

Annual Inspection of the Grand Junction, Colorado, Site

1.1 Inspection Summary

The Grand Junction, Colorado, Site was inspected on March 3, 2016. Physical and institutional controls enacted at the site continue to be effective in preventing exposure to contamination remaining on the property. Five minor maintenance needs were identified; however, no cause for a follow-up inspection was identified.

The site was contaminated during uranium milling and uranium oxide procurement activities conducted by the federal government between 1943 and 1974. DOE remediated the property between 1986 and 2001. Remediation consisted of decontaminating or demolishing contaminated buildings and removing contaminated soil. Contaminated materials were disposed of at the Uranium Mill Tailings Radiation Control Act Title I Grand Junction Disposal Site located south of Grand Junction, Colorado. Some contaminated materials were left in place and were remediated under a state-approved covenant for deferred remediation at a later date.

DOE transferred approximately 8 acres of the site in 2001 to the U.S. Department of the Army (occupied by an engineering unit of the U.S. Army Reserve). The remainder of the facility was transferred to nonfederal ownership (Riverview Technology Corporation [RTC]) in 2001, following approval of the covenant for deferred remediation. Several buildings are leased by DOE from the RTC to conduct ongoing DOE operations.

DOE remains responsible for ensuring that contamination left on its former property is controlled to prevent exposure to the public and the environment. Contamination remains in two occurrences:

- In groundwater and surface water within the site perimeter.
- As radium foil sealed below ground in a decommissioned calibration borehole.

The site transfer agreement between DOE and the RTC stipulated that contamination beneath Building 12A (site computer facility) and Building 20 (analytical chemistry laboratory) would be remediated when DOE vacated those buildings and they were demolished. Demolition of 12A and associated remediation of the concrete slab and underlying soil beneath the building was completed in 2014, and is no longer apart of the annual inspection requirements. DOE previously used Building 12A as a computer and storage facility. DOE concluded operations in the laboratory in December 2003, and demolition of the building and remediation of underlying contaminated materials occurred in 2006. The groundwater and surface water is being remediated by the process of natural flushing of the alluvial aquifer. DOE will provide stewardship oversight of the decommissioned calibration borehole in perpetuity.

1.2 Inspection Requirements

Requirements for the long-term surveillance and maintenance of the site are specified in the *Long-Term Surveillance and Maintenance (LTS&M) Plan for the Grand Junction, Colorado, Site* (June 2006).

1.3 Institutional Controls

Institutional controls at the site consist of warning signs around the surface water locations (North Pond, South Pond, and wetlands) to prevent use, an information/warning plaque over the decommissioned borehole containing radium foil, locks on the groundwater monitoring wells, and deed restrictions that prohibit unauthorized excavations that could expose contaminated groundwater under the former DOE facility. Verification of these institutional controls is part of the annual inspection, and the results are included in this report.

1.4 Inspection Results

This report presents the results of the annual U.S. Department of Energy (DOE) inspection of the Grand Junction, Colorado, Site. S. Woods of Navarro Research and Engineering (Navarro), the DOE Office of Legacy Management (DOE LM) contractor at Grand Junction, Colorado, conducted the inspection on March 3, 2016. W. Dam of DOE LM, M. Cosby of the Colorado Department of Public Health and Environment, and S. Campbell, L. Tegelman, and C. Hodgson of Navarro attended the inspection.

The purposes of the annual inspection are to confirm the integrity of visible features at the site, to identify changes in conditions that may affect site protectiveness, and to determine the need, if any, for maintenance, additional inspections, or monitoring

The annual inspection addresses only those portions of the site that must be monitored and maintained to ensure continued protection of human health and the environment. Those portions are related to contaminated media that remain at the site. Features discussed in this report are shown on the attached drawing. Photographs to support specific observations are identified in the text and on the drawing by photograph location (PL) numbers.

1.4.1 Site Surveillance Features

Figure 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.

1.4.1.1 Monument

A U.S. Coast and Geodetic Survey monument near the former north gate to the site establishes elevation control for the site. This monument was in good condition (PL-1).

1.4.1.2 Monitoring Wells

DOE owns eight monitoring wells on the property to monitor the progress of natural flushing of contaminants from the alluvial aquifer. Wells 10-19N, 11-1S, 14-13NA (PL-2), GJ01-02 (PL-3), and GJ84-04 are flush mounted and protected with standard monitoring well metal caps or manhole covers; well GJ84-04 is also protected by steel bollards. Wells 6-2N, 8-4S, and GJ01-01 have above-ground steel well casing protectors; steel bollards are in place as further protection for wells 6-2N and 8-4S. Monitoring well 11-1S well label was re-stamped following the inspection for improved readability. The visible portions of all wells were in good condition.

