United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.

1. Name of Property

Historic name: _Department of Energy Grand Junction Office

Other names/site number: _Manhattan Engineer District Grand Junction Office; Atomic Energy Commission Grand Junction Operations Office; 5ME.21616 (5ME.11936, .11937, .11939, .11943, .11945, .11946, .11947, .11948, .11953, .11954, .11955, .11958, .11963, .11965, .11966, .11967, and .11968)

Name of related multiple property listing**:**

________N/A____

(Enter "N/A" if property is not part of a multiple property listing

2. Location

Street & number: __2591 Legacy Way____

City or town: _Grand Junction______ State: _Colorado___ County: __Mesa_____

Not For Publication: n/a Vicinity: X

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this _X__ nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property _X__ meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance: **_X_national** **_X__statewide** **_X__local**

Applicable National Register Criteria: _X_**A** ___**B** ___**C** ___**D**

Signature of certifying official/Title: State Historic Preservation Officer **Date**

_History Colorado, Office of Archaeology and Historic Preservation______________

State or Federal agency/bureau or Tribal Government

In my opinion, the property ___ meets ___ does not meet the National Register criteria.

Signature of commenting official: **Date**

Title : **State or Federal agency/bureau or Tribal Government**

4. National Park Service Certification

I hereby certify that this property is:

___ entered in the National Register

___ determined eligible for the National Register

___ determined not eligible for the National Register

___ removed from the National Register

___ other (explain:) ______________________

Signature of the Keeper Date of Action

5. Classification

Ownership of Property

(Check as many boxes as apply.)

Private:	X
Public – Local	
Public – State	
Public – Federal	

Category of Property

(Check only **one** box.)

Building(s)	
District	X
Site	
Structure	
Object	

Number of Resources within Property
(Do not include previously listed resources in the count)

Contributing	Noncontributing	
9	15	buildings
1		sites
2	4	structures
		objects
12	19	Total

Number of contributing resources previously listed in the National Register ____0____

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6. Function or Use

Historic Functions
(Enter categories from instructions.)
Government/government office
Industry/Processing/Extraction/manufacturing facility
Industry/Processing/Extraction/processing site
Industry/Processing/Extraction/industrial storage
Defense/military facility

Current Functions
(Enter categories from instructions.)
Government/government office
Private offices/industry

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7. Description

Architectural Classification
(Enter categories from instructions.)
_No Style___________________

Materials: (enter categories from instructions.)
Principal exterior materials of the property: __BRICK, METAL/Aluminum, WOOD/Log, __

Narrative Description
(Describe the historic and current physical appearance and condition of the property. Describe contributing and noncontributing resources if applicable. Begin with **a summary paragraph** that briefly describes the general characteristics of the property, such as its location, type, style, method of construction, setting, size, and significant features. Indicate whether the property has historic integrity.)

Summary Paragraph

The Department of Energy (DOE) Grand Junction Office is a complex of buildings, structures, and sites along the Gunnison River south of Grand Junction in Mesa County, Colorado (Photo 1). The complex originated as the national headquarters for acquisition of domestic uranium used in the development of the first atomic bombs as part of the Manhattan Project in 1943. It was the only Manhattan Project office for the acquisition of domestic uranium. In keeping with the secretive nature of the project, the site was selected for its relative isolation near a sizable town (Grand Junction, Colorado) with good railroad access and a reliable water source in close proximity to sources of uranium ore. The office then transitioned to being the principal office used by the Atomic Energy Commission (AEC) for the acquisition of and exploration for domestic uranium used in nuclear weapons production during the Cold War (1947-1970). As such, it was the staging area for federal and private uranium exploration, the source of information for citizens involved in prospecting for uranium ore bodies, and the collection point for uranium ore that was shipped to refineries and enrichment facilities for nuclear weapon production. The office handled contracting with private companies engaged in mining and milling of uranium ore, facilitated the construction of state-of-the-art uranium mills through on-site experimental processing pilot plants, and administered uranium processing at mills throughout the West. In addition, the office headquartered geologists involved with mapping uranium deposits throughout the West and engineers and scientists that developed radioactivity detection and drill-hole logging equipment and calibration facilities in support of uranium exploration and mining. The office set subsidized prices for uranium to stimulate exploration and mining, set up ore-buying stations near uranium mills, and oversaw packaging and shipping of uranium concentrates, thereby creating and managing a national uranium industry that previously existed at only a fraction of the size. In addition to federal uranium procurement, the office oversaw procurement of uranium for the growing national private energy sector, primarily nuclear power plants.

The 25.2-acres within the National Register boundary is a portion of the original 55.71 acres leased and subsequently purchased by the government in 1943 for use by the Manhattan Project and subsequently developed during the Cold War. It includes nearly all of the land actually used and all but two of the extant buildings from the Manhattan Project (1943-1945) and the Cold War (1947-1970) (all but Buildings 7 and 40). The property was sold by the government to the private Riverview Technology Corporation (RTC), the current owner, in 2001. To facilitate the sale, consultation under Section 106 of the National Historic Preservation Act was required and a Historic American Engineering Record (HAER) documentation package was completed (Schweigert 2001). The DOE, the successor agency of the Manhattan Engineer District (MED) of the Manhattan Project and the AEC of the Cold War, leases most of the complex's office buildings and other facilities from RTC in order to continue their regulatory mission of overseeing the management of decommissioned Cold War facilities and federal uranium lease tracts throughout the West.

Narrative Description

The DOE Grand Junction Office complex consists of fifteen main buildings and sixteen ancillary buildings, structures, and sites within the 25.2-acre National Register district boundary (Table 1). Of the fifteen main buildings, nine (Buildings 2, 810, 938, 12, 26, 28, 29, 3022, and 32) are considered contributing to the National Register district and the 1943 to 1970 period of significance. One site and two structures of the other sixteen resources are considered contributing to the National Register district (Instrument Calibration Facility, Spillage Containment Structure, and Secure Parking Area). The remainder of the buildings and site elements post-date the period of significance, but are compatible or unobtrusive because of their style or are small in scale and do not detract from the character of the district. A large number of former buildings from the Manhattan Project period and the subsequent Cold War era were removed from the site between 1946 and 2014 (Table 2).

Table 1. Buildings, Structures, and Site in DOE Grand Junction Nomination Boundary.

Name	Type	Contributing?	Notes
Building 2	Building	Yes	Built 1944
Building 810	Building	Yes	Two buildings constructed 1949 and 1950, joined 1980
Building 938	Building	Yes	Three buildings constructed 1954, 1955, and 1956, infilled 1980
Building 12	Building	Yes	Original log office pre-1943; large office built 1948, additions 1953 and 1956
Building 3022	Building	Yes	Three buildings constructed 1953, 1954, and 1956, joined 1979.
Building 26	Building	Yes	Built 1954
Building 28	Building	Yes	Built 1954
Building 29	Building	Yes	Built 1956
Building 30B	Building	No	Built ca. 1980
Building 32	Building	Yes	Built 1954
Building 43	Building	No	Built 1973
Building 44A	Building	No	Built after 1990
Building 46	Building	No	Built 1977
Building 54	Building	No	Built 1989
Building 65	Building	No	Built post-1971
Spillage Containment Structure	Structure	Yes	Built ca. 1963
Secure Parking	Structure	Yes	Built pre-1956
Instrument Calibration Facility	Site	Yes	Built 1951
Refrigerator Unit	Structure	No	Built 2011
Building 12 Picnic Shelter	Structure	No	Built 2014
Storage Container	Building	No	Built 2010
Building 938 Picnic shelter	Structure	No	Built late 1990s
Building 2 Storage Shed	Building	No	Built 2014

Name	Type	Contributing?	Notes
Building 2 Prefabricated Garage	Building	No	Built 2010
Building 30B Prefabricated Garage	Building	No	Built late 1990s
Building 32 Picnic Shelter	Structure	No	Built late 1990s
Shed 1	Building	No	Built 2013
Shed 2	Building	No	Built 2010
Shed 3	Building	No	Built 2010
Shed 4	Building	No	Built late 1980s
Shed 5	Building	No	Built late 1980s

Table 2. Building Construction Dates, Removal Dates, and Building History Summaries.

Building No.*	Construction Date	Removal Date	Use and History
1	1943	All but heating plant 1948; heating plant 1995–1996	Refinery building.
2	1944	Extant	Warehouse changing house 1943–1946; cafeteria 1956-1977; communications and reproduction center 1977-1993; offices 1993-present.
3	1943	Post-1958	Analytical laboratory.
4	1943	1990s	Fuel storage and pump houses.
5	ca. 1952	1957	Oil unloading building at end of railroad spur.
6	1953	1992	First pilot plant.
6A	1955	Pre-1983	Trailer repair; offices and copier/printer space.
7	1951, 1956	Addition removed 2001	Sampling plant, expanded 1956 and used until 1971. Research facility into 1990s. Conveyed to Army Reserve in 2001.
8	1951	Extant	On-site contractor offices; attached to Building 10 (originally Building 11) in 1980.
9/36	1949	1996	Quonset-typed metal paint shop. Moved about 1950, renumbered Building 36, and used for drying and storage of yellowcake produced by the second pilot plant. By 1983, it was a storage and inspection facility, probably for USGS core samples.
9	1955	Extant	AEC mining and processing offices; attached to building 38 with Building 9A in 1956. Infilled in 1980.
10	1943–1946	pre-1955	Garage
11/10	1949	Extant	USGS office building designated Building 11; renumbered as Building 10 after 1955. Attached to Building 8 to form Building 810 in 1980.
12 12A	Pre-1943, 1948, 1953, 1956 1955	Extant 2014	Log cabin residence on site in 1943 and used as Manhattan Project office. Main AEC offices attached 1948; additional offices added 1955 (12A). Brick vault added 1953 and 1956. Exterior renovation 1996.
13-18	1944	Pre-1966	Former CCC building moved to site as warehouses for camp supplies, furniture storage, material storage, use as a carpenter shop and receiving building. Former locations used to store drums of uranium concentrates until ca. 1975.
18	1975	After 2001	Library/education, community building.
19	1948	2001	Guard station (contractor's entrance) 1948–1954.
20	1951	After 2001	Analytical laboratory, doubled in size in 1957.

Building No.*	Construction Date	Removal Date	Use and History
21	ca. 1953	Date unknown	ASARCO supply storage.
22	1951	ca. 1953	Paint warehouse.
22/22A	1953, 1954	Extant	AEC/USGS sedimentation laboratory. North wing (Building 22A) added in1954 for electronics laboratory. Large addition built 1979 to connect to Building 30.
23	1954	Date unknown	Operating warehouse for sampling plant.
24 and 25	1951–1954	Pre-1983	USGS drill core sample storage warehouses.
26	1954	Extant	Engineering offices for second pilot plant 1954-1958. Converted to Radon Development and Calibration Test Facility 1970. Storage and training building.
27	ca. 1951–1954	Date unknown	Probably Engineering Department temporary office building.
28	1954	Extant	AEC maintenance and repair shop for second pilot plant and field operations. Became GSA vehicle maintenance building in 1960. Remodeled 1986 for business incubator.
29	1956	Extant	Southern gate guard house and truck dispatch station. Replaced 1953 building.
30	1956	Extant	AEC uranium procurement program supply and operations building. Attached to Building 22 in 1979. Electronics laboratory installed 1996.
30B	1980	Extant	Storage building.
31/31A	1954	1992 (Building 31) and 1998 (Building 31A)	Acid leach circuits for second pilot mill (1954–1958). Northern wing (building 31A) added 1954–1955 for laboratory and offices of the National Lead Company, operator of the pilot plant. Later used for storage of drums of uranium concentrates. Building 31A converted to office space and radon calibration laboratory.
32	1954	Extant	Temporary chemical storage and changing facility for workers for National Lead Company for operation of second pilot plant. Temporary offices for Engineering Department. Converted to warehouse and core inspection facility 1980. Converted to Radon Calibration Laboratory 1983.
33	1954	1998	Carbonate/alkaline leaching circuits for second pilot plant 1954–1958. Storage of drums of uranium concentrates until ca. 1975.
34	1954	1996	Boiler building for second pilot plant 1955–1958. Storage of drums of uranium concentrates until 1975.
35	1954–1955	1998	Feed materials preparation mill for second pilot plant and contained falling stream apparatus for sampling uranium concentrates. Storage of drums of uranium concentrates until ca. 1975.
37	1954	1991	Truck scale house for second pilot plant.
38	1955	Extant	US Army Corps of Engineers and USGS Colorado Plateau District Office Building. Attached to Building 9 in 1956. Infilled in 1980.
39	1957	1992	Oil transfer pump house on northern side of the oil tank containment area at the end of the railroad spur.
40	1958	Extant	Gas meter house for delivery to commercial natural gas to site.
41	1956	Date unknown	Function unknown.
41	1981	After 2001	Storage building.

Building No.*	Construction Date	Removal Date	Use and History
42	1955	2000	Storage shed added to after 1967, after when it was used to store hazardous and radioactive materials.
43	1973	Extant	Garage-type storage building.
44	1976	1994	Storage building.
45	ca. 1980	1985	Modular offices.
46	1977	Extant	Solar-heated cafeteria.
47	1970–1983	Date unknown	Possible chemical drum storage.
48	1970s late–early 1980s	Pre-1983	Modular offices.
49	1970–1983	Ca. 1985	Modular offices.
50	1981	Ca. 1985	Modular offices.
51	1976	After 2001	Bottle storage for Building 20 analytical laboratory.
52	1976	1994	Storage for instrument calibration pit facility.
53A, B, C	1985–1993	After 2001	Contractor offices and laboratories.
53D, E	Post-1993	After 2001	Contractor storage trailers.
54	1992	Extant	Contractor offices.
55	1992	After 2001	Contractor offices.
56	1994	1996	Contractor offices.
57	1992	1996	Modular offices.
58, 59, 60	Post-1992	Pre-1998	Unknown functions or not built.
61A-D	1992	After 2001	Hazardous waste storage buildings.
62	1992	2001	Bag collection from Building 7 sampling plant.
64	1995	After 2001	Emergency generator building.
65	1995	Extant	Field equipment storage.
66	1995	After 2001	Gas cylinder storage.

*Building numbers assigned about 1956.

A Historic Structures Survey of the site was completed in 1999 (Schweigert 1999), resulting in Historic American Engineering Record (HAER) documentation in 2001 (Schweigert 2001) as part of the Section 106 process and subsequent mitigation for the office to leave federal ownership. The Historic Structures Survey and the HAER document provide baseline information about the history and the buildings of the DOE Grand Junction Office complex. The majority of the buildings removed during the period of significance had ceased to be useful in fulfilling the mission of the government or had to be removed because of radioactive contamination. Many of the activities carried on at the site involved the processing or handling of radioactive uranium ore. Remediation in the 1990s and early 2000s resulted in the removal of buildings that were too contaminated to be remediated in other ways. This is fairly typical for Manhattan Project and Cold War-era sites and has resulted in the few remaining buildings and other facilities that remain being rare survivals (e.g., Hanford, Oak Ridge, and the Los Alamos National Laboratory have all had buildings removed in the course of radioactive radiation remediation leaving only a few from the Manhattan Project and the Cold War eras, yet are still considered significant for the roles that they played in those important historical episodes) (Salmon 2011). In the case of the DOE Grand Junction Office, the number of surviving buildings is rather remarkable, particularly because the majority continue to serve the mission of the DOE, the succeeding agency of the MED and the AEC, to the present day.

The northern portion of the complex (Photos 2-3) consists of utilitarian office buildings that form a campus interconnected by concrete walkways through areas of lawn and flower beds. This landscaped open space between offices was dedicated as the Philip C. Leahy Memorial Park on June 2, 2015, in honor of Leahy, who was in charge of the Manhattan Project and early AEC activities at the site, and to commemorate the role of the Grand Junction Office in the development of the atomic bomb under the Manhattan Project and its subsequent role in the Cold War (U. S. Department of Energy 2015). The majority of the buildings in the northern portion are unimposing, unornamented, low-slung buildings with shallow gable roofs, metal exterior cladding, linear arrays of windows, and few doors to the outside. The exception is the imposing modern entry that connects the two most prominent office buildings and faces a large parking area to the east. Entry into the parking area is by way of two roads across the Union Pacific Railroad grade that runs north to south just outside the eastern side of the National Register boundary. Buildings south of the main office complex are two large industrial buildings surrounded by paved roads and parking areas with a scattering of other smaller buildings of varying sizes and age, all of which are of unornamented, utilitarian appearance (Photos 4-5). The calibration facility is within the open space of this area, with circular elements projecting above the ground in linear arrangements with metal stairs, landings, platforms, and pipe frameworks providing access from above for two groupings. Some grassy expanses obscure evidence of earlier buildings that have been removed and ornamental plantings have been made at a few of the buildings. The far southern portion of the area is mostly open space without landscaping where former large industrial buildings were situated, but have been removed because of radioactive contamination (Photos 6-7). Paved roads and parking areas are still present in this area around the negative space of the removed buildings, no longer serving the purposes for which they were constructed. The entire complex is surrounded by chain-link fencing surmounted by barbed wire. Outside the fence, just beyond the western National Register boundary, is an earthen levee (dike) with a dirt road on top that creates a barrier between the complex and the Gunnison River. The levee was built for flood protection from the river in 1957.

Setting

The 25.2-acre complex is on the northeastern side of the Gunnison River about 1 mile south of the confluence of the Colorado River and 1.25 miles south-southwest of the city of Grand Junction, Colorado. This is a portion of the original 55.71 acres originally purchased by the government in 1943 and contains the nearly all of the land actually used during the Manhattan Project and the Cold War. The complex is on the floodplain of the river at an elevation of 4,575’. The floodplain is entrenched in a narrow canyon with 200’-tall sandstone bluffs to the east and the west. Riparian species, such as cottonwood, willow, and Russian olive, line the river, but the remainder of the floodplain and the canyon sides are sparsely vegetated with greasewood, rabbitbrush, saltbush, sagebrush, cactus, and a variety of grasses. The majority of the complex has been graveled or paved with asphalt except between the largest concentration of buildings in the northern portion of the district where concrete walkways connect the buildings through areas of lawn and ornamental plantings of trees, shrubs, and flowerbeds. Some of the outlying buildings to the south also have concrete walkways, areas of lawn, shade trees, shrubs, and flowerbeds.

The complex evolved from an industrial complex for the administration of acquisition of uranium ore, including receiving, processing, and shipment of the ore during the Manhattan Project (log office portion of Building 12 and Building 2 are still extant) to a larger-scale uranium ore experimental recovery-process facility with uranium receiving and shipping warehouses, assay facilities, offices for field exploratory units, scientific laboratories, equipment calibration facilities, and numerous offices for administering the exploration for, extraction of, experimentation with, and acquisition of uranium ore through in-house projects and contracted work during the Cold War era. The expanded role of the office in acquiring adequate uranium ore for Cold War weapons production is reflected in the initial construction of large office buildings (Buildings 8, 10, and 12) in the late 1940s; the large growth of the facility in the middle 1950s with the addition of more offices (Building 9, 9A, and 38), experimental processing plants (no longer extant), laboratories (Buildings 22 and 22A), and maintenance and outfitting facilities (Buildings 28, 30, and 32); and the change in focus from on-site process experimentation to widespread scientific investigations nationally and internationally in the 1960s. Throughout the Cold War, facilities were built for specific projects that ceased to be needed once those projects were completed. Some of these facilities were converted to other uses, whereas others were removed. Following the end of domestic uranium ore procurement by the Grand Junction Office for Cold War weapons production in 1970, the office transitioned to managing mined lands, closed mills, and other facilities that were closed or operated in a limited capacity. The mandate to remediate hazards associated with those places, the DOE office complex, and locales contaminated nearby, such as remediation of much of the city of Grand Junction, further altered the focus of the office as an administrative facility. At the DOE Grand Junction Office itself, remediation had a major impact on the facility’s former industrial setting as the uranium pilot plants, warehouses, and other buildings that had been contaminated by radioactive materials were, by necessity, removed and reclaimed. This process continued into the early 2000s, and the DOE Grand Junction Office complex as it exists today is the result. Places where removed and remediated buildings were once present are now mostly open space with no clear footprint. The only former building location within the nominated area with a visible footprint is the site of Building 61, where four small storage buildings were built in 1992 to hold hazardous waste during radiological remediation of the complex (Photograph 91). Three of the buildings were within a fenced area. The buildings have been removed, leaving only the concrete slab foundations on which retained building materials rest and remnants of the fence.

The DOE Grand Junction Office complex is accessed from the east by Legacy Way, west of U.S. Highway 50. The Union Pacific Railroad (formerly the Denver & Rio Grande Railroad) grade passes north to south along the eastern side of the complex. Two driveways enter the complex from the east from Legacy Way, crossing the railroad and entering the northern and southern ends of a large, paved parking area that runs north to south along the western side of the railroad grade. The southern entrance passes through a gate and provides access to the buildings now used by the RTC in the southern portion of the complex. Access to the buildings in the northern portion of the complex, which is occupied by the Department of Energy and its contractors, is through the modern connecting unit of Building 810 where one must sign in at the security desk. All of the DOE-occupied buildings are included within the property boundary and are leased from RTC, the private owner of the complex.

The location was chosen for its isolation, and the restricted Gunnison River Canyon has enabled that isolation to be retained. A few modern houses have been built on the mesa edges to the west, but are quite distant and not very noticeable. A private parcel east of the complex has a single residential development on it that is not readily noticeable. Also east of the complex is a gunnery range operated by Mesa County that is only somewhat visible from the property, but detracts in an auditory way when guns are fired. The large cemeteries on top of the mesa to the east are not visible from the complex. The railroad grade still passes north to south along the eastern edge of the property, just as it did when the facility was first used.

Two buildings that were components of the Grand Junction Office are outside the nomination boundary on separate parcels of land, but are visible from the nominated area. These are Building 7 and Building 40. Building 7 (5ME.11937; Photos 88-89) was constructed in 1951 as the receiving facility and sampling plant for the AEC's Division of Raw Materials purchases of uranium and vanadium ore. This is where most of the ore purchased by the AEC during the Cold War was brought for sampling to determine its purity. It is an 80’-x-225’, steel-frame and hollow-tile building just north-northwest of the nomination boundary. The building was turned over to the U.S. Army Reserve in 2001. Building 40 (5ME.11950; Photo 90) is a 10’-x-12’, prefabricated metal building, oriented generally east to west, immediately north of the nomination boundary. The building was constructed in 1958 as a metering facility for natural gas used for heating, industrial, and scientific purposes and remains unaltered. Because it is on an isolated parcel of land owned by RTC, separated from the complex by land owned by the U.S. Army Reserve, it is not included within the nomination boundary. The industrial appearances of these two buildings are in keeping with the characteristics of the nominated property.

Contributing Resources

Contributing resources are described in this section beginning with that first encountered at the entry to the complex and then proceeding generally from north to south as one moves through the district.

Building 810 (5ME.11965) (Contributing Building, built 1949 and 1950, connected 1980, exterior remodel 1995-1996; Photos 8–14; Maps 4-7)

Building 810 (5ME.11965) is a composite of two long, rectangular, wood-frame office buildings (originally Buildings 8 and 10) constructed in 1950 and 1949 (respectively) that were connected by a large, conjoining, brick building in 1980.[1] Building 8, a 38’-x-214’, one-story office building, oriented generally north to south, forms the northern wing of the building. It has a widely overhanging gabled sheet metal roof covered with elastomeric spray-on foam that was

[1] Numbers were not assigned to buildings in the office complex until about 1956, so do not run in sequential order by date of construction.

applied in the mid-1990s,[2] and a concrete foundation. The southern wing, Building 10, is of identical construction but is two stories tall and measures 38' x 168', oriented generally north to south. Both buildings have horizontal aluminum siding on the lower walls with the upper walls filled with continuous banks of one-over-one double-hung, aluminum-sash windows. The only exceptions are on the gable ends where banks of three windows are to the eastern and western sides, a pattern that is mirrored on the second floor of Building 10. Three exterior doors are on the western side of Building 8, the northernmost of which is accessed by a concrete ramp from the south with a pipe railing. Adjacent to the north of the central entry is a basement entry accessed by concrete steps with a pipe railing. A single entry is on the western side of Building 10, which also has a basement entry adjacent to the south with concrete stairs and a pipe railing. An entry is also centered on the southern end of Building 10. All of the ground-level entry doors are flush metal with single lights in the upper half, whereas the basement doors are flush wood.

The two-story brick unit that connects Buildings 8 and 10 measures 48' square, has a flat roof, and is built on a concrete foundation. It stands taller than Building 10 and has continuous banks of two-over-two double-hung, aluminum-sash windows on the western side and interrupted banks of windows on the eastern side. The main entry to the composite Building 810 is through full glass aluminum double doors flanked by fixed aluminum-sash lights in a recessed entryway just south of center on the eastern side. To both sides of the entry are banks of windows also in recesses. A brick planter extends northward from the entry beyond the limits of the unit, and a flower bed is to the south of the entry. A concrete apron is in front of the entry with three circular concrete planters. On the second-floor level, the windows extend across the northern three-quarters of the façade, with a flagpole and a DOE logo on the northern end. On the wall beneath the flagpole and logo are applied letters that read "UNITED STATES DEPARTMENT OF ENERGY/Grand Junction Office." Just within the entrance is a security desk; the remainder of the building contains a hallway to the rear entry and offices. The rear entry, on the western side, is offset to the south within a recess with eleven three-light aluminum-sash windows extending northward across the rest of the façade on the ground floor. Thirteen four-light aluminum-sash windows extend across most of the second-floor level.

Building 10 was designed by Thomas E. Moore of Smith, Hegner & Moore Architects of Denver and built in 1949 as the U.S. Geological Survey Office Building.[3] Its companion building,

[2] Elastomeric roof coverings are formulated with acrylic polymers, resin, and fillers that form a permeable membrane that prevents water penetration but allows moisture to breathe out from the underlying substrate. The white color reflects light, improving cooling of building interiors.

[3] Thomas Edgar Moore was born in Denver in 1908. He graduated from Yale University in 1930 and returned to Yale to receive a Bachelors of Fine Arts degree in Architecture in 1936. He was then employed as a draftsman and designer with Frewen and Morris architects in Denver from 1937 to 1939. He served in England with the First Photo Intelligence Detachment of the 8th Army Corps from 1942 to 1946 in World War II. He returned to Denver and partnered with Dudley Smith and Casper Hegner in Smith, Hegner & Moore until 1952, when the partnership was dissolved and he went into private practice. While with the partnership, Moore designed the Civic Center Classroom Building at the University of Denver (5DV.1855, listed on the NRHP 12/6/1990). When Smith, Hegner & Moore was awarded the contract to design the AEC office building in 1947, Moore moved to Grand Junction to work on the project and opened a branch office there. In addition to Building 10 at the Grand Junction Office, Moore designed the Grand Junction City Hall, regional airport, Veterans Administration Medical Center, City Market Warehouse, St. Mathews Church, and State Home Training Center and a variety of residences in Grand

Building 8, was designed and built in 1951 by the Walker-Lybarger Construction Company, the prime contractor at the site for the AEC at that time, as the Exploration Branch Office Building.[4] It was designed with an identical exterior appearance to Building 10, save its being two-stories tall. The two buildings served as administrative offices for the AEC to facilitate its uranium exploration program and to facilitate the national uranium ore procurement program until purchasing of uranium ore by the federal government ceased in 1970. Buildings 8 and 10 were joined in 1980 by the connecting building designed by Robert D. Jenkins of the architectural firm of Dean Blake Chambliss.[5] The combined building was then renamed Building 810. Beginning in the 1970s, Buildings 8 and 10 and the combined Building 810 served as the administrative center for regional radiological cleanup projects through the 1980s. It continues to serve as the center of regional DOE activities to the present day.

Alterations and Integrity: Building 8 was upgraded with a fire-protection system and electrical rehabilitation in 1972. A fire-protection system was added to Building 10 in 1970, wiring was rehabilitated in 1972, and the cooling system was upgraded in 1978. Buildings 8 and 10 were joined with the intervening two-story brick unit in 1980, resulting in the combined building being referred to as Building 810. A complete exterior renovation of the Buildings 8 and 10 portions of Building 810 took place in 1995 and 1996. At that time, the current wood-grain aluminum siding and trim was installed over the original wood clapboard siding and vertical tongue-and-groove siding on the upper walls between doors and windows in a way that mirrors the original construction. Energy-efficient, one-over-one, double-hung, aluminum-sash windows were installed that replaced wood windows of similar configuration and fit in the original spaces. The original flush wood doors with a single light above were replaced with steel doors of similar appearance, also with single lights. The original solid wood, four-panel doors into the basement were replaced with flush wood doors. Finally, the original asphalt-shingle roof was replaced by a metal roof at the same time. As mentioned above, it was coated with elastomeric spray-on foam in the mid-1990s (Schweigert 1999, 2001). Despite these changes, the single-story and two-story sections of the building retain their original configuration, stature, and general exterior appearance. They are clearly recognizable as the office buildings they were constructed to be in 1949 and 1950 and retain their prominent position in the DOE office campus, just as they did during the Cold War.

Junction. He also designed the Montrose airport terminal and numerous residences and schools in western Colorado. After the partnership was dissolved, Moore returned to Denver where he designed the Combs Hayden Aviation Hanger at Stapleton Airport, the library and gymnasium at Bromwell Elementary School, and St. Timothy's Episcopal Church. Moore was considered one of the most influential Avant Garde architects in Colorado. He specialized in the minimalist International Style and was known for his innovative design of thin-shell concrete structures. He was a visiting instructor at the University of Colorado's School of Architecture during his later years. He died in 1970 (Family of Thomas E. Moore 2012).

[4] Walker-Lybarger Construction Company was the prime contractor to the AEC at the Grand Junction Office from 1948 to 1956. They constructed buildings for the AEC, were responsible for maintenance and operation of the facility, and provided support for AEC exploration, drilling, and geologic studies.

[5] Dean Blake Chambliss is an architectural firm in Denver. The firm originated in 1961 and is still in business. Robert D. Jenkins is a practicing architect in Grand Junction.

Building 12 (5ME.11939) (Contributing Building, built pre-1943 and 1948, additions 1953 and 1956; Photos 15–29; Map 8)

Building 12 (5ME.11939) is an irregular T-shaped office building consisting of the original log cabin office from pre-1943 on the east to which a long, north-south addition of offices was added to the west in 1948. The log portion of the building was examined in detail by John Feinberg, an architectural conservation and preservation planner with Collaborative, Inc. of Boulder, Colorado, whose descriptions and findings were compiled in a report by Chamberlain Architects of Grand Junction, Colorado in 2015 and are incorporated into this description (Chamberlain Architects 2015). The one-story log cabin measures 30’ x 30’ with a 14’-x-18’ gabled extension that projects eastward from the northern end of the eastern side, and a 4’x9’ elevated entry porch west of center on the northern side. It is constructed of machine-squared logs with rounded exteriors set on a concrete perimeter foundation that is raised 4’ above grade and forms the upper walls of a full basement. The raised foundation and basement are a historic alteration that is shown in Historic Photographs 1 and 2. The spaces between the logs are uniform and filled with gray cementitious daubing. The log ends are not notched, but fit adjacent to each other. The alternate log ends on the lower courses have been trimmed flush with the walls to above head height, and the upper alternate log ends extend about 1’ beyond the walls. The cabin is covered by a composition-shingle gable roof, and wood shingles fill the gable ends. An exterior brick chimney is on the center of the eastern side, and an interior chimney extends through the ridge at the center of the cabin. The entry porch is accessed from the east by welded-steel stairs with a pipe handrail. The porch is supported from below by log posts with a concrete wall poured between the posts on the western side. The porch has horizontal log walls and is covered by a shed roof supported by log posts. The only exterior entry is on the northern side within the covered porch. All of the original multi-light, wood-sash windows with panels of four or eight lights were initially replaced in 1948 and have been subsequently replaced with sliding aluminum-sash windows that fit within the original wood openings, probably during the major exterior renovation of the remainder of the building in 1996. A former entry into the basement was beneath the entry porch; its opening was sealed with concrete at an unknown date after 1950.

The interior of the cabin exhibits much of its original finish, but the interior space has been altered by construction of partition walls. It has vertical, knotty-pine board walls and ceilings, a built-in wall cabinet, multi-light double wood doors, and a brick fireplace with brass fan-design vents on the sides. The glass panes in the double doors have been replaced with Masonite panels and the built-in cabinet is partly covered by a partition wall. The partition walls, some of which utilize the original vertical-board paneling, were installed without marring the original paneling and trim and were made to be removable. Upon acquisition of the cabin by the US government in 1943, the building was lifted and a full concrete basement installed beneath it. The basement includes a former underground garage, two vaults with steel doors, a kitchen area, former toilet and shower rooms, and a storage room. One of the interior doorways is arched. The ceilings of the vaults are of poured concrete supported by railroad rails that span the rooms (Chamberlain Architects 2015). One of these rails is marked “COLORADO SPC 90 RA A III 1927 OH” on its webbing. The “COLORADO” mark indicates manufacture by Colorado Fuel & Iron Co, in Pueblo, Colorado, a major manufacturer of steel railroad rails. The “90” means that it is a 90 lb.

rail, indicating its weight per linear yard, which was a common rail type for narrow gauge railroads. The "RA" mark indicates the rail was manufactured to the standards of the American Railway Association. The "III" is the month mark, meaning that it was manufactured in March, and the "1927" is the year of manufacture. One of the vaults has a steel door manufactured in 1917 by the Diebold Safe & Lock Company of Cincinnati, Ohio. The other vault door dates to the 1950 installation of a second vault by the Walker-Lybarger Construction Co.

Added to the western side of the cabin is a large office building constructed in 1948 and designed by Thomas E. Moore of Smith, Hegner & Moore Architects of Denver. This consists of a short western projection from the cabin that connects to two long, one-story wings that extend to the north and south. The design of the building preceded that of Buildings 8 and 10, which were of similar appearance and had the same exterior wall materials, roof design and materials, window styles, and doors. Both the northern and southern wings measure 34' x 100'. They are slightly offset with the northern wing set a few feet farther west than the southern wing and are joined by a westward-projecting entry wing that is 28' x 32', oriented generally east to west. These wings are of wood-frame construction on concrete foundations, and have standing-seam, metal-panel gable roofs covered with elastomeric spray-on foam that was applied in the mid-1990s. They are sided with horizontal, wood-grained aluminum clapboard on the lower portion and vertical wood-grained aluminum siding above. Fenestration is regular, being identical one-over-one double-hung, aluminum-sash windows in varying configurations. The westward extension connecting to the log cabin has an entry just east of center on its northern side that is reached by two concrete steps from the north with a pipe railing. Except where noted elsewhere, all of the exterior doors are flush metal with single lights filling the upper half. An entry on the northern end of the northern wing is through a 7'-x-10½' gabled entry projection that is oriented generally east to west with the door on the eastern side. Attached to nearly the entire western side of the northern wing is a brick addition that measures 28' x 134' and extends 16' northward beyond the northern end of the northern wing. It was designed as a File Storage Vault by the Walker-Lybarger Construction Company and constructed in two phases in 1953 and 1956. The brick addition has a nearly flat roof, no windows, and only one entry on its eastern side where it projects beyond the northern wing. Formerly, an addition built in 1955 extended southward from the southern end of the southern wing that was designated Building 12A. It was designed and built by the Walker-Lybarger Construction Co. This was removed in 2014, and a new 12½'-x-13' entry vestibule was built, projecting from a new large gabled wall made of flat, gray fiber-cement panels on a metal framework on the southern end of the south wing. The vestibule is of metal-frame construction and sided with horizontal fiber-cement clapboard that is covered by a wide, overhanging gable roof. Full glass aluminum doors enter the vestibule from the eastern and western sides, and a bank of three large aluminum-sash windows are on the southern side.

