# Appendix A

# Institutional Controls

# ARA-01
# ARA-I Chemical Evaporation Pond

**History**: The Auxiliary Reactor Area (ARA-01) site is a shallow, unlined surface impoundment that was used to dispose of laboratory wastewater from the ARA-I Shop and Maintenance Building.

**Contaminants of Concern:** Arsenic is identified as a contaminant of concern (COC) based on human health risk estimates.

**ROD Requirements:** Because arsenic poses an unacceptable risk to human health, site access has been restricted until remediation is implemented as prescribed in the Record of Decision (ROD), at which time the requirements will be reevaluated. Land-use controls will not be required after remediation if contaminated soil is removed and residual contaminant concentrations do not pose an unacceptable risk. Otherwise, institutional controls will be maintained until discontinued based on the results of a 5-year review.

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| No facility fence | CERCLA signs<br>Radiological signs | Radiological fencing | None | Must access through main INEEL security gate and requires Radiological Work Permit (RWP) for entry. | STD-101 and MCP-3448 |

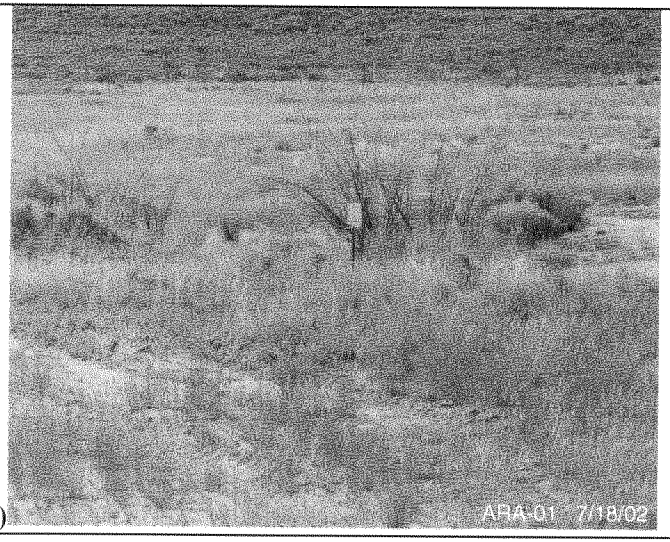


**Photo File: PD020333-10.jpg**

Comments: No findings noted.

Inspection Date: July 18, 2002

Photograph Date: July 18, 2002

## ARA-02
## ARA-I Sanitary Waste System

**History**: The ARA-02 site was a sanitary septic system comprising three septic tanks in series, a seepage pit, and the associated piping built in 1960 and serviced permanent and temporary ARA-I buildings until 1988 when ARA-I was inactivated.

**Contaminants of Concern:** Cesium-137, Ra-226, U-235, U-238, and lead were identified as COCs based on the results of the human health risk assessment.

**ROD Requirements:** Because contaminants present at the site posed an unacceptable risk to human health, site access was to be restricted until remediation was implemented as prescribed in the ROD, at which time the requirements would be reevaluated. Land-use controls are no longer required following remediation because contaminated soil was removed and residual contaminant concentrations do not pose an unacceptable risk. Institutional controls will be maintained until discontinued, based on the results of a 5-year review.

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| No facility fencing | CERCLA signs<br>Radiological signs | Radiological fencing | None | Must access through main INEEL security gate and requires RWP for entry. | STD-101 and MCP-3448 |

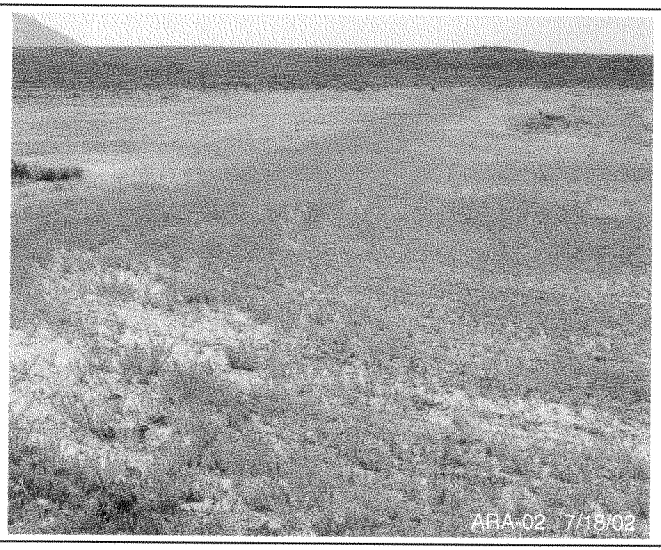


**Photo File: PD020333-11.jpg**

Comments: No findings noted.

