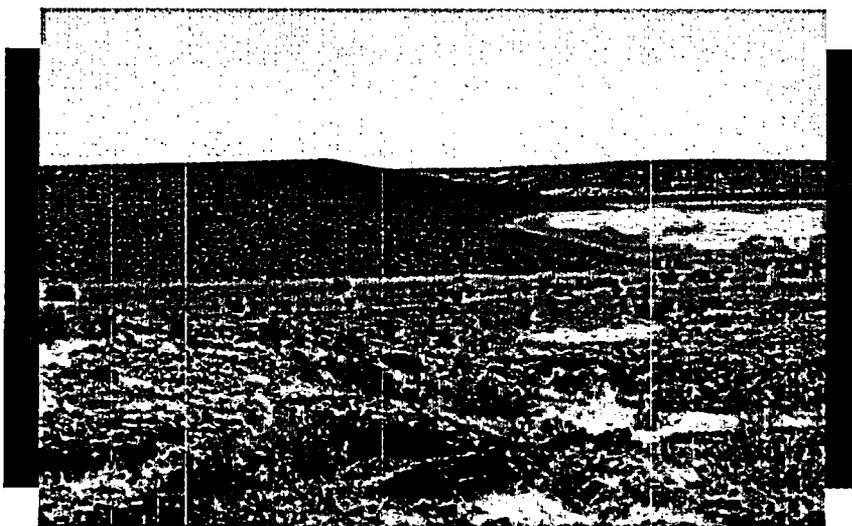


Long-Term Surveillance and Maintenance Program

**2000 Annual Site Inspection and Monitoring
Compliance Report for Uranium Mill Tailings
Radiation Control Act Title II Disposal Sites**

September 2000



Bluewater, New Mexico, Disposal Cell Site, 2000



Edgemont, South Dakota, Disposal Cell Site, 2000

Long-Term Surveillance and Maintenance Program

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Compliance Report
for
Uranium Mill Tailings Radiation Control Act
Title II Disposal Sites**

September 2000

Prepared by
U.S. Department of Energy
Grand Junction Office
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Summary

This report presents results of annual site inspections for the two Uranium Mill Tailings Radiation Control Act (UMTRCA) Title II mill tailings sites that currently fall under the DOE general license for long-term custody and care of uranium or thorium byproduct materials disposal sites (10 CFR 40.28). Specific inspection and monitoring requirements are in the Long-Term Surveillance Plans for each site.

The Bluewater, New Mexico, UMTRCA Title II disposal site was inspected on May 10, 2000. The site is generally in excellent condition. Ponded water was present on top of the north end of the main tailings pile in two locations at the time of the inspection. A section of perimeter fence will require repair during the next scheduled site visit. Results of ACL and PCB groundwater monitoring showed all ACLs to be within specified limits and there was no detection of PCB's.

The Edgemont, South Dakota, UMTRCA Title II disposal site was inspected on June 20, 2000. The site is in excellent condition. Minor fence repairs are recommended. Groundwater monitoring is not required for this site.

End of current text

1.0 Bluewater

Bluewater Site Long-Term Custody Compliance Requirements

The following list comprises the long-term custody compliance requirements for the Bluewater site as defined in Section 3.2 of the site Long-Term Surveillance Plan:

1. Annual site inspection.
2. Annual inspection report.
3. Follow-up inspections and inspection reports, as necessary.
4. Site maintenance as necessary to sustain design functions.
5. Emergency measures in the event of catastrophe.
6. Environmental monitoring as required.

The Bluewater site long-term custody compliance requirements were fulfilled for 2000 as follows:

1. The site was inspected on May 10, 2000 in accordance with the inspection procedure as outlined in Section 3.3.2 of the Long-Term Surveillance Plan (LTSP).
2. This document serves as the annual inspection report.
3. No follow-up inspections were necessary.
4. No maintenance was necessary to sustain design functions, although some fence repairs were recommended.
5. No catastrophic events necessitated emergency measures.
6. The required ground-water monitoring, as specified in Section 3.7.1 of the LTSP, was completed and the results are summarized in this report (see page 9).

Bluewater Site Inspection Results

M. R. Widdop (Chief Inspector) and M. J. Gardner (Assistant Inspector), both of MACTEC-ERS, the Technical Assistance and Remediation contractor at the DOE Grand Junction Office (GJO), and J. P. Gilmore of DOE-GJO conducted the inspection on May 10, 2000. The inspection was conducted in accordance with (1) the Long-Term Surveillance Plan (LTSP) for this site, *Long-Term Surveillance Plan for the DOE Bluewater (UMTRCA Title II) Disposal Site Near Grants, New Mexico, July 1997*, and (2) procedures established by the GJO to comply with requirements of 10 U.S. Code of Federal Regulations (CFR) Section 40.28.

