

Nuclear Regulatory Commission

and



ENVIROCARE OF UTAH, INC.
THE SAFE ALTERNATIVE

Envirocare of Utah, Inc.

March 6, 2000

NRC Region IV

create
PKG w/ML003692795

template NRR/RGN-002

Overview

- Follow-up of NRC 8/16/99 NOV
- Other outstanding groundwater violations
- Results of soil sampling
- Discussion of Proposed Monitoring Plan



8/16/99 NOV B

Failure to submit to the NRC a consolidated groundwater sampling report that summarizes the quarterly groundwater data and analysis.

- **Prepared groundwater instruction (January 21, 2000) which includes:**
 - Tracking system/production calendar to monitor deliverables
 - EC Senior Vice President review and approval of program
 - EC Environmental Engineer review and tracking of deliverables on a weekly basis
 - First deliverable (to the DRC) was submitted on time



8/16/99 NOV C

I. Failure to have detection limits less than baseline levels in Appendix Z of the License.

Constituent	App. Z/ Exhibit 4	License/ Table S-1
Beryllium	.02 mg/L	0.005 mg/L
Molybdenum	.310 mg/L	0.3 mg/L
Thorium-230	15.0 pCi/L	4.62 pCi/L
Thorium-232	15.0 pCi/L	0.0 pCi/L



8/16/99 NOV C

Proposed Appendix Z detection levels
(Request submitted November 17, 1999)

Constituent	App Z/ Exhibit 4	Proposed
Beryllium	0.02 mg/L	0.005 mg/L
Molybdenum	0.31 mg/L	0.04 mg/L
Thorium-230	15.0 pCi/L	± 1.0 pCi/L
Thorium-232	15.0 pCi/L	± 1.0 pCi/L



8/16/99 NOV C

Proposed License Baseline Levels (Table S-1)
(Request submitted November 17, 1999)

Constituent	Table S-1	Proposed
Radium 226/228	x.x pCi/L	x.x ± 0.6 pCi/L
Thorium-230	x.x pCi/L	x.x ± 1.0 pCi/L
Thorium-232	x.x pCi/L	x.x ± 1.0 pCi/L



8/16/99 NOV C

II. Failure of laboratory to meet specified detection limits

- Switched laboratories for 4th quarter sampling event.
- Conducted audit of American West Analytical Laboratories to evaluate current methods, detection levels, and certification. Results of audit are provided.
- Requested RFPs from 14 laboratories to evaluate procedures, detection levels, and cost. Will remain with AWAL until after evaluation is completed.



Follow-up Item 9902-04

Management of storm water

Response: Envirocare has prepared OWP99-026 to detail storm water management procedures both inside and outside of the restricted area. This procedure was approved by the SERP (99-022) and went into implementation on January 12, 2000. Envirocare will modify OWP-026 to become more inclusive and also deal with clay mining/liner construction.



