2.0 Burrell, Pennsylvania, Disposal Site

2.1 Compliance Summary

The Burrell, Pennsylvania, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Disposal Site, inspected on October 4, 2011, was in excellent condition. The disposal cell and all associated drainage diversion structures were in good condition and functioning as designed. No cause for a follow-up or contingency inspection was identified.

An effective vegetative management program that aligns with requirements set forth within the *Long-Term Surveillance Plan for the U.S. Department of Energy Burrell Vicinity Property, Blairsville, Pennsylvania* (GJO−2002−331−TAR, U.S. Department of Energy [DOE], revised April 2000; LTSP) has proven successful. One technique includes seeding specific areas to deter the growth of invasive Japanese knotweed, an eco-friendly approach to reducing the amount of herbicide application.

Groundwater monitoring is required every 5 years and was last conducted in October 2009. The next sampling event is scheduled for 2014. Past monitoring results have indicated that the disposal cell is not releasing any contamination and is performing as designed.

2.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the 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 2–1 lists these requirements.

Table 2–1. License Requirements for the Burrell Disposal Site

Requirement	Long-Term Surveillance Plan	This Report
Annual Inspection and Report	Section 3.3	Section 2.3.1
Follow-Up or Contingency Inspections	Section 3.5	Section 2.3.2
Routine Maintenance and Repairs	Section 3.6	Section 2.3.3
Groundwater Monitoring	Section 3.7	Section 2.3.4
Corrective Action	Section 3.6.3	Section 2.3.5

Institutional Controls—Institutional controls at the site, as defined by DOE Policy 454.1, consist of federal ownership of the property, a site perimeter fence, warning/no-trespassing signs along the property boundary, and locked gates.

The 72-acre site is owned by the United States of America and was accepted under the U.S. Nuclear Regulatory Commission (NRC) general license (10 CFR 40.27) in 1994. 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.

With the exception of bullet holes in several of the site perimeter signs, inspectors found no evidence that these institutional controls were ineffective or violated.

2.3 Compliance Review

2.3.1 Annual Inspection and Report

The site, east of Blairsville, Pennsylvania, was inspected on October 4, 2011. The results of the inspection are described below. Figure 2–1 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.

2.3.1.1 Specific Site-Surveillance Features

Site Access, Fence, Gates, and Signs—Access to the site is off Strangford Road on an access road that lies within a perpetual right-of-way through private property (Tract 201–E). The access road continues across DOE-leased land and crosses the Norfolk Southern railroad tracks to the entrance gate at the east end of the site. Authorized personnel who need access to the railroad tracks and to the several natural-gas wells nearby also use the road.

The chain-link security fence, replaced in 2007, remains in excellent condition, with the exception of a bent rail on the south fence (PL–1). The fence rail was damaged when a tree recently fell across it. The tree was safely removed from the fence shortly after being discovered. The top rail of the fence needs to be replaced. A vegetation-free corridor remains established along the fence line (PL–2). The entrance gate and four personnel gates were in good condition. Several of the 17 perimeter signs mounted on the security fence have been damaged by bullet holes, but they remain serviceable (PL–3).

Site Markers and Monuments—The site has nine markers (a site marker and eight erosion control markers). Site marker SMK–1 was in excellent condition. All eight erosion control markers were located during the inspection, and in excellent condition. Erosion control marker EC–7 was recently replaced. In response to recommendations made in the 2010 inspection, dense vegetation was cleared from all of the erosion control markers, making them easy to locate during this year's inspection.

The site has 10 monuments (three survey monuments and seven boundary monuments). Survey monument SM–102 could not be located. A global positioning system will be used during next year's inspection to relocate the monument. Of the seven boundary monuments, six were in good condition. Boundary monument BM–5 was in the process of being replaced.

Monitoring Wells—The site has four pairs of monitoring wells. Each pair consists of a shallow (alluvial) completion and a deeper (bedrock) completion. Monitoring wells were not inspected in 2010. The water sampling crew last inspected them in 2009. The monitoring wells will be inspected again when they are sampled in 2014. All wells encountered during the 2010 site inspection were locked and secured. All of the outer protective casings had been recently painted and identified with brass identification tags (PL–4).

