3.0 Canonsburg, Pennsylvania, Disposal Site

3.1 Compliance Summary

The Canonsburg, Pennsylvania, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Disposal Site (site) was inspected on October 26, 2016. No changes were observed in the disposal cell or associated diversion and drainage features. The north vehicle gate hinge is damaged and will be repaired in 2017. Inspectors believe boundary monument BM-1 is buried under gravel; it will be found in 2017. Steel pins protrude from a concrete footer near BM-1; the city will be contacted to cut them off before the 2017 inspection. A small area of erosion (noted during the 2015 inspection) along the bank of Chartiers Creek north of the disposal cell, believed to be caused by surface water runoff to the creek, was a little larger this year. A routine follow-up inspection will be completed by engineering staff in spring 2017 to evaluate the erosion and collect design specifications for mitigation actions. Inspectors identified no other maintenance needs.

Groundwater monitoring is conducted on a 5-year schedule. Sampling was last conducted in 2013. The next sampling event is scheduled for 2018.

3.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the site are specified in the site-specific U.S. Department of Energy (DOE) Long-Term Surveillance Plan (LTSP) (DOE 2013) and in procedures DOE established to comply with requirements of Title 10 *Code of Federal Regulations* Section 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	Section 3.3	Section 3.4
Follow-Up Inspections	Section 3.4	Section 3.5
Maintenance	Section 3.5	Section 3.6
Environmental Monitoring	Section 3.7	Section 3.7
Emergency Response	Section 3.6	Section 3.8

3.3 Institutional Controls

The 34.2-acre site, identified by the property boundary shown in Figure 3-1, is owned by the United States and was accepted under the U.S. Nuclear Regulatory Commission (NRC) general license (10 CFR 40.27) in 2008. DOE is the licensee and, in accordance with requirements for UMTRCA Title I sites, is responsible for the custody and long-term care of the site. Institutional controls (ICs) at the site include federal ownership of the property and the following physical ICs that are inspected annually: the disposal cell and drainage features, entrance gates and sign, security fence, perimeter signs, site markers, survey and boundary monuments, and monitoring wellhead protectors.

ICs are applicable to Area C and Tract 117, which are southeast of Strabane Avenue. Area C (3.1 acres) was sold and transferred in 2005, and Tract 117 (0.431 acre) was sold and transferred in 2009 to the same private owner. DOE and the Commonwealth of Pennsylvania complied with restrictions on parcel transfers stipulated in UMTRCA and the cooperative agreement between DOE and the Commonwealth. The deed for Area C and Tract 117 establishes restrictions to limit excavation, prohibits the disturbance of the stream bank, maintains access for monitoring and stream bank maintenance, and prevents the areas from being used for residential purposes. Use of groundwater is not restricted. Adherence to these ICs is evaluated during the site inspection. There was no evidence that any of the ICs were violated.

3.4 Inspection Results

The site, located in Canonsburg, Pennsylvania, was inspected on October 26, 2016. The inspection was conducted by K. Broberg and J. Homer of the DOE Legacy Management Support (LMS) contractor. C. Carpenter (DOE site manager) and B. Walker (DOE); M. Roberts, R. Powell, and B. DeBoer (NRC); D. Shearer (Pennsylvania Department of Environmental Protection); T. Biller (Lawn RX); A. Bier (A&S Landscaping); and P. Cameon, J. Lambert, and E. McLaughlin (LMS contractor) attended the inspection. The purposes of the inspection were to confirm the integrity of visible features at the site, to identify changes in conditions that may affect site integrity, and to determine the need, if any, for maintenance or additional inspection and monitoring.

3.4.1 Site Surveillance Features

Figure 3-1 shows the locations of site surveillance features. Inspection results and recommended maintenance activities associated with site surveillance features are included in the following subsections. Photographs to support specific observations are identified in the text and in Figure 3-1 by photograph location (PL) numbers.

3.4.1.1 Site Access, Entrance Gates, and Entrance Sign

Access to the site is directly from Strabane Avenue. There are two vehicle gates: an entrance gate at the southeast corner of the site along Strabane Avenue (the main entrance gate) and a vehicle access gate north of the disposal cell between perimeter signs P8 and P9. There are also two personnel access gates: northwest of the disposal cell south of perimeter sign P5 and one in the southwest corner. All gates were locked. The main entrance gate and all personnel gates were functional. A misaligned hinge was observed on the north vehicle gate (PL-1). The gate will be repaired in the spring of 2017. An entrance sign is posted on the main entrance gate. The entrance sign was undamaged. No other maintenance needs were identified.