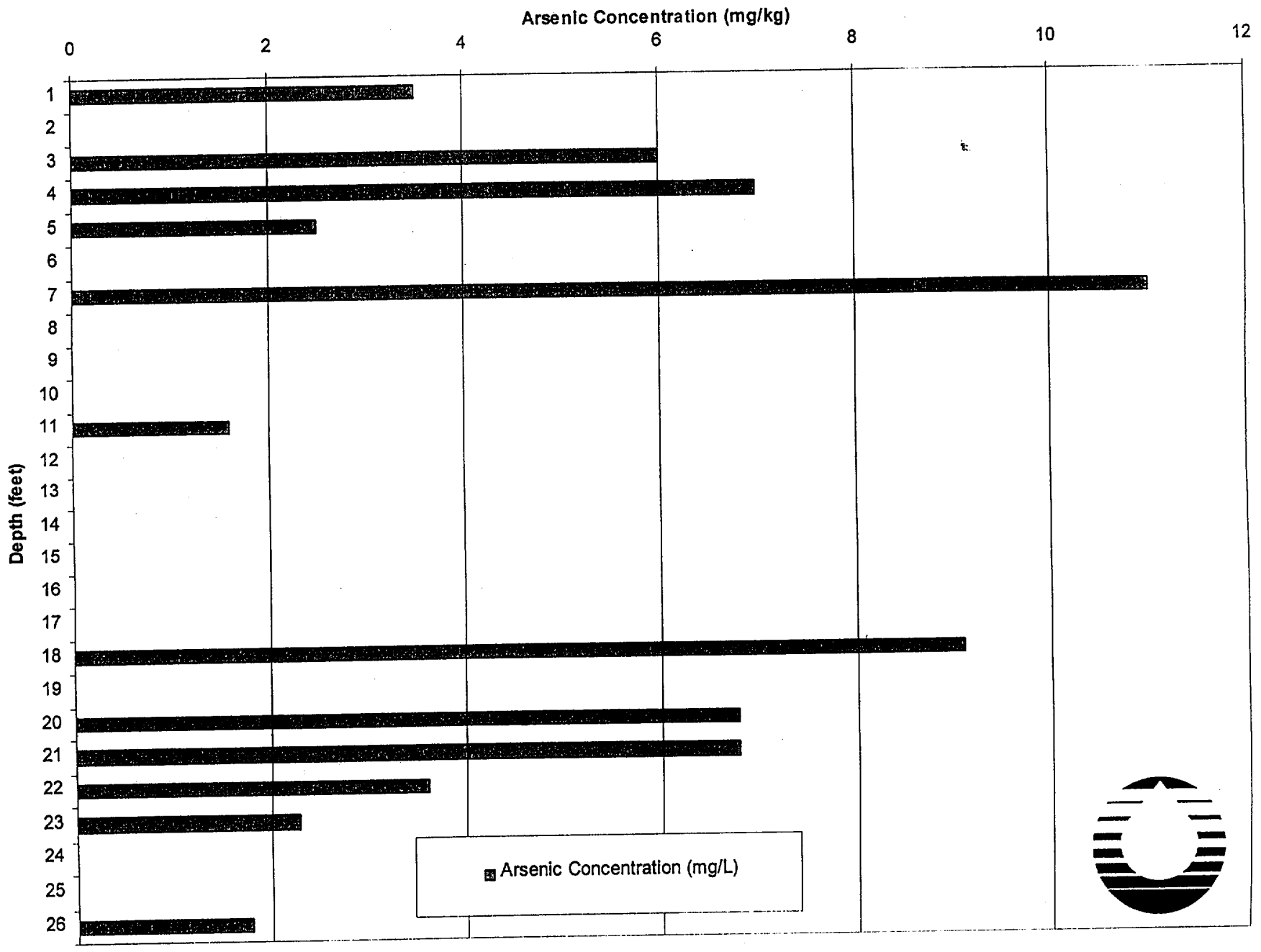
Soil Sampling

- 12 Samples collected and analyzed for total organic carbon, arsenic, and selenium.
- Results indicate elevated levels of arsenic ranging from 1.6 to 11 mg/kg.
- Arsenic concentrations variable, but were detected in significant concentrations.
- Results suggest that as groundwater elevations fluctuate, there is a high potential of re-dissolving residual arsenic.



		Location:		100 yards NE of MW Ops Bldg								
		Personnel:		Jeff Low, Brian Duggan, Jane Jensen								
		Date:		12/9/99								
		Equipment:		BA Track hoe, SS mixing bowl, SS scoop, sample jars								
		texture (%)						chemistries (mg/kg)				
		clay & silt	sand (predominantly fine)	gravel	color	moisture content	sample designation	TOC	Total Arsenic	Total Selenium	comments	
approximate feet below ground surface	0 -	> 90	< 10	0	light gray	dry	TOC-1	120	3.5	< 0.50		
	-1 -											
	-2 -	> 90	< 10	0	br. to br. gy	dry	TOC-2	110	6.0	< 0.50		
	-3 -	> 90	< 10	0	red-brown	moist	TOC-3	150	7.0	< 0.50		
	-4 -	> 90	< 10	0	light brown	moist	TOC-4	250	2.5	< 0.50		
	-5 -											
	-6 -	> 90	< 10	0	light brown	moist	TOC-5	110	11	< 0.50		
	-7 -											
	-8 -											
	-9 -											
	-10 -	> 90	< 10	0	white	moist	TOC-6	310	1.6	< 0.50		
	-11 -											
-12 -												
-13 -												
-14 -												
-15 -												
-16 -												
-17 -	< 5	> 95	0	light gray		TOC-7	300	9.1	< 0.50			
-18 -												
-19 -	< 10	> 90	0	lt. gy to tan	moist	TOC-8	100	6.8	< 0.50	iron staining		
-20 -	< 10	> 90	0	light gray	damp	TOC-9	210	6.8	< 0.50	clay layers		
-21 -	< 10	> 90	0	lt. br. to lt. gy		TOC-10	76	3.6	< 0.50			
-22 -	< 10	> 85	< 5		moist	TOC-11	49	2.3	< 0.50			
-23 -												
-24 -												
-25 -	< 10	> 90	0	lt br to tan	moist	TOC-12	46	1.8	< 0.50			





Groundwater Exceedances

- During last meeting (November 9, 1999) discussed changing monitoring program according to 10 CFR 40 Appendix A.

“Licensees or applicants may propose alternatives to the specific requirements in this appendix. The alternative proposals may take into account local or regional conditions, including geology, topography, hydrology, and meteorology.”

The alternative proposal will need to: “achieve a level of stabilization and containment of the sites concerned, and a level of protection for public health, safety, and the environment from radiological and nonradiological hazards associated with the sites.”