Inspection Date: July 18, 2002

Photograph Date: July 18, 2002

## ARA-03
## ARA-I Lead Sheeting Pad near ARA-627

**History**: The ARA-03 site is a contaminated soil area located east of ARA-I building ARA-627. The area was identified as contaminated in 1979, and the source of the contamination may have originated from cleanup operations following the 1961 reactor accident at SL-1. Lead sheeting was placed over the site for shielding. The sheeting was removed in 1991.

**Contaminant of Concern:** The estimated baseline risk for this Track 2 site is 2E-05 for the 100-year future residential scenario from exposure to Cs-137.

**ROD Requirements:** Because of the presence of Cs-137, the site has been restricted to industrial use and institutional controls will be maintained until discontinued based on the results of a 5-year review.

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| No facility fencing | CERCLA signs<br>Radiological signs | Radiological fencing | None | Must access through main INEEL security gate and requires RWP for entry. | STD-101 and MCP-3448 |

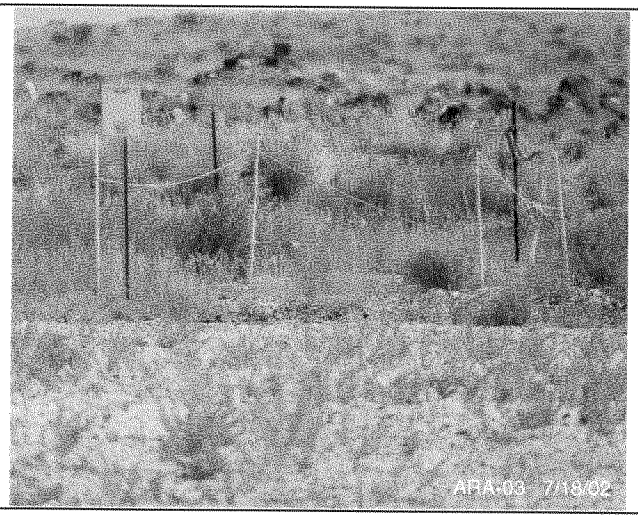


**Photo File: PD020333-13.jpg**

Comments: No findings noted.

Inspection Date: July 18, 2002

Photograph Date: July 18, 2002

## ARA-06
## ARA-II Stationary Low-Power Reactor No. 1 Burial Ground

**History**: The ARA-06 site consists of radioactive debris, soil, and gravel from the 1961 SL-1 reactor accident and cleanup. In 1996, a remedial action consisting of an engineered barrier was implemented at ARA-06.

**Contaminant of Concern:** This site has an estimated baseline risk of 1E-01 for the 100-year future residential scenario from exposure to radiologically contaminated soil and waste, diminishing to 1E-04 in approximately 400 years.

**ROD Requirements:** Because of the elevated baseline risk, land-use controls will be maintained to inhibit intrusion into the buried waste. Surface contamination will be addressed by the remediation of ARA-23. Institutional controls will be maintained until discontinued based on the results of a 5-year review. Recommendations for appropriate land-use restrictions will accompany any land transfer.

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| Outside facility | CERCLA signs, monuments, and Radiological signs | Chain link fence | Permanent markers | Must access through main INEEL security gate and requires RWP for entry. | STD-101 and MCP-3448 |

**Photo File: PD020333-19.jpg**

Comments: No findings noted.

Inspection Date: July 18, 2002

Photograph Date: July 18, 2002

## ARA-07
## ARA-II Seepage Pit to the east

**History**: The ARA-07 site was a concrete-block lined seepage pit located just outside the ARA-II facility fence that was the terminus of two septic tanks serving the Administration Building (Building 613) and the Technical Support Building (Building 602) in the ARA-II facility.

