

**Public Involvement Plan for the Environmental
Assessment of Ground Water Compliance
at the Grand Junction Uranium Mill Tailings Remedial
Action (UMTRA) Project Site
(Climax Uranium Millsite)**

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**Prepared by
U.S. Department of Energy
Grand Junction Office
Grand Junction, Colorado**

Public Involvement Plan for the Environmental Assessment of Ground Water Compliance at the Grand Junction, Colorado, Uranium Mill Tailings Site

This Public Involvement Plan is tiered to the Uranium Mill Tailings Remedial Action (UMTRA) Ground Water Project Public Participation Plan dated October 1997. This public involvement plan is specific to the Grand Junction, Colorado, site and describes the activities that will meet the public participation requirements of the National Environmental Policy Act (NEPA) of 1969 and the Uranium Mill Tailings Radiation Control Act of 1978, as amended.

The objectives of this plan are to promote stakeholder awareness, understanding, and participation in the project decision-making processes; to maintain an active public affairs program that accurately identifies public and media concerns and provides timely information; and to establish stakeholder involvement and information to promote communication between the U.S. Department of Energy's Grand Junction Office (DOE-GJO) and affected stakeholders to accomplish the project mission successfully.

History

In 1978, public concern about potential human health and environmental effects of uranium mill tailings led Congress to pass the Uranium Mill Tailings Radiation Control Act (42 U.S.C. 7901 *et seq.*). In the Uranium Mill Tailings Radiation Control Act, Congress acknowledged the potentially harmful health effects associated with uranium mill tailings and designated 24 inactive uranium-ore processing sites for cleanup (see Figure 1). These sites are located in 10 states; 23 of the sites are in states west of the Mississippi River. Of those, four sites are on Native American-owned lands.

In 1983, the U.S. Environmental Protection Agency (EPA) developed standards to protect the public and the environment from potential radiological and nonradiological hazards at abandoned processing sites. These standards included exposure limits for surface contamination and proposed compliance options for ground water contamination. The ground water standards were made final in 1995. DOE is responsible for bringing surface and ground water contaminant levels at the 24 sites into compliance with EPA standards. DOE is accomplishing this through the UMTRA Surface Project and the UMTRA Ground Water Project.

Under the UMTRA Surface Project, DOE has been cleaning up surface contamination since 1983. The purpose of the UMTRA Ground Water Project is to meet ground water standards at the 24 processing sites. Project management for the UMTRA Ground Water Project was transferred to DOE-GJO in fiscal year 1996.

