NPS Form 10-900a
(Aug. 2002)

OMB Approval No. 1024—0018
(Expires Jan. 2005)

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number _____ **Page** _____

SUPPLEMENTARY LISTING RECORD

NRIS Reference Number: 05000454

Property Name: Conchas Dam Historic District

County: San Miquel State: New Mexico

N/A
Multiple Name

This property is listed in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation.

Signature of the Keeper — May 27, 2005
Date of Action

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Amended Items in Nomination:

Section 8: Significance

"Art" is hereby added as an Area of Significance to reflect the importance of the large New Deal-era paintings by Odon Hullenkremer, which hang in the administration building and are documented in the nomination as having high artistic value and association with the WPA Federal Art Project.

The US Army Corps of Engineers was notified of this amendment.

DISTRIBUTION:
National Register property file
Nominating Authority (without nomination attachment)

(Oct. 1990)

United States Department of the Interior
National Park Service
NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM

1. NAME OF PROPERTY: CONCHAS DAM HISTORIC DISTRICT

HISTORIC NAME: Conchas Dam Project
OTHER NAME/SITE NUMBER: N/A

2. LOCATION

STREET & NUMBER: Roughly bounded by entrance to Conchas Lake State Park South Area, entrance to Conchas Lake State Park North Area, Conchas Reservoir and Bell Ranch (Conchas Dam and Lake, U.S. Army Corps of Engineers, Albuquerque District) **NOT FOR PUBLICATION:** N/A

CITY OR TOWN: Conchas Dam **VICINITY:** N/A

STATE: New Mexico **CODE:** NM **COUNTY:** San Miguel **CODE:** 047 **ZIP CODE:** 88416

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 ___nationally __X_statewide _ _locally. (___See continuation sheet for additional comments.)

Signature of certifying official — Date: 3/22/05

State Historic Preservation Officer

State or Federal agency and bureau

In my opinion, the property ✓ meets ___does not meet the National Register criteria. (___See continuation sheet for additional comments.)

Signature of commenting or other official — Date: 4/8/05

U S ARMY CORPS OF ENGINEERS

State or Federal agency and bureau

4. NATIONAL PARK SERVICE CERTIFICATION

I hereby certify that this property is:

Signature of the Keeper — Date of Action

- ✓ entered in the National Register — for Edson Beall — 5/22/05
  - ___ See continuation sheet.
- ___ determined eligible for the National Register
  - ___ See continuation sheet.
- ___ determined not eligible for the National Register
- ___ removed from the National Register
- ___ other (explain): _____

5. CLASSIFICATION

OWNERSHIP OF PROPERTY: Public

CATEGORY OF PROPERTY: District

NUMBER OF RESOURCES WITHIN PROPERTY:	CONTRIBUTING	NONCONTRIBUTING
	6	3 BUILDINGS
	1	0 SITES
	11	2 STRUCTURES
	2	0 OBJECTS
	21	5 TOTAL

NUMBER OF CONTRIBUTING RESOURCES PREVIOUSLY LISTED IN THE NATIONAL REGISTER: 0

NAME OF RELATED MULTIPLE PROPERTY LISTING: N/A

6. FUNCTION OR USE

HISTORIC FUNCTIONS:
GOVERNMENT: public works (dam and reservoir)
RECREATION AND CULTURE: outdoor recreation (reservoir, picnic area, hiking trails)

CURRENT FUNCTIONS:
GOVERNMENT: public works (dam and reservoir)
RECREATION AND CULTURE: outdoor recreation (reservoir, picnic area, hiking trails)

7. DESCRIPTION

ARCHITECTURAL CLASSIFICATION: MODERN MOVEMENT: Art Deco

MATERIALS: **FOUNDATION**: CONCRETE
WALLS: CONCRETE; ADOBE
ROOF ASPHALT
OTHER N/A

NARRATIVE DESCRIPTION (see continuation sheets 7-5 through 7-21).

8. STATEMENT OF SIGNIFICANCE

APPLICABLE NATIONAL REGISTER CRITERIA

_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.

_x_ **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 VALUE, 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: N/A

AREAS OF SIGNIFICANCE: ENGINEERING; POLITICS/GOVERNMENT; ARCHITECTURE

PERIOD OF SIGNIFICANCE: 1935-1954

SIGNIFICANT DATES: 1935; 1939; 1940

SIGNIFICANT PERSON: N/A

CULTURAL AFFILIATION: N/A

ARCHITECT/BUILDER: U.S. Army Corps of Engineers (Captain Hans Kramer, District Engineer), engineer/designer; Bent Brothers Inc. and Griffith Company, Los Angeles, contractors; Works Progress Administration, Civilian Conservation Corps, work-relief contract labor.

NARRATIVE STATEMENT OF SIGNIFICANCE (see continuation sheets 8-22 through 8-37).

9. MAJOR BIBLIOGRAPHIC REFERENCES

BIBLIOGRAPHY (see continuation sheet 9-38).

PREVIOUS DOCUMENTATION ON FILE (NPS): N/A

_ 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 #
_ recorded by Historic American Engineering Record #

PRIMARY LOCATION OF ADDITIONAL DATA:

x State historic preservation office *(Historic Preservation Division, Office of Cultural Affairs)*
_ Other state agency
x Federal agency (U.S. Army Corps of Engineers, Conchas Dam)
_ Local government
_ University
_ Other -- Specify Repository:

10. GEOGRAPHICAL DATA

ACREAGE OF PROPERTY: approximately 141.3 acres

UTM REFERENCES

A.	13	574010 E, 3920020 N
B.	13	573130 E, 3918440 N
C.	13	573610 E, 3918440 N
D.	13	573130 E, 3918260 N
E.	13	573080 E, 3918250N
F.	13	574200 E, 3915000 N
G.	13	571460 E, 3912870 N
H.	13	571430 E, 3912510 N

VERBAL BOUNDARY DESCRIPTION (see continuation sheet 10-39 through 10-40)

BOUNDARY JUSTIFICATION (see continuation sheet 10-39 through 10-40)

11. FORM PREPARED BY

NAME/TITLE: John D. Schelburg (with updated information by Julie R. Stone, Park Ranger, September 2004)

ORGANIZATION: U.S. Army Corps of Engineers, Albuquerque District Office **DATE:** 1997; 2004

STREET & NUMBER: 4101 Jefferson Plaza, NE **TELEPHONE:** 505-342-3601

CITY OR TOWN: Albuquerque **STATE:** NM **ZIP CODE:** 87109

ADDITIONAL DOCUMENTATION

CONTINUATION SHEETS

MAPS (see attached Tenaja Mesa and Conchas Dam U.S.G.S. quadrangle topographic maps)

PHOTOGRAPHS (see continuation sheet Photo-41 through Photo-42)

ADDITIONAL ITEMS N/A

PROPERTY OWNER

NAME: U.S. Army Corps of Engineers

STREET & NUMBER: 4101 Jefferson Plaza, NE **TELEPHONE:** 505-342-3601

CITY OR TOWN: Albuquerque **STATE:** NM **ZIP CODE:** 87109

Description

The Conchas Dam Historic District is located 35 miles northwest of Tucumcari at Conchas Lake in San Miguel County, New Mexico. The dam is situated along the South Canadian River approximately one-quarter mile below its confluence with the Conchas River. The centerpiece of the district is the Conchas Dam constructed between 1935 and 1939. The commanding concrete gravity-type dam is 1,250 feet in length and 235 feet in height with a capacity of 709,100 acre-feet. The district contains the Main Dam and associated dikes, wing dams and spillways. Nominated with the district is the 1939-40 Administrative Area, including the Administration Building, five former staff houses, and an entry gate, a water tower and two paintings by artist Odon Hullenkremer. A small number of modern intrusions are noncontributing to the district. Overall, the district contains a high degree of integrity of its location, design, workmanship, materials, feeling, setting and association.

The Conchas Dam Historic District occupies a portion of the Pablo Montoya Grant of 1824 now described as Section 33, Township 14 North, Range 26 East (see U.S.G.S. quad maps). Government land at the entire project amounts to 3,530 acres and the flowage easement land are 20,113 acres. The smaller nominated district is situated along the South Canadian River approximately one-quarter mile below its confluence with the Conchas River. The South Canadian River rises in the Sangre de Cristo Mountains near Raton, New Mexico, flowing in a southeast direction; the Conchas River originates east of Las Vegas, New Mexico, and flows in a southeast direction. The drainage area above Conchas Dam is approximately 7,500 square miles.

The historic district is within the High Plains and Great Basin Grasslands (Brown 1982). Hot in the summer and cold in the winter, this semiarid area is marked by varieties of prairie grass, shrubs, and stunted piñon and juniper trees. Erosion dissected, flat-topped mesas overlook the reservoir. The now fully mature elm trees planted by the Civilian Conservation Corps (CCC) in the park and housing area that the CCC constructed provide an oasis of shade in this otherwise sun-drenched setting.

Conchas Dam Historic District is a complex set of interconnected components acting in concert to create a reservoir of 315,735 acre-feet of water (see Figure 7-1). In addition to the concrete Main Dam, supplemental water control features were also constructed. These consist of the north and south wing dams, the north and south dikes, the emergency spillway, the irrigation headworks structure and a saddle dam (all contributing). In contrast to the Main Dam, the wing dams and dikes were constructed out of an impervious rolled fill, covered by a pervious rolled fill, and then capped by broken rock or riprap. The Emergency Spillway, located to the north of the Main Dam, is a concrete ogee weir structure that extends 3,000 feet in length. The combined length of the proposed linear district is 3.75 miles spanning a north to south trending line.

Upon completion of the dam in September 1939, an administration building, a single-family house, and four duplex residences were constructed immediately northwest of the Main Dam in the Spanish-Pueblo Revival

style. Original Conchas City construction camp buildings were dismantled and the over 700,000 adobe bricks used to build it in 1935 were salvaged to construct the Administration Building and the permanent housing for government employees. Contained within the Administration Building are two paintings by Odon Hullenkremer, each contributing.

Table 7.1: Contributing Elements of Main Dam Complex

Name	Type	Construction
Main Dam	Structure	1935 - 1939
No. 1 North Dike	Structure	1936 - 1939
Emergency Spillway	Structure	1936 - 1939
No. 2 North Dike	Structure	1937 – 1939
North Wing Dam	Structure	1937 – 1939
South Wing Dam	Structure	1937 – 1939
South Dike	Structure	1937 – 1939
Saddle Dam	Structure	1937 – 1939
Irrigation Headworks	Structure	1938 – 1939

Main Dam

Conchas Dam is a large, straight concrete gravity dam built in 29 monoliths (see Photo 1). The staging of the construction included building a monolith separately, creating a jagged wall of rising from the riverbed (see Figure 7-2). Creating a massive wall of concrete, the sheer weight of the concrete holds the dam in place. Measuring 1,250 feet in length, the dam is equal to the height of the Empire State Building. Construction of such a large dam required 36,000 cubic yards of concrete, enough to build two Pentagon buildings and a sidewalk around them. Five ungated ogee spillways, forming what appear to be a series of closed-spandrel bridges (see Photo 2), top the dam. When spilling over the dam, water continues southeast as the South Canadian River to Ute Lake. The crest elevation of the dam spillway is 4,201 feet. Full capacity of these spillways at elevation 4,230 is 182,000 cubic feet per second (cfs) of water.