**Contaminants of Concern:** No COCs were identified for this site.

**ROD Requirements:** Unrelated surface contamination will be addressed by the remediation of ARA-23. No institutional control requirements are identified in the ROD. However, due to the presence of Cs-137 contamination remaining in the seepage pit sludge, the site has been restricted to industrial land use and institutional controls will be maintained until discontinued based on the results of a 5-year review.

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| No facility fencing | CERCLA signs<br>Radiological signs | None | None | Must access through main INEEL security gate. | STD-101 and MCP-3448 |

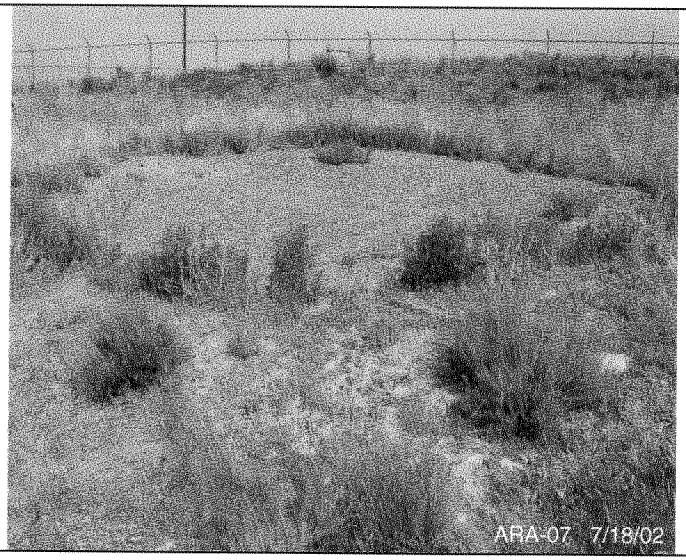


**Photo File: PD020333-16.jpg**

Comments: No findings noted.

Inspection Date: July 18, 2002

Photograph Date: July 18, 2002

## ARA-08
## ARA-II Seepage Pit to the west

**History**: The ARA-08 site was a concrete-block lined seepage pit located just outside the ARA-II facility fence that received wastes from the Administrative and Technical Support Building (Building 606) in the ARA-II facility.

**Contaminants of Concern:** No COCs were identified for this site.

**ROD Requirements:** Unrelated surface contamination will be addressed by the remediation of ARA-23. No institutional control requirements are identified in the ROD. However, due to the presence of Cs-137 contamination remaining in the seepage pit sludge, the site has been restricted to industrial land use and institutional controls will be maintained until discontinued based on the results of a 5-year review.

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| No facility fencing | CERCLA signs<br>Radiological signs | Radiological fencing | None | Must access through main INEEL security gate and requires RWP for entry. | STD-101 and MCP-3448 |

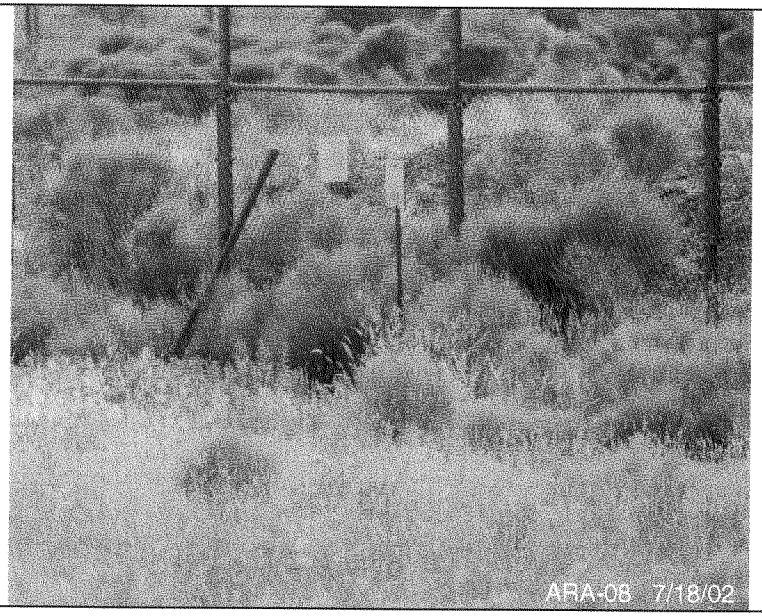


**Photo File: PD020333-08.jpg**

Comments: No findings noted.