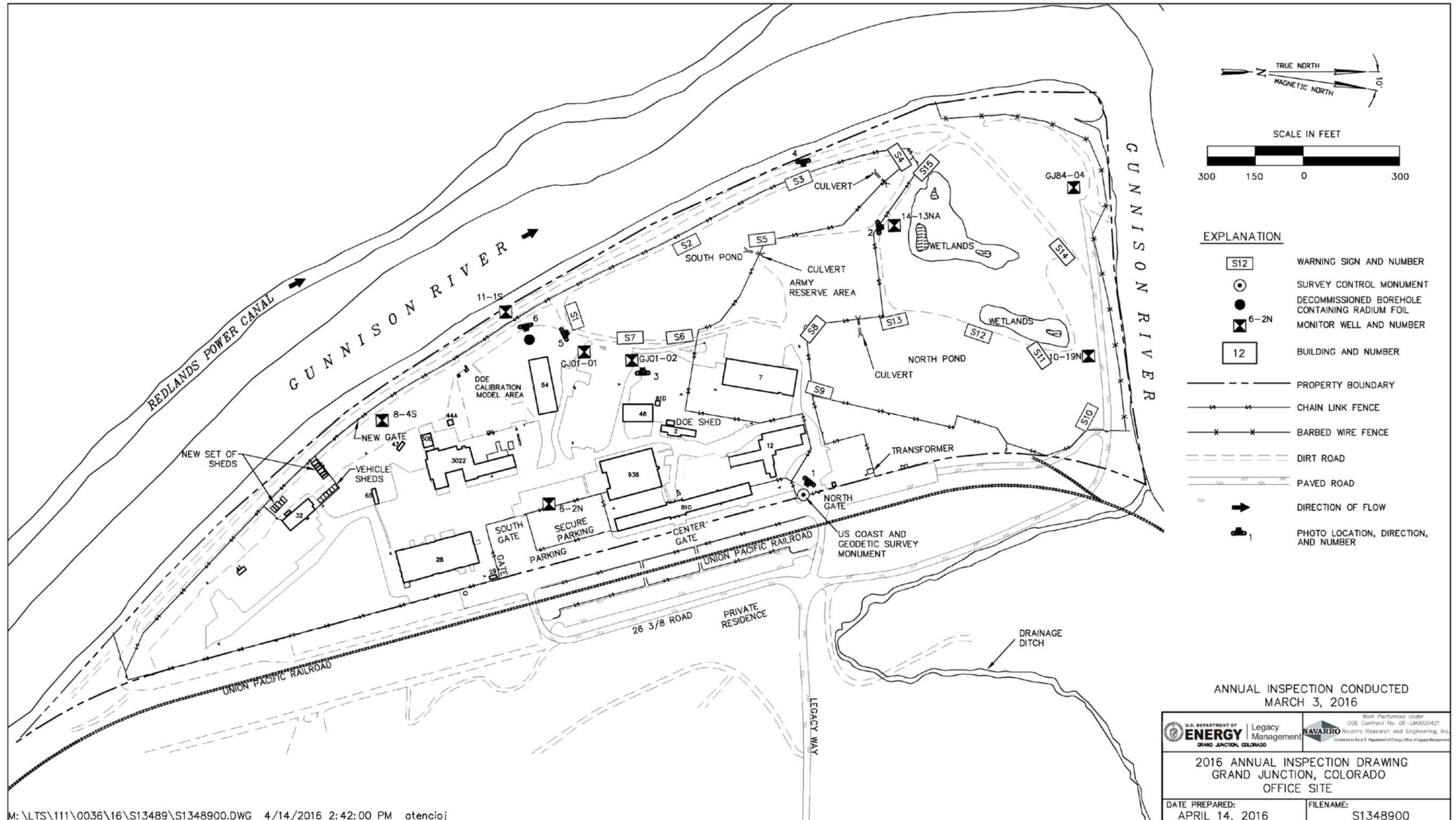


Figure 1. 2016 Annual Inspection Drawing for the Grand Junction Site

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1.4.1.3 Warning Signs

Fifteen warning signs installed on galvanized steel posts are positioned around the surface water areas so the warning will be visible to a person approaching from any direction of reasonable access. All signs were undamaged and legible (PL-4 and PL-5).

