/10/2008	12/13/2008	RE
Radium-228	EPA 904*/9320*	0.551 +/- 0.763	pCi/l	0.808	12/8/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.558 +/- 0.464	pCi/l	0.635	11/21/2008	11/26/2008	SD
Thorium-230	LANL ER 200 M*	2.84 +/- 0.792	pCi/l	1.13	11/21/2008	11/26/2008	SD
Thorium-228	LANL ER 200 M*	0.349 +/- 0.484	pCi/l	0.732	11/21/2008	11/26/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.25 +/- 1.26	pCi/l	1.54	11/21/2008	11/25/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.833 +/- 1.03	pCi/l	1.26	11/21/2008	11/25/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	7.75 +/- 2.62	pCi/l	2.44	11/21/2008	11/25/2008	SD
		Inorganics Analyses					
Total Alkalinity	SM 2320 B	13.8	mg/L as CaCO3	1		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	7.7	mg/L as CaCO3	1		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	6.2	mg/L as CaCO3	1		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	43.6	uMHO/cm	2		11/14/2008	RT
Eh	SM 2580 B	70.3	mv			11/14/2008	RT
Eh-Temp		21.8	degrees C			11/14/2008	RT
pH	SM 4500-H+ B	9.35	SI			11/14/2008 7:15:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	719	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	14, 400	ml			11/13/2008	RT
		Metals Analyses					
Aluminum	EPA 6010B*	BDL	mg/l	1.1	11/13/2008	11/20/2008	RE
Calcium	EPA 6010B*	BDL	mg/l	1.1	11/13/2008	11/20/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/20/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/20/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-50
Client ID: 6-88 (SPLP 4" dia./ 3 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	1.17 +/- 0.519	pCi/l	0.494	11/30/2008	12/3/2008	RE
Radium-226	SM 7500 Ra B (M)*	4.7 +/- 0.8	pCi/l	0.5	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	2.92 +/- 0.744	pCi/l	0.736	12/8/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	0.360 +/- 0.342	pCi/l	0.422	11/24/2008	11/30/2008	SD
Thorium-230	LANL ER 200 M*	0.100 +/- 0.602	pCi/l	1.29	11/24/2008	11/30/2008	SD
Thorium-228	LANL ER 200 M*	0 +/- 0.537	pCi/l	0.936	11/24/2008	11/30/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	2.17 +/- 1.18	pCi/l	1.12	11/24/2008	11/30/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.092 +/- 0.882	pCi/l	1.46	11/24/2008	11/30/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	4.48 +/- 1.77	pCi/l	1.81	11/24/2008	11/30/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	23.1	mg/L as CaCO3	1		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	23.1	mg/L as CaCO3	1		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	BDL	mg/L as CaCO3	1		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	57.6	uMHO/cm	2		11/18/2008	RT
Eh	SM 2580 B	174	mv			11/18/2008	RT
Eh-Temp		23.8	degrees C				RT
pH	SM 4500-H+ B	7.76	SI			11/18/2008 4:59:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	523	g			11/14/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	10, 500	ml			11/14/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	1.58	mg/l	1.1	11/14/2008	11/21/2008	RE
Calcium	EPA 6010B*	1.94	mg/l	1.1	11/1/143	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/14/2008	11/21/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/14/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
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Analytical Report

Lab ID: 20080782-51
Client ID: 6-88 (SPLP 4" dia./ 7 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.779 +/- 0.552	pCi/l	0.683	12/3/2008	12/10/2008	RE
Radium-226	SM 7500 Ra B (M)*	4.3 +/- 0.6	pCi/l	0.3	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	2.81 +/- 0.437	pCi/l	0.400	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	1.36 +/- 0.608	pCi/l	0.732	11/26/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	3.26 +/- 0.786	pCi/l	0.878	11/26/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	0.838 +/- 0.399	pCi/l	0.369	11/26/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	2.83 +/- 1.06	pCi/l	0.875	11/26/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.875 +/- 0.604	pCi/l	0.54	11/26/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	4.07 +/- 1.27	pCi/l	1.05	11/26/2008	12/2/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	29.4	mg/L as CaCO3	1		12/3/2008	RT
Bicarbonate Alkalinity	SM 2320 B	25.2	mg/L as CaCO3	1		12/3/2008	RT
Carbonate Alkalinity	SM 2320 B	4.1	mg/L as CaCO3	1		12/3/2008	RT
Conductivity	EPA 120.1/SM 2510 B	68.3	uMHO/cm	2		11/21/2008	RT
Eh	SM 2580 B	210	mv			11/21/2008	RT
Eh-Temp		21.4	degrees C			11/21/2008	RT
pH	SM 4500-H+ B	9.25	SI			11/21/2008 11:31:00 AM	RT
SPLP - Extraction Sample Weight	SW 1312 M	1038	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	20, 800	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	1.23	mg/l	1.1	11/13/2008	11/21/2008	RE
Calcium	EPA 6010B*	2.06	mg/l	1.1	11/13/2008	11/21/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	0.22	11/13/2008	11/21/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Analytical Report

Lab ID: 20080782-52
Client ID: 6-88 (SPLP 4" dia./ 14 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	1.53 +/- 0.596	pCi/l	0.651	12/7/2008	12/9/2008	RE
Radium-226	SM 7500 Ra B (M)*	9.5 +/- 1.1	pCi/l	0.7	12/10/2008	12/16/2008	RE
Radium-228	EPA 904*/9320*	78.8 +/- 1.93	pCi/l	0.843	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	1.51 +/- 0.593	pCi/l	0.721	12/3/2008	12/4/2008	SD
Thorium-230	LANL ER 200 M*	1.98 +/- 0.709	pCi/l	1.06	12/3/2008	12/4/2008	SD
Thorium-228	LANL ER 200 M*	1.51 +/- 0.582	pCi/l	0.695	12/3/2008	12/4/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	3.08 +/- 1.37	pCi/l	1.42	12/3/2008	12/4/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	1.34 +/- 1.05	pCi/l	1.30	12/3/2008	12/4/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	3.86 +/- 1.51	pCi/l	1.51	12/3/2008	12/4/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	29.9	mg/L as CaCO3	1		12/5/2008	RT
Bicarbonate Alkalinity	SM 2320 B	26.8	mg/L as CaCO3	1		12/5/2008	RT
Carbonate Alkalinity	SM 2320 B	3.1	mg/L as CaCO3	1		12/5/2008	RT
Conductivity	EPA 120.1/SM 2510 B	77.9	uMHO/cm	2		11/26/2008	RT
Eh	SM 2580 B	113	mv			11/26/2008	RT
Eh-Temp		23.6	degrees C				RT
pH	SM 4500-H+ B	9.00	SI			11/26/2008 3:52:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	886	g			11/12/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	17,700	ml			11/12/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	10.6	mg/l	10	11/12/2008	12/16/2008	RE
Calcium	EPA 6010B*	BDL	mg/l	10	11/12/2008	12/16/2008	RE
Magnesium	EPA 6010B*	BDL	mg/l	2	11/12/2008	12/16/2008	RE
Silicon	ICP	BDL	mg/l	10	11/12/2008	12/16/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-53
Client ID: 03-13-08-004-BD
Date Sampled:
Matrix: Solid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Tl-208	HASL 300*	23.3 +/- 1.55	pCi/g	0.575		12/18/2008	SD
Bi-212	HASL 300*	ND	pCi/g	5.35		12/18/2008	SD
Pb-212	HASL 300*	55.4 +/- 4.36	pCi/g	0.743		12/18/2008	SD
Bi-214 (Ra226)	HASL 300*	20.9 +/- 1.65	pCi/g	1.03		12/18/2008	SD
Pb-214	HASL 300*	30.1 +/- 1.39	pCi/g	0.920		12/18/2008	SD
Ac-228 (Ra228)	HASL 300*	60.9 +/- 2.46	pCi/g	1.91		12/18/2008	SD
Lead-210	EML HASL 300-Pb-01-RC	85.5 +/- 5.3	pCi/g	3.45	12/15/2008	12/16/2008	RE
Radium-226	SM 7500 Ra B (M)*	25.6 +/- 1.6	pCi/g	0.8	12/9/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	11.2 +/- 5.25	pCi/g	5.41	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	32 +/- 3.35	pCi/g	1.04	12/2/2008	12/9/2008	SD
Thorium-230	LANL ER 200 M*	18 +/- 3.0	pCi/g	3.6	12/8/2008	12/9/2008	SD
Thorium-228	LANL ER 200 M*	35 +/- 3.5	pCi/g	1.3	12/2/2008	12/9/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	22.9 +/- 0.869	pCi/g	0.051	11/21/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	1.11 +/- 0.193	pCi/g	0.062	11/21/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	19.0 +/- 0.793	pCi/g	0.095	11/21/2008	12/2/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	344000	mg/kg as CaCO3	910		12/9/2008	RT
Bicarbonate Alkalinity	SM 2320 B	240000	mg/kg as CaCO3	910		12/9/2008	RT
Carbonate Alkalinity	SM 2320 B	104000	mg/kg as CaCO3	910		12/9/2008	RT
Conductivity	EPA 120.1/SM 2510 B	495	uMHO/cm	2		12/8/2008	RT
Eh	SM 2580 B	74.7	mv			12/8/2008	RT
Eh-Temp		22.6	degrees C				RT
pH	EPA 9045B	9.48	SI			12/8/2008 2:46:00 PM	RT
Metals Analyses							
Aluminum	EPA 6010B*	12800	mg/kg	19.8	12/4/2008	12/8/2008	RE
Calcium	EPA 6010B*	47700	mg/kg	99	12/4/2008	12/8/2008	RE
Magnesium	EPA 6010B*	91100	mg/kg	29.7	12/4/2008	12/8/2008	RE
Silicon	ICP	1660	mg/kg	50.0	12/4/2008	12/8/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
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Analytical Report

Lab ID: 20080782-54
Client ID: 03-13-08-004-BD (SPLP 12 Mesh/24 HR)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	1.37 +/- 0.884	pCi/l	0.504	12/4/2008	12/5/2008	RE
Radium-226	SM 7500 Ra B (M)*	2.2 +/- 0.5	pCi/l	0.5	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	0.950 +/- 0.904	pCi/l	0.952	12/8/2008	12/12/2008	SD
Thorium-232	LANL ER 200 M*	0.318 +/- 0.206	pCi/l	0.163	11/21/2008	11/26/2008	SD
Thorium-230	LANL ER 200 M*	1.34 +/- 0.555	pCi/l	0.963	11/21/2008	11/26/2008	SD
Thorium-228	LANL ER 200 M*	0.456 +/- 0.226	pCi/l	0.097	11/21/2008	11/26/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.07 +/- 0.850	pCi/l	0.764	11/21/2008	11/26/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.586 +/- 0.580	pCi/l	0.390	11/21/2008	11/26/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	1.71 +/- 1.13	pCi/l	1.14	11/21/2008	11/26/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	158	mg/L as CaCO3	2		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	36.9	mg/L as CaCO3	2		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	121	mg/L as CaCO3	2		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	325	uMHO/cm	2		11/14/2008	RT
Eh	SM 2580 B	111	mv			11/14/2008	RT
Eh-Temp		22.0	degrees C			11/14/2008	RT
pH	SM 4500-H+ B	10.0	SI			11/14/2008 7:19:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	100	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2000	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	BDL	mg/l	1.1	11/13/2008	11/20/2008	RE
Calcium	EPA 6010B*	5.24	mg/l	1.1	11/13/2008	11/20/2008	RE
Magnesium	EPA 6010B*	45.6	mg/l	0.22	11/13/2008	11/20/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/20/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-55
Client ID: 03-13-08-004-BD (SPLP 12 Mesh/ 3 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.337 +/- 0.246	pCi/l	0.267	11/30/2008	12/3/2008	RE
Radium-226	SM 7500 Ra B (M)*	1.2 +/- 0.4	pCi/l	0.4	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	1.91 +/- 2.01	pCi/l	2.15	12/15/2008	12/16/2008	SD
Thorium-232	LANL ER 200 M*	1.20 +/- 0.573	pCi/l	0.528	11/24/2008	11/29/2008	SD
Thorium-230	LANL ER 200 M*	2.24 +/- 0.901	pCi/l	1.38	11/24/2008	11/29/2008	SD
Thorium-228	LANL ER 200 M*	1.05 +/- 0.547	pCi/l	0.528	11/24/2008	11/29/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.793 +/- 0.616	pCi/l	0.401	11/24/2008	11/30/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	2.08 +/- 0.953	pCi/l	0.401	11/24/2008	11/30/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	5.53 +/- 1.52	pCi/l	0.330	11/24/2008	11/30/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	164	mg/L as CaCO3	2		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	39.0	mg/L as CaCO3	2		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	125	mg/L as CaCO3	2		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	337	uMHO/cm	2		11/18/2008	RT
Eh	SM 2580 B	119	mv			11/18/2008	RT
Eh-Temp		23.2	degrees C				RT
pH	SM 4500-H+ B	9.95	SI			11/18/2008 5:04:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	100	g			11/14/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2000	ml			11/14/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	BDL	mg/l	1.1	11/14/2008	11/21/2008	RE
Calcium	EPA 6010B*	5.21	mg/l	1.1	11/1/143	11/21/2008	RE
Magnesium	EPA 6010B*	49.0	mg/l	0.22	11/14/2008	11/21/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/14/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-56
Client ID: 03-13-08-004-BD (SPLP 12 Mesh/ 7 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.248 +/- 0.323	pCi/l	0.482	12/3/2008	12/10/2008	RE
Radium-226	SM 7500 Ra B (M)*	2.8 +/- 0.8	pCi/l	0.6	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	0.335 +/- 1.07	pCi/l	1.15	12/9/2008	12/12/2008	SD
Thorium-232	LANL ER 200 M*	2.11 +/- 0.509	pCi/l	0.299	11/26/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	1.63 +/- 0.527	pCi/l	0.703	11/26/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	1.01 +/- 0.541	pCi/l	0.723	11/26/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	2.94 +/- 0.700	pCi/l	0.483	11/26/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	2.08 +/- 0.55	pCi/l	0.21	11/26/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	9.66 +/- 1.17	pCi/l	0.272	11/26/2008	12/2/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	183	mg/L as CaCO3	2		12/3/2008	RT
Bicarbonate Alkalinity	SM 2320 B	57.7	mg/L as CaCO3	2		12/3/2008	RT
Carbonate Alkalinity	SM 2320 B	126	mg/L as CaCO3	2		12/3/2008	RT
Conductivity	EPA 120.1/SM 2510 B	370	uMHO/cm	2		11/21/2008	RT
Eh	SM 2580 B	135	mv			11/21/2008	RT
Eh-Temp		21.3	degrees C			11/21/2008	RT
pH	SM 4500-H+ B	9.94	SI			11/21/2008 11:34:00 AM	RT
SPLP - Extraction Sample Weight	SW 1312 M	100	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2000	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	BDL	mg/l	1.1	11/13/2008	11/21/2008	RE
Calcium	EPA 6010B*	4.75	mg/l	1.1	11/13/2008	11/21/2008	RE
Magnesium	EPA 6010B*	52.4	mg/l	0.22	11/13/2008	11/21/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