Inspection Date: July 18, 2002

Photograph Date: July 18, 2002

## ARA-12
## ARA-III Radioactive Waste Leach Pond

**History**: The ARA-12 site is an unlined surface impoundment approximately 113 × 46 m (370 × 150 ft). The pond was constructed in a natural depression west of ARA-III to dispose of low-level liquid waste from reactor research operations.

**Contaminants of Concern:** Silver-108m (Ag-108m) is identified as the COC for ARA-12, based on human health risk estimates.

**ROD Requirements:** Because of the presence of Ag-108m, which poses an unacceptable human health risk, site access has been restricted and institutional controls will be maintained until remediation is implemented as prescribed in the ROD, at which time requirements will be reevaluated. Land-use controls will not be required after remediation if contaminated soil is removed and if residual contaminant concentrations do not pose an unacceptable risk. Otherwise, institutional controls will be maintained until discontinued, based on the results of a 5-year review.

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| No facility fencing | CERCLA signs<br>Radiological signs | Radiological fencing | None | Must access through main INEEL security gat and requires RWP for entry. | STD-101 and MCP-3448 |

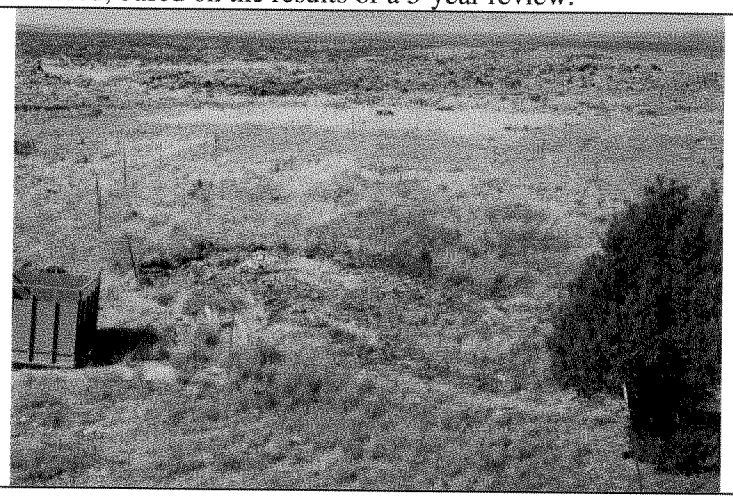

**Photo File: PD020333-05.jpg**

Comments: No findings noted.

Inspection Date: July 18, 2002

Photograph Date: July 18, 2002

# ARA-16
# ARA-I Radionuclide Tank

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| No facility fencing | CERCLA signs<br>Radiological Signs | Radiological roping | None | Must access through main INEEL security gate and requires RWP for entry. | STD-101 and MCP-3448 |

**History**: The ARA-16 site was a 1,000-gal stainless steel underground holding tank resting within a lidless concrete vault and covered by approximately 1.1 m (3.5 ft) of soil. From 1959 to 1988, the tank received radioactive liquid waste.

**Contaminants of Concern:** The total estimated risk for the 100-year future residential scenario from the soil around the tank is 1E-04 from Cs-137. The contents of the tank are classified as Resource Conservation and Recovery Act (RCRA) F-listed mixed waste.

**ROD Requirements:** Because of the presence of Cs-137, site access was to be restricted until remediation was implemented as prescribed in the ROD at which time the requirements would be reevaluated. Land-use controls are no longer required following remediation because contaminated soils have been removed and residual contaminant concentrations do not pose an unacceptable risk. Institutional controls will be maintained until discontinued based on the results of a 5-year review.