Stepped towers, or pier houses, bracket the spillways. Each pier house features a polished bronze door opening to the interior of the dam. A road with parapet walls designed according to highway bridge specifications and recommendation from the American Association of State Highway Official traverses the top of the dam (Kramer 1941: Vol.1: 81). Traveling north over the top of the dam, the expanse of the Conchas Lake reservoir is evident to the left (west), the spillway drops precipitously to the right (east).

The interior of the dam contains three interconnecting galleries that supply ventilation and access for operation and inspection, and for future grouting and drainage. The operating gallery houses six, 4 foot by 5-foot service and emergency hydraulic gates that have a capacity of emitting 8,100 cfs of water. The grouting gallery

at the bottom of the dam holds three Kaylex holes that were bored down into the foundation. These holes are monitored for uplift pressure on the dam and provide inspection access to the foundation.

The concrete walled powerhouse is situated on the south downstream side of and physically attached to the Main Dam (see Photo 3). It houses a hydroelectric generator, a diesel generator, electrical transformers and panels. Designed in the same stepped fashion as the pier houses, the interior and exterior doors are made of bronze. Originally the roof was covered with copper sheets and the flashing and vents made also of copper. The original roof was replaced with asphalt after the 1970s due to the extreme difficulties in maintaining it. Steel casement windows and glass blocks, completing the quasi Art Deco appearance, are original. The hydro-generator has never been used but is well maintained to act as a backup generator if the diesel motor should fail and the hydraulic gates needed to be opened. Penstocks, a sluice or gate used to control water, were installed in the dam for the intended future construction of a second powerhouse, to be located on the north downstream side, to generate hydroelectricity and supply water to nearby communities.

Foundation excavation for the Main Dam initiated on December 20, 1935 by government forces and was then contracted out in November 1, 1936. In preparation for the construction, surveyors stalked the countryside with flags and scopes, followed by "high scalers" pushing away loose rock and scraping the hillsides that would become the abutments. The first bucket of concrete was placed on April 12, 1937. Thereafter, and for the following three years, construction on the various components progressed, with the dates, costs, volumes of material involved, personnel, detailed by the War Department in 1940. In total, 1,300,000 cubic yards of material were excavated and 836,000 cubic yards of concrete, 2,900,000 cubic yards of earth fill, and 785,000 cubic yards of rock fill placed.

Conchas Dam construction was unlike common dam building where a diversion tunnel or canal is used to displace the water. Instead, the dam was essentially built from the outside in as the river was allowed to flow through the center area of the dam while the south and north abutments and adjoining monoliths were completed first. When construction began on the center monoliths, a cofferdam was built and the river was diverted through the already completed sluicing gates on the north side of the dam.

Captain Hans Kramer, the District Engineer in charge of the project, assured structural stability of the dam for years to come. He wrote, "Should grouting be necessary in the future, 3-1/2 inch steel pipe casings set at five-foot centers and extended from the gallery floor to bedrock were installed along the entire length of the dam. Extensive provisions for foundation drainage were made under the Main Dam...[with]...a series of 66 eight-inch core holes drilled to varying depths in the foundation are and extended with ten-inch riser pipes to the operating gallery where they vent the artesian water and relieve pressure from under the Main Dam to the Stilling Basin" (Kramer, 1941, Vol.I:194). In a similar manner, the Stilling Basin has 292 two-inch holes for the same purpose of relieving any uplift pressures.

Eastern New Mexico had been in a long period of drought and no one expected the water retained behind the dam to rise significantly. It was speculated that it would take up to ten years to fill the reservoir behind Conchas Dam. However, by July 1939, workers found themselves in a race against the rising water and accelerated their pace.

North and South Wing Dams

The north and south wing dams are contiguous to the Main Dam and are constructed of earth and rock. The north wing dam is approximately 1,000 feet in length, while the south wing dam is 4,000 feet long. Together they contain approximately 880,00 cubic yards of rolled earth fill and 225,000 cubic yards of rock fill (see Photo 1).

North Dike No. 1 and No 2.

There are two north dikes that are composed of low earth fill structures separated by the Emergency Spillway. Government forces started construction of the North Dikes and excavation for the Emergency Spillway on September 8, 1938. North Dike No. 1 is three-quarters of a mile north of the Main Dam and is approximately 1,400 feet long with a maximum height of 30 feet (see Photo 11). It contains approximately 37,000 cubic yards of rolled earth fill and 11,500 cubic yards of rock fill. North Dike No. 2 is one and one-half miles north of the Main Dam and is approximately 1400 feet long with a maximum height of 20 feet. It contains 10,000 cubic yards of rolled earth fill and 4000 cubic yards of rock fill.

Emergency Spillway

The Emergency Spillway is a concrete gravity, ogee-type structure that is 3,000 feet long and contains 67,250 cubic yards of concrete (see Photo 11). Government forces placed the concrete foundation; another 67,000 cubic yards of concrete for the spillway was placed by contract. The contract started September 18, 1938 and was completed May 4,1939. The crest elevation of the Emergency Spillway is 4,218 feet. Its capacity, at elevation 4,230 is 450,000 cubic feet per second of water. It is estimated that water would flow over the Emergency Spillway once in 240 years.

South Dike

The South Dike is an earth and rock fill structure approximately 96 feet high and 6,400 feet long situated across low ground one-quarter of a mile south of the Main Dam (see Photo 4). In July 1937, funds appropriated by the Emergency Relief Act of 1937 were made available for construction of the South Dike. Construction started in August 1937 and was completed in April 1939. Foundation excavation required removal of 300,000 cubic yards of material while the fill contains approximately 1,900,000 cubic yards of rolled earth fill and 515,000 cubic yards of rock fill. The South Dike was completed with 100% government relief labor.

Saddle Dam

The Saddle Dam is a small earth and rock fill structure located three miles south of the Main Dam (see Photo 14). It serves as a safety valve in the event of an extreme flood. The structure is 1,400 feet long with a maximum height of four feet and contains 2,000 cubic yards of earth fill and 700 cubic yards of riprap.

Irrigation Headworks

The Irrigation Headworks consists of a concrete-lined tunnel driven through approximately 700 feet of shale under the south abutment of the south dike (see Photo 5). Contract work initiated on the structure on October 19, 1938 and completed July 3, 1939. Concrete placement in the gate chamber was done by drilling an 8-inch hole from the roadway of the South Dike directly above it. The operating equipment consisting of slide gates and penstocks was installed by contract started March 10, 1939 and completed September 29, 1939. Approximately 140,000 cubic yards of material were excavated and 6,000 cubic yards of concrete used to build the structure. Included are the intake structure, an 11-foot diameter circular tunnel 328-feet long, a gate chamber, a tunnel (known as the "horseshoe" tunnel), 22 feet wide by 15-feet high and 310-feet long, and an outlet portal that discharges water into the irrigation canal. To regulate irrigation discharge, two, 90-inch diameter steel penstocks, located in the horseshoe tunnel, control two hydraulically operated emergency gates, each of which is six feet by seven feet-six inches and located in the gate chamber. Two similar gates are situated in the outlet portal gatehouse for normal operation of the facility.

Administration Area

Located northwest of the Main Dam, the Administration Area consists of the project Administration Building, five former staff housing units, and a park and picnic area. A few noncontributing elements, including a recent picnic shelter and a bathroom, and metal storage sheds, have been introduced. These elements do not detract from the historic setting, feeling, and association of the area.

Table 7.2: Contributing and Noncontributing Elements of Administration Area

Name	Type	Construction
Contributing		
Administration Building	Building	1939 – 1940
Duplex House 1	Building	1939 – 1940
Duplex House 2	Building	1939 – 1940
Duplex House 3	Building	1939 – 1940
Duplex House 4	Building	1939 – 1940

Single Residence House	Building	1939 – 1940
Entrance Gate	Structure	1939 – 1940
Water Tower	Structure	1939 – 1940
Painting "Commencement of Main Dam Construction."	Object	1935
Conchas City, New Mexico"	Object	1936
Park	Site	1939 - 1940

Noncontributing

Maintenance Building 1	Building	post-1960s
Maintenance Building 2	Building	post-1960s
Restrooms	Building	post-1970s
Shelter	Structure	post-1970s
New Mexico State Highway 433	Structure	c. 1939; altered late 1950s

The road to the administration area from the south leads directly over the top of the dam and through the tree-lined park built by the CCC. A left-hand turn takes one past the adobe entrance gate and into the parking lot with the Administration Building directly in front and the houses further to the west (see Photo 6). Conchas Reservoir provides a panoramic backdrop. The trees and grass of the park and the administration area offer a welcome respite from the intense sun. Erected in 1939, the buildings were constructed with adobe blocks recycled from the dismantling of Conchas City following the conclusion of the project. The houses, administration building, park, and landscaping were built by a combination of the CCC and government and contractor employees.

Entry Gate

Forming an imposing entry to the Administration Building are two, large stepped adobe posts topped with metal lanterns. The CCC used recycled adobe salvaged from the construction camp to build the entry posts and adjoining adobe walls.

Administration Building

The Administration Building is composed of a large, H-plan structure serving as the project office, park headquarters and visitor center (see Photo 7). The center projecting volume contains the Visitor Center, including a reception area and small exhibit on the building of Conchas Dam. The ceiling of the Visitor Center

features traditional *vigas* and *latillas* composed of flat tongue-and-groove boards. Bronze letters above the entrance invite the visitor to Conchas Dam. To the south is a three-bay garage, and to the north is an open volume housing a water treatment plant. In ca. 1980 the original steel casement windows were replaced with fixed three-part, double-glazed units. The decorative vigas were also removed at this time and original copper lined *canales* replaced with durable tin drains. In 2003 the original flagstone walkway was replaced with concrete in order to provide ADA accessibility.

In the exhibit area are two paintings by Odon Hullenkremer, a Hungarian-born artist who worked with the WPA Federal Art Project during the 1930s. The larger of the paintings, six feet by twelve feet, hangs on the north wall of the Visitor Center in the administration building and is called "Commencement of Main Dam Construction" (see Figure 7-4). The foreground of this painting depicts four surveyors with their instruments. The actual identities of the surveyors depicted have been verified by their descendents. In the background are depicted machines and men at work. The second Hullenkremer painting, "Conchas City, New Mexico" measures approximately four feet by eight feet and hangs on the south wall of the conference room of the administration building (see Figure 7-5). This painting illustrates from a distance the town built for the construction and support personnel of Conchas Dam. The town itself is dwarfed by the surrounding landscape.