Outreach Laboratory
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-57
Client ID: 03-13-08-004-BD (SPLP 12 Mesh/ 14 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	1.21 +/- 0.326	pCi/l	0.231	12/7/2008	12/10/2008	RE
Radium-226	SM 7500 Ra B (M)*	9.5 +/- 1.1	pCi/l	0.4	12/10/2008	12/16/2008	RE
Radium-228	EPA 904*/9320*	2.45 +/- 1.95	pCi/l	2.05	12/9/2008	12/12/2008	SD
Thorium-232	LANL ER 200 M*	0.744 +/- 0.375	pCi/l	0.358	12/3/2008	12/4/2008	SD
Thorium-230	LANL ER 200 M*	0.771 +/- 0.522	pCi/l	0.929	12/3/2008	12/4/2008	SD
Thorium-228	LANL ER 200 M*	0.541 +/- 0.338	pCi/l	0.358	12/3/2008	12/4/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.55 +/- 0.744	pCi/l	0.435	12/3/2008	12/4/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	1.19 +/- 0.638	pCi/l	0.312	12/3/2008	12/4/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	6.05 +/- 1.45	pCi/l	0.742	12/3/2008	12/4/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	191	mg/L as CaCO3	2		12/5/2008	RT
Bicarbonate Alkalinity	SM 2320 B	58.7	mg/L as CaCO3	2		12/5/2008	RT
Carbonate Alkalinity	SM 2320 B	132	mg/L as CaCO3	2		12/5/2008	RT
Conductivity	EPA 120.1/SM 2510 B	370	uMHO/cm	2		11/26/2008	RT
Eh	SM 2580 B	178	mv			11/26/2008	RT
Eh-Temp		22.1	degrees C				RT
pH	SM 4500-H+ B	9.87	SI			11/26/2008 3:57:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	100	g			11/12/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2000	ml			11/12/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	BDL	mg/l	10	11/12/2008	12/16/2008	RE
Calcium	EPA 6010B*	BDL	mg/l	10	11/12/2008	12/16/2008	RE
Magnesium	EPA 6010B*	58.6	mg/l	2	11/12/2008	12/16/2008	RE
Silicon	ICP	BDL	mg/l	10	11/12/2008	12/16/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
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Analytical Report

Lab ID: 20080782-58
Client ID: 03-13-08-005-BD
Date Sampled:
Matrix: Solid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Tl-208	HASL 300*	7.22 +/- 0.511	pCi/g	0.234		12/18/2008	SD
Bi-212	HASL 300*	12.1 +/- 1.50	pCi/g	1.28		12/18/2008	SD
Pb-212	HASL 300*	21.9 +/- 1.78	pCi/g	0.550		12/18/2008	SD
Bi-214 (Ra226)	HASL 300*	8.33 +/- 0.642	pCi/g	0.412		12/18/2008	SD
Pb-214	HASL 300*	8.03 +/- 0.475	pCi/g	0.300		12/18/2008	SD
Ac-228 (Ra228)	HASL 300*	17.3 +/- 0.975	pCi/g	0.647		12/18/2008	SD
Lead-210	EML HASL 300-Pb-01-RC	23.0 +/- 1.71	pCi/g	0.340	12/15/2008	12/16/2008	RE
Radium-226	SM 7500 Ra B (M)*	5.2 +/- 0.6	pCi/g	0.2	12/9/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	4.57 +/- 10.9	pCi/g	11.7	12/9/2008	12/12/2008	SD
Thorium-232	LANL ER 200 M*	11 +/- 0.427	pCi/g	0.052	11/21/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	6 +/- 0.3	pCi/g	0.2	11/21/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	12 +/- 0.5	pCi/g	0.1	11/21/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	6.16 +/- 0.395	pCi/g	0.051	11/21/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.911 +/- 0.155	pCi/g	0.064	11/21/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	5.26 +/- 0.366	pCi/g	0.064	11/21/2008	12/2/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	611000	mg/kg as CaCO3	1330		12/9/2008	RT
Bicarbonate Alkalinity	SM 2320 B	411000	mg/kg as CaCO3	1330		12/9/2008	RT
Carbonate Alkalinity	SM 2320 B	200000	mg/kg as CaCO3	1330		12/9/2008	RT
Conductivity	EPA 120.1/SM 2510 B	406	uMHO/cm	2		12/8/2008	RT
Eh	SM 2580 B	62.7	mv			12/8/2008	RT
Eh-Temp		22.0	degrees C				RT
pH	EPA 9045B	9.64	SI			12/8/2008 2:50:00 PM	RT
Metals Analyses							
Aluminum	EPA 6010B*	8710	mg/kg	19.3	12/4/2008	12/8/2008	RE
Calcium	EPA 6010B*	55700	mg/kg	97	12/4/2008	12/8/2008	RE
Magnesium	EPA 6010B*	154000	mg/kg	29.0	12/4/2008	12/8/2008	RE
Silicon	ICP	1270	mg/kg	48.8	12/4/2008	12/8/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
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Analytical Report

Lab ID: 20080782-59
Client ID: 03-13-08-005-BD (SPLP 12 Mesh/24 HR)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.511 +/- 0.395	pCi/l	0.445	12/4/2008	12/5/2008	RE
Radium-226	SM 7500 Ra B (M)*	0.5 +/- 0.4	pCi/l	0.7	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	1.54 +/- 0.745	pCi/l	0.760	12/8/2008	12/12/2008	SD
Thorium-232	LANL ER 200 M*	0.347 +/- 0.255	pCi/l	0.260	11/21/2008	11/26/2008	SD
Thorium-230	LANL ER 200 M*	0.964 +/- 0.573	pCi/l	1.06	11/21/2008	11/26/2008	SD
Thorium-228	LANL ER 200 M*	0.252 +/- 0.262	pCi/l	0.334	11/21/2008	11/26/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.28 +/- 0.994	pCi/l	0.761	11/21/2008	11/26/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.674 +/- 0.757	pCi/l	0.682	11/21/2008	11/26/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	3.08 +/- 1.50	pCi/l	1.02	11/21/2008	11/26/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	153	mg/L as CaCO3	2		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	27.7	mg/L as CaCO3	2		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	125	mg/L as CaCO3	2		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	316	uMHO/cm	2		11/14/2008	RT
Eh	SM 2580 B	110	mv			11/14/2008	RT
Eh-Temp		21.8	degrees C			11/14/2008	RT
pH	SM 4500-H+ B	10.2	SI			11/14/2008 7:25:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	100	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2000	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	BDL	mg/l	1.1	11/13/2008	11/20/2008	RE
Calcium	EPA 6010B*	3.69	mg/l	1.1	11/13/2008	11/20/2008	RE
Magnesium	EPA 6010B*	43.8	mg/l	0.22	11/13/2008	11/20/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/20/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Analytical Report

Lab ID: 20080782-60
Client ID: 03-13-08-005-BD (SPLP 12 Mesh/ 3 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
		Radiochemical Analyses					
Lead-210	EML HASL 300-Pb-01-RC	0 +/- 0.191	pCi/l	0.339	11/30/2008	12/3/2008	RE
Radium-226	SM 7500 Ra B (M)*	2.2 +/- 0.6	pCi/l	0.7	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	1.32 +/- 0.783	pCi/l	0.805	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.612 +/- 0.367	pCi/l	0.380	11/24/2008	11/29/2008	SD
Thorium-230	LANL ER 200 M*	0 +/- 0.405	pCi/l	1.15	11/24/2008	11/29/2008	SD
Thorium-228	LANL ER 200 M*	0.396 +/- 0.323	pCi/l	0.380	11/24/2008	11/29/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.623 +/- 0.682	pCi/l	0.676	11/24/2008	11/30/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.701 +/- 0.653	pCi/l	0.482	11/24/2008	11/30/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	5.24 +/- 1.75	pCi/l	1.16	11/24/2008	11/30/2008	SD
		Inorganics Analyses					
Total Alkalinity	SM 2320 B	159	mg/L as CaCO3	2		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	27.7	mg/L as CaCO3	2		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	131	mg/L as CaCO3	2		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	311	uMHO/cm	2		11/18/2008	RT
Eh	SM 2580 B	120	mv			11/18/2008	RT
Eh-Temp		23.2	degrees C				RT
pH	SM 4500-H+ B	10.1	SI			11/18/2008 5:09:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	100	g			11/14/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2000	ml			11/14/2008	RT
		Metals Analyses					
Aluminum	EPA 6010B*	BDL	mg/l	1.1	11/14/2008	11/21/2008	RE
Calcium	EPA 6010B*	3.57	mg/l	1.1	11/1/143	11/21/2008	RE
Magnesium	EPA 6010B*	46.2	mg/l	0.22	11/14/2008	11/21/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/14/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
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Analytical Report

Lab ID: 20080782-61
Client ID: 03-13-08-005-BD (SPLP 12 Mesh/ 7 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.219 +/- 0.181	pCi/l	0.212	12/3/2008	12/10/2008	RE
Radium-226	SM 7500 Ra B (M)*	2.0 +/- 0.5	pCi/l	0.3	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	0 +/- 1.50	pCi/l	1.63	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.277 +/- 0.243	pCi/l	0.294	11/26/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	0.762 +/- 0.425	pCi/l	0.697	11/26/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	0.832 +/- 0.344	pCi/l	0.294	11/26/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.79 +/- 0.880	pCi/l	0.703	11/26/2008	12/3/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.637 +/- 0.514	pCi/l	0.383	11/26/2008	12/3/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	3.91 +/- 1.25	pCi/l	0.817	11/26/2008	12/3/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	174	mg/L as CaCO3	2		12/3/2008	RT
Bicarbonate Alkalinity	SM 2320 B	44.3	mg/L as CaCO3	2		12/3/2008	RT
Carbonate Alkalinity	SM 2320 B	130	mg/L as CaCO3	2		12/3/2008	RT
Conductivity	EPA 120.1/SM 2510 B	339	uMHO/cm	2		11/21/2008	RT
Eh	SM 2580 B	130	mv			11/21/2008	RT
Eh-Temp		21.1	degrees C			11/21/2008	RT
pH	SM 4500-H+ B	10.1	SI			11/21/2008 11:37:00 AM	RT
SPLP - Extraction Sample Weight	SW 1312 M	100	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2000	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	BDL	mg/l	1.1	11/13/2008	11/21/2008	RE
Calcium	EPA 6010B*	3.46	mg/l	1.1	11/13/2008	11/21/2008	RE
Magnesium	EPA 6010B*	47.6	mg/l	0.22	11/13/2008	11/21/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/21/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
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Analytical Report