Alterations and Integrity: The log cabin portion of Building 12 was on the site in 1943 when the Manhattan Engineer District (MED) obtained the property. It may have been used as a home and/or office for a prior gravel-mining operation. It and Building 2 are the only buildings remaining from the Manhattan Project era (1943-1945) and is little altered from its 1943 appearance on both the interior and exterior. The cabin was probably built from a standard plan or may have been pre-fabricated (Chamberlain Architects 2015). The basement with garage and vaults was not an original element of the cabin. The cabin was lifted and the basement installed immediately upon acquisition by the U.S. government in 1943 in order to provide a secure office facility for the uranium extraction and refinement that was being carried out by the Manhattan Engineer District without calling attention to the secret activities (see Historic Photos 1 and 2).The lifting of the cabin and installation of the basement with garage and vault in 1943 was an alteration that is important to the understanding of the Manhattan Project activities at the complex. The attachment of the large office building portion in 1948 obscured most of the western side of the log building, but the 1943 log office is easily recognizable as the original office because of its distinctive log-cabin appearance, chimneys, roof, and interior elements. The log office clearly demonstrates the clandestine atmosphere of the Manhattan Project through retention of its original characteristics, particularly on the exterior. The discrete addition of the underground parking and vault facilities in the basement speak to the need for secrecy and security.

The subsequent need for a large office for the AEC's Cold War mission resulted in the 1948 construction of the office wings attached to the original log cabin office. The large size of the office building is a testament to the larger scale of the Cold War operations at the site. With such large-scale office construction, it is remarkable that the log portion was incorporated as it was, resulting in it being a rare survival of the Manhattan Project and perhaps the only Manhattan Project facility office that has survived virtually intact to the present day. The brick vault additions to the large office wings were added in 1953 and 1956, within the period of significance. Except for replacement of the windows in the log cabin portion with sliding aluminum windows, probably in 1996, the following descriptions of alterations pertains to the large attached office wings.

Fire protection was added to Building 12 in 1969. In 1996, a major exterior renovation was undertaken. The original asphalt-shingle roof was replaced by a metal roof. The current wood-grain aluminum siding and trim was installed over the original horizontal wood clapboard siding and vertical tongue-and-groove siding on the upper walls between doors and windows in a way that mirrors the original construction. Energy-efficient, one-over-one, double-hung, aluminum-sash windows were installed that fit in the original spaces and replaced steel-frame windows of similar configuration. The original flush wood doors with a single light in the upper half were replaced with flush steel doors with single lights in the upper half of similar appearance. The only exception to this is a probably original flush metal door into the brick vault addition on the eastern side of its northern end. Despite the exterior siding, windows, and doors being changed, they are similar in appearance to the original and the roof is of the same configuration (Schweigert 1999, 2001). The southernmost wing of the building, the former Building 12A (built in 1955), was removed in 2014, and a new entrance was installed on the southern end that is of completely different materials and appearance. Although this removal and entry addition somewhat diminishes the size and character of the building, it remains largely the substantial office building that it was constructed to be in 1948 and enlarged with its 1953 and 1956 brick vault additions for secure storage. In conjunction with Buildings 8 and 10, nearby, it retains its prominent position as an important element of the AEC Cold War office campus and continues to serve as office space for continuing DOE operations.

Building 938 (5ME.11966) (Contributing Building, built 1954 and 1955, connected 1956, infilled 1980; Photos 30-32; Maps 9 and 10)

Building 938 (5ME.11966) is a composite of two prefabricated Butler-type buildings (Buildings 9 and 38), planned at the same time and constructed in 1954 and 1955, and a gabled, wood-frame connecting unit (Building 9A) built in 1956 that joined their northern ends. The remainder of the space between the two buildings was infilled in 1980. The interior contains a large number of offices, restrooms, other ancillary spaces, and an auditorium with projection booth and stage.

The western portion of Building 938, Building 9, was constructed in 1954 as a one-story, 38'-x-168' building, oriented generally north to south, with a sheet-metal gable roof and sheet metal panel siding on a concrete foundation. It was designed by H. Summerfield Day under the direction of Walker-Lybarger Construction Company.[6] Building 38 was built parallel a short distance to the east in an identical fashion with the same dimensions in 1955. No plans for this building have been found, but the similarity in design suggests it may have been built from the same plans. These were built parallel to the west of Building 10, and spaced nearly the same distance apart. The buildings were a modified Butler-type prefabricated metal building with metal-panel roofs and siding, flush steel doors with four-light windows in the upper half, and six-light steel-frame windows. It is not known if the buildings were purchased from the Butler Manufacturing Company and modified or just built in that design. The interconnecting building, constructed to join the northern ends of Buildings 9 and 38 in 1956, known as Building 9A, adjoined flush with the gable ends of the earlier buildings. It was designed by the Walker-Lybarger Construction Company. Although not a steel building, its doors and windows were probably the same. The remainder of the space between Buildings 9 and 38 was infilled in 1980 using a design by Robert D. Jenkins of Chambliss Jenkins Associates/Architects. The infill unit is of wood-frame construction, but has a flat roof and T1-11 plywood-panel siding. The infill does not extend as far south as the southern gable ends of Buildings 9 and 38, resulting in a 10'-deep recess and a shallow U-shaped configuration on the southern side.

[6] Herbert Summerfield Day was born February 22, 1910 in Chicago, Illinois. He received a BA degree from the University of Illinois in 1933 and did graduate work at Harvard University in 1933 and 1934. He then worked for the National Park Service as an archaeologist at Jamestown, Virginia in 1934 and 1935, Aztec National Monument, New Mexico in 1937, and conducted excavations at Ocmulgee National Monument in Georgia and Hobbs Island, Alabama. In 1938, he served as Assistant Sociology professor at the University of Illinois. Between 1941 and 1943, he worked as a draftsman and designer for the chemical warfare arsenals in Huntsville, Alabama, and Denver Colorado. For the remainder of World War II, he was a stress engineer for Douglas Aircraft in Chicago. Following the war, he worked for several architectural firms in Denver and then went into private practice in Grand Junction from 1949 to 1959. During that time he designed the 1st National Bank in Rifle (1951), Safeway Supermarket (1952), AEC Mining and Processing Building (1953) at the Grand Junction DOE office, and the 1st Congregational Church (1954), La Court Motel (1954), and the Public Service Company Building (1955) in Grand Junction. In 1959, he joined the Architect's Office at the University of Illinois at Urbana-Champaign as an Associate Architect. He became the University of Chicago's Supervising Architect in 1964. From 1966 to 1975, he was the Architect for Iowa State University. He then served as the Program Assistant in the Architect's Office of Iowa State University until his retirement in 1980. He died in 1986 (Iowa State University 2007; Koyle 1955, 1962).

The northern side of Building 938 incorporates the flush northern gable ends of Buildings 9 and 38. It has a centered, 7'-x-8' gabled entry projection with a flush metal door with a single light on the eastern side of the projection. Except for one door noted below, all of the exterior doors are of this type. Two more doors are centered on both gable ends on the northern side, which also has thirteen one-by-one, sliding, aluminum-sash windows, which are the window type found elsewhere on the building except for on the infilled section on the southern side. On the western side are nine evenly spaced windows in the northern portion and two doors on the southern portion. Fifteen regularly spaced windows are on the eastern side, but no entries. On the southern side, the gable end of Building 38 has a centered doorway with a window adjacent; no door or window openings are on the gable end of Building 9, but a flush metal door with no glazing enters the southern end of the eastern side where the unit extends beyond the infilled section. The recessed portion on the southern side has a full glass aluminum-frame entry door to the east with the remainder of the space filled with seven sets of large aluminum-sash windows.

Alterations and Integrity: Fire protection was added to Building 938 in 1969. The southern end of the Building 9 portion was remodeled as a conference room and auditorium in 1978. It was designed by Henningson, Durham & Richardson, Inc.[7] As noted above, the infilled section of the building is a 1980 alteration. Because it is stepped back on the southern side and has a low, flat roof profile, it is relatively unobtrusive to the original U-shaped layout of the building. Extensive renovations of the building took place in 1995. It was probably at that time that all of the original steel-frame windows of buildings 9, 9A, and 38 were replaced with one-by-one sliding aluminum-sash windows that fill the original openings. The coating of the metal gable roofs of the Building 9, 9A, and 38 units with elastomeric spray-on foam also probably took place in 1995. The building exterior was covered with stucco in 2005 except on the southern side of the infill addition, which remains as built with aluminum-sash windows and an aluminum-frame door.

According to architectural historian Kurt Schweigert (2001), "Building 9 was designated as the Mining and Processing Building, to house offices associated with those activities of the AEC. Building 38 was designated the U.S. Geological Survey Office Building, and it provided offices for USGS until at least 1970." After being joined on their northern ends by Building 9A, the building became known as Building 938. It has continued to be used as an office for the continuing mission of the DOE that extends from the Cold War era, and includes an auditorium with a projection booth and stage. When built, Building 938 formed the southern portion of the AEC office campus comprised of nearby Buildings 8, 10, and 12. The quick succession of construction in 1954, 1955, and 1956 reflects the rapid increase in Cold War projects undertaken at the office complex at that time. Building 938 has remained an important element of the office campus at the DOE Grand Junction Office from the Cold War to the present time and, despite its

[7] Henningson, Durham & Richardson was founded by Henning H. Henningson in 1917 as the Henningson Engineering Company in Omaha, Nebraska. In 1939, Willard Richardson and Charles W. Durham joined the company and acquired partial ownership in 1946. The company became known as Henningson, Durham & Richardson in 1950. The company offered engineering and architectural expertise. It has grown nationally and internationally and is known today as HDR, Inc. (HDR, Inc. 2015).

external alterations, retains its historical configuration and massing, particularly when viewed from the north from the quadrangle formed by the four office buildings.

Building 2 (5ME.11936) (Contributing Building, built 1944, remodeled ca. 1956, 1977, and 1993; Photos 33–36; Map 11)

Building 2 (5ME.11936) is a one-story, 20'-x-108', wood-frame building, oriented generally north to south, with a 7'-x-34' shed extension south of center on the eastern side. The building is on a concrete slab foundation, is covered with T1-11 plywood siding, and has a composition shingle gable roof. The main entry is a double flush metal doors with single lights filling the upper halves left of center on the south gable end. Additional flush metal doors with single lights filling the upper half are in the northern portion of the western side, on the southern end of the eastern side of the shed extension, and just north of the shed extension on the eastern side. Fenestration is one-over-one, double-hung, aluminum-sash windows of varying sizes. One large window is to the right of the double door on the southern side, 10 irregularly spaced windows are on the western side, two are on the southern end and one is on the northern end of the eastern side, and one is on the northern end of the eastern side of the shed extension. No door or window openings are on the northern side of the building.

Alterations and Integrity: The building was constructed in 1944 by the Stearns-Roger Manufacturing Company of Denver for the United States Vanadium Company (USV) on behalf of the US government as a companion building to the nearby uranium refinery that they built that same year that is no longer extant. It was a metal panel building used as a change house, where workers at the mill and later pilot processing plants showered and changed clothes. As such, it had a central locker room with a shower, toilet, urinal, and sink room on one end, and a warehouse office and small parts storage room on the other. It remained in use throughout the Cold War era and during the subsequent period when the Grand Junction facility was the center of AEC uranium exploration and procurement. In 1956, the building was converted into a cafeteria for the complex by the Walker-Lybarger Construction Co. Fire protection was added in 1962. The building was remodeled as offices with a mail room and telephone control room in 1977. The shed extension on the eastern side is depicted on the 1956 map of the complex (see Map 3), so was added sometime prior, during the period of significance. In 1977, the building was converted into offices. It was at that time that the present exterior siding was installed over the original metal panels and the current windows and doors were installed. The present doors are of similar appearance to the original doors, except being of steel instead of wood. The windows are currently aluminum sash, where the original were likely industrial steel frame; the replacement windows were installed within the original openings. In 1993, the building was converted into the communications hub and copy center for the complex.

Building 2 and the log cabin portion of Building 12 are the only buildings remaining from the Manhattan Project. Building 2 is also the only building remaining from the 1943-1945 Manhattan Project procurement and processing plant. The removal of the southern wing of Building 12 (Building 12A) in 2014 has made Building 2 more visible from the landscaped office quadrangle than before and it now forms a portion of the western side of the historic Cold War-era office campus.

Spillage-Containment Structure (Contributing Structure, built ca. 1963; Photo 37)

West of Building 46 is a 45'-x-45' concrete slab at grade with a 6"-thick perimeter concrete wall that extends 18" above the slab. It was constructed about 1963 as a secondary spillage-containment structure for oil/fuel tanks (Schweigert 1999).

Alterations and Integrity: The oil/fuel tanks contained within the structure were removed in 1997 as part of a hazardous materials remediation. The containment structure itself is unaltered and is an important industrial element of the Grand Junction Office complex.

Secure Parking Area (Contributing Structure, built pre-1956; Photo 38)

The Secure Parking Area is a 120'-x-240' paved asphalt area fenced with 8'-tall chain link topped with barbed wire. Vehicles gain access into the parking area through a 10'-wide mechanical side-rolling, chain-link gate that is electronically activated by a security keypad. A 3'-wide, security keypad-activated, side-hinged, chain-link pedestrian gate provides restricted access through the northern fence south of Buildings 810 and 938. It is uncertain when the Secure Parking Area was installed, but it fits with the security required of the facility during the Cold War era, and is depicted as partly enclosed in the 1956 map of the facility (Map 3). The security keypads and the chain-driven rolling gate mechanism are elements installed in the 2000s.

Alterations and Integrity: The parking area is unaltered except for the installation of additional surrounding fencing and electronically controlled access gates. The parking area contributes to the significance of the district as a visible reminder of the Cold War security requirements at the complex, a situation that continues to the present day.

Instrument Calibration Facility (5ME.11968) (Contributing Site, built 1951-1973; Photos 39–43)

The Instrument Calibration Facility (5ME.11968) is an irregularly shaped graveled area covering a roughly 125'-x-300' area, oriented generally northeast to southwest. It contains metal pipes, culverts, and tanks above and below ground level; below-ground pits and bore holes; overhead sample-lifting frameworks; and steel-frame access platforms. The pipes, culverts, tanks, pits, and bore holes are used to contain radioactive materials so that radio-sensitive instruments can be tested and calibrated using specific radioactive materials of known strengths. In the north-central portion of the area is an L-shaped arrangement of three 4'-diameter steel tanks that project about 1' above the ground and are covered with concrete tops and small steel lids. The tanks are marked U1, U2, and U3. A pipe suspended above the tanks is supported by a rectangular steel-post framework. Each tank has a sheave (pulley with a grooved wheel to accommodate a wire rope) above attached to a suspended overhead pipe. Adjacent to the north is a 5'-x-12' concrete block that stands 3' tall, has a surrounding pipe railing, and is accessed by a set of welded-steel stairs from the east. Four steel lids of varying sizes are mounted on top of the concrete block; inscribed in the top surface of the concrete is "1973 WF." A pipe with four sheave brackets is mounted above, supported by a rectangular-post framework; only one sheave remains. Adjacent to the west is a 4½'-x-6' concrete box covered by sheet steel through which six steel-rod T handles project. Farther north is a 6'-x-18' concrete block that stands 1' tall with five steel lids of varying diameters mounted on top. A pipe is suspended above, supported by rectangular posts on concrete piers. Adjacent to the west is a 4½'-x-7' concrete box with seven steel-rod T handles that project from its steel cover. Extending perpendicular eastward from the center of this north-south arrangement of tanks and concrete boxes are six 4'-diameter corrugated steel tanks with concrete tops and small steel lids marked T-1, T-2, T-3 (with one bearing a 1965 date), and U, T, and K (each dated 1973). East from tank U1 is a 4'-x-12' concrete slab, oriented east to west, marked "S MODEL/1965." Steel lids of varying diameters are mounted on the top of the slab.

In the south-central portion of the calibration facility area are six 6'-diameter tanks with their covers at grade. In the southeastern portion of the area are four 4'-diameter tanks that extend 4' above the ground marked BA/BB, BT/BK, BU/BM, and BL/BH. The top of each tank is accessed by a welded-steel pipe and angle-iron platform with expanded-metal floors, metal stairs, and pipe railings. A pipe with attached sheaves supported by a rectangular metal-post framework on concrete piers is suspended over the tanks. Near the center of the area is a 16'-diameter steel tank with a concrete top that extends 1' above grade. Seven steel lids of varying diameters are mounted on top.

Five 5'-diameter tanks in a north–south alignment are in the southwestern portion of the calibration facility. These stand 7½' above the ground and are marked N1, N2, N3, N4, and N5. Access to the tops of the tanks is by a steel plate walkway with an angle-iron handrail. A set of welded-steel stairs with a pipe handrail access the walkway from the east. A pipe is suspended above the tanks, supported by 4"-x-4", steel-post frameworks on the ends and at the center. Brackets are mounted on the pipe above each tank to which sheaves were attached for raising and lowering samples and equipment. Only one of the sheaves is still in place.

The calibration facility was constructed for both surface and subsurface instrument calibration. Typical instruments calibrated at the facility have included alpha, beta, and gamma ray meters; portable gamma-ray spectrometers; pressurized ionization chambers; air pumps for particulate monitors; and laboratory test equipment. Spectral logging systems are calibrated in the subsurface elements of the facility; these are instruments primarily used for gamma-ray logging systems, but also for calibration of moisture/porosity, density, and magnetic susceptibility measurement systems. In addition, the facility has been used to determine inherent tool background measurements. The bore hole models are 4-5' diameter and up to 30' deep. The surface calibration elements of the facility are generally 5' diameter, 2' tall cylindrical pads and other small-area cylindrical pads used to calibrate portable vehicle-mounted or airplane-mounted spectrometers.

The facility was constructed by AEC's on-site contractor, Walker-Lybarger Construction Company, and was the primary calibration facility for AEC and DOE throughout the Cold War and post-Cold War eras. Calibration pits were first installed by 1951 with additions and modifications indicated by 1965 and 1973 dates inscribed in concrete and steel caps. The facility was initially used by the USGS and AEC, but was later used by private industry to calibrate instruments for down-hole logging of drill holes. The calibration facility was groundbreaking as the first facility in the country where precision adjustment was done of gamma ray-sensitive instruments used in uranium and other radioactive mineral exploration. The calibration facility at the DOE Grand Junction office was the first of its kind and served as the model for similar calibration facilities built in at least eight other states during the National Uranium Resource Evaluation (NURE) program between 1974 and 1982 as extensions of AEC's operations at Grand Junction. Included are facilities at Grand Junction Regional Airport (Walker Field) and in Spokane, Washington; Casper, Wyoming; Morgantown, West Virginia; Live Oak County and George West, Texas; and Grants, New Mexico. The calibration facility continues to be used on occasion by the DOE, instrument manufacturers, and private geophysical companies (Chenoweth 1998; Schweigert 1999, 2001; UNC Geotech 1988). The DOE still administers the facilities at Grand Junction Regional Airport; Casper, Wyoming; Grants, New Mexico; and George West, Texas. As of 1994, few calibration facilities were known worldwide. These were at Ottowa, Canada; Adelaide, Australia; Pelindaba, South Africa; Riso, Denmark; Aberdeen, Scotland, and Daquing, China (Stromswold 1994).

Alterations and Integrity: The calibration facility developed between 1951 and 1973, extending only a few years beyond the period of significance for the DOE Grand Junction Office. It has been in continuous use to the present time, so has probably undergone some maintenance, but no alterations are known since 1973. The calibration facility is the most visible element of the complex that demonstrates the scientific advances and technological innovations for radioactivity detection and logging instrumentation undertaken by AEC personnel during the Cold War with benefits that continue to the present day.

Building 3022 (5ME.11967) (Contributing Building, built 1953 (Building 22), 1954 (Building 22A) and 1956 (Building 30), connected 1979; Photos 44–53; Maps 12-14)

Building 3022 (5ME.11967) is a composite of three buildings (Buildings 22, 22A, and 30) that were joined via a concrete-block building infill in 1979, whereupon the combined building became known as Building 3022. The current configuration is an irregular U-shape with the open end on the eastern side containing a courtyard with a wood pergola over a brick patio and flanking landscaped flower and shrub beds.

Buildings 22 and 22A were constructed in 1953 and 1954, respectively, by the Walker-Lybarger Construction Company. Building 22 was built as a 40’-x-96’ rectangle, oriented east to west. Building 22A, built a year later, is a 40’-x-120’ rectangle that extends northward from the eastern end of the northern side of Building 22, forming a composite L-shaped building. The construction of both buildings is identical. They are one-story, red hollow-tile buildings on concrete foundations with gable roofs. Where the buildings intersect, the east gable end of Building 22 remains exposed. The original asphalt shingles were replaced by standing-seam sheet metal roofing in 2010. Many of the original steel-sash industrial-type windows remain on the buildings. Original horizontal redwood clapboard siding fills the gable ends. The eastern gable end of Building 22 projects a short distance beyond the intersecting Building 22A and has a flush metal entry door just south of center with non-historic fixed aluminum windows to each side. The door replaced a flush wood door with a single light in the upper half. The current windows fit into the original window openings in the same configuration. The main entry into the building is immediately north of the east gable end on the southern end of the eastern side of Building 22A. It is a modern, single, full-glass aluminum-frame door to the left of an aluminum-framed sidelight. Another single-door entry is near the northern end of eastern side. All but one of the windows along the eastern side of the northward-projecting wing are original two-light, steel-sash, awning-type windows in groups of two or three. The exception is a window on the far northern end that has been replaced by an aluminum-sash window. The three banks of windows on the north gable end of Building 22A have all been replaced with sliding, aluminum-sash windows. On the western side of Building 22A are two tall garage bay openings with dormer-like shed roofs. These originally held multi-panel overhead rolling garage doors and have been partly filled with T1-11 plywood panels with an older two-over-one, double-hung, wood-sash window (probably salvaged from elsewhere) in the northern bay and a sliding, aluminum-sash window in the southern bay. Single flush metal pedestrian doors with single lights in the upper half are immediately south of each bay. A window opening on the northern end contains modern sliding, aluminum-sash windows, but banks of two and three windows between the garage bays contain original two-horizontal-light, steel-sash, awning windows. Two groups of three of this same type of window are farther south. Adjacent to the junction of the two buildings is another wide garage bay that is partly enclosed with T1-11 plywood panels and a sliding, aluminum-sash window. The northern side of Building 22 has four window openings. The easternmost contains three original three-horizontal-light, steel-sash, awning windows. The remaining three are all original six-light, steel-sash, awning-type windows. In the western gable end of Building 22 is a former garage bay opening that is mostly filled with T1-11 plywood with a pedestrian door and a sliding, aluminum-sash window inserted. The ghost impression of a former gabled-roof entry cover is visible on the wall above the mostly filled opening. The opening is flanked by window openings. One still contains its original six-light, steel-sash, awning window, and the other is filled with a T1-11 plywood panel. Facing southward into the courtyard of the combined buildings on the southern side of Building 22 are three window openings. The easternmost two are replacement sliding aluminum-sash windows. The one farthest west is an original six-light, steel-sash, awning window.

Building 30 was constructed in 1956 by the Walker-Lybarger Construction Co. It is a two-story, 40’-x-120’ building, oriented generally east to west, with an 8’-x-80’ shed extension along most of the southern side. It was situated to align with nearby Building 22. The first floor of the building and the shed extension are built of 8” pumice concrete blocks, and the second floor is wood frame with original horizontal cedar clapboard siding on the lower walls and in the gable ends. The upper walls of the second floor are the original continuous two-over-one double-hung, wood-sash windows on all exposed sides, broken only by a flush metal door centered in the western gable end with no landing or balcony and two vertical fixed windows centered in the eastern gable. The door does not appear on the plans of the building, so may have been added at a later date for some unknown function. The building, including the shed extension, is covered by a standing-seam sheet metal gable roof installed in about 2010 over the original asphalt shingle roof; the roof of the extension stretches beyond its walls eastward and westward to cover entries in those directions. Three door openings are on the western side. A large garage bay opening is on the northern end that has been shortened with T1-11 plywood and contains a metal roll-up garage door. This opening does not appear on the building plans, but appears to be an original element of the building. At the center, a large opening has been partly filled with T1-11 plywood and now contains a single flush metal door with a single light in the upper half. An original flush wood door with a single light in the upper half is on the southern end of the western side; it has a large transom containing wire-reinforced safety glass. On the southern side of the building, two four-light, steel-sash, awning windows are west of the extension wall but sheltered by its shed roof. The shed extension is accessed by a flush steel door on its western side. The southern side of the shed extension has a flush wood door with a single light in the upper half west of center, a double flush metal doors with single lights in the upper half east of center, and a flush metal door with a single light in the upper half on the eastern end. The only window on the southern side of the shed extension is a replacement aluminum-sash window just east of center. East of the shed extension are two sets of double doors and one single door. Original flush wood double doors with single lights in the upper half and fixed transoms with wire-reinforced glass above are beneath the shed extension roof. Farther east are a single flush metal door and a double flush metal door with single lights in the upper half that evidently replaced earlier wood doors. Near the eastern end of the southern side is a single window opening that is now used for entry of a duct from an exterior heating unit. The door and window configuration on the southern side of the building does not match what is shown on the plans, but appears to be as built; no cutting or filling of openings is evident. Two evenly spaced window openings are on the ground floor on the eastern side, one of which is an original four-light, steel-sash, awning window; the other is a replacement aluminum window. Three evenly spaced window openings face northward into the courtyard of the combined buildings. The two westernmost are original four-light, steel-sash, awning windows and the easternmost is a replacement fixed, aluminum-sash window.

The portion connecting Buildings 22 and 30 is a 54’-x-64’, pumice-concrete-block building oriented generally east to west, with a standing-seam gable roof and a concrete foundation. It was designed by Robert Van Deusen of Van Deusen Architects and constructed in 1979.[8] The northern slope of its roof extends over the gable roof of Building 22’s west end. The building is only somewhat shorter in height than Building 30 to the south. Three large garage bays with roll-up doors are equally spaced on the western side. On the eastern side, a single, large garage bay with a roll-up door is on the southern end, and a single pedestrian door is in the center.

[8] Robert Anderson Van Deusen was born in Prospect, New York in 1920. He received a BS degree from the University of Michigan in 1943 and served in the U.S. Navy from 1943 to 1945. Thereafter, he returned to school and received an Architectural degree from Harvard in 1948. He was a partner in the firm Van Deusen & Bliska in Grand Junction, Colorado, from 1955 to 1965 and worked independently from 1965 to 1968. He organized Van Deusen & Associates in 1968. In Grand Junction and the surrounding area, he designed the Mesa County Courthouse Addition (1964), the Mountain States Telephone and Telegraph Building (1967), the Library (1967) and Fine Arts Building (1969) at Mesa County Junior College (now Colorado Mesa University), and Fruita Monument High School (1969). Elsewhere, he designed the Montrose County Courthouse Annex in Nucla (1975) and Norwood High School (1966). He served on the Mesa County Planning commission beginning in 1967 and was involved in Operation Foresight for redesigning downtown Grand Junction as a pedestrian-friendly area along Main Street in 1962 that resulted in Grand Junction being given an All American City designation. Van Deusen died in 2001.

Building 22 was originally used as the USGS Sedimentation Laboratory; it contained six laboratory rooms, restrooms, and a large warehouse area. Building 22A was built for an electronics laboratory. Original construction of both buildings included tile block walls, asphalt shingle roofs, horizontal redwood lap siding in the gables, single-light wooden doors, multipanel roll-up garage doors, and industrial steel-frame windows in various configurations incorporating awning-type openings. Building 30 was originally the Procurement, Supply, and Operating Building associated with AEC's operations on and off site. It included a large warehouse space with a small office and storage rooms on the ground floor and multiple storerooms and restrooms on the second floor. Original construction included pumice-concrete-block walls, asphalt shingle roofs, horizontal cedar lap siding in the gables, flush wooden single and double doors with single-lights, industrial metal-frame windows in various configurations incorporating awning-type openings on the ground floor, and bands of two-over-one double-hung, wood-sash windows on the second floor with asphalt shingle siding above. The combined building currently is the headquarters for Riverview Technology Corporation (RTC) and houses their office and several start-up businesses.

Alterations and Integrity: Buildings 22/22A and 30 have been altered by construction of the connecting unit, but the exteriors of the buildings are remarkable intact. They retain their exterior finishes of tile and pumice concrete block, original siding on the upper levels, many of their original industrial windows, all of the original wooden windows on the second floor of Building 30, and several original doors and transoms. Where pedestrian doors have been replaced, the new doors are identical except for being metal instead of wood. The roofs are replacement metal, but retain their original profiles, except where the roof of the connecting unit extends over a portion of Building 22. Although large, the connecting unit constructed in 1979 is set back from the front facades of Buildings 22/22A and 30 and is industrial in nature, so is relatively unobtrusive. Building 3022 is one of two major buildings in the southern portion of the Grand Junction Office complex (with Building 28) that demonstrate the extensive off-site facility and research project reach throughout the western United States during the Cold War. Physical data gathered throughout the West was analyzed in the USGS laboratory (Buildings 22) and scientific radioactivity detection advances were developed in the electronics laboratory (Buildings 22A). The large warehouse (Building 30) facilitated exploration projects and projects in support of mining and milling operations throughout the West.

Building 26 (5ME.11943) (Contributing Building, built 1954; Photos 54–55)

Building 26 (5ME.11943) is a one-story, 20’-x-48’, steel-framed office building, oriented generally east to west, with vertical, flat-panel steel siding, a standing-seam gable roof, and a concrete slab foundation. It was built in 1954 by the Walker Lybarger Construction Company as a temporary office building. A 5½’-x-7’ shed addition (ca.1970s or 1980s) is on the eastern end of the southern side that includes a flush metal door on its southern side. It has a south-sloping composition shingle roof, T1-11 plywood siding and a door offset on the southern side. Two single-panel wood doors with three steel-frame vertical lights in the upper half are offset to the west on the northern side. Window openings are regularly spaced on all sides of the building, most of which have been covered over by sheets of plywood. Three of the seven openings on the southern side have small sliding, aluminum-sash windows. One of the three window openings on the western side has a six-light, metal-sash, awning window, likely representative of the original window type. The building initially housed the engineering offices for the uranium processing pilot plants. It was converted to the Radon Development and Calibration Test Facility in 1970 by the Bendix Field Engineering Corp. It continued to be used during the uranium tailings clean-up programs overseen by the DOE through the 1980s. It is no longer in use (Schweigert 1999, 2001).

Alterations and Integrity: The siding and roof on Building 26 are original, as are the two doors on the northern side and a single steel-framed window on the western side. The original window openings are evident, despite many being filled and others reduced to contain replacement aluminum windows. It is uncertain when the shed addition and other alterations were made to the building, but were likely done in the 1970s or 1980s. Although the windows have been mostly filled, the building remains a good example of an ancillary office building that was erected at the Grand Junction Office complex as project demands required during the Cold War. Its basic, unornamented design reflects its intended utilitarian use.

Building 29 (5ME.11946) (Contributing Building, built 1956; Photos 56–57; Map 15)

Building 29 (5ME.11946) is a one-story, 10’-x-20’, wood-frame building, oriented generally north to south, with a nearly flat east-sloping shed roof and a concrete foundation. The built-up gravel-covered asphalt roof has wide overhanging eaves supported on the north by an extension of the eastern wall with vertical 2”-x-6” boards in a louvered pattern. The lower walls on the northern, southern, and western sides and on the entire eastern side are sided with original horizontal fiberboard clapboard with the upper walls covered with vertical tongue-and-groove beadboard siding. Original three-horizontal-light, steel-frame awning windows exist: one on the southern side and one on the southern end of the western side. A flush wood door with a single light in the upper half is to the left of the latter window, and a second door opening has been filled with T1-11 plywood near the northern end of the western side. Also present on the western side are two original one-over-one, double-hung, wood-sash windows. The northern side has another entrance with an identical door with a fixed-pane window to the right. According to the original plans for the building, this door was installed where a double-hung window originally existed.

Building 29 was designed in late 1955 and built in 1956 as the Gatehouse for the Security Branch by the Walker Lybarger Construction Co., replacing an earlier building of irregular shape that had been constructed in 1952. The building originally included a security office, dispatch office, patrol space, restroom, interview room, and reception area. The building functioned as the south guard house and truck dispatch, regulating traffic in and out of the facility. A 1956 map (Map 3) shows the building as a "Truck Scale" (Schweigert 1999). The building was an important part of security and operations at the complex during the Cold War era.

Alterations and Integrity: The building is remarkably unmodified. The only alterations are the filling of one of the doorways on the western side and the installation of a door where a window had been on the northern side. It is unknown when these changes were made. Building 29 is an important element of the Grand Junction Office, as it demonstrates the security needs of the complex during the Cold War.

Building 28 (5ME.11945) (Contributing Building, built 1954; Photos 58–68; Maps 16 and 17)

Building 28 (5ME.11945) was designed in 1953 and constructed in 1954 by the Walker-Lybarger Construction Co. as the Maintenance and Repair Shop for large vehicles and heavy equipment associated with the uranium processing pilot plants. It is a 100’-x-240’, one-story, warehouse and shop building with a nearly flat roof and 12” pumice-concrete-block walls. The building consists of a 100’-x-180’ northern unit, oriented generally north to south, and a 60’-x-100’ southern unit, oriented generally east to west, that stands about 5’ taller. Both have built-up, gravel-covered asphalt roofs. An 18’-x-18’ shed addition with a welded, U-shaped steel-channel framework is on the southern end of the eastern side. It has a corrugated metal shed roof and is enclosed by a chain-link fence with inserted plastic slats. It appears on the 1956 map (Map 3) of the site, so is an addition from the period of significance. A 20’-wide concrete loading dock extends 50’ from the center of the eastern side. It is accessed by a ramp from the north that drops 3½’ below grade. Walkways above the ramp on the eastern and western sides have metal safety railings.