Permanent Housing

The five houses making up the former Permanent Housing area are perched on a mesa top overlooking Conchas Lake (see Photo 8)(see Figure 7-3). The reservoir is visible from the back yard, living and dining rooms of the houses. Mature elms, juniper and other trees planted by the CCC surround the buildings. Four duplexes are aligned along the access road that ends in a cul-de-sac where the single-family house, once used by the Project Superintendent, is located. Each house is separated from its neighbor by an ample side yard of grass, the back yards of grass and a sloped ridge that leads down to the reservoir.

In 1934, the New Mexico State Planning Board advocated the Spanish-Pueblo Revival style as a locally derived building style suitable for New Deal public works. The State Planning Board worked with architects John Gaw Meem, Willard C. Kruger, and James F. Zimmerman to promote the widespread use of this regional style. The Corps of Engineers and New Deal project coordinators were so concerned with accuracy of the construction faithfully representing the Spanish-Pueblo Revival style that the following instructions were included in the 1939 Specifications for Permanent Facilities:

> "The exterior plaster shall be...uneven and wavy...lacking in uniformity and mechanical workmanship...to harmonize with the Pueblo style of architecture. Generally the effects strived for are not by workmen using small trowels, no straight edges, and their eye for plumbing and leveling" (Corps 1939).

In keeping with the Spanish-Pueblo style are characteristic exterior wooden lintels over all doors and windows.

The patios, walkways, and porches of each unit are constructed of flagstone, while the footings and basements are concrete. An attached garage and carport constructed in the Spanish-Pueblo Revival manner during the period of significance fronts each residence (see Photo 9).

Interior

Each house has five rooms comprising of 1,100 square-feet. Each house features a corner *horno* fireplace with firebrick lining and terra cotta flues in the adobe brick chimneys. The fireplaces are fronted with a flagstone hearth. The ceilings in the living room, dining room, screened side porches, and garages are composed of vigas and flat tongue-and-groove boards. The floors are of white oak while the porch floors, patios, and walkways are paved with locally quarried sandstone. All of the housing have plastered walls. The bathrooms have small, one-inch white, hexagonal ceramic tiles laid on the floors. Standard commercial-grade rectangular, white tile is utilized as wainscot on the walls. The interior windowsills are composed of one-inch thick white marble.

In circa 1980 all the original steel casement windows were replaced with fixed three-part, double-glaze units. As part of this upgrade the exterior vigas and copper-lined canales were also removed (see Photo 10). Recently (2001) the buildings were turned into concession leases operated by the Adobe Belle Resort. The resort Corps and the resort have the commitment to retain the remaining character-defining features of the former staff residences.

The Administration Building and the former residences for the Conchas Dam personnel are, with exception of a replacement of windows and removal of vigas, retain a sufficient integrity to communicate their significance under Criterion A, as representative of buildings constructed as part of a large New Deal project.

Water Tower

Located on a hill north of the Permanent Housing is a water tower (water tank and tower) installed in 1939-40 (see Photo 12). The 80,000-gallon tank is a standard plan design consisting of four steel legs on concrete footings and center, welded water pipe topped with a steel water tank. A steel catwalk encircles the tank. The water tower is a predominant feature on the landscape, dominating over the noncontributing maintenance buildings.

Park

East of the Administration Building, across the entrance road, is a 6.2-acre park composed of grass and mature shade trees (see Photo 13). Constructed by the CCC, the park is evocative of public works landscaping projects of the 1930s, sometimes termed the "frontier pastoral," designed to provide a small oasis in an otherwise arid landscape (Kammer 1994:27-28). The slightly undulating landscape and mature elm trees provide an oasis

during the hot summer months. The few modern intrusions, including recent picnic benches and a noncontributing shelter, do not affect the historic integrity of the resource.

Noncontributing Elements

Maintenance Building 1

An open-bay storage constructed post-1960s composed of a metal roof and 3 metal sides and containing 3,133 square feet. This building is located on the "hill" area north of the former staff housing.

Maintenance Building 2

A warehouse constructed post-1960s composed of a metal roof and 4 metal sides and containing 5,355 square feet. This building is located on the "hill" area north of the former staff housing.

Restrooms

Constructed by Youth Conservation Corps crews post-1970s, this building is made of stone and covered with a gravel and asphalt roof, and contains 300 square feet. This building is located at the east edge of the park/picnic area.

Shelter

Constructed by Youth Conservation Corps crews post-1970s, this building is made of stone and covered with a gravel and asphalt roof, and contains 200 square feet and houses the "Indian Rock" a petroglyph discovered during construction of the dam. This building is located at the south edge of the park/picnic area.

New Mexico State Highway 433

As soon as the prolonged negotiations for rights-of-entry and land acquisition were completed, an access road from the railhead at Newkirk to Conchas Dam was built. This road became New Mexico State Highway 129 in the late 1930s. The former gravel road was later paved in the 1950s. In the 1990s, the highway was designated by the New Mexico Department of Transportation as part of the Mesaland Scenic Byway. Although New Mexico State Highway 433 is important to the history of Conchas Dam, recent changes in design and paving materials preclude the highway from being considered a contributing structure.

Table 7.3: Summary Statistics

Overall length of project	6 miles * only a portion of this project is being nominated
Total length of structures	3 ¾ miles
Total volume of excavation	1,300,000 cubic yards
Maximum height of concrete section	235 feet
Maximum height of earth dike section	96 feet
Total volume of concrete	836,000 cubic yards
Total volume of earth fill	2,900,000 cubic yards
Total volume of rock fill	785,000 cubic yards
Maximum reservoir area	26 square miles
Maximum storage	600,000 acre-feet
Estimated total cost	$15,500,000.00
Estimated total employment	10,000,000 person hours
Maximum employment	2,500
Period of construction	4 years

Table 7.4: Project Costs

Surveys, Explorations and Design	$ 636,913.85
Main Dam and Wing Dams	8,642,182.08
North Dikes and Emergency Spillway	868,940.82
South Dike	2,443,062.09
Saddle Dam	4,845.70
Irrigation Headworks	419,471.25
Irrigation Headworks Operating Equipment	147,015.54
Permanent Facilities for O&M	231,881.20
Right-of-way	165,909.24
Construction Camp and Roads Cost	1,893,097.64
Total Cost	$15,453,319.41

Table 7.5: Structure Measurements

Main Dam and Wing Dams

Main Dam (straight, concrete gravity type)
Crest length: 1,250 feet
Max. height: 235 feet

Ungated spillway:	300 feet
Stilling Basin:	127 feet
Concrete:	750,000 cubic yards
Excavation:	515,000 cubic yards

Outlet works:

Sluicing conduits: 6 – 4'0" x 5'0" w/capacity at 4201' = 10,000 c.f.s.
Regulating conduits: 2- 46" diameter " " " " = 2,000 c.f.s.

North Wing Dam

Length: 1,000 feet

South Wing Dam

Length: 4,000 feet

Both

Rolled earth fill:	880,000 cubic yards
Rock fill:	225,000 cubic yards

North No. 1 and No. 2 Dikes and Emergency Spillway

Emergency spillway (concrete gravity, Ogee-type)

Length:	3,000 feet
Concrete:	67,250 cubic yards

North Dike No. 1

Length:	1,400 feet
Maximum height:	30 feet
Rolled earth fill:	37,000 cubic yards
Rock fill:	11,500 cubic yards

North Dike No. 2

Length:	1,400 feet
Max. height:	20 feet
Rolled earth fill:	10,000 cubic yards
Rock fill:	4,000 cubic yards

South Dike

Length:	6,400 feet
Max. height:	96 feet
Rolled earth fill:	1,900,000 cubic yards
Rock fill:	515,000 cubic yards
Excavation:	300,000 cubic yards

Saddle Dam

Length:	1,400 feet
Max. height:	4 feet
Earth fill:	2,000 cubic yards
Rock fill:	700 cubic yards

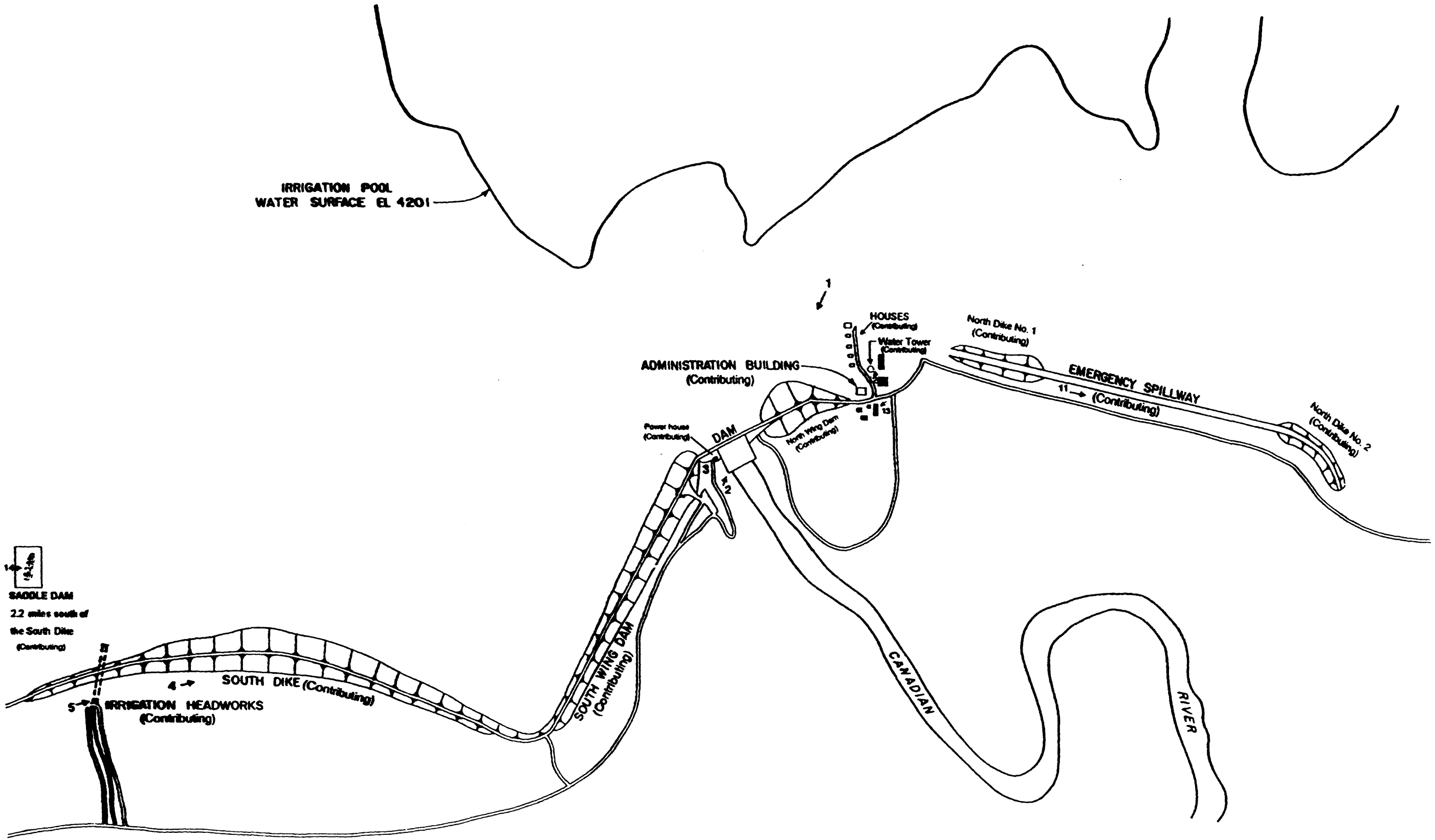
Irrigation Headworks

Tunnel length (total):	700 feet
Concrete:	6,000 cubic yards
Excavation:	140,000 cubic yards

Includes: intake structure
circular tunnel: 328 feet; 11-foot diameter
two – 6'0" x 7'6" gates, hydraulically operated for emergency control
horseshoe tunnel: 310 feet; 22 feet wide x 15 feet high
two 90-inch diameter steel penstocks
portal gatehouse
two – 6'0" x 7'6" gates, hydraulically operated for service operation
outlet portal

References: Circular No. 321, 1939; Information Pamphlet, 1948; Master Plan, 1976.

