# THE FIRST

# THIRTY-

# SIX

# YEARS



**History of the ALBUQUERQUE DISTRICT ··· 1935 - 1971**

U.S. ARMY CORPS OF ENGINEERS, ALBUQUERQUE, NEW MEXICO

# Report Documentation Page

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## FOREWORD

This History of the Albuquerque District, United States Army Corps of Engineers, was compiled at the direction of the Chief of Engineers. It covers a relatively short era, as Corps of Engineers Districts go. It was a dramatic time, spanning a most eventful period of our nation and our world.

This document represents the invaluable research efforts of Nathan J. Sewell, a pioneer employee of the District. Material gathered by Mr. Sewell formed the basis for an excellent writing by Dr. Louis C. Tulga, Assistant Professor of History at the University of New Mexico, 1967-1971.

I am most grateful for the efforts of these two gentlemen and sincerely recommend the results of their outstanding work to all U.S. Army Corps of Engineers employees and to the American public.

DATE:

JAMES L. SUTTON
Colonel, CE
District Engineer

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# INTRODUCTION

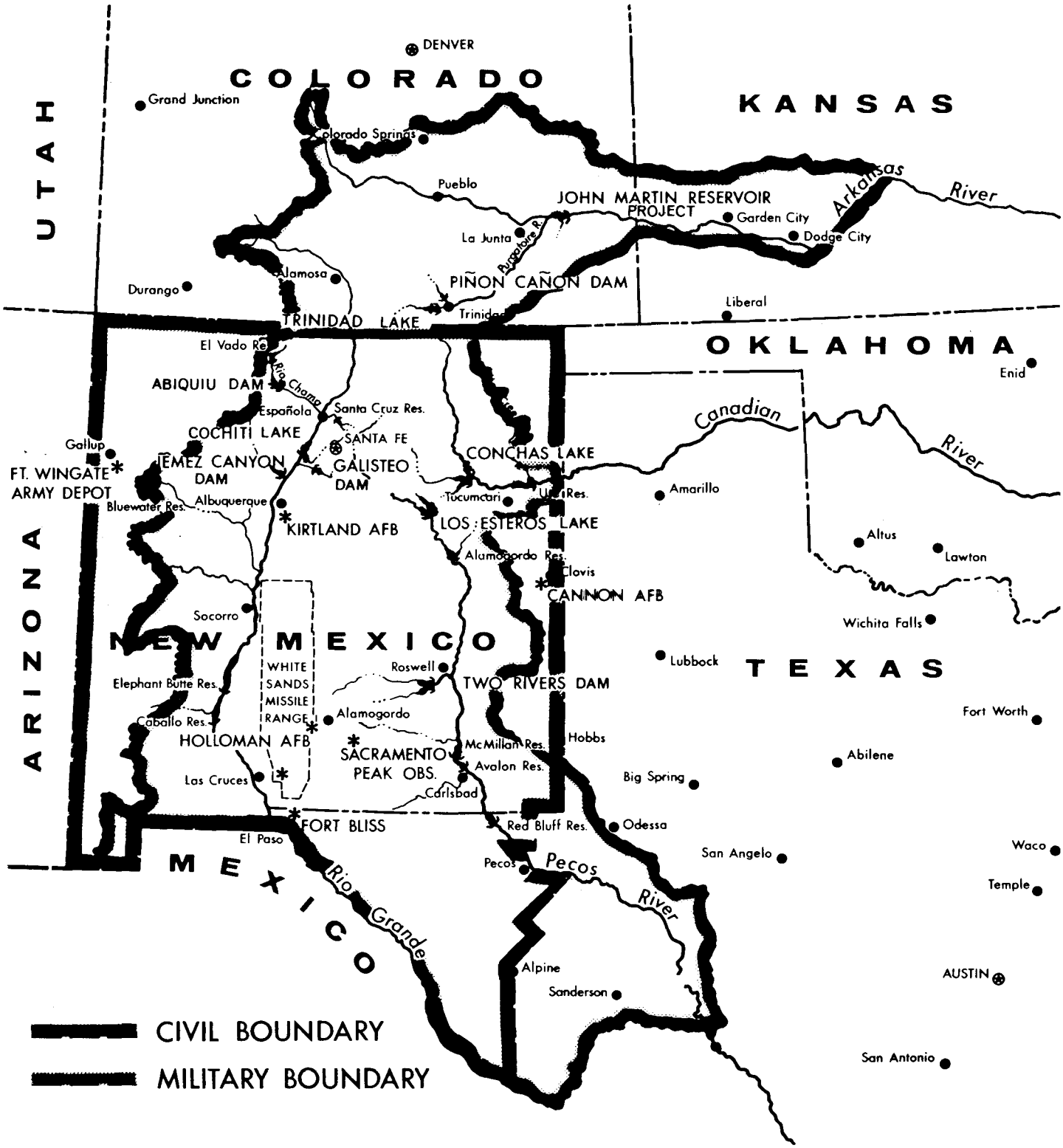
The historical setting out of which the Albuquerque District of the U.S. Army Corps of Engineers emerged was both eventful and tragic. Its inception came during the depression years of the 1930's. In order to create jobs for the many unemployed, Congress passed the Emergency Relief Appropriations Act of 1935. Under this authorization, the proposed Conchas Dam Project on the Canadian River in Northeastern New Mexico was launched--and along with the project, the Albuquerque District.

Since 1935, the United States has been instrumental in highly significant developments in virtually every field of science and technology. The nation has progressed from the "pick and shovel" days of the WPA to the age of missiles, nuclear power, and lunar exploration. The Albuquerque District has been involved, directly or indirectly, with many of these advances. A prime example of this involvement was the District's limited role, in cooperation with the Manhattan Engineer District, in the initial development of the atomic bomb.

After World War II and during the period of international tension that followed, the District was committed to the construction of technical facilities for various branches of the service engaged in research and development of weapons. The District's civil works construction increased spasmodically after World War II--being hampered by strains on the national budget occasioned by continued international crises.

The word "water" sums up the major source of problems affecting the District's civil works activity. On the one extreme is the paucity of available water in rivers and streams and its over-appropriation. On the other extreme are the problems originating in excesses of water from floods on normally dry streams--causing damage to both urban and rural areas and, on occasion, the loss of life. Practically every drop of water is under contractual ownership before it falls either inside or enters the District boundaries. Consequently, there is little or no surplus water to be appropriated and developed for future beneficial use. And with few exceptions, all major streams are "wrung dry" before leaving the District.

Nevertheless, the possibility of high intensity storms occurring below the terminal reservoirs of the District is ever present. This happened on the Arkansas River in 1965 and, although the chances are remote, it could happen on the Rio Grande and Pecos River. The District's arid/semiarid climate gives it the appearance of an unlikely area for the building of dams and other facilities to control rolling rivers. But those familiar with the ways of the desert know otherwise.




# ALBUQUERQUE DISTRICT

## SCALE IN MILES

0 30 60 120 180 240

# CHAPTER I

## HISTORICAL ROOTS OF THE ALBUQUERQUE DISTRICT

The Albuquerque District of the U.S. Army Corps of Engineers has traditionally served portions of the four states of Texas, New Mexico, Colorado, and Kansas. The District is bounded on the south by the Mexican border; on the west by the Continental Divide; on the north by the watershed of the Arkansas River--as far downstream as Great Bend, Kansas; and on the east by the Pecos River watershed. An area so vast and diverse in matters of climate, topography, and cultural heritage defies easy generalization.

The District, with three distinct climate types, has an average annual rainfall of about thirteen inches. Annual precipitation in the arid regions varies between seven and ten inches. The greater part of the District is semiarid with an annual precipitation of some fifteen inches. The higher elevation levels of the mountains of New Mexico and Colorado are often subhumid/humid with annual precipitation averaging less than forty inches.

Average elevation within the District is about 5,000 feet, but there is a divergence of over 10,000 feet between the low desert regions and the majestic peaks of the Southern Rockies. The divergence of elevation accounts for the presence of six distinct life zones--ranging from lower Sonoran to Hudsonian and Arctic. The high country is the source for the principal streams flowing through the District: the Rio Grande, and the Arkansas, Canadian, and Pecos Rivers. None of the streams in the District is navigable, yet each is an extremely important water source for irrigation, recreation, municipal, and commercial uses.

Contrast, however, is not limited to climate and topography. Three distinct cultural heritages continue to shape the lives of the people of the Albuquerque District: Indian; Hispanic; and Anglo-American.

Paleo-Indians visited widely scattered sites in the District as early as 10,000 years ago. Settled living began about the time of Christ and reached its finest expression some centuries later in the Pueblo Culture in the area immediately west of the Continental Divide. Between 800 and 1300 some of the largest villages of North America were built and occupied in that area. For reasons not fully understood, these great settlements were abandoned about 1300. Many of these people migrated eastward into the valley of the Rio Grande and its tributaries, where new, less magnificent pueblos

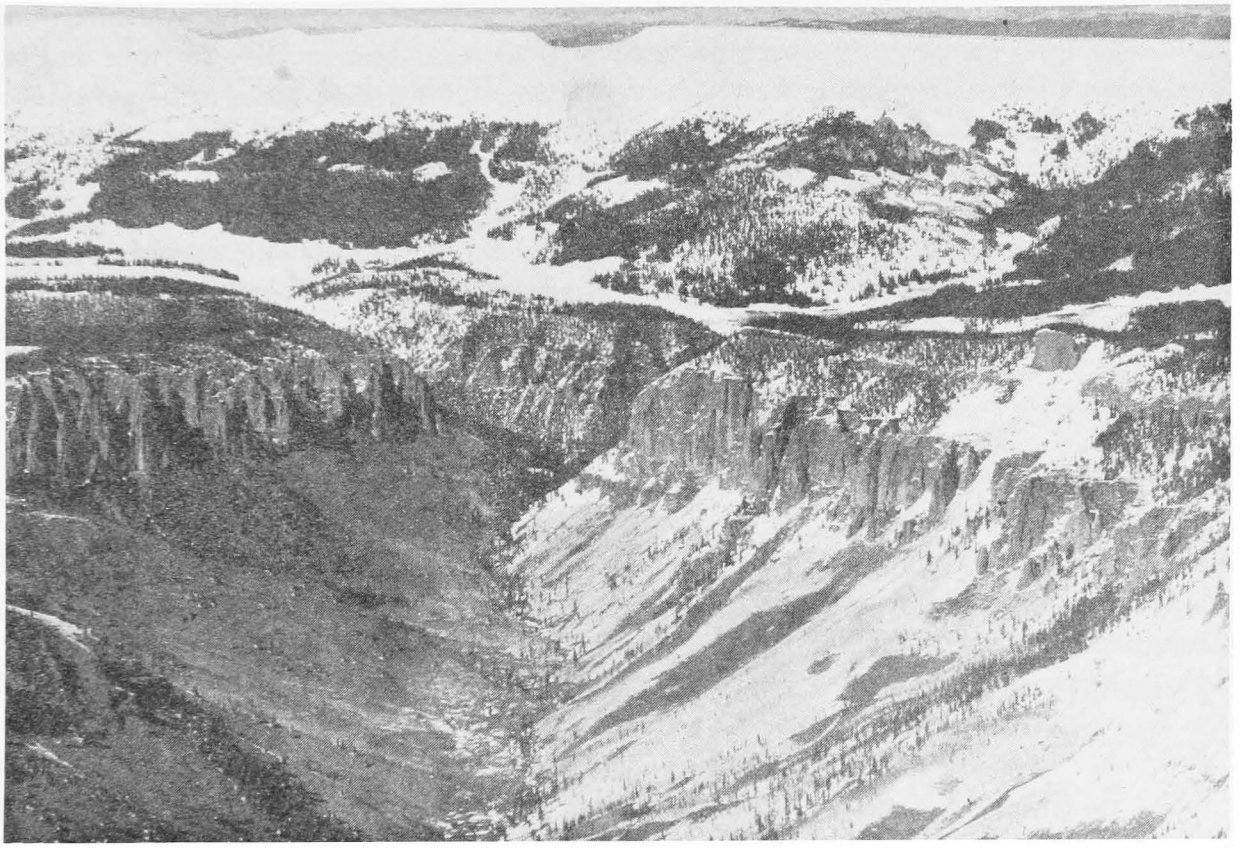
were constructed. When Francisco Vasquez de Coronado led his expedition into the Southwest in 1540 he found some 60 to 70 villages inhabited by Pueblo Indians. In the twentieth century, 19 pueblos still flourish as centers of Indian life and culture.

Between 1200 and 1500, nomadic Plains Indians began to make more or less regular incursions into the District. Their presence, along with that of the Navajos, who entered the western fringes of the District about 1500, constituted a periodic threat to the valley pueblos.

In 1540 Coronado sought out the fabled "Seven Cities of Cibola" and failed to find the great riches rumor had promised. The Spanish first successfully colonized New Mexico in 1598 under Juan de Onate and established the seat of government about 1609 at Santa Fe. By 1680, when the Pueblo Indians revolted against Spanish rule and forced them back to Mexico, the Spanish had already built a number of villages in the general vicinity of Santa Fe. Reconquest and resettlement of New Mexico was under the leadership of Don Diego de Vargas in 1692. The Spanish were back in the Rio Grande valley of New Mexico to stay. By 1750, some 4,000 people of Spanish descent were living in about 20 villages within about 100 miles of Santa Fe. Permanent settlement outside that general area was rare prior to the nineteenth century because of the danger of the Plains Indians and the Navajos.

After permanent colonization of the Rio Grande valley, the highway linking Vera Cruz with Chihuahua was extended northward to El Paso and then on to Santa Fe. Pack trains on this famous El Camino Real were the primary means of supply to the Spanish villages of New Mexico. In 1821 Mexico won its independence from Spain and, in the following year, Captain William Becknell began the annual caravan of wagons from Missouri to Santa Fe--the Santa Fe Trail. The supply link with the east soon surpassed El Camino Real in importance to New Mexico. Consequently, New Mexico began to face east instead of south. This new orientation was reenforced when much of the Southwest was ceded by Mexico to the United States in the Treaty of Guadalupe Hidalgo in 1848.

After the Civil War vast new areas of the countryside were made safe for the cattle industry, farming, mining, and permanent settlement. In the 1870's the principal railroad shipping points were Dodge City, Abilene, and Newton, Kansas. But cattle drives like those along the fabled Chisholm Trail were over in about a decade as railroads pushed deeper into the District. By 1880 rail service had been extended to Santa Fe, and in short order mining towns, remote ranches and farming centers boasted their own railheads. Numerous mining camps mushroomed almost overnight into booming towns complete with railroad spur, opera house, and the raucous behavior commonly related in western folklore. But by 1915 the days of the great ranches were over and most mining towns had begun to fade into obscurity. The legacy of this vainglorious past is preserved, however, in the ever popular tales of the Old West.



SOURCE OF THE RIO GRANDE

Prior to Spanish settlement, Pueblo Indians were diverting water from streams into a primitive system of open ditches or acequias. When the Spanish settled the valley of the Rio Grande and its tributaries they patterned their community ditches after those of the nearby pueblos. Modern methods of irrigation were not used until the late nineteenth century when the engineering knowledge and the capital necessary to build dams, reservoirs, and extensive networks of canals was available.

In the late nineteenth century settlers in Southcentral Colorado built a series of community ditches utilizing waters of the Upper Rio Grande for irrigation. By 1900

the greatest practicable amount of streamflow in that area had been diverted. A number of reservoirs were constructed in that area between 1910 and 1928 to more effectively utilize existing water resources.

By the 1880's the Middle Rio Grande watershed was laced with irrigation ditches and as much as 125,000 acres were under irrigation between Cochiti and San Marcial. The extensive water diversion in Colorado and New Mexico caused the Rio Grande to be dry at El Paso for increasingly frequent and lengthy periods.

Claiming ancient prior right, Mexico protested this situation to the United States during the 1880's. The International Boundary Commission investigated the complaint and placed an embargo on further water development along the Rio Grande in New Mexico and Colorado until the problem could be resolved. Obviously a facility to store and regulate the waters of the Rio Grande was necessary if Mexico's claims were to be satisfied.

Shortly after the passage of the Reclamation Act of 1902 investigations for a Rio Grande project were initiated. In 1904 a feasibility study concluded that a reservoir could be created by the construction of a dam at Elephant Butte, New Mexico, which could provide sufficient water to meet the requirements of all interests. Congress authorized the construction of Elephant Butte Dam in 1905. The United States and Mexico were able to negotiate a treaty in 1906 whereby Mexico was guaranteed an annual delivery of 60,000 acre-feet of water in perpetuity.

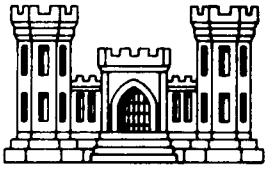
Construction of Elephant Butte Dam began in 1908 and the project was completed in 1916. The reservoir had an initial capacity of 2,639,000 acre-feet. Later, in the depression years, Caballo Dam was built some 20 miles downstream so that hydroelectric power could be generated from releases from Elephant Butte Reservoir. The Caballo Dam project, completed in 1938, created a reservoir with a capacity of 346,000 acre-feet.

Along the Pecos River valley irrigation projects have been in continuous operation since the late nineteenth century: the Hagerman Irrigation Company in the Roswell area; the Hope Community Ditch in the Artesia area; the Pecos Irrigation and Improvement Company in the Carlsbad area; and downstream in Texas, the Red Bluff Water Power Control District. Along the Pecos River a number of dams and reservoirs were constructed at the turn of the century.

As in other watersheds in the District, irrigation along the Canadian River began in the late 1880's. Projects did not possess major significance until the twentieth century. Eagle Nest Dam was completed in 1918 to impound waters of the Cimarron Creek for irrigation works downstream and in 1935 the U.S. Army Corps of Engineers entered the area to direct work on Conchas Dam located at the confluence of the Conchas and Canadian Rivers.

The U.S. Army Corps of Engineers was established by the Continental Congress in 1775. In 1802 the Corps was reorganized as a military academy with headquarters at West Point, New York. The Chief Engineer of the newly reorganized Corps was also the superintendent of the U.S. Military Academy. This relationship between the Corps and the Military Academy continued without interruption until 1866. The U.S. Military Academy was the country's first school of engineering and, until the Civil War, it was without peer in this field.

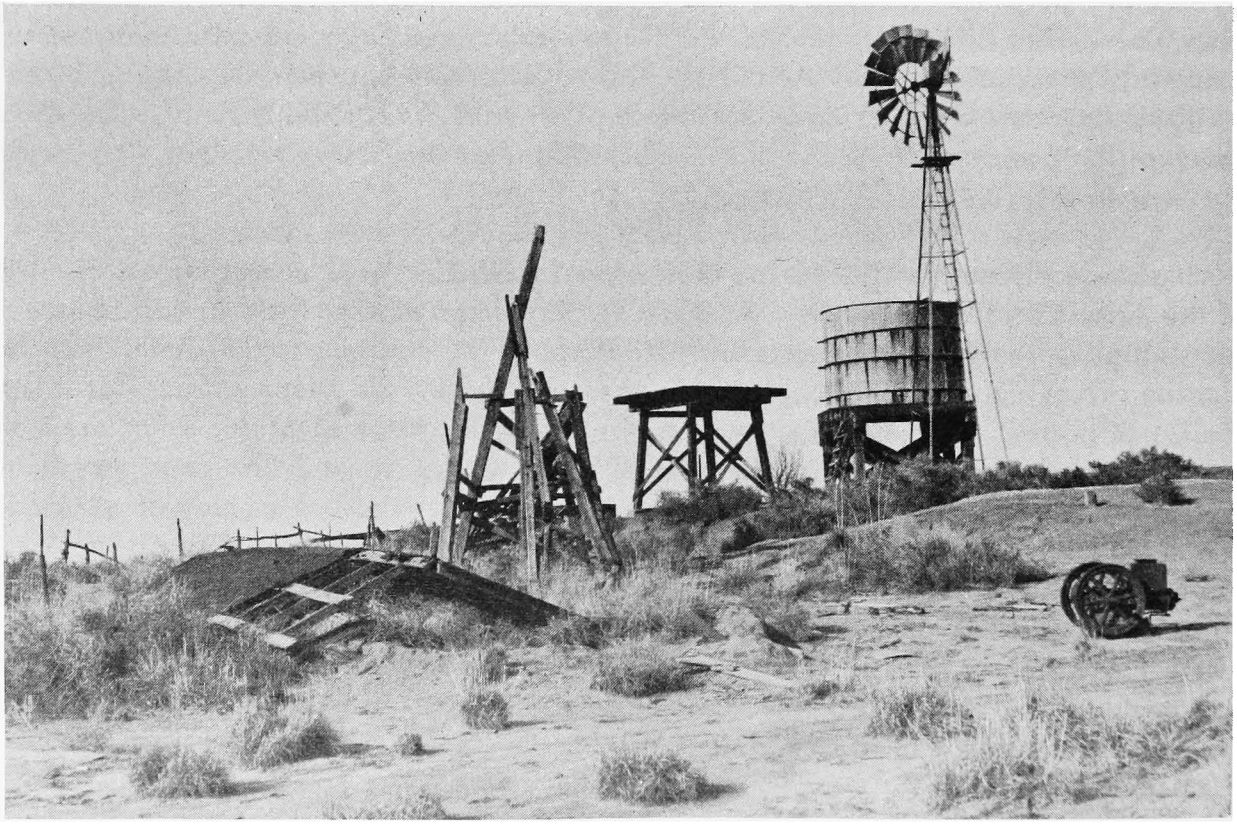
During the early days of the nation professional engineers were almost always members of the Army Corps of Engineers. As a result, the Corps was involved in varied projects ranging from building coastal fortifications to the construction of interstate roads, and the surveying of the West. In 1824, the nation's first River and Harbor Act initiated the Corps' formal assignment to the area of civil works. In the ensuing years the Corps' responsibility was greatly expanded. In 1879, the Corps, for the first time, was formally associated with the problem of flood control when it undertook a study of navigation and flood control on the Lower Mississippi River. Then in 1927, the Corps began a survey of some 191 rivers of the United States with a view toward improvement of navigation, development of hydroelectric power, flood control, and irrigation potential. In the Flood Control Act of 1936, the federal government assumed responsibility for a nationwide flood control program. The U.S. Army Corps of Engineers was designated the government agent in this field.