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 inspections and monitoring.

Photographs to support specific observations are identified in the text and on the site maps by photograph location (PL) numbers. Site features are indicated on the site maps, Figures 1-1 (south area) and 1-2 (north area).

Entrance Gate, Access Road, and Access Gate

The entrance gate (at County Road 334) is a steel, double-swing stock gate. A chain and padlocks belonging to DOE and various utility companies that have rights-of-way across the site secure the gate. The access road leads from the entrance gate to the access gate. The access road is an all-weather road surfaced with crushed basalt and extends northward, along a narrow strip of DOE property, for approximately 1,700 feet to the site access gate. The access gate is also a steel, double-swing stock gate secured by padlocks keyed the same as at the entrance gate. The entrance gate, access road, and access gate are all in excellent condition.

Perimeter Signs

Fifty-two perimeter or warning signs, designated P1 through P52 on Figures 1-1 and 1-2, are in two locations: (1) at various places along the site boundary, and (2) around the main and carbonate tailings disposal cells. The signs are mounted about 5 feet above the ground on steel posts set in concrete.

Ten signs are placed along the site boundary, mainly at gates in the perimeter fence associated with the various utility company rights-of-way. Signposts are about 5 feet inside the actual boundary line. (The sign at P1 is not at the entrance gate, as indicated in the LTSP; but at the access gate. DOE considers this location more appropriate. This variance will be noted in the LTSP when it is revised.)

The remaining 42 signs are spaced about 500 feet apart around the main and carbonate tailings disposal cells. The signposts are outward about 100 feet from the edge of each disposal cell. All signs are in excellent condition.

The signs showing the 24-hour DOE telephone number display the former (303) area code that has now been superseded by the 970 area code. Stickers with the updated area code will be applied to the signs during the next scheduled inspection.

Site Marker and Boundary Monuments

A granite site marker lies between the southwest corner of the main tailings disposal cell and the northwest corner of the carbonate tailings disposal cell. The marker is in excellent condition.

Twenty-four boundary monuments define the site boundary. These monuments are typically inside the perimeter fence, several feet inside the true corner or boundary line. Boundary monument BM-24 that was not located during the 1999 inspection was located during the 2000 inspection with the aid of the global positioning system unit (PL-1). The boundary monuments and the general area around the monuments were inspected for signs of disturbance. None was found.