Figure 7-1 Sketch Map of Nominated District (does not include discontiguous features; see reverse)



LOCATION PLAN

SCALE: 1" = 800'

= CONTRIBUTING

= NONCONTRIBUTING

1 = PHOTOLOCATIONS

Figure 7-2 Construction of Main Dam, May 7, 1938

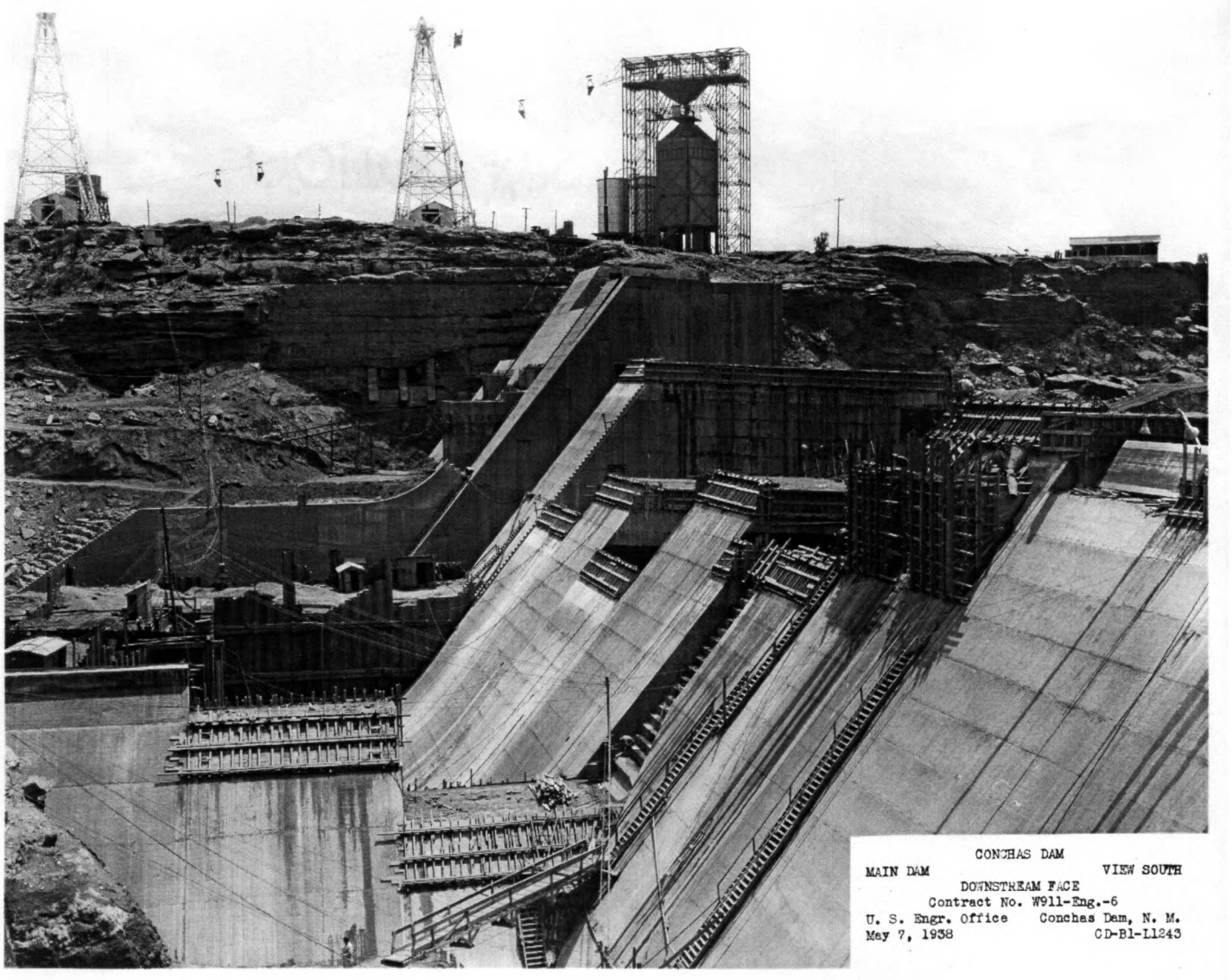


Figure 7-3 Sketch Map of Former Permanent Housing Area

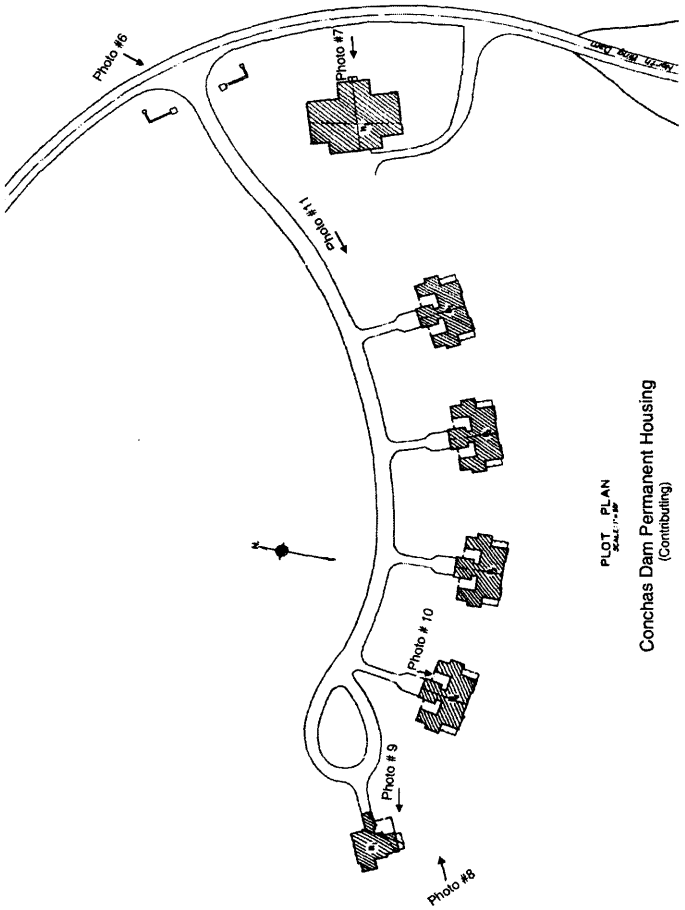
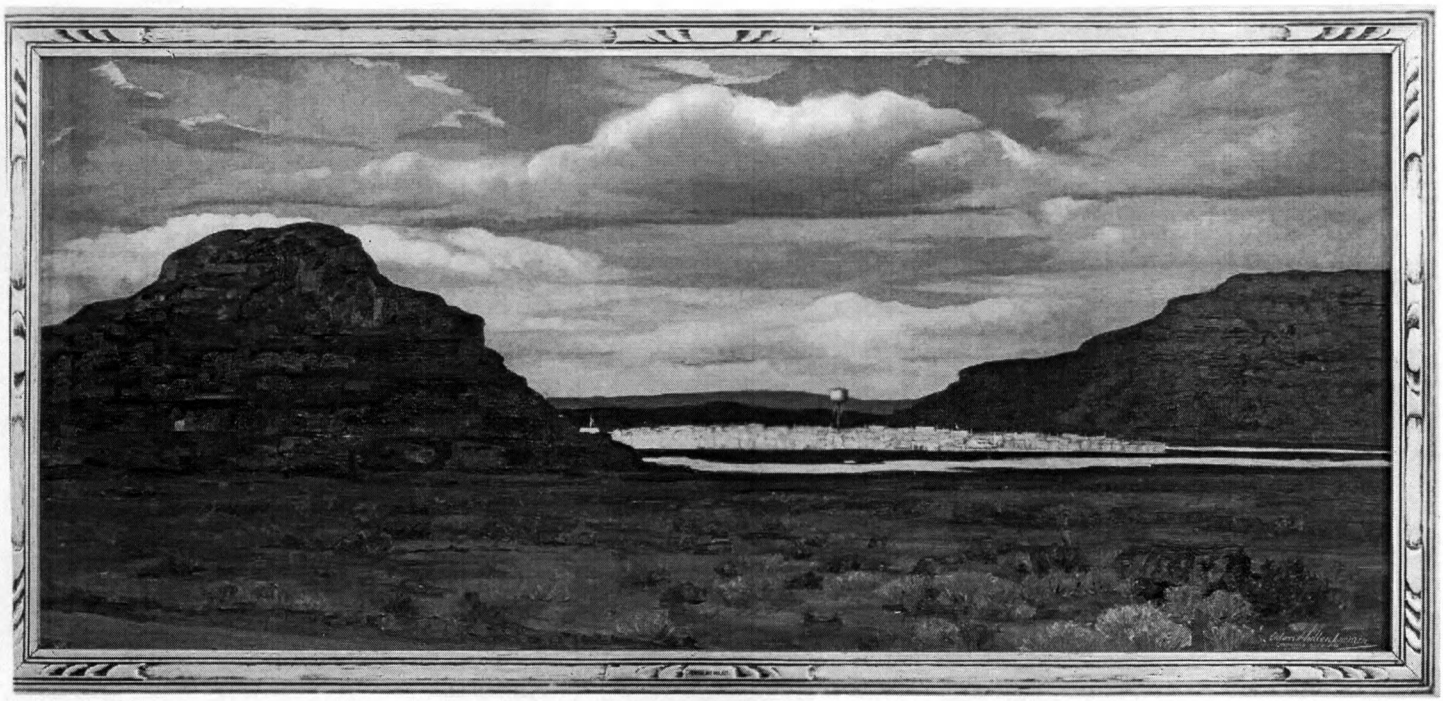


Figure 7-4 "Commencement of Main Dam Construction," Odon Hullenkremer

Figure 7-5 **"Conchas City, New Mexico," Odon Hullenkremer**



Statement of Significance

Built between 1935 and 1939 by the U. S. Army, Corps of Engineers, the Conchas Dam project was a direct result of the many New Deal Programs designed to put Americans back to work and bring the country out of the Great Depression. In addition to the dam, an 89-building town with all necessary amenities was constructed with adobe bricks. It was later dismantled and the adobe bricks were reused to build the U.S. Corps of Engineer's permanent housing and an administrative building. They survive, though altered, as part of the legacy of this large New Deal engineering project. In addition to the various construction related programs, two paintings of the dam were commissioned through the Federal Artists Program. The Conchas Dam Historic District is eligible for listing in the National Register of Historic Places at the state level under Criterion A in the areas of Social History and Politics/Government, as a large construction project funded by numerous programs of the New Deal. Conchas Dam is also eligible at the state level under Criterion C in the area of Engineering for its distinctive engineering and for the high artistic value of the two Odon Hullenkremer paintings funded by the WPA Federal Art Project.