Lab ID: 20080782-62
Client ID: 03-13-08-005-BD (SPLP 12 Mesh/ 14 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	2.21 +/- 0.660	pCi/l	0.730	12/7/2008	12/9/2008	RE
Radium-226	SM 7500 Ra B (M)*	1.7 +/- 0.5	pCi/l	0.4	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	1.83 +/- 0.959	pCi/l	0.993	12/9/2008	12/12/2008	SD
Thorium-232	LANL ER 200 M*	1.46 +/- 0.429	pCi/l	0.241	12/3/2008	12/4/2008	SD
Thorium-230	LANL ER 200 M*	2.23 +/- 0.622	pCi/l	0.845	12/3/2008	12/4/2008	SD
Thorium-228	LANL ER 200 M*	1.49 +/- 0.448	pCi/l	0.310	12/3/2008	12/4/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.37 +/- 0.803	pCi/l	0.738	12/3/2008	12/4/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	1.51 +/- 0.735	pCi/l	0.328	12/3/2008	12/4/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	8.78 +/- 1.73	pCi/l	0.419	12/3/2008	12/4/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	179	mg/L as CaCO3	2		12/5/2008	RT
Bicarbonate Alkalinity	SM 2320 B	41.2	mg/L as CaCO3	2		12/5/2008	RT
Carbonate Alkalinity	SM 2320 B	138	mg/L as CaCO3	2		12/5/2008	RT
Conductivity	EPA 120.1/SM 2510 B	346	uMHO/cm	2		11/26/2008	RT
Eh	SM 2580 B	163	mv			11/26/2008	RT
Eh-Temp		22.1	degrees C				RT
pH	SM 4500-H+ B	9.99	SI			11/26/2008 4:01:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	100	g			11/12/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2000	ml			11/12/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	BDL	mg/l	10	11/12/2008	12/16/2008	RE
Calcium	EPA 6010B*	BDL	mg/l	10	11/12/2008	12/16/2008	RE
Magnesium	EPA 6010B*	50.9	mg/l	2	11/12/2008	12/16/2008	RE
Silicon	ICP	BDL	mg/l	10	11/12/2008	12/16/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
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Analytical Report

Lab ID: 20080782-63
Client ID: 03-13-08-006-BD
Date Sampled:
Matrix: Solid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Tl-208	HASL 300*	30.6 +/- 1.89	pCi/g	0.607		12/18/2008	SD
Bi-212	HASL 300*	47.6 +/- 6.74	pCi/g	4.59		12/18/2008	SD
Pb-212	HASL 300*	80.8 +/- 6.39	pCi/g	0.842		12/18/2008	SD
Bi-214 (Ra226)	HASL 300*	48.2 +/- 2.86	pCi/g	0.973		12/18/2008	SD
Pb-214	HASL 300*	16.8 +/- 1.61	pCi/g	1.53		12/18/2008	SD
Ac-228 (Ra228)	HASL 300*	74.5 +/- 4.23	pCi/g	2.74		12/18/2008	SD
Lead-210	EML HASL 300-Pb-01-RC	97.7 +/- 3.62	pCi/g	0.544	12/15/2008	12/16/2008	RE
Radium-226	SM 7500 Ra B (M)*	29.2 +/- 1.4	pCi/g	0.2	12/9/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	12.3 +/- 3.41	pCi/g	3.36	12/9/2008	12/11/2008	SD
Thorium-232	LANL ER 200 M*	4 +/- 0.323	pCi/g	0.076	12/2/2008	12/6/2008	SD
Thorium-230	LANL ER 200 M*	2 +/- 0.3	pCi/g	0.2	12/2/2008	12/6/2008	SD
Thorium-228	LANL ER 200 M*	5 +/- 0.4	pCi/g	0.2	12/2/2008	12/6/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	24.0 +/- 0.866	pCi/g	0.092	11/21/2008	12/2/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.440 +/- 0.123	pCi/g	0.078	11/21/2008	12/2/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	19.7 +/- 0.788	pCi/g	0.138	11/21/2008	12/2/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	418000	mg/kg as CaCO3	918		12/9/2008	RT
Bicarbonate Alkalinity	SM 2320 B	302000	mg/kg as CaCO3	918		12/9/2008	RT
Carbonate Alkalinity	SM 2320 B	117000	mg/kg as CaCO3	918		12/9/2008	RT
Conductivity	EPA 120.1/SM 2510 B	789	uMHO/cm	2		12/8/2008	RT
Eh	SM 2580 B	84.3	mv			12/8/2008	RT
Eh-Temp		22.1	degrees C				RT
pH	EPA 9045B	9.52	SI			12/8/2008 2:57:00 PM	RT
Metals Analyses							
Aluminum	EPA 6010B*	10300	mg/kg	18.6	12/4/2008	12/8/2008	RE
Calcium	EPA 6010B*	38800	mg/kg	98	12/4/2008	12/8/2008	RE
Magnesium	EPA 6010B*	99700	mg/kg	28.0	12/4/2008	12/8/2008	RE
Silicon	ICP	2400	mg/kg	47.1	12/4/2008	12/8/2008	RE

*NELAC Certified Parameter BDL = Below Detection Limit

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-64
Client ID: 03-13-08-006-BD (SPLP 12 Mesh/24 HR)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0 +/- 0.427	pCi/l	0.837	12/4/2008	12/6/2008	RE
Radium-226	SM 7500 Ra B (M)*	5.5 +/- 0.7	pCi/l	0.5	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	3.40 +/- 0.973	pCi/l	0.983	12/8/2008	12/13/2008	SD
Thorium-232	LANL ER 200 M*	0.435 +/- 0.272	pCi/l	0.243	11/21/2008	11/26/2008	SD
Thorium-230	LANL ER 200 M*	0.516 +/- 0.526	pCi/l	1.07	11/21/2008	11/26/2008	SD
Thorium-228	LANL ER 200 M*	0.387 +/- 0.268	pCi/l	0.265	11/21/2008	11/26/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.92 +/- 1.06	pCi/l	0.578	11/21/2008	11/26/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.623 +/- 0.722	pCi/l	0.760	11/21/2008	11/26/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	3.38 +/- 1.52	pCi/l	1.27	11/21/2008	11/26/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	120	mg/L as CaCO3	2		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	37.9	mg/L as CaCO3	2		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	82.0	mg/L as CaCO3	2		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	416	uMHO/cm	2		11/14/2008	RT
Eh	SM 2580 B	127	mv			11/14/2008	RT
Eh-Temp		21.7	degrees C			11/14/2008	RT
pH	SM 4500-H+ B	9.97	SI			11/14/2008 7:29:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	100	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2000	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	BDL	mg/l	1.1	11/13/2008	11/20/2008	RE
Calcium	EPA 6010B*	6.61	mg/l	1.1	11/13/2008	11/20/2008	RE
Magnesium	EPA 6010B*	47.6	mg/l	0.22	11/13/2008	11/20/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/20/2008	RE

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Outreach Laboratory
311 North Aspen
Broken Arrow, OK 74012
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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
Date Reported:	12/22/2008
Date Received:	9/9/08
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Analytical Report

Lab ID: 20080782-65
Client ID: 03-13-08-006-BD (SPLP 12 Mesh/ 3 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0.292 +/- 0.260	pCi/l	0.310	11/30/2008	12/3/2008	RE
Radium-226	SM 7500 Ra B (M)*	6.5 +/- 0.7	pCi/l	0.4	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	2.85 +/- 1.06	pCi/l	1.07	12/8/2008	12/10/2008	SD
Thorium-232	LANL ER 200 M*	0.459 +/- 0.398	pCi/l	0.525	11/24/2008	11/29/2008	SD
Thorium-230	LANL ER 200 M*	0.640 +/- 0.579	pCi/l	1.13	11/24/2008	11/29/2008	SD
Thorium-228	LANL ER 200 M*	0.071 +/- 0.391	pCi/l	0.642	11/24/2008	11/29/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	0.774 +/- 0.705	pCi/l	0.660	11/24/2008	11/30/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.727 +/- 0.642	pCi/l	0.503	11/24/2008	11/30/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	3.52 +/- 1.34	pCi/l	0.786	11/24/2008	11/30/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	124	mg/L as CaCO3	2		11/25/2008	RT
Bicarbonate Alkalinity	SM 2320 B	42.0	mg/L as CaCO3	2		11/25/2008	RT
Carbonate Alkalinity	SM 2320 B	82.0	mg/L as CaCO3	2		11/25/2008	RT
Conductivity	EPA 120.1/SM 2510 B	433	uMHO/cm	2		11/18/2008	RT
Eh	SM 2580 B	136	mv			11/18/2008	RT
Eh-Temp		23.0	degrees C				RT
pH	SM 4500-H+ B	9.88	SI			11/18/2008 5:13:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	100	g			11/14/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2000	ml			11/14/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	BDL	mg/l	1.1	11/14/2008	11/21/2008	RE
Calcium	EPA 6010B*	6.79	mg/l	1.1	11/1/143	11/21/2008	RE
Magnesium	EPA 6010B*	49.9	mg/l	0.22	11/14/2008	11/21/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/14/2008	11/21/2008	RE

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
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Analytical Report

Lab ID: 20080782-66
Client ID: 03-13-08-006-BD (SPLP 12 Mesh/ 7 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	0 +/- 0.187	pCi/l	0.340	12/3/2008	12/10/2008	RE
Radium-226	SM 7500 Ra B (M)*	8.1 +/- 1.1	pCi/l	0.3	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	7.04 +/- 3.63	pCi/l	3.78	12/9/2008	12/13/2008	SD
Thorium-232	LANL ER 200 M*	4.19 +/- 0.716	pCi/l	0.595	11/26/2008	12/2/2008	SD
Thorium-230	LANL ER 200 M*	3.50 +/- 0.707	pCi/l	0.825	11/26/2008	12/2/2008	SD
Thorium-228	LANL ER 200 M*	3.44 +/- 0.659	pCi/l	0.573	11/26/2008	12/2/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	3.79 +/- 1.49	pCi/l	0.983	11/26/2008	12/3/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	1.55 +/- 0.946	pCi/l	0.615	11/26/2008	12/3/2008	SD
Uranium-234	ASTM D 3972/DOE U-02*	4.21 +/- 1.55	pCi/l	0.945	11/26/2008	12/3/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	144	mg/L as CaCO3	2		12/3/2008	RT
Bicarbonate Alkalinity	SM 2320 B	59.7	mg/L as CaCO3	2		12/3/2008	RT
Carbonate Alkalinity	SM 2320 B	84.5	mg/L as CaCO3	2		12/3/2008	RT
Conductivity	EPA 120.1/SM 2510 B	481	uMHO/cm	2		11/21/2008	RT
Eh	SM 2580 B	145	mv			11/21/2008	RT
Eh-Temp		21.2	degrees C			11/21/2008	RT
pH	SM 4500-H+ B	9.81	SI			11/21/2008 11:40:00 AM	RT
SPLP - Extraction Sample Weight	SW 1312 M	100	g			11/13/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2000	ml			11/13/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	BDL	mg/l	1.1	11/13/2008	11/21/2008	RE
Calcium	EPA 6010B*	6.72	mg/l	1.1	11/13/2008	11/21/2008	RE
Magnesium	EPA 6010B*	56.5	mg/l	0.22	11/13/2008	11/21/2008	RE
Silicon	ICP	BDL	mg/l	1.00	11/13/2008	11/21/2008	RE

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Client:	IEM
Client Project:	94005.29.03
Lab Number:	20080782
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Analytical Report

Lab ID: 20080782-67
Client ID: 03-13-08-006-BD (SPLP 12 Mesh/ 14 Day)
Date Sampled:
Matrix: Liquid

	Method	Result	Units	DL	Prep Date	Analysis Date	Analyst
Radiochemical Analyses							
Lead-210	EML HASL 300-Pb-01-RC	1.30 +/- 0.665	pCi/l	0.748	12/7/2008	12/9/2008	RE
Radium-226	SM 7500 Ra B (M)*	6.0 +/- 0.9	pCi/l	0.9	12/10/2008	12/11/2008	RE
Radium-228	EPA 904*/9320*	0.970 +/- 0.851	pCi/l	0.886	12/9/2008	12/13/2008	SD
Thorium-232	LANL ER 200 M*	2.02 +/- 0.485	pCi/l	0.214	12/3/2008	12/4/2008	SD
Thorium-230	LANL ER 200 M*	1.15 +/- 0.504	pCi/l	0.824	12/3/2008	12/4/2008	SD
Thorium-228	LANL ER 200 M*	3.48 +/- 0.630	pCi/l	0.234	12/3/2008	12/4/2008	SD
Uranium-238	ASTM D 3972/DOE U-02*	1.50 +/- 0.755	pCi/l	0.484	12/3/2008	12/4/2008	SD
Uranium-235	ASTM D 3972/DOE U-02*	0.444 +/- 0.436	pCi/l	0.370	12/3/2008	12/4/2008	SD
U[illegible]m-234	ASTM D 3972/DOE U-02*	3.07 +/- 1.06	pCi/l	0.576	12/3/2008	12/4/2008	SD
Inorganics Analyses							
Total Alkalinity	SM 2320 B	147	mg/L as CaCO3	2		12/5/2008	RT
Bicarbonate Alkalinity	SM 2320 B	58.7	mg/L as CaCO3	2		12/5/2008	RT
Carbonate Alkalinity	SM 2320 B	88.6	mg/L as CaCO3	2		12/5/2008	RT
Conductivity	EPA 120.1/SM 2510 B	484	uMHO/cm	2		11/26/2008	RT
Eh	SM 2580 B	173	mv			11/26/2008	RT
Eh-Temp		22.2	degrees C				RT
pH	SM 4500-H+ B	9.74	SI			11/26/2008 4:04:00 PM	RT
SPLP - Extraction Sample Weight	SW 1312 M	100	g			11/12/2008	RT
SPLP - Volume of Extraction Fluid	SW 1312 M	2000	ml			11/12/2008	RT
Metals Analyses							
Aluminum	EPA 6010B*	BDL	mg/l	10	11/12/2008	12/16/2008	RE
Calcium	EPA 6010B*	BDL	mg/l	10	11/12/2008	12/16/2008	RE
M[illegible]sium	EPA 6010B*	56.1	mg/l	2	11/12/2008	12/16/2008	RE
S[illegible]	ICP	BDL	mg/l	10	11/12/2008	12/16/2008	RE

