

3.0 Canonsburg, Pennsylvania, Disposal Site

3.1 Compliance Summary

The Canonsburg, Pennsylvania, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Disposal Site was inspected on October 21, 2009. The disposal cell and all associated surface water diversion and drainage structures were in excellent condition and functioning as designed.

With U.S. Nuclear Regulatory Commission (NRC) concurrence, monitoring modifications prescribed in the revised *Long-Term Surveillance Plan [LTSP] for the U.S. Department of Energy [DOE] Canonsburg Uranium Mill Tailings Disposal Site, Canonsburg, Pennsylvania* (LMS/CAN/S00404–0.0, DOE, September 2008) were implemented; however, results from sampling performed in October 2009 were not available and will be reported in 2010.

A portion of the disposal site, between Area C and the railroad (i.e., the east end of former Tract 117), was sold.

Vegetation management continued and included spraying and mowing to control noxious and invasive weeds and re-seeding and planting of trees within the re-graded Stream Bank Stabilization Project area.

No other maintenance needs or cause for a follow-up or contingency inspection was identified.

3.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the Canonsburg Disposal Site are specified in the LTSP and in procedures established by DOE to comply with the requirements of Title 10 *Code of Federal Regulations* Part 40.27 (10 CFR 40.27). Table 3–1 lists these requirements.

Table 3–1. License Requirements for the Canonsburg Disposal Site

Requirement	Long-Term Surveillance Plan	This Report
Annual Inspection and Report	Sections 3.3	Section 3.3.1
Follow-Up or Contingency Inspections	Sections 3.4	Section 3.3.2
Routine Maintenance and Repairs	Section 3.5	Section 3.3.3
Intervention or Emergency Response	Section 3.6	Section 3.3.5
Environmental Monitoring	Section 3.7	Section 3.3.4

Institutional Controls—Institutional controls at the disposal site, as defined by DOE Policy 454.1, consist of federal ownership of the property, a site security fence, warning/no-trespassing signs on the security fence, and a locked gate at the entrance to the site. Verification of these institutional controls is part of the annual inspection.

The 30-acre disposal site is owned by the United States of America and was accepted under the NRC general license (10 CFR 40.27) in 1996. DOE is the licensee and, in accordance with the requirements for UMTRCA Title I sites, is responsible for the custody and long-term care of the site.

Intitutional controls also apply to Area C and former Tract 117, which are southeast of Strabane Avenue. Area C (3.1 acres) was sold and transferred in 2006, and former Tract 117 (0.431 acre) was sold and transferred in 2009; the same private party purchased both. DOE and the Commonwealth complied with restrictions on parcel transfers stipulated in UMTRCA and the Cooperative Agreement between DOE and the Commonwealth. The deed for Area C and former Tract 117 establishes restrictions to limit excavation in the areas, prohibits the disturbance of the stream bank, maintains access for monitoring, and prevents the areas from being used for residential purposes.

Inspectors found no evidence that these institutional controls were ineffective or violated.

3.3 Compliance Review

3.3.1 Annual Inspection and Report

The site, between the communities of Canonsburg and Houston, Pennsylvania, was inspected on October 21, 2009. Figure 3–1 shows features and photograph locations (PLs) mentioned in this report. Numbers in the left margin of this report refer to items summarized in the “Executive Summary” table.

3.3.1.1 Specific Site-Surveillance Features

Access, Gates, Fence, and Signs—Access to the site is directly from Strabane Avenue, a public right-of-way within the borough of Canonsburg in Washington County, Pennsylvania. The security fence and all four site gates were in excellent condition. A vegetation-free buffer zone is being maintained around the entire site security fence. The entrance sign and 11 perimeter signs were in good condition.

Site Markers and Monuments—The site contains two site markers, eight erosion control markers, three survey monuments, and four boundary monuments.

Both site markers are in excellent condition (PL–1). Four pairs of erosion control markers were initially installed along the bank of Chartiers Creek. One of these markers, ECM–4A, was lost to erosion in 1997; erosion control marker ECM–4 has been used for reference. Stream bank stabilization work is complete, and erosion control marker ECM–4A will be replaced. All remaining erosion control markers were in excellent condition.