After the stockmarket crash of 1929 the economy of the country plummeted steadily until many banks had failed, industrial production had been cut in half, and unemployment reached crisis proportion. By the summer of 1932 almost 13 million were without work and at least a million were wandering the country in a fruitless quest for jobs or just for the sense of movement itself. On snowy days, as many as 200

men huddled over fires in the clutter at the north end of the railroad yards in Belen, New Mexico. Unlike the traditional hobo, they sought not to evade work but to find it. From the Carolinas westward to New Mexico cotton remained in the fields unpicked in mute testimony that cotton could not be sold for the cost of picking. In the plains states breadlines marched under grain elevators heaped high with wheat and western ranchers could neither market nor feed their stock.

Then the drought, which began in 1932 and continued each year until 1936, converted a huge area from Texas to the Dakotas into a "Dust Bowl." A conductor on the Santa Fe "Navajo" train reported that noon was like night--without a trace of the sun. Yellow grit from Nebraska sifted through White House doors and in the winter of 1935 red snow fell on New England. Thousands lost their land for failure to pay taxes or meet payments.



In response to such tragedies the federal government enacted a wide variety of legislation in an attempt to ameliorate personal hardship and suffering.

In 1929, a joint report of the U.S. Army Corps of Engineers and the State of New Mexico had concluded that flood control and irrigation projects along the Canadian River were not economically feasible. But because of widespread unemployment in the early 1930's the federal government directed its various agencies to recom-

mend projects that would create jobs. Under direction from General Edward M. Markham, Chief of Engineers, the Division Engineer of the Lower Mississippi Valley Division, U.S. Army Corps of Engineers, issued a report in October 1933. The report, "Unemployment and Destitution in Certain Sections of Texas, Oklahoma, Kansas, Colorado, and New Mexico," concluded that although Conchas Dam could not be justified in terms of flood control and irrigation benefits, its construction would provide a good deal of employment.

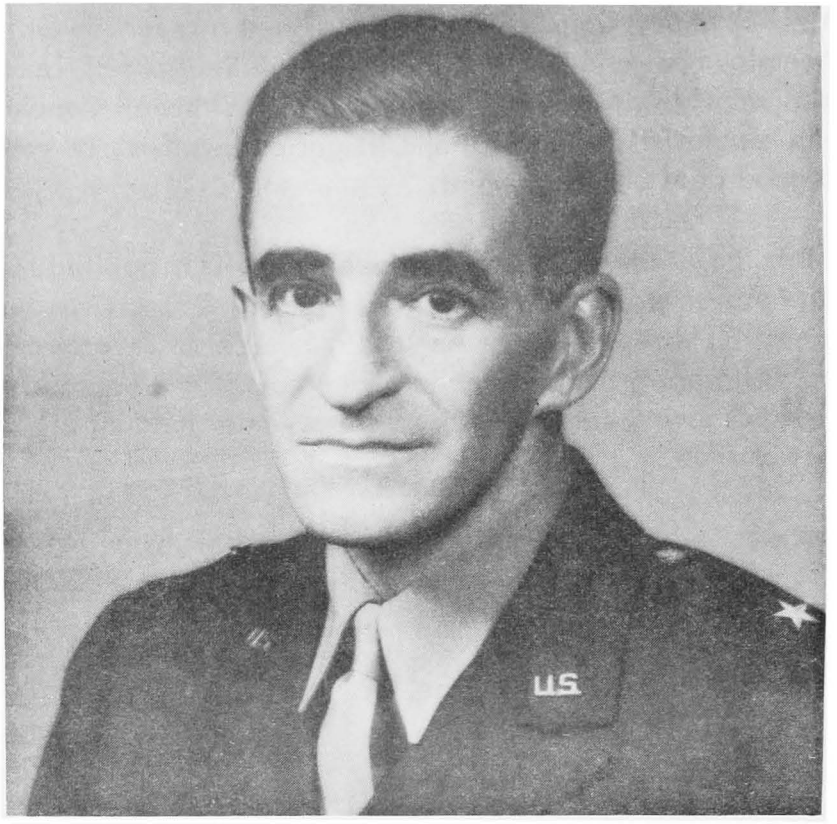
On the basis of this report, the Chief of Engineers, in 1935, applied for approval and funding of the project from the National Emergency Council, under provisions of the Emergency Relief Appropriations Act of 1935. Within several months, President Franklin D. Roosevelt approved the Conchas Dam Project and appropriated $4,500,000 in ERA funds. The following year the project came under funding provisions of the Flood Control Act of 1936.

The Conchas Dam was to be built some thirty miles horthwest of Tucumcari, New Mexico on the Canadian River just below its confluence with the Conchas River. The project was assigned to the U.S. Army Corps of Engineers and a War Department Engineer District, under the Lower Mississippi Valley Division, was established on August 1, 1935 in Tucumcari. The District, with jurisdiction over the watershed of the Canadian River west of the New Mexico-Texas state line, was organized into three main divisions: Administrative; Engineering; and Town Management.

At the outset, the Tucumcari District was under the direction of District Engineer Captain Hans Kramer (later Brig. Gen.), two commissioned officers, a medical officer, and a staff of 143. Captain Kramer, born in Germany in 1894, graduated from the U.S. Military Academy in 1918. He served the District from August 1935 until his transfer in November 1939--shortly after the completion of the Conchas Dam. Because of Captain Kramer's dedicated leadership in seeing the project through to completion he is recognized as the "Father of Conchas Dam."

When the District was founded, Tucumcari was a typical western town inhabited and frequented by merchants, stockmen, and railroad employees. District offices were located in a remodeled store front adjacent to the old Vorenberg Hotel on Main Street. The distance from the town to the project site made it necessary to build a construction camp at the project site: general town facilities; and housing for about 2,500 relief workers, 1,400 construction workers under contract, and for at least 125 families of federal civil service employees. Building the construction camp was the first order of business.

BRIGADIER GENERAL HANS KRAMER




DEDICATION PLAQUE AT CONCHAS DAM - 1967

## CHAPTER II

# THE DEPRESSION YEARS: WORK RELIEF AND CIVIL WORKS, 1935-1941

## CONCHAS

The Tucumcari District's primary mission was to direct construction of the Conchas Dam Project while providing as much emergency relief employment as possible. The project consisted of three main elements: (1) construction of a secondary highway from the railhead at Newkirk, New Mexico to the project site; (2) the building and administration of an on-site construction camp; and (3) construction of the dam and appurtenances.

The site was in an area of relative isolation, about 30 to 60 miles by rural road from the nearest town or city. The District built a two-lane gravel road, some 27 miles long, between the site and Newkirk. Almost all material for the project had to be shipped to Newkirk and hauled over this newly constructed road. Its heavily traveled surface was kept in repair by constant use of a self-propelled road grader. While the Conchas Project was under construction, traffic was so heavy that the road could not be blocked long enough to allow for paving.

Provision of suitable and adequate water supply for domestic and construction use was one of the more serious problems encountered. The original water supply was obtained from a system of 40 shallow wells which supplied about 30,000 gallons per day. Water for construction purposes was taken from deep wells. In time, the domestic water supply became inadequate and it was necessary to utilize the river flow. Canadian River water was impounded in a temporary reservoir with a storage capacity of 70,000,000 gallons. As a precautionary measure, additional water was stored in a tank which held about 10,000,000 gallons. From these facilities, water was pumped to a purification plant at the camp site.

Electric power was initially supplied by a 35kw generator. As the construction camp expanded in size, a powerplant was installed with a capacity sufficient to furnish adequate power for both domestic and construction consumption. The Gas Company of New Mexico built a pipeline from Tucumcari to the camp site, using labor hired by the government. After some time, serious leaks in the system forced the abandonment of the gas line. Butane gas and fuel oil were hauled by truck to the camp. Telephone and telegraph services were extended to the camp and the Post Office Department established a third-class post office at Conchas.

LAYING OF GAS LINE TO DAM SITE

The site selected for the camp was a gently sloping area above the bluffs of the Canadian River with excellent natural drainage. The tract contained about 834 acres. It was conveyed by the Red River Valley Company, owner of the Bell Ranch, to the federal government by easement for the construction period of the project.

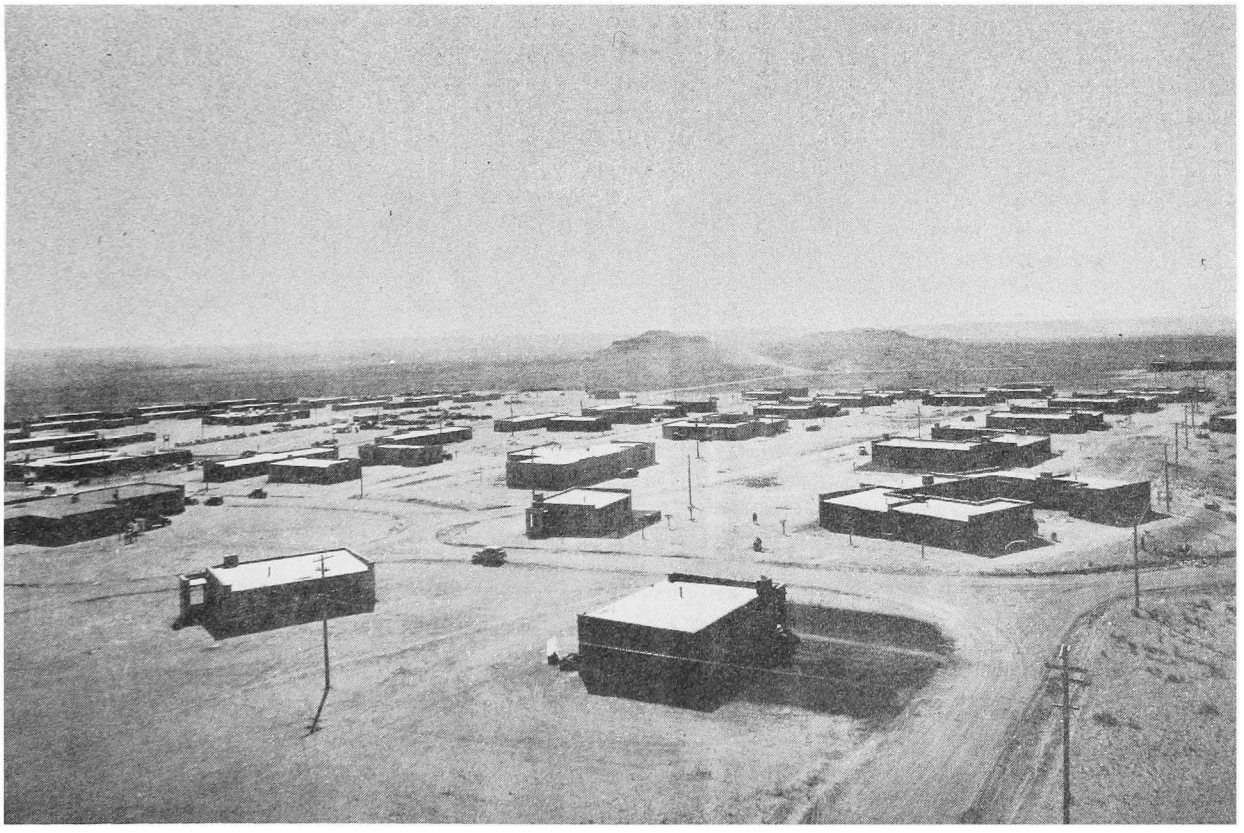
Start of camp construction necessitated the recruitment of labor from relief rolls of New Mexico and West Texas and a Corps of Engineers field office was set up at Conchas. The Town Management Division supervised the camp facility and a Corps' commissioned officer acted as Town Manager. Because of communications problems between the District headquarters at Tucumcari and the field office at Conchas the District offices were moved to the construction site. On October 1, 1936 the Tucumcari District was renamed the Conchas District.

When it became apparent that construction contracts for the dam could be awarded as early as September 1936, the schedule for construction of the camp facility was accelerated. The number of employees working on the camp increased from 500 in March 1936 to nearly 2,400 in June. As a result of increased production, all housing facilities for personnel, the utility installations and miscellaneous buildings, except for the theater and some garages, were available for occupancy by October 15, 1936.

The camp was designed to accommodate about 2,500 persons. It consisted of apartments, individual residences, dormitories, an infirmary, town hall, and other such buildings necessary for town life. All buildings in the camp were of Pueblo style architecture and the basic building materials were adobe and native stone. Rental rates were based on the amortization of all equipment over a four year period, plus operation and maintenance costs and the interest on the investment at the rate of 3.5 per cent per annum.

The Town Management Division provided full municipal services to the camp. The camp's 24-bed infirmary was one of the most completely equipped hospitals in the State of New Mexico. Dining facilities were cafeteria style in a 1,500-man capacity mess hall operated by the federal government. There was a 7-man police force and a volunteer fire department at the camp. Concession agreements were made on an annual basis to businessmen; who operated the wide range of services found in any town the size of the camp.

The Conchas Dam Recreation Association, a quasi-official organization whose membership included all employees of the project, conducted community recreational activities. Softball, tennis, golf, and basketball were among the sports activities available to employees and their families. Dances were sponsored from autumn through spring and the Association supported camera, rifle, drama, and bridge clubs.



VIEW OF CONSTRUCTION CAMP, LOOKING WEST

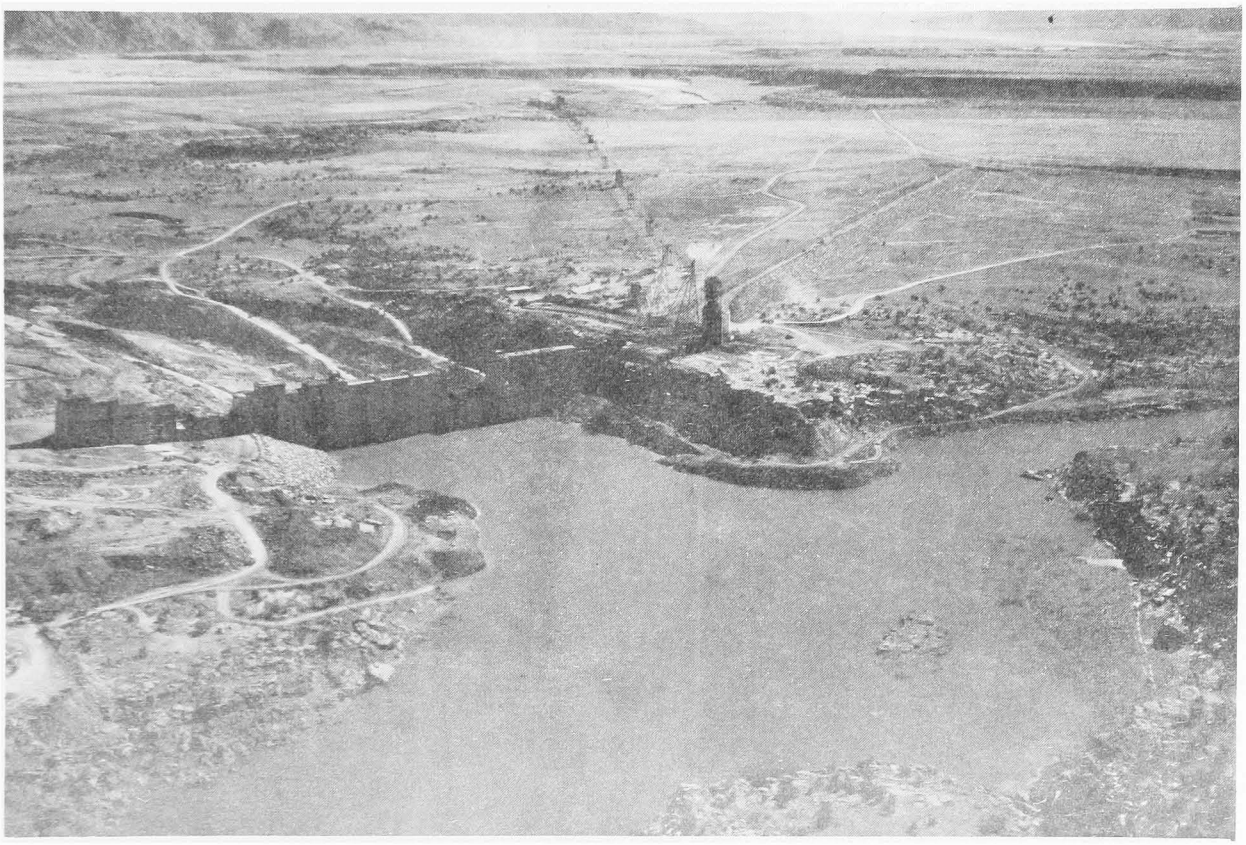
Family quarters within the construction camp were limited to official personnel. To accommodate the families of other workers, several temporary communities sprang up near Conchas. The largest and most prominent of these were Mesa Rica and Gate City. The presence of families necessitated some arrangement for schools. A WPA grant paid three grade school teachers for the 1936-1937 school year at Conchas. High school students attended school at Tucumcari. By the next school year, the New Mexico State Board of Education, in cooperation with the San Miguel County School Superintendent, established a grade school and high school at Conchas for about 150 students.


THEATER BUILDING AT THE CAMP

Land for Conchas Dam was procured by the New Mexico Interstate Streams Commission and conveyed to the federal government in fee simple. Additional tracts were conveyed by the State of New Mexico by easement for the reservoir. Excavation operations for the main dam began in December 1935 with the help of relief labor. Contracts for the construction of the main dam and wing dams were awarded in September 1936. The Dam consists of a concrete gravity main section, 1,250 feet long and 200 feet high, located in the Canadian River canyon. Flanking the concrete section are earthen dikes with a total length of about 3.7 miles. A service spillway 300 feet long is located in the main concrete dam, and a concrete emergency spillway 3,000 feet long is located in the north dike. Irrigation headworks located in the south dike's south abutment consist of a tunnel 700 feet

long. Power for lighting and operation of equipment was supplied by a 150kw hydro-electric unit working off a 24 inch penstock. Three additional penstocks, five feet in diameter, were installed through the dam for possible future development of power.

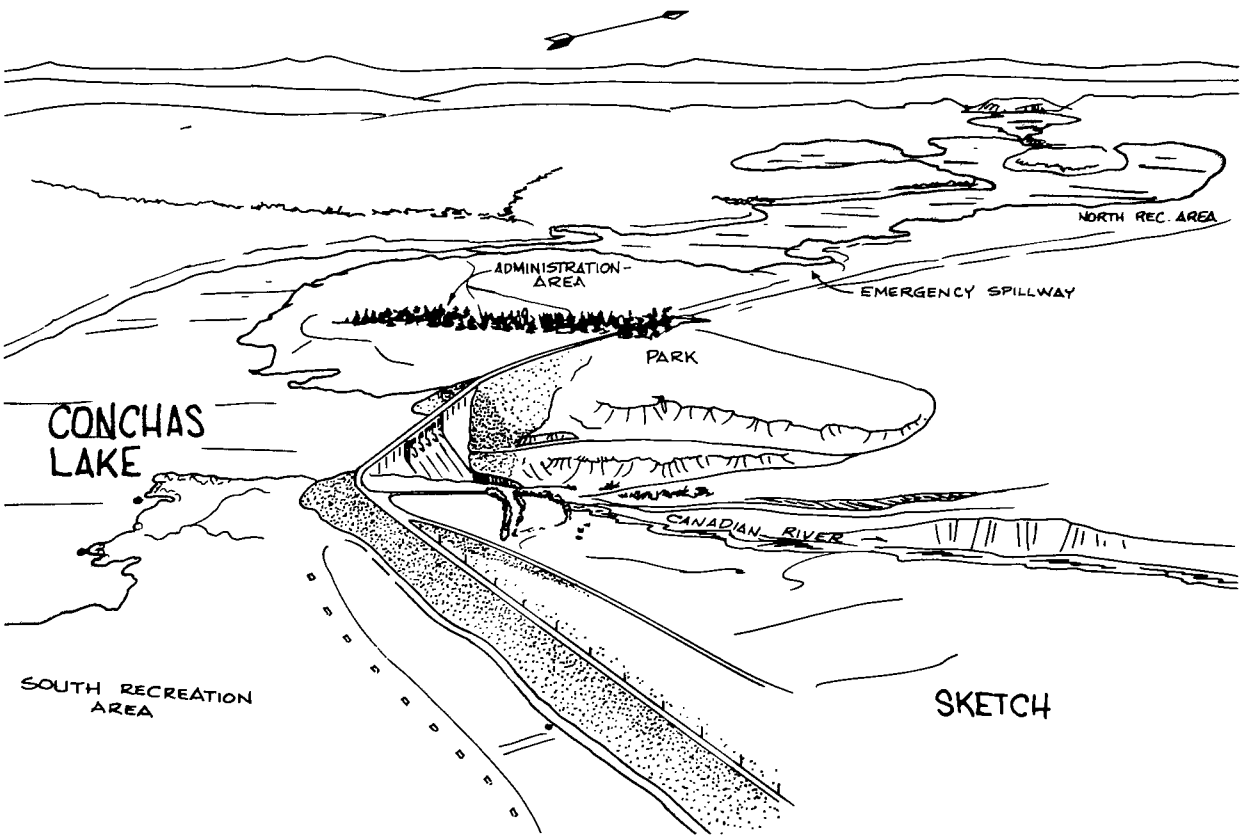
The Reservoir, with a total storage capacity of 550,800 acre-feet, controls the runoff of the Canadian River. It provides 273,000 acre-feet for irrigation, 198, 200 acre-feet for flood control, and 79,600 acre-feet for deposition of sediment.