Many of the numerous wide and tall original garage bay openings have been completely or partly filled to accommodate changes in use; none contain the original roll-up doors. The bays on the northern unit are 12’ wide and 11’ tall. On the western side, all but one of six bays are partly filled with T1-11 plywood and have smaller metal roll-up garage doors or flush metal pedestrian doors with single lights filling the upper half (four single doors and one double door) and sliding aluminum-sash windows installed. Near the southern end of the western side, one of the doors is covered by a projecting triangular entry roof built of T1-11 plywood and supported by an 8”-x-8” post. One garage bay on the northern side is partly filled with T1-11 plywood and a smaller metal roll-up garage door and a flush metal pedestrian door with a single light filling the upper half have been inserted. Four garage bays are on the eastern side of the building, the two central of which are 20’ wide with one unaltered. The other three garage bays have been partly filled with T1-11 plywood and have three flush metal pedestrian doors with single lights filling the upper half, a set of flush metal double doors, and four sliding, aluminum-sash windows. Of the five large garage bays on the southern side, two have been filled with concrete blocks, and the others have been partly filled with T1-11 plywood and have smaller metal roll-up garage doors installed with flush metal pedestrian doors with single lights filling the upper half to the left. The concrete-block filled bays are filled flush with the building walls, but are recognizable because of the difference in wall texture.

Some original window openings have been modified, but many original multi-light, steel-sash windows with awning units are still in place. On the western side, three of the seven window openings are original, and the others are partly filled with T1-11 plywood and sliding aluminum-sash windows or air conditioning units. On the northern side, three of four window openings retain original windows. On the eastern side, three of four window openings have all or portions of the original windows still in place.

Alterations and Integrity: Nearly all of the garage door openings and windows have been altered by replacement or partial or complete filling. When these alterations took place is uncertain, but were likely made in the 1980s. The openings are still readily recognizable, and the building has its same massing and general appearance as an industrial repair facility. It should be noted that the labeling on the original plans of the north and south elevations is reversed. Pedestrian doors were originally flush metal doors with single lights in the upper half, which is the style of the current doors except for a single flush metal door on the eastern side. It is unknown how many doors currently on the building are original; doors installed in infilled areas are certainly modern installations. In 1982, the building's roof was rehabilitated. Electrical, cooling, and heating renovations were undertaken in 1986 to accommodate a reconfiguring of the interior space to include offices. At that time, some windows and doors were replaced. Additional interior remodeling took place from 1994 to 1996.

The building originally contained multiple vehicle repair bays of varying sizes, some with lifts, motor tune-up areas, front-end alignment equipment, major and heavy-duty repair areas. Also within the building were paint, radiator, welding, and body shops; an electrical/battery-repair area; a parts and storage room; a carpenter shop; and a vehicle-wash area. Original construction included pumice concrete block walls, a built-up flat roof, single-light wood doors, multi-panel wood roll-up garage doors, flush metal doors with single lights in the upper half, and industrial steel-frame windows in various configurations incorporating awning-type openings. According to Schweigert (1999), "The building provided important support to the uranium processing and purchasing operations at the site." It continued in this role through at least 1970. It is currently used as a business incubator for manufacturing start-up companies with no evident exterior alterations beyond changes in exterior doors and partial infilling of some of the garage bays. The building retains its imposing stature in the complex and its industrial characteristics. It is one of two large buildings in the southern portion of the Grand Junction Office complex (with Building 3022) that demonstrates the magnitude of the off-site projects carried out throughout the West by the office during the Cold War.

Building 32 (5ME.11948) (Contributing Building, built 1954; Photos 69–72; Map 18)

Building 32 (5ME.11948) is a one-story, 50'-x-114' steel-framed laboratory building, oriented generally north to south, built on a concrete slab foundation. It has a corrugated metal gable roof with elastomeric spray-on foam that was applied in the mid-1990s and is sided with standing-seam metal. Fenestration is regular, being sliding aluminum-sash windows (six windows are evenly spaced on the western side, five windows on the eastern side, and two on the southern side). A 1987 gabled entry projects from the center of the eastern side that has a composition shingle roof and T1-11 plywood siding; it has a flush metal door with a single light in the upper half. A second entry is south of center on the eastern side under a small awning; it has a single-panel wood door with a double light in the upper half containing wire mesh safety glass. A former doorway near the southern end of the eastern side is filled with T1-11 plywood. On the southern side is a flush metal double door west of center; an infilled single door entry filled with T1-11 plywood is east of center. On the northern side, a large central garage door opening is partly infilled with T1-11 plywood with a single flush metal door with a single light in the upper half west of center covered by a projecting awning. The eastern side is landscaped with lawn and ornamental trees, with a nearby picnic shelter (Building 32 Picnic Shelter). The area west and north of the building is enclosed by a chain-link fence with access through a gate on the northern end of the eastern side. The yard is filled with large storage containers, equipment, and small sheds.

Alterations and Integrity: Building 32 was designed and built in 1954 by the Walker-Lybarger Construction Company for dry chemical storage and as a warehouse for the uranium pilot plants operated by the National Lead Company. It was a mostly open space with a restroom in one end. According to the plans, it was a modified prefabricated metal-frame and metal-panel "Hudson" Building. Hudson Buildings were evidently similar to prefabricated Butler Buildings, but no information about the company that manufactured Hudson Buildings could be found. Original construction included flush wood doors with single lights in the upper half and a double door on one end. The wood door with safety glass on the eastern side of the building is likely an original door. The building was converted to a Warehouse and Core Inspection Facility in 1980. At that time, a window on the west end of the southern side was removed and the opening enlarged to accommodate the second door on that side, and a new "Butler" metal roof was installed. In 1983, it was converted into the Radon Calibration Laboratory with an office, storage area, and two laboratories. One of the laboratories contained a radon chamber and the other was a large environmental sciences laboratory, both associated with the uranium processing pilot plants. The entry vestibule on the eastern side was added in 1987. The building was equipped with fire sprinklers in 1991, and additional interior remodeling took place from 1992 to 1996. The original prefabricated metal-building characteristics have been retained despite some door and window changes, and the building continues to have its original warehouse appearance. Building 32 is an important element of the Grand Junction Office complex, as it demonstrates the initial use of the site for the development of uranium milling processes used at mills throughout the West during the Cold War and subsequent adaptation of buildings for new uses to the present day, while retaining their historic appearance.

Non-Contributing Resources

Non-contributing resources in this section are described generally from north to south as one proceeds through the district. All of the non-contributing resources were constructed outside of the period of significance.

Building 12 Picnic Shelter (Non-Contributing Structure, built 2014; Photo 73)

A picnic shelter was constructed south of the new southern entry to Building 12 in 2014. The open-sided structure is 30' square with a gable roof supported by 6"-x-6" steel posts over a concrete slab. The picnic shelter enhances use of the landscaped quadrangle at the heart of the office campus bound by buildings 810, 12, and 938. Because the shelter was constructed outside of the period of significance for the complex, it is considered non-contributing to the National Register district, but does not detract from the district.

Storage Container (Non-Contributing Building, built 2010; Photo 74)

A modern, prefabricated, metal shipping container is set on a concrete slab west of the southern end of Building 12. It measures 8’ x 40’, oriented generally north to south, and is used for secure storage. It was placed as a permanent fixture in 2010, so is of insufficient age to be considered contributing to the National Register district. The container is west of the office campus of Buildings 810, 12, and 938. Although visible from the landscaped quadrangle between the offices, it is unobtrusive.

Building 938 Picnic Shelter (Non-Contributing Structure, built late 1990s; Photo 75)

South of Building 938 is a modern picnic shelter, constructed in the late 1990s, consisting of a gabled aluminum sheet metal roof supported by a pipe railing over a 10’-x-20’ concrete slab. The shelter is of insufficient age to be considered a contributing element of the National Register district. It is south of Building 938 and is not visible from the landscaped quadrangle of the office campus comprised of Buildings 810, 12, and 938.

Building 2 Storage Shed (Non-Contributing Building, built 2014; Photo 76)

A 16’-x-20’ prefabricated, wood-frame storage shed, built in 2014, is oriented generally north to south adjacent to the western side of Building 2. The building is on a concrete slab foundation, has a gabled roof, is covered with T1-11 plywood siding, and has a roll-up garage door with a pedestrian door adjacent on the southern side and a pedestrian door on the northern side. The shed is of insufficient age to be considered contributing to the National Register district. Being on the western side of Building 2, it is mostly screened from view from the landscaped quadrangle of the office campus comprised of Buildings 810, 12, and 938.

Building 2 Prefabricated Garage (Non-Contributing Building, built 2010; Photo 76)

A modern, prefabricated, sheet metal garage, erected in 2010, is oriented generally north to south adjacent to the western side of the Storage Shed adjacent to Building 2. The metal-frame building measures 14’ x 14’, is on a concrete slab foundation, has a gabled roof, and is fully open on its southern side. The garage is of insufficient age to be considered contributing to the National Register district. Its setting on the western side of the storage shed west of Building 2 has resulted in its being completely screened from the landscaped quadrangle of the office campus comprised of Buildings 810, 12, and 938 and is almost completely screened from the primary view of Building 2 from the south or southeast.

Building 46 (Non-Contributing Building, built 1977; Photo 77)

Building 46 (5ME.11955) is a 50’-x-65’, one-story, metal-frame cafeteria building, oriented generally north to south, with a combination of offset gable, shed, and flat roofs of raised-seam sheet metal. It is comprised of three units with the central unit sided on the eastern side with fiber cement horizontal clapboard siding and an offset gable roof. The central unit is flanked to the north and south by units sided with flat fiber-cement panels. Entry to the building is on the eastern side through a full-glass aluminum-frame door with a sidelight to the north within a recess beneath a shed roof cover. Siding on the northern and southern sides is fiber-cement clapboard; on the western side flat, gray fiber-cement panels are used. A storage room with a shed roof projects above the flat roof on the northern side with a small hatch access door on the western end of the northern side. The only windows are four, single-light, fixed aluminum windows regularly spaced across the eastern side of the building from the doorway northward. Building 46 was constructed in 1977 as a cafeteria. It originally had solar-energy components that were constructed as a demonstration project that won an internal DOE award (Schweigert 1999). The solar energy elements have been removed from the building. Building 46 is of insufficient age to be considered contributing to the National Register district. It is situated southwest of the landscaped quadrangle of the office campus formed by Buildings 810, 12, and 938 and is not an obtrusive background element.

Building 54 (5ME.11958) (Non-Contributing Building, built 1989, moved to site 1992; Photos 39, 78–79)

Building 54 (5ME.11958) is a one-story, 72’-x-144’, modular steel-framed building, oriented generally east to west, on a concrete foundation, with a 5½’-x-16’ shed addition, oriented east to west, at the center of the southern side. The building is raised about 3’ above the ground and is covered with T1-11 plywood siding and skirting. It has a flat synthetic membrane roof. Fenestration on the building is sliding, one-by-one, aluminum-sash windows. Ten windows are regularly spaced on the southern side, twelve on the northern side, and two windows each on the eastern and western sides. Entries on the northern side are a double door near the eastern end and a single door west of center. The double door is a flush metal panel door; all of the single doors on the building are flush metal panel with a single, narrow, vertical light to one side in the upper half. The entry doors are accessed by open porches with wood steps and railings. On the southern side, a large door with a fixed single sidelight east of center is accessed by a concrete entry ramp from the east. Two entries accessed by open porches with wood steps and railings are farther west. A raised entry south of center on the eastern side is accessed by an open concrete landing with steps and a pipe railing.

Building 54 was originally used in 1989 as the headquarters for the Exxon-Valdez cleanup operation in Alaska. It was then dismantled, stored in Washington state, moved to Grand Junction for use during the Uranium Mill Remedial Action (UMTRA) mill tailings cleanup, and then purchased by the DOE and moved to the DOE office complex in 1992 (Schweigert 1991).

Building 54 is of insufficient age and was not at the site during the facility's period of significance, so is considered non-contributing to the National Register district. The building stands alone southwest of the office campus area of the site and serves as a backdrop to the Instrument Calibration Facility to the south. Its plain style is in keeping with the other buildings in the complex, and it does not detract from the character of the National Register district.

Building 30B (5ME.11947) (Non-Contributing Building, built ca. 1980; Photo 51)

Building 30B (5ME.11947) is a one-story, 30’-x-50’ steel-framed building, oriented generally north to south, immediately west of Building 3022. It has a shallow standing-seam sheet metal gable roof, sheet metal siding, and a concrete foundation. A large central garage door opening is on the western side that has been partly filled with T1-11 plywood and a smaller roll-up garage door inserted. Small shed-roof tool shed additions flank the garage door opening. A pedestrian door is on the southern end of the eastern side. The building has no windows. Building 30B was constructed about 1980 for storage of materials for contamination remediation activities. The building is of insufficient age to be considered contributing to the National Register district. The industrial appearance of the building is in keeping with the character of the district.

Building 30B Prefabricated Garage (Non-Contributing Building, built late 1990s, moved 2002; Photo 51)

A prefabricated sheet metal garage, erected in the late 1990s and moved to its current location in 2002, is adjacent to the northern side of Building 30B. The 12’-x-30’, free-standing building has a metal framework and a gabled roof. The garage is of insufficient age to be considered contributing to the National Register district. Its setting, adjacent to Building 30B and west of Building 30, effectively screens it from most vantage points in the district, rendering it unobtrusive.

Sheds 4 and 5 (Non-Contributing Buildings (2), built late 1980s, moved 2002; Photo 80)

Sheds 4 and 5 are two, modern, prefabricated, portable storage sheds a short distance north of Building 44A. Both are commercially constructed Tuff-Sheds that measure 10’ x 16’ with gambrel composition shingle roofs and T1-11 plywood siding. Both have entries centered on their northern sides. The sheds were built in the late 1980s and moved to their current locations in 2002. The buildings were constructed to be portable, and it is possible that they will be moved elsewhere in the complex or removed altogether in the future. Because of their recent age and non-permanent nature, the sheds are not considered to be contributing to the National Register district. Their small size and appearance does not compromise the character of the historic district.

Building 44A (5ME.11954) (Non-Contributing Building, built post-1990; Photo 81)

Building 44A (5ME.11954) is a 14’-x-18’, metal storage building west of Building 3022. It has a standing-seam gabled roof, is covered with sheet metal siding, and is built on a concrete foundation. It has metal double doors centered on the eastern side accessed by a concrete ramp. The building has no windows. Building 44A was built in 1990, so is of insufficient age to be considered contributing to the National Register district. The building’s industrial appearance fits with and does not compromise the character of the historic district.

Building 43 (5ME.11953) (Non-Contributing Building, built in 1973; Photos 82–83)

Building 43 (5ME.11953) is a 10’-x-30’, one-story, wood-frame, garage, oriented northwest to southeast, south of Building 30B and southwest of Building 3022. It has a corrugated sheet metal gable roof and siding, and is built on a concrete slab foundation. Corrugated sheet metal double doors are on the northwestern side with a concrete landing in front. The building has no windows. Building 43 was constructed in 1973, so is of insufficient age to be considered contributing to the National Register district. Its industrial appearance fits with and the character of the historic district.

Refrigerator Unit (Non-Contributing Structure, built 2011; Photo 84)

Situated just west of Building 26 is a 20’-square refrigerated container made of riveted aluminum. It has a flat metal roof and rests on a concrete slab. The refrigerator was installed in 2011 for use by an RTC client. The refrigerator unit is of insufficient age to be considered contributing to the National Register district. Its placement west of Building 26 largely screens it from view, making it an unobtrusive incompatible feature of the complex.

Building 65 (5ME.11963) (Non-Contributing Building, built 1995; Photo 85)

Building 65 (5ME.11963) is a one-story, 12’-x-48’, storage building, oriented generally east to west, that is open to the north. It has a standing-seam shed roof and is covered on all but the northern side with standing-seam metal siding. It has no foundation, a gravel floor, 2”-x-6” framing including paired 2”-x-6” studs. The framing is attached using stamped aluminum Strong-Tie joist hangers.[9] The building is divided into six bays with chain-link fence panels across the fronts of some of the bays. The building was constructed in 1995 for equipment storage and still serves that purpose. The building is of insufficient age to be considered contributing to the National Register district. Its industrial appearance is in keeping with the character of the historic district.

Building 32 Picnic Shelter (Non-Contributing Structure, built late 1990s; Photo 86)

A picnic shelter erected in the late 1990s is just northeast of Building 32. It is an arched pipe framework with a canvas cover that covers a 10’-x-16’ area. The picnic shelter is of insufficient age to be considered contributing to the National Register district. Furthermore, it cannot be considered a permanent element of the site and is likely to have a short lifespan and subject to removal in the future. Its insubstantial construction does not detract from the character of the historic district.

Sheds 2 and 3 (Non-Contributing Buildings (2), built 2010; Photo 86)

Two modern, portable storage sheds are north of Building 32; one within a fenced enclosure and one outside. These are both prefabricated units installed in 2010 with composition-shingle gable roofs and T1-11 plywood siding. Shed 2 measures 10’ x 16’, oriented generally northwest to southeast, with its T1-11 plywood door on the southeastern side. Shed 3 measures 10’ x 20’, oriented generally southwest to northeast, with a T1-11 plywood door on the southwestern side. Because of their recent age and non-permanent nature, the sheds are not considered to be contributing to the National Register district. The buildings were constructed to be portable, and it is possible that they will be moved elsewhere in the complex or removed altogether in the

[9] Joist hangers of this sort were first marketed and patented in 1970. They are pronged joist hangers invented by Tyrell T. Gill, patented August 24, 1970 under US Patent No. 3,601,428, and assigned to Simpson Co. (Simpson Strong-Tie Company, Inc. 2015).

future. Their small size and appearance does not compromise the character of the historic district.

Shed 1 (Non-Contributing Building, built 2013; Photo 87)

Shed 1 is a modern, prefabricated, wood-frame storage shed that measures 6' x 6'. It was built in 2013 on a concrete slab foundation, has a gable roof, is covered with T1-11 plywood siding, and has a door on its southern side. The shed is not considered to be contributing to the National Register district. It is situated in the far southern portion of the complex area, away from other buildings. Its small size and appearance does not compromise the character of the historic district.

Integrity

The DOE Grand Junction Office exhibits strong integrity of location, setting, feeling, and association, albeit a lesser degree of integrity of design, materials, and workmanship. Because the complex has grown in place, with buildings being erected, removed, and repurposed, originating as a Manhattan Project facility, evolving as an AEC Cold War complex, and continuing as a DOE facility, it has excellent integrity of location. The setting has remained remarkably intact with no major intrusions. The isolated setting sought for the highly secretive Manhattan Project uranium procurement and refining facility, which was ideal for subsequent use as an AEC Cold War office and experimental uranium processing facility, is still a character-defining feature of the complex. Perimeter fencing surrounding the facility with limited access points is largely from the Cold War era and is a continuing characteristic that demonstrates the requirement for restricted access and security. The Manhattan Project office is still present (part of Building 12). The expanded mission of the complex during the Cold War is represented by the complex of offices (Buildings 8, 9, 10, 12, and 38) forming a campus around an open, landscaped quadrangle, demonstrating its prime role as an administrative facility for uranium procurement, program contracting throughout the trans-Mississippi West, and uranium detection, discovery, recovery, and refinement investigations of regional, national, and international importance. The office complex today is little changed from its character and appearance during the Cold War. Buildings added since the period of significance generally have an industrial appearance that fit sufficiently well with the historic elements. Two buildings, Buildings 7 and 40, not within the nomination boundaries, actually contribute to setting, as they were originally part of the complex during the Cold War era. In the event that the adjacent land on the northern side of the complex is reacquired by RTC, these buildings conceivably could be added to the district.

The DOE Grand Junction Office retains good integrity of feeling as an industrial and administrative complex where operations during the Manhattan Project and the Cold War era were planned, facilitated, and orchestrated. The office campus in the northern portion of the complex forms a cohesive administrative center. The buildings and other facilities away from the office campus were utilized for experimental uranium processing plants, laboratories, equipment calibration facilities, warehouses, and maintenance facilities. Many of these buildings still exist, but changing missions of the complex has resulted in removal of most early buildings and facilities, repurposing of others, and removal of still others that were too contaminated by radioactive residue for them to continue to be used safely (Table 2). Removed in 1946 after the Manhattan Project was complete were the refinery equipment, laboratory, and warehouses and shipping buildings because no further use for them was anticipated. All but the heating plant portion of the refinery building was removed in 1948. Cold War-era buildings removed because of the changing mission of the complex and radioactive contamination were the pilot plants, warehouses, and storage buildings. Several temporary offices and storage buildings were built after the period of significance and have also been removed. This has left the major offices from the Manhattan Project and the Cold War era (Buildings 8, 9, 10, 12, 26, and 38), the warehouse/changing building from the Manhattan Project that has been converted to offices (Building 2), major laboratories (Buildings 22, 22A, and 32), the substantial maintenance and repair building (Building 28), the large supply and operations building (Building 30), the guard house (Building 29), and the calibration facility. The removal of the industrial, warehouse, and storage buildings has only minimally diminished the integrity of the district as Manhattan Project and Cold War office complex where acquisition of uranium was planned and managed, where new technologies were devised, where research was spearheaded, and where planning, contracting, administration, and management of uranium exploration, mining, and milling was carried out for the entire western United States. The industrial appearance of most of the buildings away from the office campus is a historically accurate reflection of how the complex was utilized. The fenced enclosure surrounding the complex and the procedures for entering the complex are a continuation of the historical security measures that were put in place particularly during the Cold War era.

The buildings and other elements of the facility retain excellent integrity of association, as they were the offices and other facilities that were in use during the Manhattan Project and the Cold War era. Most continue to serve similar functions to the present day, housing DOE personnel and their contractors that are involved in the long-term management of contaminated sites throughout the West that originated during or before the Cold War era through AEC direction or facilitation. The buildings no longer occupied by the DOE that are now being used by RTC as offices and industrial facilities continue a comparable trajectory of use.

The complex has good integrity of design as a Cold War-era facility with rare survivals from the earlier Manhattan Project. The complex began as an office, ore-receiving, uranium-concentration, and concentrate-shipping facility during the Manhattan Project set along what was at that time the Denver & Rio Grande Railroad line with a spur entering the facility. This basic design of a core office complex with surrounding laboratory, industrial, maintenance, and storage infrastructure grew throughout the Cold War and is still evident at the site today, despite having certain elements removed as a result of changing missions during the Cold War or out of necessity because of radiological contamination.

The complex has overall fair integrity of materials, as many buildings have had windows, doors, siding, and roofs altered or replaced. However, the complex is not considered significant architecturally, but rather for its significance under Criterion A, as a place where important work was done to guarantee the security of the nation as part of a larger military operation determined to gather the materials necessary to assemble a nuclear weapon arsenal as a deterrent to the Soviet Union, which was feared as a rival intent on the destruction of American ideals, if not the nation itself, and its allies. Consequently, building alterations are not so critical to the integrity of the overall facility, as the buildings generally retain enough characteristics in their placement (office complex with outlying industrial elements) and form (utilitarian buildings, structures, and sites) to convey the significance of the property. Such characteristics include the rather plain, utilitarian offices forming a cohesive administrative campus in the northern portion of the complex, and outlying buildings, structures, and sites of a more industrial nature for experimentation, field staging, ore procurement and shipment, and maintenance on the surrounding grounds. Except for the rather uniform placement of the main office buildings around an open quadrangle, little formal planning is evidenced within the remainder of the complex, except that it is generally south of the office complex. This, in itself, is a defining characteristic, as it shows the evolving mission of the AEC Grand Junction Office during the Cold War and the agency's ability to develop facilities as needed throughout the available land contained within the complex area.

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- [x] A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] B. Property is associated with the lives of persons significant in our past.
- [ ] C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [ ] D. Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply.)

- [ ] A. Owned by a religious institution or used for religious purposes
- [ ] B. Removed from its original location
- [ ] C. A birthplace or grave
- [ ] D. A cemetery
- [ ] E. A reconstructed building, object, or structure
- [ ] F. A commemorative property
- [x] G. Less than 50 years old or achieving significance within the past 50 years

Areas of Significance
(Enter categories from instructions.)
Military
Industry
Politics/Government

Period of Significance
1943–1970

Significant Dates
1943, 1945, 1947, 1948, 1970

Significant Person
(Complete only if Criterion B is marked above.)

Cultural Affiliation

Architect/Builder
Stearns-Roger Manufacturing Company
Walker-Lybarger Construction Company
Thomas Edgar Moore
Herbert Summerfield Day

Statement of Significance Summary Paragraph (Provide a summary paragraph that includes level of significance, applicable criteria, justification for the period of significance, and any applicable criteria considerations.)

The Department of Energy Grand Junction Office is nationally significant under Criterion A under the Military, Industry, and Politics/Government areas of significance for its role in the Manhattan Project and Cold War from 1943 to 1970. The 1943 initial date for the Period of Significance is when the Materials Section of the Manhattan Engineer District established the site as its headquarters for the procurement of domestic uranium for the Manhattan Project. The 1970 terminal date of the Period of Significance is derived from the date when the federal government ceased purchase of domestic uranium for Cold War weapons production. The office complex retains rare resources from the 1943–1945 Manhattan Project, which developed the world's first nuclear bomb. All of the domestically-acquired uranium used by the Manhattan Project (14.2% of the total uranium) was obtained by personnel working at the office, concentrated on site, and shipped to other Manhattan Project facilities in Tonawanda, New York; Oak Ridge, Tennessee; Hanford, Washington; and Los Alamos, New Mexico for further refinement, enrichment, and incorporation into test devices and the bombs detonated over Hiroshima and Nagasaki to end World War II.

The complex also served as a Cold War era facility from 1947 to 1970 as the center for uranium ore prospecting, mining, and concentration for the production of America's nuclear military arsenal and for the domestic nuclear industry. The focus of the office was on procurement of sufficient uranium for use in nuclear weapons. From the DOE Grand Junction Office, the AEC orchestrated massive domestic prospecting throughout the trans-Mississippi West, large-scale cooperative federal agency and private party geological studies and uranium exploration projects, withdrawals of promising uranium-bearing lands from the public domain and their leasing to private mining companies, erection of experimental uranium concentration plants to devise new and better processes, contracting with private industry for the erection and operation of uranium mills throughout the West, distribution of educational literature to facilitate prospecting and mining, ore buying at set prices to stimulate mining and milling of uranium in order to acquire sufficient quantities of uranium ore for weapons production and domestic uranium needs, development of calibration facilities for surface detection and bore-hole logging equipment for enhanced discovery and assessment of uranium ore bodies, and geological studies using aerial remote sensing to identify economically viable uranium ore bodies nationally and internationally.

The site satisfies the requirements for Criteria Consideration G due to its exceptional significance deriving from its association with and unique role in the Manhattan Project- and Cold War-era development and acquisition of domestically-produced uranium.

Narrative Statement of Significance (Provide at least **one** paragraph for each area of significance.)

Military

The DOE Grand Junction Office is nationally significant for Military because it was the only office in the country established for acquisition of domestic uranium for the Manhattan Project, between 1943 and 1945, and for nuclear weapons production during the Cold War, between 1947 and 1970. Acquisition of domestic uranium during the Manhattan Project of World War II made it possible for the atomic (nuclear) bombs to be developed on a timetable that was anticipated to be necessary to precede development by Germany and to bring war to a close with Japan. During the Cold War, acquisition of domestic uranium made it possible for weapons production on the scale necessary for the U.S. nuclear arsenal to be a deterrent to the Soviet Union and its allies.

Scientific advances in nuclear physics in the 1930s made it clear that nuclear fission was a reality and that the development of a nuclear bomb was possible. Fear that Nazi Germany was developing such a bomb was brought to the attention of President Roosevelt in 1939. The government began investigations into developing an atomic bomb from uranium. The Uranium Committee appointed by the President reviewed the state of scientific knowledge and recommended funding in support of nuclear research. Scientists quickly concluded that a nuclear fission bomb was possible, so long as sufficient quantities of uranium and plutonium could be obtained. In late 1941, President Roosevelt authorized development of an atomic (nuclear) bomb. The secret military project to create the atomic bomb was known as the Manhattan Project, named for where the project was initially headquartered in New York City. The purpose of the Manhattan Project was to take the discovery of nuclear fission from the laboratory to the battlefield in order to achieve military superiority (Gosling 1999). Because of the extensive amount of construction required and the need for strict security, the management of the program to develop the atomic bomb was placed under the jurisdiction of the Army Corps of Engineers, which established the Manhattan Engineer District (MED) in August 1942. The MED had responsibility for process development, materials procurement, engineering design, site selection, and facilities construction. Immediately, Leslie R. Groves was promoted to brigadier general to oversee the MED effort. The Grand Junction Office began in 1943 as the headquarters for the Materials Section of the MED where efforts to acquire and refine domestic uranium for the Manhattan Project were orchestrated. The Grand Junction Office coordinated the recovery of uranium ore from tailings of existing vanadium mills in western Colorado and southeastern Utah, prompted mining of additional uranium ore by local miners, and concentrated and shipped uranium ore for further refinement at on-site facilities at the Grand Junction facility that contributed to the production of sufficient quantities of uranium for experimentation and development of a nuclear bomb. The initial explosion of a nuclear device was at the Trinity test site in southern New Mexico on July 16, 1945. The success of this experiment resulted in the assembly of two nuclear bombs that were dropped on Japan: the first on Hiroshima on August 6, 1945, and the second on Nagasaki on August 15, 1945. Japan’s surrender on September 2, 1945 quickly ensued, bringing an end to World War II. The log cabin office (part of Building 12) and

Building 2 at the DOE Grand Junction Office are rare resources from the Manhattan Project. In particular, the office is one of only a very few Manhattan Project offices that have survived to the present day, including the large office building at 270 Broadway in New York City from which the project was named. Building 2 is the only surviving office at a facility constructed specifically for the acquisition and refinement of ore for the assembly of the first nuclear bombs. A comparable office may have survived at Los Alamos, New Mexico, but it is uncertain if offices have survived at Oak Ridge, Tennessee; Hanford, Washington; or other Manhattan Project facilities nationwide.

The Grand Junction Office played a vital national role in subsequent activities carried out by the Atomic Energy Commission (AEC) during the Cold War, which had international impacts. The AEC took over the role of the former MED, and, later the Department of Energy (DOE) was the descendant agency that took over the role of the AEC. The AEC Grand Junction Office oversaw the exploration and acquisition of uranium ore for military weapons production. The source of domestic uranium was entirely west of the Mississippi River and focused largely on the Colorado Plateau of Colorado, Utah, New Mexico, and Arizona, though uranium was also mined in Wyoming, Texas, North and South Dakota, Nevada, California, Washington, Oregon, and Idaho. AEC exploration of uranium deposits in concert with the U.S. Geological Survey (USGS) and private contractors throughout nearly half the nation was overseen by the Grand Junction Office. Work initially included widespread core drilling and, later, aerial radiometric surveys throughout the West. Public participation in exploration was encouraged, and private contract relationships were established for uranium mining, milling, and concentration with guaranteed purchase prices that set off a uranium exploration and mining boom throughout the West with the most extensive being on the Colorado Plateau. Coupled with these activities, the AEC and its contractors at the Grand Junction Office were involved in the development of concentration and refining processes, innovative detection equipment, and facilities and techniques for standardizing and calibrating detection and logging equipment. Scientists employed by the government and its contractors pioneered techniques, equipment, and studies that have been applied nationally and internationally. These are detailed in the context narrative that follows.

Industry

The DOE Grand Junction Office is nationally significant for Industry due to its role in the development of uranium mining and milling as a full-fledged industry in America. Prior to the Manhattan Project, virtually no demand existed for uranium, though some industrial uses were made of uranium as a byproduct of radium and vanadium production. Demand for uranium initiated by the Manhattan Project and resulting new uranium refining techniques were directed from the Grand Junction Office in partnership with existing vanadium mining companies in the region. Subsequent industrial mining and refining development from government demand for high-grade uranium for weapons production during the Cold War was orchestrated by the Grand Junction Office. Government demand resulted in government-funded stimulus for ore production; uranium prospecting and exploration throughout the entire western United States by interested citizens, mining companies, and federal agencies, such as the U.S. Geological Survey, facilitated by the Grand Junction Office through dissemination of technical information and monetary stimulus; mine development and ore production by small and large companies benefitting from government leases and guaranteed ore purchases administered through the Grand Junction Office; and construction of uranium concentration mills throughout the western United States through government contracts administered through the Grand Junction Office using technologies developed at pilot plants at the office by government and industry scientists. For over 20 years, between 1948 and 1970, Cold War demand for uranium by the federal government created a uranium industry that stimulated the economies of rural communities throughout the west. Although the industry has not been as robust since government purchase of uranium ceased in 1970, the effects of the industry are still evident in those communities.

Hand-in-hand with the acquisition of uranium ore and exploration of the Colorado Plateau and the rest of the western U.S. for uranium, the AEC facilitated the growth of the domestic uranium industry. The same efforts and activities undertaken to obtain sufficient uranium for weapons production resulted in sufficient uranium for the domestic uranium industry, particularly nuclear energy production in the 1960s and early 1970s. Private enterprise demand for uranium increased and prolonged the prospecting and mining boom into the late 1970s, though this production did not contribute to the uranium stockpile for Cold War weapons production. In addition, the office regulated (and still regulates) leasing of uranium mining lands withdrawn from the public domain as a result of the exploration projects that began in 1948. This enabled regulated extraction and sale of uranium ore by private companies in partnership with the AEC, all headquartered from the Grand Junction Office. In addition, experimental and scientific advances in refining uranium ore and in detecting recoverable uranium deposits took place at and through the oversight of personnel at the Grand Junction Office. These advances facilitated private mining, milling, and use of uranium.

Innovative industrial processes and equipment were developed by government employees and contractors at the Grand Junction Office, beginning with the recovery and concentration of uranium ore for the Manhattan Project at its on-site refinery (no longer extant) between 1943 and 1945 and continuing through Cold War exploration, mining, and refinement. The geologic exploration programs and studies provided the needed information for industrial uranium mining to be carried out successfully, and the experimental pilot plants (no longer extant) at the Grand Junction Office, in use from 1952 to 1958 during the height of the Cold War, resulted in the development of the most efficient technologies that were then used in uranium mills that were constructed throughout the western United States. This not only enabled the government to obtain sufficient quantities of high-quality uranium ore for weapons production during the Cold War, but insured that mining companies and mill operators could operate profitably. Instrumental facilities that are no longer present were the refinery built to process uranium ore and the two pilot plants used to devise new processes for the recovery and refinement of uranium ore. Government and contract scientists working at the Grand Junction Office developed and improved electronic devices that facilitated prospecting, such as Geiger counters and drill-hole logging equipment. The most visible evidence of the industrial advances made at the complex is the calibration facility. This was an innovative facility that was used in the development of radiometric detection equipment and standardized calibration of that equipment. It was the first facility of its kind and the prototype for comparable calibration facilities worldwide (Schweigert 1999, 2001; Stromswold 1994).