The three survey monuments and four boundary monuments were located and in excellent condition.

Monitoring wells—All five monitoring wells that constitute the groundwater monitoring network (MW–0406A, MW–0412, MW–0413, MW–0414B, and MW–0424) were in excellent condition. The revised LTSP (issued in 2008) no longer requires that well MW–0410 be monitored. However, the well will not be abandoned at this time and will remain secured with a lock and inspected.

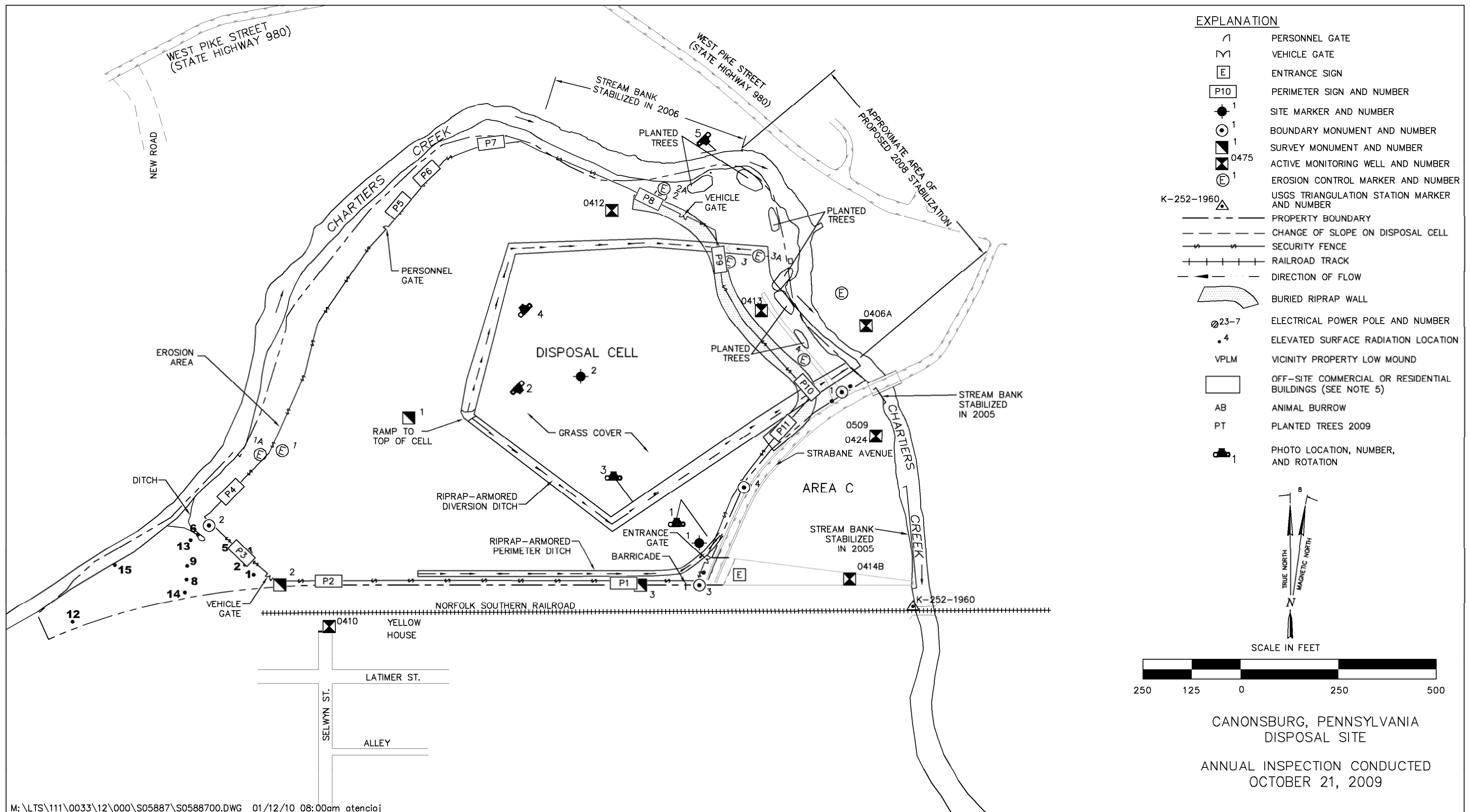


Figure 3-1. 2009 Annual Compliance Drawing for the Canonsburg Disposal Site

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3.3.1.2 Transects

To ensure a thorough and efficient inspection, inspectors divided the site into five areas called “transects”: (1) the disposal cell, (2) the diversion channels and perimeter ditch, (3) the other areas on site, (4) the site perimeter, and (5) the outlying area. The area inside each transect is inspected by walking a series of traverses.

Within each transect, the inspectors examine specific site-surveillance features, drainage structures, and vegetation. Inspectors also look for evidence of settlement, erosion, or other modifying processes that might affect the site’s integrity or long-term performance.

3A Disposal Cell—The grass-covered disposal cell surface was in excellent condition (PL–2); there was no evidence of slumping, settling, erosion, or other modifying processes. The grass is mowed and mulched in accordance with the LTSP. DOE continued to control Canada thistle and poison hemlock through a combination of mulching and spot-spraying with herbicide, which has greatly reduced the extent of these listed noxious and invasive weeds.

3B Animal burrows continue to be observed on the cell cover. Because a 36-inch-thick clay layer (radon barrier), an 18-inch-thick rock layer, and a 12-inch-thick topsoil layer overlie the buried tailings at this site, biointrusion into the tailings is unlikely, and such burrows should not pose a risk to the disposal cell’s integrity or the public’s health. In 2009, a deep burrow that appears to have gone down to the top of the rock layer (PL–3) was discovered. The location, level of activity, and significance of burrows on the cell cover will continue to be monitored.

