2. WAG 1, TEST AREA NORTH

2.1 Operable Unit 1-10

On April 20, 2004, WAG 1 sites TSF-06 Area B, TSF-09, TSF-18, TSF-26, TSF-03, and WRRTF-01 were visited to inspect them for soil-cover erosion, subsidence, and intrusion. At all of the sites except WRRTF-01, however, remedial activities were in progress when the sites were visited, and extensive soil disturbance precluded inspection of the sites' surface conditions. At WRRTF-01, no erosion, subsidence, or intrusion was observed, and that site was remediated shortly after the inspection.

In past years, radiological surveys have been performed at TSF-07, TSF-26, TSF-09, TSF-06 Area B, and TSF-18 to monitor for windblown contamination. In 2004, the surveys could only be performed at TSF-07. The other sites were inaccessible to the vehicle-based (Humvee) global positioning radiometric scanner (GPRS) equipment due to remediation work. Results of the August 10, 2004, environmental monitoring radiation survey are shown in Figure 2 and Table 1. Note that the detector configuration changed in November 2003. The conversion factor for changing counts to exposure rates came out about double the previous one. The net count rate from 2003 to 2004 is statistically the same. The perimeter of TSF-07 read basically background levels, and no change from previous years was noted. Refer to Figure 3 for the log record of the O&M inspection activity.