SOUTHEAST VIEW OF MAIN DAM, FEBRUARY 1939

The average daily employment from August 1935 until June 1939 was 1,302, of which 67 per cent were relief workers. Employment peaked at just over 2,500 in the spring of 1938. To minimize on-the-job injuries, a comprehensive program of education and safety enforcement was instituted. Under the circumstances, the District produced a commendable safety record. From August 1935 until June 1939 government hired labor worked a total of 7,244,619 man-hours with only 105 lost-time injuries and one fatality. Employees of contractors at Conchas, for the same period, worked a total of 2,853,900 man-hours with 173 lost-time injuries and five fatalities. The successful resolution of safety problems is but one example of the skill and dedication of Captain Hans Kramer and his staff of commissioned officers and civilian personnel.

When Conchas Dam was completed during the summer of 1939, the Bureau of Reclamation used the camp to house its employees who were engaged in the construction of the irrigation canal and laterals from the dam to fields downstream. In February 1940 the National Park Services took over the camp to house CCC recruits who were to demolish portions of the camp no longer needed and to build recreational facilities near the dam. When these were finished they were turned over to the New Mexico State Parks Commission for operation. Buildings for the permanent operation of the dam were constructed by the Corps of Engineers in 1939. These were adobe with stucco exteriors and included a headquarters, a residence for the Superintendent of Operations and Maintenance, and four duplex structures for operations personnel.




CONCHAS LAKE

## CADDOA

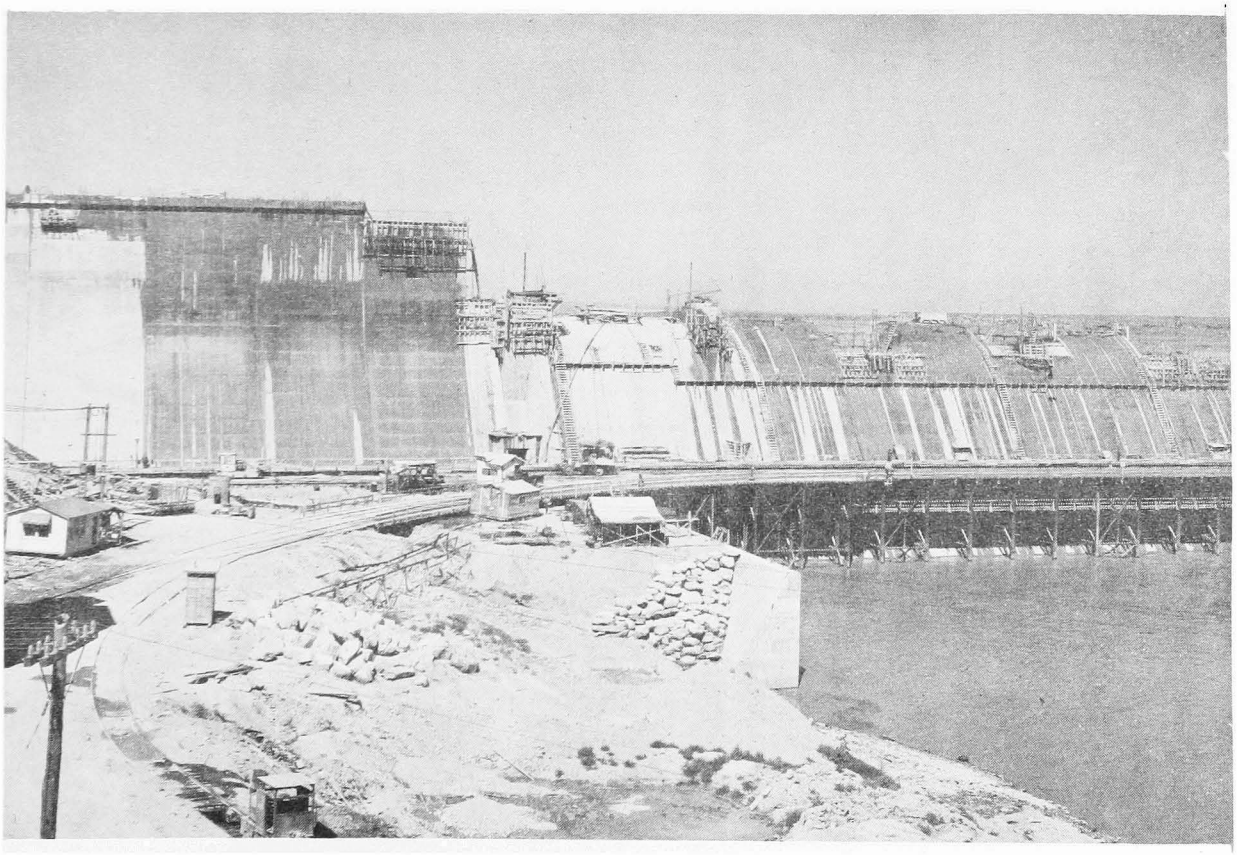
Before the completion of Conchas Dam, Major General Julian L. Schley, Chief of Engineers, had sought out other possible projects for the Conchas District. In February 1939 the Little Rock District had issued a preliminary report on the feasibility of the proposed Caddoa Dam Project, which Congress had authorized in the Flood Control Act of 1936. The Little Rock District had already acquired rights-of-way for surveys and exploratory work in the project area. On May 2, 1939 the Conchas District was transferred from the Lower Mississippi Valley

Division to the Southwestern Division. On June 1, 1939, the territorial limits of the Conchas District were extended to include the watershed of the Arkansas River west of Walnut Creek, Kansas. The proposed Caddoa Project, located on the Arkansas River about 18 miles upstream from Lamar, Colorado, now fell within the jurisdiction of the recently expanded Conchas District.

A temporary field office was set up in Lamar while District headquarters were being built at the project site. On November 4, 1939, Captain James H. Stratton replaced Major Hans Kramer as District Engineer and later in November 1939 the Lamar suboffice was moved to the new quarters at the Caddoa site. On December 4, 1939 the District was officially renamed the Caddoa District and, in short order, virtually all District personnel transferred to the Caddoa offices.

In June of 1940, after the death of Congressman John A. Martin of Pueblo, Colorado, the Caddoa Project was officially renamed John Martin Reservoir.

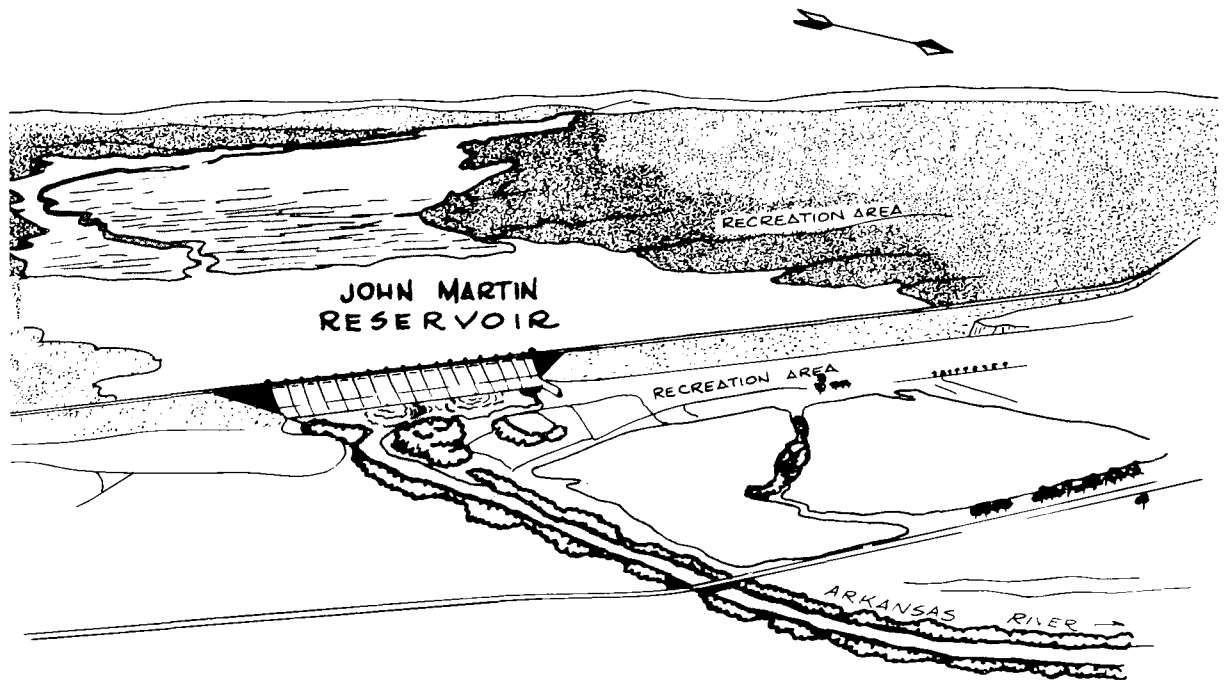
The Caddoa District maintained the organizational pattern of its predecessor. All operations were headed by the District Engineer through the Operations and Construction Chiefs. When District offices were transferred to Albuquerque, New Mexico on December 23, 1941, the Area Engineer occupied the former District offices at Caddoa.



NORTHWEST VIEW OF JOHN MARTIN RESERVOIR PROJECT

Much of the land needed for the Caddoa Project was acquired through condemnation. The town of Caddoa, trackage of the Santa Fe, portions of an irrigation canal, and several sections of telephone and telegraph lines had to be relocated. Most of the hearings and trials were over by November 1940.

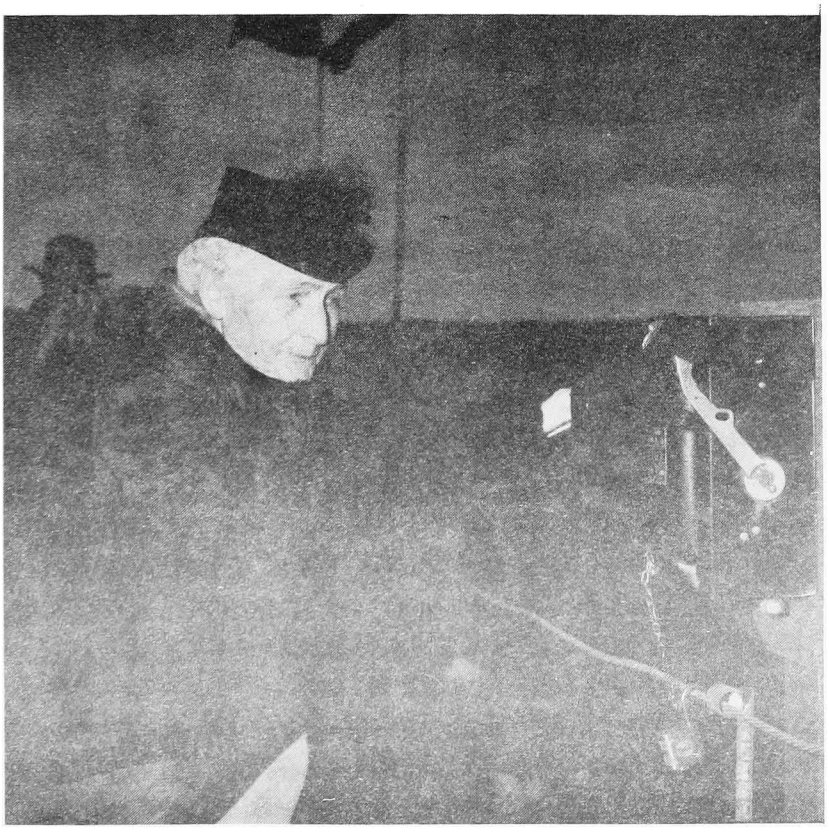
The embankment of John Martin Dam is a compacted earth structure about 2.6 miles long, including the concrete spillway section, with a maximum height of 118 feet above the streambed. The 1,644 foot-long concrete section of the dam is located across the bed of the Arkansas River. This section includes an overflow spillway 1,174 feet long, with electrically controlled steel gates mounted on concrete piers. Each spillway gate is 64 feet long and 30 feet high. A concrete stilling basin below the dam dissipates energy of the released water before it flows downstream. Six gate-controlled conduits are located in the base of the concrete spillway section of the dam. Four of these conduits are rectangular, measuring 6 feet by 7.5 feet. The other two conduits are four feet square. During construction, some earth-fill was obtained from a 75 acre tract of land immediately downstream from the dam. This excavated area, averaging 12 feet in depth, has filled with water and forms Lake Hasty--a center of year round recreation.




JOHN MARTIN RESERVOIR

Wartime demand on men and materiel forced stoppage of work on John Martin Dam in March 1943 when the task was about 85 per cent complete. During the time of stoppage of construction until the project was finished in October 1948 the reservoir was operated on a limited basis: storage for irrigation was 100,000 acre-feet and that for flood control was 170,000 acre-feet. When work resumed on the project in 1946 an elevator was installed inside the dam, stairs to the pier house, and the spillway power and lighting system was completed. A roadway, with railing was constructed across the top of the dam. The completed project has a reservoir capacity of 618,600 acre-feet. Of this total, 261,000 acre-feet are for flood control and 357,000 acre-feet are set aside for irrigation and conservation. The reservoir surface covers about 27 square miles and extends some 14 miles upstream from the dam. Fort Lyon Veterans Hospital is located on the north shore. Land for development of recreational facilities at Lake Hasty and along the north shore of the reservoir has been leased to various groups and facilities for public use include picnic grounds, swimming areas, and launch facilities for boats.

Dedication of John Martin Dam was held at the site on April 1, 1949. There were several thousand visitors and addresses were delivered by Governor Frank Carlson of Kansas, Governor Lee Knous of Colorado, and Lt. Colonel Joseph O. Killian, District Engineer of the Albuquerque District. Mrs. John Martin, widow of the late congressman in whose honor the dam was named, pulled a lever which released water for the season's irrigation needs.



MRS. JOHN MARTIN AT DEDICATION CEREMONIES

## CHAPTER III

# WORLD WAR II: THE DISTRICT AND MILITARY PROJECTS, 1942-1945

As American involvement in war-related activities increased the District took on new assignments. As early as 1940, the Caddoa District designed and began construction of improvements at eight Civil Aeronautics Administration airports in the region. This work included lengthening and adding runways, paving of parking pads, and the installation of runway lighting and markers. The first military construction assigned the Caddoa District was an Army airfield in Albuquerque, New Mexico (now Kirtland Air Force Base and the Albuquerque International Airport). During 1941, construction of airfields at Lubbock, Texas (Reese AFB) and Roswell, New Mexico (Walker AFB) was added to the District's military work load.

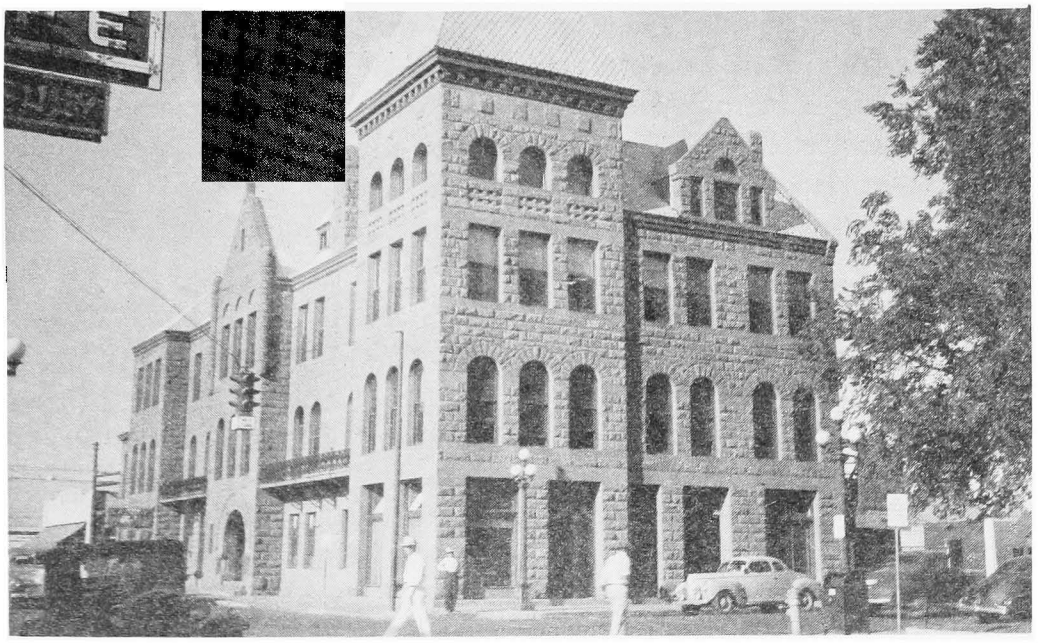
## THE ALBUQUERQUE DISTRICT

World War II fully engulfed the nation with the Japanese attack on Pearl Harbor on December 7, 1941. Nine days later, the Corps of Engineers assumed the Army Quartermaster Corps' Construction Division assignments. Consequently, the Caddoa District's geographic responsibility was formally extended to include military construction in South Colorado, West Kansas, West Texas, New Mexico, and a large portion of Arizona.

A general order of December 23, 1941, transferred District headquarters to Albuquerque, New Mexico and there was an official name change to the Albuquerque District. Colonel Lyle Rosenberg was appointed District Engineer, relieving Major James H. Stratton (later Brig. Gen.). The move to Albuquerque from Caddoa was complete by the end of January 1942. The District offices were centered in the old three-story Simms Building in the downtown section of the city. Since this structure could house only part of the District personnel additional office space was leased in other buildings throughout the downtown area.

Scientists, engineers, and technicians were in great demand in defense related industries and in various government projects. The Albuquerque District had some difficulty in maintaining an adequate work force of civilian engineers. The District's Personnel Department recruited and processed several thousand employees, with a peak work force of 3, 039. A high turnover plus the flood of new regulations

set down by boards and committees made the Personnel Department's task all the more difficult.



THE SIMMS BUILDING, ALBUQUERQUE 1942

At the war's outset, acquisition of land for the District had been initiated by the Soil Conservation Service, U.S. Department of Agriculture, in cooperation with the Corps' Southwestern Division Office. This function soon became the sole responsibility of the newly established Southwestern Division Real Estate Suboffice in Albuquerque. The Suboffice received appraisers by transfer from other government departments such as the Soil Conservation Service and the Quartermaster Corps. Negotiators were hired and the Suboffice became functional.

A large volume of real estate was acquired by the District for bombing and gunnery ranges, Army posts and airfields; but the most notable land acquisitions were for the Zia Project (Los Alamos) and the Alamogordo Bombing Range. In 1946 the Real Estate Suboffice severed its organizational ties with the Southwestern Division and became officially a division of the Albuquerque District.

## KIRTLAND AND SANDIA BASES

Kirtland Air Force Base in Albuquerque was just one of many airfields built by the Corps during World War II. In 1939, the Army leased 2,000 acres south of the city for the base, which was destined to become one of the Army's largest centers for the training of bomber crews. Construction began formally on January 8, 1941. The then existing 5,000-foot north-south runway was extended to 10,000 feet. Its first military personnel arrived in March 1941. In April 1941 the base was officially declared ready to receive advance cadres of tactical units. Activity swelled to a

full roar as B-17 and B-24 bomber crews began training early in 1942. By 1943 Kirtland was training hundreds of airmen and aircraft mechanics. That same year, the base was named in honor of Colonel Roy S. Kirtland, the one who, more than two decades earlier, had recommended General of the Army, Henry "Hap" Arnold, for flight training. The District also constructed the Mobile Air Depot (Sandia Base--destined in the post war years to perform a major role in the development of nuclear weapons) just to the east of Kirtland. When the war ended, Kirtland, like bases all over the country, canceled its training programs. But "cold war" tensions kept Kirtland's military mission and its relationship with the Albuquerque District alive.