Politics/Government

The DOE Grand Junction Office is nationally significant for Politics/Government as the only office of the Manhattan Project for the administration of procurement of domestic uranium and as the primary office overseeing acquisition of domestic uranium during the Cold War, together covering the period of 1943 to 1970. During the Manhattan Project, the Grand Junction Office, as the headquarters for domestic uranium procurement for the Materials Section of the MED, negotiated and oversaw contracts for the purchase of uranium ore and for the upgrading and operation of former vanadium mills as uranium-concentrating mills in western Colorado and southeastern Utah. The office also constructed and oversaw the operation of the uranium refinery at the Grand Junction Office complex through which all of the concentrated ore from the other mills passed prior to shipment. This also included initiation of large-scale uranium mining and milling when the supply of uranium ore available as tailings at regional vanadium mills was exhausted. With the end of World War II and the initiation of the Cold War, the Grand Junction Office continued in its role as the administrative center for domestic uranium acquisition under the AEC, further expanding its negotiation and oversight of contracts for construction and operation of uranium mills throughout the western United States. The office also provided stimuli for expanded mining and exploration by individuals and companies, partnered with the U.S. Geological Survey on an enormous core drilling exploration program, withdrew public lands suitable for uranium mining, and administered mining leases on those lands. The growth of the Grand Junction Office during the Cold War reflects the increased role of the agency and the need for office space and other facilities for federal employees engaged in administrative activities and ongoing projects and for contractors hired to facilitate the mission of the AEC and, later, the DOE.

URANIUM, RADIUM, AND VANADIUM HISTORICAL CONTEXT

The mining of radium, vanadium, and uranium has played a very important role in the industrial development of the Colorado Plateau, tying the relatively remote region to larger national and international markets. From the late nineteenth century through the early twenty-first century, a series of mining booms and busts have left a profound impact on the economy and landscape of the region. An overview of early exploration and mining is important in understanding how the region became integral to the Manhattan Project and the nation’s atomic energy program for nuclear weapons production during the Cold War and domestic power production.

Initial Discovery of Uranium and Radium

Uranium ore was first discovered in western Colorado around 1880, when brothers Andrew J. and Shadrick Talbert encountered a bright yellow material embedded in a sandstone formation while prospecting for gold and silver in the area of Roc Creek, a tributary of the Dolores River between Paradox Valley and Sinbad Valley in western Montrose County, Colorado. Not knowing what sort of material was present but suspecting that they had happened upon potentially valuable ore, the Talberts staked a claim and sent samples of the material to an assayer in Leadville, Colorado. The assayer was unable to identify the primary constituents of the material, but reported that it contained gold valued at $5 per ton (Chenoweth 1993; Moore and Kithilf 1913:18; Twitty 2008).

In 1896, miner Thomas Logan[10] and Gordon Kimball, a Ouray-based capitalist, relocated the Talberts' claim and sent samples of the yellow material to the Smithsonian Institution in Washington, D.C., where it was eventually determined to be a previously unknown type of uranium and vanadium ore. That same year, Charles Poulot arrived in Colorado from France where he had graduated from the University of Paris (Université de Paris, known colloquially as the Sorbonne) School of Mines.[11] He had been sent to Colorado by a French syndicate to identify and purchase uranium prospects. Kimball sent ten tons of what he thought was copper ore to Denver. The ore proved to be rich in uranium and purchased by Charles Poulot for $2,700. Some of this ore was sent to France for further analysis. In 1898, Poulot went to the Cashin Copper Mine in the Paradox Valley of western Montrose County to obtain additional samples of uranium ore, which he shipped the next year to his former Sorbonne professor, Charles Friedel at the University of Paris (Université de Paris).[12] Friedel and Edouard Cumenge,[13] a French mineralogist and mining engineer, determined that the ore was previously unidentified potassium uranium vanadate. At the suggestion of Crumenge, they named the ore "carnotite," in honor of French chemist Marie-Adolphe Carnot.[14] Their identification of the ore was published in Paris in February 1899, two months after the discovery of radium by Pierre and Marie Curie.[15] French scientist Antoine Henri Becquerel[16] and the Curies also received samples of carnotite from

[10] No information could be found about Thomas Logan.

[11] Charles Ernest Poulot (1859-1929) was a French chemical engineer who conducted research on silver mines in Bolivia, carnotite ore in Colorado, molybdenum, tungsten, and platinum in Australia, and phosphates in Tunisia, Morocco, and Ethiopia.

[12] Charles Friedel (1832-1899) was a French organic chemist and mineralogist. He became Professor of Chemistry and Mineralogy at the Sorbonne in 1876.

[13] Edouard Cumenge (1828-1902) worked as a consulting mining engineer in Spain, Italy, Greece, Venezuela, Mexico, Eastern Europe, and the U.S.

[14] Marie-Adolphe Carnot (1839-1920) was a French chemist and mining engineer. He became a professor at the Ecole d'Mines in 1868, was the French Chief of Engineers beginning in 1881, became the Inspector General of Mines in 1894, and was the Dean of the Ecole Nationales de Mines from 1901-1907.

[15] Pierre Curie (1859-1906) was a French physicist and a pioneer in the study of radioactivity. He graduated from the Faculty of Sciences at the Sorbonne in 1878 and was appointed Professor of Physics there in 1895. Marie Curie (1867-1934) was born in Poland and moved to Paris in 1891 to engage in higher education in physics, chemistry, and mathematics at the Sorbonne. While there, she met Pierre Curie, with whom she shared research interests; they were married in 1895. The discovery of radioactive minerals by Henry Becquerel led the Curies to conduct further research, resulting in their identification of radium and polonium in 1898. For their work on radioactivity, they and Becquerel were awarded the Nobel Prize in Physics in 1903. In 1906, Pierre was killed in a tragic accident, and Marie was appointed to be the Chair of the Physics Department at the Sorbonne in his place. The Radium Institute was established in 1909 with Marie as the director to enable scientific and medical radium research. The organization was highly supported by American scientists and benefactors. In 1910, Marie succeeded in isolating radium in pure form; she was unable to do the same for polonium. In 1911, she was awarded her second Nobel Prize for the discovery of radium and polonium and the isolation of radium. She continued her research until her death in 1934, which was the result of radiation exposure.

[16] Antoine Henry Becquerel (1852-1908) was a French physicist who discovered natural radioactivity. He became an Assistant at the Museum of Natural History in Paris in 1877 and received a Doctor of Science from the Polytechnic in 1888. In 1892, he became Professor of Applied Physics at the Paris Museum and a Professor at the

Poulot. It is likely that the radium that the Curies discovered was from the ore shipped by Poulot. The Curies soon confirmed that carnotite contained uranium, radium, and vanadium. The carnotite ore from Poulot originating from Colorado was of exceptionally high quality compared to other ores of similar composition known at the time, garnering it worldwide attention for its extraordinary economic and scientific value (Chenoweth 1993; Moore and Kithilf 1913:18; Robison 2015:125; Schweigert 2001; Twitty 2008).

Radium was much sought after in the late 1890s and early 1900s for medical experiments with the Curies in the lead. The discovery of radioactivity opened up new avenues of research regarding its nature and its potential medical benefits. Radium was in particular demand because of its strong radioactivity, but was difficult to isolate. Radium's unusual characteristics included luminosity, radioactivity that was useful in the treatment of certain types of cancer, and x-rays that enabled an internal view of the human body for the first time. Research using radium quickly resulted in many legitimate medical uses and the development of commercial products, but many sought to exploit radioactivity's renown by marketing products of questionable effectiveness and applicability, such as in cosmetics, foods, drinks, medicines, and home medical treatments, some of which caused real harm. The more dangerous characteristic of radioactivity, damage to DNA molecules that cause cellular mutations resulting in cancer, was not understood until much later (Schweigert 2001; Twitty 2008).

Carnotite Mining Boom – 1899-1923

The demand for radium and its resulting high price stimulated a mining boom in the Colorado Plateau region focused on carnotite ore. Although raw ores were initially shipped to Europe for processing, the high price of transportation soon resulted in attempts to refine carnotite in western Colorado. Because of the extremely small amounts of radium in the ores, no attempt was made to extract it. Rather, the uranium/radium ores in the carnotite were only concentrated to a point where they could be shipped to refineries, initially in France, but later in Pittsburgh, Pennsylvania, and still bring a profit. Although recognized as a constituent element, vanadium in carnotite was of minor concern.

In 1899, Charles Poulot and Charles Voilleque formed the Rare Metals Mining & Manufacturing Company in Denver for the mining of tungsten as an alloy for steel manufacture and for the recovery of radium and uranium from carnotite (Fleck 1929). Tungsten ore was processed at a mill at Gladstone near Silverton, Colorado, in the San Juan Mountains; carnotite was processed at a mill at Paradox in western Montrose County, Colorado, presumably the mill at the Cashin Copper Mine (Anonymous 1899). In 1900, Poulot and Voilleque leased the Cashin Mine on La Sal Creek just west of the Paradox Valley and began extracting carnotite. They processed the ore at a mill at Camp Snyder (5SM.1944; Poulot and Voilleque Millsite), on the Dolores River south of Paradox, with the assistance of James McBride, a mining engineer from Michigan who was associated with the Cashin Mine (Chenoweth 1993; Robison 2015; Twitty 2008). The plant closed in 1901, having produced 15,000 pounds of uranium oxide ore that was sent to the eastern

Polytechnic in 1895. His discovery of radioactivity in 1896 led to his sharing the Nobel Prize with Pierre and Marie Curie in 1903.

U.S. and Europe for further processing, and Poulot returned to France (Robison 2015). Herman Fleck[17] and Charles Carpenter[18] unsuccessfully ran the plant in 1902 and 1903 using a new process developed by Fleck and William G. Haldane.[19] Operating the plant in 1904, Carpenter teamed with Justin H. Haynes, a Denver chemist and metallurgical engineer, as the Western Refining Company using another process, which recovered uranium and vanadium, but apparently no radium.[20]

The demand for carnotite created by the mills spurred a boom in prospecting and small-scale mining between 1902 and 1905. The area around Slick Rock along the Dolores River in western San Miguel County, Colorado, particularly, produced sufficient quantities of radioactive metal ore during this period to demonstrate the profit potential of the area's carnotite industry. Most mines from this period were relatively small and involved canyon rim deposits that did not require extensive mine workings for extraction (Chenoweth 1993). Beginning in 1905, the carnotite industry in western Colorado declined when European-produced pitchblende[21] was found to be a more economical source of radium (Twitty 2008). Still attempting to capitalize on the uranium ores of the area, Haynes formed the Dolores Refining Company with Wilbur D. Engle[22] in 1905, and built a new reduction plant on the Dolores River using what was known as the Haynes-Engle process for the recovery of uranium and vanadium.[23] This process also proved inadequate, particularly because of falling prices, and the mill closed in 1909 (Robison 2015).[24]

Domestic carnotite staged a comeback beginning in 1910, spurred by the development of successful processes for extracting radium[25] and increased use of radium for medical

[17] Herman Fleck was a professor of chemistry at the Colorado School of Mines in Golden, Colorado.
[18] No information could be found about Charles Carpenter.
[19] William George Haldane was a professor of metallurgy at the Colorado School of Mines in Golden, Colorado. He later worked as the Superintendent of the U.S. Vanadium Company mill at Uravan in the early 1940s. He and Fleck had written an article on the radioactivity of carnotite ore in 1909 (Haldane, William G., and Herman Fleck, "the Radioactivity of the Carnotite Ore of Southwest Colorado" *Mining Science* 60(1557):512-514, December 2, 1909. The Fleck and Haldane process treated carnotite ore with sulphuric acid to put metals into solution. It was then decanted and treated with sulphur dioxide gas to create iron and vanadium compounds. The solution was then treated with limestone to develop a uranium/vanadium concentrate leaving the radium in concentrated residual slimes (Moore and Kithil 1913:74-75).
[20] This process roasted crushed carnotite ore then boiled it in sodium carbonate to extract uranium and vanadium, with additional uranium recovered by adding sodium hydroxide to precipitate sodium urinate (United States Geological Survey 1907:531).
[21] Pitchblende is massive, granular deposits of uraninite of a lustrous brown to black color from which its name derives. It is the ore from which uranium was first identified in 1789 and from which the Curies first identified radium and polonium in 1898.
[22] Wilbur D. Engle was a Professor of Chemistry at the University of Denver.
[23] The Haynes-Engle process boiled crushed ore in an alkaline solution of sodium carbonate or potassium carbonate to dissolve the uranium and vanadium. Uranium was then precipitated with sodium hydroxide as sodium uranate. Vanadium was precipitated with lime to form calcium vanadate. Radium remained as an insoluble residue that was washed to remove sulphates and leached in hydrochloric acid (Moore and Kithil 1913:72).
[24] The location of this mill is presently unknown.
[25] Economical extraction of radium from carnotite ores was through a process of removing the uranium and vanadium and boiling the radium extract in nitric or muriatic acid (Moore and Kithil 1913:76-78).

experiments. Founded in 1911 by Joseph M. Flannery,[26] Standard Chemical Company of Pittsburgh, Pennsylvania, quickly established and leased a number of claims in the Paradox Valley area. Initially, Standard Chemical shipped carnotite ore to an experimental mill in Pennsylvania for processing; however, by 1912, a concentration mill—known as Joe Junior (site 5MN.4997)—was built along the San Miguel River in western Montrose County at what later became the uranium mining town of Uravan. The mill removed sand from the carnotite ore and thereby reduced the weight of the material that was shipped to the company's radium refinery at Canonsburg, Pennsylvania (Chenoweth 1993; Lubeneau 2005; Twitty 2008).[27]

During this period, the Colorado Carnotite Company, a Colorado company in operation between 1912 and 1920, and the Radium Company of America, headquartered in Sellersburg, Pennsylvania, where it had a large mill, also played important roles in radium ore mining, purchasing, and refining. The Radium Company constructed another set of radium refineries in Pennsylvania. However, technological shortcomings at these refineries continued to have a negative effect on the profitability of radium-ore mining and production; the majority of western Colorado carnotite ore was still shipped to Europe for refining (Twitty 2008). In order to improve these conditions, the U.S. Bureau of Mines entered into a cooperative agreement with the National Radium Institute of Denver from 1913–1916. The National Radium Institute was established by Dr. Howard Kelly[28] of Johns Hopkins University and James S. Douglas, a mine speculator with a medical background, to facilitate interest in radium for medical research and the development of new technologies for the mining and refinement of radium from carnotite ores, including a concentration mill in Long Valley, just north of the Paradox Valley (National Radium Institute Mill; site 5MN.8267). They had a plant in Denver where efficient radium extraction techniques were experimented with. The program resulted in a resurgence of mining and processing of carnotite in west-central Colorado and southeastern Utah, stimulated by the government's encouragement of further prospecting for carnotite ores that contained radium. During the 1910s, drilling techniques were improved sufficiently to enable identification of carnotite ore away from the canyon rim exposures, substantially increasing the amount of ore available for mining and processing (Schweigert 2001; Twitty 2008).

The beginning of World War I in 1914 caused a decrease in demand for radium by disrupting international markets for and transportation of vanadium and radium. By 1917, with European radium refineries converted to other types of production facilities for the war effort, the

[26] Joseph M. Flannery (1867-1920) was a Pittsburgh, Pennsylvania, businessman who, with his brother, James J. Flannery (1855-1920), was instrumental in the development of the vanadium-alloy steel industry in America. Together they founded the American Vanadium Company and established a vanadium mill in Pittsburgh. They were also the founders of the Flannery Bolt Company and promoters of vanadium steel. When their sister became ill with cancer in 1909, Joseph found that the supply of radium for cancer treatment was in short supply and founded the Standard Chemical Company in 1911 to remedy the situation. The company ceased producing radium in 1921 (Lubenau 2005).

[27] The town of Uravan, including the Joe Junior Mill, was listed on the State Register of Historic Properties on November 9, 1994; it was delisted on January 26, 2012 because of demolition during radioactive remediation.

[28] Howard Atwood Kelly (1858-1943) was a physician and one of the founders of John Hopkins University in Baltimore, Maryland. He is credited with establishing gynecology as a medical specialty. Kelly was among the first to use radium in the treatment of cancer and founded the Kelly Clinic in Baltimore, which was a pioneering radiation therapy center.

European radium supply had dwindled substantially, forcing European radium researchers to turn to American refineries to fulfill their needs for the material. Demand for radium for use in luminous paint for the production of gauges and dials for tanks produced for the war effort reinvigorated the carnotite mining industry in America (Amundson 2002). In 1917, western Colorado became the world's leading radium-production area with little competition because of World War I in Europe. The region retained the status of world leader in radium production until approximately 1922, soon after high-grade pitchblende ore from the Belgian Congo, first discovered in 1913, was introduced on the world market at a price intended to eliminate American producers. Because of the plummeting price for radium, most mining and milling of carnotite ceased on the Colorado Plateau by 1923; radioactive metals mining in Colorado all but lay dormant until economic conditions caused it to revive in 1935, mostly as a consequence of demand for vanadium. What little demand existed was for sodium uranyl, sodium diurnate, and uranium oxide for use in the ceramic and glass industry because of the yellow color it imparted and for uranyl nitrate for use in photographic tinting (Chenoweth 1993; Hahne 1989; Twitty 2008; Atomic Energy Commission 1947a).

Initial Vanadium and Uranium Production – 1901-1940

World War I created an increased demand for vanadium used as an alloy in steel production. By adding a small amount of vanadium to steel, a high-strength alloy of lighter weight was produced at less expense. The demand for vanadium for the production of steel was nothing new to western Colorado, having begun soon after A. B. Frenzel discovered vanadium ore in the form of roscoelite at several sites near Newmire and Placerville along the San Miguel River in San Miguel County in 1901. In order to take advantage of the roscoelite resources discovered by Frenzel, the Vanadium Alloys Company was formed around 1904. Although roscoelite was known to contain vanadium, no means had yet been established by which to extract vanadium concentrate from the ore. The Vanadium Alloys Company constructed an experimental mill at Newmire, completed in 1907, intended to test a vanadium-separation process based on the carnotite milling technique used previously by the Rare Metals Mining & Manufacturing Company in the Paradox Valley. After this technique was found to be successful, a formal mill was built at Newmire to begin commercial production. Between 1909 and 1911, several additional companies arrived to take advantage of the Newmire vanadium boom, including the General Vanadium Company, Primos Chemical Company, Wolcott & Waltemeyer, Colorado Vanadium Company, United States Vanadium Company (USV), and Crucible Steel Company of America. Newmire quickly became recognized as the heart of vanadium mining in North America. In 1913, the U.S. Postal Service officially changed the name of the settlement to Vanadium. With the end of World War I and use of other metals in the production of steel alloys, demand for vanadium decreased. The USV continued to supply the reduced demand (Horn 1993; Schweigert 2001; Twitty 2008).

Although the radium industry in America did not recover after 1923, vanadium and uranium, to some degree, saw increasing demand beginning in 1930. Carnotite production in western Colorado became profitable again around 1935, when economic recovery following the nadir of the Great Depression once again began to raise demand for American vanadium for steel production. Additionally, economic uses for uranium in ceramic and chemical manufacturing gradually increased demand. Nevertheless, demand for uranium was low, and much of the uranium ore was discarded on mine dumps (Schweigert 2001). Howard Balsley of Moab began buying small quantities of uranium ore from various western Colorado sources in 1934, which he sold to the Vitro Chemical Company of Pennsylvania (Horn and Archimede 2003; Twitty 2008).

In 1935, the USV, previously acquired by Union Carbide & Carbon Corporation in 1924, established a concentration-mill facility and company town at the former location of the Joe Junior Camp (site 5MN.4997, see previous mention). Through the USV, Union Carbide spent the years between 1923 and 1934 acquiring carnotite claims throughout western Colorado. They also purchased the Standard Chemical Company and its now defunct mill and camp at the old Joe Junior site in 1928. In 1936, a new mill was constructed that produced vanadium, radium, and uranium concentrates from carnotite ore, using the most efficient technology at the time, after which the concentrates were sent to a refinery on south Bannock Street in Denver owned by the Shattuck Chemical Company (5DV.2457; HAER CO071; no longer extant, demolition and radioactive remediation completed in 2006). Workers at the mill and mines lived in the company-organized town of Uravan, named using a combination of the words “uranium” and “vanadium.” The company town housed 250 people who benefited from a full range of medical, entertainment, and commercial facilities. The town no longer exists as it and its associated industrial facilities were demolished as part of radioactive remediation completed in 2004 (Schweigert 2001; Twitty 2008).

During this period, carnotite production in western Colorado began to soar, with western Colorado emerging again as a world leader in vanadium production in 1937 (Twitty 2008). In addition to the mill at Uravan, North Continent Mining, Inc. operated a second mill at Slick Rock that had been purchased from the Shattuck Chemical Company in 1934 (U. S. Department of Energy 2009). In 1939, a third mill was constructed in Gateway, Mesa County, by the newly organized Gateway Alloys, Inc. and, in 1940, the Vanadium Corporation of America (VCA) put another mill into operation at Vancorum near Naturita in Montrose County (Figure 1). Overall, the opening of these mills and the increased profitability of carnotite mining and prospecting drew flocks of workers to the area, with substantial increases in population observed between 1930 and 1940 in almost every town in far western Montrose and Mesa counties (Twitty 2008).

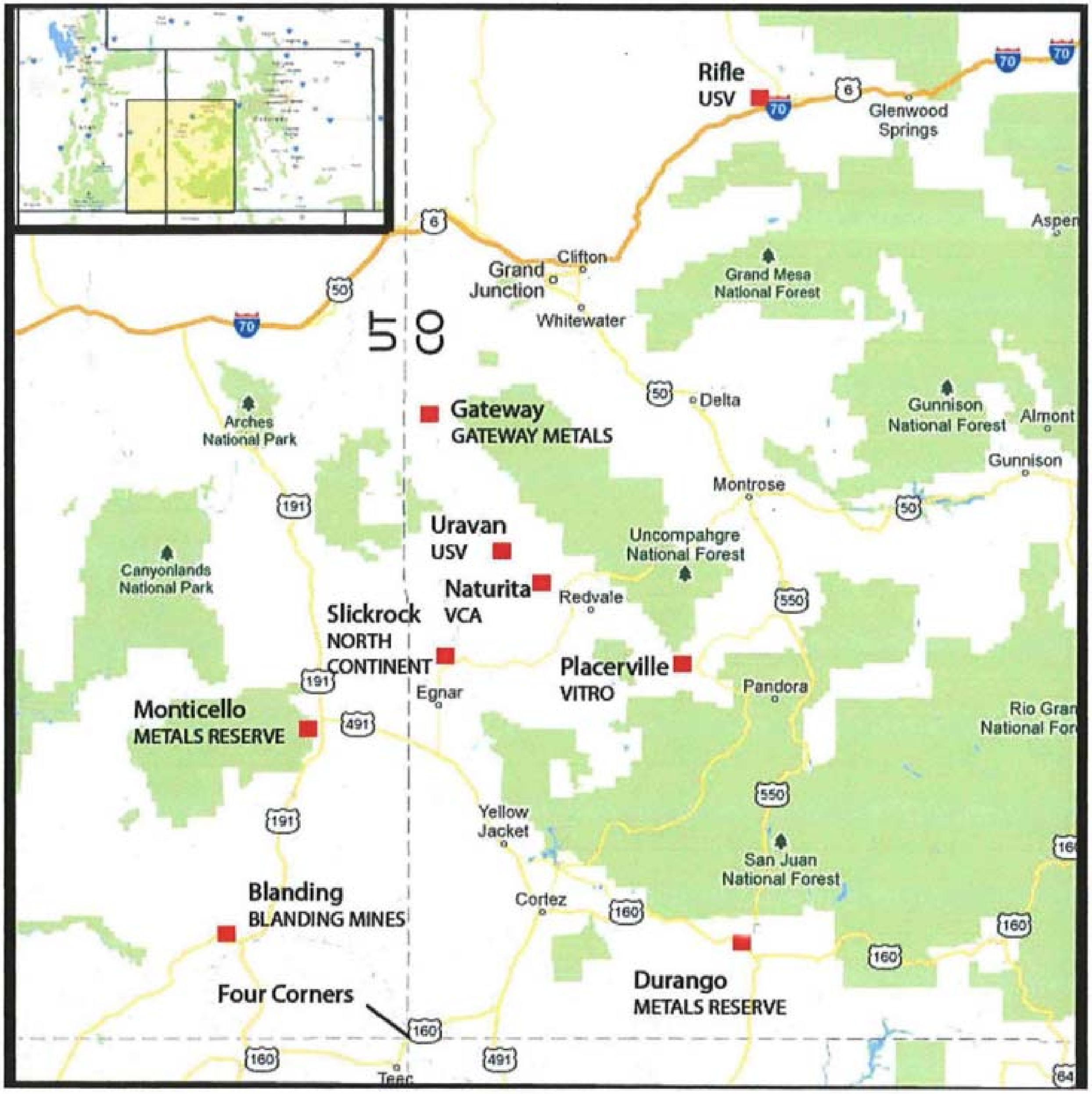

Figure 1. Nine vanadium tailing sources of uranium identified in 1942 for domestic procurement by the MED. Map from Chenoweth (2012).

Uranium and Development of the Atomic Bomb – 1942-1945

World War II stimulated interest in uranium worldwide. James Chadwick, an English physicist, discovered the neutron in 1932, which was quickly considered the key to releasing atomic energy by nuclear fission. The nuclear chain reaction of fission was discovered by German physicists Otto Hahn and Fritz Strassman in 1939, and uranium was identified as the element most suitable. Although the potential for a military weapon using fission was immediately recognized, initial interest was by the Naval Research Laboratory as a power source for submarines. Recommendations for funding of additional research from the federal Bureau of Engineering in early 1939 went nowhere. Fears that Nazi Germany might quickly develop an atomic bomb were foremost on the minds of scientists escaping the Nazi regime, particularly Leo Szilard and Eugene Wigner of Hungary. Szilard wrote a letter to President Roosevelt later in 1939, signed by the preeminent physicist Albert Einstein, to warn of the threat and urge increased experiments toward the development of an atomic bomb before one was developed by the Nazis. The letter was transmitted by Alexander Sachs, an economist with access to the President (Hewlett and Anderson 1962). This stimulated the government to seriously consider investigations into developing an atomic (nuclear) bomb from uranium. The President appointed a Uranium Committee, comprised of civilian and military representatives headed by Lyman J. Briggs, Director of the National Bureau of Standards, to review the state of uranium research and advise the government. The committee met for the first time on October 21, 1939 and, in early 1940, recommended that funding should be provided by the government to support nuclear research. Quickly, university scientists concluded that a nuclear fission bomb was possible, so long as uranium and plutonium in sufficient quantities could be obtained. Roosevelt authorized development of an atomic bomb on December 6, 1941, the day before the Japanese attack on Pearl Harbor, and the first man-made nuclear chain reaction was produced on December 2, 1942 at the University of Chicago by scientists led by Enrico Fermi[29] (Hewlett and Anderson 1962).

The Manhattan Engineer District (MED) was created as a special division of the U.S. Army Corps of Engineers by the War Department on August 16, 1942. The name was chosen to conceal its role in the atomic weapons program, which became known as the Manhattan Project. Brigadier General Leslie Groves was quickly placed in command and began selecting remote locations suitable for research and materials production. Oak Ridge, Tennessee, was chosen for production of weapons-grade uranium and plutonium. The Hanford Engineering Works on the Columbia River at Hanford, Washington, was chosen to produce plutonium. Los Alamos, New Mexico was selected for a top-secret laboratory tasked with designing an atomic bomb under the direction of Robert Oppenheimer[30] (Hewlett and Anderson 1962). These are considered the

[29] Enrico Fermi (1901-1954) was an Italian physicist who earned a doctoral degree from the University of Pisa in 1922. His work on neutron irradiation and nuclear reactions resulted in his being awarded the Nobel Prize in 1938 and his being acclaimed as the greatest expert on neutrons and the potential of nuclear fission. In order to escape the rise of Mussolini's fascist government, he immigrated to the United States in 1938. He was Professor of Physics at Columbia University from 1939 to 1942, during which time he was involved in experimentation for the Manhattan Project that resulted in the first controlled nuclear chain reaction, culminating in the development of the atomic bomb. He then became a professor at the Institute for Nuclear Studies at the University of Chicago.

[30] J. Robert Oppenheimer (1904-1967) was an American physicist in charge of developing the atomic bomb. He graduated from Harvard University, studied at Cambridge University in England, and received a doctorate from the University of Gottingen in Germany, where he worked with many prominent physicists, including Niels Bohr.

primary facilities of the Manhattan Project and still exist, though in somewhat diminished states due to the same factors of subsequent use and removal of certain structures as necessitated by radiation remediation as the DOE Grand Junction office. Although not as well-known as Oak Ridge, Los Alamos, or Hanford, the Grand Junction Office was of substantial importance to the Manhattan Project by acquiring domestic uranium and providing it to the primary facilities for enrichment and incorporation into nuclear bombs.

Initially, uranium ore for the production of plutonium and weapons-grade uranium came from a 1,200-metric-ton stockpile of high-grade ore acquired before World War II from the Shinkolobwe Mine in the Belgian Congo (now the Democratic Republic of Congo) by Edgar Sengier, a Belgian businessman, who, fearful of the ore falling into the wrong hands, had shipped the ore to the Archer Daniels Midland Company warehouses in New York. Once there, he informed the U.S. government of its availability and purchase was arranged by General Groves. Groves then made arrangements for the purchase of an additional 3,000 metric tons from the Union Miniere du Haut Katanga mining company in the Belgian Congo. Additional ore came from the Eldorado Mine on Great Bear Lake, Northwest Territories, Canada. Neither of these sources was available when the MED began operation, but the MED reopened the Canadian mine and ran its output and the ore stockpiled from the Belgian Congo through a Canadian uranium refinery. Domestically, carnotite from the Colorado Plateau was the primary source of uranium, principally from mill tailings at existing vanadium mills in the region. The MED's mission was to obtain uranium concentrates, purify those concentrates, and further knowledge about uranium deposits throughout the world. To obtain the needed uranium, the Materials Section, known cryptically as the Madison Square Area Office, was established as a branch of the MED (Schweigert 2001).

The MED established the Materials Section for the procurement of uranium for atomic bomb experiments in September 1942 and quickly selected Grand Junction as the location for its only office for domestic uranium procurement. By December, it had identified tailings at nine vanadium mills in western Colorado and southeastern Utah and uranium oxide concentrates stored at Uravan as the largest sources of readily available uranium ore in the country (see Figure 1). These sources were mapped and sampled by government specialists with geological and mining backgrounds. Contracts were established between the government's Mineral Reserve Company and the USV and VCA. Under a veil of secrecy, Second Lieutenant Philip C. Leahy[31] traveled westward by train from Chicago with Lieutenant Colonel Thomas T. Crenshaw, who

Fearing that the Nazis were capable of developing a nuclear weapon, he accepted the directorship of the Manhattan Project's Los Alamos Laboratory, a secret facility in New Mexico, where the atomic bomb was developed and assembled. Following the deployment of the bombs over Japan, he actively opposed further development of nuclear weapons, to the detriment of his later career.

[31] Philip C. Leahy (1912-1996) was born and raised in Vestal, New York. He was employed by the Army Corps of Engineers at the time World War II began. After being in charge of the MED Grand Junction facility for the Manhattan Project, he returned to the facility to serve as the manager of the Atomic Energy Commission's Grand Junction Area Office in 1947. In 1950, he became the Director of the Maintenance and Common Service Division of the AEC's Idaho Operations Office, in Idaho Falls. He later served as the Chief of the Real Estate and Maintenance Management Branch of the Energy Research and Development Administration in Albuquerque, New Mexico. He retired to Boise, Idaho, where he died in 1996.

was in charge of the Materials Section. Upon arrival in Grand Junction on March 23, 1943, Crenshaw handed Leahy his orders. Leahy was to call Blair Burwell, general manager of the USV, who would tell him what needed to be done (P. C. Leahy to William L. Chenoweth, 1993, as cited in Chenoweth 1997:34). Burwell informed Leahy that a tailings treatment plant needed to be constructed at Durango, the existing plant at Uravan needed to be enlarged, and a uranium refinery needed to be constructed in Grand Junction to process the green uranium-bearing sludge from the treatment plants. The refinery would purify and concentrate the uranium in the green sludge by removing residual vanadium from it. Leahy leased a 55.71-acre former gravel pit just south of Grand Junction as the site of the refinery. The location was ideal for what was cryptically termed "Project X." It was not in a populated area, but was close enough to Grand Junction for convenience to supplies and housing for military and civilian employees. It was served by a railroad spur and had good sources of water from an artesian spring and a pipeline from the Gunnison River. The site was subsequently purchased by the War Department on August 14, 1943 from Lester Hiram Hall for $10,500. Hall had been the president of the Prell-Hall Construction Company, a Colorado corporation dissolved on May 1, 1936.[32] The land had been owned by the company, and Hall became the owner as a result of the company's demise (Chenoweth et al. 2015; Schweigert 2001; Mesa County Clerk and Recorders Office, Deed Book 415, Page 405; Deed Book 372, Page 137; and Reception No. 311220).

A small log cabin residence (currently part of Building 12) already on the site was used as an office, and a refinery designed by the Stearns-Roger Manufacturing Company of Denver was constructed (Figure 2). The refinery was designed to process eighteen tons of sludge per day from the Durango and Uravan treatment plants. The refinery was a complex grouping of attached buildings that included a central filter and precipitation unit, a drier, a fusion furnace, a boiler, a roasting plant, a lavatory, a sludge and soda ash bin, and a dust chamber. Adjacent to the east were storage tanks; a red cake bin and settling tank were to the south; oil storage and general storage buildings were to the west; and a soda ash storage building was to the north. Nearby were a warehouse and change room building (currently Building 2), a laboratory, fuel oil storage tanks with pumps adjacent, and a soda ash storage building. At the far northern end of the complex were acid storage tanks, and a scale was just north of the office. Security was minimal, with no guards and only a wire fence around the seven acres of the property that was used (Burwell 1946; Chenoweth et al. 2015; Schweigert 2001). Expansion of the property during the subsequent Cold War is discussed below.