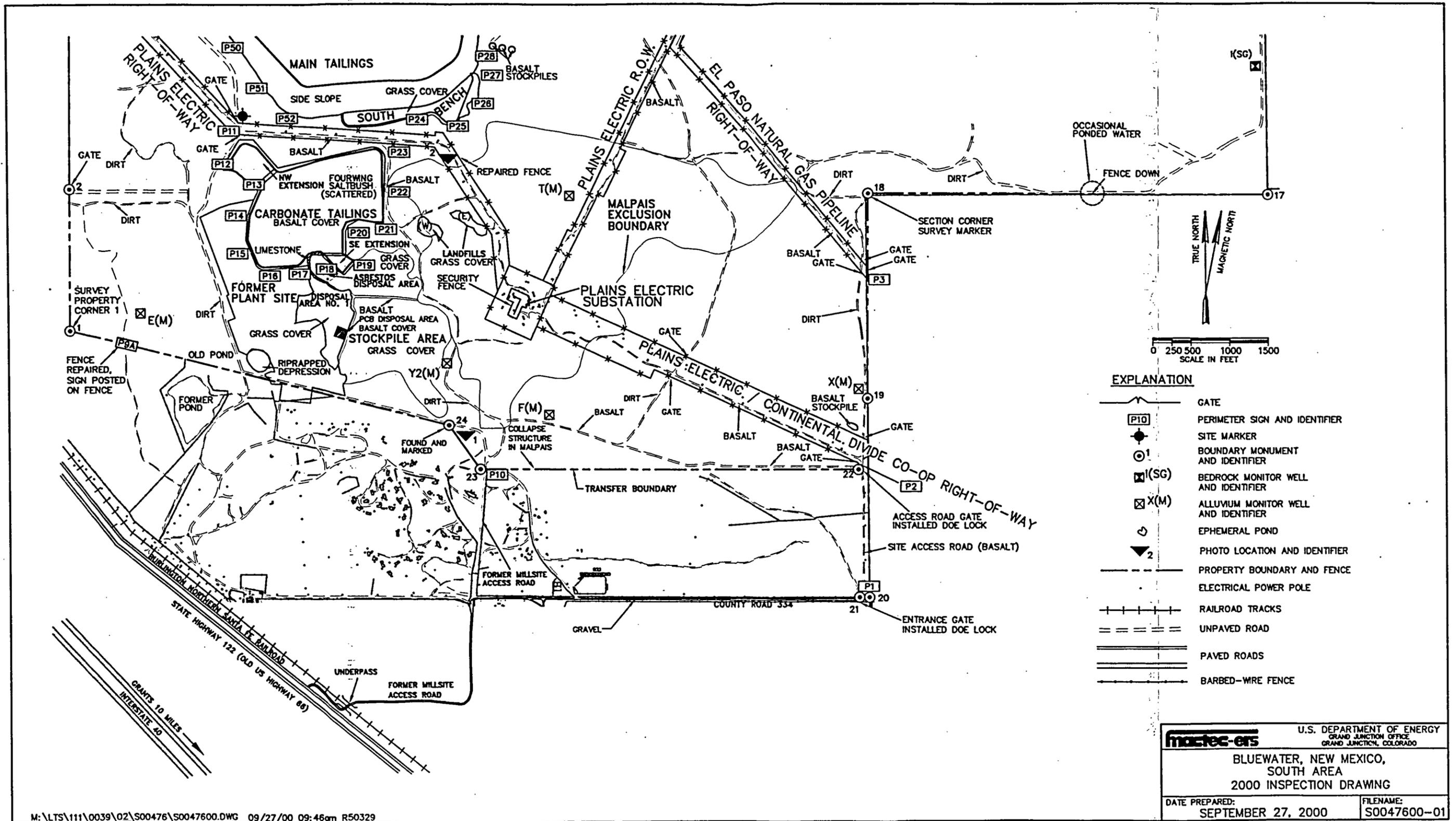


Figure 1-1. Bluewater, New Mexico, South Area, 2000 Inspection Drawing

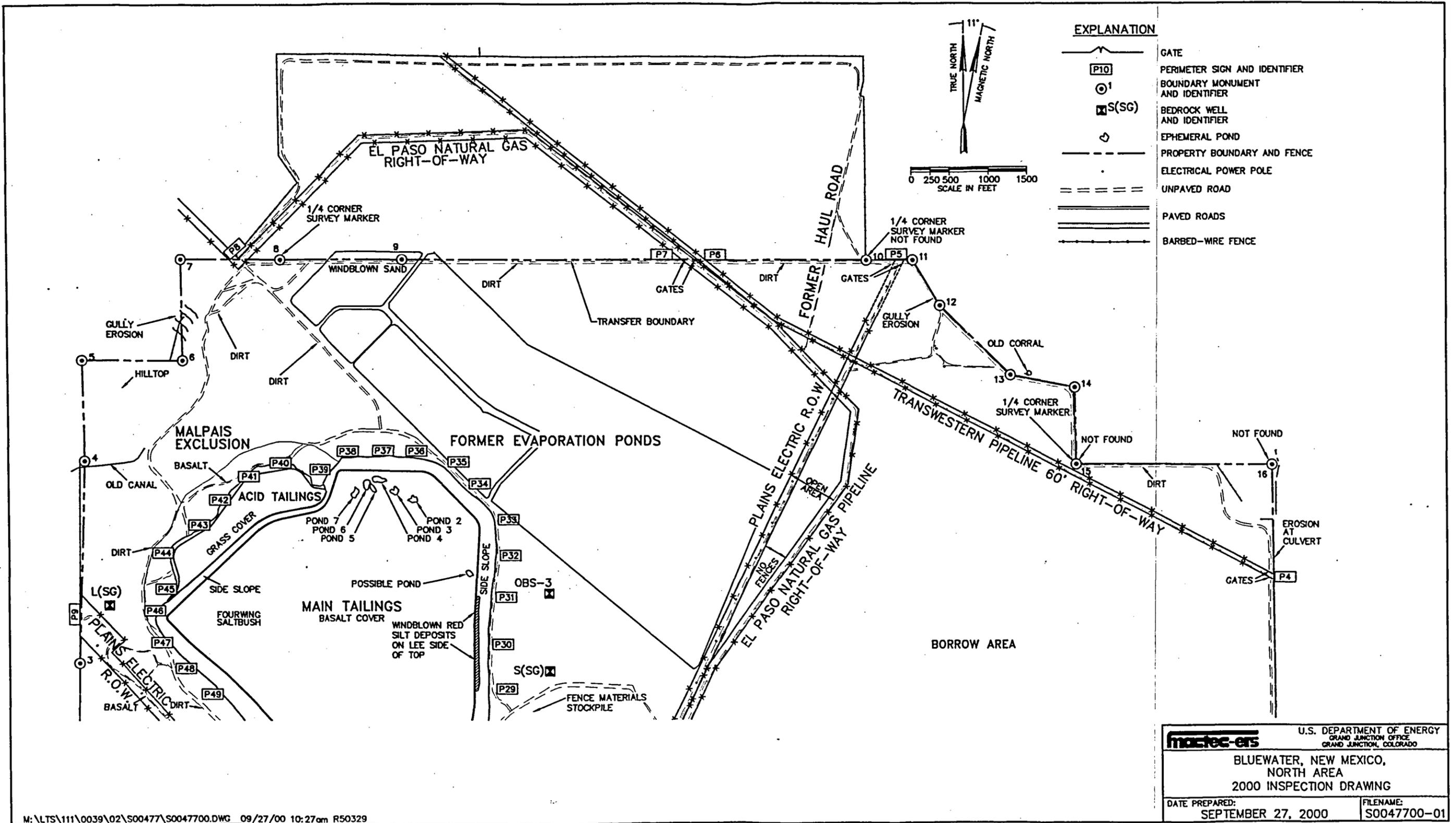


Figure 1-2. Bluewater, New Mexico, North Area, 2000 Inspection Drawing

Monitor Wells

There are nine monitor wells at this site. All are inside the site boundary. Five of the wells are screened in the alluvial aquifer (Figure 1-1). They include the letter "M" in their designation. The five alluvial wells, E(M), F(M), T(M), X(M), and Y2(M), are all in excellent condition.

The other four wells are screened in the San Andres Limestone-Glorieta Sandstone. The San Andres Limestone-Glorieta Sandstone is the bed rock aquifer at the site. Three of the four bedrock aquifer wells include the letters "SG" in their designation (Figures 1-1 and 1-2). A fourth well, OBS-3, is also screened in the bedrock aquifer. The four bedrock wells, L(SG), OBS-3, S(SG), and I(SG), are also in excellent condition.

Surface support equipment for the monitor wells (wiring and PVC piping) is weathered and shows evidence of disturbance by wildlife. However, these conditions have not impacted sampling activities.

Main Tailings, Acid Tailings, and South Bench Disposal Cells

These three disposal cells are contiguous and together constitute one large disposal area of approximately 320 acres. The main tailings disposal cell is covered with basalt riprap. It slopes northward. The grade decreases from 3 to 4 percent in the south to less than 0.5 percent in the north. The acid tailings and the south bench disposal areas are flat-topped and grass covered. The side slopes of all three disposal cells are protected by basalt riprap. All three disposal cells are generally in excellent condition.

Widely scattered dead plants are present on the main tailings disposal cell, mostly on the east side slope. The plants are predominantly Russian thistle, an annual weed. Neither DOE nor the Nuclear Regulatory Commission (NRC) considers plant encroachment an issue at this site.