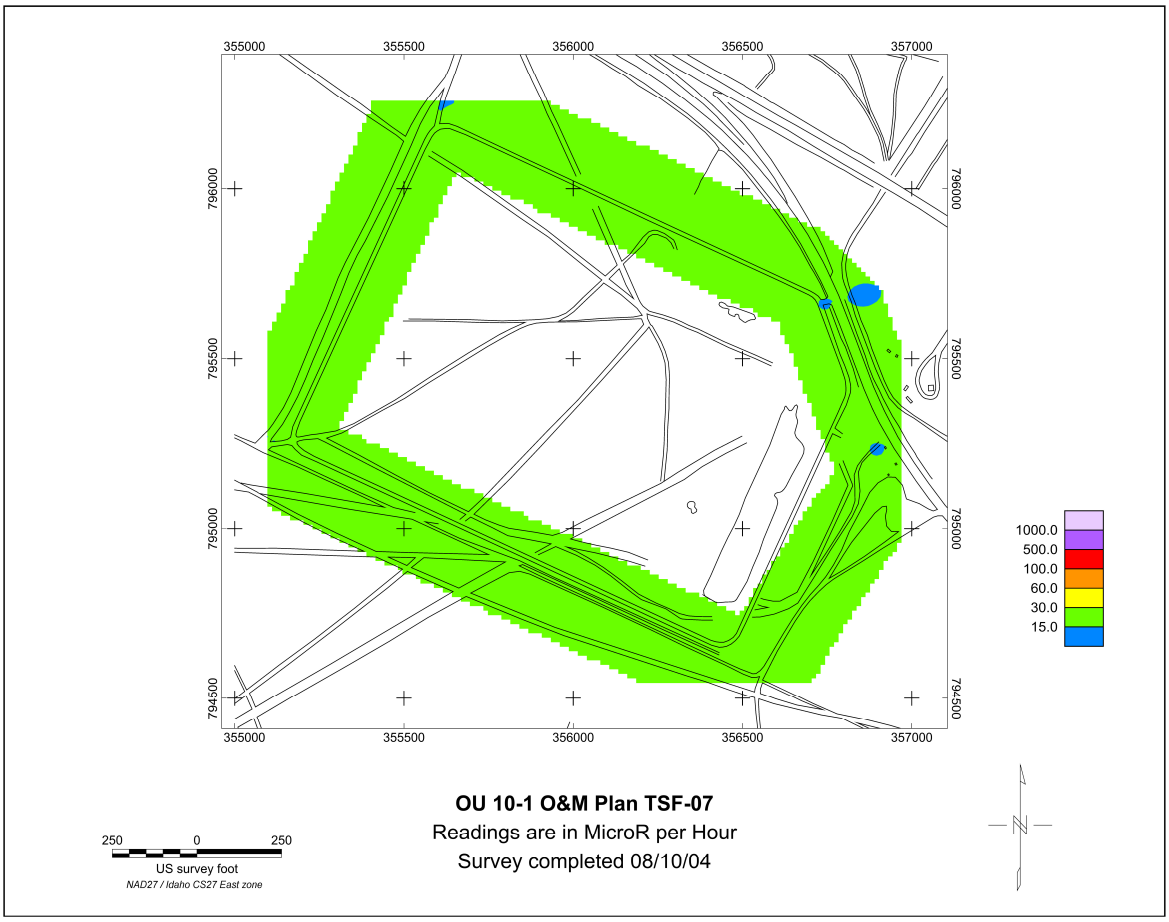


Figure 2. Results of in situ gamma scan at the perimeter of TSF-07.

Table 1. Results of in situ gamma scans at TSF-07.

Year	Minimum Value (microR/hr)	Maximum Value (microR/hr)	Mean Value (microR/hr)	Standard Deviation
2001	5.4	15.0	12.5	2.0
2002	5.2	13.4	11.3	1.35
2003	4.4	12.3	10.4	1.5
2004	10.19	22.87	20	1.67

WAG 1 O&M Inspection Form

INSPECTION ACTIVITY AT WAG 1	TSF-06 Area B	TSF-26	TSF-09/18	TSF-07	WRRTF-01 TSF-03	COMMENTS/ RECOMMENDED REPAIR
VEGETATIVE COVER						
1. Inspect for non-growth/sparse growth/weeds.	N/A	N/A	N/A	N/A	4-20-04	no comment
SOIL COVER						
1. Inspect for erosion areas/animal intrusion.	N/A	N/A	N/A	N/A	4-20-04	TSF-03 in remediation
2. Inspect for subsidence areas or slope movement.	N/A	N/A	N/A	N/A	4-20-04	
GENERAL CONDITION OF SITE						
1. Inspect for erosion areas/animal intrusion.	4-20	4-20	4-20	N/A	4-20	all sites in Remediation
2. Inspect for subsidence areas.	4-20	4-20	4-20	N/A	4-20	all soils disturbed
ENVIRONMENTAL MONITORING (In situ gamma scanner)						
1. Perform annual radiological monitoring	none	none	none	8/10/04	N/A	no problems noted

Comments

Vegetative Cover: WRRTF-01 showed no change on 4-20-04. TSF-03 was in remediation
Soil Cover: WRRTF-01 showed no intrusion or subsidence on 4-20-04. TSF-03 dug up
General condition: Remedial activity in progress except at WRRTF-01.
(WRRTF-01 was remediated later in spring of 2004)
Environmental monitoring performed at TSF-07 on 8-10-04

Inspection performed by D Renée Pitch and Lynn Schwendiman on 4-20-04

Figure 3. The 2004 O&M inspection log for WAG 1.

2.2 Operable Unit 1-07B

O&M activities at Operable Unit 1-07B are ongoing, and the tasks pertain to day-to-day operations. The O&M activities at the New Pump and Treat Facility are discussed in annual operations reports submitted directly to the regulatory agencies.

3. WAG 2, TEST REACTOR AREA[a]

The annual O&M inspection of WAG 2 sites TRA-03, TRA-06, and TRA-13 and the TRA-13 soil contamination area (SCA) was conducted on August 26, 2004. Refer to Figure 4 for the inspection log. Refer to Figures 5 through 10 for photographs of the WAG 2 CERCLA sites. On August 31, 2004,

a. The Test Reactor Area (TRA) was renamed the Reactor Technology Complex (RTC) as of February 1, 2005.

radiological surveys were performed around the perimeter of TRA-03 and the TRA-13 SCA and on the cover of the TRA-13 SCA.