3.4.1.2 Security Fence and Perimeter Signs

Most of the site is enclosed by a 7-foot-high chainlink fence, which replaced the previous fence in 2007 (PL-2). A vegetation-free buffer zone is being maintained around the entire site security fence. An area of erosion under the west security fence remains (see Figure 3-1). The area appears to be stable and has not grown in several years. For added security, slats were installed across the area beneath the fence to help fill in the gap. There are 11 perimeter signs attached to the security fence. No maintenance needs were identified.

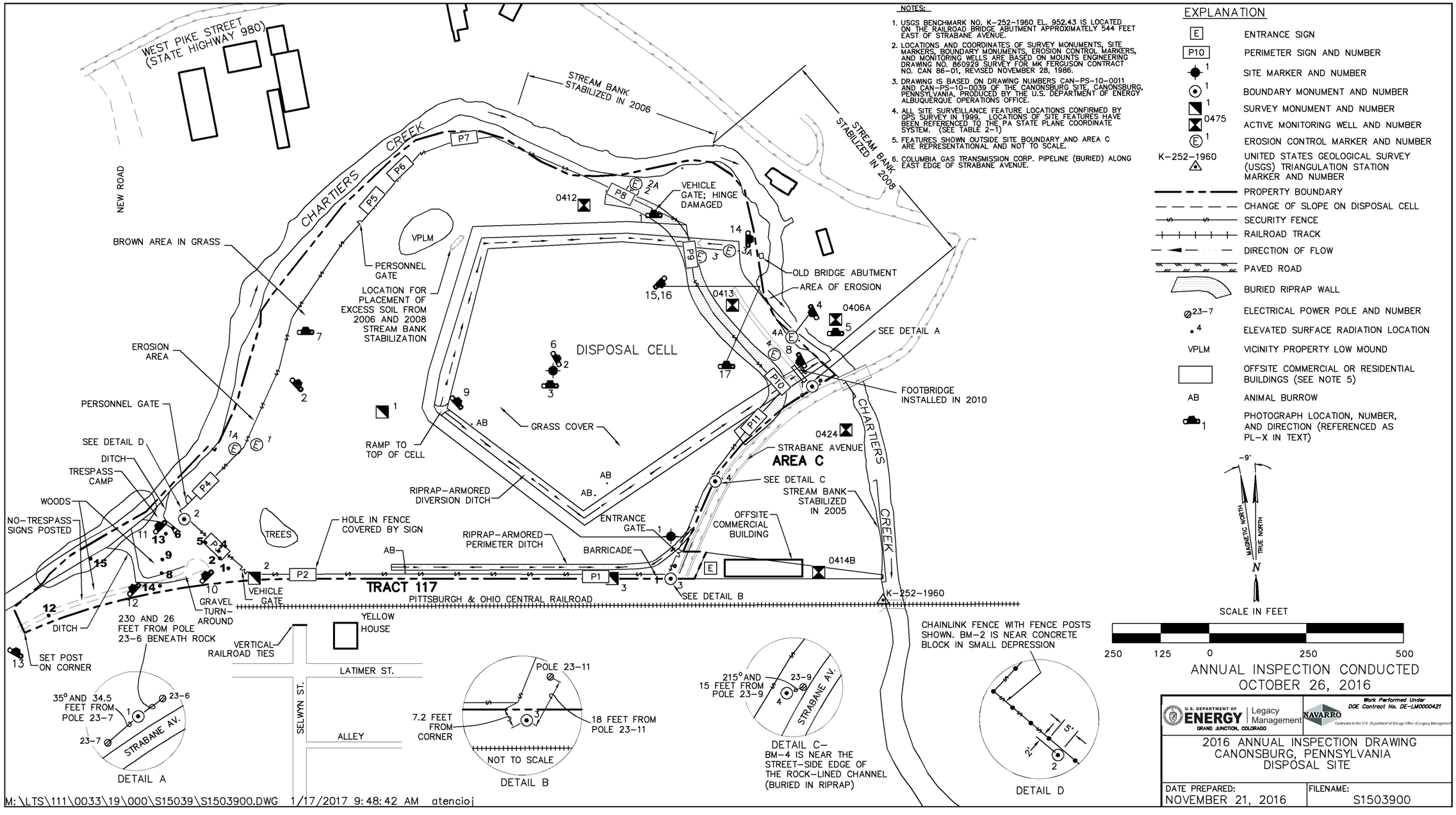

Figure 3-1. 2016 Annual Inspection Drawing for the Canonsburg Disposal Site

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3.4.1.3 Site Markers

The site has two granite site markers. Site marker SMK-1 is just inside the vehicle entrance gate at the southeast corner of the site, and site marker SMK-2 is on the top slope of the disposal cell (PL-3). No maintenance needs were identified.