At the north end of the main tailings disposal cell, the top slope flattens to less than 0.5 percent. The inspectors found water ponded in two locations in this area. Inspectors estimated the water was approximately eight inches deep and less than an acre in extent. Ponded water was also noted during the 1998 inspection. During the 1999 inspection no water was present.

The ponding may be due to settlement. The northern part of the main tailings disposal cell is the place where slimes from the settling ponds were placed. Just as likely, however, is that the low spot is an artifact of construction. A grade as low as less than 0.5 percent is hard to achieve over an area as large as the north end of the main tailings disposal cell.

Inspectors will continue to monitor ponding on top of the main tailings disposal cell. Given that evaporation greatly exceeds precipitation in this area, ponding is believed to be infrequent and brief; therefore, it is not a significant concern.

Carbonate Tailings Disposal Cell, Asbestos and PCB Disposal Areas, and Landfills

The top and side slopes of the carbonate tailings disposal cell are covered by basalt riprap (Figure 1-1). The top, for the most part, slopes gently eastward. The small northwest and

southeast extensions slope in their respective directions. The carbonate tailings disposal cell and its extensions are in excellent condition.

The asbestos disposal area is a bowl-like feature or depression just south of the carbonate pile. It is in excellent condition. The north, west, and south side slopes of this depression are covered by limestone riprap; the bottom of the bowl is grass covered.

Additionally, the small riprap-covered PCB disposal area is in excellent condition. It is easily recognized because it is almost perfectly square, surrounded by grass, and covered with riprap. The two landfills in grass-covered depressions east of the carbonate pile are also in excellent condition.