Historical Overview

The notice to proceed construction issued on August 12, 1935, gave people in the nearby town of Tucumcari cause to rejoice. Local newspapers recounted that upon receiving the news that Conchas Dam would be built, the townspeople rang bells and blew sirens in celebration. The years preceding the construction of Conchas Dam brought dust storms to Northeast New Mexico that relentlessly scraped away topsoil and destroyed farms and ranches leaving many without means to grow crops. The crash of the stock market in 1929 only added insult to injury in New Mexico. Many farmers had few options to survive the downturn. The New Deal and the promise of a dam gave these people a sense of hope. Conchas Dam not only gave them an opportunity to work but also to regain their dignity.

Isolated by miles of mesa lands from the nearest town, workers at Conchas Dam required housing, meals, schools for their children and a hospital for their healthcare. In response the federal government built an 89-building construction camp known as Conchas City on former sagebrush country.[1] Over 700,000 adobe bricks were used to build 50 buildings. In winter, when it was too cold to make adobe bricks, workers used hand quarried sandstone blocks instead. Twenty-nine of the buildings were made of sandstone, one building was a combination of adobe and sandstone, and the remaining buildings were three metal warehouses and six wood-framed buildings.

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[1] Conchas City was dismantled and the adobe bricks reused to construct the Administration Building and Permanent Housing units. A few of the original stone buildings from Conchas City remain on private land and are not the subject of this nomination.

Civilian Conservation Corps and other government employees dismantled the construction town following completion of the dam in 1939. The adobe blocks were salvaged and reused to build the Corps of Engineers' permanent administration building and housing. These buildings stand today as examples of the historic and architectural resources of the New Deal in New Mexico.

After completion of the housing and permanent facilities, the CCC created a small 6.2-acre park of grass and trees adjacent to the administration building. Many of the trees planted still exist today and prompt visitors to delight in the "oasis" in the desert. As a final touch, the CCC again used recycled adobe to build an imposing gateway into the Administration Area.

CRITERION A: SOCIAL HISTORY, POLITICS/GOVERNMENT

New Deal programs played a profound role in New Mexico from 1933 through 1942. Not only was New Mexico plagued with poverty but it also lacked state agencies capable of delivering social services. The Federal agencies created by the New Deal to stimulate the economy and to alleviate widespread unemployment through work relief projects, forced New Mexico to create agencies in order to receive Federal aid. As a result, the New Deal fundamentally shaped New Mexico state government, confirmed the architectural style of the state governmental buildings, and ushered New Mexico into the 20th century.

The widespread absence of well-supported state institutions, agencies and capital improvements indicates how unprepared New Mexico was for the Great Depression. While it is generally dated from the 1929 stock market crash to the 1941 preparations for war, New Mexico began the slide into the depression in the early 1920s. Aggregate farm values dropped from $224 million in 1920 to $174 million in 1925 and then plunged in 1930. Livestock values fell from $132 million in 1918 to $61 million by 1929; and taxable properties fell from $403 million in 1920 to $342 million in 1930. Much of the state's revenue was based on its property tax. Even though the State's administrators cut budgetary appropriations late in the 1920s, the tax base supporting the remaining governmental functions declined more rapidly than any savings generated by the cuts (Kammer 1994:8). Welsh (1985:20) noted that by the height of the Depression approximately 50 percent of New Mexicans were unemployed and only one percent of the irrigable land was actually under cultivation.

Numerous obstacles had to be overcome prior to any initial surveying or subsequent construction of the dam. The remote location and low population density contributed to the rejection of a dam in this vicinity in 1931. A cost estimate of over 11 million dollars to build a dam on the South Canadian River could not be economically justified. A 1933 report, "Unemployment and Destitution in Certain Sections of Texas, Oklahoma, Kansas, Colorado and New Mexico" well described the conditions of the region during that era (Welsh 1985:23). It was not until 1935 that the use of relief workers under the Emergency Relief Appropriation Act (ERA) made the dam possible to contemplate.

In December 1932, Governor Seligman requested $90,000.00 from the Reconstruction Finance Corporation (RFC). In his January 1933, address to the legislature he praised the modesty of his request. Yet by March 1933, fully one-third of the state's citizens required some form of relief merely to subsist. In the spring of 1933, the RFC provided $465,000.00 in an attempt to mitigate some of the effects of the state's economic catastrophe. Even as farm prices dropped and farm foreclosures spread in eastern New Mexico, Seligman's plan to fight the Depression was economic restraint.

The unrealistic approach of New Mexico's government left the state totally unprepared to deal with the ramifications of the Depression. With the statewide and national economic collapse and the inability of the New Mexico's leadership to develop meaningful relief programs the ensuing response forever changed the structure, and character of New Mexico's government. This involvement with the WPA programs was facilitated by the interaction between President Franklin D. Roosevelt and Governor Clyde Tingley (Kammer 1994:14-17).

Governor Clyde Tingley's Influence

With the economic justification provided by the use of relief workers, the Corps of Engineers was now poised to return to New Mexico. There were, however, two major problems, which had to be overcome: monetary and bureaucratic. New Mexico had no money for its share of the project cost and the legislature would not meet for eight months (early 1936). Additionally, Harold Ickes, director of the Public Works Administration (PWA), did not believe in the economic viability of the Conchas Dam.

Elected as governor in November 1934, Clyde Tingley, a consummate New Deal Democrat, embraced the Conchas Dam project and pledged his support to request any amount of funds from the State Legislature. In May 1935, Tingley was told that $54,000.00 was needed to purchase right-of way from absentee owners of the 40-square mile Bell Ranch where the dam was to be built. On July 23, 1935, the PWA recommended Conchas Dam for construction, and the Emergency Relief Act was signed on the first of August. During this period of time, Tingley had conducted an elaborate scheme to acquire federal funds by speaking on behalf of the Legislature and the Bell Ranch without the knowledge of either party. Tingley had promised Washington that New Mexico would purchase right-of-way while attempting to convince the ranch owners to accept a good faith 90-day note without payment. Captain Hans Kramer threatened to withdraw federal support when he learned of the situation, and the manager of the Bell Ranch let it be known that, "the governor is in quite a jamb..." (Welsh 1985:20-25).

Since Tingley began going door to door to raise the necessary funds, the ranch manager permitted the Corps to conduct the test drilling for a suitable dam location but would not allow construction of any permanent buildings. (Corps of Engineers personnel were living out of tents and or traveling back and forth from Tucumcari). Discussions between Kramer and Tingley resulted in a condemnation suit for 1,100 acres of the Bell Ranch for the dam, townsite, and road easements. The state had no legal authority to initiate condemnation proceedings because an impasse had not yet been reached. The Bell Ranch was trapped in an awkward position

due to the "fever heat" gripping the populace at the prospect of employment (Welsh 1985:26). The ranch mounted legal challenges to protect their position, and during this period the local businessman and water commissioner Arch Hurley of Tucumcari, suggested to the ranch owners that they pressure the Corps to provide water and free electricity to pump it to 3,000 highland acres in exchange for 17,000 acres for the dam. All the while, Tingley was attempting to raise $100,000.00; the Corps believed $234,000.00 to be a more appropriate sum.

Harold Ickes had always been suspicious of the motives of New Mexico's politicians. He confided to Bell Ranch officials that he released the Conchas funding early in order to force New Mexico's elected officials to acquire their share of the costs or lose the project. In early October 1935, Tingley learned that the Corps would abandon the project if the right-of-way money were not raised by October 22. Tingley's corporate sponsors began to lose interest upon learning that no private concessions would be permitted at the construction site and the low wage scale would preclude commercial activity in the area.

Given the increasingly bleak prospects for Conchas Dam, Tingley chose an even more direct course of action and took the train to the dedication of Boulder Dam on the Colorado River. There he met with his friend President Roosevelt for more than an hour in the latter's private railroad car. The meeting resulted in Roosevelt's support for federal purchase of the right-of-way with the understanding that New Mexico's legislature would buy it in January 1936. Tingley continued to raise money for the state's share.

Arch Hurley, an influential farmer from Tucumcari, compounded the difficulties by breaching the confidentiality of the Roosevelt-Tingley agreement to Amarillo business leaders. Bell Ranch owners assumed that Hurley acted in an official capacity when he suggested irrigating the highlands, and so in September 1935 they offered the deal to the federal government. As Tingley knew nothing about this he was shocked when contacted by a questioning federal employee. Almost at the same time, the state was prepared to claim the dam site through the condemnation suit but they decided that 34,000 acres would be required to include a lake and public park. The Bell Ranch threatened a second counter suit and the Chief of the Corps of Engineers demanded a resolution by November 12, 1935.

On November 1, 1935, Bell Ranch owners surprised everyone with an offer of a complete settlement in exchange for water conveyed through a four-inch pipe, and for the first time, set a purchase price ($165,000.00). Three days later the New Mexico Supreme Court officially and publicly pronounced a verdict of dismissal, with prejudice, of the Bell Ranch lawsuit. On November 13, 1935, all parties signed all agreements and Captain Hans Kramer was granted permission to enter all land associated with the dam site.

Work Relief, Hand Labor and Adobe Bricks

President Franklin D. Roosevelt approved the Conchas Dam project on July 29, 1935 as part of the Works Relief Program under the Emergency Relief Appropriation Act of 1935. Congress adopted it in the Flood Control Act of 1936 to provide flood control, irrigation, and municipal water supply benefits. The undertaking involved nearly every New Deal program created by the Roosevelt. Both the Works Progress Administration and the Public Works Administration (PWA) were involved with the construction of Conchas Dam, while the CCC built the Permanent Housing and Administration Building and park.

The Conchas Dam project was specifically justified as a means to bring wage paying jobs to an area of high unemployment (see Figure 8-1). As soon as the protracted negotiations for rights-of-entry and land acquisition were completed, people were put to work on the access road to the site from the railhead at Newkirk. Initially hand tools such as shovels, sledgehammers, pry bars, and horse drawn fresnoes were used as no larger, mechanical, equipment was available. As example, rock for the South Dike was all placed by hand and several access roads were dug with picks and shovels. The use of labor-intensive adobe construction compensated for the lack of skilled workers who were, however, skilled in the manufacture and use of adobes. This also compensated for both the lack of standard building material then available in New Mexico and the high transportation cost that would have been involved in bringing this material to this remote location.