Diversion Channels and Perimeter Ditch—Diversion channels around the disposal cell, and the perimeter ditch along the south side of the site, are armored with riprap and were in good condition (PL–4). No indications of diminished rock durability were noted. Woody vegetation that is becoming established in the diversion ditches continues to be controlled by cutting and spraying.

3C Other Areas on Site—Thick grass covers the area surrounding the disposal cell. The grass extends beyond the security fence to the north and east as far as the bank of Chartiers Creek. The grass inside the site boundary was in excellent condition; it is mowed and mulched in accordance with the LTSP. Vegetation management continues to be dramatically improved. The combination of spraying and mowing has greatly reduced the extent of noxious and invasive weeds on site.

Site Perimeter—Chartiers Creek is an active, meandering waterway that abuts the east, north, and west portions of the site. As a result of flooding in past years, particularly in 2004, the creek cut into the bank and required a series of stream bank stabilization efforts. Both the Borough of Canonsburg and DOE funded the work. NRC representatives evaluated the plans and concurred in the work.

In 2001, the Chartiers Creek bank along Area C was reconstructed to stop slumping. In 2004, inspectors found that floodwater eroded the stream bank. Approximately 100 feet of reconstructed stream bank was damaged downstream from the Strabane Avenue Bridge, and 200 feet was damaged upstream from the railroad bridge. Floodwater cut laterally into the bank and scoured behind the riprap and fabric in places. DOE notified NRC, performed a follow-up inspection of the damage, and developed recommendations for creek bank repair along Area C.

NRC concurred in the recommendations, and in April 2005, repairs were made (scoured areas along Area C were filled with riprap to restore the creek bank profile). Shrub and forb seed was broadcast to further stabilize the bank with vegetation. In 2006, the area between perimeter signs P7 and P8 was stabilized, and in 2008, the area between perimeter sign P8 and Strabane Avenue Bridge was stabilized. The stabilization work consisted of cutting back the slope of the creek bank and armoring the toe with riprap keyed into bedrock. Geotextile fabric underlies the riprap. Above the riprap, stabilization matting and new plantings of live fascines protect the slope.