Other Areas inside the Site

Other areas inside the site were inspected by driving the site perimeter road and numerous other roads, including some along utility rights-of-way. Much of the southern and western parts of the site are relatively inaccessible because they are covered by basalt flows.

Several utility company rights-of-way cross the site. Stock fences with locked gates where the rights-of-way intersect one another, cross the site boundary, or cross the perimeter road enclose these rights-of-way. Roads along the rights-of-way are typically covered with crushed basalt to provide the utility company with all-weather access.

An electric power substation is enclosed by a security fence near the center of the site along the Plains Electric Company right-of-way (Figure 1-1). Fencing around this station is in good condition. Inspectors repaired the fence along the right-of-way northwest of the substation (PL-2).

Two other disposal areas, disposal area number 1 and the stockpile area, occur on the site south of the carbonate tailings disposal cell. Both are grass-covered and in excellent condition.

Site Perimeter and Outlying Areas

The perimeter fence is a barbed wire stock fence set several feet inside the property line. The perimeter fence is generally in good to excellent condition.

The perimeter road consists of a dirt track covered at places with crushed basalt. The road runs along the site boundary in much of the southern and most of the northern and eastern parts of the site. Most of the road is in good to excellent condition, but will require periodic maintenance if it is to remain passable. Inspectors had to detour around a gully in the road near the northeastern corner of the site. A culvert is washing out south of boundary monument 16 and the road here may soon become impassable (see North Area drawing). This erosion does not pose a threat to the disposal site function. Again, periodic maintenance may be necessary for this road to remain passable.

The area outside the site boundary for a quarter of a mile was visually inspected for erosion, development, change in land use, or other phenomenon that might affect the long-term integrity of the site. None was seen.

Ground-Water Monitoring Results

The required groundwater sampling was conducted on November 11, 1999. As specified in the LTSP only the alluvial aquifer was sampled during this event. All concentrations were less than the specified ACL for each parameter. The table below summarizes the analysis results. The results of the EPA-required PCB sampling are included for completeness. PCBs were not detected.

Table 1-1. Ground-Water Sampling and Analysis Results Summary, November 1999

Alluvial Aquifer					
Constituent	ACL	Background Well E(M)	POC Well F(M)	POC Well T(M)	EPA Well Y2 (M)
U-Nat, mg/L	0.44	0.0053	0.0125	0.0962	N/A
Selenium, mg/L	0.05	ND	ND	0.005	N/A
Molybdenum, mg/L	0.10	ND	ND	ND	N/A
PCB, µg/L	N/A	ND	ND	ND	ND

N/A = not applicable

ND = constituent concentration was below the method detection limit

ACL = alternate concentration limit

Conclusion

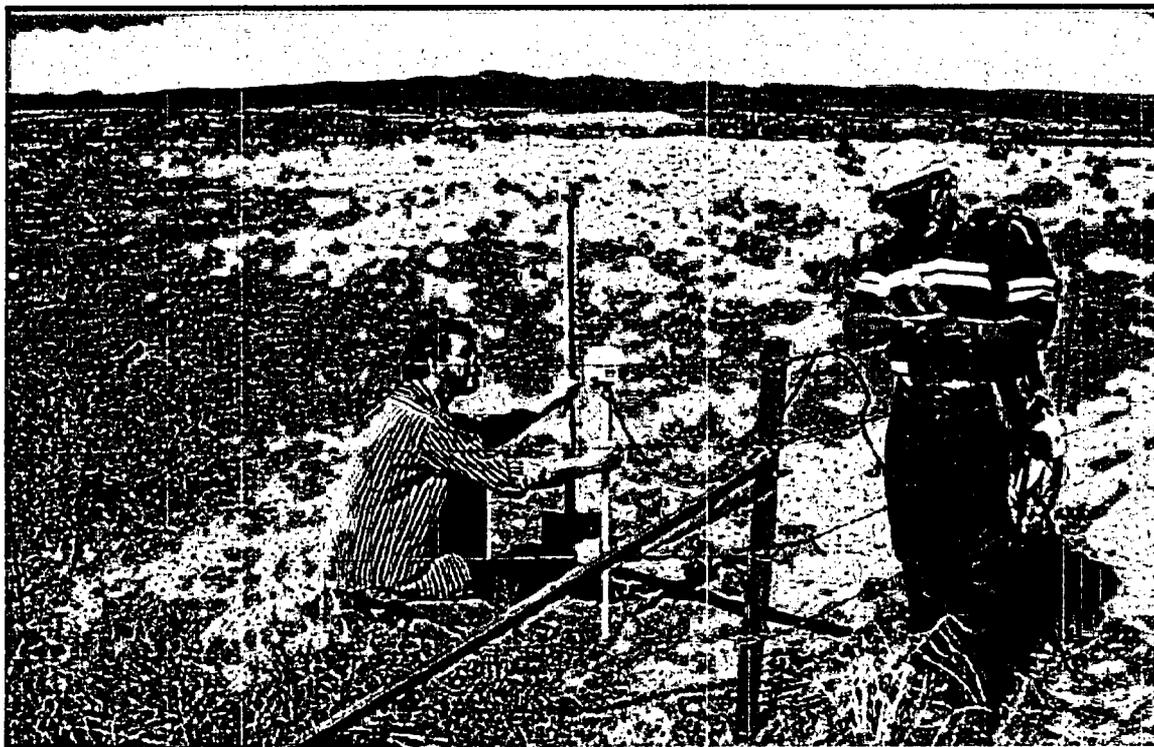
The Bluewater disposal site is in excellent condition at this time. The occurrence of ponding near the north end of the top of the main tailings pile will continue to be monitored for impacts. Measured ground-water constituent concentrations remain less than their respective ACLs.