WAG 2 O&M Inspection Form

O&M INSPECTION ACTIVITY AT TRA	TRA-03	TRA-06	TRA-13	TRA-13 SCA	COMMENTS/RECOMMENDED REPAIR
REVEGETATED AREAS					
1. Inspect for non-growth areas.	✓	✓	✓	✓	All vegetation growing well.
2. Inspect for non-sparse growth areas.	✓	✓	✓	✓	No sparse areas
3. Inspect for weed encroachment.	✓	✓	✓	✓	weeds, grasses and rabbit brush growing on Rip Rap.
NATIVE SOIL COVER					
1. Inspect for erosion areas/animal intrusion.	N/A	✓	✓	✓	No evidence of erosion or animal int.
2. Inspect for subsidence areas or slope movement.	N/A	✓	✓	✓	No evidence of subsidence
3. Conduct topographical survey.	N/A	N/A	N/A ✗	✗ N/A	
PERIMETER OF RADIOLOGICAL SURVEY					
1. Perform perimeter radiological survey.	✓	N/A	N/A	N/A	
RADIOLOGICAL SURVEY OF SURFACE OF SOIL COVER					
1. Perform surface radiological survey	N/A	N/A	✓	✓	
RIP RAP BARRIER					
1. Inspect for erosion areas.	✓	N/A	N/A	N/A	
2. Inspect for subsidence areas..	✓	N/A	N/A	N/A	
3. Inspect for biological intrusion.	✓	N/A	N/A	N/A	
4. Inspect for effectiveness of surface water runoff.	✓	N/A	N/A	N/A	

Additional Comments or Notes:

TRA-03 is the Warm Waste Pond. Perimeter is vegetated. Cover is rip rap.	
TRA-06 is the Chemical Waste Pond.	Vegetation (grasses) are very sparse. Weeds are plentiful
TRA-13 is the Sewage Leach Ponds.	Vegetation (grasses) are very sparse. Weeds are abundant at the SLP cover
TRA-13 SCA is the soil contamination area surrounding the Leach Ponds.	and SCA surrounding the SLP.

Inspection performed by John R. Giles John R. Giles 8/26/2004

Figure 4. The 2004 O&M inspection log for WAG 2.

Figure 5. TRA-03 warm waste pond monument.
PD040213-15.jpg

Figure 6. TRA-03 warm waste pond riprap cover.
PD040213-16.jpg

Figure 7. TRA-13 sewage leach pond. PD040213-24.jpg

Figure 8. TRA-13 sewage leach pond warning signs. PD040213-22.jpg

Figure 9. TRA-06 chemical waste pond. PD040213-26.jpg

Figure 10. Vegetation around TRA-03. PD040213-19.jpg

The O&M activities at WAG 2 included inspection of the engineered barriers at TRA-03, TRA-06, TRA-13, and the TRA-13 SCA. The barriers were inspected for vegetation, soil cover integrity, settling, and evidence of erosion and proper drainage. While walking around the site perimeters, a visual inspection was performed for subsidence in the covers.

The 2004 inspection indicated no change from the previous annual inspection. No evidence of subsidence or erosion was noted. Vegetation was sparse on TRA-06 and TRA-13, with weed growth noted. No evidence of animal intrusion was observed.

Surface radiological monitoring was performed at TRA-03, TRA-13, and the TRA-13 SCA to identify potential migration of contamination and to ensure that the existing remedy is protective in terms of occupational exposure. The 2004 survey was performed around the perimeter of TRA-03 using an in situ high-purity germanium detector and on the surface of TRA-13 and the TRA-13 SCA cover using a GPRS. Results of the surveys, when compared with previous annual surveys, give no indication of migration of contamination. The area along the east Reactor Technology Complex (RTC) security fence showed no elevated isotopic concentrations and no difference in the uncollimated to collimated high-purity geranium detector ratios for any of the points. This area required the use of collimators in previous

years, because the waste storage area inside the RTC security fence produced shine that affected the survey. In 2004, the waste was removed from the storage area. Future surveys can be performed with the GPRS system.