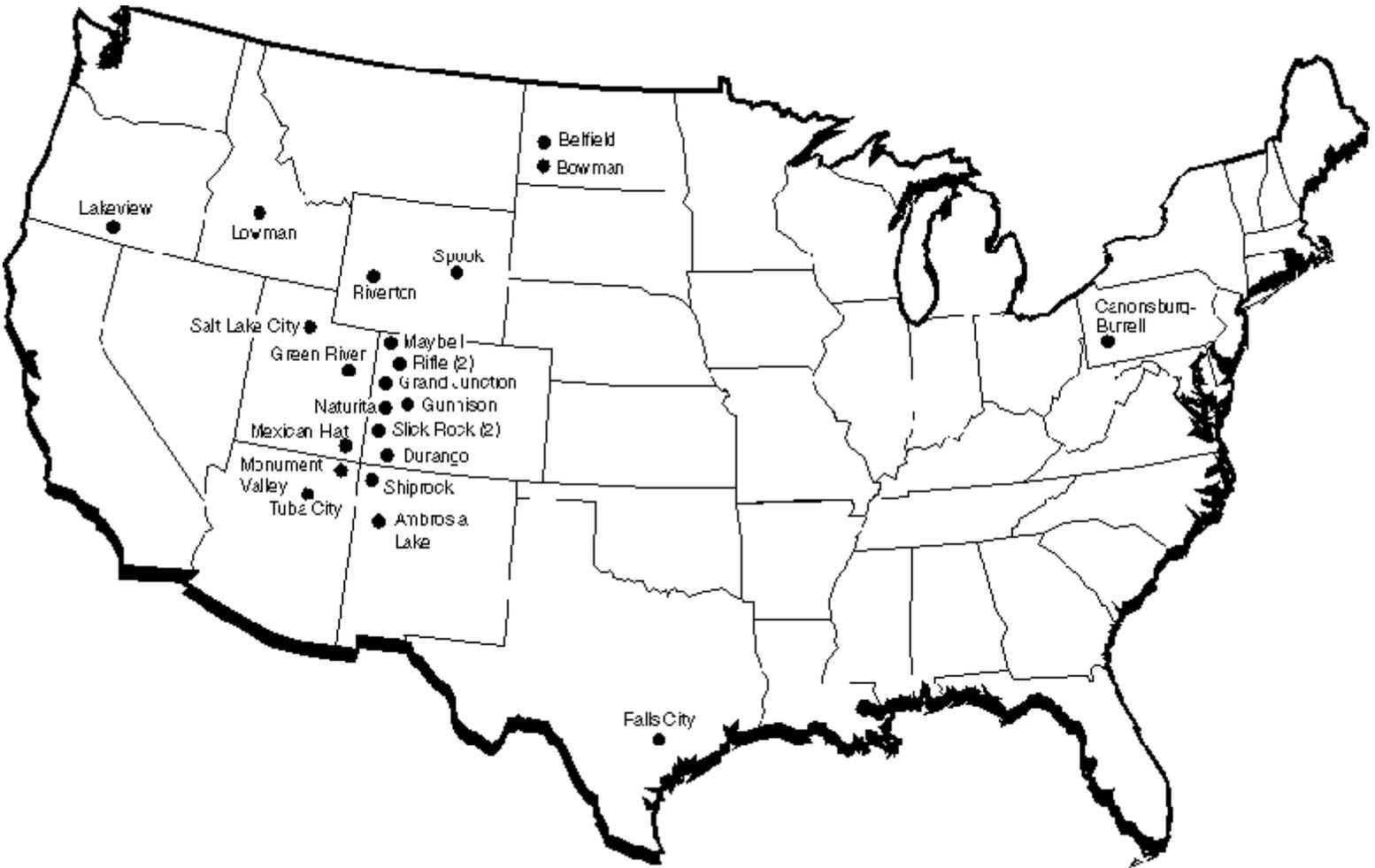


Figure 1. Locations of the Former Uranium-Ore Processing Sites

In 1992, DOE began preparation of a Programmatic Environmental Impact Statement (PEIS) for the UMTRA Ground Water Project. The PEIS presents an analyses of the potential effects of four alternatives for implementing the entire UMTRA Ground Water Project: the proposed action, no action, active remediation to background levels, and passive remediation. Nineteen public meetings were conducted between November 1992 and April 1993. Nine public hearings and a 120-day public comment period followed the issuance of the draft PEIS in April 1995. The final was distributed to the public in December 1996.

The Record of Decision issued in April 1997 identified the preferred alternative that is the programmatic foundation for conducting the UMTRA Ground Water Project at all sites. Under the proposed-action alternative, three ground water compliance strategies are presented to meet the EPA standards and may be selected for a given site: no remediation, passive remediation with natural flushing and monitoring, and active remediation. DOE may select one strategy or a combination of strategies to meet the EPA standards at a site.

Roles and Responsibilities

The DOE UMTRA Ground Water Project Manager, the DOE Public Affairs Specialist, and the NEPA document manager are responsible for identifying the need for, and proposing the scope and content of public information materials and activities that meet the public participation requirements of NEPA. These individuals are also responsible for developing plans to establish and maintain communication, identify and resolve issues of concern to stakeholders, and evaluate the success of the communication programs.

The DOE-GJO Public Affairs Office has day-to-day management responsibility for public affairs activities for the UMTRA Ground Water Project. DOE-GJO personnel are the principal spokespersons for the UMTRA Ground Water Project in public meetings and interviews with the media.

Site-Specific Information

The Grand Junction site is located on city-owned land in Grand Junction, along the north side of the Colorado River, in Mesa County, Colorado (see [Figure 2](#)). The Grand Junction millsite, also called the Climax millsite, began as a sugar beet mill and was operated as a uranium/vanadium mill from 1950 to 1970 (see [Figure 3](#)). During this time the mill processed over 2 million tons of ore, which produced about 12 million pounds of uranium oxide (U_3O_8) and 46 million pounds of vanadium oxide (V_2O_5). Ores were crushed, ground, salt roasted, and water leached to remove vanadium; uranium was extracted with a sulfuric acid leach. The Climax Corporation demolished most of the mill buildings and seeded the tailings piles before they left the site in 1976. From the late 1980s to 1994 the site was used as an interim repository for mill tailings removed from Grand Junction vicinity properties. By the end of 1994 all tailings were removed, and the remaining