Bluewater Inspection Photographs

Table 1-2. Photograph Descriptions for Bluewater, New Mexico, Disposal Site

Photograph Location Number	Description
BLU PL-1	Locating BM-24
BLU PL-2	Repairing the fence along the Plains Electric right-of-way

End of current text



BLU 5/2000. PL-1. Locating BM-24.



BLU 5/2000. PL-2. Repairing the fence along the Plains Electric right-of-way.

2.0 Edgemont

Edgemont Site Long-Term Custody Compliance Requirements

The following list comprises the long-term custody requirements for the Edgemont site as defined in Section 3.2 of the site Long-Term Surveillance Plan:

1. Annual site inspection.
2. Annual inspection report.
3. Follow-up inspections and inspection reports, as necessary.
4. Site maintenance as necessary to sustain design functions.
5. Emergency measures in the event of catastrophe.
6. Environmental monitoring as required.

The Edgemont site long-term custody compliance requirements were fulfilled for 2000 as follows:

1. The site was inspected on June 20, 2000, in accordance with the inspection procedure as outlined in Section 3.3.2 of the LTSP.
2. This document serves as the annual inspection report.
3. No follow-up inspections were necessary.
4. Minor fence repairs will be completed before the next inspection.
5. No catastrophic events necessitated emergency measures.
6. The condition of the grass-covered features of the site were inspected and continue to function as designed (see pages 14 and 15). There is no ground-water monitoring required for this site.

Edgemont Site Inspection Results

The inspection was conducted on June 20, 2000, by C. L. Jacobson (Chief Inspector) and M. R. Widdop (Assistant Inspector), both of MACTEC-ERS, the Technical Assistance and Remediation contractor at the DOE Grand Junction Office (GJO), and J. P. Gilmore of the DOE-GJO. The inspection was conducted in accordance with (1) the Long-Term Surveillance Plan (LTSP) for this site, *Long-Term Surveillance Plan for the DOE Tennessee Valley Authority (UMTRCA Title II) Disposal Site Edgemont, South Dakota, June 1996*, and (2) procedures established by the GJO to comply with requirements of 10 U.S. Code of Federal Regulations (CFR) Section 40.28.

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 inspections and monitoring.

Photographs to support specific observations are identified in the text and on the site map by photograph location (PL) numbers. Site features are indicated on the site map, Figure 2-1.

Access Road, Entrance Gate Area, Fencing, and Boundary Monuments

Access to the Edgemont disposal site is immediately off an all-weather county road and is unimpaired.

The tubular metal entrance gate is secured by a padlocked chain and is in excellent condition. The site marker and site entrance sign also are in excellent condition.

A four-strand barbed wire fence was installed in spring 1999 on the boundaries of the site to demarcate DOE's property and to control grazing on the property. The entire fence line was walked to inspect the fence and the boundary monuments. Fence repairs are recommended at two locations. The fence has become loose from the wood posts on the south boundary line (Figure 2-1) and the wire is stretched and loose along the west boundary, north of the entrance gate. Otherwise the fence is in excellent condition.

The four boundary monuments are undisturbed and in excellent condition.

Top of Disposal Basin

The 100-acre top of the disposal cell is grass-covered. DOE manages the grass cover by controlled grazing. No cattle were on site the day of the inspection, but signs of recent grazing were evident. The grass is well established and was not over-grazed when inspected (PL-1). There was no evidence of settling, slumping, or erosion on the disposal cell.