The results of the GPRS survey of the sewage leach pond area, TRA-13, and the TRA-13 SCA are shown in Figure 11. There is a slightly elevated exposure rate along the south, east, and north perimeters of the cover. This is consistent with the results of surveys in previous years and does not indicate migration of contamination.

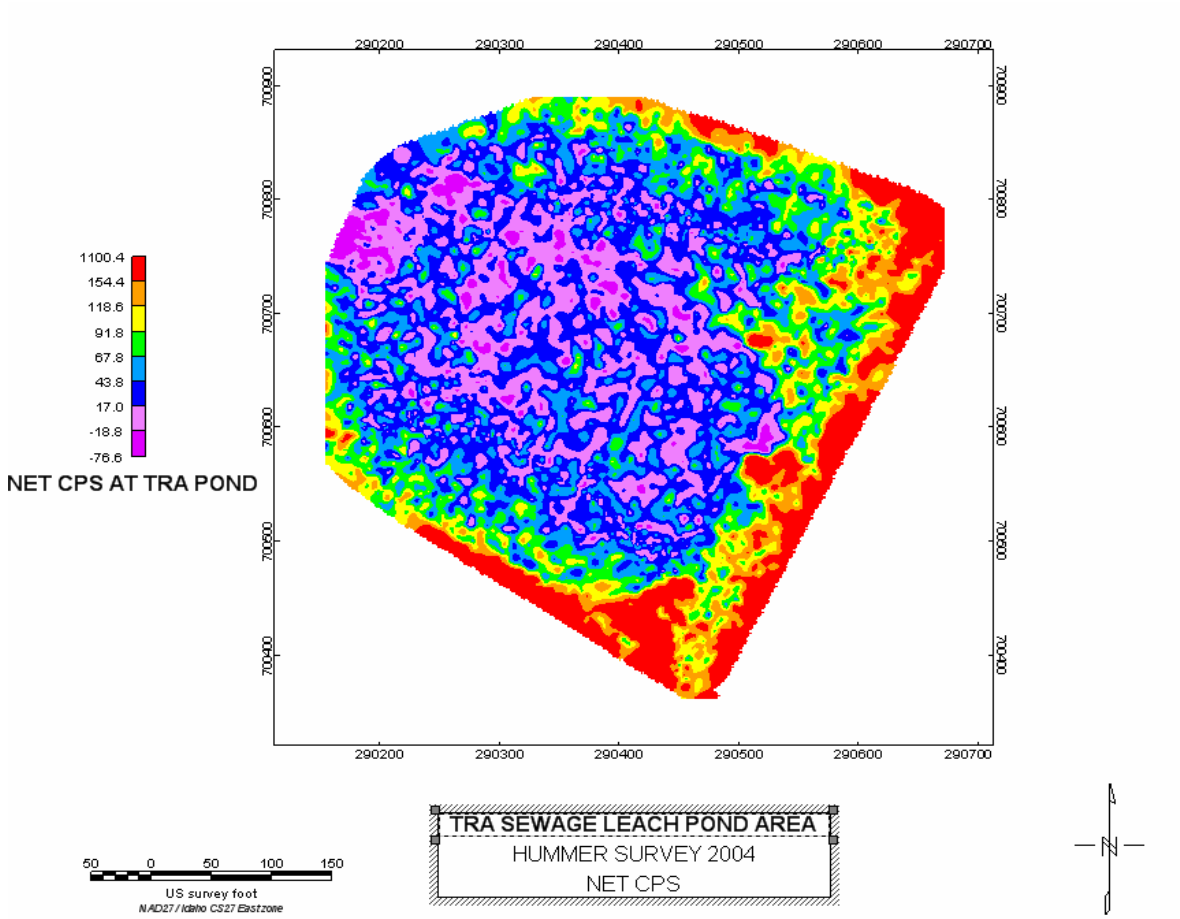


Figure 11. Humvee drive-over survey at the TRA sewage leach pond in 2004.