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QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	MS %REC	MSD %REC	MSD RPD	Date
Aluminum	0.115	98.0				DO	DO	1.4	11/21/2008
Aluminum	0.131		104.0			DO	DO	0.5	11/20/2008
Aluminum	18.5	127.0				DO	DO	0.5	12/8/2008
Aluminum	0.384	10.0				DO	DO	0.9	11/21/2008
Am-241		93.0	90.0	2.7					12/17/2008
Bi-212					NC				12/17/2008
Calcium	85.6	120.0				DO	DO	0.9	12/8/2008
Calcium	0.118	101.0				DO	DO	0.6	11/21/2008
Calcium	0.548	112.0				DO	DO	0.0	11/21/2008
Calcium	0.137	112.0				DO	DO	1.5	11/20/2008
Co-60		101.0	91.0	11.3					12/17/2008
Conductivity	BDL	101.0			3.1				12/8/2008
Conductivity	BDL	102.0			0.0				11/14/2008
Conductivity	BDL	100.0			0.5				11/26/2008
Conductivity	0.9	101.0			0.6				11/21/2008
Conductivity	2.5	101.0			1.0				11/18/2008
Cs-137		100.0	93.0	7.5					12/17/2008
Eh	297	101.0			11.4				11/26/2008
Eh		100.0			6.5				12/8/2008
Eh	382	103.0			0.7				11/18/2008
Eh	360	102.0			2.2				11/14/2008
Eh	301	104.0			37.8				11/21/2008
K-40					NC				12/17/2008
Lead-210	0.684	104.0				85.0	79.0	6.9	12/9/2008
Lead-210	0.150	98.0				155.0	106.0	37.2	12/10/2008
Lead-210	0.180	99.0				170.0	126.0	29.7	12/16/2008
Lead-210	0.150	101.0				101.0	108.0	6.9	12/5/2008
Lead-210	0.072	108.0				113.0	122.0		12/3/2008
Magnesium	21.2	108.0				DO	DO	0.9	12/8/2008
Magnesium	0.042	89.0				103.0	102.0	0.6	11/21/2008
Magnesium	0	104.0				110.0	109.0	0.4	11/21/2008
Magnesium	0.026	102.0				113.0	109.0	3.2	11/20/2008
Pb-212					NC				12/17/2008
Pb-214									12/17/2008
pH		100.0			0.1				11/14/2008
pH		100.0			0.0				11/18/2008
pH	8.45	100.0			0.1				11/21/2008
pH		100.0			0.0				11/26/2008
pH		100.0			0.7				12/8/2008

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Radium-226	0.278	137.0		DO	DO	2.9	12/11/2008
Radium-226	1.02	95.6		96.2	79.7	18.7	12/11/2008
Radium-226	0.066	97.2		91.9	106.0	14.2	12/11/2008
Radium-226	0.834	108.0	NC	99.1	123.0	21.2	12/12/2008
Radium-226	0	89.5		100.0	79.6	22.9	
Radium-228	1.12	103.0		76.8	80.1	4.1	12/10/2008
Radium-228	1.14	114.0		120.0	122.0	1.4	12/11/2008
Radium-228	0.563	92.5		93.2	85.2	9.0	12/11/2008
Radium-228	0.303	95.3		103.0	97.7	5.7	12/11/2008
Radium-228	1.63	102.0	NC	101.0	112.0	9.8	12/11/2008
Silicon	0	122.0		90.0	93.0	2.0	11/21/2008
Silicon	0	83.0		99.0	101.0	1.8	11/21/2008
Silicon	13.4	104.0		DO	DO	5.8	12/8/2008
Silicon	0	86.0		100.0	103.0	2.8	11/20/2008
Th-234 (U238)			NC				12/17/2008
Thorium-228	0.045	104.0		102.0	103.0	1.3	11/30/2008
Thorium-228	0.384	98.4		106.0	102.0	4.4	12/9/2008
Thorium-228	0	92.0		101.0	83.2	19.6	12/4/2008
Thorium-228	0.028	89.5		82.9	94.5	13.1	11/26/2008
Thorium-228	0.025	71.4		85.4	84.5	1.0	12/2/2008
Thorium-230	0.005	105.0		112.0	106.0	4.7	12/9/2008
Thorium-230	0.001	112.0		124.0	113.0	8.9	11/30/2008
Thorium-230	0.002	103.0		73.6	94.8	25.2	11/26/2008
Thorium-230	0.001	110.0		103.0	111.0	7.3	12/4/2008
Thorium-230	0	99.3		104.0	102.0	1.6	12/2/2008
Thorium-232	0.114	91.2		96.3	95.5	0.7	12/2/2008
Thorium-232	0.023	108.0		107.0	86.2	21.6	12/4/2008
Thorium-232	0.266	94.6		104.0	109.0	4.8	12/9/2008
Thorium-232	0.033	110.0		95.3	91.6	3.9	11/30/2008
Thorium-232	0.031	108.0		95.1	96.3	1.3	11/26/2008
Tl-208			NC				12/17/2008
Total Alkalinity	6.2	98.4	0.5	98.9	98.9	0.0	12/3/2008
Total Alkalinity	0.5	98.4	1.2	98.9	97.9	0.6	11/25/2008
Total Alkalinity	0	98.9	1.9	99.9	99.4	0.3	11/25/2008
Total Alkalinity	7.2	99.4	0.4	101.0	100.0	0.2	12/5/2008
Total Alkalinity	0	98.9		116.0	118.0	1.6	12/9/2008
Uranium-234	0.219	88.1		87.2	87.4	0.1	12/4/2008
Uranium-234	0.143	95.3		85.7	85.3	0.4	11/25/2008
Uranium-234	0.242	81.0		76.0	83.3	8.8	11/30/2008
Uranium-234	1.09	100.0	NC	89.0	112.0	10.5	12/2/2008
Uranium-234	0.248	94.3		87.8	84.3	3.9	12/2/2008
Uranium-238	0.179	102.0		110.0	93.3	15.8	12/2/2008
Uranium-238	0.057	95.0		92.9	94.3	1.5	12/4/2008
Uranium-238	0.082	109.0		97.4	98.9	1.5	11/25/2008
Uranium-238	0.086	85.3		94.3	97.4	3.2	11/30/2008

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Uranium-238	0.932	109.0	NC	97.0	110.0	6.2	12/2/2008	

Lab Approval: _____

*NELAC Certified Parameter BDL = Below Detection Limit

SUMMARY OF RESULTS

Initial Testing (SPLP) Results

Client ID		03-13-08-001-S	03-13-08-001-S	03-13-08-001-S	03-13-08-001-S	03-13-08-001-S	03-13-08-001-S	03-13-08-001-S	03-13-08-001-S	03-13-08-001-S	03-13-08-001-S	03-13-08-001-S	03-13-08-001-S	03-13-08-001-S
Matrix		Solid	Liq. 12 Mesh/24 hr	Liq. 12 Mesh/3 d	Liq. 12 Mesh/7 d	Liq. 12 Mesh/14 d	Liq. 1 in./24 hr	Liq. 1 in./3 d	Liq. 1 in./7 d	Liq. 1 in./14 d	Liq. 4 in./24 hr	Liq. 4 in./3 d	Liq. 4 in./7 d	Liq. 4 in./14 d
Radiochemical														
pCi/g or pCi/l	Pb-210	332	0.97	31.3	40.4	2.58	0.395	2.35	6.49	0.34	2.44	0.442	0.405	1.62
pCi/g or pCi/l	Ra-226	407	1950	2480	1200	3200	202	326	426	402	56	84.9	83.8	153
pCi/g or pCi/l	Ra-228	455	751	306	1110	2600	44.4	89.7	148	227	1.97	49.4	31.6	27.2
pCi/g or pCi/l	Th-232	378	0.617	7	2.55	0.96	0.745	0.449	1.71	0.156	1.06	0.358	1.41	0.514
pCi/g or pCi/l	Th-230	200	14.1	15.7	13.1	0.388	3.86	0.125	4.49	1.94	0.783	0.419	2.4	1.58
pCi/g or pCi/l	Th-228	360	21.2	91.2	32.7	19.3	1.05	1.19	4.81	2.11	0.235	0.823	2.25	0.931
pCi/g or pCi/l	U-238	230	1.32	14.7	2.02	1.91	0.444	3.3	1.51	1.74	2.15	1.95	0.608	0.363
pCi/g or pCi/l	U-235	9.04	0.661	1.9	0.386	0.283	0.161	2.63	0.7	0.466	0.696	0.055	0.378	0.379
pCi/g or pCi/l	U-234	213	5.95	16.8	2.52	2.48	1.05	15.1	3.93	1.99	2.68	3.51	3.16	1.68
Inorganics														
mg/kg or mg/l	Tot. Alk.	183000	846	2360	814	1150	556	923	845	399	127	277	223	261
mg/kg or mg/l	Bicarb. Alk.	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
mg/kg or mg/l	Carb. Alk.	164000	584	1890	670	659	351	697	608	227	107	209	173	202
uMHO/cm	Conductivity	2510	1490	1580	1580	2520	978	1270	1390	1230	238	383	285	406
mv	Eh	0	33.6	59	31.3	28.3	0	0	16.8	10.1	0	0	0	0
oC	Eh-Temp	21.5	22.2	22	19.2	22.1	22.2	22.4	19.3	21	22	23.3	18.8	21.4
SI	pH	11.4	11.4	11.4	11.5	11.4	11.1	11.1	11.4	11.2	10.4	10.2	9.89	10.4
Metals														
mg/kg or mg/l	Al	159000	188	227	112	156	138	266	218	81.4	27.9	91.1	63.9	85.1
mg/kg or mg/l	Ca	189000	135	167	110	225	163	272	239	154	36.3	95.4	63	91.6
mg/kg or mg/l	Mg	36900	BDL	1.81	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
mg/kg or mg/l	Si	2950	1.83	3.55	1.05	BDL	1.75	3.79	2.55	BDL	BDL	1.17	BDL	BDL

Client ID		03-13-08-002-S	03-13-08-002-S	03-13-08-002-S	03-13-08-002-S	03-13-08-002-S	03-13-08-002-S	03-13-08-002-S	03-13-08-002-S	03-13-08-002-S	03-13-08-002-S	03-13-08-002-S	03-13-08-002-S	03-13-08-002-S
Matrix		Solid	Liq. 12 Mesh/24 hr	Liq. 12 Mesh/3 d	Liq. 12 Mesh/7 d	Liq. 12 Mesh/14 d	Liq. 1 in./24 hr	Liq. 1 in./3 d	Liq. 1 in./7 d	Liq. 1 in./14 d	Liq. 4 in./24 hr	Liq. 4 in./3 d	Liq. 4 in./7 d	Liq. 4 in./14 d
Radiochemical														
pCi/g or pCi/l	Pb-210	112	0.965	0	1.21	1.34	0.131	3.67	0.295	1.08				
pCi/g or pCi/l	Ra-226	486	2280	2370	3400	1800	666	88.6	170	132				
pCi/g or pCi/l	Ra-228	164	109	2690	699	2090	22.1	28.1	37.8	19.7				
pCi/g or pCi/l	Th-232	553	0.434	0.498	0.95	0.375	0.575	0.357	1	1.08				
pCi/g or pCi/l	Th-230	349	1.17	0.734	1.45	1.23	1.6	1.09	2.5	1.74				
pCi/g or pCi/l	Th-228	545	12.8	18	23.3	15.7	0.683	1.11	1.89	1.5				
pCi/g or pCi/l	U-238	255	1.52	0.611	2	1.13	2.96	0.875	0.653	1.27				
pCi/g or pCi/l	U-235	13.4	0.053	0.241	0.592	0.481	2.25	0.308	0	0.786				
pCi/g or pCi/l	U-234	243	4.35	5.24	2.88	0.241	13.6	2.82	2.79	4.72				
Inorganics														
mg/kg or mg/l	Tot. Alk.	154000	969	979	716	1050	219	321	350	436				
mg/kg or mg/l	Bicarb. Alk.	13100	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL				
mg/kg or mg/l	Carb. Alk.	141000	564	830	1640	567	180	231	261	302				
uMHO/cm	Conductivity	2480	1590	1440	0	2410	332	465	502	749				
mv	Eh	0	0	0	19.6	0	0	20.7	37.4	14.2				
oC	Eh-Temp	21.6	22	23.1	11.5	22.4	22	23.6	19.6	22.1				
SI	pH	11.4	11.39	11.3		11.5	10.5	10.6	10.7	10.8				
Metals														
mg/kg or mg/l	Al	133000	256	250	139	155	58.5	95.9	94.7	120				
mg/kg or mg/l	Ca	154000	188	157	141	184	62.4	95.8	102	133				
mg/kg or mg/l	Mg	63500	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL				
mg/kg or mg/l	Si	2320	2.84	3.03	1.36	BDL	BDL	1.43	BDL	BDL				