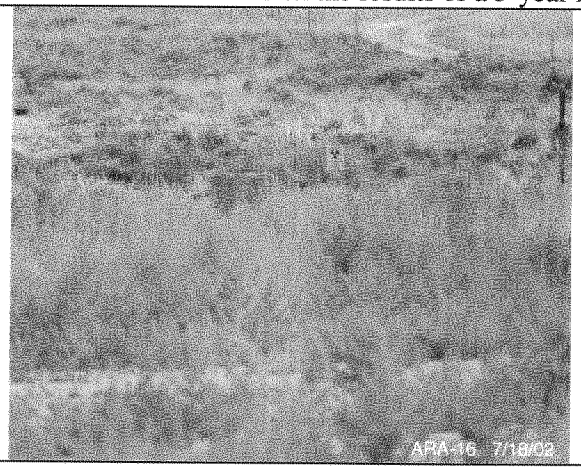


**Photo File: PD020333-14.jpg**

Comments: No findings noted.

Inspection Date: July 18, 2002

Photograph Date: July 18, 2002

# ARA-23
## ARA-II Radiologically Contaminated Surface Soils Around ARA-I and ARA-II

**History**: The ARA-23 site is a 240-acre windblown contamination area surrounding ARA-I and ARA-II and subsurface structures remaining after decontamination and dismantlement (D&D) within the ARA-I and ARA-II facilities. Winds dispersed the contamination over an area roughly 240 acres in size, but soil concentrations over most of the area are less than the remediation goals.

**Contaminant of Concern:** Cesium-137 was identified as a COC for ARA-23, based on human health risk estimates.

**ROD Requirements:** Because of the presence of Cs-137, which poses an unacceptable risk to human health, site access has been restricted and institutional controls will be maintained until remediation is implemented as prescribed in the ROD at which time the requirements will be reevaluated. Land-use controls will not be required after remediation if contaminated soil is removed and if residual contaminant concentrations do not pose an unacceptable risk. Otherwise, institutional controls will be maintained until discontinued, based on the results of a 5-year review.

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| No facility fencing | CERCLA signs<br>Radiological signs | Radiological fencing | None | Must access through main INEEL security gate and requires RWP for entry. | STD-101 and MCP-3448 |

**Photo File: PD020333-09.jpg**

Comments: No findings noted.

Inspection Date: July 18, 2002

Photograph Date: July 18, 2002

# ARA-24
# ARA-III Windblown Soil

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| No facility fencing | CERCLA signs and monument | None | None | Must access through main INEEL security gate | STD-101 and MCP-3448 |

**History**: The ARA-24 site consists of the surface soils surrounding the ARA-III facility, as defined by a 1990 aerial survey, excluding Site ARA-12 and including the area within the ARA-III facility fence. Nearly all ARA-III structures have been removed.

**Contaminant of Concern:** Estimated baseline risks for this site are less than 1E-06 for all scenarios. However, a contaminated pipeline embedded in concrete 20 ft below grade remains.

**ROD Requirements:** Because of the presence of the contaminated pipeline, land use has been restricted to prohibit potential exposure to radiologically contaminated material. Institutional controls will be maintained until discontinued based on the results of a 5-year review. Recommendations for appropriate land-use restrictions will accompany any land transfer.

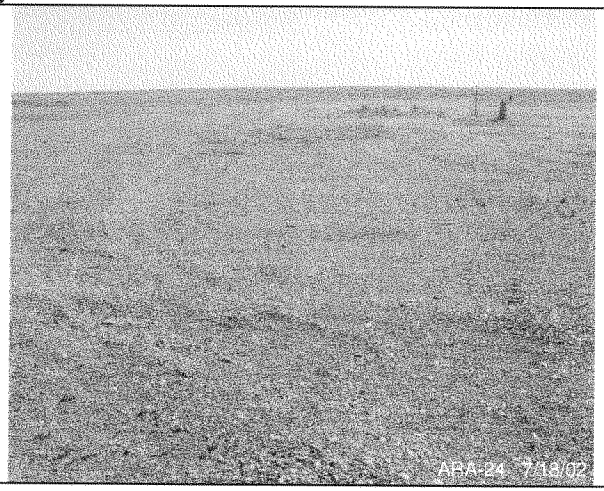


**Photo File: PD020333-07.jpg**

Comments: No findings noted.