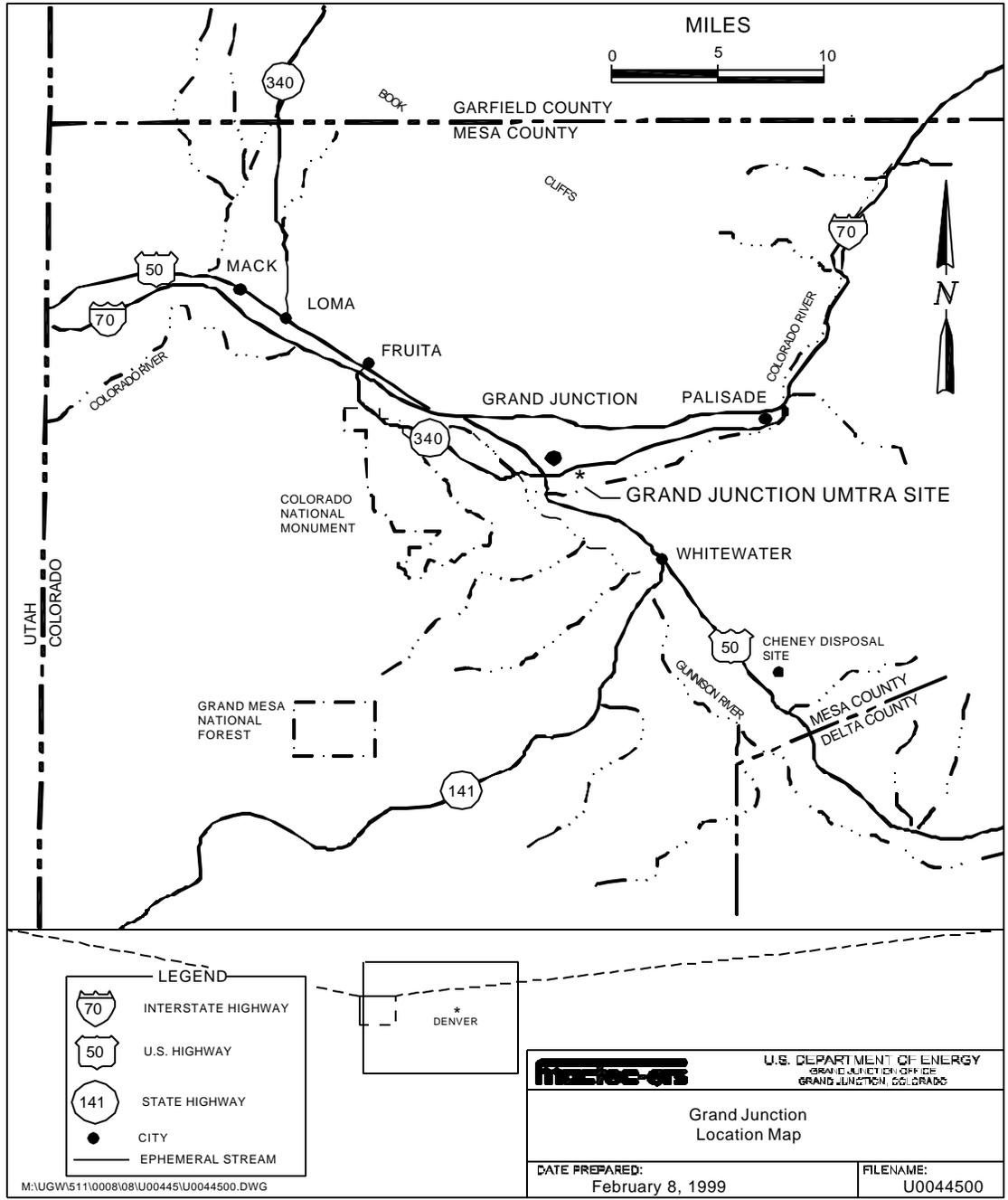


Figure 2. Location of the Grand Junction Site



Figure 3. 1956 Aerial Photograph Looking Northwest at the Climax Uranium Mill

buildings, except the old sugar beet warehouse, were demolished and hauled to the UMTRA Cheney repository 18 miles southeast of Grand Junction on Highway 50.

Assessment of Risk to Human Health and the Environment

The Baseline Risk Assessment of 1995 indicated that widespread ambient contamination of ground water in the alluvial aquifer might justify a no-remediation compliance strategy based on high concentrations of total dissolved solids and high naturally occurring levels of molybdenum, selenium, and uranium in background ground water. It concluded that the quality of ground water in the alluvial aquifer in the area is naturally poor, the ground water is not currently being used, and that institutional controls were in place to prevent use as a drinking water supply. The chemicals of potential concern in the ground water were arsenic, cadmium, cobalt, fluoride, iron, manganese, molybdenum, nickel, radium-226, sulfate, uranium, vanadium, and zinc. Risks to human health and the environment were considered to be minimal; however, it was recommended that additional information be gathered to further evaluate potential risks and characterize the ground water.