## MISCELLANEOUS CONSTRUCTION

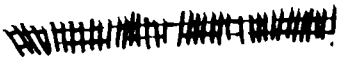
Fort Bliss, on the edge of El Paso, Texas, was established in 1849 as a military outpost. During the war the Albuquerque District constructed anti-aircraft artillery firing ranges, facilities for housing, and structures for the maintenance of troops at the fort. The District also enlarged William Beaumont General Hospital at El Paso. The hospital, when World War II began, was a 425-bed facility consisting of 37 buildings. The District's expansion program enlarged these facilities to a 174-building, 4,604-bed complex. By 1945, the hospital was treating about 6,000 patients.

In 1942, the District built the 525-bed Bruns General Hospital in Santa Fe, New Mexico. Following the war this general field-type hospital was deactivated and its permanent buildings were diverted to other uses. The temporary structures were removed.

Two new ordnance depots, the Navajo in Arizona, and the Pueblo in Colorado, were started in 1942 and, for the most part, were completed the following year. The previously existing Wingate Ordnance Depot, Fort Wingate, New Mexico, was expanded during the course of the war.

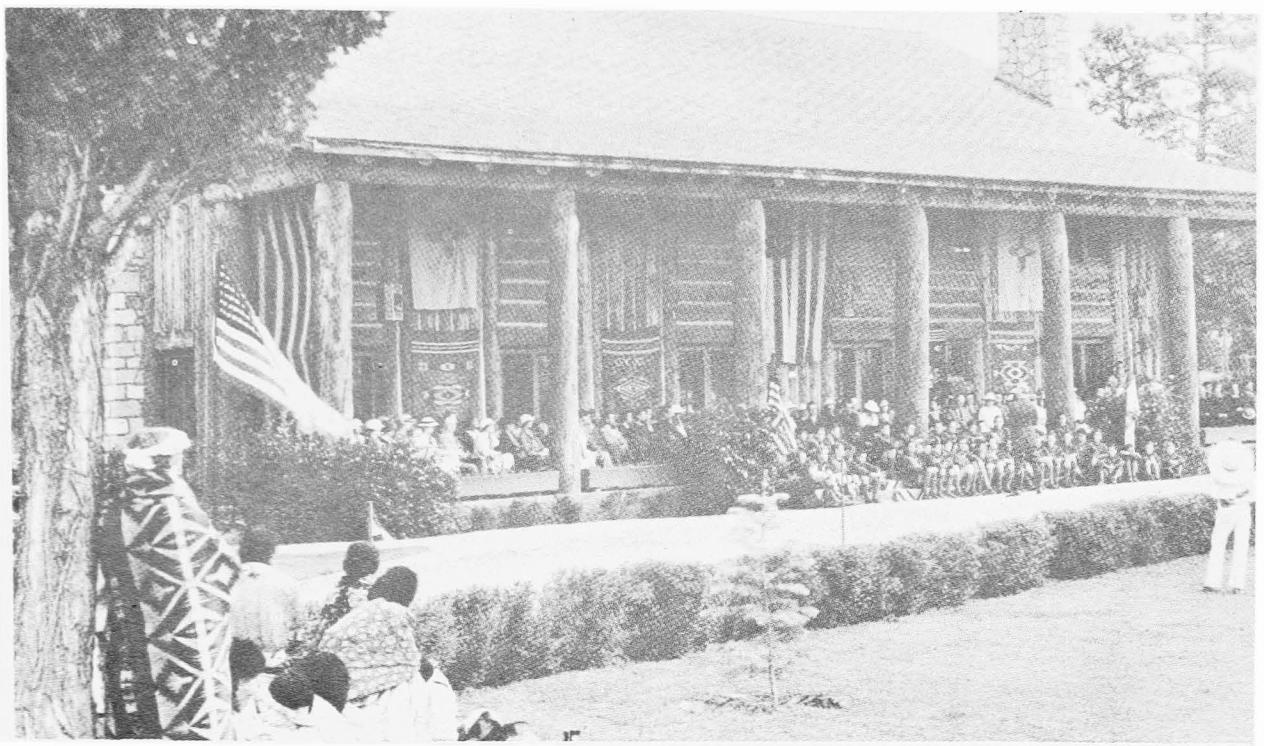
The District constructed Prisoner of War camps at Florence, Arizona; Trinidad, Colorado; and Lordsburg and Roswell, New Mexico.

In the spring of 1942 the federal government initiated the removal of all residents along the West Coast of Japanese ancestry. Some 110,000 uprooted souls were then relocated in areas remote from the Pacific shoreline. The Albuquerque District had the thankless task of building a "relocation camp" at Granada, Colorado. A large part of the camp construction was done by Japanese interned at the Granada facility. The buildings were of a temporary sort and, following World War II, they were disposed of by the War Assets Administration. Thus ended the Albuquerque District's



involvement in one of the most serious denials of constitutional rights of American citizens in the nation's history.

## ZIA PROJECT



LOS ALAMOS RANCH SCHOOL, FULLER LODGE

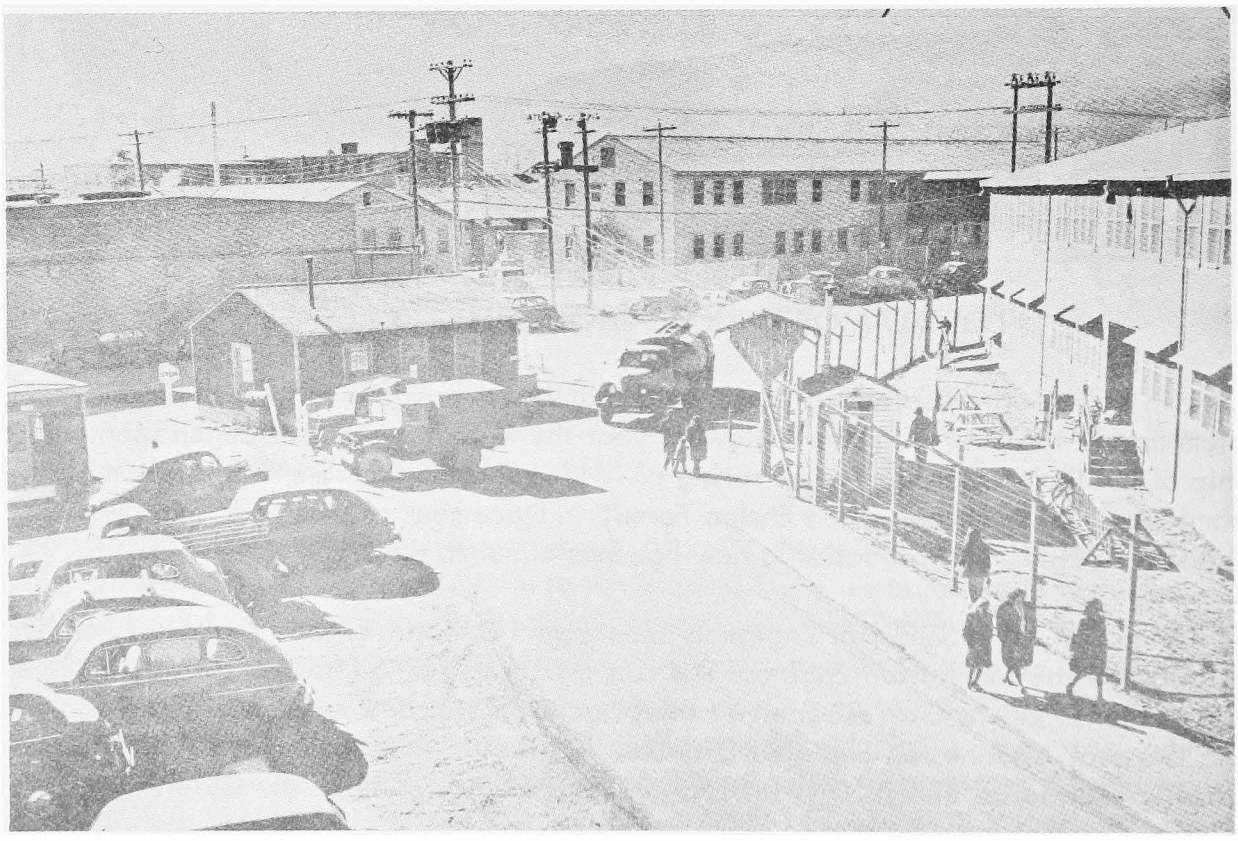
Late in 1938 German scientists discovered that it was possible to split the uranium atom and in the autumn of the following year the U.S. government began sponsorship of nuclear research. In the spring of 1942 it seemed feasible that an atomic bomb could be built and when Enrico Fermi, in December of that year, achieved the first nuclear chain reaction a new age was about to dawn.

On August 16, 1942 Chief of Engineers Lieutenant General Eugene Reybold formally established the Manhattan Engineer District (MED) and on September 23 of the same year Colonel Leslie Groves received the brigadier's star and was appointed Commanding General, Manhattan Engineer District. Unlike other Districts, MED had no geographic boundaries and its District Engineer reported directly to the Chief.

In October 1942 Major John Dudley was given orders to locate a partially developed site surrounded by hills in a sparsely populated area of the Southwest where a community of 250 to 450 persons could live in isolation. With the cooperation of Dr. J. Robert Oppenheimer and General Groves the site of the exclusive Los Alamos Ranch School was selected.

The Albuquerque District gave the Zia Project (Los Alamos, New Mexico) the highest priority. A formal site directive gave Colonel R.R. Neyland, Jr., Division Engineer, Southwestern Division, authority to acquire the Ranch School and environing forest and grazing lands--54,000 acres in all. Engineers, appraisers, and attorneys went to work immediately and by late November 1942 the Albuquerque District had obtained right of entry to the land. The Ranch School vacated the site in mid-February 1943 while over 1500 workers were busy with construction in the vicinity.

The Albuquerque District under District Engineer Colonel Lyle Rosenberg awarded contracts for several phases of construction at Los Alamos as the scientific community continued to expand. In order to facilitate operations, the District set up a Zia Area office in Santa Fe with a staff of about 50 civilian and military employees. By the spring of 1944 most of the Albuquerque District's construction responsibilities had been completed and the District closed the Area office in Santa Fe. All contract work at the site was transferred to the Los Alamos Post Engineer (MED) and security responsibility fell to an Army Military Police Company.



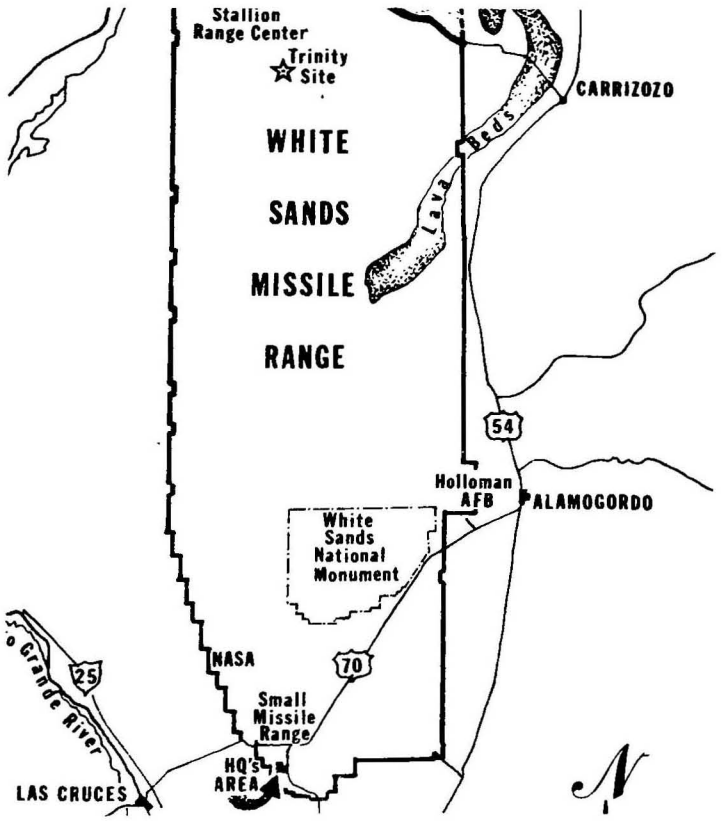
ARMY CONSTRUCTION AT THE RANCH SCHOOL SITE

## TRINITY PROJECT

During the summer of 1944 the Albuquerque District focused its attention on the Jornada del Muerto, the "Journey of the Dead," a desolate desert in southern New Mexico--part of the Alamogordo Bombing Range. Picked by a committee of scientists

ZIA AREA OFFICE PERSONNEL 1943

and engineers as an acceptable nuclear test site, the Jornada took the code name "Trinity." In the late fall of 1944 the Manhattan District established a base camp for the one-shot nuclear experiment.




TRINITY SITE


TRINITY BASE CAMP EARLY 1945

The Albuquerque District, under Lieutenant Colonel R.E. Cole, District Engineer, rushed plans for the construction of the desert test site. Construction of Trinity Base Camp involved the building of roads, bunkers, a communications system, a power system, and a network of control points. An unloading platform at Pope, New Mexico was built for "Jumbo," the giant steel vessel 25 feet long and 8 to 10 feet in diameter designed to contain the atomic explosion with its 14-inch steel casing.

Most of the camp construction was finished by December 1944 and about 12 military police took up residence to guard the site. By the summer of 1945 Trinity Base Camp was a bustling hive of activity with more than 200 scientists, technicians, and soldiers on location. On May 7, 1945 a 100-ton trial blast of TNT was set off from a sturdy wood tower built for the occasion. The explosion completely demolished the tower and could be seen as a brilliant orange fireball as far away as 60 miles.

Finally, in the pre-dawn hours of Friday the 13th the pre-assembled high explosive components of the atomic bomb were loaded into the rear seat of a sedan at Los Alamos for the journey to Trinity. Further assembly and tests of the active components took place in the ranch house of the McDonald Ranch on the test site and shortly after noon on that same Friday the 13th final assembly of the bomb began in a

canvas tent at the base of the test tower. On July 14 the tent was removed and the completely assembled bomb, except for detonators, was hoisted to the top of the 100-foot tower constructed to cradle the device. By July 15 everything was ready at Trinity except the weather--which was inclement. After some anxious moments of delay, at 5:29:45 AM Mountain Daylight Time on July 16, 1945 came an incredible burst of light bathing the surrounding mountains in an unearthly brilliance. Then came the shock wave, accompanied by a thunderous roar, that knocked over two men 10,000 feet south of ground zero. The steel tower that had held the bomb vanished, and the tower that held "Jumbo"--some 800 feet from the blast--lay crumpled and broken on the ground. The huge fireball that mushroomed to a height of 10,000 feet could be seen as far away as Santa Fe--about 180 miles distant! In this fashion the Nuclear Age made its awful entry at Trinity.

Trinity Site was dozed over and its rotting wooden structures were burned. Posted signs read: "Dangerous Area--Keep Out." A lava monument was erected on the spot marking ground zero in commemoration of an unforgettable moment in the desolate, silent countryside appropriately named centuries before--the Valley of the Dead.


LEFT: STEEL TOWER WITH FIRST ATOMIC BOMB UNDER SHELTER AT TOP
RIGHT: MONUMENT AT GROUND ZERO, TRINITY SITE

TRINITY TEST SHOT OF A-BOMB 1945

# SANTA FE NEW MEXICAN

*The Oldest Newspaper in the Southwest, Founded in 1849*

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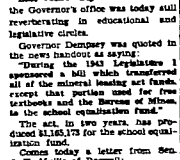
# Los Alamos Secret Disclosed by Truman

# ATOMIC BOMBS DROP ON JAPAN




By WILL HARRISON

Last week's "Big I" handout from the Governor's office was today still reverberating in educational and legislative circles.

Governor Dempsey was quoted in the news handout as saying:

"During the 1943 Legislature I sponsored a bill which transferred all of the mineral leasing act funds, except that portion used for free textbooks and the Bureau of Mines, to the school equalization fund."

The act, in two years, has produced $1,165,173 for the school equalization fund.

Comes today a letter from Sen. J. H. Mullis of Roswell:

"Before the 1943 Legislature I conferred with J. D. Shinkle, superintendent of the Roswell schools. Col. E. L. Cook of the New Mexico Military Institute, and Clarence E. Hinkle, president of the Roswell board of education, regarding legislation which would increase the teachers' salaries. We decided on three bills:

"1—To transfer to the school fund, to be used to increase the teachers' salaries, the balance of the Mineral Leasing Act fund, maintained by Governor Dempsey;

"2—Reducing from 5 per cent to 2 per cent the amount allowed the Bureau of Revenue for collecting the sales tax;

"3—Limiting the Commissioner of Public Lands to $100,000 per year.

"I had these bills prepared before the Legislature convened and Governor Dempsey had nothing to do with the preparation of these bills. It is my recollection that Governor Dempsey was opposed to the mineral funds bill because it took that amount from the general fund.

"I introduced the bills and with the help of the New Mexico Educational Association secured the passage of the first two of the Governor had the other two killed."

As noted in this space Saturday, the teachers act which the Governor said "I sponsored" was permitted to pass only after the school lobby consented to support a Dempsey measure permitting the transfer of certain surplus administrative funds to the state general fund.

And after the "I sponsored bill" became law the administration even then tried to grab part of the mineral leasing money for other than school support. Nov. 20, 1943, state records show, Governor Dempsey's State Board of Finance ordered $85,612.16 of mineral leasing money transferred to the general fund. Educational groups put up a fight and on Nov. 29, 1943, the amount was returned on the authority of an Attorney General's opinion.

Although the schools received during the past two years $1,165,172 as a result of the "I sponsored bill" a complete and truthful statement would show that fairly almost equalling that amount were withheld from the schools by Dempsey sponsored bills to the same Legislature that enacted the mineral leasing funded law.

The transfer law, for which Dempsey traded with the school lobby, in the past two years has taken $357,-563.64 for the general fund that would otherwise have gone to schools. ($162,108.71 from surplus in emergency school tax administrative fund in 1945, and $195,000 in 1944; $89,-456.23 from surplus in income tax administration fund in 1945, and $30,000 in 1944.)

A total of $514,000 from the Casual Indebtedness fund was transferred to the general fund when no deficit existed. This money, under administrations prior to Dempsey, would have been transferred to the schools as witnessed June 30, 1942, when Gov. John Miles transferred to the schools $145,781.24 of casual deficit funds which were not needed to meet actual deficits.

The transfers under Dempsey of casual deficit money to the $64,-general fund were $262,000 in 1944 and $252,000 in 1945.

Net Gain $253,388

The sum of these losses to school funds is $871,562.64, leaving a net gain through the mineral leasing funds law of $283,560.

And that gain may be credited to Sen. J. H. Mullis of Roswell and the New Mexico Educational Association who first fought the administration and then traded out with the Governor for the increased revenue.

**$700 STOLEN**

Mrs. Ida M. Glynn, living in one of La Posada's cabins, reported to city police that $700 was stolen from a purse which she had hidden under a pillow in one of her rooms. The money included a $500 bill, police said.

## Deadliest Weapons in World's History, Made In Santa Fe Vicinity

Santa Fe learned officially today of a city of 6,000 in its own front yard.

The reverberating announcement of the Los Alamos bomb, with 2,000 times the power of the great Grand-Slammers dropped on Germany, also lifted the secret of the community on the Pajarito Plateau, whose presence Santa Fe has ignored, except in whispers, for more than two years.

Decision to locate the Atomic Bomb Project Laboratory on mesa an hour's drive from Santa Fe meant that it was necessary for the Army Engineers to construct an entirely new town to house the workers and their families. Primary reason for selection of the isolated site was security.

**Ranch School Site**

When the Army took over the property early in 1943 there were a few buildings which had been occupied by the Los Alamos Ranch School. New buildings began going up that summer. Today there are 37 in the main technical area and about 200 others on the property used for the project itself. Three hundred buildings containing 620 family units also were constructed, as well as military barracks, hospital buildings and structures for administrative offices.

Dr. J. R. Oppenheimer one of the foremost physicists in the country and director of the laboratory, came to the site during early stages of construction. Other scientists and technical workers followed soon after.

Scientific groups which had been working on the project elsewhere in the country were moved in nearly, bringing their equipment with them. The Harvard cyclotron was in operation two weeks after it had reached the site.

**Tortuous Route**

Transportation facilities are at Albuquerque and Santa Fe. This made it necessary to truck everything from those cities, at least. The road from Santa Fe is a tortuous one, and in the beginning, the last 20 miles after leaving Pojoaque was bad enough for passenger cars, and presented a particularly tough problem in hauling heavy loads.

Today the community has more than 6,000 residents. Slightly less than two-thirds are civilian men, women and children and the remainder military personnel. The post commandant is Col. Gerald R. Tyler.

First need of arriving personnel in mass halls, or in a large cafeteria was housing. Various types were constructed, to meet different needs. There are three-room prefabricated, individual houses; three-room apartments, eight to a building, and four-and five-room apartments, four in a two-story unit. There are some hutments, Quonset-type huts and government and personally-owned trailers.

**Bachelor Dorms**

Dormitories have been constructed for unmarried personnel, or persons who do not have their families with them. Rental, for family units, are based on earnings. Apartments are unfurnished and family groups ordinarily bring their furniture with them, although some items of government furniture have been available.