As construction intensified on the dam, mechanized equipment was used in abundance, however, men with shovels were still employed in order to lessen the relief rolls. Captain Hans Kramer, District Engineer, instituted training programs throughout the four years of construction. Initially there were so few skilled workers in New Mexico that the private contractors engaged in various portions of the dam were required to bring in skilled personnel from as far away as California and the Midwest. This resulted in a certain amount of resentment and conflict between the locals and the outsiders. However, the poverty of New Mexico was such that there was never a lack of people seeking work, in spite of the low wages for the unskilled ($.25 per hour) and limits of 20 hours per week (so that even more people could be hired).

The logistics accompanying such a large construction project as Conchas Dam were staggering. In addition to a complex dam, an entire town had to be created in the middle of nowhere in a sparsely populated state. There were also unanticipated consequences, which caused difficulties in other parts of the state. For example, the great demand for workers at the PWA's Conchas Dam project forced WPA administrators to assign many individuals on work relief in Union County to jobs at the dam site. This in turn caused the WPA district office in Raton to suspend WPA projects in Union County due to the lack of additional personnel and the priority of federal agencies and private interests over the WPA use of relief workers (Kammer 1994:64).

The first employment peak occurred during the creation of the construction town, Conchas City, in the summer of 1936 (see Figure 8-2). This major undertaking relied almost exclusively on relief laborers from New Mexico and the Texas Panhandle. Construction of the town began in the winter of 1935, and by the time it was completed in the summer of 1936, over 2,500 relief workers had been involved at a cost of 1.5 million dollars. Over 745,000 adobe bricks were manufactured for use in the buildings of the construction town. In order to

prevent breakage, the bricks were loaded, unloaded, and stacked by hand. Production of the bricks began on August 15, 1935, and in the first three months 5,600 adobe bricks were made. In addition to the 745,266 adobe bricks, 216,850 cubic feet of sandstone was excavated for constriction. The result was 50 adobe buildings, 29 stone buildings, and one combination of adobe and stone completed at a cost of $0.19 per cubic foot. These buildings provided dormitory quarters for 1,320 men and apartment residences for 141 families (Adobe Brick Reports 1937; Kramer 1940:60-63, and 1941:355-362; Foote 1937:265-268).

By late August 1936, an entire town characterized by wide gravel streets and buildings of typical Southwestern architecture was created to support the construction project. The construction also included roads, gas and power lines, sewage system and power plant. In addition to the 36 dormitories and 132 individual houses and duplex apartments, the site included a mess hall capable of feeding 1,500 employees; an administration building; a 24-bed modern hospital; a filling station; a business building, which housed a drug store, a restaurant, a dry cleaning and tailor shop, a barber shop, a pool hall, a grocery store, and a beauty parlor; a town hall which also contained the post office, a service building; a guest house; and a concrete and soils laboratory. Following the major construction effort a movie theater capable of seating 700 patrons; three 8-car garages; nine single houses; one quadruplex apartment; and a Catholic church were added. Due to the unsuitably high saline content of the well water, four water storage tanks, each with a capacity of 2,200,000 gallons, and a complete water purification plant were constructed. At its height, the construction town's population was slightly over 1,800. The town's administration was supervised by a town manager; a five-person police force and a 30-member volunteer fire department were maintained. Telephone and telegraph and mail service were provided. Recreational opportunities for workers and students included baseball, softball, golf, swimming, tennis, volleyball, basketball and dances.

With the many families living at the construction town it became necessary to provide for the education of the school age children. The 120-mile daily round trip to Tucumcari, the nearest town, was considered too arduous for the younger children. Captain Kramer and others secured WPA funds for the employment of three grade school teachers for the 1936-1937 academic year. Those old enough to attend high school traveled to Tucumcari. For the following academic years, the New Mexico Board of Education established grade schools and high schools at the construction site (average enrollment each year of 50 in grammar school and 100 in high school).

Originally the town was to be demolished and the salvaged materials sold to other Corps Districts or other government agencies. While there was growing interest in the development of recreational facilities by the State, recreation was not among the War Department's authorities. Therefore, the Engineer Department of the Corps cooperated in interesting the proper agencies in such an undertaking. The result of this collaboration was an agreement with the National Park Service (NPS) to occupy and maintain portions of the camp until they could construct suitable recreation facilities on lands and waters provided by the Corps. The recreation area was located on the opposite side of the lake from the dam. After that time the CCC, under NPS direction, undertook

the demolition of the town, the recycled the materials to build the Corps' Permanent Housing and Administration Building.

Given the small number of New Mexico's government-sponsored capital improvements, the number of projects completed through New Deal programs is nothing short of profound. New Mexico ranked fifth among all states, behind Nevada, Montana, Wyoming, and Arizona, in per capita expenditure of New Deal money from 1933-1939. Contrasted with the 294 federal and nonfederal PWA projects in New Mexico are the almost 4,000 WPA projects divided essentially equally into two categories, service and engineering or construction. The 64.3 million dollars spent on WPA projects in New Mexico made dramatic changes in public capital improvements. The Conchas Dam Historic District is a centerpiece of the New Deal's legacy in New Mexico

CRITERION C: ENGINEERING, ART

> "The construction of a large dam in a remote locality, in addition to the obvious engineering and transportation difficulties, involves social and administrative problems whose importance is frequently not appreciated [and] are in many respects similar to those maintaining an army in the field in time of war" (Kramer, 1941: Vol. I:1).

Although Conchas Dam represents a fairly standard dam construction technology, problems occurring while building the abutment and embankment resulted in developing innovative engineering strategies to overcome geological constraints. Additionally, methods developed to manufacturer and deliver concrete, are important for understanding the construction logistics and the engineering significance of the dam.

The excavation at the north abutment was proceeding as per design until a vertical face approximately 55 feet high had been established. (The north abutment had a 20-foot cap of Canyon Sandstone underlain by about 70 feet of Red Shale). As soon as it was exposed, the Red Shale layer began to dry out and spall off, continuing until nearly the entire vertical face hade caved off. As the overlying soil and lose materials were being cleared from the top of the cap rock, large and extensive cracks were observed. Excavation was temporarily halted in the immediate vicinity and numerous meetings were held to contemplate procedures to halt the drying and spalling material. The first attempt was to spray a bituminous sealant over the shale face. Initially, it appeared to work, but within hours, the black bituminous material absorbed even more sunlight and became hotter than the untreated shale face. Huge curtains were then hung in an attempt to shade the face, however, between the wind and the insufficient shade, it was clear that this would not be a viable solution (see Figure 8-3).

Following additional meetings, it was decided to move the abutment face 100 feet farther to the north and to then excavate six individual shafts several hundred feet down to the solid rock foundation. The excavation of the six shafts and concrete placement in each occurred sequentially until the six sections formed a single concrete monolith 50 feet wide and 180 feet long. As the excavation proceeded downward in each shaft, timber bracing was employed. A system of keys and grout outlets were included, and a sealant between the concrete and shale face was placed as the concrete was poured. Once this monolith was completed, excavation for the adjoining monoliths began. Excavation at the south abutment posed similar difficulties, and was overcome by similar methods.

The problems presented by the south embankment were the most complicated impediments to be overcome during the Project. The construction of monolith 5 was started when the work on the columns and concrete walls were about one-third complete. To reduce the hazard of working under the canyon sandstone, the work on monolith five was to proceed by constructing it in three sections, "... so that an upstream block (Section 5A) could be built up to support the cap rock before it was necessary to remove all the talus material in front of the downstream columns" (Kramer1941:Vol.II, p.301). The foundation for section 5A was approximately 20 feet lower than that for the columns and retaining walls. Therefore, it was decided to temporarily leave the shale under the columns and walls. This shale would then be excavated later by tunneling in from the adjoining section 5B foundation area and tunneling down from a 42-inch "chimney" excavated from the top of monolith 5A. To prevent the concrete from bonding to this sloping shale face, four-inch adobe bricks and two layers of roofing paper were placed over the shale. These were then removed later while tunneling down the chimney. Once this excavation was complete, upstream and downstream vents were made to prevent air pockets and concrete was poured down the chimney. When monolith 5A was in place, sections 5B and 5C were excavated by power shovel without incident. Seepage from the shale caused two small rockslides and was a minor delay until the contractor placed a concrete block to prevent the problem from continuing. Through this long, staged process, the construction of the south embankment was completed.

Concrete Manufacture and Delivery

One of the main elements required for a concrete dam is the local availability of large amounts or raw aggregate. In order to process the aggregate, an impressive and massive system of excavation and hauling machinery, an aggregate plant, a 10,000-foot long aerial tramway, a concrete mixing and batching plant, and two 15-ton cableways were required (see Figure 8-4).

The aggregate plant was located approximately 2-1/2 miles southeast of the Main Dam site. The raw aggregate was delivered to a 20-cubic yard "grizzly hopper" that had a reciprocating feeder with a capacity of 240 tons per hour. A 26-inch conveyor belt, 315-feet long on a 31-percent incline, powered by A 60 horsepower electric motor carried the aggregate to the top of a dual sided washing and classifying plant. This plant sorted the material into five useable sizes: fine sand, coarse sand, and 1,2, and 4-inch gravel. After sorting, a 36-inch conveyor belt delivered the aggregate to a receiving box divided into two gravity chutes, each fed by a 48-inch

by 20-foot tilted cylindrical screen where aggregate was washed and dropped to triple-decked vibrating screens and then stockpiled.

The loading terminal was 165 feet away from the stockpiles and consisted of six bins each with 120 cubic yard capacity. Material departed the stockpiles at a rate of 240-tons per hour via a 30-inch conveyor belt capable of traveling at 400 feet per minute. This load terminal delivered the materials to 80 end-dump buckets, each with a capacity of 36 cubic feet, that then traveled over the 10,000-foot long tramway.

The tramway consisted of 15 support towers varying from 30 feet to 63 feet in height and spanned 264 feet to 1,100 feet from each other. The midway Tower No. 9 was constructed as a double tension tower that supported and delivered the lock coil track cable for the loaded buckets and the returning empty buckets. The maximum speed of the tramway was 550 feet per minute with electric motors running 63 cycles per second. The cost of moving the aggregate through the tramway system ran only $0.27 per cubic yard.

The unloading terminal was located on the south bank of the river near the south end of the Main Dam. It was a rectangular steel structure, 135 feet in height and built adjacent to, but independent of, the concrete mixing and batching plant. At this terminal, bucket left the track cable and rolled over a circular monorail around the top of the structure, automatically discharging the aggregate into a large hopper. Any one of six bins was then manually selected to sort the different sizes of aggregate.

Cement was railroaded to Newkirk in bulk and stored in two cylindrical cement silos each with a capacity of 4,700 barrels. Six Government-owned trucks then hauled the cement 27 miles from the railhead to the mixing and batching plant at the construction site.

The 91-foot high hexagonal shaped concrete mixing and batching plant was situated below the unloading terminal on the south bank (no longer extant). Six aggregate bins, each with a capacity of 217 cubic yards, circled the outside of the building. In the center was the cement bin with a capacity of 750 barrels and a water tank, 22-feet in diameter capable of holding 800 gallons. Four beam scales permitted the setting of four different mixes on the scale at one time.