Client ID		03-13-08-003-S	03-13-08-003-S	03-13-08-003-S	03-13-08-003-S	03-13-08-003-S	03-13-08-003-S	03-13-08-003-S	03-13-08-003-S	03-13-08-003-S	03-13-08-003-S	03-13-08-003-S	03-13-08-003-S	03-13-08-003-S
Matrix		Solid	Liq. 12 Mesh/24 hr	Liq. 12 Mesh/3 d	Liq. 12 Mesh/7 d	Liq. 12 Mesh/14 d	Liq. 1 in./24 hr	Liq. 1 in./3 d	Liq. 1 in./7 d	Liq. 1 in./14 d	Liq. 4 in./24 hr	Liq. 4 in./3 d	Liq. 4 in./7 d	Liq. 4 in./14 d
Radiochemical														
pCi/g or pCi/l	Pb-210	93.8	0.198	0.588	4.8	4.05	0.77	3.84	0.24	0	1.87	1.51	0	0
pCi/g or pCi/l	Ra-226	479	1230	2840	1790	1880	556	343	315	437	24.4	63.6	93.2	303
pCi/g or pCi/l	Ra-228	187	301	972	892	1140	51	33	38.4	130	4.18	10.7	11.2	45.8
pCi/g or pCi/l	Th-232	464	0.188	0.441	1.1	1.32	0.23	0.417	4.12	0.459	0.308	0.494	3.64	0.76
pCi/g or pCi/l	Th-230	367	0.18	0	6.37	2.84	2.31	1.29	3.15	0.483	0	1.34	6.19	3.32
pCi/g or pCi/l	Th-228	454	5.72	6.93	13.1	15.8	2.23	1.9	4.77	0.947	0.4	0.722	3.68	1.14
pCi/g or pCi/l	U-238	357	0.573	4.56	11	5.04	1.11	1.11	1.97	0.501	0.321	3.1	1.45	0.778
pCi/g or pCi/l	U-235	37.4	0.382	2.52	1.08	0.627	1.04	0.719	1.42	1.31	0.551	3.12	2.09	0.632
pCi/g or pCi/l	U-234	354	3.77	7.97	10.3	7.78	2.17	7.21	5.95	5.04	4.68	8.09	5.13	7.71
Inorganics														
mg/kg or mg/l	Tot. Alk.	190000	948	917	896	1170	480	555	594	577	80	90.7	111	219
mg/kg or mg/l	Bicarb. Alk.	57700	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	7.2	28.2	19.1	BDL
mg/kg or mg/l	Carb. Alk.	133000	636	687	659	773	304	354	391	378	72.8	62.5	91.7	169
uMHO/cm	Conductivity	3050	1460	1610	1480	2110	842	847	974	996	126	111	161	443
mv	Eh	0	0	4.1	13.8	1.9	0	14.2	11	49	29.6	115	72.4	0
oC	Eh-Temp	21.6	22	23.5	19.4	22.5	22	23.4	19.2	22.8	22.1	23.4	19.8	23.1
SI	pH	11.4	11.4	11.4	11.5	11.5	11.1	11	11.2	11	10	9.14	9.34	10.7
Metals														
mg/kg or mg/l	Al	134000	245	219	164	126	122	162	152	153	15.1	19.4	26.7	54.3
mg/kg or mg/l	Ca	165000	179	188	218	184	140	171	165	175	20.4	24.2	31.5	66.2
mg/kg or mg/l	Mg	82500	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
mg/kg or mg/l	Si	2480	2.5	3	2.51	BDL	1.24	2.33	1.54	BDL	BDL	BDL	BDL	BDL

Client ID		6-88	6-88	6-88	6-88	6-88	6-88	6-88	6-88	6-88	6-88	6-88	6-88	6-88
Matrix		Solid	Liq. 12 Mesh/24 hr	Liq. 12 Mesh/3 d	Liq. 12 Mesh/7 d	Liq. 12 Mesh/14 d	Liq. 1 in./24 hr	Liq. 1 in./3 d	Liq. 1 in./7 d	Liq. 1 in./14 d	Liq. 4 in./24 hr	Liq. 4 in./3 d	Liq. 4 in./7 d	Liq. 4 in./14 d
Radiochemical														
pCi/g or pCi/l	Pb-210	1290	0.736	1.26	2.54	1.73	2.3	0	4.66	7.39	1.01	1.17	0.779	1.53
pCi/g or pCi/l	Ra-226	1340	41.2	44.5	113	1.3	22.6	17.6	24.3	33.8	30.9	4.7	4.3	9.5
pCi/g or pCi/l	Ra-228	96.8	88.3	125	59.2	115	5.46	54	14.6	9.86	0.551	2.92	2.81	78.8
pCi/g or pCi/l	Th-232	1140	0.234	0.377	2.56	0.5	0.532	0.477	2.54	1.43	0.558	0.36	1.36	1.51
pCi/g or pCi/l	Th-230	165	0.15	0.521	6.02	3.81	1.03	0.837	5.85	1.25	2.84	0.1	3.26	1.98
pCi/g or pCi/l	Th-228	1220	2.07	1.92	5.8	1.44	0.399	0	1.55	0.805	0.349	0	0.838	1.51
pCi/g or pCi/l	U-238	143	0.447	1.54	4.4	4.13	0.66	0.939	1.13	0.836	1.25	2.17	2.83	3.08
pCi/g or pCi/l	U-235	33.6	0.544	0.438	3.69	3.78	0.025	0.732	0.366	0.07	0.833	0.092	0.875	1.34
pCi/g or pCi/l	U-234	145	3.51	4.57	7.93	10.3	1.29	2.02	2.57	3.14	7.75	4.48	4.07	3.86
Inorganics														
mg/kg or mg/l	Tot. Alk.	29200	1100	1240	1540	1640	70.2	150	225	273	13.8	23.1	29.4	29.9
mg/kg or mg/l	Bicarb. Alk.	23400	308	241			40.5	71.8	70	106	7.7	23.1	25.2	26.8
mg/kg or mg/l	Carb. Alk.	5840	789	1000			29.7	77.9	155	167	6.2	BDL	4.1	3.1
uMHO/cm	Conductivity	9960	1450	1860	3120	3860	163	278	408	417	43.6	57.6	68.3	77.9
mv	Eh	0	0	9.2	0	0	0	0	0	0	70.3	174	210	113
oC	Eh-Temp	21.9	21.8	23.7	20.5	23.4	21.9	23.5	20.3	23.5	21.8	23.8	21.4	23.6
SI	pH	11.8	11.2	11.3	11.8	11.8	9.77	9.76	10.4	9.95	9.35	7.76	9.25	9
Metals														
mg/kg or mg/l	Al	57000	152	190	197	230	6.65	17.1	23.9	38.1	BDL	1.58	1.23	10.6
mg/kg or mg/l	Ca	47200	6.14	5.56	4.77	BDL	2	3.7	6.14	BDL	BDL	1.94	2.06	BDL
mg/kg or mg/l	Mg	239	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
mg/kg or mg/l	Si	1060	BDL	1.64	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Client ID		03-13-08-004-BD	03-13-08-004-BD	03-13-08-004-BD	03-13-08-004-BD	03-13-08-004-BD	03-13-08-004-BD	03-13-08-004-BD	03-13-08-004-BD	03-13-08-004-BD	03-13-08-004-BD	03-13-08-004-BD	03-13-08-004-BD	03-13-08-004-BD
Matrix		Solid	Liq. 12 Mesh/24 hr	Liq. 12 Mesh/3 d	Liq. 12 Mesh/7 d	Liq. 12 Mesh/14 d	Liq. 1 in./24 hr	Liq. 1 in./3 d	Liq. 1 in./7 d	Liq. 1 in./14 d	Liq. 4 in./24 hr	Liq. 4 in./3 d	Liq. 4 in./7 d	Liq. 4 in./14 d
Radiochemical														
pCi/g or pCi/l	Pb-210	85.5	1.37	0.337	0.248	1.21								
pCi/g or pCi/l	Ra-226	25.6	2.2	1.2	2.8	9.5								
pCi/g or pCi/l	Ra-228	11.2	0.95	1.91	0.335	2.43								
pCi/g or pCi/l	Th-232	32	0.318	1.2	2.11	0.744								
pCi/g or pCi/l	Th-230	18	1.34	2.24	1.63	0.771								
pCi/g or pCi/l	Th-228	35	0.456	1.05	1.01	0.541								
pCi/g or pCi/l	U-238	22.9	1.07	0.793	2.94	1.55								
pCi/g or pCi/l	U-235	1.11	0.586	2.08	2.08	1.19								
pCi/g or pCi/l	U-234	19	1.71	5.53	9.66	6.05								
Inorganics														
mg/kg or mg/l	Tot. Alk.	344000	158	164	183	191								
mg/kg or mg/l	Bicarb. Alk.	240000	36.9	39	57.7	58.7								
mg/kg or mg/l	Carb. Alk.	104000	121	125	126	132								
uMHO/cm	Conductivity	495	325	337	370	370								
mv	Eh	74.7	111	119	135	178								
oC	Eh-Temp	22.6	22	23.2	21.3	22.1								
SI	pH	9.48	10	9.95	9.94	9.87								
Metals														
mg/kg or mg/l	Al	12800	BDL	BDL	BDL	BDL								
mg/kg or mg/l	Ca	47700	5.24	5.21	4.75	BDL								
mg/kg or mg/l	Mg	91100	45.6	49	52.4	58.6								
mg/kg or mg/l	Si	1660	BDL	BDL	BDL	BDL								

Client ID		03-13-08-005-BD	03-13-08-005-BD	03-13-08-005-BD	03-13-08-005-BD	03-13-08-005-BD	03-13-08-005-BD	03-13-08-005-BD	03-13-08-005-BD	03-13-08-005-BD	03-13-08-005-BD	03-13-08-005-BD	03-13-08-005-BD	03-13-08-005-BD
Matrix		Solid	Liq. 12 Mesh/24 hr	Liq. 12 Mesh/3 d	Liq. 12 Mesh/7 d	Liq. 12 Mesh/14 d	Liq. 1 in./24 hr	Liq. 1 in./3 d	Liq. 1 in./7 d	Liq. 1 in./14 d	Liq. 4 in./24 hr	Liq. 4 in./3 d	Liq. 4 in./7 d	Liq. 4 in./14 d
Radiochemical														
pCi/g or pCi/l	Pb-210	23	0.511	0	0.219	2.21								
pCi/g or pCi/l	Ra-226	5.2	0.5	2.2	2	1.7								
pCi/g or pCi/l	Ra-228	4.57	1.54	1.32	0	1.83								
pCi/g or pCi/l	Th-232	11	0.347	0.612	0.277	1.46								
pCi/g or pCi/l	Th-230	6	0.964	0	0.762	2.23								
pCi/g or pCi/l	Th-228	12	0.252	0.396	0.832	1.49								
pCi/g or pCi/l	U-238	6.16	1.28	0.623	1.79	1.37								
pCi/g or pCi/l	U-235	0.911	0.674	0.701	0.637	1.51								
pCi/g or pCi/l	U-234	5.26	3.08	5.24	3.91	8.78								
Inorganics														
mg/kg or mg/l	Tot. Alk.	611000	153	159	174	179								
mg/kg or mg/l	Bicarb. Alk.	411000	27.7	27.7	44.3	41.2								
mg/kg or mg/l	Carb. Alk.	200000	125	131	130	138								
uMHO/cm	Conductivity	406	316	311	339	346								
mv	Eh	62.7	110	120	130	163								
oC	Eh-Temp	22	21.8	23.2	21.1	22.1								
SI	pH	9.64	10.3	10.1	10.1	9.99								
Metals														
mg/kg or mg/l	Al	8710	BDL	BDL	BDL	BDL								
mg/kg or mg/l	Ca	55700	3.69	3.57	3.46	BDL								
mg/kg or mg/l	Mg	154000	43.8	46.2	47.6	50.9								
mg/kg or mg/l	Si	1270	BDL	BDL	BDL	BDL								