4. WAG 3, IDAHO NUCLEAR TECHNOLOGY AND ENGINEERING CENTER

WAG 3, the Idaho Nuclear Technology and Engineering Center, is subject to the *Final Record of Decision, Idaho Nuclear Technology and Engineering Center, Operable Unit 3-13* (DOE-ID 1999). Currently, no CERCLA O&M activities are defined for WAG 3, but as remedial activities evolve at WAG 3, O&M requirements will be reevaluated. Tank farm inspections are required but are currently reported under a separate report.

5. WAG 4, CENTRAL FACILITIES AREA

Four sites at WAG 4 were inspected on April 8, 2004: CFA-01, CFA-02, CFA-03, and CFA-08. These sites are inspected annually for erosion, animal intrusion, subsidence, the condition of the soil covers, and the condition of vegetative cover. CFA-08 is inspected for the condition of the monuments, and the three landfill sites are inspected for the condition of monitoring equipment and rock armor as applicable. Refer to Figure 12 to see the inspection log.

WAG 4 O&M Inspection Form

INSPECTION ACTIVITY AT LANDFILLS	CFA-01	CFA-02	CFA-03	COMMENTS/RECOMMENDED REPAIR
VEGETATIVE COVER				
1. Inspect for non-growth/sparse growth/weeds.	OK	OK	OK	Good growth + cover
SOIL COVER				
1. Inspect for erosion areas/animal intrusion.	OK	OK	OK	
2. Inspect for subsidence areas or slope movement.	OK	OK	X	One pocket of subsidence at 3
3. Conduct topographical survey.	N/A	N/A	N/A	5-year Review
TIME DOMAIN REFLECTOMETER (TDR)				
1. Inspect cabinet interior for unusual dirt or debris.	OK	OK	OK	
2. Inspect exterior and interior of cabinet for deterioration and presence of moisture or water.	OK	OK	OK	
3. Inspect solar collector barrel for condition/function.	OK	OK	OK	
4. Inspect and verify presence of guard post and/or impingement posts.	OK	OK	OK	
SOIL GAS WELLS and NEUTRON PROBE ACCESS TUBES (NPATs)				
1. Inspect for integrity/cleanliness.	OK	OK	OK	
3. Inspect, rust on cover, well casing damage.	OK	OK	OK	
4. Inspect guard posts around well cover.	OK	OK	OK	
ROCK ARMOR				
1. Inspect to verify no more than 12 inches of subsidence of rock armor.	N/A	OK	N/A	
2. Conduct topographical survey.	N/A	N/A	N/A	During 5-year review.

Additional Comments or Notes:

One area of subsidence on CFA Landfill III noted
Inspected April 8 2004 D Renee Pitch

CFA DRAINFIELD CFA-08		COMMENTS/RECOMMENDATIONS
1. Document No Excavations or Drilling.	yes	no signs of excavation or drilling
2. Inspect vegetation for sparse growth.		Early season but vegetation looks good
3. Inspect vegetation for weed encroachment.	OK	
4. Inspect vegetation for non-growth.	OK	
5. Inspect for erosion.	none	
6. Inspect for subsidence.	none	
7. Inspect for animal intrusion.	none	
8. Inspect permanent markers.	OK	
9. Conduct radiological survey.	N/A	In 2005 at the 5-year review.

Additional Comments or Notes:

Inspected April 8, 2004 D Renee Pitch

Figure 12. The 2004 O&M inspection log for WAG 4.

The 2004 O&M inspection showed that the remedies at WAG 4 are performing as designed. With one exception, there was no visual evidence of subsidence, erosion, or intrusion. Settling at Landfill III, however, has resulted in slumping in one area. The area, which was small at the time of the April 2004 inspection, showed increased subsidence when visited later. In November 2004, the area was approximately 3 ft across, as shown in Figure 13. Repair of the subsidence is scheduled for the 2005 construction season.