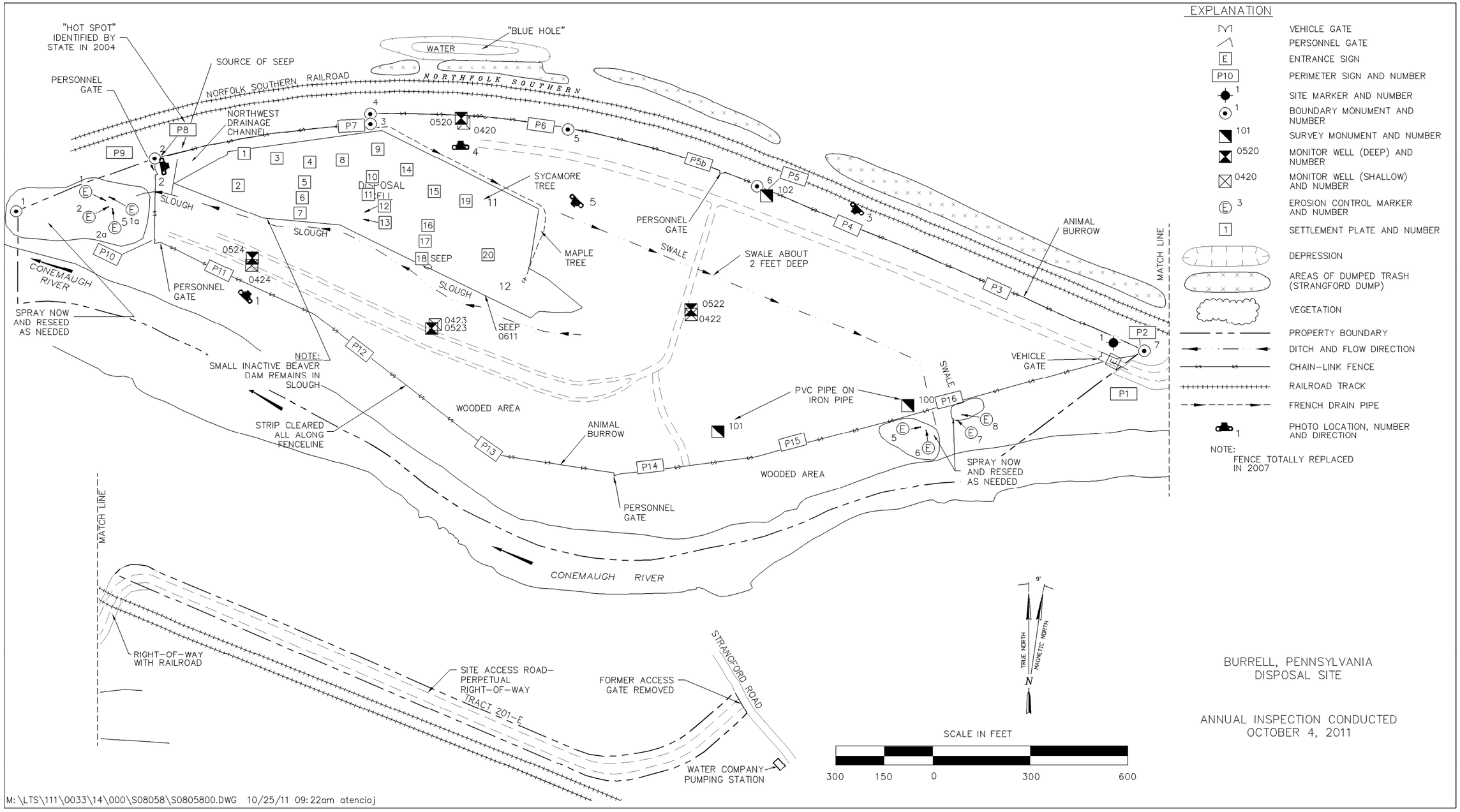

Figure 2–1. 2011 Annual Compliance Drawing for the Burrell Disposal Site

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2.3.1.2 Transects

To ensure a thorough and efficient inspection, inspectors divided the site into four areas called "transects": (1) the disposal cell, (2) the area between the disposal cell and site boundary, (3) the site perimeter, and (4) the outlying area.

The area inside each transect was inspected by walking a series of traverses. Within each transect, the inspectors examined specific site-surveillance features, drainage structures, and vegetation. Inspectors also looked for evidence of settlement, erosion, or other modifying processes that might affect the site's integrity or long-term performance.

Disposal Cell—The riprap-covered disposal cell was in excellent condition (PL–5). There were no indications of cell instability, such as slumping, bulging, or differential settlement. Rock quality was excellent; degradation of the limestone riprap was not evident.

Active control of vegetation on the cell cap has not been required since 2000. Past studies at the site concluded that deep-rooted plant growth on the cell puts the public and the environment at no greater risk of exposure to contaminants within the disposal cell. Vegetation growth on the cell might actually enhance cover performance through evapotranspiration. These studies further concluded that plant growth would not impede the proper functioning of the radon barrier. NRC concurred on the revised LTSP, which no longer requires active control of deep-rooted vegetation on the cell cover. NRC has suggested that DOE reevaluate the effects of vegetation on cover performance in 10 to 20 years to confirm performance parameters and predictions. The timing for this assessment is, therefore, between 2007 and 2017.

In 2008, a vegetation management plan for the site was issued. Although vegetation is allowed to grow on the disposal cell, the vegetation plan directs that the cell cap be sprayed for noxious
2A weeds. Through spraying efforts, the presence of Japanese knotweed on the cell cap and side slopes is declining, but continued efforts are needed. Deep-rooted woody species continue to proliferate on the cell cap (i.e., sycamore, tree of heaven, elm, tulip poplar, black locust, catalpa, maple). As the trees mature, there is some concern that uprooting could damage the disposal cell cover, which would require repair. Another concern with the continued growth of vegetation on the cell cap is the ability to observe potential indications of cell instability (e.g., slumping, bulging, differential settlement).