3.4.1.4 Survey and Boundary Monuments

The site has three survey monuments and four boundary monuments. Boundary monument BM-1 could not be located. It is believed that BM-1 was buried under gravel during the last stream-bank stabilization action along Chartiers Creek. The site maintenance contractor will find BM-1 next spring. No other maintenance needs were identified.

3.4.1.5 Erosion Control Markers

The site has four pairs of erosion control markers (PL-4) along the bank of Chartiers Creek. No maintenance needs were identified.

3.4.1.6 Monitoring Wells

The site has five groundwater monitoring wells (0406A, 0412, 0413, 0414B, and 0424), which are inspected when the wells are sampled. The monitoring wells were last sampled in November 2013 and are scheduled for sampling again in 2018. All wellhead protectors that were observed during the annual inspection were undamaged and locked (PL-5). No maintenance needs were identified.

3.4.2 Inspection Areas

In accordance with the LTSP, the site is divided into five inspection areas (referred to as "transects" in the LTSP) to ensure a thorough and efficient inspection. The inspection areas are (1) the disposal cell, (2) the grass-covered area surrounding the disposal cell, (3) the diversion channels and perimeter ditches, (4) the site perimeter, and (5) the outlying area. Inspectors examined specific site-surveillance features within each area and looked for evidence of erosion, settling, slumping, or other modifying processes that might affect site integrity or long-term performance.

3.4.2.1 Disposal Cell

The disposal cell, completed in 1985, occupies 6.8 acres and is covered in grass. There was no evidence of erosion or slope instability (PL-6). Animal burrows occur on the disposal cell cover. Because the buried tailings are overlain by a 36-inch-thick clay layer (radon barrier), an 18-inch-thick rock layer, and a 12-inch-thick topsoil layer, biointrusion down to or through the radon barrier is unlikely. Therefore, such burrows should not pose a risk to disposal cell integrity or public health. Inspectors will continue to monitor the location and significance of burrows. No new burrows were noted on the disposal cell during the inspection. No maintenance needs were identified.

3.4.2.2 Grass-Covered Area Surrounding the Disposal Cell

The site consists primarily of mowed grasses within the security fence and on the disposal cell cover, with seeded fescues and crown vetch present across the site. The spray-and-mow approach to vegetation management at the site continues to be effective. Noxious weeds within the fenced area are limited to resprouting seedlings that were observed in portions of mowed areas. Several patches of dead grass were observed along the western edge of the grassland area (PL-7). It is anticipated this is a temporary condition due to overspray of glyphosate herbicide and that vegetation will reestablish over time. Inspectors will continue to monitor this area.

A small pedestrian bridge was installed northeast of the disposal cell in 2010 (PL-8). Inspectors painted the footbridge in 2014. Some of the bridge deck paint is now peeling. The bridge will probably need to be repainted within the next 2 years. No other bridge maintenance needs were identified.

3.4.2.3 Diversion Channels and Perimeter Ditches

Rock deterioration in the engineered channels and ditches surrounding the disposal cell does not appear to be a problem. Future inspections will look at rock conditions within the diversion ditch, and indications of poor rock durability will be noted. No indications of poor rock durability were noted in 2016.

No woody vegetation was observed in the channels and ditches (PL-9). Periodic physical removal and spot herbicide applications have been effective at reducing woody vegetation and will continue to be conducted as needed. No maintenance needs were identified,

3.4.2.4 Site Perimeter

Small Parcel of Land Adjacent to the Southwest Boundary of the Disposal Cell: In 2007, a radiological survey was conducted on this small parcel of land to evaluate the potential opportunity to release it for industrial reuse. The survey identified isolated radium-226 (^{226}Ra) contamination in soil in excess of the established average criterion for the site. Under current property usage, these radiological conditions do not pose a risk to personnel, and no corrective measures are required. Due to the isolated areas of ^{226}Ra contamination, the entire parcel of property did not satisfy established radiological criteria to be released for beneficial reuse. In 2008, the decision was made to take no action and to remove this small parcel as a candidate for reuse. Through ownership, DOE will control land use. Inspectors will continue to check the area for evidence of trespass.