Vegetation is in good condition on the Central Facilities Area (CFA) landfills and is progressing well on the CFA-08 cap, which has been established more recently.

Figure 13. Area of subsidence on CFA Landfill III in during winter of 2004. P-1214-06

6. WAG 5, AUXILIARY REACTOR AREA/POWER BURST FACILITY/STATIONARY LOW-POWER REACTOR NO. 1

On August 26, 2004, WAG 5 was visited in order to conduct the O&M inspection. But only ARA-06, i.e., the Stationary Low-Power Reactor No. 1 (SL-1), could be inspected. All of the other WAG 5 sites were under remediation.

The biotic barrier and riprap at ARA-06 were evaluated visually for erosion, animal intrusion, and settling of the cover, with no findings noted. A radiological survey of the ARA-06 site perimeter was also performed; the results indicated no change in conditions from previous years.

Refer to Figure 14 for the 2004 site inspection log. Refer to Figures 15 through 18 for photographs at the time of the inspection.

7. WAG 6/10, BOILING WATER REACTOR EXPERIMENT/SITEWIDE CONCERNS

The Boiling Water Reactor Experiment (BORAX) I burial ground was inspected on August 26, 2004. No subsidence or erosion was noted, and vegetation is well established. The environmental monitoring results for radiation are consistent with previous years.

Refer to Figure 19 for the 2004 site inspection log. The perimeter radiological survey was performed on March 18, 2004. Refer to Figure 20 for the report of the radiological survey.

WAG 5 O&M Inspection Form

INSPECTION ACTIVITY AT ARA and PBF	ARA-01	ARA-02	ARA-06	ARA-12	ARA-16	ARA-23	ARA-25
BACKFILLED AREA (POST REMEDIATION)							
1. Inspect for intrusion.			✓				
2. Inspect for subsidence areas or slope movement.			✓				
3. Inspect for erosion.			✓				
4. Inspect vegetative cover when applicable.			✓				
ENVIRONMENTAL MONITORING							
1. Radiological survey of site perimeter at 5-year review.	N/A	N/A	✓	N/A	N/A	N/A	N/A
2. Heavy metal survey of site soils at 5-year review..		N/A	N/A		N/A	N/A	

O&M INSPECTION ACTIVITY AT SL-1	SL-1 Burial Ground	COMMENTS/RECOMMENDED REPAIR
BIOTIC BARRIER		
1. Inspect for human intrusion	John R. Giles	
2. Inspect cover for settling and erosion.	John R. Giles	
RIP RAP BARRIER		
1. Inspect for human intrusion	John R. Giles	
2. Inspect cover for settling and erosion.	John R. Giles	
PERIMETER OF RADIOLOGICAL SURVEY		
1. Perform perimeter radiological survey.	John R. Giles	

Comment or notes. Soil removal occurring at SL-1/ARA-23 areas. Soil removal activities in and around the ARA CERCLA sites. ARA-23 soil removal not yet complete. ARA-01 & ARA-12 soil removal was just completed prior to this inspection. These areas have not been revegetated as of 8/26/2004.) ARA-02, ARA-16 + ARA-25 are located amidst the soil removal for ARA-23; as such, the inspections for these sites were not performed.

8/26/2004

Figure 14. The 2004 O&M inspection log for WAG 5.