[32] The Prell-Hall Construction Company originated as the Lumsden-Hall Construction Company. It was incorporated on May 28, 1930 by John J. Lumsden, Mabel Prell, and L. H. Hall, all of Grand Junction (Colorado State Archives, Incorporation Book 319, Page 75). Lumsden had been a long-term resident of Grand Junction and was a prominent builder and developer in western Colorado, having built the Grand Junction sugar factory, Teller Indian School, and many buildings in Grand Junction (*Denver Post*, March 2, 1935:4). Within a year, Lumsden relinquished his ownership in the company, and it was renamed the Prell-Hall Construction Company on May 20, 1931 (Colorado State Archives, Incorporation Book 319, Page 75). Lumsden moved to Denver and died March 1, 1935 after falling down a mine shaft in Boulder (*Denver Post*, March 2, 1935:4).

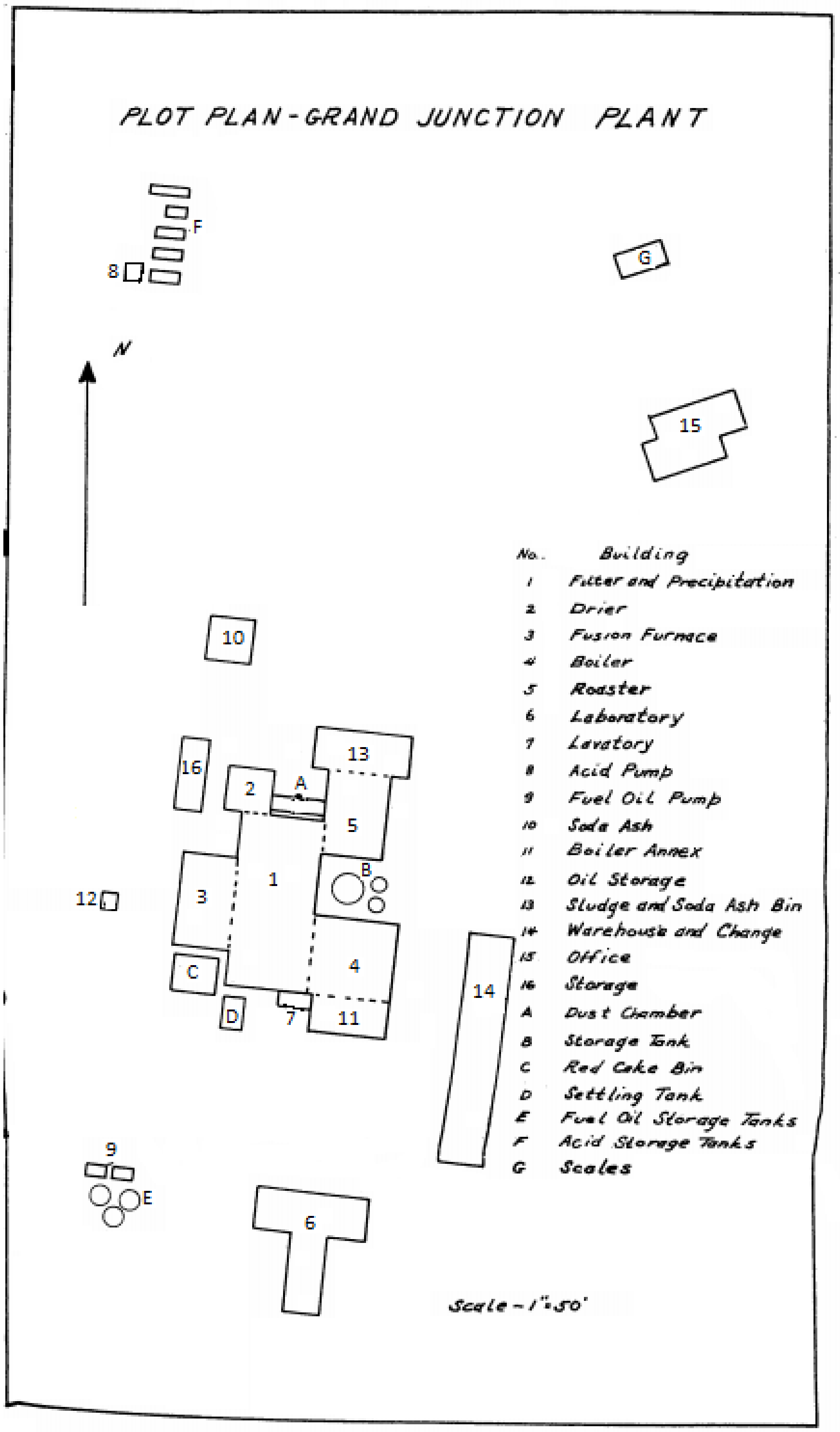

Figure 2. Plan map of the MED Grand Junction facility in Burwell (1946). Note that Building 15 on the plan is the log office portion of current Building 12, and Building 14, the warehouse and change room, is the current Building 2. These are the only two buildings that have survived to the present day from the Manhattan Project.

Domestically, the Manhattan Project focused on the known uranium-ore region of western Colorado, southeastern Utah, and the Navajo Reservation in northwestern New Mexico and northeastern Arizona. The vanadium content of the region's carnotite ores had already triggered an unprecedented period of exploration and mining in western Colorado and southeastern Utah. In 1941, the U.S. government classified vanadium as a strategic metal because of its importance in the production of steel alloys. Because of growing instability worldwide and the uncertainty of dependable foreign sources, the Metals Reserve Company had been established in 1940 to produce, acquire, and transport strategic and critical materials and became an important agent in the production of weapons. The Metals Reserve Company was one of eight subsidiaries of the Reconstruction Finance Corporation, an independent government corporation established in 1932 to provide financial support for state and local governments during the Depression. Stepping into its role as part of the Manhattan Project, the Metals Reserve Company set an attractive base price for vanadium that stimulated mining and exploration. Buying stations were established at Durango, Rico, Dove Creek, and Gateway, Colorado; Moab, Thompson, and Monticello, Utah; and Shiprock and Farmington, New Mexico (Amundson 2002:7-8). Beginning in 1942, the Bureau of Mines and USGS combined to conduct secretive core-drilling programs at select locations in the Salt Wash Member of the Morrison formation on the Colorado Plateau. In order to disguise these uranium-procurement efforts, exploration was reported to be for vanadium (Twitty 2008).

As part of the project, Leahy purchased trucks to haul supplies to the Durango and Uravan plants and to transport drums of green sludge to the refinery in Grand Junction. In order to keep the highway over Red Mountain Pass through the San Juan Mountains of Colorado open for haulage in the winter, a rotary snowplow was obtained for the Colorado Highway Department. In addition to the refinery, the Colorado Area Engineer's office was established in downtown Grand Junction. In all, thirty-one enlisted men were employed at the Grand Junction refinery and at the Uravan treatment plant (Chenoweth et al. 2015). The number of employees at the Durango plant is unknown.

In 1944, easily accessed supplies of uranium ore from the tailings of vanadium mills and stockpiles at Uravan began to run out, and the mining and processing of crude carnotite ore began on a large scale with the ultimate intention of obtaining uranium. The necessary quantity of uranium was quickly acquired by the MED, and a stockpile of 6 million pounds of vanadium oxide resulted in the termination of vanadium/uranium ore purchasing later in 1944.

The initial steps in the recovery of uranium from crude ore were undertaken at mills in Monticello, Utah; Naturita, Uravan, and Durango, Colorado; and Shiprock, New Mexico. The Durango and Uravan mills were of particular importance. They produced uranium-rich green sludge that was produced by plants constructed under contract to the MED Grand Junction Office by the Stearns-Roger Manufacturing Company of Denver. The green sludge was shipped by truck and rail to the secret uranium refinery at the MED facility in Grand Junction, also constructed by Stearns-Roger, that was operated by the USV for the MED between August 1943 and October 1945 using a process devised by USV. The mill had a capacity of 20 tons per day, but averaged 12.9 tons per day. Very high-grade ore from Moab was also processed in the

Grand Junction MED facility mill. The Grand Junction plant refined the sludge and ore by removing vanadium from it[33] (Chenoweth 2012; Hewlett and Anderson 1962; Albrethson and McGinley 1982; Scalsky 2011; Schweigert 2001). None of these mills and refineries has survived due to subsequent radioactivity remediation.

All of the ore procured by the MED domestic uranium acquisition program passed through the Grand Junction facility at the current DOE Grand Junction office. This amounted to 2,698,000 tons of uranium oxide, or 14.2 percent of the total uranium procured for the Manhattan Project (Table 3). Of the three sources of uranium for the project, the domestic program obtained uranium at a cost of nearly half the cost of Belgian Congo uranium and almost one-third the cost of uranium from Canada.

Table 3. Source, Quantity, and Price of Uranium Oxide Obtained for the Manhattan Project.

Source	Quantity (lbs.)	Percentage	Cost	Price per lb.
Domestic (Colorado Plateau)	2,698,000	14.2	$2,072,330	$0.77
Canada	2,274,000	13.0	$5,082,300	$2.23
Belgian Congo	13,966,000	73.7	$19,381,600	$1.38
Total	**19,381,600**	**99.9**	**$26,536,230**	**$1.37**

The material from the Colorado Plateau and refined at the Grand Junction MED facility was sent by railroad to the Linde Air Products Company at Tonawanda, New York for separation of uranium-235, the fissionable isotope of uranium that comprises less than 1 percent of all natural uranium. This material was then sent to Oak Ridge, Tennessee and Hanford, Washington for further enrichment and assembled into nuclear devices at a secret nuclear laboratory at Los Alamos, New Mexico. The enriched uranium from Oak Ridge was used in the bomb dropped on Hiroshima. Plutonium was produced at the Hanford facility by deuteron bombardment of uranium-238. Concentration of plutonium-239, which is also fissionable, went into the bomb dropped on Nagasaki. The day after the first atomic device was successfully detonated at the Trinity test site in southern New Mexico on July 16, 1945, Leahy received word from General Groves that the MED's mission had been accomplished (Chenoweth 2012). It was not until the two atomic bombs had been exploded over Japan that that the scope of the mission was fully understood by most who had been involved. Soon after the war, in 1946, the sludge plants at the Grand Junction MED facility were demolished and their equipment sold (Scalsky 2011; Schweigert 1999, 2001). The Colorado Engineer's Office in Grand Junction was closed on March 19, 1946, and Leahy was transferred to Oak Ridge, Tennessee, but returned to Grand Junction in 1947 when the AEC took over the facility (Chenoweth et al. 2015).

The deployment of the atomic bombs over Japan in August 1945 ended World War II. The secrecy concerning uranium procurement in western Colorado and southeastern Utah and the

[33] The process involved roasting the green sludge with sodium carbonate, which was then filtered to remove sodium vanadate. It was then processed with sulfuric acid to remove alumina, phosphorus, and arsenic. The resulting concentrate was known as "red cake." It contained 15 percent uranium oxide and 1 percent vanadium oxide (Albrethson and McGinley 1982; Schweigert 2001).

role of the radioactive metals produced by the Colorado Plateau region in the war effort was then revealed. By that time, the mining economy of western Colorado had collapsed with the termination of government purchases. However, this was soon to change with the initiation of the Cold War and America's development of a nuclear weapon arsenal. The long-lasting benefit to the area from the Manhattan Project was the expansion of transportation and communication infrastructure in the area: mostly improved roads between Grand Junction and Durango by way of what is now State Highway 141 through Gateway, Uravan, Naturita, Slickrock, and Dove Creek, Colorado, and U.S. Highway 491 (formerly U.S. Highway 666) westward from Dove Creek to Monticello, Utah. Vanadium sales returned to the free market when its fixed price was repealed; with the exception of nuclear weapons production, uranium had little commercial or industrial purpose. Consequently, by 1946, the mines and mills in western Colorado were closed, and miners and their families began to move elsewhere (Schweigert 2001; Twitty 2008).

Cold War Uranium Boom – 1947-1957

Following World War II, the Atomic Energy Act was passed in 1946 to promote the use of nuclear energy for both domestic and defense purposes. Under the Atomic Energy Act, fissionable materials were placed under the control of the federal government through the AEC, though exploration and mining of uranium by members of the public was encouraged. The AEC took over the functions and facilities of the MED, including those in Grand Junction, on January 1, 1947. At the time, the MED had over 5,000 military and civilian employees nationally and administered contracts that involved over 50,000 people. In 1947, the administrative offices of the AEC were in New York and Washington, DC, and the future of the Grand Junction facility was uncertain.

Leahy retired from the Army and returned to the Grand Junction facility as its first manager for the AEC in August 1947. Under the AEC, the Colorado Raw Materials Office for uranium procurement was established at the existing Grand Junction complex in December 1947. Leahy contracted with Walker-Lybarger Construction Company of Grand Junction to build a concentrate-sampling plant (no longer extant), assay laboratory (no longer extant), and office buildings (currently Building 12 added to the original log office) to add to the empty refinery building (no longer extant), log cabin office (part of Building 12), changing room and warehouse (Building 2), and a small laboratory (no longer extant) that were already present. Soon thereafter, a portion of the AEC Exploration Branch was headquartered in Grand Junction, to work with the USGS in initiating exploratory uranium drilling beginning in 1948. In November 1952, the domestic procurement and exploration programs were combined to form the Grand Junction Operations Office under the AEC Division of Raw Materials. Additional exploration offices situated in the Federal Center in Denver and Salt Lake City (222 South West Temple) under the Division of Raw Materials, were placed under the Grand Junction Operations Office in 1956 (Albrethsen and McGinley 1982; Schweigert 2001; Twitty 2008). Separate from these was the Rocky Flats Plant northwest of Denver, which produced plutonium triggers for nuclear weapons between 1952 and 1989 (Buffer 2003).

The ultimate stimulus for acquiring uranium through the program was weapons production in response to the Soviet Union's growing worldwide influence. Although the United States and

Great Britain were allies of the Soviet Union during World War II, the relationship was tense and distrustful. With the development of nuclear-bomb technology by the United States, resulting in the production of the bombs that were dropped on Japan to end World War II, the Soviet Union began working on acquiring the technology that would enable them to develop nuclear weapons as well, in order to cement their place as a world power. Fearing that the Soviet Union intended world domination and proliferation of communist doctrine, the United States attempted to extend its influence worldwide while doing its best to thwart the Soviet Union's attempts to do the same. Each attempted to counter the influence of the other, which included development and deployment of nuclear weapons for both offensive and defensive purposes. This period of competition between the Soviet Union and the U.S. (and their respective allies) is known as the Cold War.

The initial goal of the AEC Grand Junction Office was to acquire uranium concentrates for military weapons construction during the Cold War. Because the most readily available materials—the tailings from existing mills—had been used up during the Manhattan Project, new uranium ore bodies were sought, resulting in the Exploration Branch being established at the Grand Junction Office. This office served the entire western half of the United States, growing steadily in size commensurate with the increasing scope of its projects and capabilities throughout the Cold War era. To facilitate the mission, the AEC engaged contractors that worked in tandem with federal employees, a practice that had been initiated during the Manhattan Project and continues to the present (Table 4).

The AEC joined with the USGS and engaged in a cooperative exploration program from 1948 to 1958 beginning on the Colorado Plateau and expanding nationwide. The exploration program resulted in an increase in the estimate of recoverable uranium from one-million tons in 1948 to 89-million tons in 1958. Between 1948 and 1958, 7,500 preliminary geological investigations were carried out in 42 states. The program identified and withdrew public lands where uranium was known to exist and leased them for mining. The sedimentary geology of the Colorado Plateau was intensively studied during this period to more effectively predict the locations and quantities of carnotite deposits. A massive drilling program was implemented to find ore deposits buried beneath the surface of high mesa tops beyond what was exposed on the canyon rims. Aerial surveys were also carried out from 1949 to 1956 under the auspices of the Grand Junction Office that radiometrically scanned 81,000 square miles of potential uranium territory. In addition, twenty Navajo prospectors were employed by the AEC to search for uranium using Geiger counters on the Navajo Reservation in Arizona, New Mexico, and Utah from 1951 to 1954. As a result of the exploration program, about 500,000 acres of public lands in several western states were withdrawn from the public domain and made available for mineral leasing by the AEC (Chenoweth et al. 2015; O'Rear 1966; Schweigert 2001; Twitty 2008).

Prominent publicity and guaranteed prices for uranium ore resulted in large numbers of citizen prospectors fanning out across the Colorado Plateau and the rest of the West in search of uranium deposits that would make them rich. The Grand Junction Office published nine Domestic Uranium Program Circulars between 1948 and 1957 that offered guaranteed prices for uranium, provided incentives for mining, and outlined regulations for leases on federal lands

(O'Rear 1966). New information was regularly made available to prospectors and mining companies by the Grand Junction Office in order to stimulate discoveries and mining. The sudden influx of private prospectors to the area created a region-wide economic and population boom from 1948 to 1958. Following the original mining laws developed for hard-rock mining in the nineteenth century, prospectors with little or no capital explored canyon rims, employing Geiger counters, bulldozers, or simply their own eyesight to search for ore deposits in sandstone outcrops. The electronics laboratory at the AEC Grand Junction Office conducted extensive geophysical research that improved the design and effectiveness of the electronic devices used in detecting uranium by prospectors. Meanwhile, companies with more resources drilled for buried deposits or excavated large areas using heavy machinery. Independent prospectors either developed the claims they staked themselves or sold the claim to one of the larger companies, such as the USV, VCA, or Climax Uranium Company, who in turn leased the claims to smaller parties, often with some development assistance. To facilitate exploration and transportation of ore to the new and reopened mills, the AEC Grand Junction Office collaborated with the Bureau of Public Roads from 1951 to 1958 in ninety road-improvement projects that resulted in the construction or improvement of 1,253 miles of state and federal highways and other roads into uranium-producing areas in Colorado, Utah, New Mexico, Arizona, Wyoming, and South Dakota (Albrethson and McGinley 1982; O'Rear 1966; Schweigert 2001; Twitty 2008).

The stimulus program instituted by the AEC's Grand Junction Office was highly successful. Between 1948 and 1962, the AEC operated ore-buying stations in Durango, Grand Junction, Naturita, Rifle, and Uravan, Colorado; Hite, Marysvale, Mexican Hat, Moab, Monticello, Salt Lake City, Thompson, and White Canyon, Utah; Bluewater, Grants, and Shiprock, New Mexico; Crooks Gap, Riverton, and Shirley Basin, Wyoming; Globe and Tuba City, Arizona; Edgemont, South Dakota; and Falls City, Texas. Some of these buying stations were in operation for only a short time (Albrethsen and McGinley 1982; Schweigert 2001). Under the AEC Grand Junction Office, AEC purchases of uranium ore increased from 54,000 tons in 1948 to 4.5 million tons in 1958 with a peak of 8 million tons in 1961 (O'Rear 1966).

Table 4. Grand Junction Office Contractors, Dates, and Activities.

Contractor	Dates	Activities
U.S. Vanadium Corporation	August 14, 1943-December 31, 1946	Constructed and operated the uranium ore refinery (mill) for the MED.
U.S. Army Manhattan Engineer District	1947	Dismantled outlying mill buildings; disposed of surplus equipment and materials.
Ledoux and Company	1948	Performed the initial sampling of uranium concentrate (yellowcake).
Walker-Lybarger Construction Company Prime Contractor	1948-December 31, 1956	Constructed buildings for the AEC expanding missions; responsible for maintenance and operation of facility; provided support to the AEC exploration, drilling, and geologic studies.
American Smelting and Refining Company	1948-1955	Set up uranium ore buying stations in the western U.S.; operated the analytical chemistry laboratory; responsible for receiving, sampling, analyzing, storing, and shipping uranium ore concentrates. In 1951 a new sampling plant was built.
American Cyanamid Company	May, 1953-June 1954	Operated the first pilot plant (1953); developed the resin-in-pulp uranium extraction process.
National Lead Company, Inc.	July, 1954-June, 1958	Operated the large pilot plant (1954) (two mill buildings, a crushing and sampling plant, office and laboratory warehouse, maintenance shop).
Swinerton and Walberg	January 1, 1957-April 30,	Assumed the duties of prime contractor.

Prime Contractor	1959	
Lucius Pitkin, Inc. Prime Contractor	1956-1965 May 1, 1959-July 10, 1975	Operated ore-buying stations, the analytical chemistry laboratory, and the concentrate sampling plant. Supported the uranium procurement program until termination in 1970; provided technical and engineering support to the National Uranium Resource Evaluation (NURE) program in 1974.
Bendix Field Engineering Corporation Prime Contractor	July 11, 1975-September 30, 1986	Prime responsibility was to manage the expanding NURE program and administered the Grand Junction Remedial Action Program that began in 1972 (remediated soils in the Grand Junction area).
UNC Technical Services, Inc. UNC Geotech, Inc. Chem Nuclear Geotech, Inc. Rust Geotech, Inc. Prime Contractor	October 1, 1986-September 30, 1987 October 1, 1987-August 14, 1990 August 15, 1990-November 2, 1993 November 3, 1993-September 4, 1996	Name changes due to a series of corporate mergers and acquisitions. Did remediation work in public areas; managed the Long-Term Surveillance and Maintenance (LTSM) program that was assigned to GJOO in 1989.
MACTEC Environmental Restoration Services	September 5, 1996-July 21, 2002	Continued the remediation projects; managed cleanup of uranium mill tailings and mill tailings contaminated with material from the former AEC-operated processing mills at Monticello, Utah, etc.
Wastren, Inc. Prime Contractor	September 5, 1996-July 21, 2002	Assumed responsibility to operate the site in September 1996. Responsibilities included facility management, analytical chemistry laboratory, occupational medical services, technical library, records management, automated data processing systems, publication services, communication systems, security, and remediation of the facilities site.
Riverview Technology Corporation (RTC)	September 30, 2001-Present	DOE transferred ownership of the property to RTC. DOE leases portions of the site and provides some on-going remediation services and long-term surveillance and maintenance.
S.M. Stoller Corporation Prime Contractor	July 22, 2002-September 30, 2015	Assumed the activities of the two previous contractors. Oversaw stewardship responsibility for the Grand Junction (Cheney) Disposal Cell, 28 other remediated sites or disposal cells, and management of the former uranium ore-processing mill site and the tailings pile at Moab, Utah.
Navarro Research and Engineering, Inc. Prime Contractor	October 1, 2015-Present	Assumed the activities of the previous three contractors.

(Based on Table 5-1 in Scalsky et al. 2011).

The government established prices for uranium ore and was initially the sole buyer, refiner, and producer of uranium for atomic use (Amundson 2002:19-20). The AEC was charged with developing the nation's nuclear technology and securing a stockpile of uranium concentrates from low-grade domestic ore with the AEC Grand Junction Office overseeing the effort west of the Mississippi River. Some identification of uranium deposits in the eastern United States resulted from work of the U.S. Geological Survey on behalf of the AEC from the Oak Ridge, Tennessee office, but only limited mining of uranium from deposits at Mount Pisgah, Pennsylvania took place. Procurement was focused on the Colorado Plateau in western Colorado and southeastern Utah, but ore also came from other western states and the Dakotas. Between 1947 and 1960, the Grand Junction Office administered thirty-two procurement contracts that resulted in the construction of twenty-eight uranium mills and small processing facilities operated by private enterprises in Arizona, Colorado, Idaho, New Mexico, Oregon, North Dakota, South Dakota, Texas, Utah, Washington, and Wyoming (Table 5). The AEC contracted with the VCA in 1947 to reopen the Vancorum Mill, and also with the USV in 1947 and 1948 to reopen the mills in Rifle and Uravan. At the behest of AEC, the Climax Uranium Company in 1948 opened a new uranium and vanadium concentration mill in Grand Junction. The AEC also built a government-owned processing mill at Monticello, Utah, in 1948. These new mills and other facilities contributed significantly to economic recovery of the rural areas where they were situated (Albrethsen and McGinley 1982; Chenoweth 1993; Schweigert 2001). Ore obtained at the buying stations and processed into concentrates in the mills was shipped to the Grand Junction Operations Office for assaying to determine the quantity of uranium and vanadium present. Between 1948 and 1961, the production of uranium oxide concentrates from the mills increased immensely. In 1948, the AEC Grand Junction Office, the only buyer of uranium in the country, purchased 110 tons of uranium oxide concentrates. By 1954, the quantity increased to 1,450 tons and peaked in 1961 at 17,671 tons (O'Rear 1966).

Table 5. Uranium Mills and other Uranium Processing Plants Administered by the AEC Grand Junction Office.

Place	Operator	Dates
	ARIZONA	
Monument Valley	Vanadium Corp. of America	1955-1964
Tuba City	Rare Metals Corp. of America and El Paso Natural Gas Co.	1955-1966
	COLORADO	
Cañon City	Cotter Corp.	1957-1979
Durango	Vanadium Corp. of America	1948-1963
Grand Junction	Climax Uranium Co. and American Metals Climax, Inc.	1951-1970
Gunnison	Gunnison Mining Co.	1956-1962
Maybell	Trace Elements Corp. and Union Carbide Corp.	1955-1964
Naturita	Vanadium Corp. of America	1947-1963
Rifle	U.S. Vanadium Corp. and Union Carbide Corp.	1947-1972
Slick Rock	North Continent Mines, Inc.	1931-1943
Slick Rock	Union Carbide Corp.	1957-1961
Uravan	U.S. Vanadium Corp. and Union Carbide Corp.	1944-1984
	IDAHO	
Lowman	Porter Brothers Corporation	1956-1960
	NEW MEXICO	
Ambrosia Lake	Kermac Nuclear Fuels Corp., Kerr-McGee Oil Industries Inc., and Kerr-McGee Corp.	1957-1970
Ambrosia Lake	Phillips Petroleum Co. and United Nuclear Corp.	1957-1963
Bluewater	Anaconda Copper Mining Co. and The Anaconda Co.	1951-1982
Grants	Homestake-New Mexico Partners	1956-1962
Grants	Homestake-Sapin Partners	1957-1962
Shiprock	Kerr-McGee Oil Industries, Inc., Vanadium Corp. of America, and Foote Mineral Co.	1953-1968
	OREGON	
Lakeview	Lakeview Mining Co.	1957-1960
	NORTH DAKOTA	

Place	Operator	Dates
Belfield	Union Carbide Corp.	1965-1967
Bowman	Kermac Nuclear Fuels Corp.	1964-1967
SOUTH DAKOTA		
Edgemont	Mines Development, Inc.	1955-1974
Edgemont	Mining Research Corp.	1953-1956
TEXAS		
Falls City	Susquehanna-Western, Inc.	1961-1973
UTAH		
Green River	Union Carbide Corp.	1958-1961
Hite (White Canyon)	Vanadium Corp. of America	1949-1953
Mexican Hat	Texas-Zinc Minerals Corp. and Atlas Corp.	1956-1965
Moab	Uranium Reduction Co. and Atlas Corp.	1955-1984
Monticello	The Galigher Co. and National Lead Co., Inc.	1942-1960
Salt Lake City	Vitro Corp. of America	1951-1968
White Canyon Mining Dist.	COG Minerals Corp.	1957-1960
WASHINGTON		
Ford	Dawn Mining Co.	1956-1965
WYOMING		
Baggs	Shawano Development Corp.	1956-1957
Converse County	Wyoming Mining and Milling Co.	1962-1965
Gas Hills	Federal-Radorock-Gas Hills Partners	1959-1981
Gas Hills	Globe Mining Co., Globe Mining Corp., and Union Carbide Corp.	1960-1988
Gas Hills	Lucky Me Uranium Corp. and Utah Construction & Mining Co.	1958-1988
Riverton	Fremont Minerals, Inc. and Susquehanna-Western, Inc.	1958-1963
Shirley Basin	Petrotomics Co.	1962-1979
Split Rock	Lost Creek Oil and Uranium Co., Western Nuclear Corp., and Western Nuclear, Inc.	1957-1981

Based on data mainly from (Albrethsen and McGinley 1982).

The price paid for the ore was based on the amount of uranium and vanadium present. Concentrates were brought to the Grand Junction Office by railroad or truck where they were stored and sampled. Initial sampling and assaying of concentrates at the Grand Junction Operations Office was by contractor Ledoux and Company in 1947 and 1948. The American Smelting and Refining Company (ASARCO) was the contractor for the work from 1948 to 1956, and Lucius Pitkin, Inc. was the contractor from 1956 to 1975, when Bendix Field Engineering Corporation became the prime on-site contractor. Between 1966 and 1968, sampling and analysis of concentrates were carried out for private industry at the Grand Junction Office until Allied Chemical Corporation of Metropolis, Illinois began offering the service. These contractors, stationed at the Grand Junction Office, developed state-of-the-art procedures for accurate sampling and assaying (Albrethson and McGinley 1982; O'Rear 1966; Scalsky 2011). In order to confirm the validity of the assays of the contractors, the AEC contracted with independent laboratories to confirm the results of the on-site contractors so that the mine operators would have confidence that the prices they were being paid was an accurate reflection of the ore provided. After sampling, uranium concentrates were shipped to processing plants;[34] vanadium concentrates were promptly sold or transferred to the Government Services Administration. At times, large quantities of concentrates were stored in warehouses at the Grand Junction facility. Between 1948 and 1971, 347-million pounds of uranium oxide and 29-million pounds of vanadium oxide were received and stored at the Grand Junction facility. The last of the stockpiled vanadium was sold in 1965; the final stockpiles of uranium concentrates were shipped to plants in Ohio and Illinois between 1973 and 1975 (Scalsky 2011; Schweigert 2001).

In addition to assaying and sampling the uranium concentrates, the Grand Junction Operation Office conducted tests of various chemical and physical processes for refining uranium ore for the recovery of uranium oxide (yellow cake) and the associated costs. The facility also tested new processes in two pilot plants constructed at the Grand Junction Office at a sufficient volume to adequately assess the suitability in full-scale plants. Innovations developed at the Grand Junction facility were incorporated into commercial uranium mills built throughout the western United States after 1955. The two plants built at the Grand Junction facility between 1952 and 1958 were the proving facilities for the AEC Raw Materials Development Laboratory (RMDL) of Winchester, Massachusetts. The RMDL originated in 1944 as an MED project to study the treatment of low-grade uranium ores by the Massachusetts Institute of Technology (MIT). In 1951, the program was taken over by the American Cyanamid Company, who constructed and operated the first pilot plant at the Grand Junction facility, which employed between fifteen and eighteen people. In 1954, the National Lead Company, Inc. took over the project and constructed a larger plant that employed up to 107 people. Between 1954 and 1958, the pilot plants operated non-stop and resulted in development of a resin-in-pulp process and acid and alkaline leaching processes that enabled higher uranium recovery. During the pilot plants' periods of use, 108,000 pounds of uranium oxide (yellow cake) was produced. Once the processes developed at the pilot plants were put into practice at newly constructed commercial mills throughout the western United States during the 1954 to 1958 period, the need for the pilot plants at the Grand Junction office were no longer needed and further experimentation and process improvements were carried out at the individual commercial mills (Albrethsen and McGinley 1982; Scalsky 2011; Schweigert 2001).

The boom in uranium mining continued through the 1950s, bringing miners from all over the country, including a substantial number of Navajo miners. Populations soared within towns of the area, especially in Naturita, Colorado, and Moab, Utah, which became central hubs for mining activity. Uravan, Gateway, and Nucla, Colorado, and Monticello, Utah, also saw substantial population increases during the Cold War era. In response to the population explosion, the U.S. government sponsored significant improvements in transportation infrastructure, expanded electrical grids, and built schools, resulting in regional transformations

[34] Refineries included the Feed Materials Production Center in Fernald, Ohio; the Babcock and Wilcox Plant in Lynchburg, Virginia; Allied Signal in Metropolis, Illinois; Sequoya Fuels Corporation in Gore, Oklahoma; Mallinckrodt Chemical Works in St. Louis, Missouri; Harshaw Chemical Works in Cleveland, Ohio; Union Carbide and Chemical Electro-Metallurgical Division Works in Buffalo, New York; Westinghouse Lamp Division in Bloomfield, New Jersey; and plants in Apollo, Pennsylvania, and Weldon Spring, Missouri. Enrichment of uranium was carried out at Oak Ridge, Tennessee; Portsmouth, Ohio; Paducah, Kentucky; and Hanford, Washington.

that are still evident today. Less positive changes during this period included environmental pollution and degradation from the industrial activities (Twitty 2008).

At the end of the active government-sponsored exploratory period in 1957, the Exploration Division was merged with the AEC's Production Evaluation Division and continued to be headquartered at the Grand Junction Office with field offices in Monticello, Utah; Milan, New Mexico; and Flagstaff, Arizona. To facilitate exploration, the Grand Junction Office employed scientists who improved radiation-detecting devices, drill-hole logging equipment, and developed device-calibration equipment in order to standardize data from private exploration companies so that it could be reliably compared. As the uranium industry grew, the Grand Junction Office compiled information on private uranium industry activities, ore purchases, mine exploration and development, core drilling data, and uranium ore concentration (Chenoweth et al. 2015).

End of the Government-Subsidized Uranium Industry

In 1958, the government announced that supplies of uranium had reached a point where unrestricted government-sponsored exploration and purchase of uranium ore by the government was no longer necessary. Purchases after November 24, 1958, were only for amounts deemed necessary and only from already developed reserves. Prices for uranium ore were no longer guaranteed as the AEC converted from procuring uranium for weapons production to focusing on facilitating and maintaining the uranium industry they had fostered toward domestic use. Even with the new restrictions, the quantity of ore shipped to mills increased through the early 1960s. Apparently aware that another sudden purchasing halt, such as the one that occurred following World War II, would send the economy of western Colorado into a downward spiral, the U.S. government reduced its buying programs gradually. Although production slowed during this period, many of the larger mining companies were able to remain in business by having delivery contracts stretched out over a number of years until purchases of uranium ceased entirely in 1970. This event marks the end of the period of significance for the Grand Junction Office's Cold War uranium procurement activities. In 1963, the AEC determined that it would cease purchasing vanadium, the market for which had dropped in 1961. Shortly thereafter, uranium/vanadium mills throughout the West began to close. Even though carnotite ore could still be shipped elsewhere for processing, the high associated costs ensured that the boom of the AEC exploration era was finished. At the height of the Cold War era, the Grand Junction Operations Office had 500 employees headquartered there with an additional 250 or so stationed at field offices elsewhere. The Raw Materials Program alone had a staff of 169 AEC employees and 132 Lucius-Pitkin contract employees in 1969 (Albrethsen and McGinley 1982; Scalsky 2011; Schweigert 2001; Twitty 2008).