1.4.1.4 Radium Foil Borehole

DOE installed a 300-foot-deep cased borehole in the 1980s to calibrate depth measurement systems on borehole geophysical logging trucks. Two strips of radium-226 foil were placed around the casing at depths of 81 feet (29 picocuries per gram) and 181 feet (3 picocuries per gram). During calibration, the instruments in the trucks would detect the gamma signal from the radium.

The borehole was decommissioned in place in 2000. DOE perforated the casing above and below each strip of foil and pressure-grouted the annulus with Portland cement to seal the foil in place. The borehole was filled with grout, and a metal plaque was mounted in concrete at ground level over the well. The metal plaque with the borehole information and warning engraved into the metal was in good condition (PL-6).

1.4.2 Inspection Areas

To ensure a thorough and efficient inspection, the site is divided into two areas referred to as transects: (1) the area within the former DOE property boundary that is addressed in the LTS&M Plan, and (2) the outlying area.

Specific site surveillance features were observed within each transect, such as survey markers, warning signs, and monitoring wells. Each transect was inspected for evidence of erosion, excavation, vandalism, or other phenomenon that might indicate a loss of institutional control or diminished protectiveness.

1.4.2.1 Interior Portions of the Site

This transect includes the surface water areas, and other site surveillance features within the former DOE property boundary.

Most of the site surveillance features and surface water features are in areas not easily accessible by the public due to fencing. There were no signs of activity, development, or land use change (e.g., well installations or excavations that could expose groundwater) on the site that might degrade protectiveness.

1.4.2.2 Outlying Area

A private residence exists on the adjacent property east of the site. City of Grand Junction supplies water to the residence (no alluvial groundwater use). There were no signs of activity, development, or land use change in other areas adjacent to the site that might expose contaminated groundwater or impact the natural flushing of the aquifer.

1.5 Follow-Up or Contingency Inspections

DOE will conduct follow-up inspections if (1) the annual inspection or other site visit reveals a condition that requires a return to the site to further evaluate the condition, or (2) a citizen or outside agency notifies DOE that conditions at the site or in the vicinity of the site are substantially changed.

No need for a follow-up inspection was identified.

1.6 Maintenance and Repairs

Five minor maintenance needs were identified during the audit:

1. Warning sign S7 – needs to be tightened to post.
2. Well 11-1S – re-stamp/label well on the well-vault lid.
3. Pick up fence post lying on the ground on the east side of the South Pond.
4. Broken pipe sticking out of the ground in the dirt road that loops around Building 46 needs to be removed or cut to be level with the surrounding surface.
5. The panel on the electrical box located east of the South Pond needs to be closed and secured.

Identified maintenance needs 1-3 above have been addressed and resolved. RTC has been notified regarding maintenance needs 4 and 5.

1.7 Environmental Monitoring

In accordance with the Record of Decision for the site, the contaminated groundwater is being remediated through natural flushing of the alluvial aquifer. This process is expected to be complete in 50 to 80 years following completion of remediation of contaminated soils (except for the contamination that was left under Buildings 12 and 20, site remediation was completed in 2001). Sampling of the groundwater at the site monitoring wells and of the surface water at North Pond, South Pond, the wetlands areas, and the Gunnison River occurs annually, usually in February. Monitoring results are included in an annual data validation report. The visible features of the monitoring wells are inspected for their condition and to confirm they are locked.

1.8 Corrective Action

No corrective action was required in 2016.

1.9 Photographs

Photo Location Number	Azimuth	Photograph Description
PL-1	130	U.S. Coast and Geodetic Survey Monument.
PL-2	355	Monitoring well 14-13NA.
PL-3	270	Monitoring well GJ01-02.
PL-4	85	South Pond warning sign S3.
PL-5	335	South Pond warning sign S1.
PL-6	80	Plaque at decommissioned borehole containing radium foil.



GJO 3/2016. PL-1. U.S. Coast and Geodetic Survey Monument.



GJO 3/2016. PL-2. Monitoring well 14-13NA.



GJO 3/2016. PL-3. Monitoring well GJ01-02.



GJO 3/2016. PL-4. South Pond warning sign S3.



GJO 3/2016. PL-5. South Pond warning sign S1.



GJO 3/2016. PL-6. Plaque at decommissioned borehole containing radium foil.