The weighing equipment and the discharge gates interlocked thus preventing discharge if the proper weight of the material was not met. Correct weights of cement, aggregate and water were then discharged into a circular hopper that, in turn, fed into two 4-cubic yard Koehring mixers. Mixing time was three minutes. Peak performance of the plant was rated at 144 cubic yards per hour – the equivalent of 1,152 cubic yards per eight-hour shift. The largest daily output of the plant was 2,750 cubic yards of concrete. Mixed concrete was then placed into 4-cubic yard Blaw-Knox cylindrical bottom-dump buckets and was delivered to the cableway by way of a standard gauge railway. In order to run a year-round operation, the mixing plant included a boiler and an 800-gallon hot water tank for winter mixing.

Dump buckets were attached to two 15-ton cableways for delivery of the concrete to location. The cableways spanned 1,650 feet across the construction area and were attached to a fixed steel tail tower, 183 feet in height, on the north bank. The cableway hoists were electronically operated by induction, slip-ring motors with 250 horsepower capacity. The motors had full magnetic control for regenerative braking when lowering or stopping descending buckets. Friction clutches and brakes were operated by compressed air supplied to each cableway by a compressor. The cableways operated at a conveying speed of 1,200 feet per minute. Operators of each cableway communicated with a signalman at each form location by means of both a bell signal line and a telephone for safety. Precision positioning of the dump bucket was attributed to the exact communication between the operator and signalman and was never but a few feet off from target.

The first bucket of concrete was placed at Conchas Dam on April 12,1937 in a ceremony presided over by Governor Clyde Tingley (see Figure 8-5). Concrete was then poured in five-foot lifts starting with the odd-numbered monoliths that were kept 10-feet higher than adjacent monoliths.

New Deal Art

Santa Fe artist Odon Hullenkremer (1888-1978), commissioned under the WPA Federal Art Project program, painted two images of the Conchas Dam construction era. Born in Budapest, Hungary on June 1 1888, Hullenkremer showed both skill and passion for art even as a small child. Hullenkremer, renowned as a young artist, presented at the Hungarian Royal Court to Emperor Franz Josef I in 1904. At age 15, the self-taught artist entered a painting competition, taking first prize. Young Odon was presented at the Hungarian Royal Court to Emperor Franz Josef I and was immediately admitted to the Hungarian Royal Academy of Fine Arts. He later studied in Egypt, Berlin and finally in Munich in 1910. Hullenkremer immigrated to the United States in 1912, traveled to South America, returned to the United States and settled in Santa Fe, New Mexico in 1933.

Hullenkremer was appointed as an artist at the Conchas Dam project after a Corps official in charge of dam construction came to his studio in Santa Fe and saw his work (Cohea: 1976). The larger of his two paintings is six feet by twelve feet and is called "Commencement of Main Dam Construction." It was painted in 1935 and is currently located on the north wall of the administration building visitor center. The individuals portrayed in the scene are actual people who were working on the project surveying at the time. Hullenkremer "considered it one of his best paintings" (Cohea, 1976).

The smaller painting that measures four feet by eight feet is entitled "Gate City, New Mexico," dated 1936, is a rendition of another construction camp three miles from the original known as Gate City. The scene in the painting depicts a small town wedged between two large mesas that is now the location of two small communities known as Big Mesa and Hooverville. The painting had been misplaced for several years after being sent to Albuquerque for restoration. In 2004 it was located and returned to Conchas Dam where it hangs on the south wall of the administration building conference room. As part of his New Deal work, Hullenkremer also completed painting for the Carrie Tingley Hospital in Truth or Consequences and public libraries in

Galveston, Texas and Raton, and contributed to the renowned *Portfolio of Spanish Colonial Design in New Mexico*.

As a brilliant draftsman and colorist and proponent of realism made him one of the great portrait painters of his time, the two paintings at Conchas Dam are important works in his career and represent well the intentions of the WPA Federal Art Project program.