Figure 15. SL-1 monument. PD040213-01.jpg

Figure 16. SL-1 CERCLA sign. PD040213-11.jpg

Figure 17. Aerial view of WAG 5.
PD040079-130.jpg

Figure 18. North trench of the SL-1 burial ground. PD040212-10.jpg

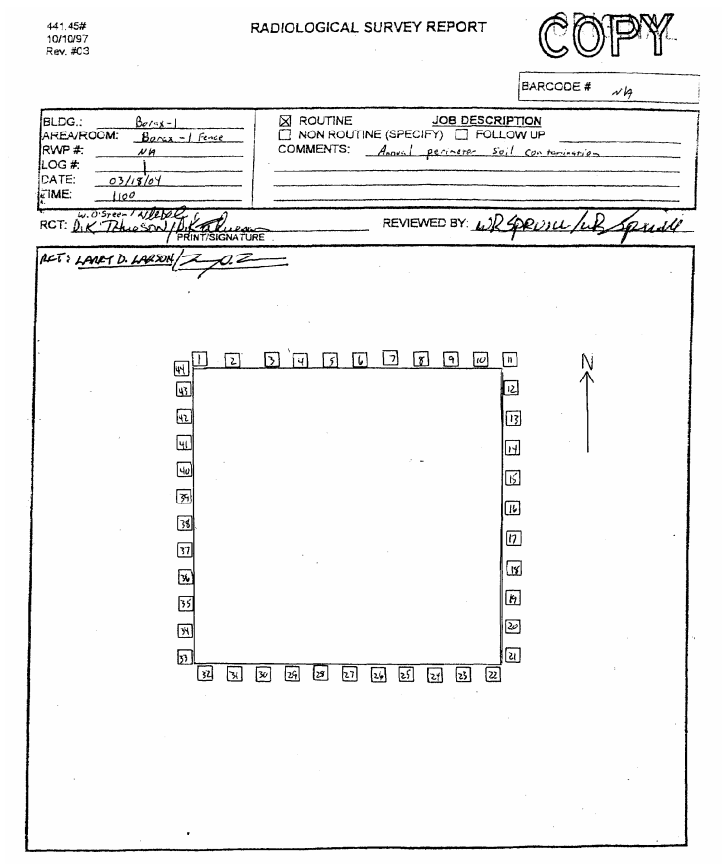
WAG 6/10 O&M Inspection Log and Map

O&M INSPECTION ACTIVITY AT BORAX	**BORAX Burial Ground**	COMMENTS/RECOMMENDED REPAIR
RIP RAP BARRIER		
1. Inspect for human intrusion	John R. Sile	
2. Inspect cover for settling and erosion.	John R. Sile	
PERIMETER OF RADIOLOGICAL SURVEY		
1. Perform perimeter radiological survey.	John R. Sile	

Comment or notes. Borax site remedial action (i.e. Cover) is effective in eliminating human intrusion. Cover does not appear to be subsiding, nor eroding. Vegetation appears healthy and well established

8/26/2004

Figure 19. 2004 O&M inspection log for WAG 6/10.



441.45#
10/10/97
Rev. #03

RADIOLOGICAL SURVEY REPORT

COPY

BARCODE # N/A

BLDG.: Borax-1
AREA/ROOM: Borax-1 Fence
RWP #: N/A
LOG #:
DATE: 03/18/04
TIME: 1100

☒ ROUTINE
☐ NON ROUTINE (SPECIFY) ☐ FOLLOW UP

JOB DESCRIPTION

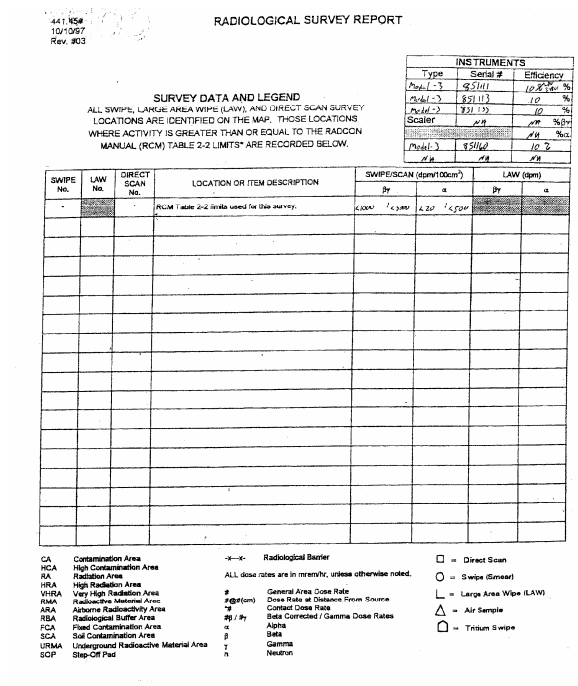
COMMENTS: Annual perimeter soil contamination