Inspection Date: July 18, 2002

Photograph Date: July 18, 2002

# ARA-25
## ARA-I Soil beneath the ARA-626 Hot Cells

**History**: The ARA-25 site comprised contaminated soil that was discovered beneath the ARA-626 Hot Cells during the D&D of the ARA-I facility in 1998. The contamination was found near the hot cell floor drains.

**Contaminants of Concern:** Arsenic, lead, Cs-137, and Ra-226 were identified as COCs for ARA-25, based on human health risk estimates.

**ROD Requirements:** Remediation of the site was implemented as prescribed in the ROD. Because residual contaminant concentrations pose an unacceptable risk to human health, site access controls will remain in effect and land-use controls will be required Institutional controls will be maintained until discontinued, based on the results of a 5-year review.

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| No facility fence | CERCLA signs<br>Radiological signs | Radiological roping | None | Must access through main INEEL security gate and requires RWP for entry. | STD-101 and MCP-3448 |

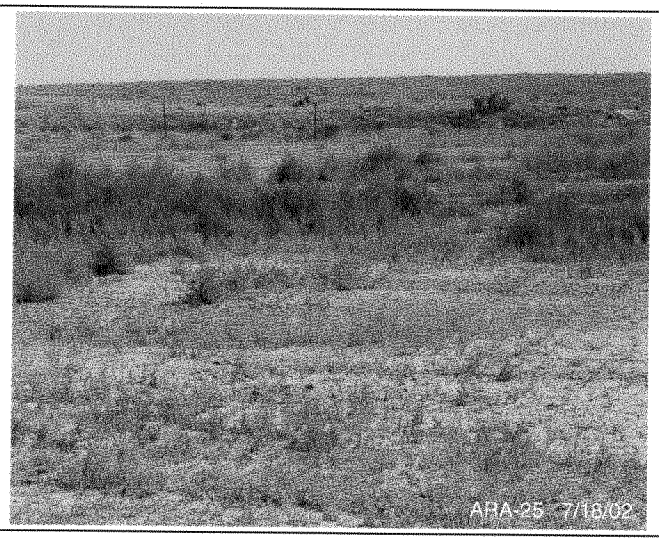


**Photo File: PD020333-15.jpg**

Comments: Monument has been fabricated. It will be emplaced upon completion of the remedial action at ARA-23 that encompasses the ARA-25 site. No findings noted.

Inspection Date: July 18, 2002

Photograph Date: July 18, 2002

## PBF-10
## PBF Reactor Area Evaporation Pond (PBF-733)

**History**: The PBF-10 site was a 19,600-$ft^2$ Hypalon-lined surface impoundment used from 1972 to 1984. An interim action was completed in 1994 and in 1995, the pond liner was removed, the berm was pushed into the pond, and the area was graded and seeded with native grasses.

**Contaminant of Concern:** The post-remediation estimated baseline risk is 2E-05 for the 100-year future residential scenario from exposure to Cs-137.

**ROD Requirements:** Because the post-remediation baseline risk is 2E-05, site access has been restricted and institutional controls will be maintained until discontinued based on the results of a 5-year review.

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| PBF facility fencing | CERCLA signs and monument | None | None | Must access through main INEEL security gate and PBF facility gate. | STD-101 and MCP-3448 |

**Photo File: PD020318-12.jpg**

Comments: No findings noted.

Inspection Date: July 11,2002

Photograph Date: July 11, 2002

## PBF-12
## PBF SPERT-I Leach Pond

**History**: The PBF-12 site is the historical location of a 4.6 × 13.7-m (15 × 45-ft) diked, unlined surface impoundment originally called the SPERT-I Warm Waste Seepage Pit. The site received radiologically contaminated and non-radioactive overflow from the SPERT-I reactor pit on a sporadic basis from 1955 to 1964. In 1984, D&D was performed at the site. Remediation included removing the drain line and the top 0.8 m (2.5 ft) of contaminated soil. The area was mounded slightly with a 2.4-m (8-ft) cover of clean soil.

**Contaminant of Concern:** Risk evaluation for this Track 1 site identified no current occupational risk and a 100-year future residential risk of 2E-05 from exposure to Cs-137.

**ROD Requirements:** Because of the presence of Cs-137, the site has been restricted to industrial land use and institutional controls will be maintained until discontinued based on the results of a 5-year review.