No active seeps were found along the south slope of the disposal cell during the site inspection.

Area Between the Disposal Cell and Site Boundary—The area surrounding the disposal cell and inside the security fence was cleared during reclamation and is now covered by thick grass and reestablishing hardwood trees. Periodic mowing maintains access to monitoring wells. The area east of the cell remains grassland.

An effective vegetative management program that aligns with requirements set forth within the LTSP has proven successful. One technique includes seeding specific areas to deter the growth of invasive Japanese knotweed, an eco-friendly approach to reducing the amount of herbicide application.

A French drain was installed along the base of the north side slope of the disposal cell in 1998 to prevent water from ponding next to the cell. Inspection findings dating back to 1998 indicate

that, before the French drain was installed, rainwater and snowmelt would collect off the north side of the disposal cell. Saturated soil and wetland vegetation (cattails and purple loosestrife) were present. At the same time that wetland vegetation was growing on the north slope of the disposal cell, seeps were occurring on the south slope of the disposal cell. It was thought that the source of water for the seeps could be the ponded water north of the cell. No water has been observed flowing from the seeps on the south slope of the disposal cell since the French drain was installed. In spring 2010, though, a new seep was observed on the south slope (seep 0611). The seep was sampled. No maximum concentration limit exceedances were measured in the sample. Inspectors in 2010 observed cattails and purple loosestrife growing once again between the north slope of the disposal cell and the location of the French drain, indicating that the area might not be draining efficiently. This area was revisited during the 2011 inspection and appeared unchanged. Inspection of the outlet to the French drain indicates that the drain outlet is clear of obstructions.

A small, inactive beaver dam remains within the slough at the base of the south slope of the disposal cell, and water continues to collect behind it. The water level behind the dam this year was higher than in previous years due to recent rains but still is not high enough to saturate the tailings or impact the integrity of the disposal cell. Therefore, DOE has elected not to remove the dam. Instead, DOE will continue to monitor the dam and its possible impacts on the disposal site.

Site Perimeter—A known seep along the north security fence, about 60 feet east of perimeter sign P8 and west of the disposal cell, was flowing at the time of the 2011 inspection. This area will continue to be monitored for seeps to determine if they threaten the disposal cell's integrity. Conceivably, the seeps also could destabilize the nearby railroad embankment. The water for this seep may be coming from other seeps on the bluffs, above and just north of the railroad tracks.

Outlying Area—The area beyond the site boundary for a distance of 0.25 mile was visually examined for signs of erosion, development, and other changes that might affect the site. North of the site, a dirt road parallels the railroad tracks and provides access to a long, narrow, wooded area that has been used as an illegal dump over the years. In 2011, no new trash was observed. The dump is not a threat to the disposal site but is an indication of the overall level of activity near the disposal site and may be a predictor of vandalism. For this reason, the area will continue to be monitored. All other areas around the site remained unchanged.

2.3.2 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 contingent inspections were required in 2011.

2.3.3 Routine Maintenance and Repairs

In 2011, noxious and invasive weed control continued, and the routes to the monitoring wells were mowed. Minor maintenance was conducted at the monitoring wells. Protective casings were painted and brass identification tags installed. Two broken or missing boundary monuments and one erosion control marker were replaced.

2.3.4 Groundwater Monitoring

In accordance with the LTSP, DOE monitors groundwater at the site as a best management practice to evaluate the disposal cell's performance. The groundwater monitoring network consists of eight wells (in four pairs) that are monitored for four target analytes: lead,
2B molybdenum, selenium, and uranium. The revised LTSP stipulates that monitoring be performed every 5 years. DOE last conducted monitoring in 2009 (presented in the 2010 report). The results indicated that there was no contamination being released and that the disposal cell is performing as designed. The next monitoring is scheduled for October 2014.

2.3.5 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 2011.

2.3.6 Photographs

Table 2–2. Photographs Taken at the Burrell Disposal Site

Photograph Location Number	Azimuth	Description
PL–1	45	Damage to perimeter fence.
PL–2	80	Vegetation cleared from perimeter fence.
PL–3	225	Bullet holes in perimeter fence sign P3.
PL–4	NA	Brass ID tag, top of monitoring well 0520.
PL–5	225	Northeast corner of disposal cell.

BUR 10/2011. PL–1. Damage to perimeter fence.

BUR 10/2011. PL–2. Vegetation cleared from perimeter fence.

BUR 10/2011. PL–3. Bullet holes in perimeter fence sign P3.

BUR 10/2011. PL–4. Brass ID tag, top of monitoring well 0520.

BUR 10/2011. PL–5. Northeast corner of disposal cell.