Tailings Dam Face and Drainage and Diversion Ditches

The tailings dam face is covered with riprap and represents the steepest slope on site. The slope is stable and the riprap shows no signs of degradation. Scattered plants, mostly grass, grow in the riprap (PL-2). These plants do not pose an immediate to stability of this structure but plant density will probably increase over time and will be monitored.

Water stands in the drainage outlet below the tailings dam, as reported previously. The drainage outlet is the lowest point on site and most meteoric water that falls on the site passes through this drainage outlet. Wetland vegetation has established in the drainage outlet below the dam. Diversion and drainage ditches are grass-covered (upgradient) and riprapped (downgradient and on steeper slopes). Minor amounts of vegetation occur in the riprap. The vegetation density will likely increase over time and should be monitored.

Grass in the vegetated portions of the drainage ditches is dense and healthy. There is no erosion.

The riprapped drainage channel at the northwest corner of the site property was stable and in excellent condition.

Area Between the Disposal Basin and the Site Perimeter

The area between the disposal cell (disposal basin) and the site perimeter is grass-covered. This area is also grazed in a controlled manner. The grass is well established but minor erosion was noted on steeper portions of the site in the central eastern portion of the site (PL-3). This erosion is a significant distance from the disposal basin and does not threaten the integrity of the site.

Outlying Areas

The areas surrounding the Edgemont site boundary for about a quarter mile were inspected at a distance from the boundary fence. The city of Edgemont operates a municipal landfill north-northwest of the site. An occasional piece of wind-blown trash from the landfill occurs here and there on site or along the fences. No evidence of activity or change in land use that could affect the site was seen.

Conclusion

The Edgemont disposal site is in excellent condition at this time. Minor fence repairs will be completed before the next inspection. Vegetation colonizing the riprap will continue to be monitored during future inspections.

Edgemont Inspection Photographs

Table 2-1. Photograph Descriptions for Edgemont, South Dakota, Disposal Site

Photograph Location Number	Description
EDG PL-1	Condition of vegetation at disposal site.
EDG PL-2	Plant encroachment on tailings dam face.
EDG PL-3	Erosion east of tailings embankment.