With the end of the pilot plant experiments and the end of the government-sponsored uranium exploration program, both in 1958, the AEC Grand Junction Operation Office focused its efforts on geological studies to assess uranium reserves and improve equipment and techniques used for uranium exploration. In 1973, the focus of the Grand Junction office was widened to provide information to develop a long-term nuclear policy for the entire United States. In response, the AEC created the National Uranium Resource Evaluation (NURE) program with its headquarters at the Grand Junction Operations Office. The NURE program employed ninety-four federal employees and 558 contract employees headquartered at the Grand Junction Office. The Grand Junction office was chosen because it was in the core area of historic uranium exploration and mining and had facilities and equipment already in place for uranium studies. The NURE program at the Grand Junction Office continued as the AEC transitioned to the Energy Research and Development Administration (ERDA) in 1975, which was succeeded by the U.S. Department of Energy (DOE) in 1977. With these administrative changes, the Grand Junction facility became known as the DOE Grand Junction Projects Office and, simply, the DOE Grand Junction Office after 1996. Extensive geological studies by DOE, prime contractor Bendix Field Engineering Corporation, and the USGS from 1976 to 1981 resulted in the first nationwide radiometric and magnetic maps of radioactive elements using aerial instrument surveillance. These techniques have since been applied worldwide. In addition, precise testing methods and detection instruments were tested and developed through research at the Grand Junction Office through 1980, resulting in the construction of instrument calibration facilities at various places throughout the country. The NURE data-gathering program ran from 1974 to 1981 with all projects completed in 1984. The decline in demand for uranium beginning in 1980 resulted in decreased funding for the project beginning in 1981 and no funding after 1983. The more than 1,300 reports on geology, geophysics, and geochemistry not only improved understanding of radioactive minerals in the United States, but furthered general mineral research and science of international importance (Chenoweth et al. 2015; Schweigert 2001).[35]

Uranium Production for Domestic Energy Development – late 1960s-1982

During the late 1960s and early 1970s, the private nuclear power industry finally began to mature. As a result, the AEC revised its estimate of the quantity of uranium ore needed to satisfy the demand of industry upward to 27,000 tons per year, well above the 17,671 tons purchased at the peak of the Cold War era in 1961. A new prospecting rush began that was facilitated by the Grand Junction Operations Office through seminars and workshops on uranium geology, exploration techniques, and mining and milling methods. As demand increased, lower grades of uranium ore became marketable, resulting in an increase in mining. The extensive geological investigations of the late 1940s and 1950s had resulted in the withdrawal of lands on the public domain that contained deposits of uranium that were considered recoverable; these were then leased on a royalty basis to mine operators. The leasing program was continued under the 1974 Uranium Lease Management Program, administered by the AEC Grand Junction Office. The mill at Uravan, still operated by Union Carbide, quickly began to take in ore from all over the mining belt in western Colorado. The increase in activity during the late 1970s was brief, as the price of uranium fell steeply between 1979 and 1982. Contributing to the decline in demand and price for uranium was the Three Mile Island nuclear accident in 1979,[36] which changed public

[35] The reports are available through the National Archives, Denver, Colorado or various offices of the USGS throughout the country. Many reports are available as electronic documents online.

[36] One of the reactors at the Three Mile Island nuclear power plant near Middleton, Pennsylvania had a partial meltdown on March 28, 1979. This was the largest nuclear power plant accident in U.S. history. The accident resulted in major changes in emergency response, training, design, engineering, and radiation protection at nuclear power plants and closer regulation by the Nuclear Regulatory Commission. It also brought critical awareness by the

opinion about the safety of nuclear power production. After peak uranium production in 1980, there was an oversupply of uranium because of reduced demand. Additionally, increased levels of regulation on the mining industry, intended to combat environmental damage, raised the costs of production substantially. Finally, by the late 1970s, the rich, high-grade ore reserves in western Colorado appeared to be nearly exhausted (Twitty 2008). Together, these factors resulted in a near cessation of uranium mining throughout the western United States that has lasted to the present day. In recent years, most of the lease tracts have fallen dormant and considerable reclamation of mines on the lease tracts has taken place (Chenoweth et al. 2015; Schweigert 2001).

Era of Uranium Mill and Mine Cleanups – 1972-2001

The demise of uranium mining coincided with an increased realization of health risks associated with exposure to uranium mill tailings at abandoned mills. Residual radioactivity of mill tailings and radioactive decay into radium and radon were known carcinogens and causes of genetic mutation. In the 1950s, it was determined that radon gas was associated with elevated rates of lung cancer. In fact, it has been recently demonstrated that AEC and its overseeing Joint Committee on Atomic Energy, consisting of civilian and congressional panels, were long aware of the health risks due to uranium radioactivity and purposefully prevented that information from being disseminated in order for the uranium procurement program to proceed without hindrance (Alvarez 2013). The decision to suppress such information had a particular effect on uranium miners, particularly Navajos who made up a significant percentage of the uranium mining workforce. Miners were exposed to the hazards of uranium exposure in mines that had "little to no ventilation" and pervasive ore dust. As noted by former DOE Senior Policy Advisor Robert Alvarez, "Withholding information about the hazards of the workplace was deeply embedded in the bureaucratic culture of the nuclear weapons program" (Alvarez 2013).

Although it is clear that the AEC had direct knowledge of the health hazards of uranium exposure and the need for better conditions in the uranium mines and mills in order to minimize cancer rates, there is no indication in the research to date that these decisions were made at the Grand Junction Office, nor that the Office's staff were involved in this deception. Such investigations and decisions appear to have been made at higher levels of authority based in the Washington, D.C. area. Once the health hazards of uranium radioactivity became readily known to the public, the Public Health Service and the Colorado Department of Health conducted studies throughout Grand Junction where mill tailings from the Climax Mill had been used during construction. The tailings had been used during construction of residences and town buildings in the form of fill, soil amendment, concrete, stucco, and bricks. The Colorado Department of Health issued an order to cease using mill tailings for construction and the studies resulted in public awareness and frequent distortion of facts. Congressional hearings were held, resulting in the passage of the Grand Junction Remedial Action program in 1972. Using guidelines established by the Surgeon General, 594 locations were remediated in Grand Junction between 1983 and 1998 (Colorado Department of Public Health and Environment 2015). As a

general public that negatively affected the perception of nuclear power generation in America (United States Nuclear Regulatory Commission 2014).

result, the health risks associated with other uranium mill sites became a higher concern. The AEC, followed by the succeeding ERDA and DOE, was then tasked with assessing twenty-two uranium mill sites throughout the country. This resulted in passage of the Uranium Mill Tailings Radiation Control Act (UMTRCA) in 1978 for cleanup by the DOE of the identified sites in accordance with standards of the Environmental Protection Agency (EPA) and in compliance with the National Environmental Policy Act (NEPA). The DOE's Uranium Mill Tailings Remedial Action (UMTRA) project was based in the Albuquerque Operations Office, but the largest concentration of mills to be remediated was in western Colorado and eastern Utah and managed from the Grand Junction Office, which also handled the cleanup in Edgemont, South Dakota. The DOE Grand Junction Office handled the contracting of the mill cleanups, including the mill tailings removal in Grand Junction. At the peak of the UMTRA project in the mid-1990s, the DOE Grand Junction Office had over 800 employees, more than were employed at the peak of the uranium boom years during the Cold War era. The mill tailings removal project in Grand Junction was completed in 1998, whereas other regional cleanup projects continued into the 2000s. In 1996, the UMTRA Ground Water Project, which monitored water at contaminated sites as part of the remediation project, was transferred to the Grand Junction Office. Sites with continuing concerns for water quality are managed by the Long-Term Surveillance and Maintenance Program, also administered from the Grand Junction Office currently. This program monitors water quality at uranium tailings disposal sites nationwide developed under UMTRCA and disposal sites developed by other agencies or private parties that have been transferred to DOE. In late 2003, the DOE established the Office of Legacy Management to meet the DOE's responsibilities under the Long-Term Surveillance and Maintenance Program, which is a primary activity of the Grand Junction Office to the present day.

Uranium mines extend beyond the authority of UMTRCA. The EPA is tasked with protecting the public from environmental hazards and has extended its authority to state and federal agencies, including the DOE, for the cleanup of uranium mines with radioactive hazards, termed Technologically Enhanced Naturally Occurring Radioactive Material. The Grand Junction Office has been involved in uranium mine cleanup, primarily in federal lease areas on the Colorado Plateau. Cleanup of these areas is done under existing clean air and water laws. An estimated 15,000 uranium mines have been identified throughout the western United States that contain radioactive hazards, with the highest concentration on the Colorado Plateau.

In addition to administering contracts for remediation throughout the region, the facilities that processed and handled uranium ore at the Grand Junction Office were entered into the Surplus Facility Management Program. Contamination resulting from the activities carried out at the Grand Junction Office from the Manhattan Project through the Cold War was evaluated between 1989 and 1993. A remedial action project was implemented from 1990 to 1995. Decontamination of buildings continuing in service at the complex was carried out from 1994 to 2000 (See Table 2 for chronology of construction and removal of buildings) (Chenoweth et al. 2015; Schweigert 2001).

With scaling down of operations at the Grand Junction Office, decontaminated buildings no longer needed for everyday operations were offered for lease. In 1999, five buildings were leased to the Western Colorado Business Development Corporation, a small-business incubator, and several fledgling manufacturing and other companies began operation there. In 2001, the DOE transferred eight acres of the northern portion of the DOE complex area to the Army Reserve and sold the remainder of the complex to Riverview Technology Corporation (RTC), the current owner, which operates the business incubator. To facilitate the transfer of the complex from federal to private ownership, a Historic American Engineering Record (HAER) documentation package was prepared for the DOE Grand Junction Office in 2001 as mitigation resulting from Section 106 consultation for the property leaving federal ownership (Schweigert 2001). The DOE currently leases office space from RTC and continues administering DOE projects from the facility.

Chronology of Facility Construction and Change

Upon acquisition of the property in 1943 by the U.S. government, preparations commenced to develop the site for the acquisition, concentration, and shipment of uranium concentrates. A small log cabin used as a residence/office for the gravel pit operation already on the site was converted into an office (part of Building 12) (Historic Photo 1). A picket fence around the building was kept in place, but an exterior entry to the basement was built through the northern wall beneath the existing entry, which was accessed by stairs and a porch, making the new entry less visible. The remodeling of the cabin appears to have been done in such a way as to allow the work of the Manhattan Project to take place without drawing attention to the increased activity. Parking below the building would have allowed additional vehicles to be parked out of view and the vault would have provided the necessary secure storage for the top-secret documents and information being gathered.

Other buildings constructed at the site by the Stearns-Roger Manufacturing Company of Denver for the Manhattan Project may have appeared similar enough to buildings used in a gravel operation to not have appeared out of place. The existing railroad spur into the site entered from the northeast and terminated at the existing gravel operation, so required no new construction. Buildings other than the log office were oriented along both sides of the rail spur. Buildings comprising the facility from 1943 to 1945 included the log office (part of Building 12), the main uranium processing plant with several attached units; a laboratory building; truck scales and a truck-loading ramp; acid, solution, and oil storage tanks; a pump house; bins for soda ash, yellow cake (uranium ore), and sludge; oil and tool houses; a garage; settling and septic tanks; and a warehouse changing room building (Building 2).[37] How many of these buildings may have already been present or were converted from the former gravel pit operation is not known. In about 1944, twenty or thirty former Civilian Conservation Corps (CCC) buildings were moved to the complex for use as warehouses; none are extant.[38] In 1946, following the completion of the

[37] No building numbers were assigned to the complex until about 1956.
[38] Numerous Civilian Conservation Camps were in and around Grand Junction in the 1930s and early 1940s including Camps DG-2 and G-2 for the Division of Grazing; Camp SCS-11 for the Soil Conservation Service on Glade Park; Camps BR-22 and BR-59 for the Bureau of Reclamation northeast of Grand Junction and in Palisade; Camps NM-1, NM-3, and NP-8 for the National Park Service for work at the Colorado National Monument; and

Manhattan Project, the majority of the uranium processing plant was demolished, leaving only the heating plant portion.

Reoccupation of the site by the AEC beginning in 1947 resulted in the reuse of several of the buildings left from the Manhattan Project and the addition of numerous others. A tabulation of buildings (based on Schweigert 1999, 2001) constructed at the DOE Office Complex is presented in Table 2. Reused buildings included the log cabin office, the analytical laboratory, the warehouse changing building, the fuel storage and pump house, a garage, and at least six of the CCC buildings used as warehouses. The original log cabin office was joined to a new office building (Building 12) in 1948 that extended north to south with the log cabin portion attached by an eastern projection at its center (Historic Photo 2). That same year, a guard station (later numbered Building 19; no longer extant) just northeast of the new office provided for increased security to the complex. In 1949, a large Quonset hut was erected that was used as a paint shop. Two additional large office buildings were constructed in 1949 (Building 10) and 1950 (Building 8) for use by the U.S. Geological Survey and for AEC contractors. In 1951, the original analytical laboratory was replaced with a new laboratory building, a paint warehouse was built, two USGS drill core sample storage warehouses were constructed, and temporary office buildings for the Engineering Department were erected. Experimental facilities began to be constructed at the site beginning in about 1951, starting with the first pits within the Instrument Calibration Facility and laboratories in 1953 and 1954 (Buildings 22 and 22A). In 1952, the first pilot plant for experiments in the extraction and concentration of uranium ore was constructed, replaced in 1954 by a larger pilot plant. These were constructed in the far southern portion of the facility within the National Register district boundary. With the erection of the second pilot plant came a need for additional security in the southern portion of the complex, so the southern gate guard house (Building 29) was built in 1952, which was completely rebuilt in 1956 and also used as a truck dispatch station. In 1954 and 1955, the facility saw its greatest growth with the addition of the AEC mining and processing offices, warehouses, engineering offices for the pilot plants (Building 26), maintenance and repair shops for the pilot plant and field operations (Building 28), an acid leaching and carbonate/alkaline leaching circuit buildings, chemical storage and changing facility for the second pilot plant (Building 32), the AEC procurement program supply and operations building (Building 30), Army Corps of Engineers and USGS District Office building (Building 38), and other ancillary facilities. Coinciding with the considerable construction and reflecting the complexity of the operations there, buildings were given numbers in about 1956. Little new construction was conducted in the 1960s and 1970s, but some of the buildings were joined and infilled by new construction, such as Buildings 9, 9A, and 38 being infilled to form Building 938 in 1963 and Buildings 22, 22A, and 30 being joined by new construction to form Building 3022 in about 1979. Beginning in about 1970, with the end of uranium procurement for Cold War weapon production, the focus of the facility changed away from procurement of uranium ore for weaponry, facilitation of mining and ore processing, and support of the domestic uranium industry, to more study-based investigations of uranium both domestically and worldwide. New construction was of smaller scale and oriented more toward storage, modular offices, and office support facilities. With the mill tailings removal

Camp F-27 at Whitewater for the U.S. Forest Service. One or more of these camps were likely the source of the CCC buildings used as warehouses at the complex.

project in Grand Junction and subsequent large-scale remediation projects at uranium mills and other facilities throughout the western United States, additional offices were required, most of which were modular or temporary in nature. In the late 1990s, the DOE Grand Junction Office complex itself required radiological remediation, which resulted in the removal of numerous processing and storage facilities from the Cold War era.

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Previous documentation on file (NPS):

____ preliminary determination of individual listing (36 CFR 67) has been requested
____ previously listed in the National Register
____ previously determined eligible by the National Register
____ designated a National Historic Landmark
____ recorded by Historic American Buildings Survey #____________
_X_ recorded by Historic American Engineering Record # __CO-87___
____ recorded by Historic American Landscape Survey # ___________

Primary location of additional data:

_X_ State Historic Preservation Office
____ Other State agency
_X_ Federal agency
____ Local government
____ University
____ Other

Name of repository: History Colorado, Denver, Colorado; Department of Energy, Grand Junction Office, Grand Junction, Colorado; Riverview Technology Corporation, Grand Junction, Colorado

Historic Resources Survey Number (if assigned): 5ME.21616 (5ME.11936, .11937, .11939, .11943, .11945, .11946, .11947, .11948, .11953, .11954, .11955, .11958, .11963, .11965, .11966, .11967, and .11968)

10. Geographical Data

Acreage of Property 25.2

Use either the UTM system or latitude/longitude coordinates

Latitude/Longitude Coordinates
Datum if other than WGS84:__________
(enter coordinates to 6 decimal places)
1. Latitude: Longitude:

2. Latitude: Longitude:

3. Latitude: Longitude:

4. Latitude: Longitude:

Or
UTM References
Datum (indicated on USGS map):

☐ NAD 1927 or ☒ NAD 1983

1. Zone: 12	Easting: 709923	Northing: 4324456
2. Zone: 12	Easting: 710019	Northing: 4324459
3. Zone: 12	Easting: 710018	Northing: 4324548
4. Zone: 12	Easting: 710045	Northing: 4324558
5. Zone: 12	Easting: 710090	Northing: 4324523
6. Zone: 12	Easting: 710281	Northing: 4323909
7. Zone: 12	Easting: 710208	Northing: 4323935
8. Zone: 12	Easting: 709904	Northing: 4324297
9. Zone: 12	Easting: 709940	Northing: 4324299

Verbal Boundary Description (Describe the boundaries of the property.)

The boundary of the Department of Energy Grand Junction Office is shown as a solid black line on the accompanying map. The property is a contiguous block of land in an irregular polygon. It contains all of the land on which current and former buildings and facilities were and are located except for Buildings 7 and 40, which are excluded and are on land owned by the U.S. Army Reserve. This is mainly in the eastern portion of Section 27, east of the Gunnison River, and a small portion of the western edge of Section 26, Township 1 South, Range 1 West, Ute Principal Meridian. The eastern, southern, and western boundaries conform to the boundary of the land parcels owned by Riverview Technology Corporation

(RTC), mostly delineated by fencing. The eastern portion of the parking area outside the nomination boundary is railroad right-of-way leased from the Union Pacific Railroad. The northern boundary is a combination of the boundary line between property owned by RTC and the U.S. Army Reserve and a line drawn across RTC land to encompass portions of the property used during the period of significance and to exclude ponds to the north. No irrigation water structures or wells are within the boundary.

Boundary Justification (Explain why the boundaries were selected.)

The boundary of the Department of Energy Grand Junction Office was drawn to include the maximum extent possible of all of the former and existing buildings, structures, and sites associated with the complex during the period of significance. This reflects the historic area encompassed by the complex except that not in the contiguous ownership of the Riverview Technology Corporation.

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11. Form Prepared By

name/title: Jonathon C. Horn, Principal Investigator (for property owner)
organization: Alpine Archaeological Consultants, Inc.
street & number: PO Box 2075
city or town: Montrose state: Colorado zip code: 81402
e-mail: jon_horn@alpinearchaeology.com
telephone: (970) 249-6761 x 14
date: January 22, 2016

Additional Documentation

Submit the following items with the completed form:

- **Maps:** A **USGS map** or equivalent (7.5 or 15 minute series) indicating the property's location.
- **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.
- **Additional items:** (Check with the SHPO, TPO, or FPO for any additional items.)

Photographs

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels (minimum), 3000x2000 preferred, at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map. Each photograph must be numbered and that number must correspond to the photograph number on the photo log. For simplicity, the name of the photographer, photo date, etc. may be listed once on the photograph log and doesn't need to be labeled on every photograph.

Photo Log

Name of Property:	Department of Energy Grand Junction Office
City or Vicinity:	Grand Junction
County:	Mesa
State:	Colorado
Photographer:	Jon Horn
Date Photographed:	August 28 and 31 and September 16, 2015

Digital TIFFs on file with History Colorado Office of Archaeology and Historic Preservation

Number of Photographs:	91

Photo #	Description
1	Looking northwest at the DOE Grand Junction Office complex. Note the Gunnison River passing along the western side of the area and the Union Pacific Railroad grade passing along the eastern side.
2	The northern portion of the DOE Grand Junction Office complex showing the main entrance at Building 810 across the Union Pacific Railroad grade. View is to the west.
3	The northern portion of the DOE Grand Junction Office complex with a coal train passing by on the Union Pacific Railroad grade, looking west.
4	Looking south-southwest at the southern portion of the DOE Grand Junction Office complex. Note the access road entering across the Union Pacific Railroad grade with Building 28 left of center and Building 3022 right of center.
5	South-central portion of the DOE Grand Junction Office complex, looking west. Note Building 28 just across the Union Pacific Railroad grade with Building 3022 behind and slightly to the right. Building 938 is partly visible at the far right adjacent to the parking area.
6	Looking northwest through the southern portion of the DOE Grand Junction Office parcel where Buildings 31, 33, and 35 had formerly been situated. Building 28 is to the right, Building 3022 is at center, and Building 32 is to the left.
7	Looking south-southwest at the former locations of Buildings 33 and 35 in the southern portion of the nomination area.
8	Main entrance into the DOE Grand Junction Office complex through the eastern side of the modern connecting structure of Building 810. Building 8 extends southward to the left, and Building 10 extends northward to the right.

9 Looking northwest at the southern and western sides of Building 8 of the combined Building 810.

10 The southern and eastern sides of Building 8 of the combined Building 810, looking north-northeast.

11 Looking south-southwest at the northern and eastern sides of Building 10 of the combined Building 810. 11 The northern and western sides of Building 10 of the combined Building 810, looking south-southeast.

12 The northern and western sides of Building 10 of the combined Building 810, looking south-southwest.

13 Detail of the western side of Building 10 of the combined Building 810 showing the ramp with pipe railing leading to the side door. View is to the southeast.

14 Looking east at the western side of the modern connecting structure of Building 810 with Building 8 extending northward to the left and Building 10 extending southward to the right. The rear entrance into the building is in the recess to the right.

15 The southern and eastern sides of the log cabin portion of Building 12 showing its connection to the large T-shaped office building to the left. View is to the west-northwest.

16 Eastern side of the log cabin portion of Building 12, looking west.

17 The northern and eastern sides of the log cabin portion of Building 12. View is to the south-southwest.

18 Looking east-southeast at the northern side of the log cabin portion of Building 12. Note the gable on the western side of the cabin extending above the connection with the T-shaped office building portion.

19 Detail of the brick fireplace with brass fan-pattern vents on the interior of the log cabin portion of Building 12, looking northwest. Note the vertical pine paneling and the modern partition wall to the left.

20 Detail of the partly covered shelving unit and one side of the multi-light double door on the interior of the log cabin portion of Building 12. View is to the southeast.

21 Looking southeast at the two vaults in the basement of the log cabin portion of Building 12. The vault to the right was installed in 1943 and the vault to the left was installed in 1950.

22 Rectangular and arched concrete door frames in the basement of the log cabin portion of Building 12. View is to the west.

23 Kitchen in the basement of the log cabin portion of Building 12, looking north-northeast. Note the storage room to the right and the vault door farther right.

24 Northern side of the room constructed within the L of the eastern and northern wings of Building 12. View is to the south.

25 Eastern side of the northern wing of Building 12, looking northwest.

26 Looking south-southwest at the northern and eastern sides of the northern wing of Building 12. Note the log cabin portion of the building extending eastward.

27 Northern and western sides of the northern wing of Building 12, looking south-southeast.

28 Western and southern sides of Building 12 showing the new entry on the southern end. View is to the north-northeast. Note the brick portion of the northern wing extending to western projection between the wings.

29 Part of the western side of the southern wing and the southern side of the western projection of Building 12 at the connection between the northern and southern wings. View is to the north-northeast.

30 Northern and eastern sides of Building 938, looking southwest. Note the entry projection at the center of the northern side.

31 Southern side and part of the eastern side of Building 938, view is to the west-northwest.

32 Southern side and part of the western side of Building 938. View is to the northeast.

33 Looking north-northwest at the southern and eastern sides of Building 2. Note the shed extension near the center of the eastern side.

34 Southern side of Building 2 with a modern storage building and garage to the left. View is to the north-northeast.

35 Eastern and northern sides of Building 2, looking west-southwest. Note Building 46 in the background to the left.

36 Looking south-southeast at the northern and western sides of Building 2.

37 Looking northwest at the spillage containment structure.

38 Secure parking area with the southern entry into the complex to the right. View is to the northeast.

39 Looking across the central portion of the calibration facility with Building 54 in the background. View is to the north.

40 Above ground tanks in the north-central portion of the calibration facility marked N1-N5 at left, L-shaped arrangement of partly subterranean tanks marked U1-U3 in background at center, two concrete tanks at far right, and six semisubterranean tanks marked T-1, T-2, T-3, U, T, and K running perpendicular in the foreground. View is to the west. Note the overhead pipes with supporting frameworks.

41 Five of the six semi-subterranean tanks in the eastern portion of the calibration facility marked U, T, K, T-2, and T-3, looking southeast. Note proximity of Building 3022 in the background.

42 Looking southwest at above-ground tanks N1-N5 in the central portion of the calibration facility.

43 Above-ground tanks with access platforms and overhead pipe frameworks in the southwestern portion of the calibration facility, looking west-northwest.

44 Looking west at the eastern side of Building 3022. The taller portion at the far left is Building 30, the gabled portion left of center is the addition that joined Buildings 22 and 30, and the single-story section to the right is Buildings 22 and 22A.

45 Looking west at the connecting unit of Building 3022 showing the landscaped courtyard area with wooden pergola.

46 Eastern side of Buildings 22 and 22A with part of the eastern side of the unit that connects Buildings 22 and 30 at the far left. View is to the northwest.

47 Looking southwest at most of the eastern side of Buildings 22 and 22A with its front-facing gable left of center. Note the eastern portion of Building 30 at the far left and the top of the gable of the interconnecting section just visible left of center.

48 Northern and western sides of Building 22A and northern side of Building 22, looking southeast. Note the calibration facility tanks in the foreground.

49 Northern and western sides of Building 22 and most of the western side of Building 22A with the western sides of the interconnecting unit and Building 30 farther right. View is to the southeast. Note the gable end of the western side of the western wing still visible beneath the northern roof extension from the interconnecting unit.

50 Looking east-northeast at the western side of the interconnecting unit that joins Buildings 22 and 30 as Building 3022.

51 Northern and western sides of Building 30B with a temporary storage structure adjacent immediately west of the Building 30 portion of Building 3022. View is to the east-southeast.

52 The southern portion of the western side and western end of the southern side of Building 3022. View is to the north-northeast.

53 Southern and eastern sides of Building 30, looking northwest.

54 Northern side of Building 26, looking south.

55 Looking west-northwest at the southern and eastern sides of Building 26. Note modern refrigerated container in background to the left.

56 Western side of Building 29, looking east.

57 Looking southeast at the northern and western sides of Building 29.

58 Southern and western sides of Building 28, looking northeast.

59 Western side of Building 28. View is to the east.

60 Looking southeast at the northern and western sides of Building 28.

61 Northern side of Building 28, looking south.

62 Northern and eastern sides of Building 28. View is to the southwest.

63 Looking south-southwest along the eastern side of Building 28.

64 Detail of the loading dock on the eastern side of Building 28. View is to the south-southwest.

65 Steel addition on the southern end of the eastern side of Building 28, looking northwest.

66 Looking north at the southern and eastern sides of Building 28.

67 Southern side of Building 28, looking north.

68 Typical original steel-framed, awning-type window on Building 28, looking east.

69 Looking south at the northern and eastern sides of Building 32. Note the picnic shelter on the edge of the driveway.

70 Eastern side of Building 32, looking southwest.

71 Southern side and part of the eastern side of Building 28. View is to the northwest.

72 Looking east at the southern and western sides of Building 32.

73 Looking north-northwest at the new entry on the southern end of the southern wing of Building 12. Note the new picnic shelter to the left and modern storage container at the far left.

74 Modern storage container west of Building 12, looking northwest.

75 Picnic shelter and satellite dishes south of Building 938, looking north.

76 Looking east-northeast at the temporary garage and storage building on the western side of Building 2.

77 Eastern and northern sides of modern Building 46, looking southwest.

78 Looking south-southwest across recently landscaped area that formerly contained Building 20 with Building 54 in the background.

79 Northern and eastern sides of Building 54, looking south-southwest.

80 Looking southeast at the northern and western sides of temporary portable Sheds 4 and 5 at left and Building 44A at right west of Building 3022. Note the adjacent calibration facility tanks.

81 Southern and eastern sides of Building 44A, looking northwest.

82 Looking south-southeast at the northern and western sides of Building 43. Note Building 26 in the background to left.

83	Southern and eastern sides of Building 43 with Building 3022 in the background to the right. View is to the north.
84	Northern and eastern sides of refrigeration unit, looking south-southwest.
85	Northern and western sides of Building 65. View is to the southeast.
86	Picnic shelter at left and two portable storage Sheds 2 and 3 north and east of Building 32. View is to the west.
87	Modern storage Shed 1 and piles of stockpiled salvaged bricks in the vicinity of the former location of Buildings 33 and 35, looking south-southwest.
88	Looking southwest at the northern and eastern sides of Building 7, outside the National Register boundary.
89	The southern and eastern sides of Building 7, outside of the National Register boundary. View is to the north-northwest.
90	Southern and western sides of Building 40 within a chain-link fence outside the National Register boundary, looking north-northeast.
91	Former location of Building 61, now used for storage of salvaged building materials. View is to the north. Note Building 28 in the background.

HISTORIC PHOTOGRAPH LOG

The following information pertains to all photograph numbers 1-4 except as noted:

Photographer: Unknown
Date of Photographs: ca. 1943 (Photo 1); 1948 (Photo 2 and 3); 1951 (Photo 4)
Negatives: DOE Grand Junction Office, Grand Junction, CO

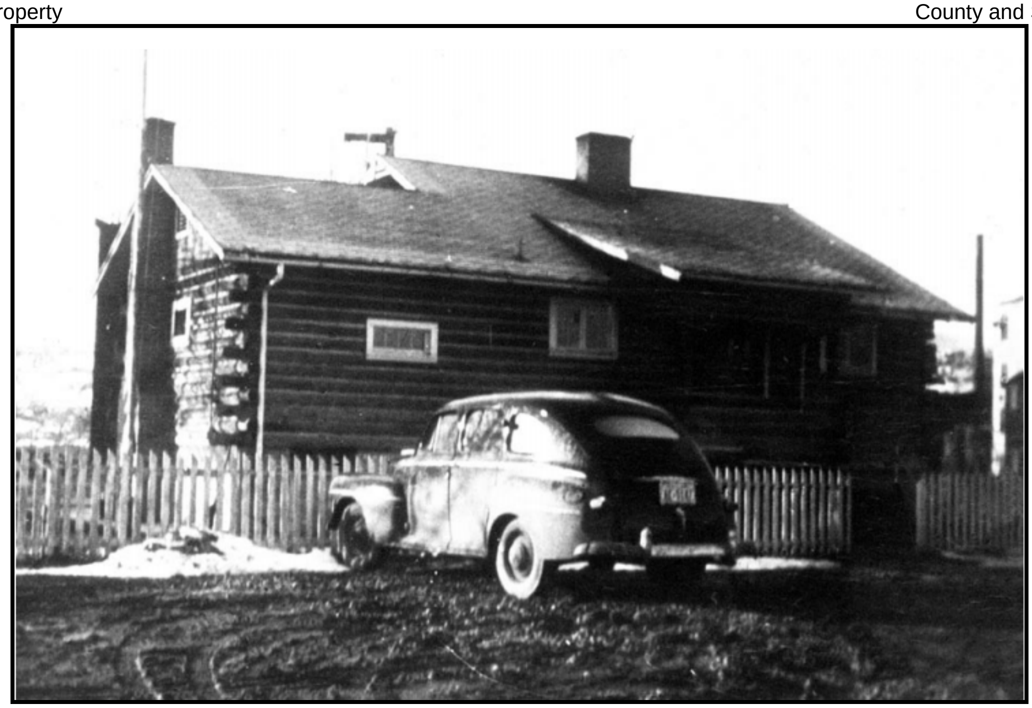
Photo No.	Photographic Information
01	Circa 1943 photograph of the log cabin office building surrounded by a picket fence. Note that the raised foundation can be seen through the fence.
02	1948 photograph showing the construction of Building 12 adjacent to the log cabin office. Note the raised foundation of the cabin with the garage entry on the western side.

03	1948 photograph of Building 12 under construction with the shell of the Manhattan Project refinery in the background.
04	1951 aerial photograph of the Grand Junction Office complex. Note office buildings 8, 10, and 12 are in place with the original log office attached to the east side of Building 12. The photograph is oriented with north to the right.
05	1955 photograph of uranium prospectors waiting for aerial survey results in front of Building 29. J. R. Eyerman photo published in LIFE 38(21):31, May 23, 1955.

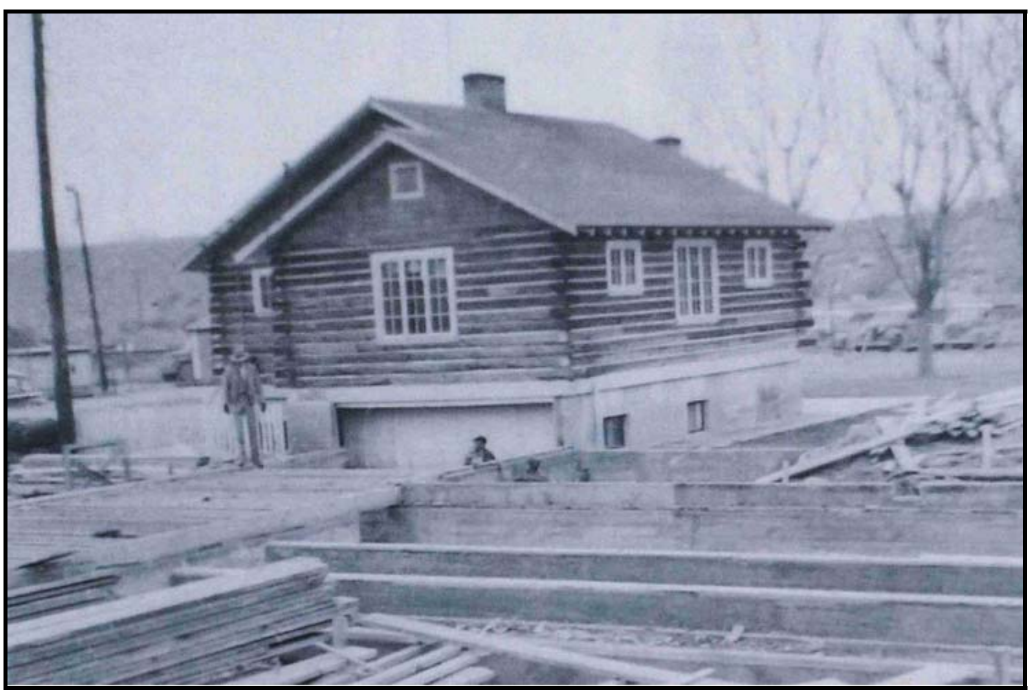
LIST OF MAPS

Map No.	Map Information
01	Plan view map of the Department of Energy Grand Junction Office.
02	Plan view map of the Department of Energy Grand Junction Office with photographic points depicted.
03	1956 plan view map of the Atomic Energy Commission Grand Junction Operations Office, now the DOE Grand Junction Office.
04	Building 8 elevations.
05	Building 8 floor plans with door and window schedules.
06	Building 10 elevations.
07	Building 810 connecting unit.
08	Building 12 elevations except for original log cabin portion.
09	Building 38 elevations.
10	Building 9A plans forming the connection between the northern ends of Buildings 9 and 38.
11	Building 2 plan.
12	Building 22 elevations.
13	Building 30 north and west elevations.