Housewives shop for food for daily meals at an army commissary where ration points are as important as elsewhere. A "trading post" offers items needed in everyday life and there are the usual post exchange services.

Personnel living in dormitories eat. There is also a dining room with waitress service.

A "town council" of eight elected members serves in an advisory capacity, meeting with representatives of the project and of the commanding officer. There is a school board, appointed by Colonel Tyler and Doctor Oppenheimer, which oversees operation of an accredited elementary school and high school. There

(Continued on Back Page)

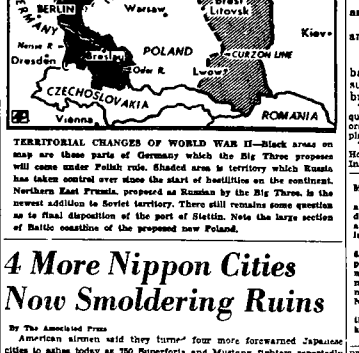
**REVOLUTIONARY**

Disclosure of the development at Los Alamos of an atomic bomb immediately raised conjecture regarding the potential industrial uses of the energy.

The power of the atomic force harnessed by scientists in the secret projects is almost beyond comprehension—one bomb packing the wallop of the bomb loads of 2,000 Superforts. Talk was at once heard of the possibility of the newly controlled energy replacing coal, electricity, gasoline, water as a source of power.

That the study of the subject with practical ends in mind by the appointment by the Secretary of War of a committee to carry on investigation of atomic energy.

Suggestion for the Los Alamos project said they had not been informed of this meant post-war possibilities of the mountain project.




**TERRITORIAL CHANGES OF WORLD WAR II**—Black areas on map are those parts of Germany which the Big Three proposes will come under Polish rule. Shaded area is territory which Russia has taken control over since the start of hostilities on the continent. Northern East Prussia, proposed as Russian by the Big Three, is the newest addition to Soviet territory. There still remains some question as to final disposition of the port of Stettin. Note the large section of Baltic coastline of the proposed new Poland.

## 4 More Nippon Cities Now Smoldering Ruins

By The Associated Press

American airmen said they turned four more forewarned Japanese cities to ashes today as 750 Superforts and Mustang fighters reportedly swept the enemy's sacred islands with fire bombs, rockets and parachuted mines.

B-29 crewmen returning to their Marianas Island bases told of setting fires visible for 150 miles at sea. Some ran into intense antiaircraft fire and strong interception including rocket planes as they raided cities Tokyo described as "defenseless".

Wave of B-29s from the Marianas blasted Japanese industrial centers in two Jima struck as American commanders announced 70 Nipponese ships and small craft and 61 locomotives were destroyed or damaged in previous aerial blows, reaching over 4,500 miles from Paramushiro to Singapore

Terror-ridden China carried the brunt of ground actions. Elsewhere land armies hunted for Japanese generals in the northern Philippines, drove toward trapping the largest Japanese force remaining in New Guinea and counted 13,000 Nipponese dead in recent fighting in monsoon-swept south Burma.

Superforts warned 12 more cities Sunday morning they were on their fire list. A formation of 580 followed up today by lighting towering fires in four of the 31 forewarned cities.

Today's targets include Hachinomiya, noted in prewar days for producing Japan's best sake, favorite alcoholic beverage of Nippon. The other industrial targets were Maebashi, 60 miles from Tokyo, sags on northern Honshu island, and Imabari, on the southern island of Honshu. One B-29 unit hammered the Ube coal liquefaction plant with high explosives.

Japanese also reported Mustangs from Iwo raked the capitol with rockets, bombs and machinegun bullets in daylight for the third time in four days.

For consolation, Japanese propagandists reported: Americans "lead a starvation life"; Nipponese raiders caught U S planes lined up wing to wing on two Okinawa air fields; a U. S. submarine was sunk off the coast of Japan; Nipponese subs sank two Allied vessels in the central Pacific.

Chinese reports told of new terror in China. Once-beautiful Kweilin, former southeast China air base city, was left thoroughly sacked Pitythousand Chinese were killed or missing from Kanhsien in east central China. Six thousand civilians were reported killed by forced poisonous injections at Ichang, enemy-held central China river port.

Americans and Filipinos eliminated an ambushing Japanese company and beat back two desperate counterattacks on northern Luzon island, running last week's toll in the Philippines to 4,794. Japanese killed and 444 taken prisoner U S losses for the week were 7 killed, 11 wounded.

Maj. Gen. William Ohl offered a 45-day furlough to any member of the 32d Division who captures an enemy general alive. Chief prize is Gen. Tomoyuki Yamashita, onetime "Tiger of Malaya" variously reported cornered, killed or flown from northern Luzon mountains.

## Hi Johnson Dies at 79

WASHINGTON, Aug. 6 (AP)—Sen. Hiram W. Johnson of California, militant opponent of the League of Nations and the San Francisco Charter for a United Nations organization, died today.

The veteran Republican senator succumbed at Naval Hospital, where he had been confined for 2½ weeks. His physician, Capt. Robert E. Duncan, USN, said he died from a thrombosis of a cerebral artery.

Johnson, 79-year-old Californian who died at 6:45 a. m., after having been in ill health for some time.

His political activities extended over a third of a century covering some of the most stirring events in the nations history.

A striking figure in the Senate since first elected to Congress in 1910, he played a leading part in defeating President Wilson's League of Nations Covenant and later in opposing United States' adherence to the World Court.

His wife, whom he referred to as "the boss," was with him at the time of his death.

McKellar (D.-Tenn.) President of the Senate, today will appoint a committee to attend the funeral of the silver-haired veteran.

## 'Utter Destruction,' Promised in Potsdam Ultimatum, Unleashed; Power Equals 2,000 Superforts

**WASHINGTON, Aug. 6 (AP)—The U. S. Army Air Force has released on the Japanese an atomic bomb containing more power than 20,000 tons of TNT.**

**It produces more than 2,000 times the blast of the largest bomb ever used before.**

**The announcement of the development was made in a statement by President Truman released by the White House today.**

**The bomb was dropped 16 hours ago on Hiroshima, an important Japanese army base.**

The President said that the bomb has "added a new and revolutionary increase in destruction" on the Japanese.

Mr. Truman added:

"It is an atomic bomb. It is a harnessing of the basic power of the universe. The force from which the sun draws its power has been loosed against those who brought war to the Far East."

The base that was hit is a major quartermaster depot and has large ordnance, machine tool and aircraft plants.

The raid on Hiroshima, located on Honshu Island on the shores of the Inland sea, had not been disclosed

**MADE IN SANTA FE**

WASHINGTON, Aug. 6 (AP)—The atomic bomb disclosed by President Truman today was developed at factories in Tennessee, Washington and New Mexico.

Mr. Truman said that from 65,000 to 125,000 workers were employed on the project at Oak Ridge near Knoxville, Tenn., at Richland near Pasco, Wash., and at an unnamed installation near Santa Fe, New Mexico.

He said the work was so secret that many of the employes did not know the character of it.

previously although the 20th Air Force on Guam announced that 580 Superforts raided four Japanese cities at about the same time

The city of 318,000 also contains a principal port.

2 Billion Gamble

The President disclosed that the Germans "worked feverishly" in search of a way to use atomic energy in their war effort but failed. Meantime American and British scientists studied the problem and developed two principal plants and some lesser factories for the production of atomic power

The President disclosed that more than 65,000 persons now are working in great secrecy in these plants, adding:

"We have spent $2,000,000,000 on the greatest scientific gamble in history — and won."

"We are now prepared to obliterate more rapidly and completely every productive enterprise the Japanese have above ground in any city. We shall completely destroy Japan's power to make war."

The President noted that the Big Three ultimatum issued July 26 at Potsdam was intended "to spare the Japanese people from utter destruction" and the Japanese leaders rejected it. The atomic bomb now is

**WILL SHORTEN WAR**

WASHINGTON, Aug. 6 (AP) — Secretary Stimson predicted today that the atomic bomb will "prove a tremendous aid" in shortening the war with Japan.

The war secretary made his statement as the Army reported that an "unpenetrable cloud of dust and smoke" cloaked Hiroshima after it was hit by the new weapon from the air.

An accurate assessment of the damage inflicted by the bomb is not yet available, however, the War Department said. As soon as details of its effectiveness are learned, the department added, they will be released.

**PUNCH CATASTROPHIC**

WASHINGTON, Aug. 6 (AP) — The atomic bomb announced by President Truman today packs a punch equivalent to that normally delivered by 2,000 B-29s.

The President said the missile has an explosive force equal to 20,000 tons—40,000,000 pounds—of TNT. Assuming a B-29 carries a bomb load of 10 tons of TNT, four 500-plane raids by the world's largest bombers would be necessary to equal in destructive power the exploding fury of one atomic bomb.

The atomic bomb dwarfs by 2,000 times the blast power of the British "grand-slam" bomb, which weighed approximately 11 tons.

**SENTENCED**

Pat Chaves, 333 Urioste Street, faced a 100-day jail sentence and $100 fine today on conviction before Peace Justice A. E. P. Robinson of assault and battery on a woman taxi driver. The court rejected the case Saturday as involving a Pat Lopez and called attention today to the correct name of the defendant.

the answer to that rejection and the President said "they may expect a rain of ruin from the air, the like of which has never been seen on this earth."

**Process Secret**

Mr. Truman forecast that sea and land forces will follow up this air attack in such numbers and power that the Japanese never have witnessed.

The President said that this discovery may open the war for an

**LONDON, Aug. 6 (AP)—Germany possessed some atomic power secrets, Winston Churchill said tonight, but "by God's mercy, British and American science outpaced all German efforts."**

entirely new concept of force and power The actual harnessing of atomic energy may in the future supply the power that now comes from coal, oil and the great dams, he said.

"It has never been the habit of the scientists of this country or the policy of this government to withhold from the world scientific knowledge." Mr. Truman said. "Normally therefore everything about the work with atomic energy would be made public." That will have to wait however, he said, until the war emergency is over.

## May Be Tool To End Wars; New Era Seen

Mankind's successful transition to a new age, the Atomic Age, was ushered in July 16, 1945, before the eyes of a tense group of renowned scientists and military men gathered in the desert lands of New Mexico to witness the first hand results of their $2,000,000,000 effort. Here in a remote section of the Alamogordo Air Base 120 miles southeast of Albuquerque the first man-made atomic explosion, the outstanding achievement of nuclear science, was achieved at 5:30 a. m. of that day.

Mounted on a steel tower, a revolutionary weapon destined to change war as it has been known, or which may even be the instrumentality to end all wars, was set off with an impact which signalled man's entrance into a new physical world. Success was greater than the most ambitious estimates A small amount of matter, the product of a chain of huge specially constructed industrial plants, was made to release the energy of the universe locked up within the atom from the beginning of time

Credit J. R. Oppenheimer

This phase of the Atomic Bomb Project, which is headed by Maj. Gen. Leslie R. Groves, was under the direction of Dr. J. R. Oppenheimer, theoretical physicist of the University of California He is to be credited with achieving the impracticable of atomic energy for military purposes.

Tension before the actual detonation was at a tremendous pitch. Failure was an ever-present possibility Too great a success, enviolated by some of those present, might have meant an uncontrollable, unusable weapon.

Final assembly of the atomic bomb began on the night of July 13 in an old ranch house. As various components assemblies arrived from distant points, tension among the scientists rose to an increasing pitch. Coolest of all was the chief himself with the actual assembly of the vital core, Dr. R. F. Bacher, in normal times a professor at Cornell University

**Lighning Threatens**

On Saturday, July 14, the unit which was to determine the success or failure of the entire project was elevated to the top of the steel tower.

The ominous weather which had dogged the assembly of the bomb had a very sobering effect on the assembled experts whose work was accomplished amid lightning flashes and peals of thunder

Nearest observation point was set up 10,000 yards south of the tower where in a timber and earth shelter given the best observation the key figures in the atomic bomb project took their posts. These included General Groves, Dr. Vannevar Bush, head of the Office of Scientific Research and Development, and Dr. James B. Conant, president of Harvard University.

**Lie Face Down**

Actual detonation was in charge of Dr. K. T. Bainbridge of Massachusetts Institute of Technology. He and Lieutenant Bush, in charge of the Military Police Detachment, were the last men to inspect the tower with its cosmic bomb.

At the Base Camp, all present were ordered to lie on the ground, face downward, heads away from the blast direction.

Tension reached a tremendous pitch in the control room as the deadline approached. The several observation points in the area were tied in to the control room by radio and with 20 minutes to go Dr. K. K. Allison of Chicago relieved Bush, took

(Continued on Back Page)

## The Weather

New Mexico: Partly cloudy with widely scattered thunderstorms mostly over mountains during afternoon and evening; otherwise fair tonight and tomorrow; no important change in temperature.

City

High 90, low 56.

Airport

High 82, low 62

## Now They Can Be Told Aloud, Those Stories of 'the Hill'

By WILLIAM McNULTY

The secret of Los Alamos is out and The New Mexican staff and other newspapermen through New Mexico can heave a sigh—sigh. Nothing: it's more of a groan—of relief.

President Truman's revelation today that it was an atomic bomb THEY were working on on Tech Hill ended what was probably the strictest censorship ever imposed upon the people of this state. There was practically no limit to the lengths that the guards went to and the situation at times became fantastically involved including the famed "Battle of the MPs."

Notwithstanding the censorship, the news of Los Alamos had scored a race about the Plaza this morning when the membership of the "I-Knew-It-All-Along" club began growing by leaps and bounds. As a matter of record, the most recent rumor, No. 6,892—straight from the grapevine—had leaked week—was that Alamos was working fickety-split, night and day, in the production of windshield wipers for submarines.

The taboo on the mention of Los Alamos was final, complete and until today, irrevocable and not susceptible to any exceptions whatsoever.

A whole social world existed in nowhere in which people were married and babies were born nowhere. People died in a vacuum, autos and trucks crashed in a vacuum and the MPs baseball team materialized out of a vacuum, trained in a vacuum and after their games at Fort Marcy Park, returned to the vacuum. Even the graduates of Los Alamos Ranch School the institution which preceded Uncle Sam's Atomic Bomb Project Laboratory, ceased to be residents of Los Alamos, they bounded direct from Public School No 7 clear into the classrooms of Harvard and Yale.

And on days when the Alamos experimenters threw their atomic bombs about a little too vigorously and the windows of Santa Fe rattled ominously, this paper's phones would ring and the whole staff could just "no speak English".

The chain of secrecy about the project was maintained from the big cities in East where workers were recruited clear through to the delivery of these same workers on the Hill. The Alamos Ranch School at Sena Plaza and people laden with luggage and youngsters clinging to their arms, frequently barged into offices of that Plaza and inquired, "Where do we go to work?" One of the earliest bits of Alamos lore was that of the dude Wac who had never been farther west than Albany, N. Y., she chose the moment when The Hill bus was turning the highest point on the Jemez mountains to peek out—and fainted dead away.

Under these conditions of secrecy rumors multiplied like maggots in one of Mel Hagman's garbage cans. Gas warfare, rockets, jet propulsion, death rays and — atomic bombs — were among the guesses most frequently voiced. During the last Presidential campaign, Alamos—no foolin'—was sometimes a Republican internment camp.

In the early days of the project, every "outside employee" who knew no more of what was going on than the Japs in the foxholes of Guadalcanal, were sworn never to reveal what they didn't know anyway, for the rest of their lives. One Guy B. B. Dunne got tangled in the wringer for so much as mentioning that "there were a lot of scientists in town".

Then there was the time when the New York Daily was whipping up a Sunday feature on Nobel prize-winners in the U. S. It queried The New Mexican for a brief summary of what Prof X was doing now. The staff recognized the Alamos postoffice box number—that famous postal box where babies were born and to which whole crateloads of furniture assigned—but it was decided to give the professor a whirl anyway on the old "You can't shoot me for trying" principle. A letter went out to Professor X in which an interview was asked.

The next morning at 8:09—their watches must have been slow,—two guards jumped the cityroom. After a heap of protestations and avowals of innocence, it was agreed that the following telegram could be sent the News:

"Your man working for Mr. Whitakers on extremely hush-hush project. No soap."

The telegram was delivered in New York by a Western Union boy flanked by a covey of guards. These men then began spilling all over the News cityroom like oranges out of a busted crate.

How, they wanted to know, did the News staff explain such Dick Tracy huggermugger stuff?

The News' difficulty was that the girl who had sent the telegram had gone on vacation and couldn't be reached. The News explained it after two minded weeks in which, by report, you couldn't toss a cigaret in a wastepaper basket without setting fire to a guard.

The tantalizing little that Santa Fians knew about The Hill, only heightened their interest. There were the lights to be seen from miles away; there were the days when fires raged and smoked billowed in the mountains and always the mysterious explosions — (Lady Holmes moved to Tesuque and had moments when she thought she was back in bomb-shattered London).

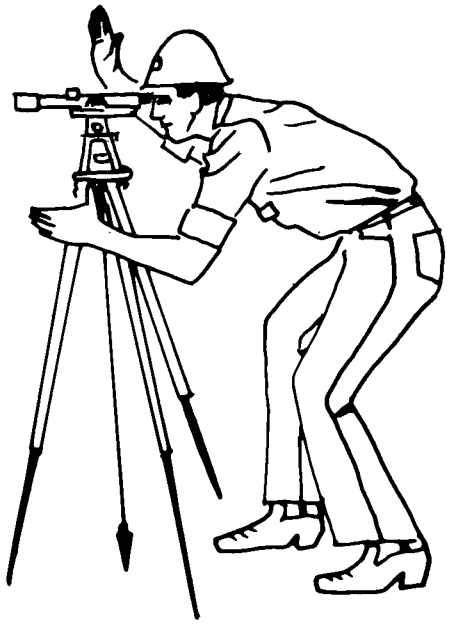
The payoff, however, came in the "Battle of the MPs". More than a year ago a boxing card was arranged in which the Santa Fe high athletes took on the Alamos MPs. The sluggers from The Hill must have been stocking out on their vitamins or the Demons were packing an atomic punch because the MPs were knocked cold, one after the other in one round and one punch practically.

Unfortunately for Mel Rhine and his Santa Fe MPs—as distinct from the Alamos MPs—soldiers read the sports pages and the next Saturday night, there was an epidemic of free-swinging in the bars and restaurants.

Practically Rhine demanded that The New Mexican print an explanation that the one-round pushovers were decidedly NOT his MPs but he got smack into the Alamos secrecy ban.

For hours Rhine sweated over a document which, by the time it complied with censorship requirements, rambled for no less than 700 words or so—and meant exactly nothing to anybody. It was a masterpiece of obfuscation. Of course, the boys were still swinging at the so-called "one-round MPs" for weeks before they discovered their mistake.

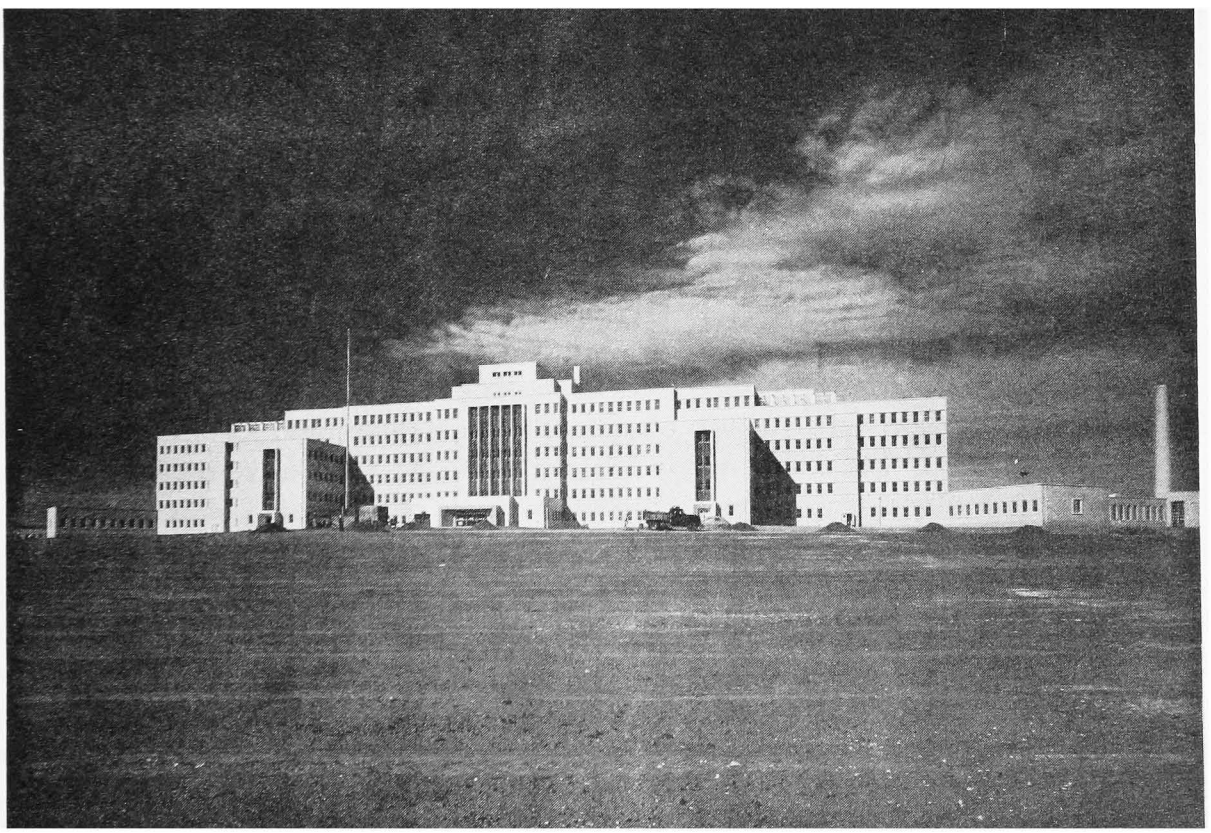
The District's wartime military construction program exceeded $250,000,000. Completed work included 16 airfields, two ordnance depots, one general hospital, and the enlargement of another. Four Prisoner of War camps and one Internment camp for Japanese residents of the West Coast were built by the District. Perhaps, most notable of all, was the construction program of the District carried out in cooperation with the Manhattan Engineer District--the Zia Project and the Trinity Project which ushered in the Nuclear Age.