A local plastics company has cleared some of DOE's property north of the railroad tracks and spread gravel to create a turnaround for its trucks. No-trespassing signs were posted around this area so the gravel area will not become any larger (PL-10). An access agreement is being established for the turnaround area.

Trespass was observed during the inspection. A campsite was hidden among the trees (PL-11) in the southwest corner of the site, outside the locked perimeter fence. The Canonsburg Police Department was called, and three officers were dispatched. The occupant of the campsite could not be found. DOE is working with the Canonsburg Police Department to remove the trespasser. No-trespassing signs were posted around the campsite and within the campsite to clarify that the land is DOE property (PL-12 and PL-13). No other maintenance needs were identified.

3.4.2.5 Outlying Area

Chartiers Creek Bank: Chartiers Creek is an active, meandering waterway east of the disposal site. Erosion along the creek bank has required several stream-bank stabilization projects along the east and north sides of the site between 2001 and 2009.Vegetation growth on the riprap-armored southern bank of Chartiers Creek is being controlled so visual inspections of riprap integrity can be performed.

Bedrock outcrops and mature trees on the stream bank west of the security fence indicate that the bank is stable. The stream bank north of the perimeter fence is also stable. The planted vegetation within the floodplain appears to be well established. The trees are of sufficient size that the T-posts used to stabilize them at the time of planting can be removed (PL-14). A small area of erosion (noted during the 2015 inspection) along the stream bank north of the disposal cell, believed to be caused by surface water runoff to the creek, was a little larger this year (PL 15 through PL-17).

Heavy mowing equipment operating near the edge of the stream bank may have undermined the integrity of the bank. Inspectors installed four T-posts around the erosion area in 2015 to make it more visible to the mowing crews. Mowing crews have been instructed to keep heavy equipment back from the edge of the stream bank to avoid undermining the integrity of the bank. A routine follow-up inspection will be conducted by engineering staff in the spring of 2017 to evaluate the erosion and collect design specifications for mitigation actions. No other maintenance needs were identified.

Area C and Tract 117: Area C and Tract 117 form a triangular parcel of property east of the site bounded by Strabane Avenue, Chartiers Creek, and the Pittsburgh and Ohio Central Railroad. Area C and Tract 117 are included in the annual inspection to ensure compliance with ICs put in place to address land use and site access requirements. There was no evidence that any of the ICs in place for Area C and Tract 117 have been violated.

The landowner of Area C and Tract 117 is building above-ground storage units and has placed approximately 6 feet of clean fill material on the site. ICs restrict structure excavations deeper than 4 feet and utilities excavation deeper than 6 feet. The storage unit construction did not violate these ICs.

DOE has two groundwater monitoring wells in Area C and Tract 117 (0424 and 0414B, respectively) that are part of the groundwater monitoring network. Inspectors noted that drainage from the storage unit foundation is directed behind monitoring well 0414B via a pipe. Inspectors will continue to monitor this area to assess how and if the drainage pipe might affect the monitoring well area. No maintenance needs were identified.

Strabane Avenue: The maintenance subcontractor periodically removes trash found on and adjacent to the site to maintain the site's appearance. Inspectors also pick up trash as necessary. Inspectors observed that Strabane Avenue, next to the site, was relatively clear of trash. Trash was not collected during the inspection.

The guardrail along Strabane Avenue near boundary monument BM-1 was slightly repositioned during the last stream-bank stabilization effort. A few metal pins protrude from the remaining

concrete footer. The pins present a tire hazard and need to be cut off flush with the ground surface. The city will be contacted to address this issue. No other maintenance needs were identified.

3.5 Follow-Up Inspections

DOE will conduct follow-up inspections if (1) a condition is identified during the annual inspection or other site visit that requires a return to the site to evaluate the condition or (2) DOE is notified by a citizen or outside agency that conditions at the site are substantially changed. Engineering staff will conduct a routine follow-up inspection in spring 2017 to evaluate erosion along the Chartiers stream bank north of the disposal cell and to collect design specification for mitigation actions. Evaluation results and mitigation actions will be reported in the 2017 UMTRCA Title I Annual Report.

3.6 Maintenance

The north vehicle gate hinge will be adjusted next spring to ensure proper alignment and continued functionality. Inspectors believe boundary monument BM-1 was buried under gravel during the last stream-bank stabilization action along Chartiers Creek. The site maintenance contractor will locate boundary monument BM-1 before the 2017 inspection. The steel pins that protrude from an unused concrete footer near BM-1 present a tire hazard. The city will be contacted to address this before the 2017 inspection. No other maintenance needs were identified.