Client ID		03-13-08-006-BD	03-13-08-006-BD	03-13-08-006-BD	03-13-08-006-BD	03-13-08-006-BD	03-13-08-006-BD	03-13-08-006-BD	03-13-08-006-BD	03-13-08-006-BD	03-13-08-006-BD	03-13-08-006-BD	03-13-08-006-BD	03-13-08-006-BD
Matrix		**Solid**	**Liq. 12 Mesh/24 hr**	**Liq. 12 Mesh/3 d**	**Liq. 12 Mesh/7 d**	**Liq. 12 Mesh/14 d**	**Liq. 1 in./24 hr**	**Liq. 1 in./3 d**	**Liq. 1 in./7 d**	**Liq. 1 in./14 d**	**Liq. 4 in./24 hr**	**Liq. 4 in./3 d**	**Liq. 4 in./7 d**	**Liq. 4 in./14 d**
Radiochemical														
pCi/g or pCi/l	Pb-210	97.7	0	0.292	0	1.3								
pCi/g or pCi/l	Ra-226	29.2	5.5	6.5	8.1	6								
pCi/g or pCi/l	Ra-228	12.3	3.4	2.85	7.04	0.97								
pCi/g or pCi/l	Th-232	4	0.435	0.459	4.19	2.02								
pCi/g or pCi/l	Th-230	2	0.516	0.64	3.5	1.15								
pCi/g or pCi/l	Th-228	5	0.387	0.071	3.44	3.48								
pCi/g or pCi/l	U-238	24	1.92	0.774	3.79	1.5								
pCi/g or pCi/l	U-235	0.44	0.623	0.727	1.55	0.444								
pCi/g or pCi/l	U-234	19.7	3.38	3.52	4.21	3.07								
Inorganics														
mg/kg or mg/l	Tot. Alk.	418000	120	124	144	147								
mg/kg or mg/l	Bicarb. Alk.	302000	37.9	42	59.7	58.7								
mg/kg or mg/l	Carb. Alk.	117000	82	82	84.5	88.6								
uMHO/cm	Conductivity	789	416	433	481	484								
mv	Eh	84.3	127	136	145	173								
oC	Eh-Temp	22.1	21.7	23	21.2	22.2								
SI	pH	9.52	9.97	9.88	9.81	9.74								
Metals														
mg/kg or mg/l	Al	10300	BDL	BDL	BDL	BDL								
mg/kg or mg/l	Ca	38800	6.61	6.79	6.72	BDL								
mg/kg or mg/l	Mg	99700	47.6	49.9	56.5	56.1								
mg/kg or mg/l	Si	2400	BDL	BDL	BDL	BDL								

APPENDIX E

FIELD SCREENING DATA SUMMARY

Appendix E
Radiological Screening Results
Shieldalloy Metallurgical Corporation
Storage Yard Decommissioning Plan
June 2008

Sample No.	Collection Date / Time	Collection Location[1]		Detailed Sample Description	Estimated Material Volume Within Area (%)	Photograph ID	Measured Exposure Rate (Counts/2 Minutes)
		Northing	Easting				
AREA 1							
1-A	6-17-08 / 1500	258026	346713	Green, glassy textured slag with large crystal faces with micaceous texture.	<1%	TRC-1-39, TRC-1-40, IEM-Sample 1-A, IEM-Sample 1-A (2), IEM-Sample 1-A(3)	10,402
1-B	6-17-08 / 1510	258002	346780	Dense brown-dark brown slag with no vesicles, no iridescence within a soil pile located near the south-central portion of Area 1.	<1%	TRC-1-41, TRC-1-42, IEM-Sample 1-B	9,662
1-C	6-17-08 / 1515	258083	346783	Brown iridescent vesicular slag with crusty material on surface of slag. White crusty material is quite durable and appears to have been formed during the cooling process or as secondary mineralization.	<1%	TRC-1-43, TRC-1-44, IEM - Sample 1-C, IEM-Sample 1-C(2)	18,971
AREA 2							
2-A	6-17-08 / 1440	258006	346903	Green tinged soil/slag. Soil matrix is dark brown-light green, slag is light green-light grey.	≈15%	TRC-2-37, IEM-Sample 2-A	25,840
2-B	6-17-08 / 1445	258001	346894	Brown sandy soil with concrete debris. Soil is brown F-SAND, little m-sand, little f-m gravel (quartz pebbles), little slag (1/4-1" diameter).	≈70%	TRC-2-38, IEM-Sample 2-B	11,220
AREA 3							
3-120	6-17-08 / 1515	258156	346944	Grey crushed slag (gravel size), some coarse-grained ~ 3".		IEM-3-120	732,562
3-121	6-17-08 / 1505	258126	346956	Grey crushed slag (gravel size), some coarse-grained ~ 3".		IEM-3-121	837,985
3-122	6-17-08 / 1510	258100	346904	Grey crushed slag (gravel size), some coarse-grained ~ 3".		IEM-3-122	868,712

Counted on 6-19-08
Background=11,431 counts/2 minutes
[1] - New Jersey Plane Coordinate System; NAD 83

Sample No.	Collection Date / Time	Collection Location[1]		Detailed Sample Description	Estimated Material Volume Within Area (%)	Photograph ID	Measured Exposure Rate (Counts/2 Minutes)
		Northing	Easting				
AREA 4							
4-A	6-18-08 / 1610	258307	346856	Hexagonal-shaped slag which tapers to ~ 1-2" diameter on one end and ~4-8" on the other end. The hexagonal slag structures are contained within a larger "dome"-like structure. Interior of hexagonal structure contains green fine-grained crystals with small (1-5 mm) black crystals. A 0.5-1 inch thick lt. grey, fine-grained cooling rind on exterior.	≈≤5%	TRC-4-66, TRC-6-67, TRC-4-68, IEM-Sample 4-A, IEM-Sample 4-A(2)	19,664
4-B	6-18-08 / 1700	258311	346713	White coarse-grained material, possibly some sort of refractory material.	<1%	TRC-4-69, TRC-4-70, IEM-Sample 4-B	12,750
4-C	6-19-08 / 0815	258374	346694	Darker colored slag located at base of main pile, slag seems to be very isolated in the pile. Exterior of slag is dark brown-dark grey, interior is fine-grained and crystalline, very dense.	<1%	TRC-4-81, TRC-4-82, IEM-Sample 4-C	589,891
4-69	6-18-08 / 0745	258346	346868	Light blue/grey fine-grained slag, highly fractured, little secondary mineralization (white clayey).		IEM-4-69	492,515
4-70	6-18-08 / 0750	258337	346824	Medium grey fine-grained slag, dense/solid, slight secondary mineralization along one fine fracture line.		IEM-4-70	899,117
4-71	6-18-08 / 0755	258333	346777	Medium gray fine-grained slag, dense/solid.		IEM-4-71	748,625
4-72	6-18-08 / 0800	258269	346844	Medium grey fine-grained slag, dense/solid, slight secondary mineralization along very fine fracture lines.		IEM-4-72	558,976
4-73	6-18-08 / 0805	258268	346790	Light grey to brown very fine-grained slag, indications of cubic fracture planes, slight secondary mineralization.		IEM-4-73	789,288
4-74	6-18-08 / 0810	258263	346737	Medium grey fine-grained slag, dense/solid, slight amount of vesicules on outside surface with some metallic bead inclusions.		IEM-4-74	814,330
4-75	6-18-08 / 0820	258208	346773	Medium grey fine-grained slag, slight vesicules, moderately fractured with very fine fractures, some secondary mineralization along fractures.		IEM-4-75	589,315

Counted on 6-19-08

Background=11,431 counts/2 minutes

[1] - New Jersey Plane Coordinate System; NAD 83

Shading - A previous sample was collected at sample location 4-72 and identified as 3S. It was submitted for initial leachability testing.

4-76	6-18-08 / 0825	258191	346707	Medium grey fine-grained slag, dense/solid.		IEM-4-76	528,116
4-77	6-18-08 / 0840	258209	346662	Light grey fine-grained slag, trace vesicules on outside surface, lightly fractured with fine fractures, some secondary mineralization along fracture lines.		IEM-4-77	440,139
4-78	6-18-08 / 0845	258282	346619	Medium grey fine-grained slag, trace vesicules.		IEM-4-78	662,535
4-79	6-18-08 / 0850	258293	346653	Light grey fine-grained slag, solid/dense.		IEM-4-79	548,309
4-80	6-18-08 / 0855	258292	346705	Light blue/grey fine-grained slag, solid/dense.		IEM-4-80	547,608
4-81	6-18-08 / 0905	258357	346656	Medium grey fine-grained slag, very slight vesicules, solid/dense.		IEM-4-81	691,127
4-82	6-18-08 / 0925	258414	346653	Dark grey fine to very fine-grained slag, metallic inclusions on outer edge, trace vesicules, dense/solid.		IEM-4-82	795,285
4-83	6-18-08 / 0930	258416	346705	Medium grey fine-grained slag, dense/solid.		IEM-4-83	672,919
4-84	6-18-08 / 0900	258325	346701	Light grey fine-grained slag, many vesicules.		IEM-4-84	466,640
4-85	6-18-08 / 0910	258351	346746	Medium grey fine-grained slag, dense/solid.		IEM-4-85	829,315

Counted on 6-19-08
Background=11,431 counts/2 minutes
[1] - New Jersey Plane Coordinate System; NAD 83
Shading - A previous sample was collected at sample location 4-83 and identified as 1S. It was submitted for initial leachability testing.

Sample No.	Collection Date / Time	Collection Location[1]		Detailed Sample Description	Estimated Material Volume Within Area (%)	Photograph ID	Measured Exposure Rate (Counts/2 Minutes)
		Northing	Easting				
AREA 5							
5-A	6-17-08 / 1045	258316	346915	Light grey to grey soil mixed with refractory brick, concrete blocks and slag.	≤5%	TRC-5-16, TRC-5-17, IEM-Sample 5-A	123,267
5-B	6-17-08 / 1050	258306	346924	Light yellow brick has "BENEZET" on it.	<1%	TRC-5-18, IEM-Sample 5-B	18,972
5-C	6-17-08 / 1100	258296	346907	Light brown F- SAND and SILT, soil (~60-70%), slag (~30-40%).	Subpile <1% of Area 5	TRC-5-19,TRC-5-20, IEM-Sample 5-C	22,159
5-D	6-17-08 / 1110	258287	346920	Brown-red brown F-SAND, some silt, little f-m gravel, trace slag pieces. Vegetation growing on subpile.	Subpile ≈10% of Area 5	TRC-5-21, TRC-5-22, IEM-Sample 5-D	12,956
5-E	6-17-08 / 1124	258278	346955	50% Soil, 50 % Slag, slag is light grey-grey in color.	Subpile and associated representative sample is ≤5% of Area 5	TRC-5-24, TRC-5-25, IEM-Sample 5-E	277,858
5-F	6-17-08 / 1132	258262	347023	Refractory Brick, dark red color, brick has "Chromex-B" imprinted on it.	<1%	TRC-5-26, IEM-Sample 5-F	11,719
5-G	6-17-08 / 1140	258226	346990	Slag with purple cooling rind on outside surface with lighter purple layering ~1 in. from the outside. Then 2-3 in. thick light colored fine grained layer. Below is a very coarse crystalline textured zone with a small square-shaped pattern forming a honey comb texture. When breaking this material with a hammer, got a brief sulfur odor.	<1%	TRC-5-27, TRC-5-28, TRC-5-29, IEM-Sample 5-G	12,511
5-H	6-17-08 / 1201	258223	346945	Black glassy textured slag. Glassy texture has large crystal faces and appears to be toward the inside of the slag mound. Toward outside of mound, crystals are smaller and somewhat elongated.	Material makes up ≈15% of subpile, but <1% of Area 5	TRC-5-30, TRC-5-31, IEM-Sample 5-H, IEM-Sample H(2)	167,572
5-I	6-17-08 / 1215	258224	346934	Light purple-pink slag with vesicular texture. Makes up ~10% of the pile.	Material makes up ≈10% of subpile, but <1% of Area 5	TRC-5-32, TRC-5-33, TRC-5-34, IEM-Sample 5-I	235,898
5-J	6-17-08 / 1220	258206	346889	Black greasy substance on far SW corner of Area 5. Subpile is about 20' long x 10' wide x 3' high.	≈1%	TRC-5-35, IEM-Sample 5-J	12,898
K	6-18-08 / 1155	258173	346836	Material on outer surface has "corn flake" texture. When digging into pile, white material has a creamy white color with clayey texture. Subpile is approx. 30' long x 20' wide x 6' high.	<5%	TRC-5-59, TRC-5-60, IEM-Sample 5-K	11,447

Counted on 6-20-08
Background=11,269 counts/2 minutes
[1] - New Jersey Plane Coordinate System; NAD 83