RCT: W. O'Steen / N. Lebel / D.K. Thomson / D.K. Thomson
PRINT/SIGNATURE

REVIEWED BY: WR Spruill / WB Spruill

RCT: LARRY D. LARSON / [signature]

N



441.45#
10/10/97
Rev. #03

RADIOLOGICAL SURVEY REPORT

SURVEY DATA AND LEGEND

ALL SWIPE, LARGE AREA WIPE (LAW), AND DIRECT SCAN SURVEY LOCATIONS ARE IDENTIFIED ON THE MAP. THOSE LOCATIONS WHERE ACTIVITY IS GREATER THAN OR EQUAL TO THE RADCON MANUAL (RCM) TABLE 2-2 LIMITS* ARE RECORDED BELOW.

INSTRUMENTS		
Type	Serial #	Efficiency
Model-3	851111	10 %
Model-3	851113	10 %
Model-3	851133	10 %
Scaler	N/A	N/A %βγ
		N/A %α
Model-3	851160	10 %
N/A	N/A	N/A

SWIPE No.	LAW No.	DIRECT SCAN No.	LOCATION OR ITEM DESCRIPTION	SWIPE/SCAN (dpm/100cm²) βγ	SWIPE/SCAN (dpm/100cm²) α	LAW (dpm) βγ	LAW (dpm) α
-		-	RCM Table 2-2 limits used for this survey.	<1000 '<5000	<20 '<500		

CA Contamination Area
HCA High Contamination Area
RA Radiation Area
HRA High Radiation Area
VHRA Very High Radiation Area
RMA Radioactive Material Area
ARA Airborne Radioactivity Area
RBA Radiological Buffer Area
FCA Fixed Contamination Area
SCA Soil Contamination Area
URMA Underground Radioactive Material Area
SOP Step-Off Pad

-x—x- Radiological Barrier

ALL dose rates are in mrem/hr, unless otherwise noted.

General Area Dose Rate
#@#(cm) Dose Rate at Distance From Source
*# Contact Dose Rate
#β / #γ Beta Corrected / Gamma Dose Rates
α Alpha
β Beta
γ Gamma
n Neutron

☐ = Direct Scan
○ = Swipe (Smear)
L = Large Area Wipe (LAW)
△ = Air Sample
⌂ = Tritium Swipe

Figure 20. Results of radiological survey at the BORAX I site in 2004.

8. REFERENCES

42 USC 9601 et seq., 1980, "Comprehensive Environmental Response, Compensation and Liability Act of 1980," *United States Code*, December 11, 1980.

DOE-ID, 1996, *Idaho National Engineering and Environmental Laboratory Comprehensive Facility and Land Use Plan*, DOE/ID-10514, Rev. 0, U.S. Department of Energy Idaho Operations Office, March 1996. (NOTE: This version contains official use only information. It is available internally at http://meris.inel.gov. An unclassified version, DOE/ID-10514-97, is available at http://cflup.inel.gov for external access.)

DOE-ID, 1999, *Final Record of Decision–Idaho Nuclear Technology and Engineering Center, Operable Unit 3-13*, DOE/ID-10660, Rev. 0, U.S. Department of Energy Idaho Operations Office, October 1999.

DOE-ID, 2004a, *INEEL Sitewide Operations and Maintenance Plan for CERCLA Response Actions*, DOE/NE-ID-11159, Rev. 0, U.S. Department of Energy Idaho Operations Office, September 2004.

DOE-ID, 2004b, *INEEL Sitewide Institutional Controls Plan*, DOE/ID-11042, Rev. 1, U.S. Department of Energy Idaho Operations Office, June 2004.