14	Building 30 south and east elevations.
15	Building 29 elevations and plan.
16	Building 28 isometric view drawing showing east and north sides of the building as built in 1953.
17	Building 28 elevations. Note that the south and north elevations are mislabeled and should be the north and south elevations.
18	Building 32 plan and elevations.

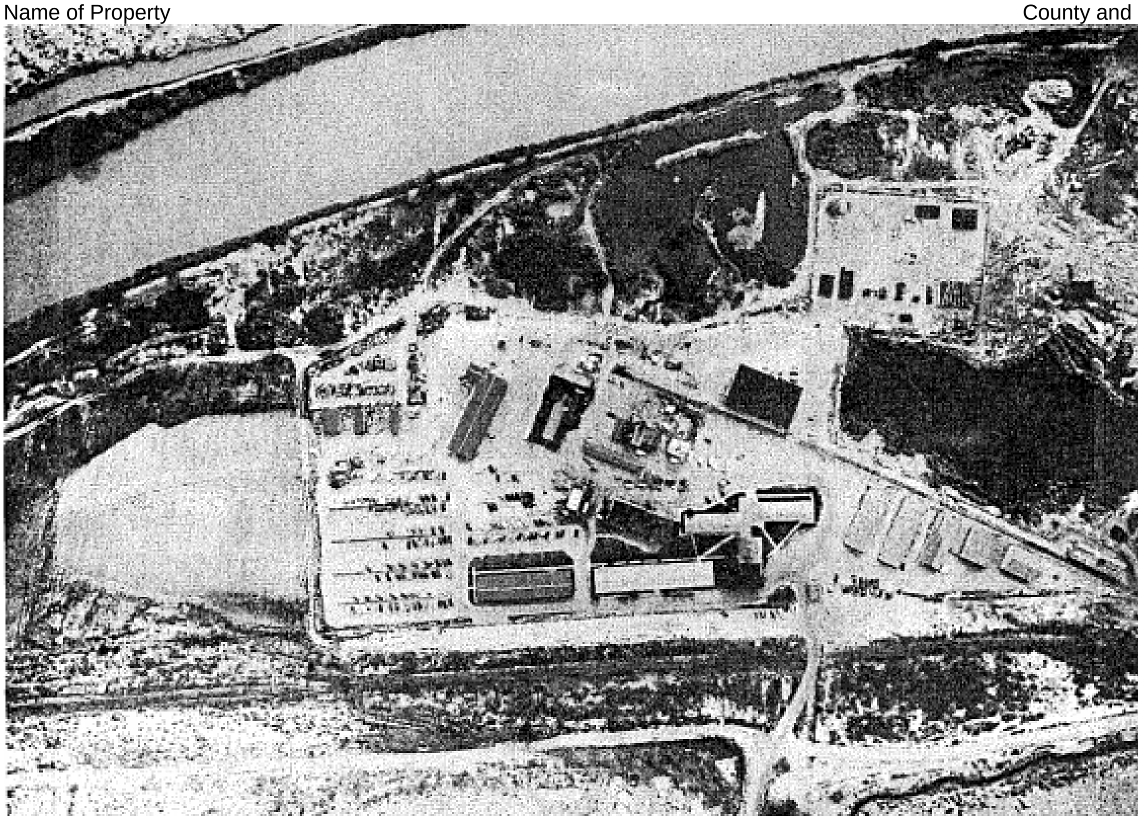


Historic Photo 1. Circa 1943 photograph of the log cabin office building surrounded by a picket fence. Note that the raised foundation can be seen through the fence. Photographer unknown, on file at the DOE Grand Junction Office, Grand Junction, Colorado.



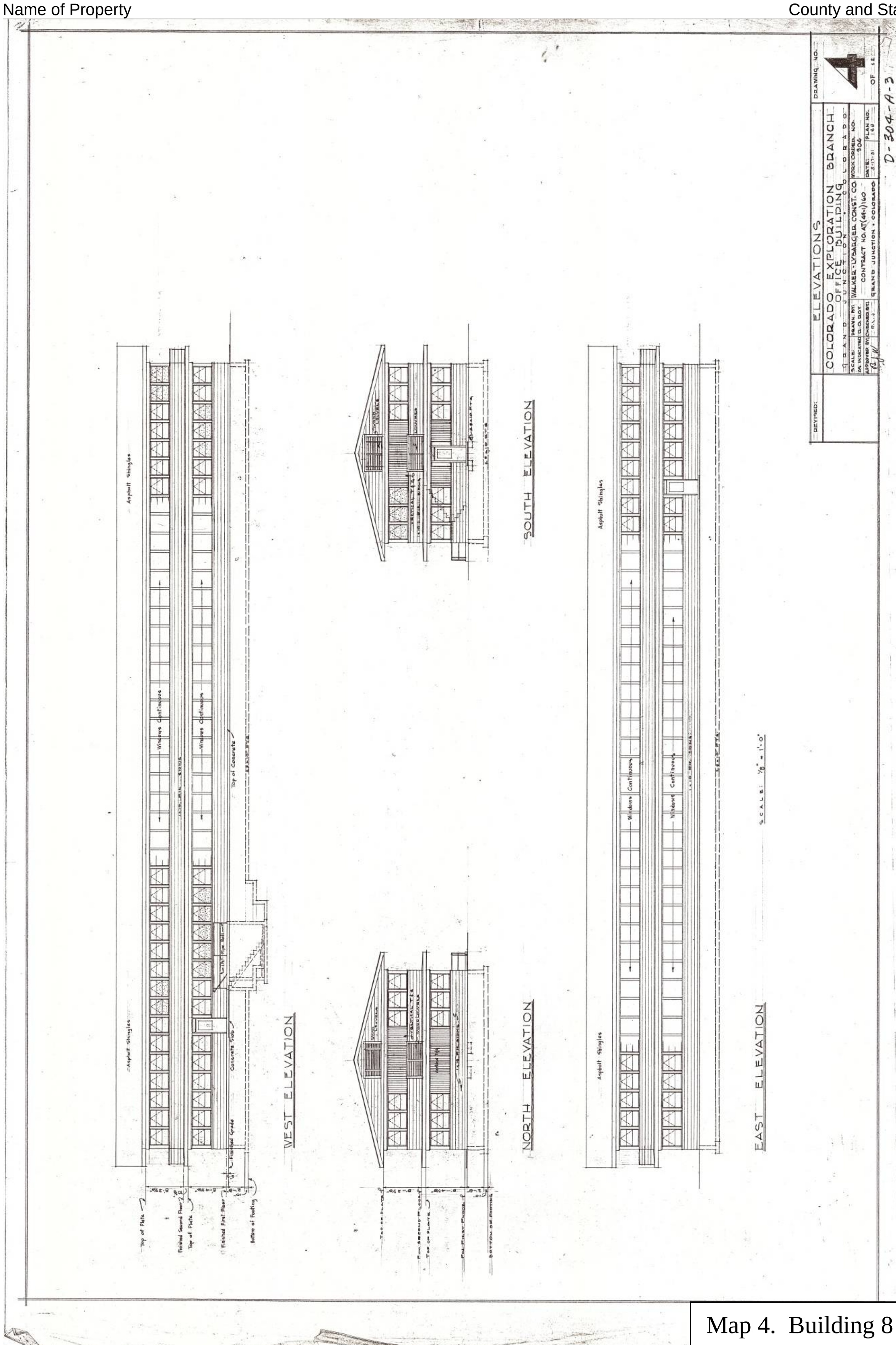
Historic Photo 2. 1948 photograph showing the construction of Building 12 adjacent to the log cabin office. Note the raised foundation of the cabin with the garage entry on the western side. Photographer unknown, on file at the DOE Grand Junction Office, Grand Junction, Colorado.

Historic Photo 3 1948 photograph of Building 12 under construction with the shell of the Manhattan Project refinery in the background.

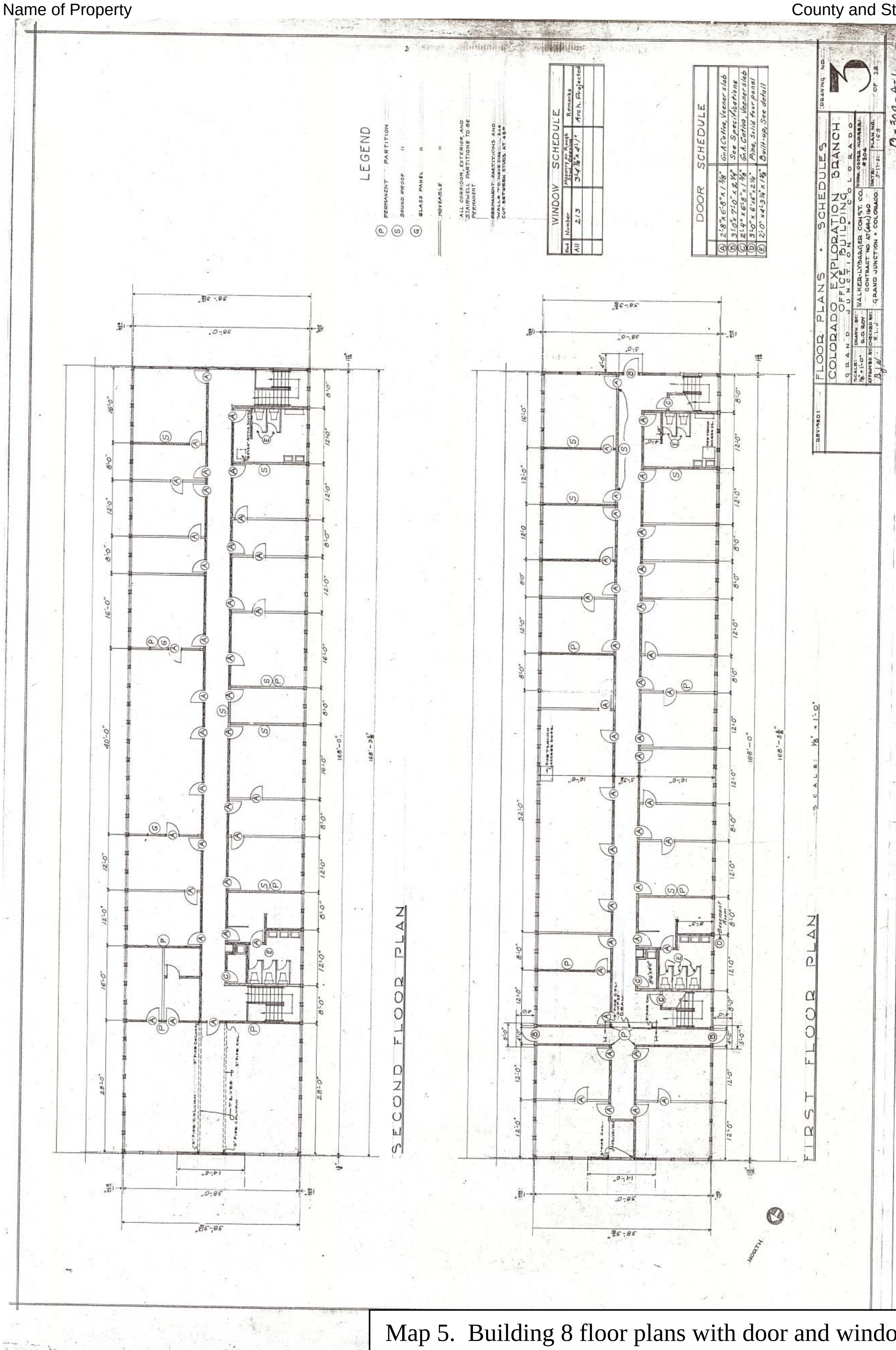


Historic Photo 4 1951 aerial photograph of the Grand Junction Office complex. Note office buildings 8, 10, and 12 are in place with the original log office attached to the east side of Building 12. The photograph is oriented with north to the right.

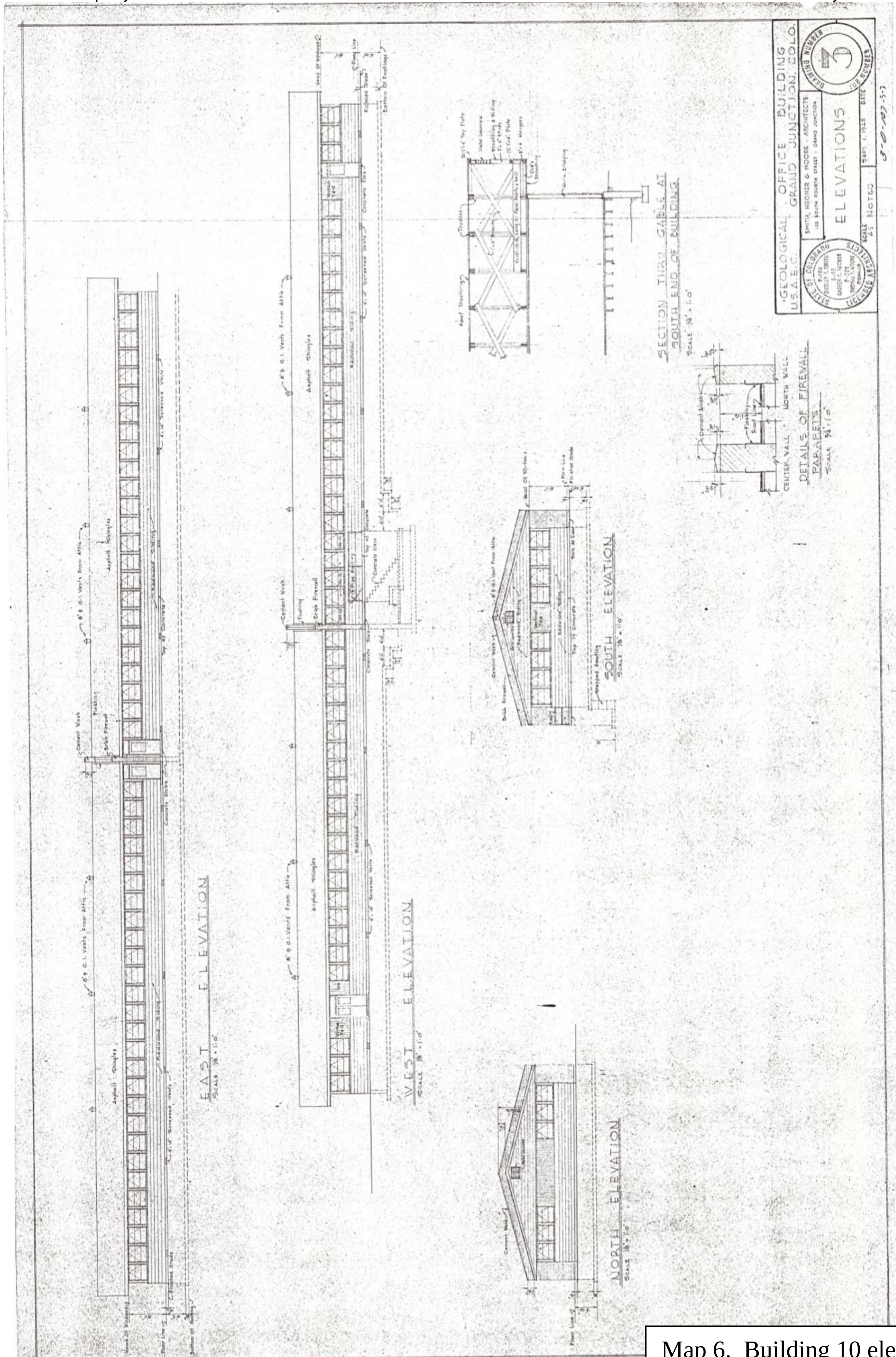
Historic Photo 5 1955 photograph of uranium prospectors waiting for aerial survey results in front of Building 29. J. R. Eyerman photo published in LIFE 38(21):31, May 23, 1955.



Map 4. Building 8 elevations.



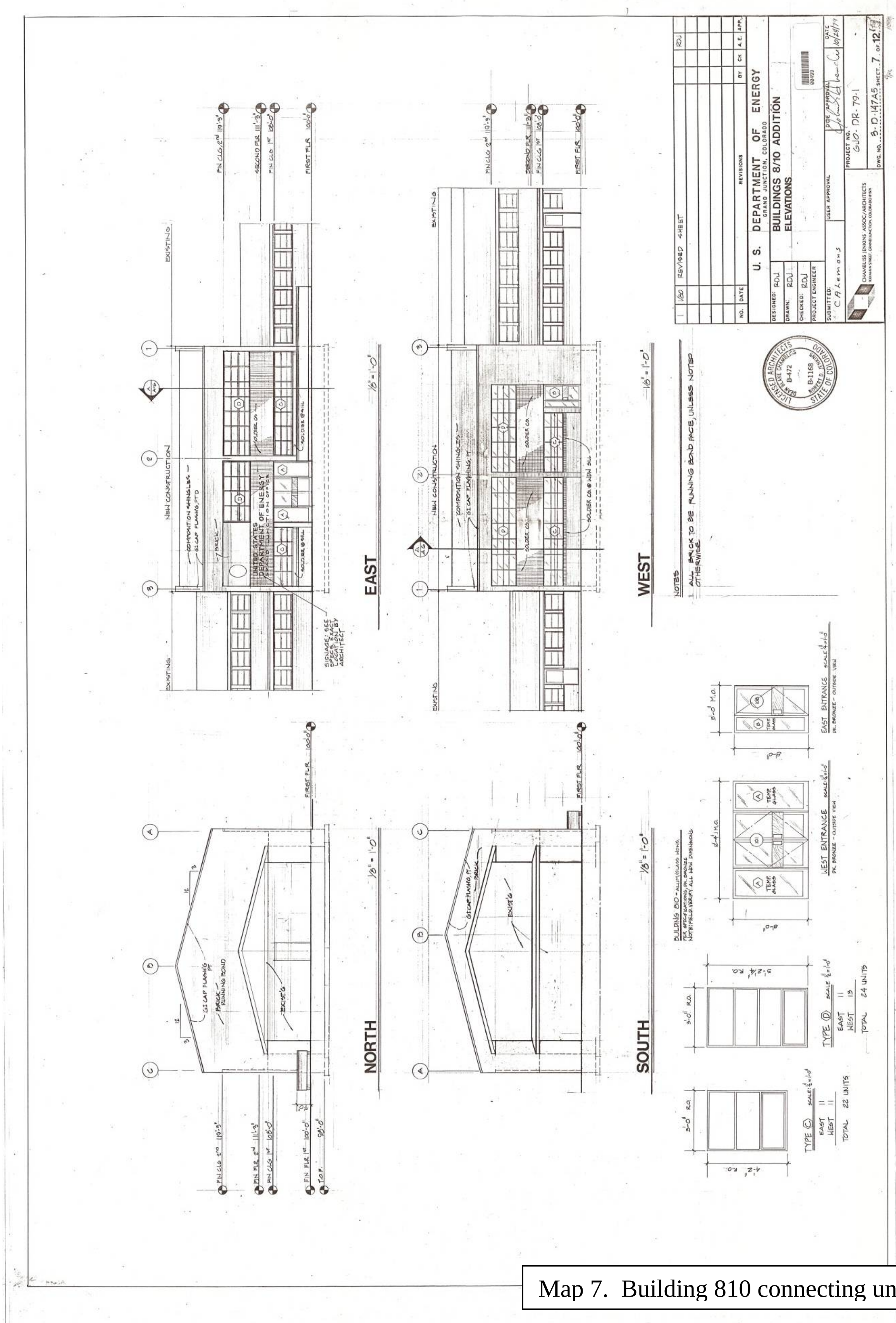
Map 5. Building 8 floor plans with door and window schedules.



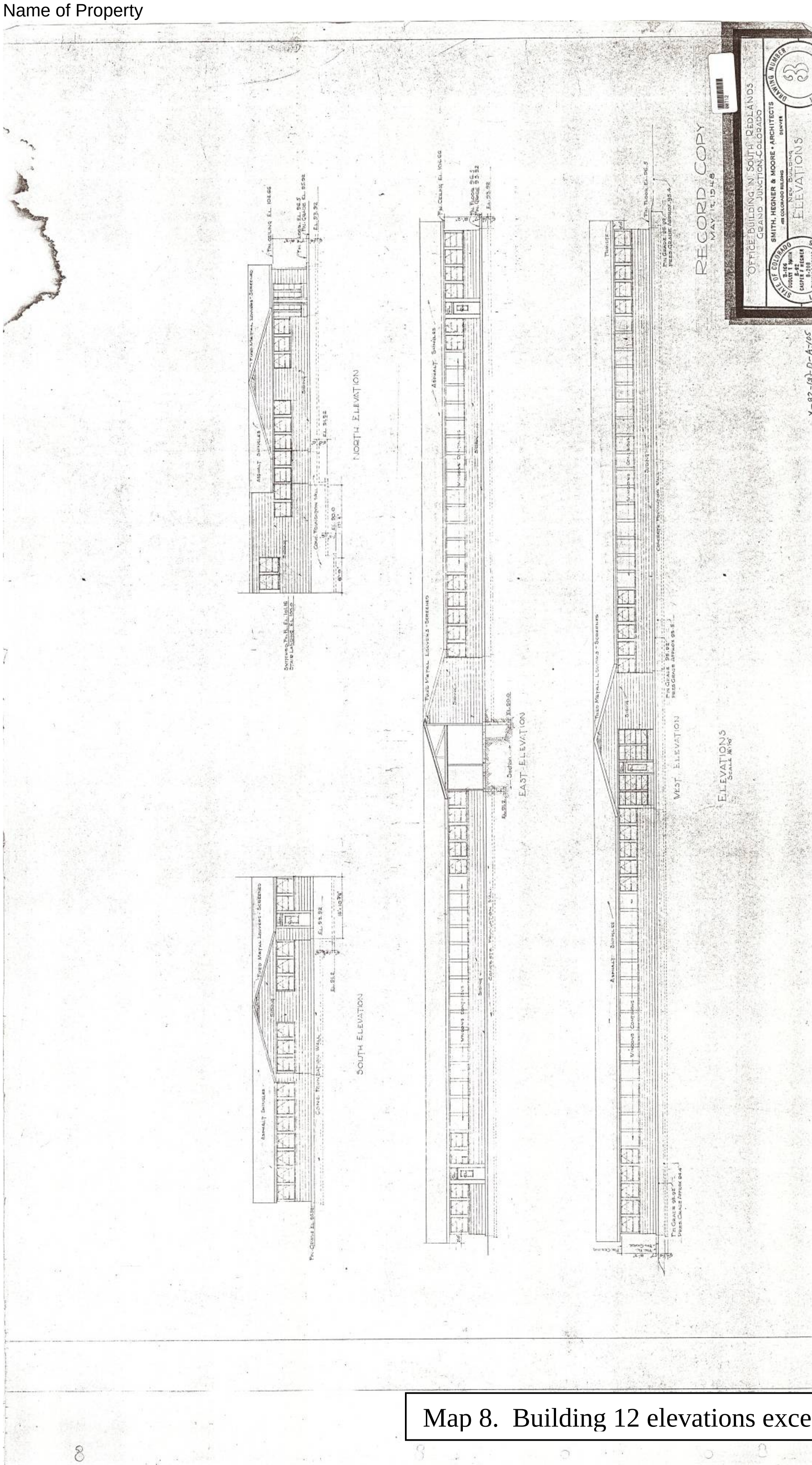
Map 6. Building 10 elevations.

Department of Energy Grand Junction Office
Name of Property

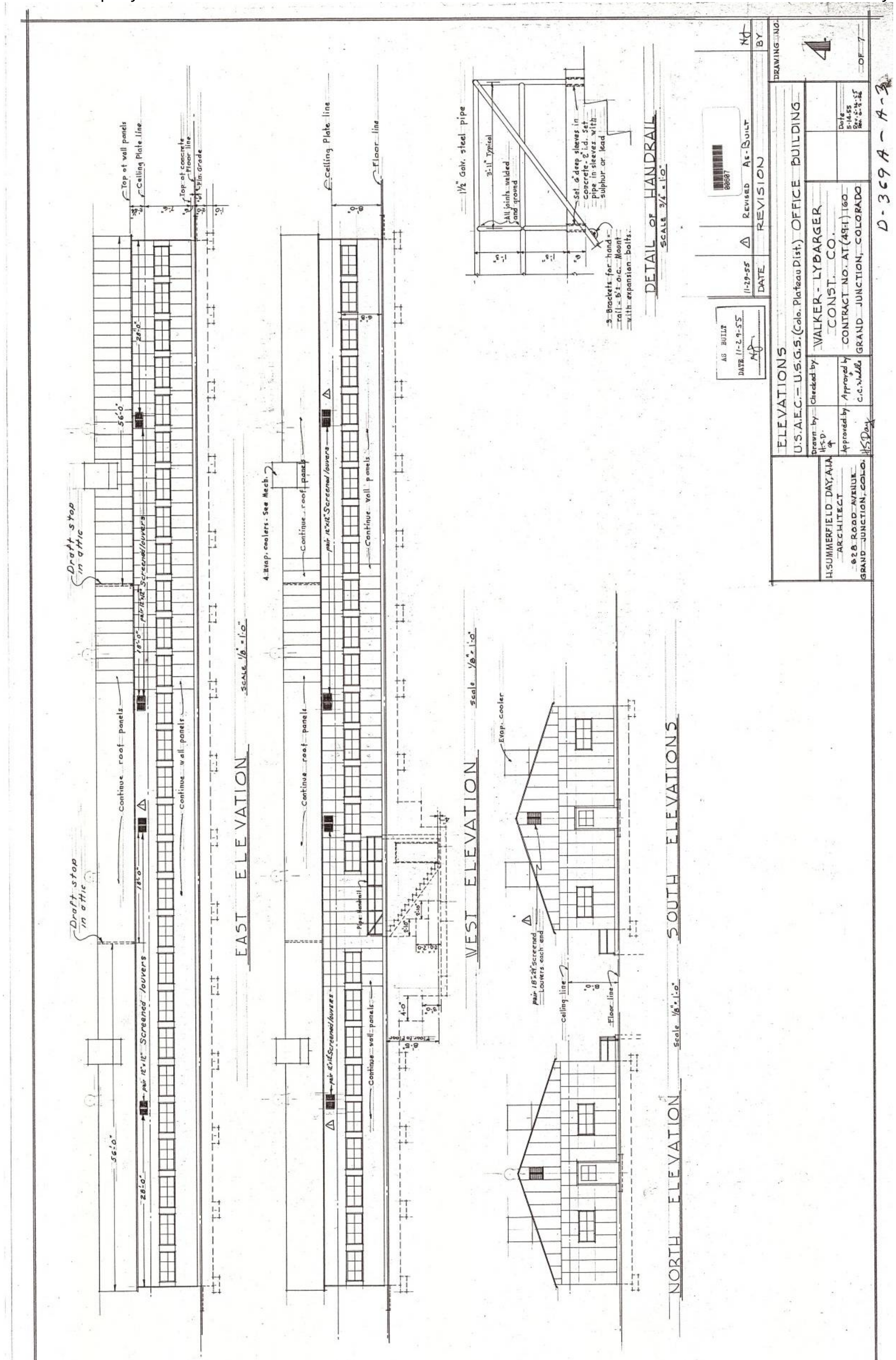
Mesa County, Colorado
County and State



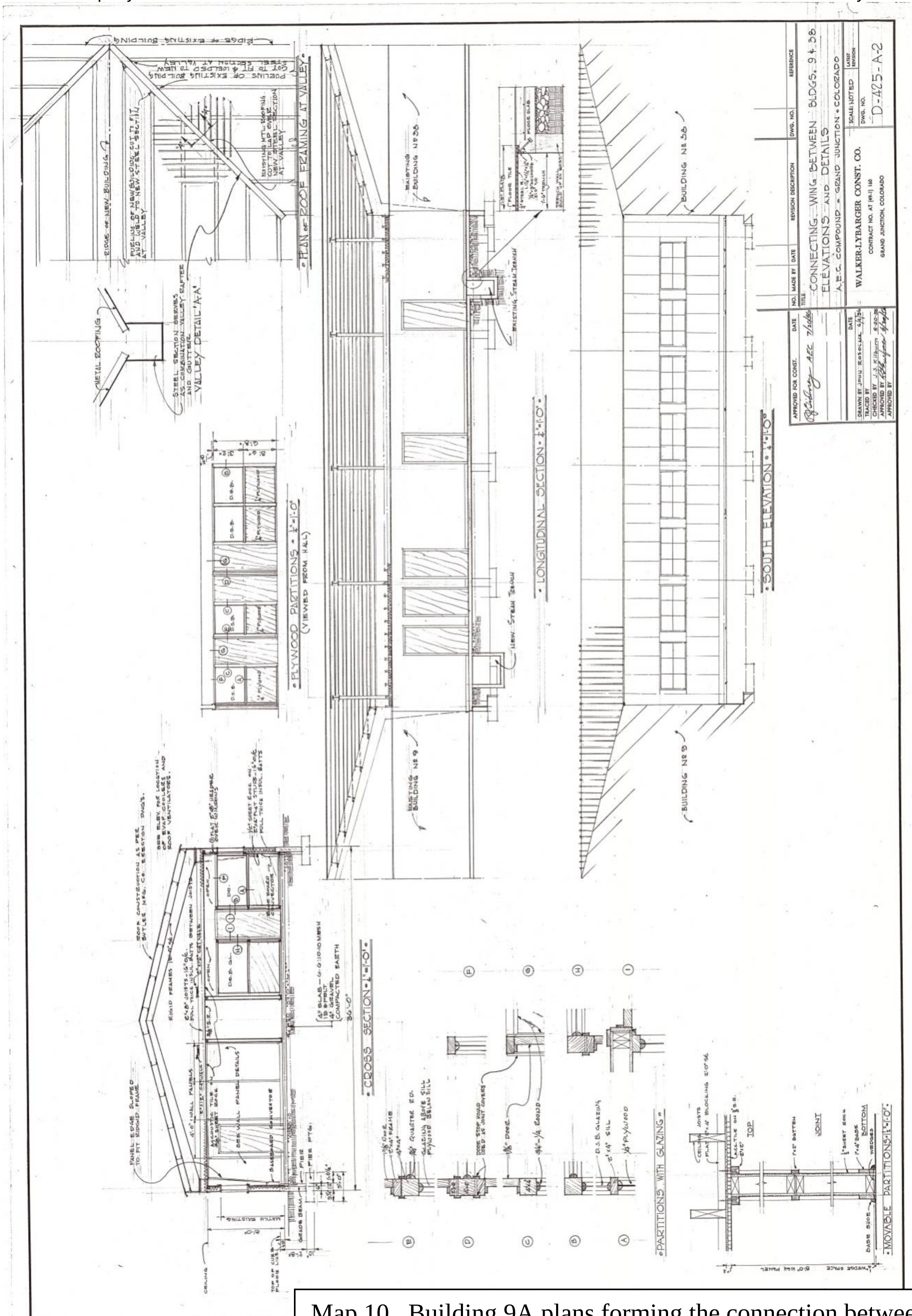
Map 7. Building 810 connecting unit.