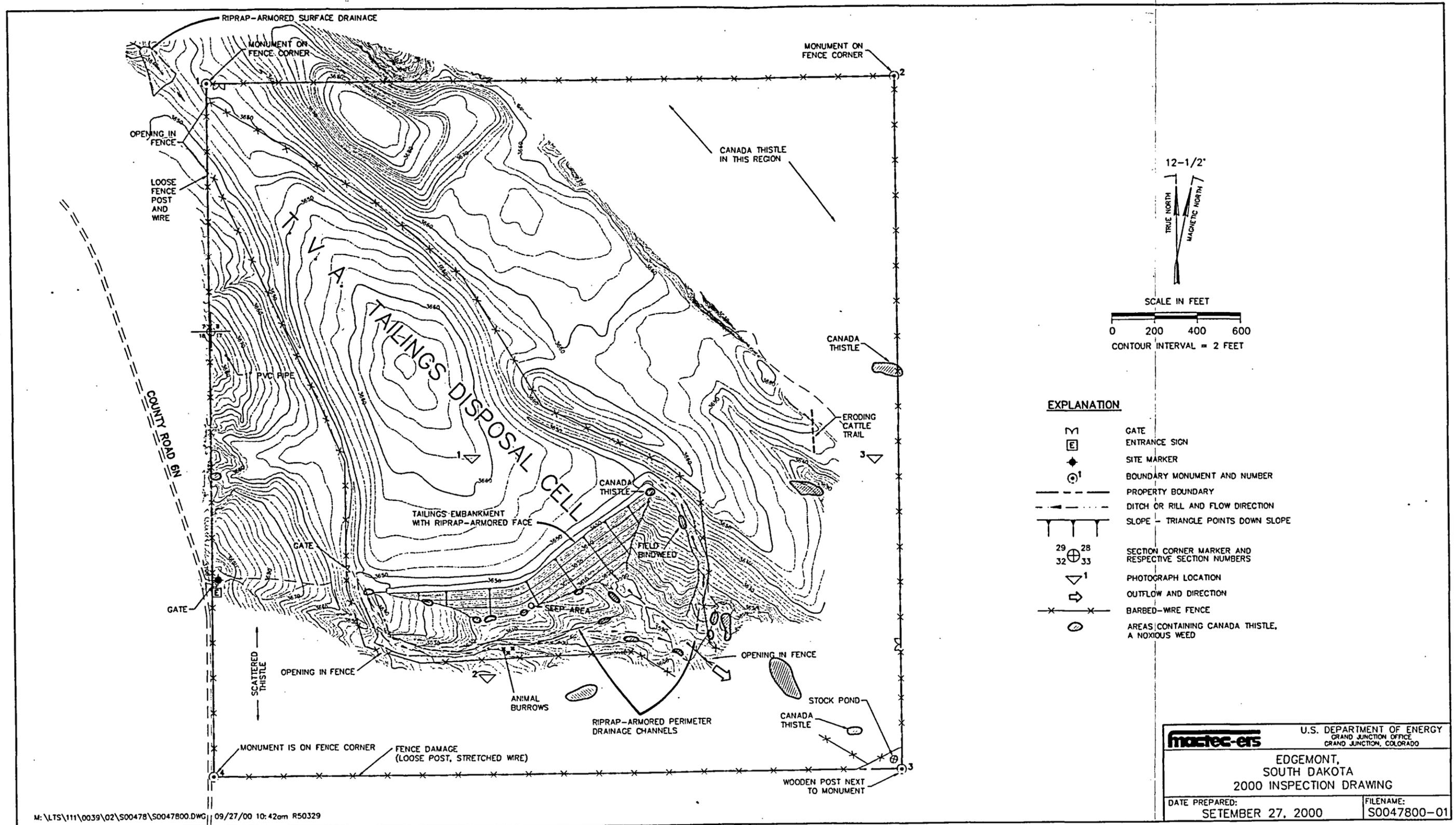
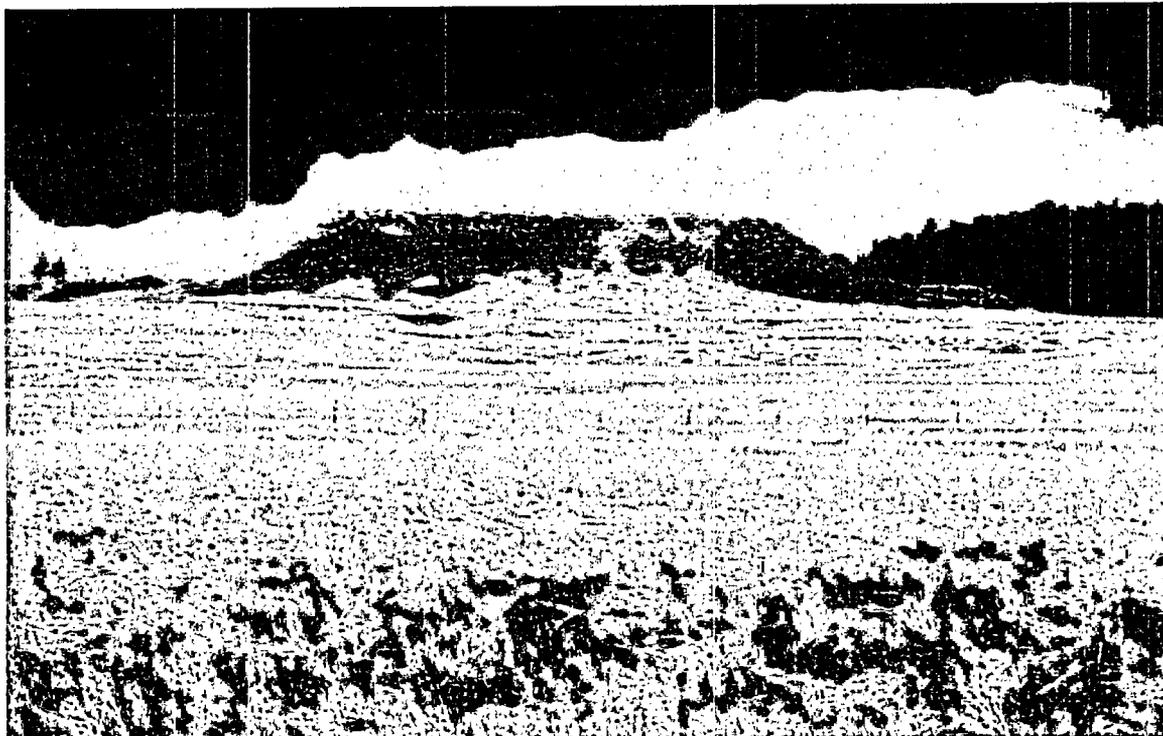


Figure 2-1. Edgemont, South Dakota, 2000 Inspection Drawing



EDG 6/2000. PL-1. Condition of vegetation on cell top (foreground) and in undisturbed areas (between fences).



EDG 6/2000. PL-2. Plant encroachment on embankment face.



EDG 6/2000. PL-3. Erosion east of cell.