- 3D In 2009, re-seeding and the planting of large (greater than 2-inch caliper) saplings took place within the area that was re-graded in 2008 as part of a Stream Bank Stabilization Project (PL-5). The trees were planted under a third-party LM grant.

Outlying Area—The predominant land use near the site is residential and commercial. The area outward, for a distance of approximately 0.25 mile, was visually inspected for development or change in land use that might affect the safety or security of the site. No new development or change in land use was observed; although, former Tract 117, southeast of Strabane Avenue, was sold and transferred in 2009.

In 2007, DOE conducted a radiological survey on the small portion of the site property that lies outside the perimeter fence southwest of the disposal cell. The survey was conducted to evaluate the potential for releasing this portion of the site for industrial reuse. The survey identified isolated radium-226 contamination in soil, in excess of UMTRCA standards for unrestricted use. DOE retains this portion of the site. Under the current property use, the radiological conditions do not pose unacceptable risk to personnel, and no corrective measures are required. DOE has added monitoring for disturbance of this area to inspection procedures.

3.3.2 Follow-Up or Contingency Inspections

DOE will conduct follow-up inspections if (1) an annual inspection or other site visit reveals a condition that must be reevaluated during a return to the site, or (2) a citizen or outside agency notifies DOE that conditions at the site are substantially changed.

No follow-up or contingency inspections were required in 2009.

3.3.3 Routine Maintenance and Repairs

In 2009, DOE controlled woody growth within the diversion channels, mowed grass on and adjacent to the disposal cell, cleared vegetation from the perimeter fence, sprayed noxious and invasive weeds, and reseeded and planted trees along the stream bank.

3.3.4 Groundwater and Surface Water Monitoring

- 3E DOE monitors groundwater and surface water at the Canonsburg Site to comply with the requirements in the revised LTSP. The revised LTSP combines the objectives of both the original LTSP (issued in 1995) and the *Ground Water Compliance Action Plan [GCAP] and Application for Alternative Concentration Limits [ACLs] for the Canonsburg, Pennsylvania, UMTRA Project Site* (U0035901, DOE, February 2000). Monitoring prescribed in the original LTSP was a best management practice because NRC determined that cell performance monitoring to ensure compliance with remedial actions discussed under Subpart A of

40 CFR 192 was not required since the disposal cell's design was adequate to provide long-term protection of human health and the environment. The GCAP required monitoring for a period of no less than 5 years (through 2004) and up to 30 years (through 2029—the estimated time for any contamination to naturally attenuate) to ensure compliance with Subpart B of 40 CFR 192 (i.e., legacy uranium-processing-site-related contamination). The Subpart B protection strategy is no remediation in conjunction with the application of an ACL for uranium.

The objectives of groundwater monitoring under the revised LTSP are to (1) evaluate downgradient contaminant trends in groundwater in the shallow unconsolidated materials and in surface water, (2) demonstrate that concentrations of uranium at point-of-compliance (POC) locations are decreasing as predicted and that the system remains in compliance with the GCAP, and (3) ensure that remedial actions at the disposal site and Area C continue to protect human health, safety, and the environment. The ACL for uranium is 1.0 milligram per liter (mg/L) at POC wells (MW-0412, MW-0413, and MW-0414). The U.S. Environmental Protection Agency maximum concentration limit (MCL) for uranium is 0.044 mg/L (40 CFR 192, Subpart A, Table 1). The uranium limit established for the point of exposure in Chartiers Creek is 0.01 mg/L (location SW-602).

According to the revised LTSP, the monitoring network consists of five wells (MW-0406a, MW-0412, MW-0413, MW-0414B, and MW-0424) completed in the uppermost aquifer (shallow unconsolidated materials), and one surface water location in Chartiers Creek (SW-602). Routine field measurements are collected, and uranium levels are determined. Monitoring is annual and will continue through 2010. After 2010, the need for annual monitoring will be reevaluated. Any changes made to the monitoring will be done in consultation with the Commonwealth and with NRC concurrence.