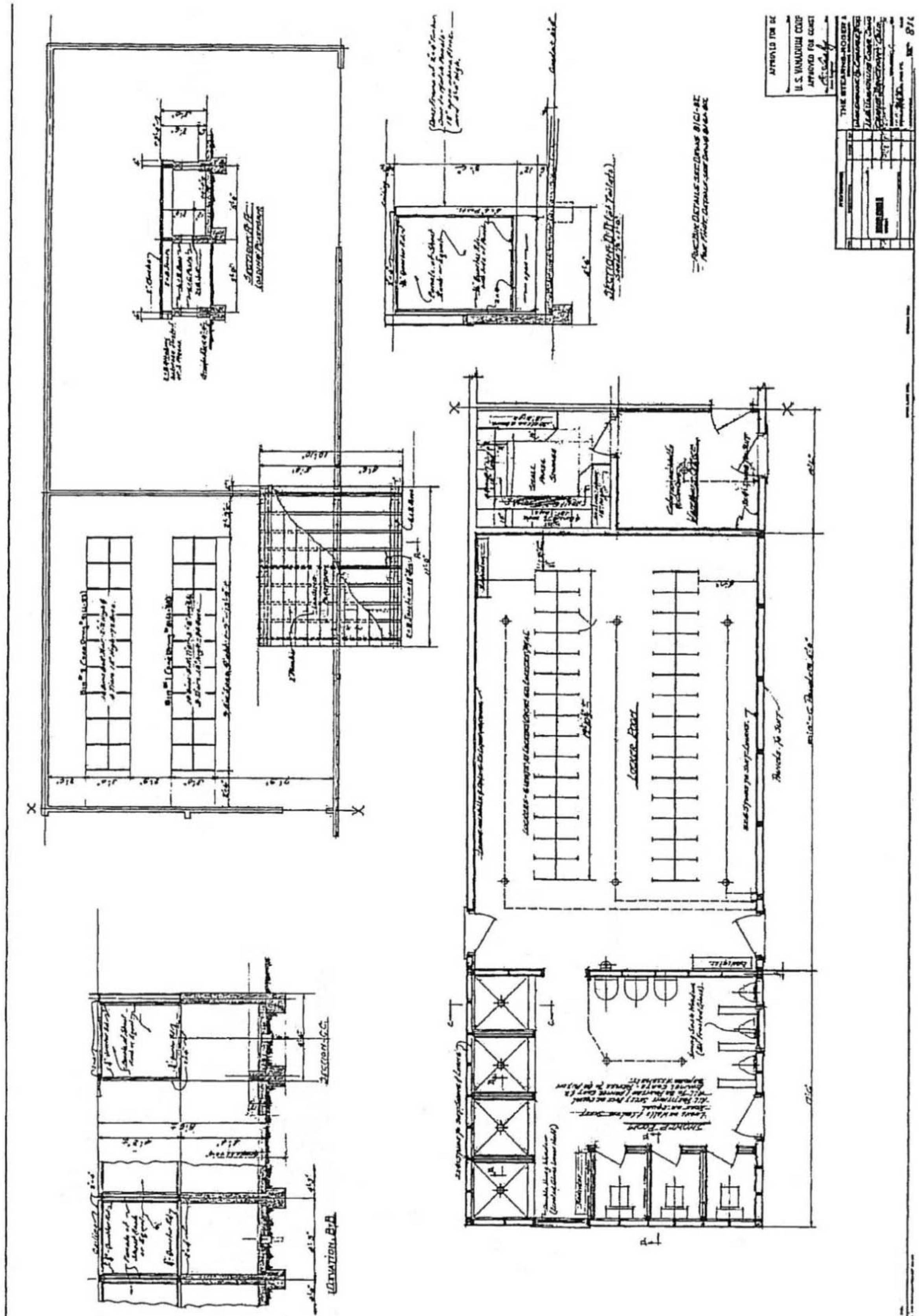
Map 8. Building 12 elevations except for original log cabin



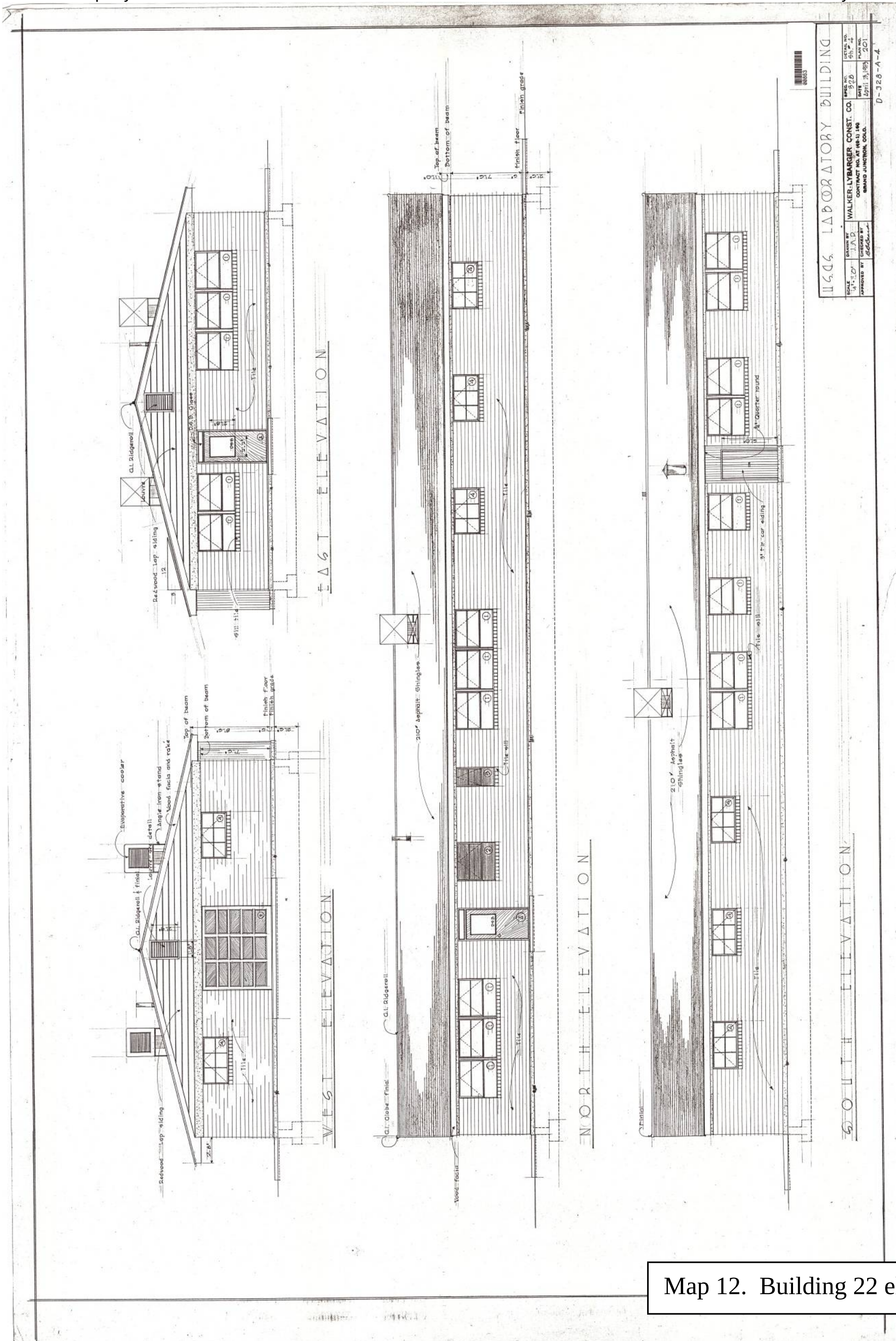
Map 9. Building 38 elevations.



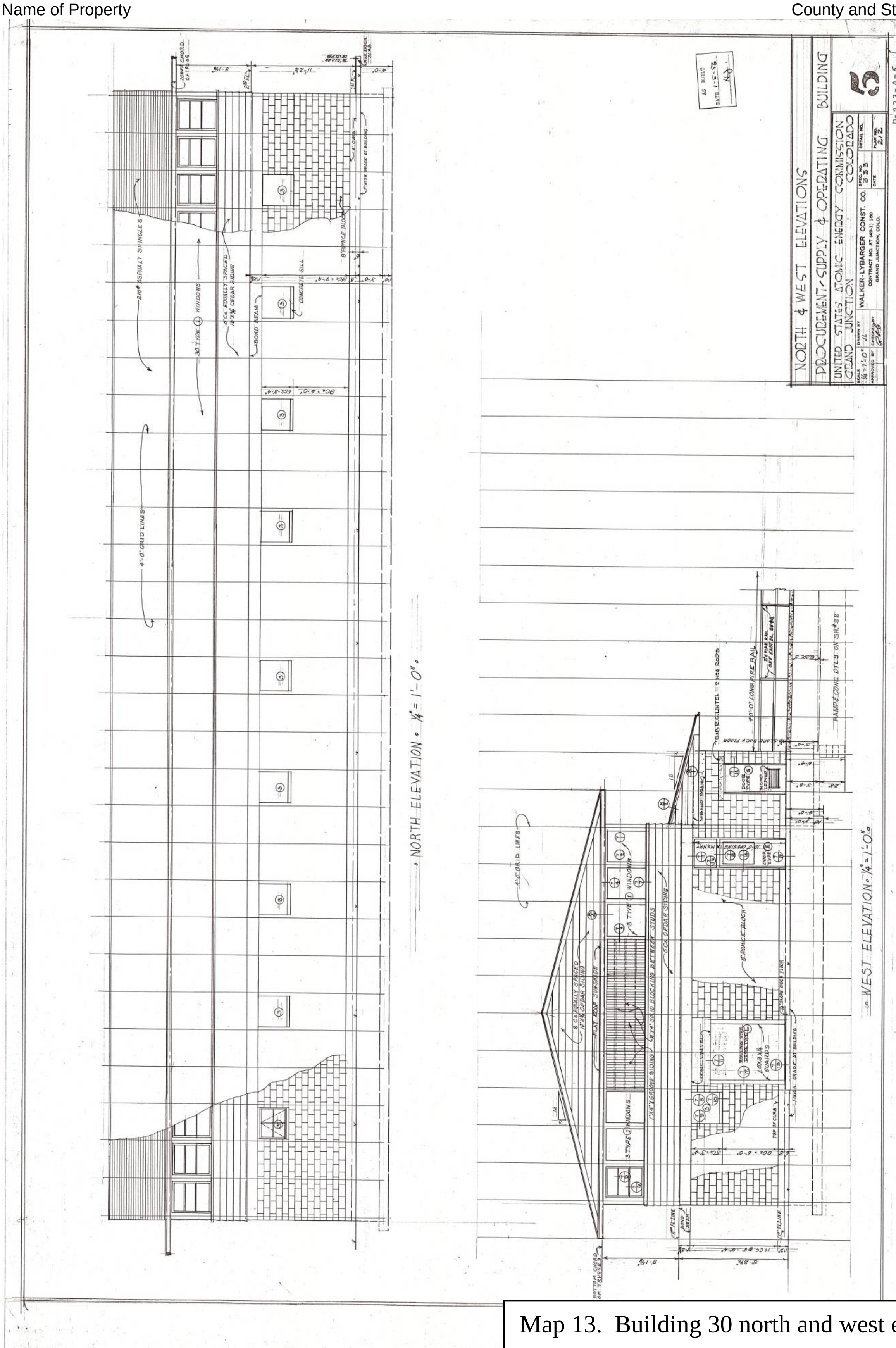
Map 10. Building 9A plans forming the connection between the northern ends of Buildings 9 and 38.



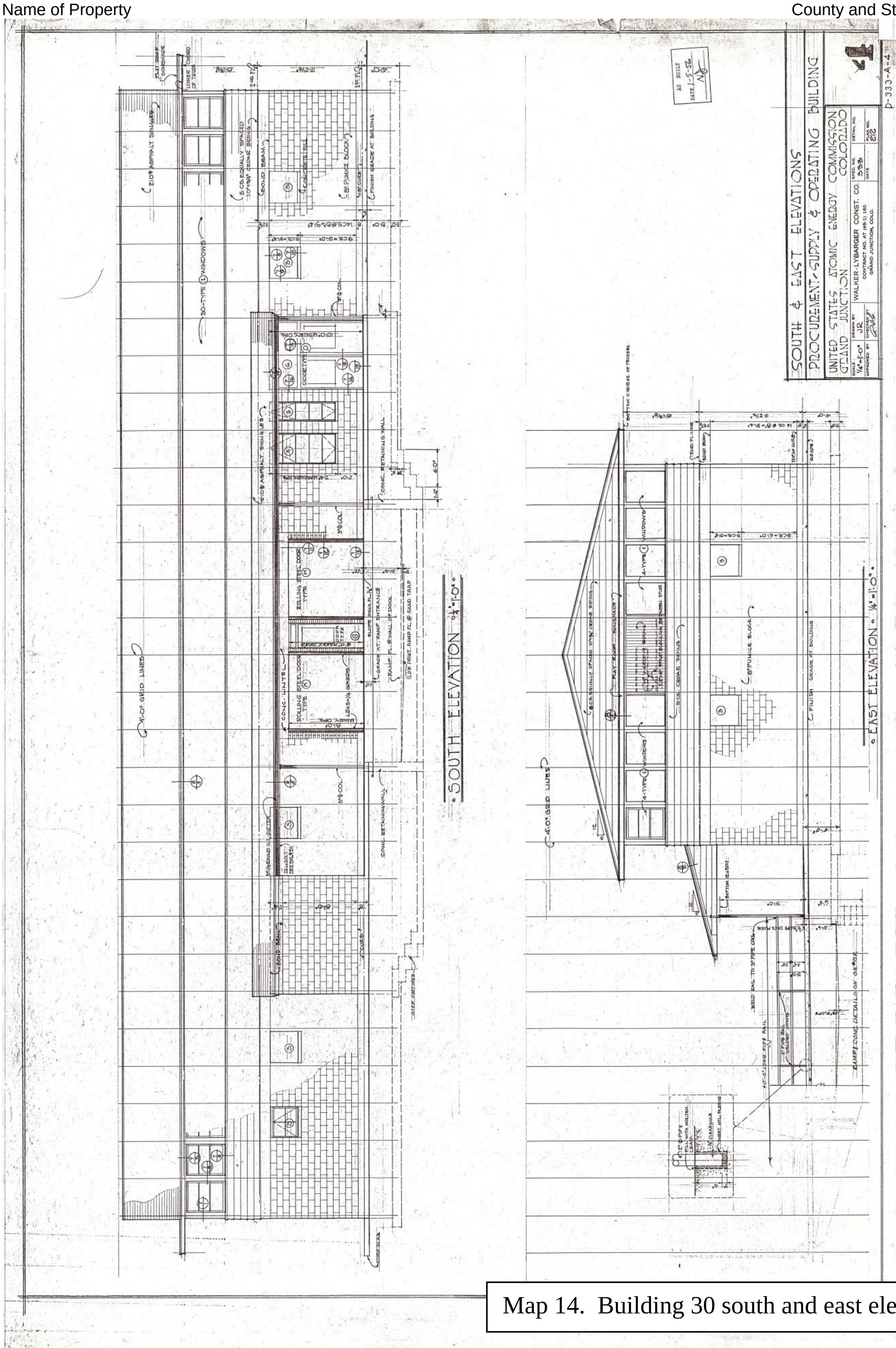
Map 11. Building 2 plan.



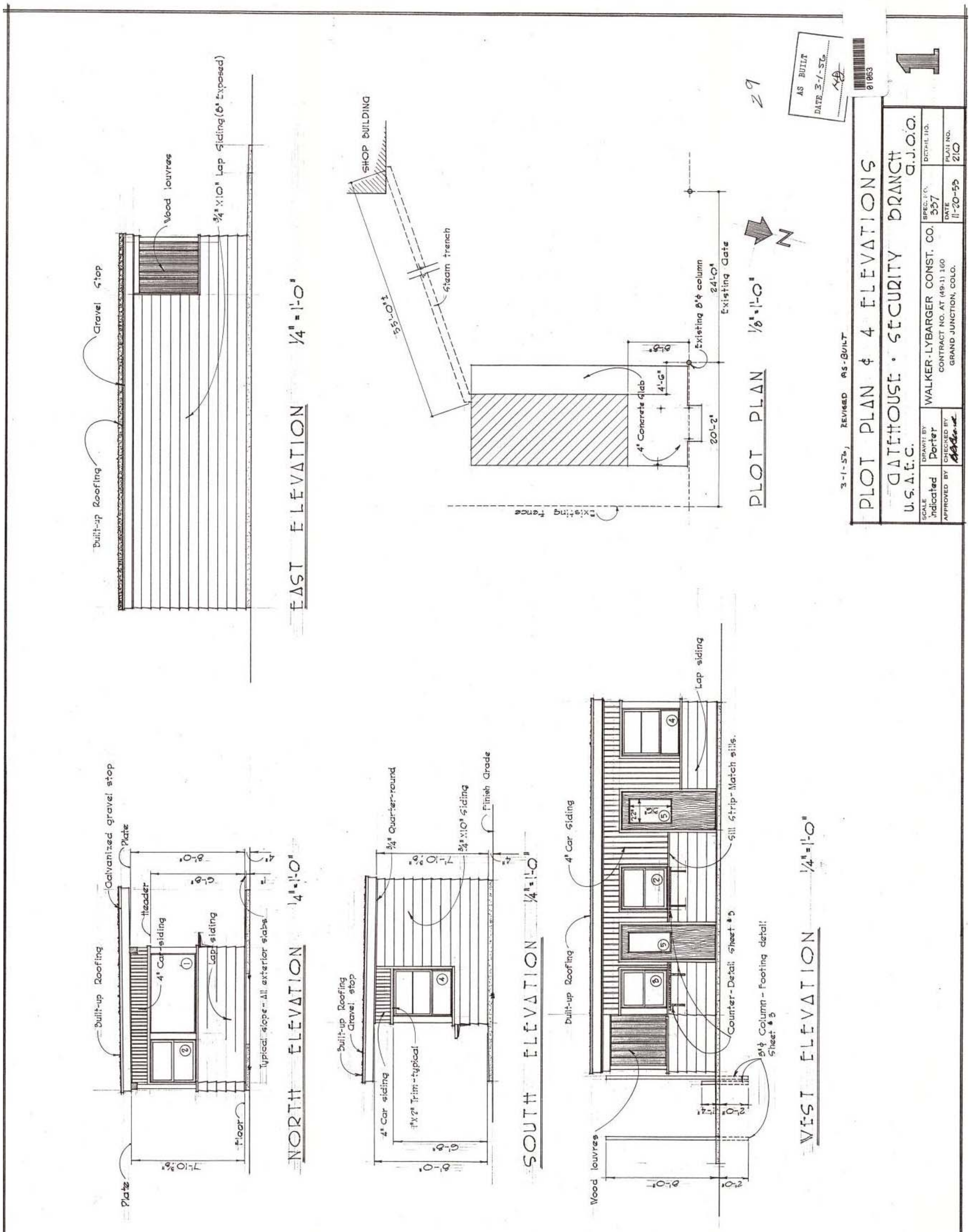
Map 12. Building 22 elevations.



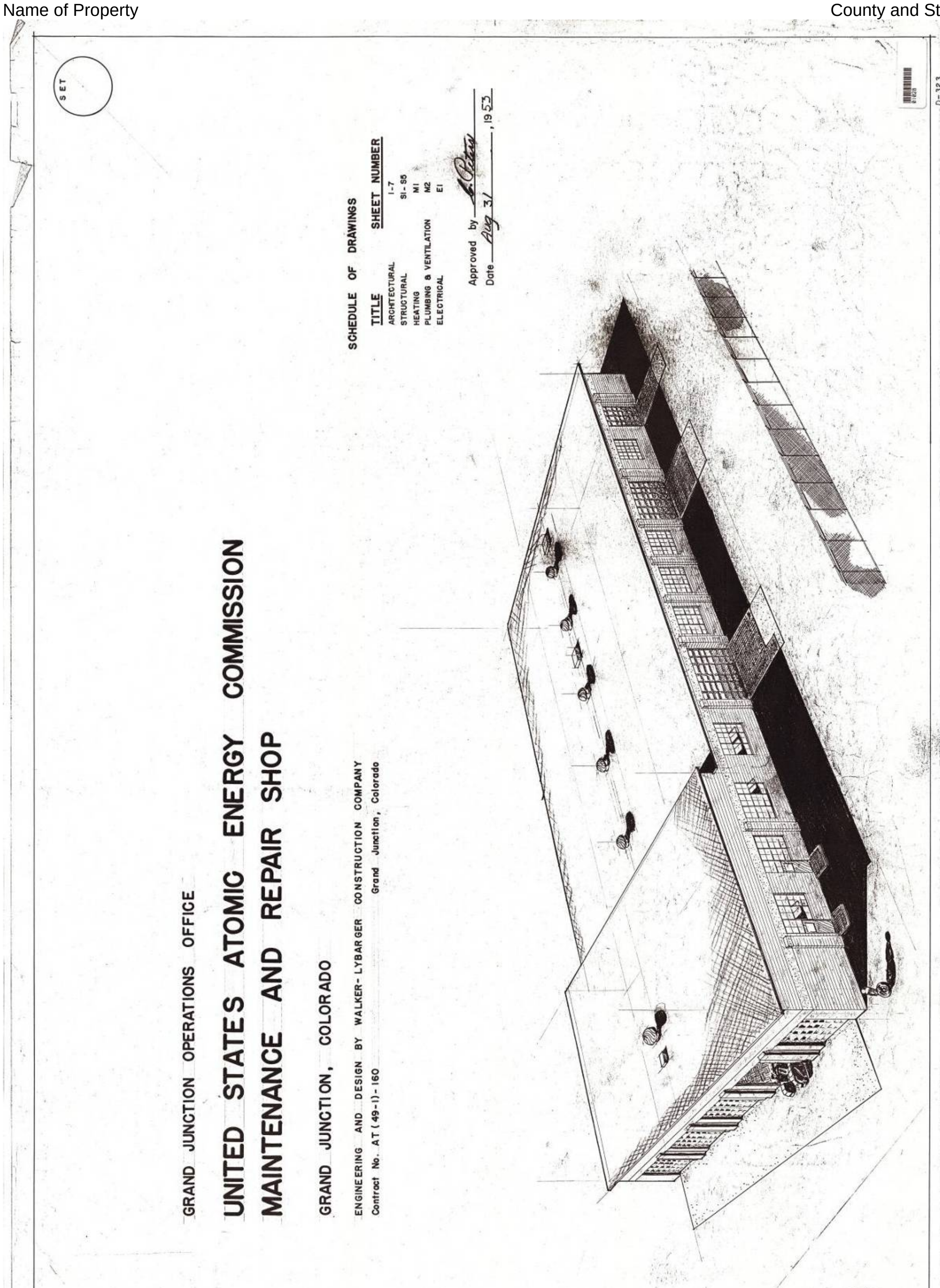
Map 13. Building 30 north and west elevations.



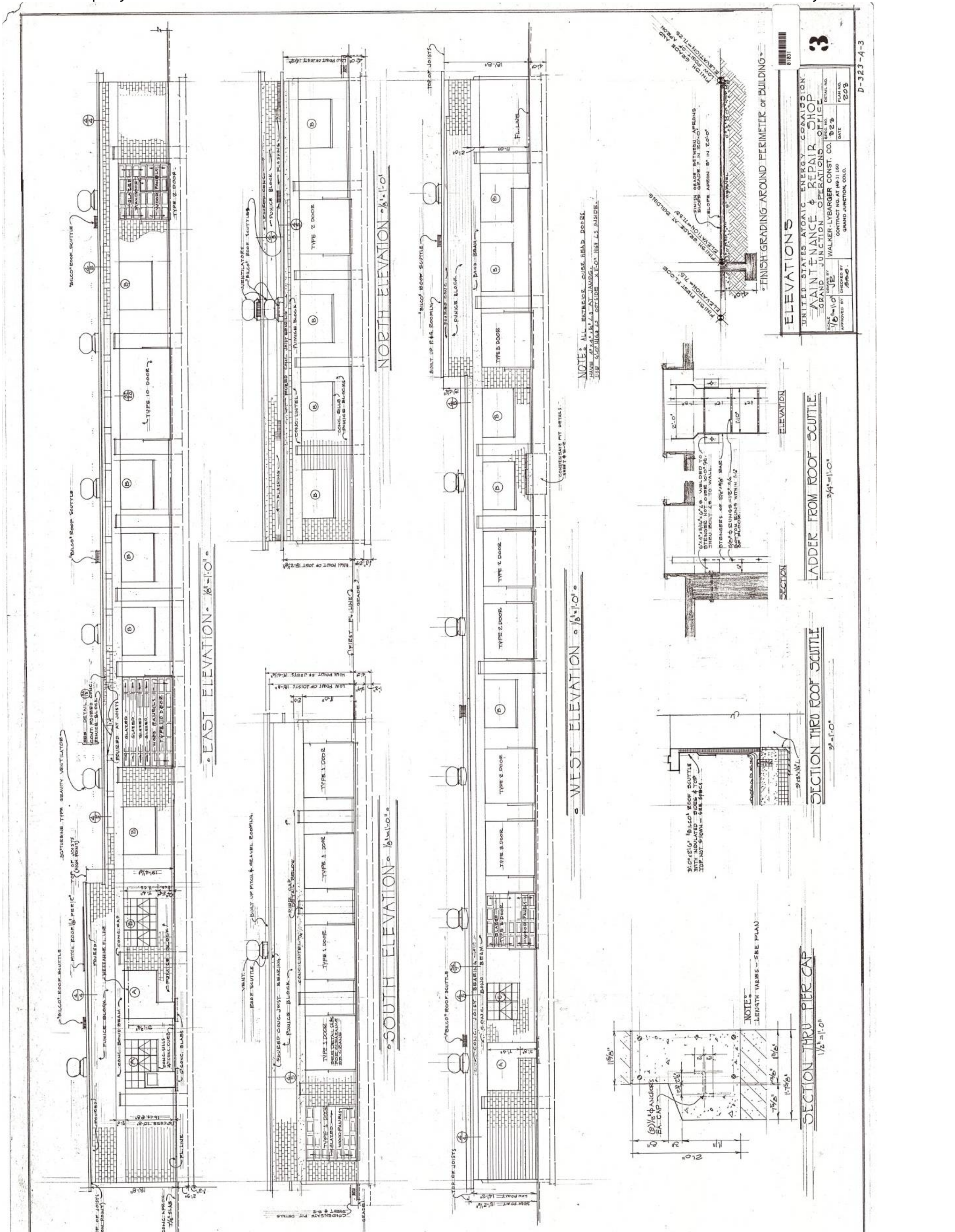
Map 14. Building 30 south and east elevations.



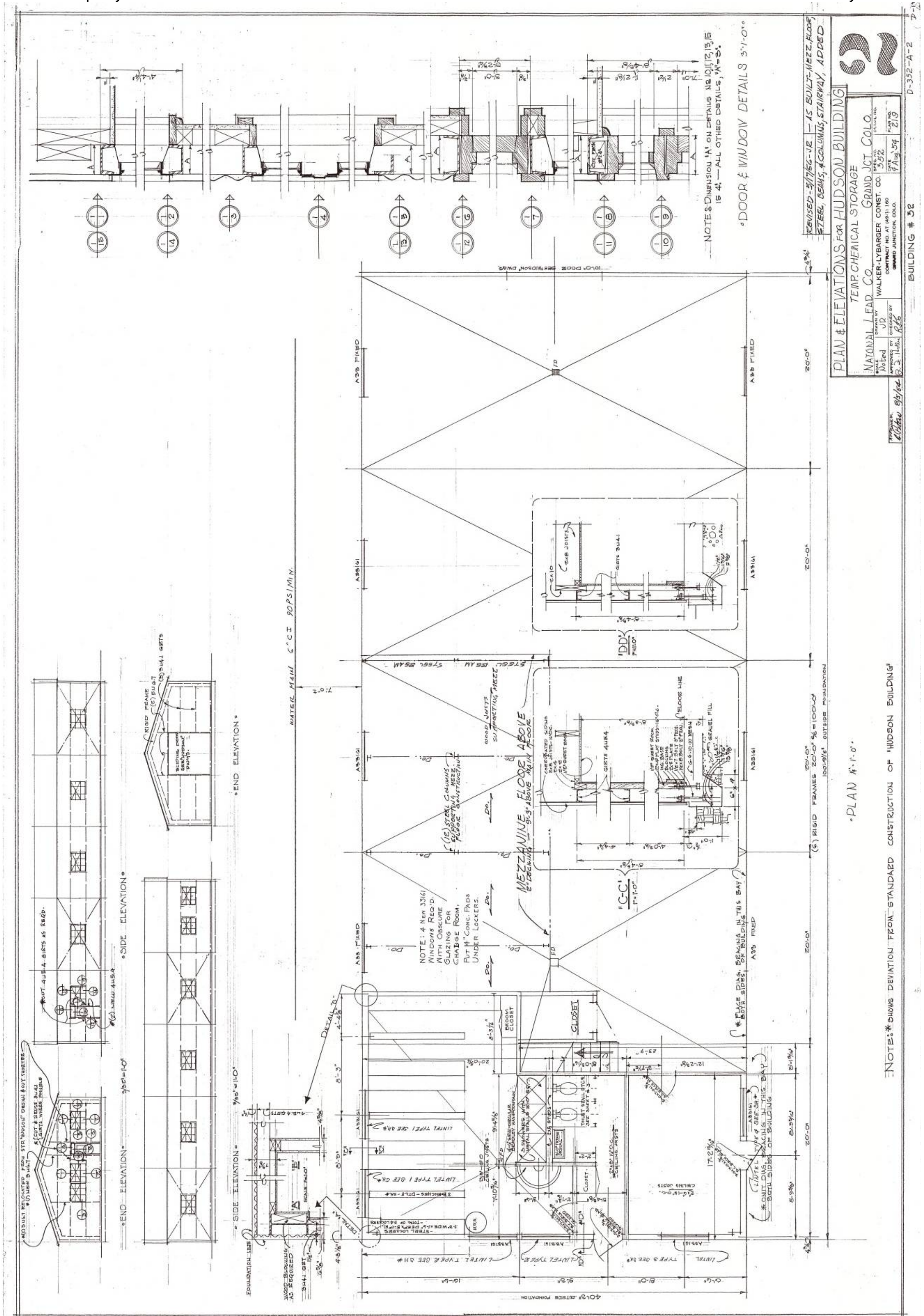
Map 15. Building 29 elevations and plan.



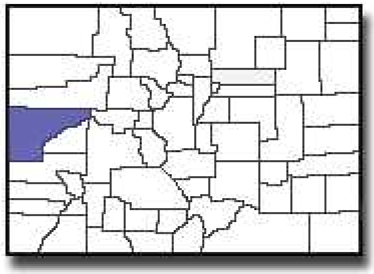
Map 16. Building 28 isometric view drawing showing east and north sides of the building as built in 1953.



Map 17. Building 28 elevations.



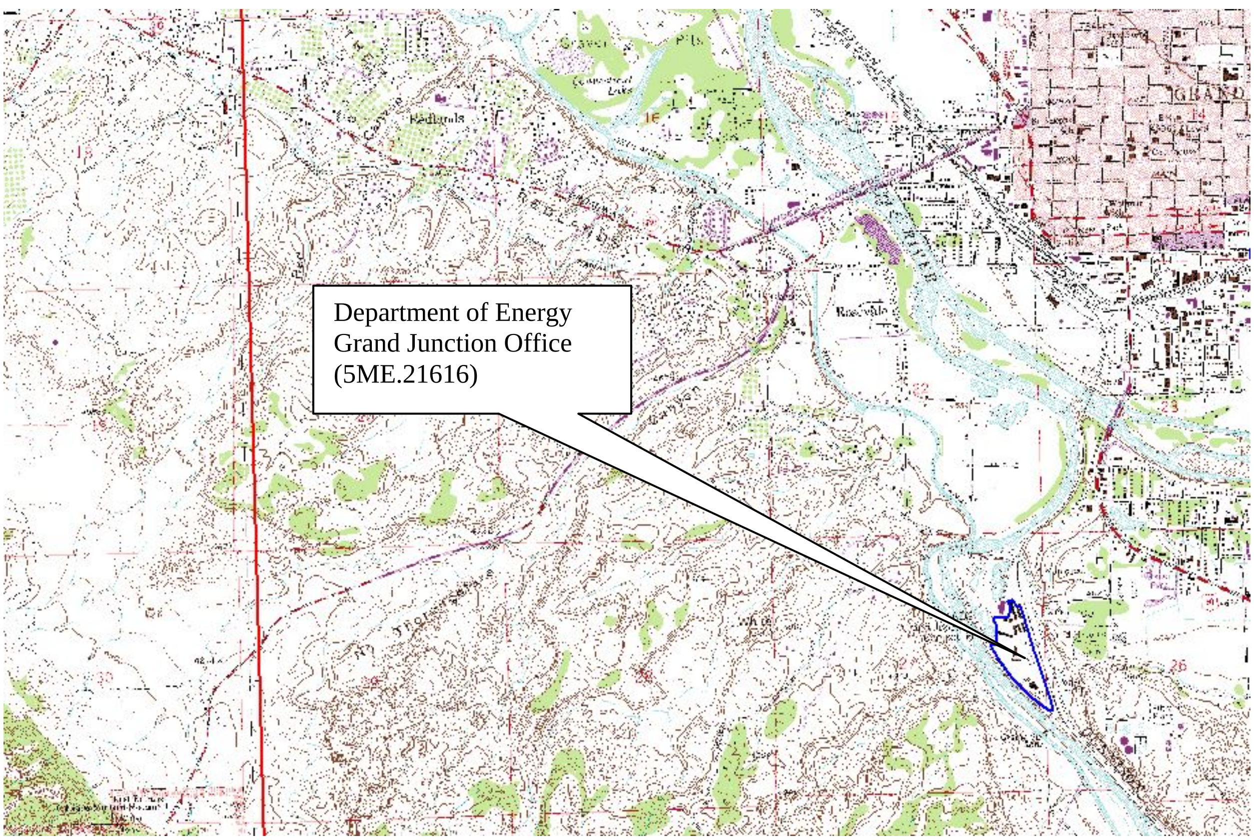
Map 18. Building 32 plan and elevations.

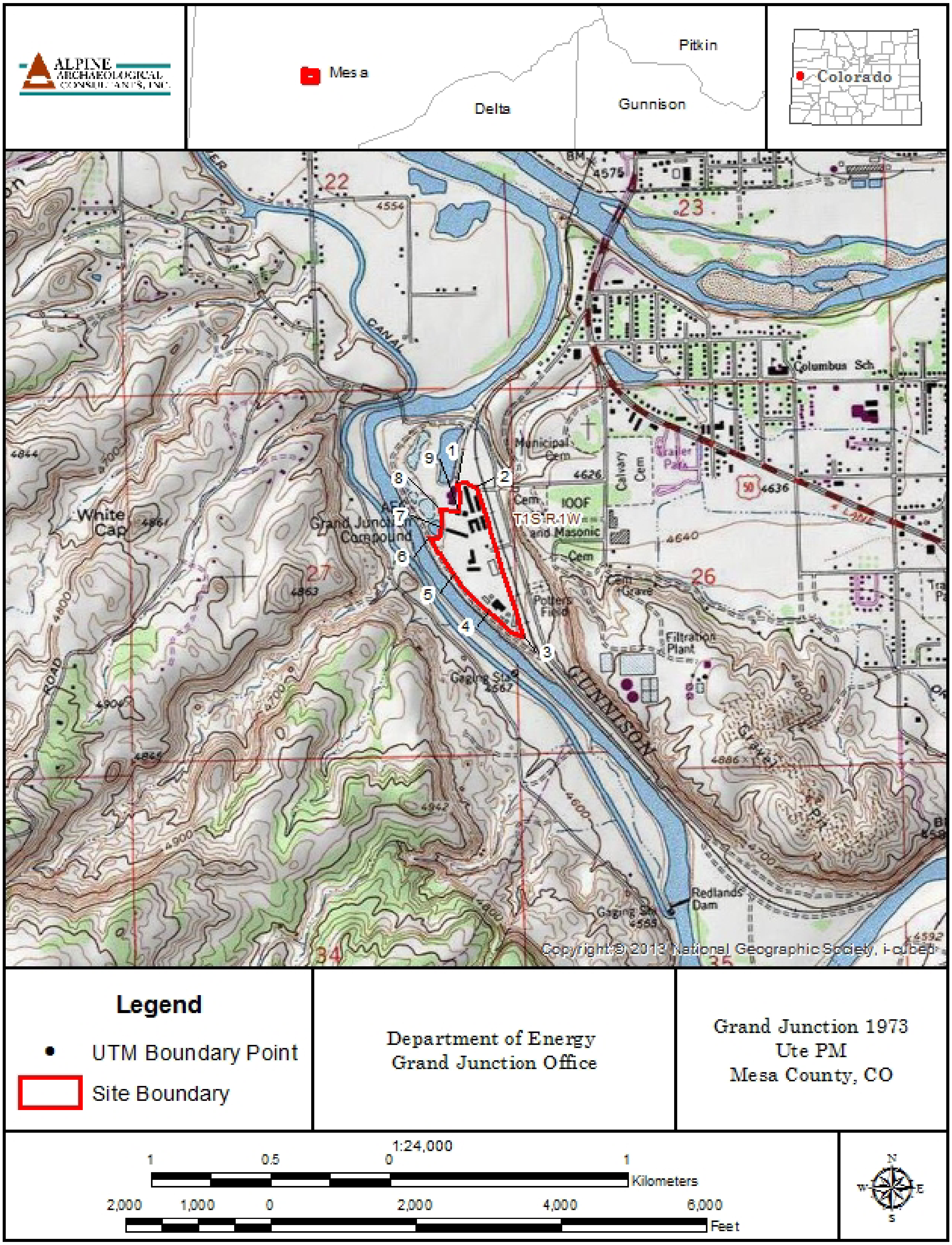


State Perspective: Mesa County

USGS TOPOGRAPHIC MAP
Grand Junction, Colorado Quadrangle

PM UTE Township 1S Range 1W Section 27 SE NE/ NE NE SE and Section 26 SW NW NW SW
Elevation: 4,580ft

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