Figure 8-1 Plant Section – Newkirk Group, April 28, 1939

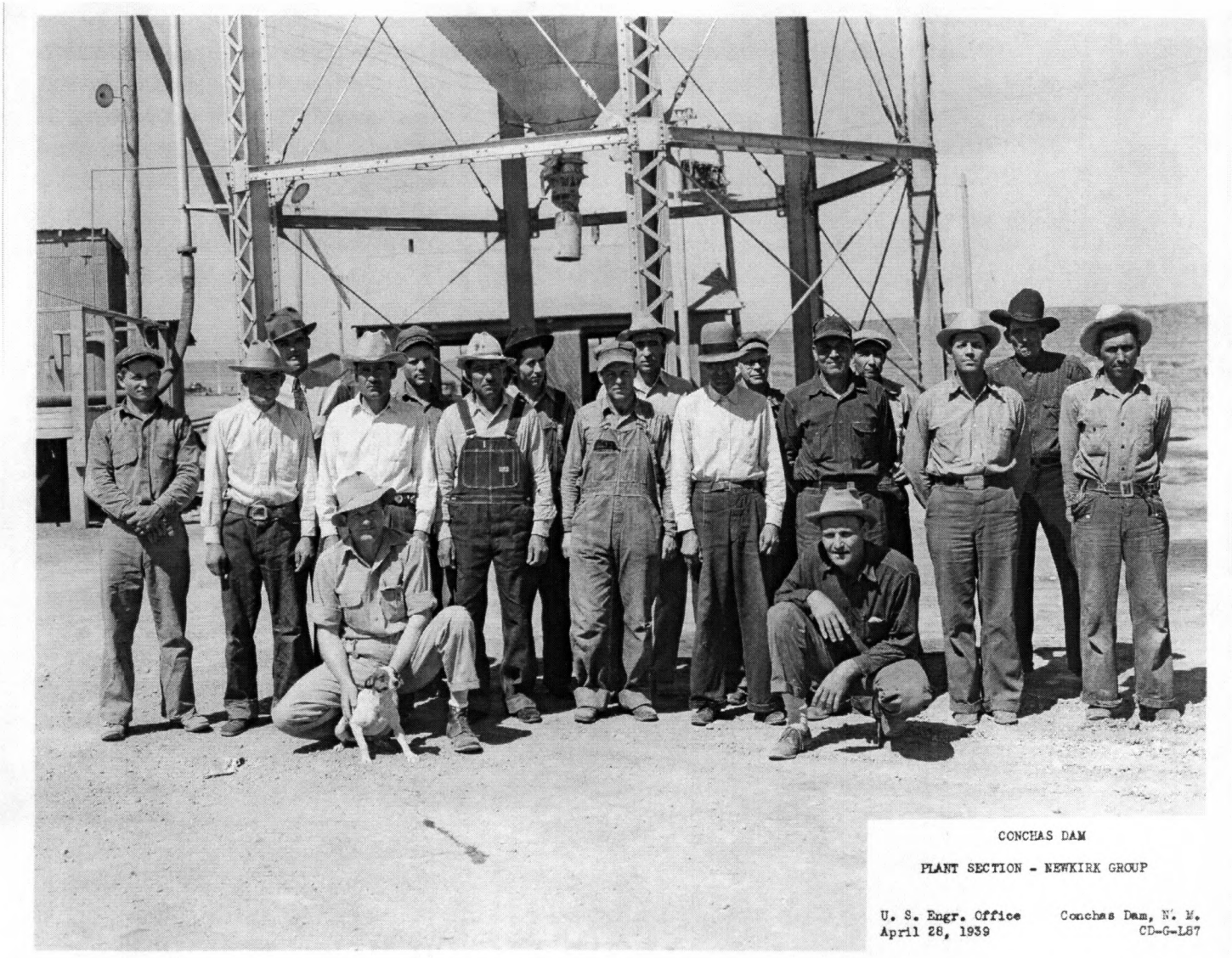


Figure 8-2 Building of Permanent Housing, December 1, 1939

Figure 8-3 North Abutment Construction, October 25, 1937

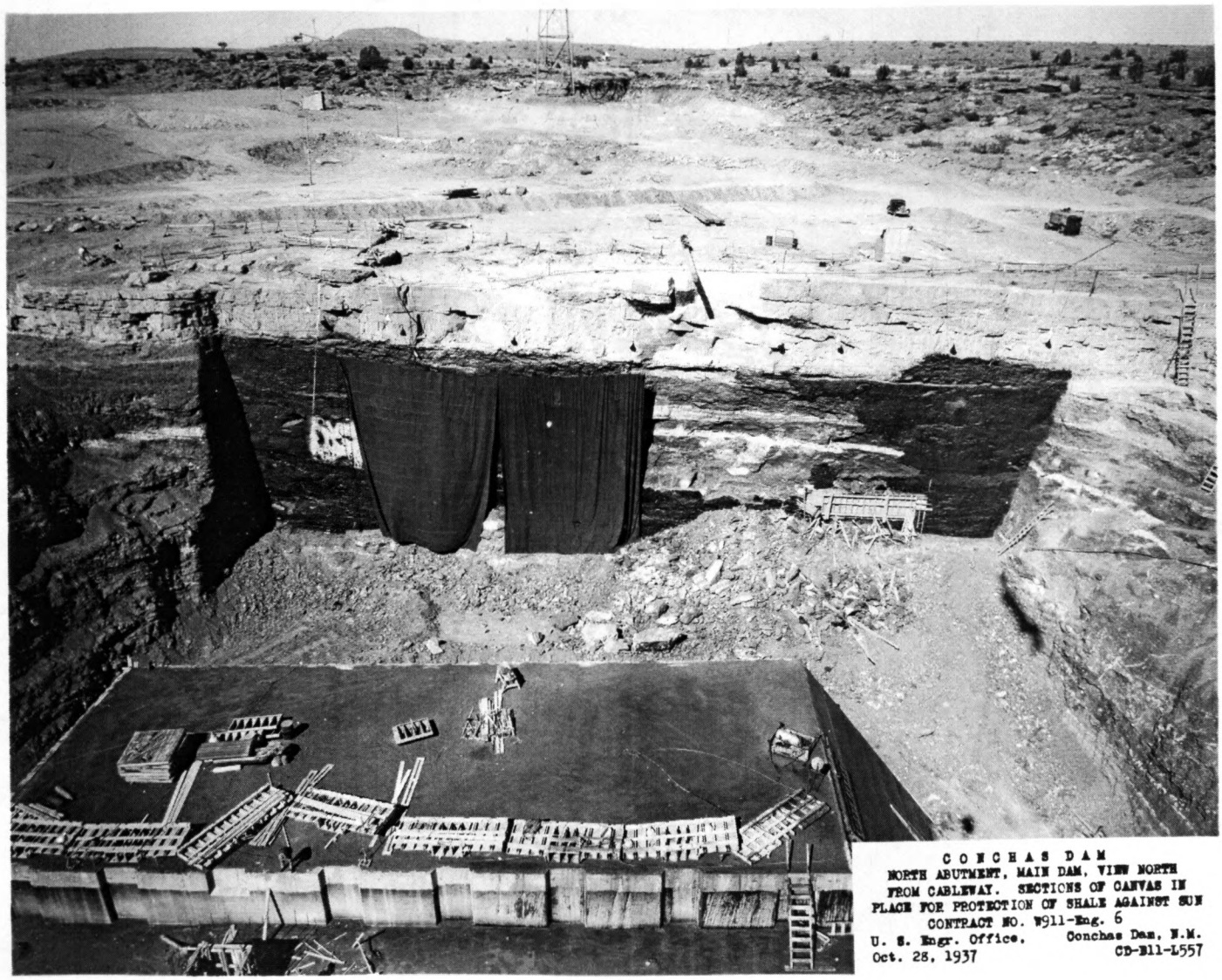
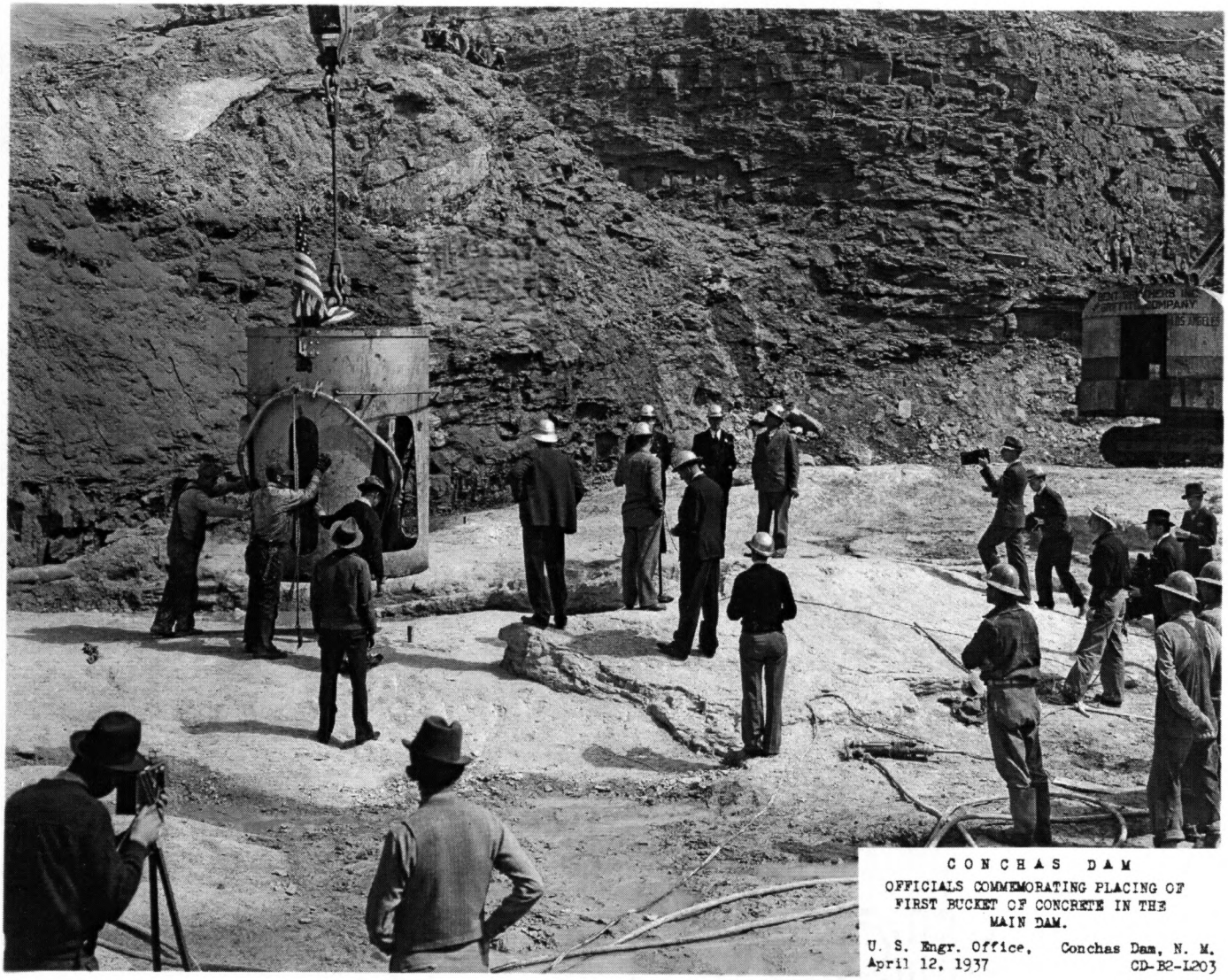


Figure 8-4 Aerial Tramway, December 15, 1937

Figure 8-5 "First Bucket of Concrete," April 12, 1937



CONCHAS DAM
OFFICIALS COMMEMORATING PLACING OF FIRST BUCKET OF CONCRETE IN THE MAIN DAM.
U. S. Engr. Office, April 12, 1937 Conchas Dam, N. M. CD-B2-L203

Bibliography

Cohea, Carol
1976 "Paintings Escape Obscurity," *Albuquerque Journal* (March 21, 1976). Albuquerque.

Culter, Phoebe
1985 *The Public Landscape of the New Deal.* Yale University Press

Foote, L.H.
1937 Conchas Dam Construction Camp, *The Military Engineer.* Vol. XXIX, No. 166. On file. Corps of Engineers, Albuquerque District, Albuquerque, NM.

Kammer, David
1994 *The Historic and Architectural Resources of the New Deal in New Mexico.* On file. New Mexico Historic Preservation Division, Santa Fe, NM.

Kramer, Hans
1940 *History of Conchas Dam and Reservoir Project.* On file. IM-S Historical File, Corps of Engineers Albuquerque District, Albuquerque, NM.

1941 Design and Construction of Conchas Dam, New Mexico. Two volumes. On file. IM-S Historical File, Corps of Engineers, Albuquerque District, Albuquerque, NM.

U.S. Army Corps of Engineers
1931 "Circular No. 321" On file, IM-S Historical File. Albuquerque, NM.

1937 *Adobe Brick Reports. Part I, Report of Tests. Part II, Building Construction.* On file, Records Holding, 228-10; Box M7-9-1. Albuquerque, NM.

1939 Specifications: Permanent Facilities. On file. Albuquerque, NM.

1948 *Information Pamphlet on Conchas Dam and Reservoir Project, South Canadian River, New Mexico.* On file, IM-S Historical File Albuquerque, NM.

1976 *Master Plan, Conchas Dam.* On file. Albuquerque, NM.

Welsh, Michael E.
1985 *A Mission in the Desert.* On file. Corps of Engineers, Albuquerque District, Albuquerque, NM.

Geographical Data

Verbal Boundary Description

The Conchas Dam Historic District is a long, linear district following essentially the course of New Mexico (NM) State Highway 433 from the south tip of the South Dike to the north tip of No. 2 North Dike, with the west boundary formed by the Conchas Reservoir and the Canadian River and the east boundary formed by private land. Units of Conchas Lake State Park form the north south boundaries of the district. As such, the boundary captures the Main Dam and all the water control features historically associated with the project, as well as an associated building complex and park. A discontiguous feature of the district is located approximately 1.8 miles to the south. The district is approximately 141.3 acres with an average width of 300 feet. The width of the district expands at the Administrative Area to capture the CCC-built park, Administration Building and the Permanent Housing. This deviation forms a rectangle measuring approximately 700 feet north and 1,900 feet east to west, as depicted on the accompanying U.S.G.S. map. North and south of the Administrative Area, the width returns to the average 300 feet. The discontiguous feature of the district, the Saddle Dam, is directly associated with the construction and purpose of the Conchas Dam project and is therefore significant to the nominated resource. The following UTM reference points and the accompanying Conchas Dam and Tenaja Mesa quadrangle maps delineate the boundary of the district.

Starting from north:

A.	North tip of No. 2 North Dike:	13	574010 E, 3920020 N
B.	Administrative Area, NW corner:	13	573130 E, 3918440 N
C.	Administrative Area, NE corner:	13	573610 E, 3918440 N
D.	Administrative Area, SE corner:	13	573610 E, 3918260 N
E.	Administrative Area, SW corner:	13	573080 E, 3918250 N
F.	South tip of South Dike:	13	574200 E, 3915000 N

Discontiguous feature:

G.	North tip of Saddle Dam:	13	571460 E, 3912870 N
H.	South tip of Saddle Dam:	13	571430 E, 3912510 N

The boundary of the one discontiguous feature is indicated on the accompanying Tenaja Mesa quadrangle map as well as described below.

Verbal Boundary Justification
The nominated boundary, including the discontiguous element, includes all the water control features historically associated with the Conchas Dam project. The boundary also includes all historic buildings and structures associated with the Conchas Dam project that are located on land managed by the U.S. Army Corps of Engineers.

Saddle Dam

Verbal Boundary Description
The discontiguous feature is located approximately 1.8 miles south of the south boundary of the contiguous district. To access the discontiguous feature, proceed 528 feet from the intersection of NM State Highway 433 and State Highway 104. Proceed west on NM 104 approximately 8,700 feet. From this point, proceed approximately 900 feet west over a field to the north tip of the Saddle Dam.

The Saddle Dam is a rectangular feature measuring 10 x 1,400 feet. Its north and south boundary points are designated by the following UTM reference points: North, 13 571460 E, 3912870 N; South, 13 571430 E, 3912510 N. The acreage of the discontiguous element is less than one acre. The boundary for the discontiguous feature includes only its footprint and is depicted on the accompanying Tenaja Mesa quadrangle map.

Verbal Boundary Justification
The boundary of the Saddle Dam includes only the structure as defined by its footprint. The discontiguous feature is directly associated with the construction and purpose of the Main Dam and is therefore significant to the nominated resource.

Photographic Log

The following information pertains to all photographs unless otherwise noted:

Conchas Dam Historic District
Conchas Dam, San Miguel County, New Mexico
Julie Stone
November 2004
Negatives on file with the U.S. Corps of Engineers, Conchas Dam Project, Conchas Dam

Photo 1 of 14
Main Dam, upstream view
Facing southeast

Photo 2 of 14
Main Dam, downstream view
Facing northwest

Photo 3 of 14
Adit and Powerhouse
Facing northwest

Photo 4 of 14
South Dike
Facing northwest

Photo 5 of 14
Irrigation Headworks Gatehouse
Facing northwest

Photo 6 of 14
Entry Gate
Facing southwest

Photo 7 of 14
Administration Building
Facing west

Photo 8 of 14

Permanent Staff Housing
Facing west

Photo 9 of 14
Entry of Single Residence
Facing west

Photo 10 of 14
Duplex Residence
Facing southeast

Photo 11 of 14
North Dike No 2. (background) and Emergency Spillway (foreground)
Facing south

Photo 12 of 14
Water Tower
Facing west

Photo 13 of 14
Park
Facing south

Photo 14 of 14
Saddle Dam
Facing north