## CHAPTER IV

# THE POSTWAR ERA: MILITARY AND CIVIL WORKS, 1946-1959

The war had produced its toll of wounded and injured needing treatment and rehabilitation. Since existing military facilities were unable to meet the pressing demand, the federal government authorized an expansion of military medical capabilities. Under the direction of the Albuquerque District, construction of a general medical complex at Big Spring, Texas began in February 1948 and was completed by June 1950. The 250-bed, eight story hospital was built on a 31-acre site. District plans for a proposed Neuro-Psychiatric Veterans Hospital at El Paso, Texas, submitted in 1948 were not approved for funding.



VETERANS HOSPITAL, BIG SPRING, TEXAS 1950

Shortly after the end of the war, the Albuquerque District constructed technical support facilities for those military bases within its boundaries engaged in research and development of nuclear weapons and rocketry. Airfields were expanded to accommodate the larger jet aircraft. Most notable among expanded facilities were Kirtland AFB, White Sands Missile Range, and Holloman AFB.

## KIRTLAND AFB

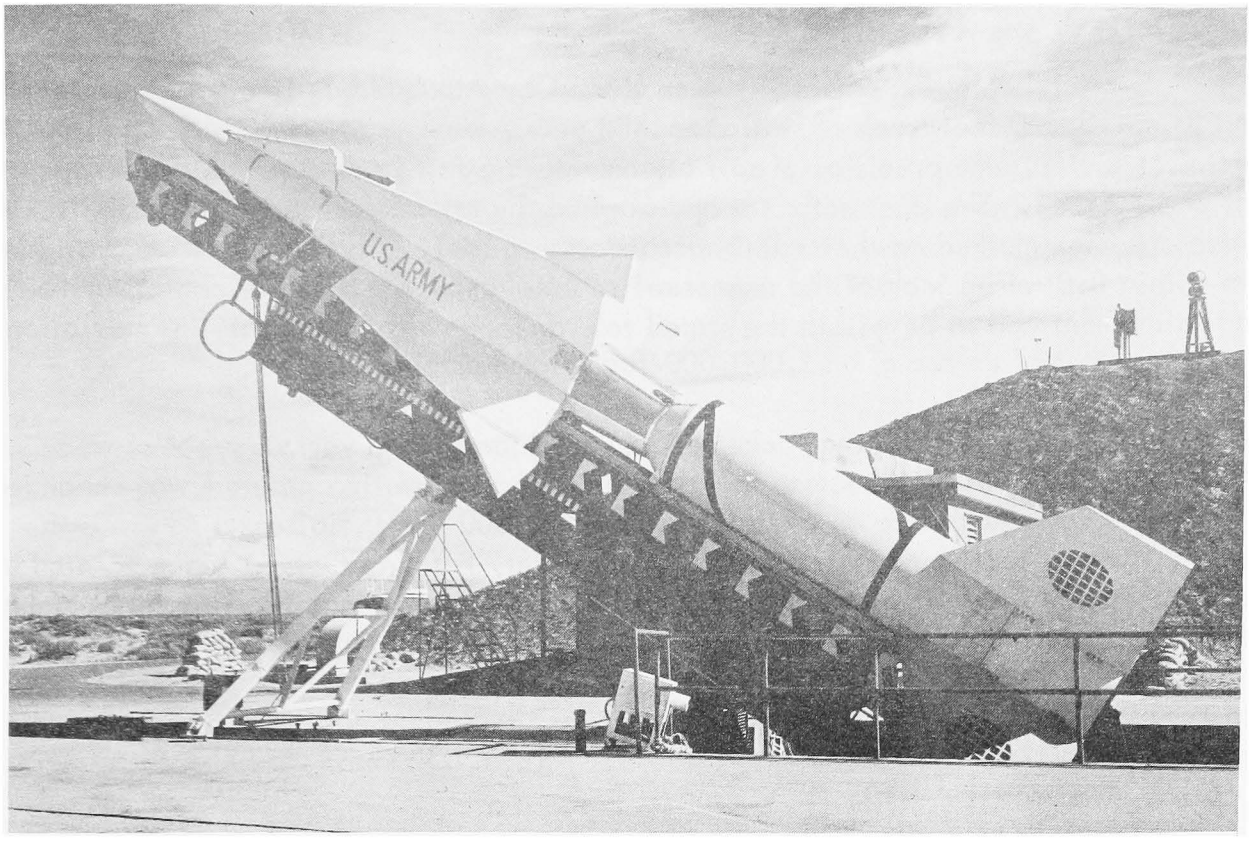
In September 1947 Kirtland AFB was designated an Air Force Research Center. Construction required to prepare the base for its new role was directed by the Albuquerque District. At first, Kirtland's nuclear activities were limited to modification of aircraft to carry atomic bombs and to testing programs designed to improve bombing accuracy. In later years, however, Kirtland AFB has been associated with a wide range of projects including development of supersonic aircraft, ballistic missiles, and the H-bomb. With the outbreak of the Korean War the District lengthened and rebuilt the east-west runway, constructed hangars large enough to accommodate B-52 bombers, and built a new headquarters and laboratories.

In the foothills of the Manzano Mountains--just to the east of Kirtland AFB-- the District began construction of Manzano Base in 1948 and completed the new complex in 1951.

In 1959, the Armed Forces Special Weapons Program at Sandia Base, adjacent to Kirtland AFB, was replaced by the Defense Atomic Support Agency. The new agency offered support to the Secretary of Defense, Joint Chiefs of Staff, and other Defense Department agencies in matters related to nuclear programs. As changes in Atomic Energy Commission programs occurred the District initiated additional construction at Sandia Base.

## WHITE SANDS MISSILE RANGE

White Sands Missile Range is the largest military reservation in the United States. It is a 40-mile wide, 100-mile long strip in southcentral New Mexico's Tularosa Basin. The Range, after its various components were integrated in 1952, consisted of 2,168,000 acres. The Albuquerque District acquired the first unit of 166,500 acres from Fort Bliss prior to World War II; the second unit of 1,203,000 acres was added in 1941 as a part of Holloman AFB and the Alamogordo Bombing Range; and the third unit of 798,000 acres was acquired in 1945 and was designated the Ordnance and California Institute of Technology area (ORDCIT). This vast military complex became a permanent part of the District's construction responsibilities. Engineering and construction work on the project involved building the Range's basic test and support facilities, technical and administrative structures, and housing necessary to support a small community situated in a remote portion of the New Mexico desert.




NIKE ZEUS PREPARED FOR FIRING AT WHITE SANDS MISSILE RANGE

Expansion of facilities was not always popular with area residents. Shortly after World War II leases covering use of the missile range at White Sands had expired. The Albuquerque District attempted to reactivate these leases in 1949. In spite of opposition from such sources as the New Mexico Cattle Growers Association and the Wool Growers Association, with the backing of some members of Congress and the New Mexico Commissioner of Public Lands, the leases were renewed by 1950.

Then in 1954, when authorities at Fort Bliss proposed the purchase of 650,000 acres of ranch land in New Mexico, opposition similar to that of the period of 1949-1950 resurfaced. But again, in spite of adverse publicity and strong opposition, the federal government proceeded to purchase the designated land through condemnation. The federal government did accept the proposal of the New Mexico State Land Commissioner that, in cases of State owned land, there be an exchange rather than a purchase of land by the government.

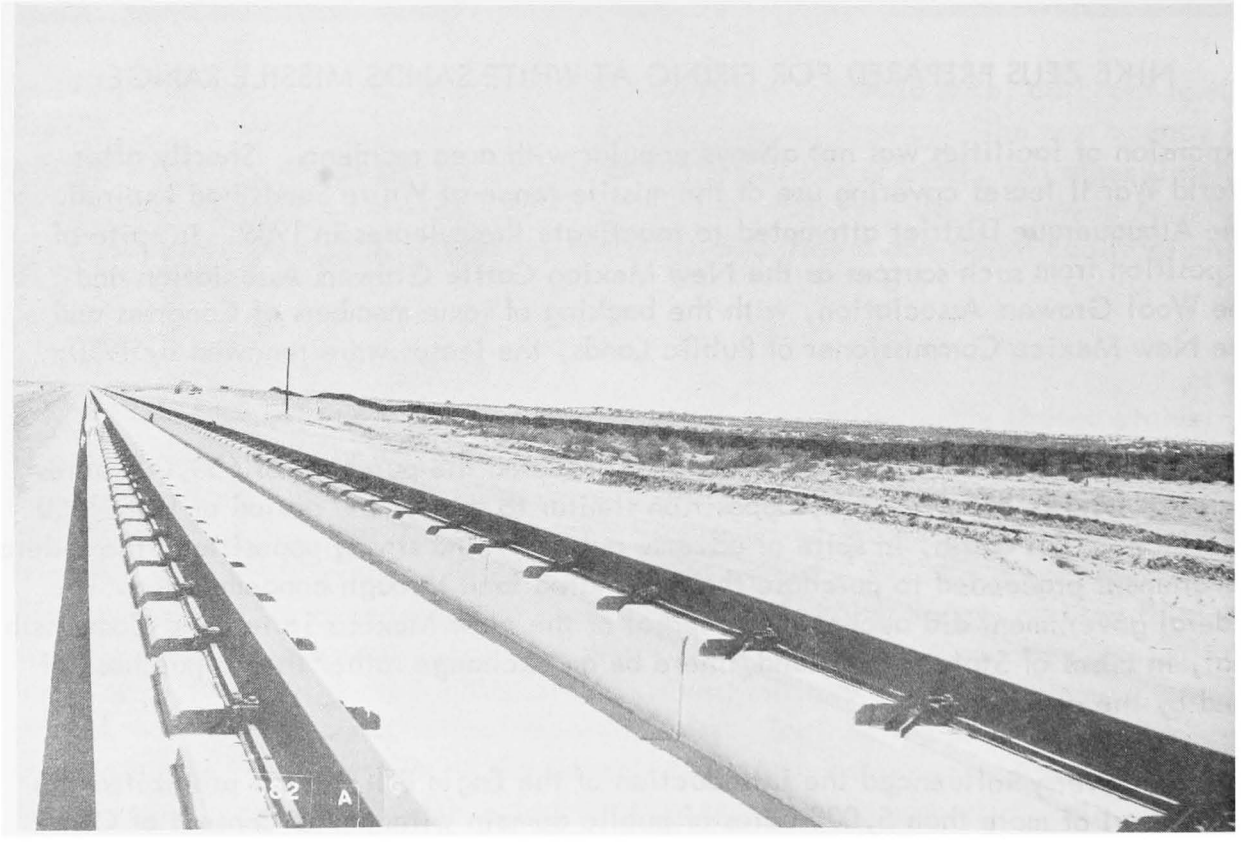
This controversy influenced the introduction of the Engle Bill, which prohibited the withdrawal of more than 5,000 acres of public domain without the consent of Congress. Wholesale condemnation of lands in the name of national security was thus brought under question.

## HOLLOMAN AFB

Soon after the beginning of hostilities in Korea the Albuquerque District constructed an unique 3,500-foot track at Holloman AFB near Alamogordo, New Mexico. Except for the extreme precision of rail alignment, the test track resembled trackage of any railroad. The contractor set and aligned the master rail to within 0.005 of an inch of a line marked on the concrete foundation girder. The second rail was aligned to within 0.01 of an inch of the master rail. Any variations from horizontal or vertical alignment had to be within the stated tolerances --with a straight-line deviation less than that of an arc of an 1,000,000-foot diameter circle.

The track was used for testing rockets, missiles, planes, and various types of weapons. When its potential value became fully apparent and the testing program was expanded, the track was extended to an overall length of 35,000 feet. Holloman AFB was the testing site for such systems as Firebee, Sidewinder, Falcon, Genie, Mace, Matador, and the Hound Dog. It also conducted tests of guidance mechanisms, control systems, and other components for the Air Force and other defense agencies.

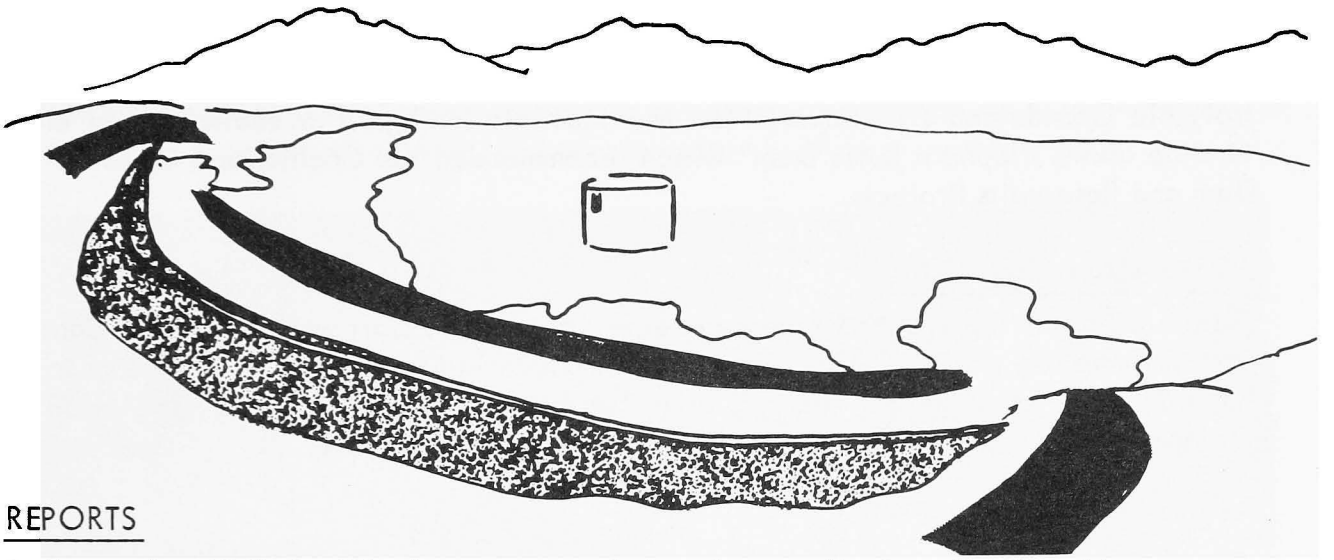
In 1955, Colonel John P. Stapp became the "fastest man on earth" when, in a special test run on the track, he roared down the test rails at 632 miles per hour.



THE COMPLETED TEST TRACK AT HOLLOMAN AFB

## CIVIL WORKS RESUMED

After World War II the Albuquerque District revived its civil works function. Work resumed on the John Martin Reservoir in 1946 and the District concentrated its efforts on initiation of as many authorized survey reports as possible. In September 1948 construction began on the Templeton Gap Floodway at Colorado Springs, Colorado and was finished by June 1950. Work on the Willow Creek Floodway at Creede, Colorado started in June 1949 and was completed in September of 1950.



## REPORTS

In September 1948 the District recommended a plan to alleviate flood problems along the Arkansas River at Pueblo, Colorado and in June 1950 a District report supported the Two Rivers Reservoir Project for flood control on the Rio Hondo near Roswell, New Mexico.

Under the Flood Control Act of 1950 an Arkansas-White-Red River Basins Interagency Committee (AWRBIAC) was formed. The Interagency Committee consisted of representation from the Departments of Army, Agriculture, Interior, and the Federal Power Commission. The Department of the Army was the Chairman agency. The Albuquerque District participated in the AWR study from its inception in 1950 until its completion in 1955. The final AWR Report provided reference material to federal, state, and local interests to help them determine priority for proposed projects.

The District "Report on Survey for Flood Control, Pecos River and Tributaries, Texas and New Mexico" was submitted in 1951 and revised in 1954. It recommended construction of the Los Esteros Reservoir and modification of the Alamogordo Dam Project, New Mexico; the Pecos, Texas Flood Control Project; the Dark Canyon Floodway, Carlsbad, New Mexico; and the Artesia Flood Control Project, New Mexico.

The "Review Report on Survey for Flood Control, Rio Grande and Tributaries, Socorro, New Mexico and Vicinity" was submitted by the District in September 1952. It recommended the Socorro Diversion Channel Project, Socorro, New Mexico.

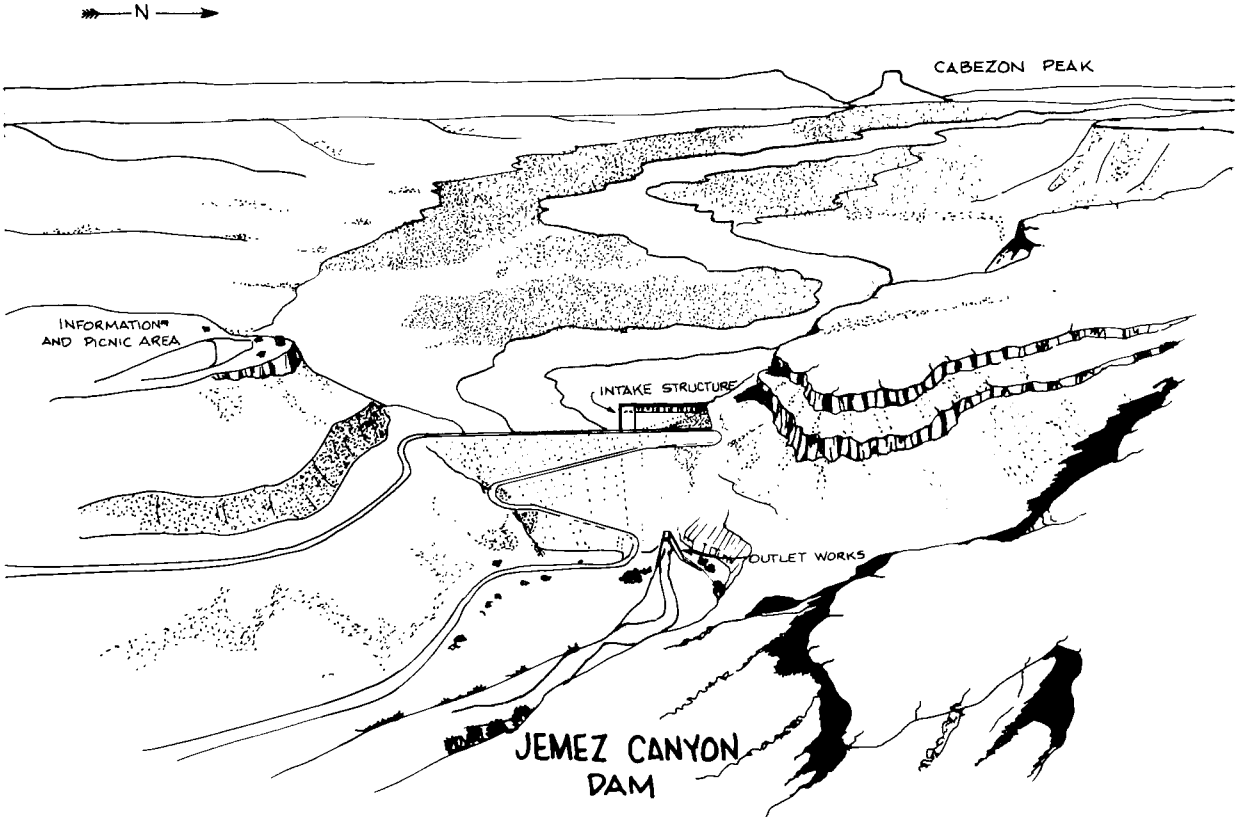
The following year the District issued a "Review Report on Survey for Flood Control, Rio Grande and Tributaries, Albuquerque, New Mexico and Vicinity." This report suggested flood protection at Albuquerque by construction of two channels to divert flood waters which originate in the mountains to the east and to discharge them into the Rio Grande north and south of the city.

Also in 1953, the District recommended construction of Trinidad Dam and Reservoir on the Purgatoire River above Trinidad, Colorado in a "Review Report on Survey for Flood Control, Irrigation and Recreation on Purgatoire River, Colorado."

Later, in 1958, the Albuquerque District submitted a "Review Survey for Flood Control, Rio Grande and Tributaries, New Mexico: Interim Report on Main Stem of Rio Grande above Elephant Butte Dam" which recommended the Cochiti and Galisteo Dam and Reservoirs Projects.