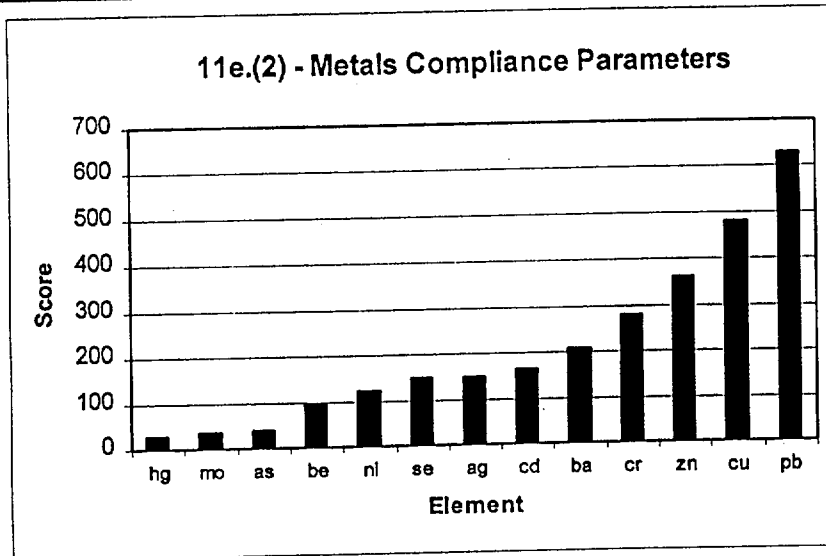


Evaluation

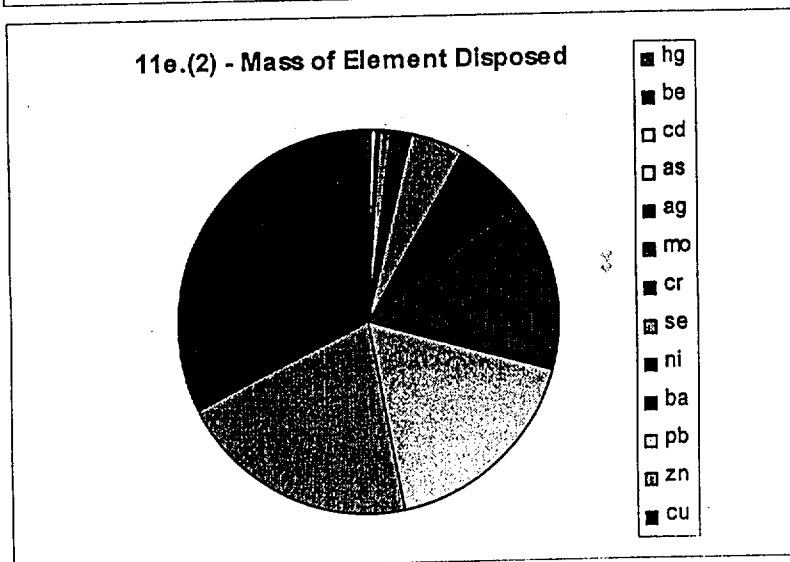
- **New proposal includes an evaluation of the following parameters:**
 - Mass of disposed wastes
 - Mobility of waste terms (K_d/K_{oc})
 - Concentration of waste term in groundwater
 - Detection ability of waste in groundwater
- **Waste terms were then ranked and summed. Waste terms with the highest sums are diagnostic parameters to indicate cell leakage.**



11e.(2) - Selection of Metals Compliance Parameters



Element	Mass Ran	Kd Rank	Ave Conc. In GW Rank	Score
hg	1	2	13	26
mo	7	5	1	35
as	4	5	2	40
be	2	4	12	96
ni	12	2	5	120
se	10	5	3	150
ag	5	3	10	150
cd	3	5	11	165
ba	13	2	8	208
cr	8	5	7	280
zn	15	6	4	360
cu	16	5	6	480
pb	14	5	9	630



Rank Scoring:

Mass - more mass, higher rank (1-17)

K_d - lower K_d , higher rank (1-6)

Ave. Conc. In GW - lower conc., higher rank



NRC's Comments

- Approach appears to be acceptable, but Kd values are an unknown. May have to either do a literature study on the affects of high TDS on Kd or conduct site specific Kd studies. Concern is that the Kd values proposed may vary by several orders of magnitude.



ENVIROCARE'S PROPOSAL

- Conduct literature search to do a qualitative evaluation as to the affects of high TDS waters on Kd.
- Prepare final report on hanging the monitoring network to include the following:
 - Use only Lead, Copper, and Zinc as compliance parameters
 - Continue to use Uranium, Thorium, and Radium as compliance parameters
 - Sample for Volatiles and Semi-volatiles on an annual basis
- Conduct lab study to do a quantitative evaluation as to the affects of high TDS waters on Kd.