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| PBF facility fencing | CERCLA signs and monument | None | None | Must access through main INEEL security gate and PBF facility gate | STD-101 and MCP-3448 |

**Photo File: PD020318-10.jpg**

Comments: No findings noted.

Inspection Date: July 11, 2002

Photograph Date: July 11, 2002

# PBF-13
## PBF Reactor Area Rubble Pit

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| PBF facility fencing | CERCLA signs and monument | None | None | Must access through main INEEL security gate and PBF facility gate | STD-101 and MCP-3448 |

**History**: The PBF-13 site is a rubble pit used to dispose of soil and basalt pieces excavated during facility construction in the late 1960s and later used as a dump for construction materials and piping with asbestos insulation. All visible materials containing asbestos were removed in 1993, and the pit was backfilled with clean soil and basalt rubble.

**Contaminant of Concern:** Risk evaluation for this site identified no unacceptable risk, but the site contains construction waste, possibly friable asbestos.

**ROD Requirements:** Because the site possibly contains friable asbestos, land use will be controlled to prohibit potential exposure to the friable asbestos. The existing institutional controls have been augmented with signs and the existing cover maintained. Institutional controls will be maintained until discontinued based on the results of a 5-year review. Recommendations for appropriate land-use restrictions will accompany any land transfer.

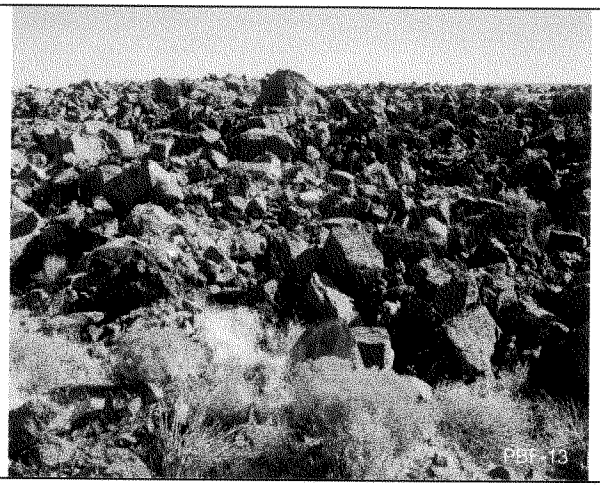


**Photo File: PD020318-16.jpg**

Comments: No findings noted.

Inspection Date: July 11, 2002

Photograph Date: July 11, 2002

# PBF-21
# PBF SPERT-III Large Leach Pond

**History**: The PBF-21 site is the historical location of a leach pond that received primary cooling water waste from the sump pump in the SPERT-III Reactor Building from 1958 to 1968. The pond was backfilled by the D&D Program.

**Contaminants of Concern:** Estimated risks for this site are below 1E-06 for the current occupational scenario and are 1E-05 for the 100-year future residential scenario from exposure to Cs-137 and U-238. The contamination is covered by a 2.4-m (8-ft) thick layer of soil.

**ROD Requirements:** Because of the presence of residual contamination, the site will be restricted to industrial land use and institutional controls maintained until discontinued based on the results of a 5-year review.

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| PBF facility fencing | CERCLA signs and monument | None | Permanent marker installed during D&D of site | Must access through main INEEL security gate and PBF facility gate | STD-101 and MCP-3448 |

**Photo File: PD020318-37.jpg**

Comments: No findings noted.

Inspection Date: July 11, 2002

Photograph Date: July 11, 2002

## PBF-22
## PBF SPERT-IV Leach Pond (PBF-758)

**History**: The PBF-22 site was an unlined surface impoundment that received effluent from the SPERT-IV reactor from 1961 to 1970.

**Contaminant of Concern:** Estimated risks for this site are 9E-06 for exposure to Cs-137 for the current occupational scenario and 3E-06 for exposure to Cs-137 for the 100-year future residential scenario.

**ROD Requirements:** Because of the presence of Cs-137, the site has been restricted to industrial land use and institutional controls will be maintained until discontinued based on the results of a 5-year review.