DOE gathered additional information in 1998 to address data needs as recommended in the Baseline Risk Assessment. The studies addressed the important question of whether actions taken by DOE were protective of human health and the environment.

The Baseline Risk Assessment concluded that direct ingestion was the only potential threat to human health from the alluvial ground water. The 1998 study of risk to human health, based on the direct ingestion pathway, indicated that concentrations of certain constituents in both millsite and background ground water were above acceptable limits, although greater risks would result from ingestion of millsite plume water because of higher concentrations of some constituents. The constituents in plume water that contributed the largest risk component were ammonia, followed by uranium, arsenic, fluoride, iron, manganese, molybdenum, and vanadium. The highest risks from ingestion of background ground water were attributable to manganese, molybdenum, selenium, and uranium. However, because alluvial ground water in the area of the Grand Junction site is not used for drinking, and because the city zoning and development codes prohibit its use as drinking water, the exposure pathway is incomplete. Consequently, alluvial ground water at the site does not present a human health risk in the present or the foreseeable future.

An ecological risk assessment compared water, sediments, and plant tissues from the mill site area with similar samples collected from a reference or background area located about three miles upstream along the Colorado River. That evaluation did not find a statistically significant difference in contaminant concentrations in samples from the two areas, although slightly elevated concentrations of some contaminants (ammonia and some metals) were detected sporadically in samples from the millsite. The study found no unacceptable risks to the ecology.

The human health and ecological risk studies found that some constituents in ground water and plant tissues are above acceptable values, but that many of the same constituents are also above acceptable values in background ground water and plant tissues.

Proposed Compliance Strategy

The proposed compliance strategy for the Grand Junction site is the application of supplemental standards based on the criterion of limited use ground water. Ground water may be classified as limited use if it is not a current or potential source of drinking water and any of three criteria are met (Title 40, *Code of Federal Regulations*, Part 192.11[e]):

- The concentration of total dissolved solids is in excess of 10,000 milligrams per liter.
- Widespread ambient contamination not due to activities involving residual radioactive materials from a designated processing site exists that cannot be cleaned up using treatment methods reasonably employed in public water systems.
- The quantity of water reasonably available for sustained continuous use is less than 150 gallons per day.

Alluvial ground water at the Grand Junction site meets the second criterion of widespread ambient contamination, that is, concentrations of some constituents in background ground water exceed UMTRA Project maximum concentration limits (MCLs). These constituents are naturally occurring, and they cannot be removed from the water by using treatment methods reasonably employed in public water systems. Studies performed in 1998 demonstrated that background ground water in the Grand Valley contains uranium and selenium in excess of UMTRA Project MCLs. A feasibility study to examine the cost of treating this ground water for public use showed that costs would be excessive. In addition, existing institutional controls imposed by DOE, the State of Colorado, or the City of Grand Junction prevent the use of ground water for drinking purposes on site or downgradient of the site.

Public Involvement

Following the issuance of the draft PEIS for the UMTRA Ground Water Project in 1995, a public meeting was held in Grand Junction, Colorado, on June 25, 1995. The numerous comments received were documented in Volume II of the PEIS. Many comments were requests for information on the NEPA process and timing of the environmental assessment, a NEPA document. The environmental assessment was begun in February 1999 and was completed by September 1999. Other commentors indicated that remediation was unnecessary and expressed an interest in “clean water at the point of use.” This refers to a private water treatment system used only for a household or business. DOE’s response to the “point of use” comments was that EPA standards do not provide a regulatory basis for using “clean water at the point of use” to meet the standards.

The City of Grand Junction’s zoning and development code requires all landowners within the city limits to use water supplied by the city, unless a variance is granted. Although this requirement was established independently of ground water concerns, it serves the same functional purpose by limiting access to contaminated water. The zoning and development code also addresses concerns of landowners who requested more information on risks to water users. Provided no variances are allowed for drinking water purposes, no exposure pathway exists, and risk to human health is negligible. Ecological risk and institutional controls will be discussed in detail in the site environmental assessment.

Table 1 provides a detailed listing of the public participation activities involved in completing the Environmental Assessment process.

Table 1. Public Participation Activities Involved in the Environmental Assessment Process.