Sampling was conducted in October 2009; however, results were not available and will be reported in 2010.

3.3.5 Corrective Action

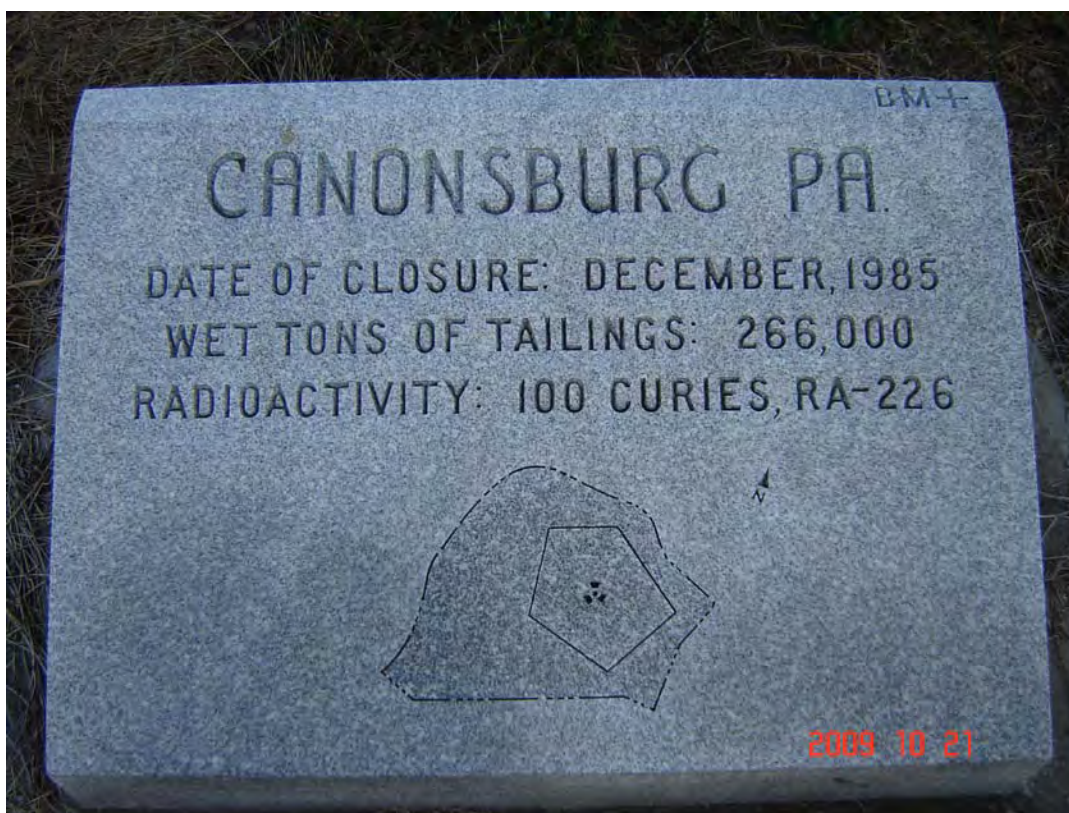
Corrective action is taken to correct out-of-compliance or hazardous conditions that create a potential health and safety problem or that may affect the integrity of the disposal cell or compliance with 40 CFR 192.

No corrective action was required in 2009.

3.3.6 Photographs

Table 3-2. Photographs Taken at the Canonsburg Disposal Site

Photograph Location Number	Azimuth	Photograph Description
PL-1	NA	Site marker SMK-1.
PL-2	135	Southwest side of the disposal cell.
PL-3	NA	Animal burrow on the disposal cell.
PL-4	315	Riprap-armored diversion ditch.
PL-5	135	New trees planted north of the disposal cell.



CAN 10/2009. PL-1. Site marker SMK-1.



CAN 10/2009. PL-2. Southwest side of the disposal cell.



CAN 10/2009. PL-3. Animal burrow on the disposal cell.



CAN 10/2009. PL-4. Riprap-armored diversion ditch.



CAN 10/2009. PL-5. New trees planted north of the disposal cell.