## JEMEZ CANYON DAM

Fortunately, the District had received necessary funds to start work on Jemez Canyon Dam prior to the war in Korea. Construction began in May 1950 and in spite of involvement in Korea funding was sufficient for the project to bring it to completion by October 1953--with finishing touches accomplished by May of 1954.

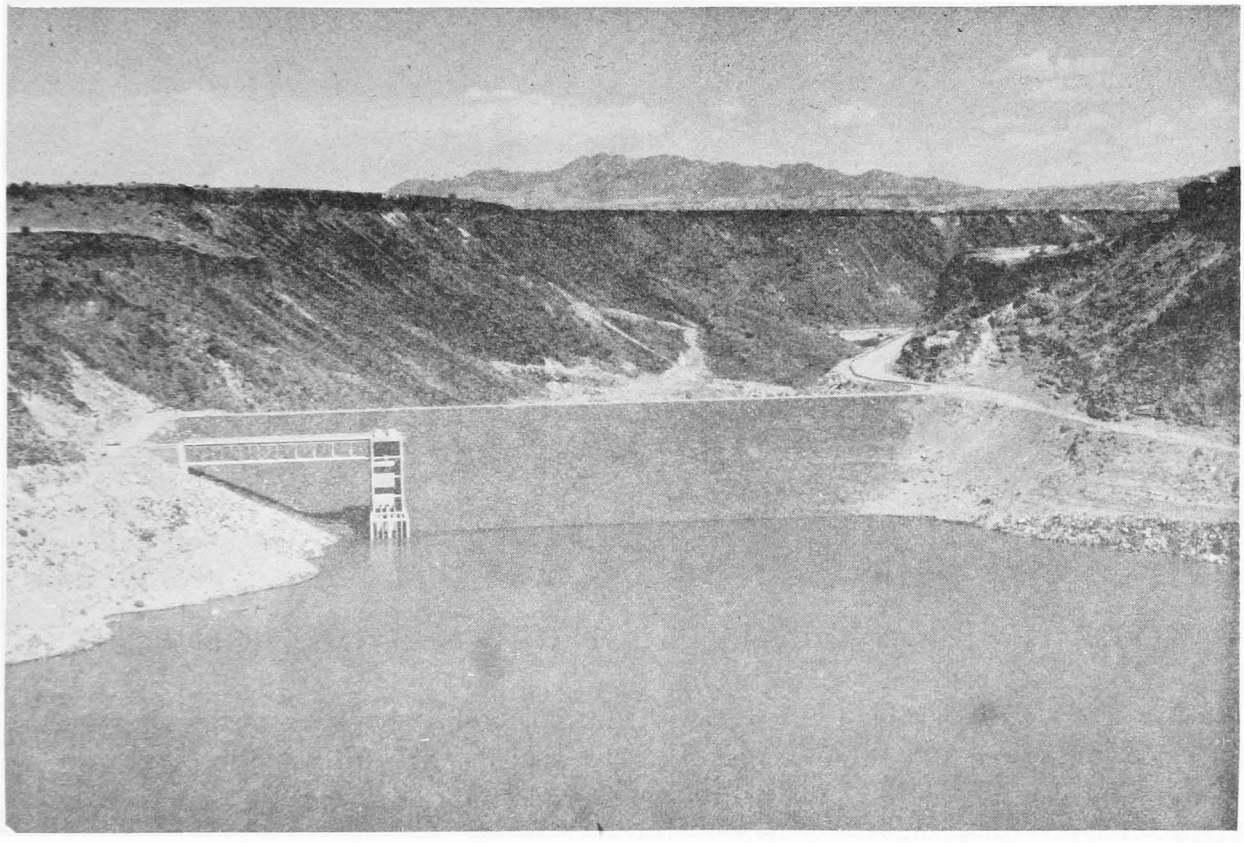



The Jemez Canyon Dam, constructed as a part of a comprehesive plan for flood control on the Rio Grande and its tributaries, was built on the Jemez River about two miles up-

stream from the confluence of the Jemez River and the Rio Grande. The land for the project--2,831 acres in fee simple and 3,880 acres by easement was obtained by the District through condemnation.

The dam is a 780-foot long earthfill structure with a maximum height of 136 feet above streambed. It has an uncontrolled, off channel, saddle spillway 400 feet long and outlet works with a gate controlled conduit 13 feet in diameter. The reservoir had an initial capacity of 117,213 acre feet, of which 73,000 acre-feet is for flood control and 44,213 acre-feet for sediment deposition.

Although there is no permanent pool, the dam's proximity to Albuquerque and its scenic view draw numerous sightseers. Therefore minimum recreational facilities--access road, parking area, overlook shelter, and picnic units--have been constructed.



JEMEZ CANYON DAM

## MISCELLANEOUS CONSTRUCTION

The Flood Control Act of 1951 authorized construction of the proposed Floodway Levee Extension Project at Pueblo, Colorado. The District began work on the project in May 1952 and completed it by September of the same year. The levee extension was 2,780 feet long with three drainage structures. It was located on the left bank of the Arkansas River at its confluence with the Fountain River--inside the Pueblo city-limits.

In 1954 the Pinon Canyon Dam was built about one half mile north of Trinidad, Colorado on the precipitous Pinon Canyon Arroyo, a tributary to the Purgatoire River. The dam is an earthfill structure extending 73 feet above streambed and with a crest length of 695 feet. Storage capacity of the reservoir is only 406 acre-feet. The project protects Trinidad, Colorado from flood waters originating in the arroyo.

## RIO GRANDE FLOODWAY

RIO GRANDE PRIOR TO INSTALLATION OF BANK PROTECTION WORKS

The Rio Grande Floodway is but one unit in a comprehensive plan of development for flood control on the main stem of the river and its tributaries. The Floodway Project covers a 271-mile reach of the Rio Grande between Espanola and Truth or Consequences, New Mexico. To facilitate planning, funding, and construction, the project has been divided into a number of units.

The Albuquerque Unit consists of a 20-mile reach in the vicinity of the city. In 1954 the Albuquerque District began construction of a system of levees to protect the Albuquerque area from flooding from the Rio Grande. A levee about 18 miles long was built along the east bank of the river to protect business, industrial, and residential areas. Another levee nine miles long was constructed along the west bank of the river to protect other urban developments. The levees average about 10 feet in height with a crown width of 12 feet and have 2.5 on 1 side slopes. Flexible-

type bank stabilization works were placed in critical areas vulnerable to scour and cutting during floods. The work was completed in 1956.

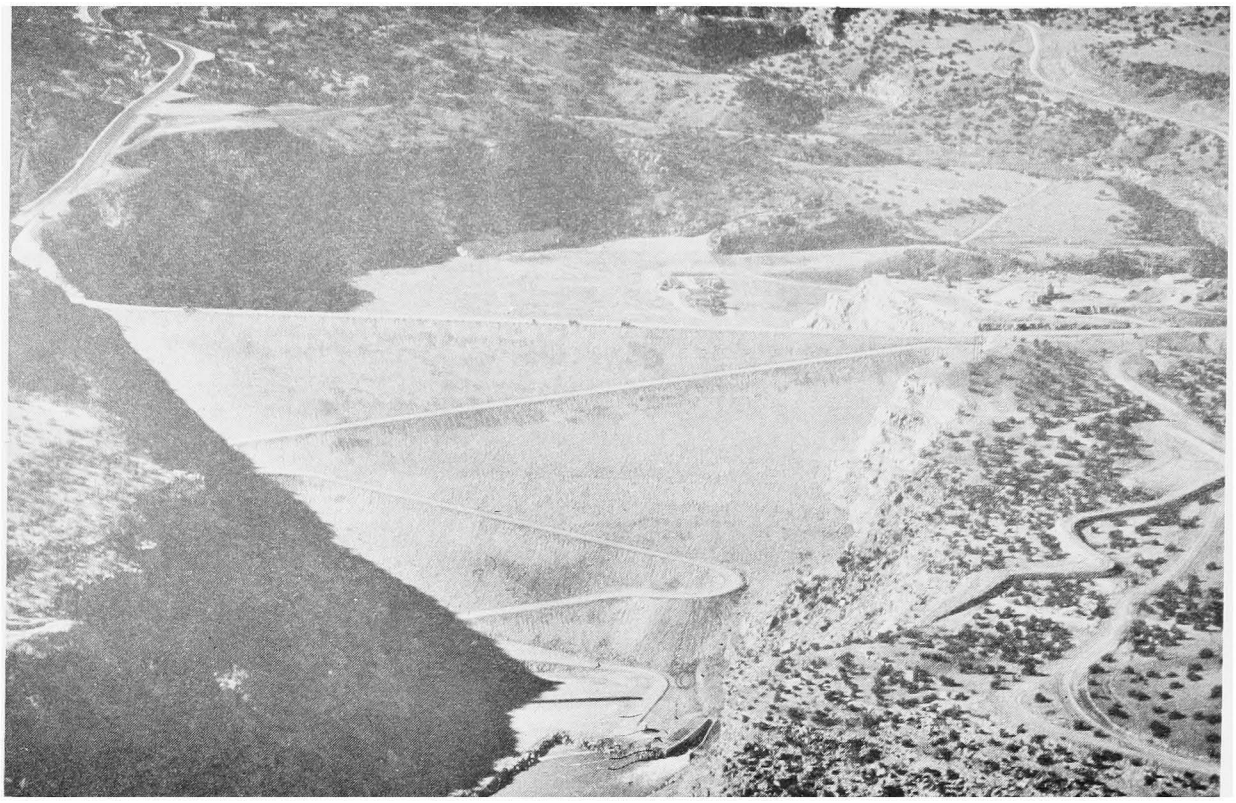
RIO GRANDE AFTER INSTALLATION OF BANK PROTECTION WORKS

## ABIQUIU DAM

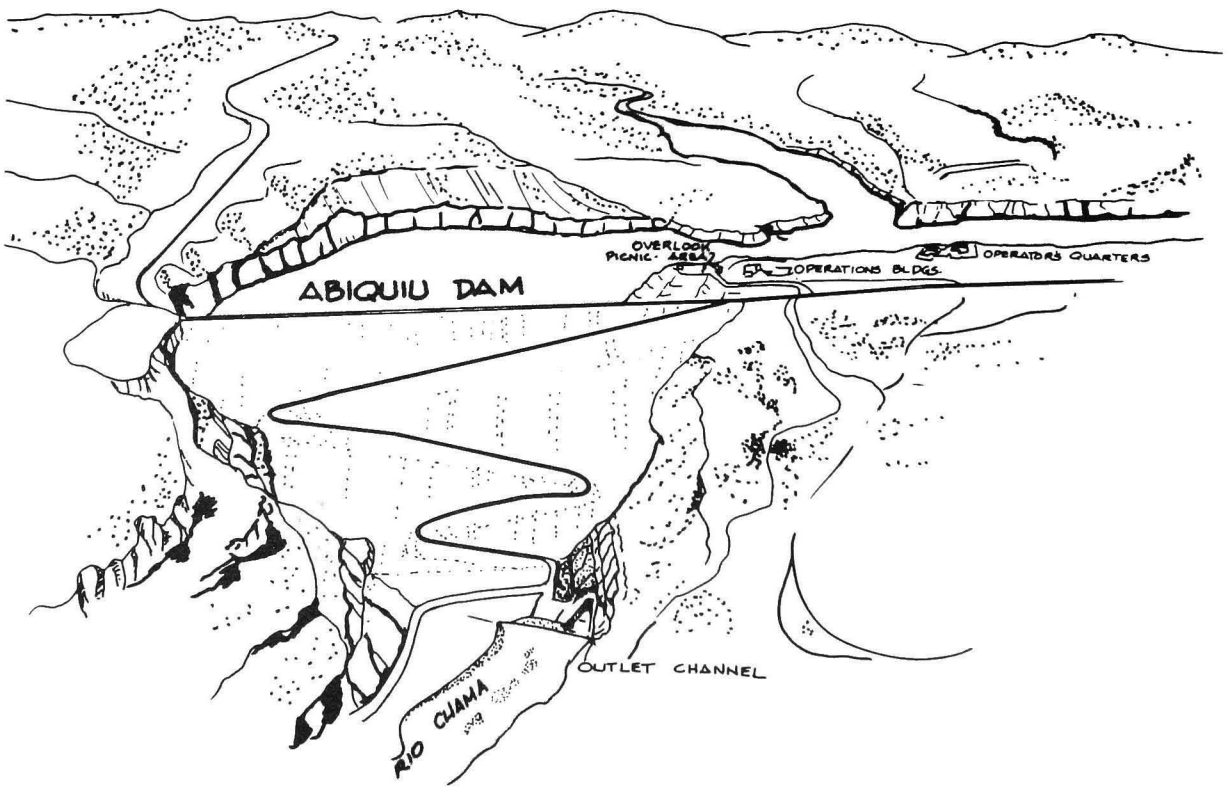
The District began construction of Abiquiu Dam in August 1956. The site is 45 miles northwest of Santa Fe on the Rio Chama, a tributary to the Rio Grande. Complications in establishing rights of ownership in the area made it necessary for the District to acquire the land by condemnation.

The dam is an earthfill structure 1,540 feet long with a maximum height above streambed of 325 feet. The outlet works, placed in the left abutment, consist of a single-gated 12-foot diameter conduit 2,300 feet long. An uncontrolled spillway with bottom width narrowing from 80 feet to 40 feet was built in a natural saddle about one mile north of the left abutment. Dam closure was effected in July 1959 and the project became operative in February of 1963.

The reservoir had an initial capacity of 1,217,300 acre-feet, of which 502,000 acre-feet is for flood control, 70,000 acre-feet for sediment retention, with the remaining capacity for dam protection. A minimum pool of 2,000 acre-feet is maintained. Snow runoff in the early summer provides opportunity for some water-associated recreational activity. Recreation facilities were constructed on the reservoir's north shore: access roads; overlook shelter; picnic units; and parking areas with a boat-launch facility.



ABIQUIU DAM AND RESERVOIR



# CHAPTER V

# THE SPACE AGE: MILITARY AND CIVIL WORKS, 1960-1971

## NEW HEADQUARTERS BUILDING

At the close of World War II the Albuquerque District had transferred its offices from downtown Albuquerque to vacated buildings at Kirtland AFB. When office space in the aging quarters at Kirtland gradually became overcrowded, additional locations throughout the city were leased. However, the dispersal of District offices made effective communications and operations difficult. In the spring of 1960, a new eight-story Federal Building in downtown Albuquerque had been completed and was ready for occupancy. District headquarters was assigned all of the seventh and eighth and part of the first and third floors of the new structure in April 1960.

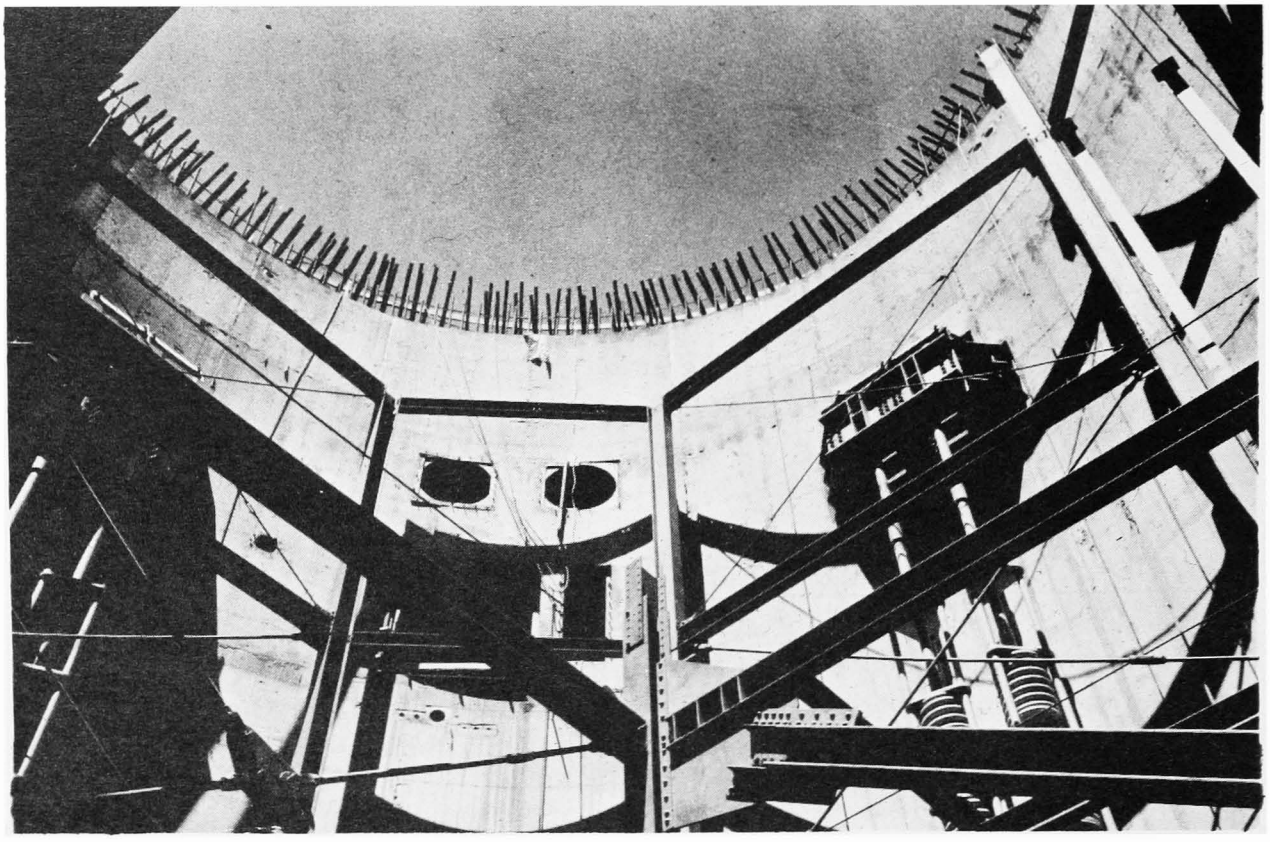
## CEBMCO

In August 1960 a national task force known as the Corps of Engineers Ballistic Missile Construction Office (CEBMCO) was organized under the auspices of the Air Force with headquarters in Los Angeles, California. An Area Office was set up at Roswell, New Mexico. At its peak, the project employed eight commissioned officers and 186 civilian employees. Many of the personnel for the Roswell Area Office and the Los Angeles Headquarters were transfers from the Albuquerque District.

## WALKER AFB

In 1960, small tracts of land around Roswell, near Walker AFB, were acquired by the District for Atlas Missile silos. Some tracts were obtained by direct purchase but many required condemnation. Connecting the 12 sites was a network of communication cables installed on easements acquired by negotiation or condemnation. Contract for construction of the first silo at the Roswell site was awarded in June of 1960. The last of the 12 silos at this installation was completed in January 1962.

During construction of the silos, three major accidents occurred resulting in eight fatalities. The most severe resulted in six deaths, one permanent injury, eighteen temporary disabling injuries, and about $150,000 in damage. Needless to say, more specific and extensive safety regulations were instituted and enforced by government inspection teams.



ATLAS MISSILE SILO UNDER CONSTRUCTION

Much to the consternation of those working in the program, the Atlas "F" ICBM was obsolete almost as soon as the project reached completion. Sites were maintained for a very limited time only. Two sites were destroyed by fire, leaving only 10 operational at the time the Air Force declared them excess. The entire facility was later dismantled and disposed of.

## MISCELLANEOUS CONSTRUCTION

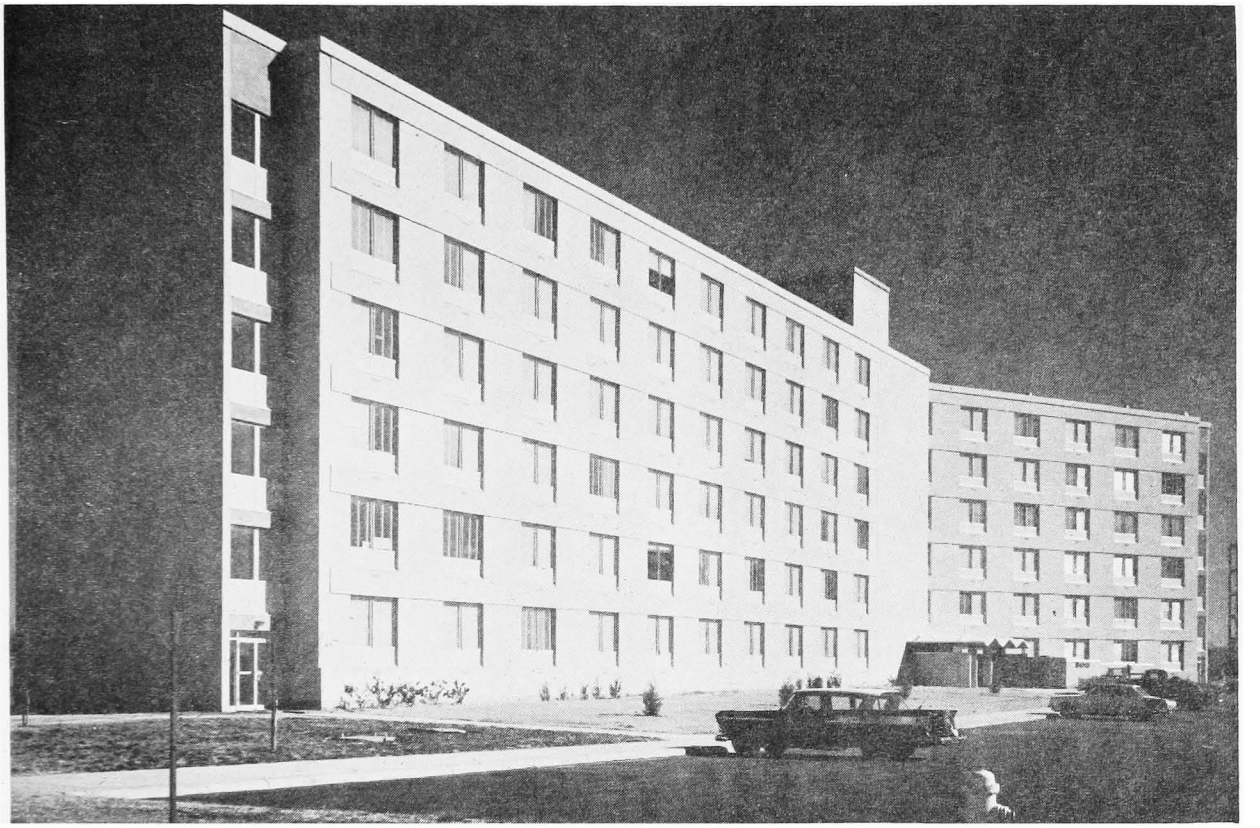
While the District was involved in the Atlas construction program it also built three Air Force Control and Warning Stations in various parts of New Mexico.