Sample No.	Collection Date / Time	Collection Location[1]		Detailed Sample Description	Estimated Material Volume Within Area (%)	Photograph ID	Measured Exposure Rate (Counts/2 Minutes)
		Northing	Easting				
AREA 6							
6-A	6-18-08 / 0920	258454	346527	Partial slag "buttons" having a green-colored tinge. The slag buttons are highly vesicular and dense. Broken surfaces still exhibit a green tinge but also a grey-dark grey fine-grained crystalline structure.	≈10-15%	TRC-6-49, TRC-6-50, TRC-6-51, IEM-Sample 6-A	96,766
6-B	6-18-08 / 0955	258454	346517	Outer cooling rind of slag "button", dark brown-dark purple crystalline texture, somewhat friable.	<1%	TRC-6-52, TRC-6-53, IEM-Sample 6-B	17,678
6-C	6-18-08 / 1120	258426	346585	Smaller slag "button" with a white "cauliflower"-textured secondary mineralization associated with fractures within the slag. Slag button has cooling texture with bluish platy minerals toward the interior of the "button".	Slag containing secondary mineralization ≈50% of Area 6. Secondary mineralization ≈5% of each button.	TRC-6-54, TRC-6-55, TRC-6-56, IEM-Sample 6-C	440,267
6-D	6-18-08 / 1135	258393	346563	White refractory brick material which is often found at base of "buttons".	<1%	TRC-6-57, TRC-6-58, IEM-Sample 6-D	13,003
6-86	6-17-08 / 1540	258389	346596	Dark grey, fine-grained slag with medium-grained white inclusions, some vesicles noted as well as some platy glassy crystals.		IEM-6-86	114,582
6-87	6-17-08 / 1547	258396	346576	Light grey highly vesicular fine-grained slag, moderately fractured.		IEM-6-87	257,438
6-88	6-17-08 / 1605	258399	346558	Light grey fine grained slag with little vesicles, slight white mineral deposits noted, refractory material noted on one side.		IEM-6-88	1,073,907
6-89	6-17-08 / 1700	258402	346543	Medium grey fine-grained slag with platy vertical crystallization (honey comb) on interior side. Honey comb has gold hue to it. Few vesicles noted as well as some platy crystals.		IEM-6-89	385,696
6-90	6-17-08 / 1705	258408	346530	Medium grey fine-grained slag, little vesicules, platy vertical crystallization noted in several vesicles.		IEM-6-90	510,794
6-91	6-17-08 / 1710	258414	346516	Medium grey medium to large-grained slag, highly vesicular crystals appear to be platy/glassy in nature and are randomly configured with relation to each other.		IEM-6-91	575,420

Counted on 6-20-08
ackground=11,269 counts/2 minutes
New Jersey Plane Coordinate System; NAD 83

Sample No.	Collection Date / Time	Collection Location[1]		Detailed Sample Description	Estimated Material Volume Within Area (%)	Photograph ID	Measured Exposure Rate (Counts/2 Minutes)
		Northing	Easting				
6-92	6-17-08 / 1617	258423	346502	Medium grey fine-grained slag, little vesicules.		IEM-6-92	732,875
6-93	6-17-08 / 1715	258439	346488	Medium blue/grey fine-grained slag, little vesicules with some white secondary mineralization within the matrix.		IEM-6-93	680,894
6-94	6-17-08 / 1623	258479	346485	Medium grey fine-grained slag with platy vertical crystallization (honey comb) on interior side. Honey comb oriented in roughly triangular pattern.		IEM-6-94	627,272
6-95	6-17-08 / 1625	258475	346504	Light blue/grey fine to medium-grained slag some secondary mineralization along fracture lines (lightly fractured).		IEM-6-95	700,643
6-96	6-17-08 / 1630	258469	346520	Medium blue/grey fine to medium-grained slag, some secondary mineralization along fracture lines (lightly fractured), little vesicules.		IEM-6-96	816,581
97	6-17-08 / 1632	258464	346536	Medium grey fine grained slag, highly vesicular with few vugs.		IEM-6-97	810,979
6-98	6-17-08 / 1635	258459	346550	Dark grey, coarse grained slag. Glassy platy crystallization arranged randomly relative to one another on outer portion, some honey combs on interior side.		IEM-6-98	223,110
6-99	6-17-08 / 1637	258453	346564	Light grey fine-grained slag with some opaque white medium-grained crystal inclusions, little vesicules.		IEM-6-99	514,840
6-100	6-17-08 / 1720	258447	346579	Light grey fine-grained slag, lightly vesiculated, lightly fractured.		IEM-6-100	195,337
6-101	6-17-08 / 1641	258439	346593	Light brown exterior to purple interior medium-grained sandy textured material, moderately friable.		IEM-6-101	230,395
6-102	6-17-08 / 1644	258429	346607	Dark Gray fine-grained slag with some medium-grained glassy platy crystal inclusions, metallic bead inclusion.		IEM-6-102	520,886

Counted on 6-20-08
Background=11,269 counts/2 minutes
[1] - New Jersey Plane Coordinate System; NAD 83

Sample No.	Collection Date / Time	Collection Location[1]		Detailed Sample Description	Estimated Material Volume Within Area (%)	Photograph ID	Measured Exposure Rate (Counts/2 Minutes)
		Northing	Easting				
AREA 7							
7-A	6-17-08 / 0803	258353	346518	Friable slag by-products (fine-grained "soil"-textured slag)	≈10% of north subpile or ≈5% of Area 7	TRC-7-1, TRC-7-2, IEM-Sample 7-A	25,189
7-B	6-17-08 / 0810	258352	346524	Friable slag, honey comb texture (cooling cracks), light to dark gray on the outside with a lighter white material on the inside.	≈30% of north subpile or ≈15% of Area 7	TRC-7-3, IEM-Sample 7-B	12,182
7-C	6-17-08 / 0818	258374	346515	Dark grey-black-purple slag with pumice texture but dense and highly vesicular, fresh broken surface is a lighter color with same vesicular texture.	≈8% of north subpile or ≈4% of Area 7	TRC-7-4, TRC-7-5, IEM-Sample 7-C	16,933
7-D	6-17-08 / 0827	258377	346514	Grey-dark grey fine grained slag, dense with elongated cooling crystals, fresh broken face is similar to the unbroken face, with fine grained crystalline texture.	≈32% of north subpile or ≈16% of Area 7	TRC-7-4, TRC-7-5, IEM-Sample 7-D	851,863
7-E	6-17-08 / 0840	258340	346468	Brown F-SAND, little f-m gravel soil, little-trace slag pieces.	≈70% of west subpile or ≈10% of Area 7	TRC-7-6, TRC-7-7, IEM-Sample 7-E	34,976
7-F	6-17-08 / 0845	258338	346466	Light grey-white concrete with f-m gravel. When broken open, yellow-light green color.	≈10% of west subpile or ≈1% of Area 7	TRC-7-6, TRC-7-7, IEM-Sample 7-F	11,605
7-G	6-17-08 / 0848	258345	346464	Black slag with coarse-grained crystals, little vesicles.	≈20% of west subpile or ≈3% of Area 7	TRC-7-6, TRC-7-8, IEM-Sample 7-G	168,841
7-H	6-17-08 / 0905	258322	346482	Crushed dark grey/black slag.	≈50% of "center" subpile or ≈8% of Area 7	TRC-7-9, TRC-7-10, IEM-Sample 7-H	12,679
7-I	6-17-08 / 0907	258328	346488	Dense brown irridesant-colored slag, with numerous vesicles.	≈5% of "center" subpile or ≈<1% of Area 7	TRC-7-11, IEM-Sample 7-I	10,766
7-J	6-17-08 / 0915	258288	346507	Large 1-4 ft across, concrete blocks with steel rebar.	This is a representative sample from the southeast subpile which is ≈5% of Area 7.	TRC-7-12, IEM-Sample 7-J	12,019
7-K	6-17-08 / 0928	258287	346466	Lt. Grey-brown soil, F-SAND and SILT, little f-c gravel-sized slag.	≈80% of southwest subpile or ≈10% of Area 7	TRC-7-13, TRC-7-14, IEM-Sample 7-K	34,068
7-L	6-17-08 / 0930	258285	346467	Purple glassy slag (10%).	≈10% of southwest subpile or ≈1% of Area 7	TRC-7-13, TRC-7-14, IEM-Sample 7-L	21,694

Counted on 6-20-08
Background=11,269 counts/2 minutes
[1] - New Jersey Plane Coordinate System; NAD 83

Sample No.	Collection Date / Time	Collection Location[1]		Detailed Sample Description	Estimated Material Volume Within Area (%)	Photograph ID	Measured Exposure Rate (Counts/2 Minutes)
		Northing	Easting				
AREA 8							
8-A	6-18-08 / 1345	257990	346576	Gunite, dark grey-black fine grained matrix with f-m gravel, gunite is 1-1.5" thick and covers ~75% of pile surface.	<1%	TRC-7-62, IEM-Sample 8-A	14,158
8-103	6-17-08 / 1455	257970	346585	Green/grey brown fine- to very fine-grained material, some gravel- to cobble-sized slag noted. Collected ~1' bgs.		IEM-8-103	29,730
8-104	6-17-08 / 1130	257963	346559	Light grey hard friable material. Collected ~1' bgs.		IEM-8-104	33,702
8-105	6-17-08 / 1120	257981	346465	Brown fine-grained baghouse dust with little light grey lime deposits. Cobble-sized slag pieces noted within baghouse dust as well as distributed on the surface in this area.		IEM-8-105	45,405
8-106	6-17-08 / 1200	257993	346533	Light grey hard friable material. Gravel-sized slag noted within matrix. Collected ~1' bgs.		IEM-8-106	26,912
8-109	6-17-08 / 1210	258064	346506	Brown to light orange brown fine to very fine-grained material, soft. No slag noted. Collected ~1' bgs.		IEM-8-109	59,924
8-110	6-17-08 / 1225	258091	346473	Brown fine to very fine-grained material, no slag noted. Collected ~1' bgs.		IEM-8-110	51,485
8-112	6-17-08 / 1215	258129	346525	Brown to dark brown fine to very fine-grained material, little gravel-sized slag and quartz pebbles. Collected ~1' bgs.		IEM-8-112	47,250
8-113	6-17-08 / 1230	258149	346565	Brown fine to very fine-grained material, no slag noted. Collected ~1' bgs.		IEM-8-113	56,518
8-114	6-17-08 / 1410	258135	346633	Grey brown fine to very fine-grained material and coarse-grained material (slag and gravel), cobble-sized slag noted. Collected ~1' bgs.		IEM-8-114	40,926
8-115	6-17-08 / 1415	258105	346607	Light brown fine to coarse-grained material, gravel- to cobble-sized slag within matrix. Collected ~1' bgs.		IEM-8-115	31,206
8-116	6-17-08 / 1430	258076	346577	Light brown fine to coarse-grained material, gravel- to cobble-sized slag within matrix. Collected ~1' bgs.		IEM-8-116	34,392
8-117	6-17-08 / 1435	258033	346587	Green/grey brown fine- to very fine-grained material, no slag noted. Location moved from berm to baghouse dust pile. Collected ~1' bgs.		IEM-8-117	77,200
8-118	6-17-08 / 1145	258015	346600	Light grey hard friable material. Collected ~1' bgs.		IEM-8-118	26,309
8-119	6-17-08 / 1150	257995	346567	Light grey hard friable material. Cobble-sized slag pieces noted within matrix and on surface. Collected ~1' bgs.		IEM-8-119	20,493
AREA 9							
9-A	6-18-08 / 1425	258181	346488	Bluish grey opaque slag or refractory material exhibits conchoidal fracture.	<1%	TRC-9-63, TRC-9-64, IEM-9-A	66,620
9-B	6-18-08 / 1500	258190	346498	Black to dark grey vesicular slag, very dense.	≈90-95% of this subpile or ≈10-15% of Area 9	TRC-9-63, TRC-9-65, IEM-9-B	175,853
9-123	6-17-08 / 1725	346486	258229	Slag		IEM-9-123	148,635
9-124	6-17-08 / 1730	346584	258226	Slag		IEM-9-124	228,927
9-125	6-17-08 / 1735	346586	258185	Baghouse Dust		IEM-9-125	39,859
9-126	6-17-08 / 1740	346475	258176	Baghouse Dust		IEM-9-126	60,299

Counted on 6-20-08
Background=11,269 counts/2 minutes
[1] - New Jersey Plane Coordinate System; NAD 83