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| PBF facility fencing | CERCLA signs<br>Radiological signs | Radiological fencing | None | Must access through main INEEL security gate and PBF facility gate | STD-101 and MCP-3448 |

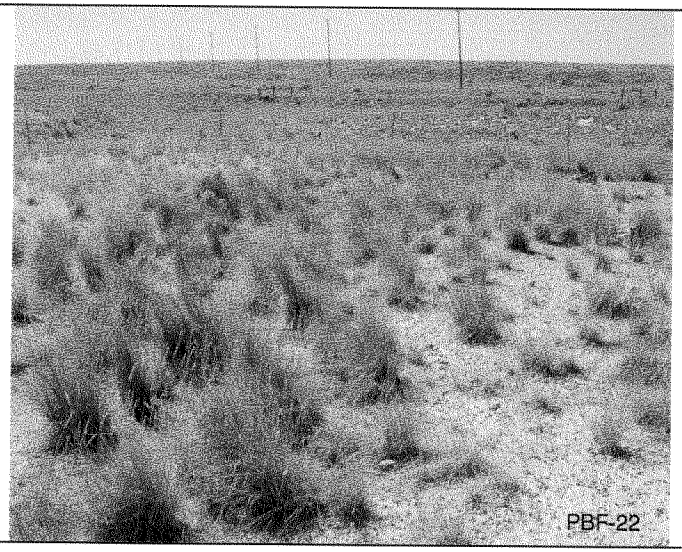


**Photo File: PD020318-42.jpg**

Comments: No findings noted.

Inspection Date: July 11, 2002

Photograph Date: July 11, 2002

## PBF-26
## PBF SPERT-IV Lake

**History**: The PBF-26 site is a large surface impoundment constructed in 1960. From 1961 to 1970, it received uncontaminated cooling water from the secondary loop of the SPERT-IV Reactor. From 1971 until 1985, the lake was inactive. From 1985 to 1992, the only discharges to the lake were uncontaminated effluent from Three Mile Island studies and discharges generated by periodic testing of emergency eye wash and shower stations.

**Contaminants of Concern:** Estimated baseline risks for this site are 3E-04 for the 100-year future residential scenario from exposure to arsenic, Aroclor-1254, Cs-137, U-235, and U-238.

**ROD Requirements:** Because of the presence of the listed contaminants, the site has been restricted to industrial land use and institutional controls will be maintained until discontinued based on the results of a 5-year review.

| FACILITY SECURITY FENCE | CURRENT SIGN REQUIREMENTS | CURRENT FENCE REQUIREMENTS | OTHER REQUIREMENTS | ACCESS RESTRICTIONS | WORK CONTROL PROTOCOL |
|---|---|---|---|---|---|
| PBF facility fencing | CERCLA signs | None | None | Must access through main INEEL security gate and PBF facility gate | STD-101 and MCP-3448 |

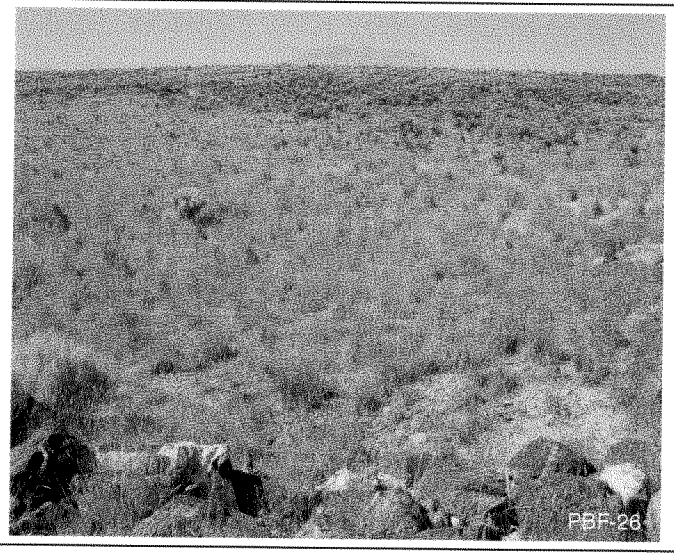


**Photo File: PD020318-45.jpg**

Comments: No findings noted.

Inspection Date: July 11, 2002

Photograph Date: July 11, 2002