3.7 Environmental Monitoring

3.7.1 Groundwater Monitoring

DOE monitors groundwater and surface water at the site to comply with requirements in the revised LTSP. The monitoring network consists of five wells (0406A, 0412, 0413, 0414B, and 0424) completed in the uppermost aquifer (shallow unconsolidated materials) and one surface water location in Chartiers Creek (0602) (Figure 3-2). Uranium is the constituent of concern for the monitoring network. The groundwater compliance action plan required monitoring for no less than 5 years (through 2004) and up to 30 years (through 2029), which is the estimated time for any contamination present to naturally attenuate.

In 2011, DOE evaluated the groundwater and surface water monitoring program as required by the revised LTSP. The assessment recommended that following the collection of samples in 2011 the frequency of monitoring be reduced from annual to once every 5 years for disposal cell performance purposes. NRC concurrence to change the monitoring frequency was received in 2012. Groundwater and surface water sampling was conducted in November 2013. No groundwater or surface water sampling was required for 2016. The next sampling event is scheduled for 2018.

As reported in the 2014 inspection report, groundwater uranium concentrations in 2013 were considerably below the established alternate concentration limit. With the exception of monitoring wells 0412 and 0413, uranium concentrations in 2013 were also below the maximum concentration limit. Only one surface water location (0602) is sampled under the revised LTSP.