Area-Specific Statistics	Counts/2 minutes
AREA 1 (Observational Samples only)	
Mean	13,012
Maximum	18,971
Minimum	9,662
Standard Deviation	5,174
AREA 2 (Observational Samples only)	
Mean	18,530
Maximum	25,840
Minimum	11,220
Standard Deviation	10,338
AREA 3 (Grid Samples only)	
Mean	813,086
Maximum	868,712
Minimum	732,562
Standard Deviation	71,408
AREA 4 (Observational and Grid Samples)	
Mean	584,823
Maximum	899,117
Minimum	12,750
Standard Deviation	234,633
AREA 5 (Observational Samples only)	
Mean	82,478
Maximum	277,858
Minimum	11,447
Standard Deviation	101,444
AREA 6 (Observational and Grid Samples)	
Mean	454,255
Maximum	1,073,907
Minimum	13,003
Standard Deviation	294,178
AREA 7 (Observational Samples only)	
Mean	101,068
Maximum	851,863
Minimum	10,766
Standard Deviation	240,469
AREA 8 (Observational and Grid Samples)	
Mean	39,707
Maximum	77,200
Minimum	14,158
Standard Deviation	16,750
AREA 9 (Observational and Grid Samples)	
Mean	120,032
Maximum	228,927
Minimum	39,859
Standard Deviation	75,685
ALL AREAS (AREAS 1 - 9)	
Mean	292,334
Maximum	1,073,907
Minimum	9,662
Standard Deviation	314,102

Observational Slag	Grid-Based Slag	Baghouse Dust
10,402	732,562	29,730
9,662	837,985	33,702
18,971	868,712	45,405
25,840	492,515	26,912
19,664	899,117	59,924
589,891	748,625	51,485
123,267	558,976	47,250
277,858	789,288	56,518
12,511	814,330	40,926
167,572	589,315	31,206
235,898	528,116	34,392
96,766	440,139	77,200
17,678	662,535	26,309
440,267	548,309	20,493
25,189	547,608	39,859
12,182	691,127	60,299
16,933	795,285	
851,863	672,919	
168,841	466,640	
12,679	829,315	
10,766	114,582	
21,694	257,438	
66,620	1,073,907	
175,853	385,696	
	510,794	
	575,420	
	732,875	
	680,894	
	627,272	
	700,643	
	816,581	
	810,979	
	223,110	
	514,840	
	195,337	
	230,395	
	520,886	
	148,635	
	228,927	

	Observational Slag	Grid-Based Slag	Baghouse Dust
Mean	142,036	586,221	42,601
Minimum	9,662	114,582	20,493
Maximum	851,863	1,073,907	77,200
Background	11,431	11,431	11,431
Mean above Background	12.4	51.3	3.7

APPENDIX F

AREA 3 LINEAR FEATURE METALLURGICAL RESULTS AND PHOTOGRAPHS

APPENDIX F

Area 3 Linear Feature Sample Metallurgical Results
Shieldalloy Metallurgical Corporation
Storage Yard Decommissioning Plan

ID	EXP	Picture	Description	F	Na2O	MgO	Al2O3	SiO2	SO3	Cl	CaO	TiO2	V2O5	Fe2O3	NiO	SrO	Y2O3	ZrO2	Nb2O5	BaO
MOL 001	EXP 2432	Photo 1	small smooth sample, analyzed as is	-	0.22	8.51	45.65	8.21	0.92	-	20.69	-	8.48	2.07	0.28	0.93	0.05	0.82	0.19	0.49
MOL 001	EXP 2433	Photo 1	yellow residue from small smooth sample	-	0.2	16.86	38.6	16.6	0.49	0.06	13.52	0.77	9.92	1.61	0.16	0.05	-	0.39	0.09	-
MOL 001	EXP 2438	Photo 1	small smooth sample, crushed to 60 mesh	1.47	0.1	17.52	42.13	1.09	0.21	0.02	32.82	1.21	0.45	0.25	0.03	0.63	0.04	0.49	0.19	0.21
MOL 001a	EXP 2436	Photo 1	large rough sample w small amts of yellow residue	-	1.35	38.77	4.13	4.64	0.13	-	4.32	0.14	38.28	1.84	3.8	0.05	0	0.05	0.05	0.09
MOL 002	EXP 2434	Photo 2	Dark unknown material crushed, 60 mesh	-	3.32	0.2	2.08	4.22	0.06	-	0.79	0.31	76.19	6.72	5.41	0.05	-	-	0.01	0.07

ID	EXP	Picture	Description	La2O3	CeO2	Pr2O3	Nd2O3	HfO2	ThO2	U3O8	P2O5	K2O	MnO	ZnO	PbO	Co3O4	CuO	As2O3	Sb2O3	Total %
MOL 001	EXP 2432	Photo 1	small smooth sample, analyzed as is	0.16	0.67	-	-	0.17	0.82	0.2	0.1	0.16	0.16	0.03	0.03	-	-	-	-	100.01
MOL 001	EXP 2433	Photo 1	yellow residue from small smooth sample	-	-	-	-	-	0.08	-	0.26	0.29	-	0.04	-	-	-	-	-	99.99
MOL 001	EXP 2438	Photo 1	small smooth sample, crushed to 60 mesh	0.11	0.07	0.05	0.11	0.07	0.61	0.12	-	-	-	-	-	-	-	-	-	100
MOL 001a	EXP 2436	Photo 1	large rough sample w small amts of yellow residue	-	0.08	-	-	-	0.03	-	2.13	0.02	0.06	-	-	0.03	-	-	-	99.99
MOL 002	EXP 2434	Photo 2	Dark unknown material crushed, 60 mesh	-	-	-	-	-	-	-	0.24	-	0.05	0.04	0.02	0.05	0.07	0.01	0.1	100.01

All results are percentages by weight.

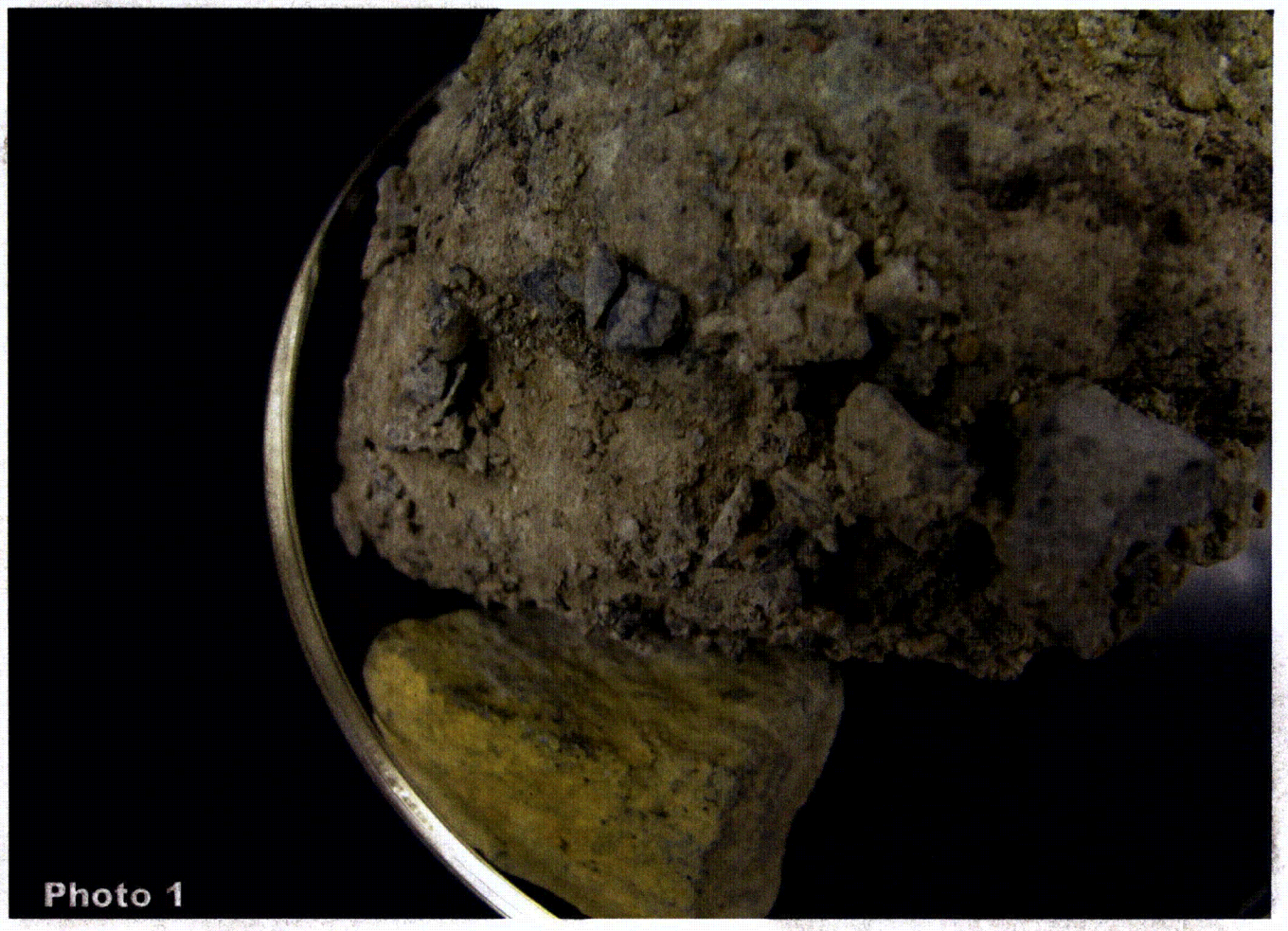

Photo 1

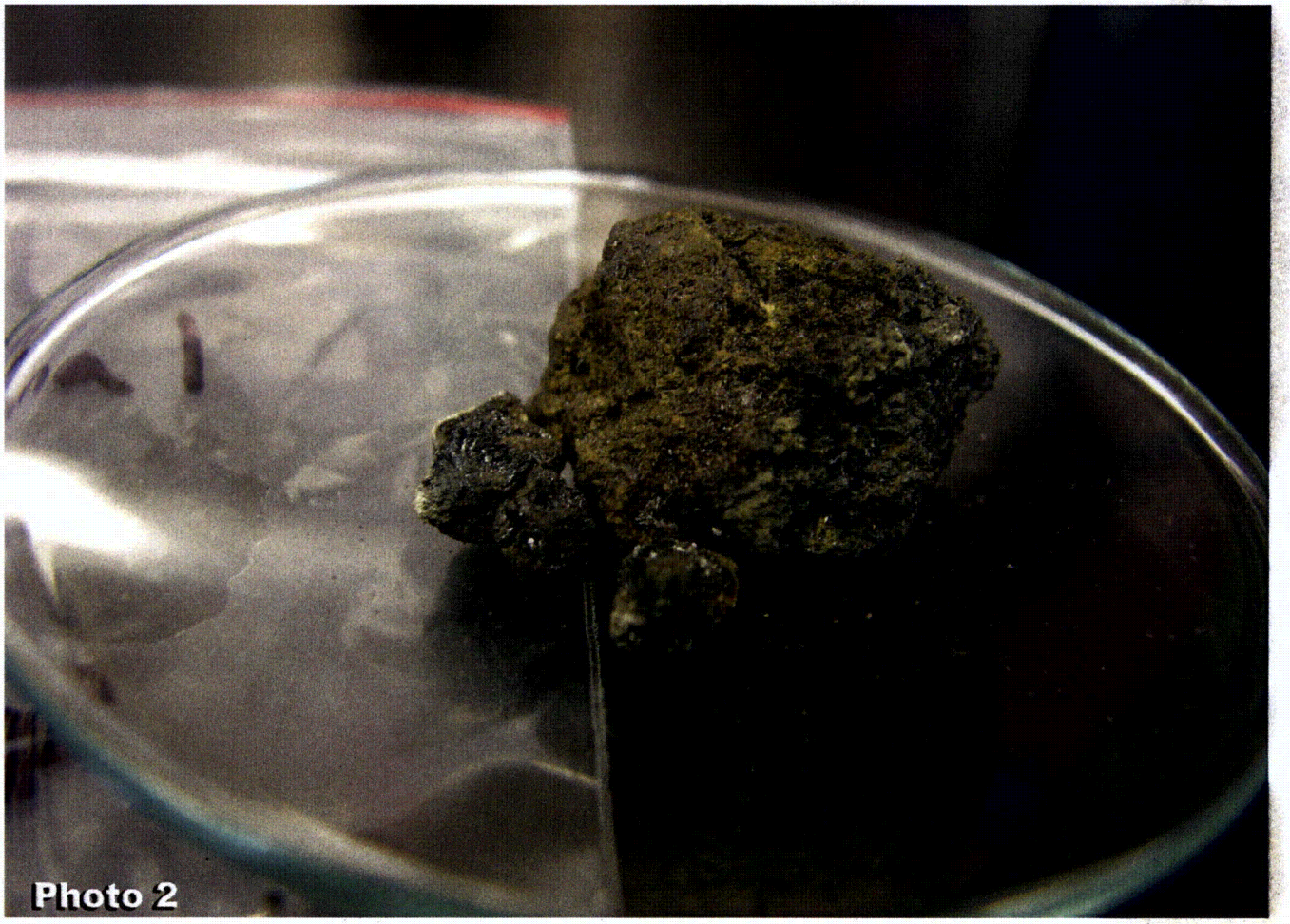

Photo 2

Linear Feature in Area 3

Linear Feature in Area 3

Linear Feature in Area 3

Linear Feature in Area 3