Activity	Timing
Send letter disclosing proposed compliance strategy to: Grand Junction City Council Mesa County Commissioners Planning Commission Colorado State Engineer’s Office	February 19, 1999 (completed)
Send letter to adjacent property owners	April 9, 1999 (completed)
Make presentation to Grand Junction City Council during regularly scheduled public city council meeting. (D. Metzler, DOE-GJO)	March 15, 1999 (completed)
Discussions and meetings with the Colorado Department of Public Health and Environment	Ongoing
Conduct interviews with local officials and landowners of property downgradient to the former millsite.	June 1999 (completed)
Review of draft final EA by the State of Colorado	August 10, 1999
Notify availability of EA via • News release • Federal Register notice (not required)	August 10, 1999
Transmit draft final EA to interested stakeholders, other agencies, public (upon request)	August 1999
Place copies of EA in public locations: • Mesa County Library • DOE-GJO Reading Room • Other	August 1999
Hold public meetings	As needed
Receive comments from stakeholders	August 27, 1999
Address comments	September 6, 1999
Send news release of Finding of No Significant Impact (FONSI)	September 1999
Issue final EA and FONSI to the public, stakeholders, and agencies	September 1999

Place copies of EA and FONSI in public locations:

- Mesa County Library
- DOE-GJO Reading Room
- Other

September 1999

Information Contacts

Requests for information should be directed to the DOE UMTRA Ground Water Project manager listed below. A toll-free hotline (1-800-399-5618) has been established to provide information and to take public comments. In addition, the DOE-GJO Home Page has information relevant to the UMTRA Ground Water Project. The home page address is <http://www.doegjpo.com>.

U. S. Department of Energy contacts:

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Glossary

Alluvial aquifer: The uppermost aquifer beneath the Grand Junction site; the alluvial aquifer is composed of unconsolidated sediments (silt, sand, gravel, cobbles) deposited by stream flow.

Ambient contamination: Naturally occurring constituents in ground water (i.e., constituents that are not due to ore-processing) that are present in concentrations sufficiently high to render the water undesirable or unfit for domestic use.

Aquifer: A body of rock or sediment that is saturated and sufficiently permeable to conduct ground water in economically significant quantities to wells and springs.

Background: The quality of ground water in nearby portions of the aquifer that were not affected by uranium-ore processing.

Baseline risk assessment: A baseline risk assessment describes the source of contamination, how the contamination reaches people and the environment, the amount of contamination to which people or the ecological environment may be exposed, and the health or ecological effects that could result from exposure.

Compliance strategy: The method used to meet Environmental Protection Agency ground water standards at an UMTRA Project site.

Contaminant: An undesirable substance from uranium-ore processing activities that may affect human health and the environment.

Downgradient: Ground water located in the same direction as ground water flow from a specified location.

Environmental assessment: A document that evaluates the potential for significant impacts to the environment from an action.

Environmental impact statement: A document that describes and evaluates the potentially significant impacts on the environment from several alternative actions, including no action.

Ground water plume: A defined area of ground water contamination. In this document, the term “ground water plume” means the contaminated ground water beneath a millsite and surrounding area that DOE determines to contain soluble radioactive or nonradioactive hazardous constituents that are present as a result of the uranium milling process.

Ground water remediation: Treatment of ground water to decrease the amount and mobility of contaminants.

Institutional controls: Controls that limit the use of land and thereby minimize human exposure to contaminated ground water. Examples include restrictive easements on private land and purchase of land to control use.

Maximum concentration limits: EPA's maximum concentration of certain constituents for ground water protection. Constituents with maximum concentration limits that may be present in contaminated ground water at UMTRA Project sites include arsenic, barium, cadmium, chromium, lead, mercury, molybdenum, nitrate, radium, selenium, silver, and uranium.

Natural flushing: Allowing natural ground water movement and geochemical process to decrease contaminant concentrations.

Site observational work plan: A document that presents a summary of site hydrogeologic data and presents a site conceptual model. It presents an analysis of site environmental and health risk, data gaps in the conceptual model, and identifies appropriate site-specific ground water compliance strategies.

Supplemental standards: Regulatory standards that are protective of human health and the environment that may be applied when the quantity of certain constituents exceeds the standards.

Tiering: "Tiering" refers to the coverage of general matters in broader environmental impact statements (such as national program or policy statements); subsequent narrower statements or environmental analyses (such as regional or ultimately site-specific statements) are "tiered" to the broader, general statements and incorporate them by reference. The narrower statements concentrate solely on the issues specific to the site.

Uranium mill tailings: The sandy material remaining after the ore has been crushed, ground, and leached with acids and solvents to extract the uranium and vanadium.

Vicinity properties: Properties outside a processing site boundary that have been contaminated by residual radioactive materials. These materials could have been dispersed by wind or water erosion, or removed by people.