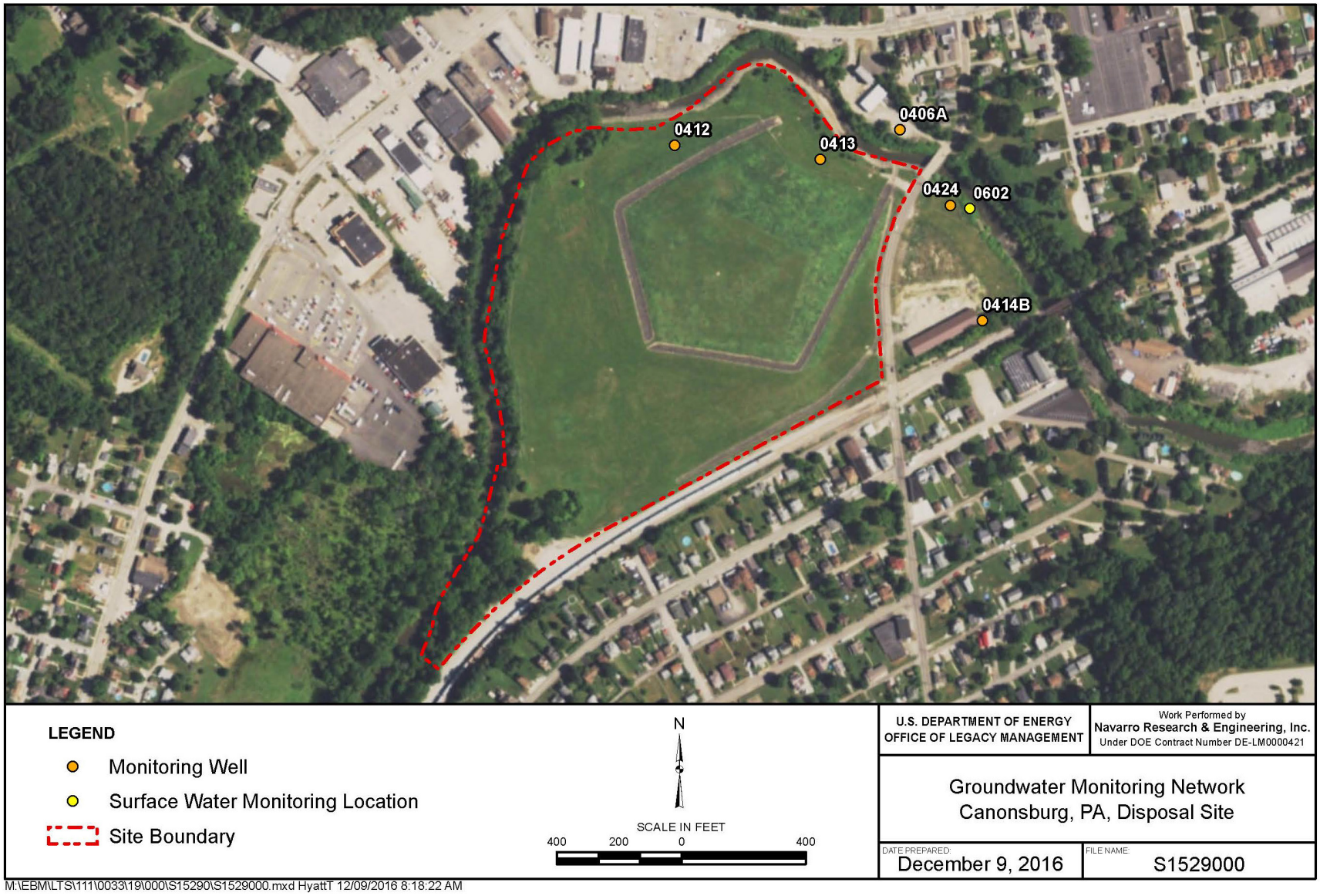

Figure 3-2. Groundwater Monitoring Network for the Canonsburg Disposal Site

The uranium concentration of surface water at location 0602 in 2013 remained below the target concentration of 0.01 milligram per liter.

3.7.2 Vegetation Management

Vegetative management activities continue to be conducted at the site in accordance with the LTSP. Vegetation management activities include spot-treating tree of heaven (an invasive tree), physical removal and spot herbicide application targeting woody vegetation in channels in ditches, and the spray and mow approach. These activities are mostly successful. Noxious weeds within the fenced area are limited to resprouting seedlings, which were observed in portions of mowed areas. No changes to the current vegetation management approach are recommended. It is recommended that the site be considered for pollinator and conservation initiative opportunities.

3.8 Emergency Response

Emergency responses are the actions that DOE will take in response to "unusual damage or disruption" that threatens or compromises site safety, security, or integrity in compliance with 10 CFR 40, Appendix A, Criterion 12. No need for emergency response was identified.

3.9 References

DOE (U.S. Department of Energy), 2013. *Long-Term Surveillance Plan for the U.S. Department of Energy Canonsburg Uranium Mill Tailings Disposal Site, Canonsburg, Pennsylvania,* LMS/CAN/S00404, March.

3.10 Photographs

Photograph Location Number	Azimuth	Photograph Description
PL-1	0	Misaligned Hinge on North Vehicle Gate
PL-2	30	Inside of the West Security Fence
PL-3	0	Site Marker SMK-2
PL-4	225	Erosion Control Marker 4
PL-5	0	Monitoring Well 0406A
PL-6	45	Top of the Disposal Cell Cover
PL-7	0	Brown Area in Grass
PL-8	225	North Side of the Footbridge
PL-9	30	Riprap-Armored Perimeter Ditch
PL-10	315	No-Trespassing Signs Posted in Area of Gravel Turnaround
PL-11	315	Trespass Camp
PL-12	315	No-Trespassing Sign Posted Within the Trespass Camp
PL-13	30	No-Trespassing Sign Posted at Southwest Corner of DOE Property
PL-14	90	Tree on the Floodplain
PL-15	135	Bank of Chartiers Creek at Area of Erosion Along Armored Riprap Section
PL-16	NA	Area of Erosion Along the Bank of Chartiers Creek
PL-17	135	Bank of Chartiers Creek Just East of Area of Erosion; Shows Further Erosion Along the Top of the Armored Riprap Section

Abbreviation:
NA = not applicable

PL-1. Misaligned Hinge on North Vehicle Gate

PL-2. Inside of the West Security Fence

PL-3. Site Marker SMK-2

PL-4. Erosion Control Marker 4

PL-5. Monitoring Well 0406A

PL-6. Top of the Disposal Cell Cover

PL-7. Brown Area in Grass

PL-8. North Side of the Footbridge

PL-9. Riprap-Armored Perimeter Ditch

PL-10. No-Trespassing Signs Posted in Area of Gravel Turnaround

PL-11. Trespass Camp

PL-12. No-Trespassing Sign Posted Within the Trespass Camp

PL-13. No-Trespassing Sign Posted at Southwest Corner of DOE Property

PL-14. Tree on the Floodplain

PL-15. Bank of Chartiers Creek at Area of Erosion Along Armored Riprap Section

PL-16. Area of Erosion Along the Bank of Chartiers Creek

PL-17. Bank of Chartiers Creek Just East of Area of Erosion; Shows Further Erosion Along the Top of the Armored Riprap Section