In 1961, four military bases east of the 100th meridian in the states of Texas and Oklahoma were transferred to the Albuquerque District: Dyess AFB and Missile Base, Abilene, Texas; Sheppard AFB, Witchita Falls, Texas; Altus AFB and Missile Base, Altus, Oklahoma; and Fort Sill, Lawton, Oklahoma. Later other bases in Texas were transferred to the District: Goodfellow AFB, San Angelo; Reese AFB, Lubbock; Amarillo AFB; and Webb AFB at Big Spring.

Transfer of the Oklahoma and Texas areas to the District greatly increased its Real Estate Division's work load--especially in the Appraisal, Management, and Disposal Branches. When Fort Sill came under the jurisdiction of the Albuquerque District many old buildings at the Fort were being offered for sale to interested parties.

The District assumed that work, disposing of hundreds of structures. Several large hangars at Altus AFB and a large number of buildings at Sheppard AFB were in similar fashion disposed of through advertising efforts of the District.

After having held title for about ten years, the federal government donated much of the land west of Kirtland AFB back to the city of Albuquerque. The city was eager to use the land for an expansion of the municipal airport. The District Real Estate Division cooperated with the officials of Albuquerque in preparing documents necessary for the transfer of title to the land.



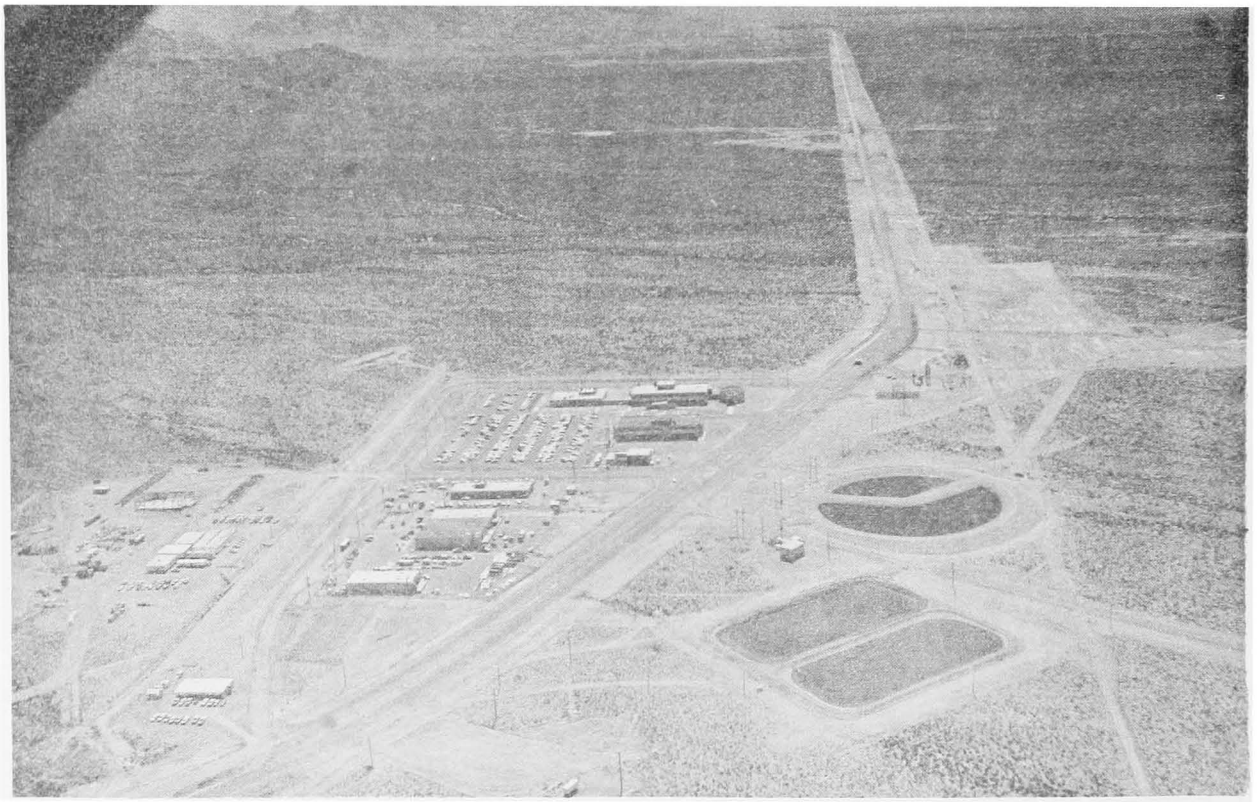
300-MAN BOQ FORT SILL CONSTRUCTED BY THE DISTRICT

## WHITE SANDS MISSILE RANGE

During the summer of 1963 officials of White Sands Missile Range once again informed the District of the need to acquire certain off-range properties in New Mexico. One such area, Fort Wingate, had been designated a launch and abort area for the Pershing Missile. This land was acquired without condemnation.

The small village of Datil was included in another area, over which the Athena Missile would fly from a launch-point near Green River, Utah. Datil was used for an abort area only as no intentional impacts had been planned for the area.

Acquisition of some Navajo lands required settlement with the Indians themselves. Where individual Navajos were not available, the General Superintendent of the Bureau of Indian Affairs acted in a delegated capacity to sign agreements. In addition to these lands in northwest New Mexico, other parcels were obtained for the Range in the southern part of the state.



ADMINISTRATION AREA, WHITE SANDS MISSILE RANGE

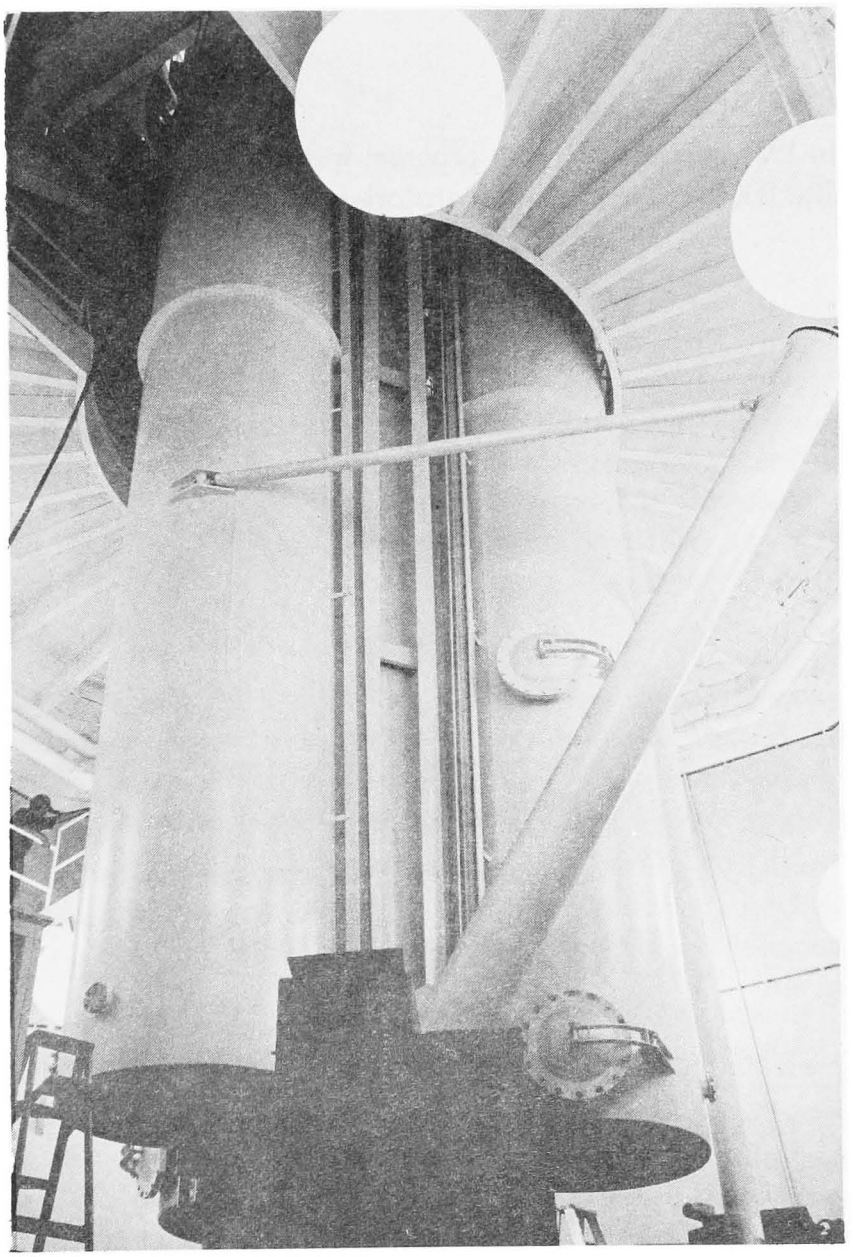
## UPPER AIR RESEARCH STATION

One of the District's more unique projects was construction of a solar observatory known as the Upper Air Research Station. Built for the Air Force, the observatory was located in the Sacramento Mountains--at an elevation of 9,240 feet--near Holloman AFB. Work on the project, commonly referred to as "Sac Peak," began in April 1966 and was completed in June 1969 and became operational the following October.

Construction of the shaft, tower, and laboratory building necessitated blasting and excavation of a 232-foot deep shaft on top of "Sac Peak," and the erection of a conical-shaped reenforced concrete tower 150 feet in height. An 193-foot segment of the 200-ton, 328-foot long vacuum telescope, designed by Richard B. Dunn, Air Force Project Supervisor, was set below ground in the shaft while 135 feet of the instrument extended above ground into the tower structure. An 11-ton pool of mercury, positioned 90 feet above ground in the tower, gave the world's largest

telescope a frictionless suspension system. Among the telescope's wide range of uses it should make it possible to predict more accurately, and over longer periods of time, proton showers from the sun, which men in space must avoid in order to survive.

Much to the District's delight, under the 1971 Chief of Engineer's Distinguished Design Awards Program, the Sac Peak Observatory received the Award of Merit in Architectural Competition--one of only three such awards presented that year. The Corps' primary liaison during the later planning stages of the project was Mr. D. L. Orendorff, Assistant Chief, Engineering Division, Albuquerque District. The Project Engineer for the District was Mr. Paul S. Chamberlain.



VIEW FROM 1000-FOOT ELEVATION SHOWING TELESCOPE AND THE COLLIMATOR TUBE

## HOLLOMAN AFB

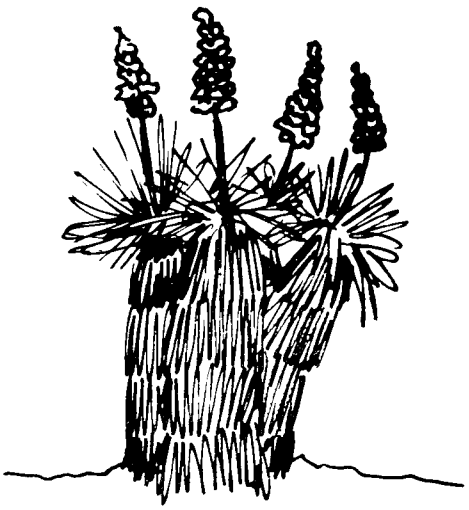
In 1968 the 49th Tactical Fighter Wing was transferred from Germany to Holloman AFB. With the sudden influx of 2,150 military personnel and about 4,350 dependents it was necessary for the District to build several millions of dollars worth of housing at the base to accomodate the newly transferred unit.

## WILLIAM BEAUMONT GENERAL HOSPITAL

In a continuing program of updating military facilities the District, in 1969, began expansion of William Beaumont General Hospital at El Paso, Texas. This involved construction of a new 608-bed, 12-story, $17.5 million main hospital building. The new structure was designed to replace 51 obsolete and inadequate temporary and semi-permanent buildings at the 272-acre medical complex. The project was scheduled for completion by 1972.

## KIRTLAND AFB

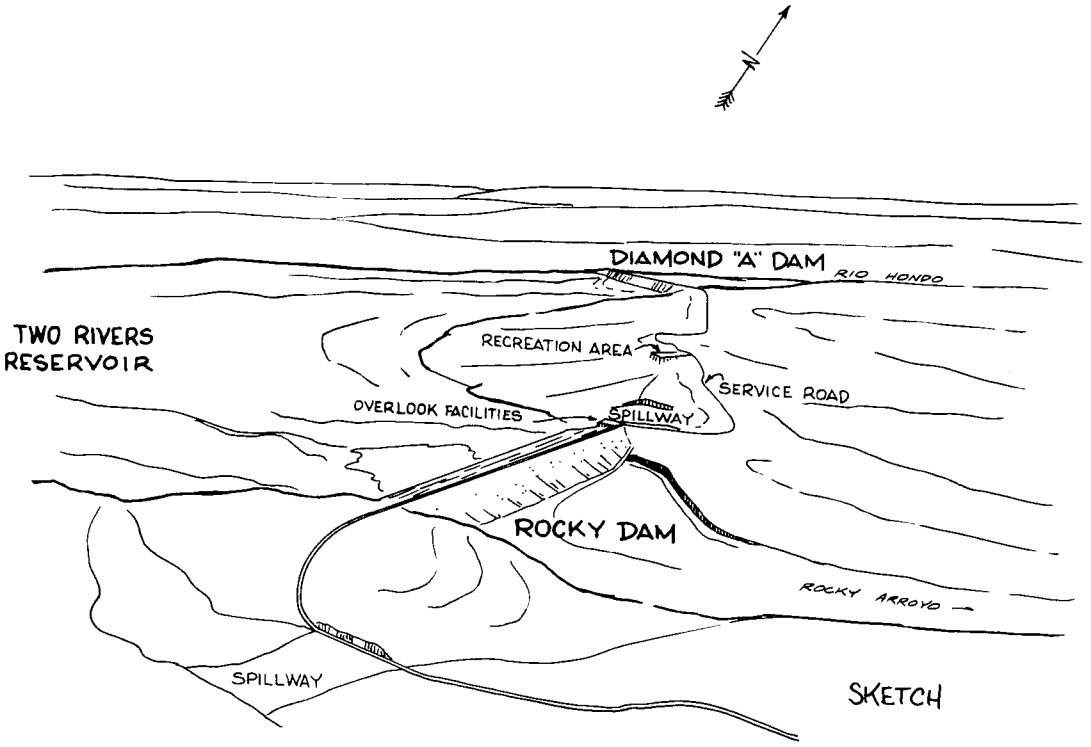
In 1971 another building program went into effect at Kirtland AFB in Albuquerque. The District built new laboratories, a post office, and a branch bank.



The buildup of Vietnam operations began slowly in the early 1960's, was accelerated in 1965, and reached a peak in 1969. In spite of budgetary pressures the District completed work on three major civil works projects and began construction of four others.

## TWO RIVERS RESERVOIR

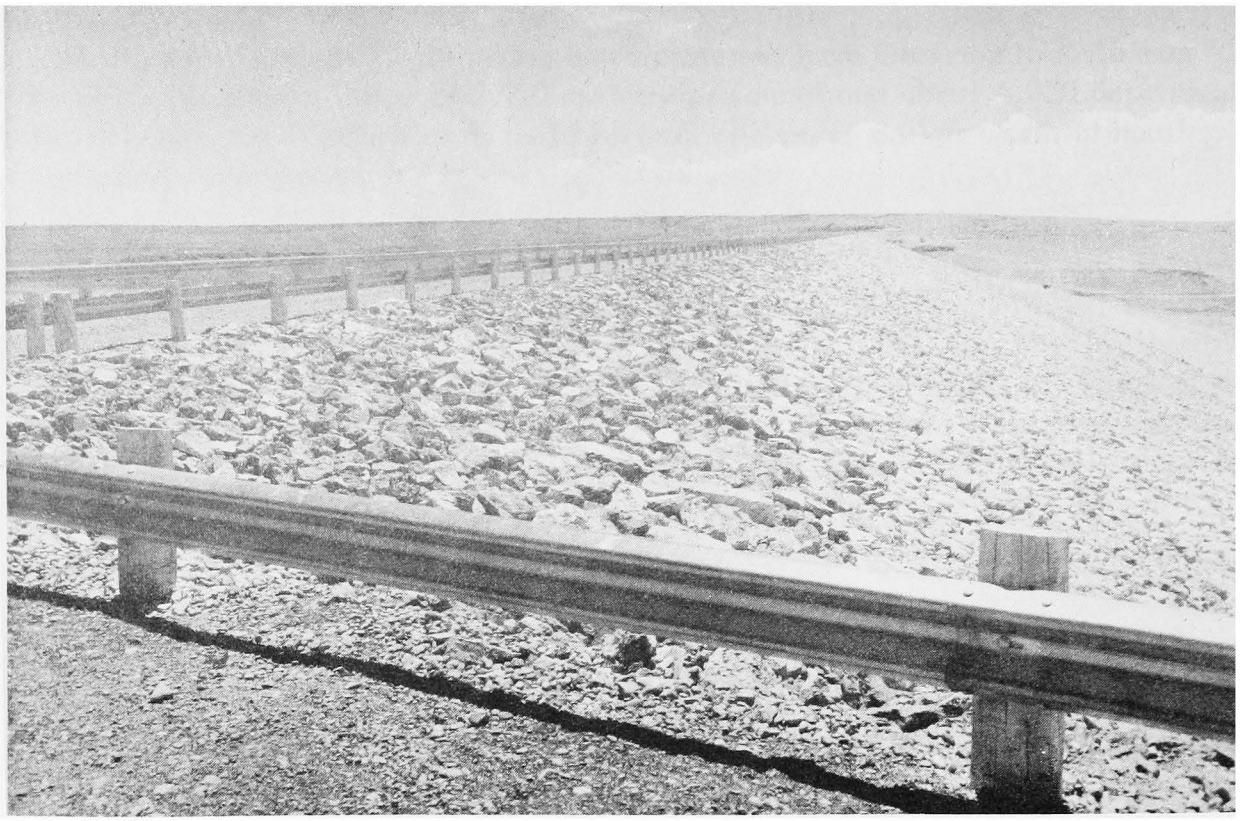
Two Rivers Reservoir was the first unit to be constructed by the Corps of Engineers as part of a comprehensive plan for development of water resources of the Pecos River watershed. Construction began in May 1960 and was completed in 1963. The project site was located about 14 miles southwest of Roswell, New Mexico on the Rio




Hondo, a tributary to the Pecos River. In addition to affording protection to the city of Roswell and vicinity, the project reduces water damage downstream along the Pecos River valley. The Two Rivers project consists of two dams, Diamond "A" Dam on the Rio Hondo, and Rocky Dam on the tributary Rocky Arroyo. These two structures create the reservoir designated as Two Rivers. Completed in 1963, the projects was dedicated by the city of Roswell in August of 1964.

Diamond "A" Dam is an earthfill structure 4,918 feet long and 98 feet above streambed, with a gated outlet. Topography of the site permitted the use of two natural saddles in limestone on the rim of the reservoir for spillways, which have a total length of 1,130 feet. One of the spillway saddles is between the dams and the other is south of Rocky Dam.

The reservoir formed by the dams had an initial capacity of 168,000 acre-feet at spillway crest elevation, of which 18,000 acre-feet is reserved for deposition of sediment. Flood releases are controlled, as much as possible, so that flows through Roswell do not exceed the channel capacity of the Rio Hondo. Since the reservoir is emptied as soon as possible after each flood there is no permanent pool for recreational uses. Yet minimal recreational facilities have been provided for visitors: a parking area; overlook shelter; and six picnic units. The project is operated and maintained by the Albuquerque District.



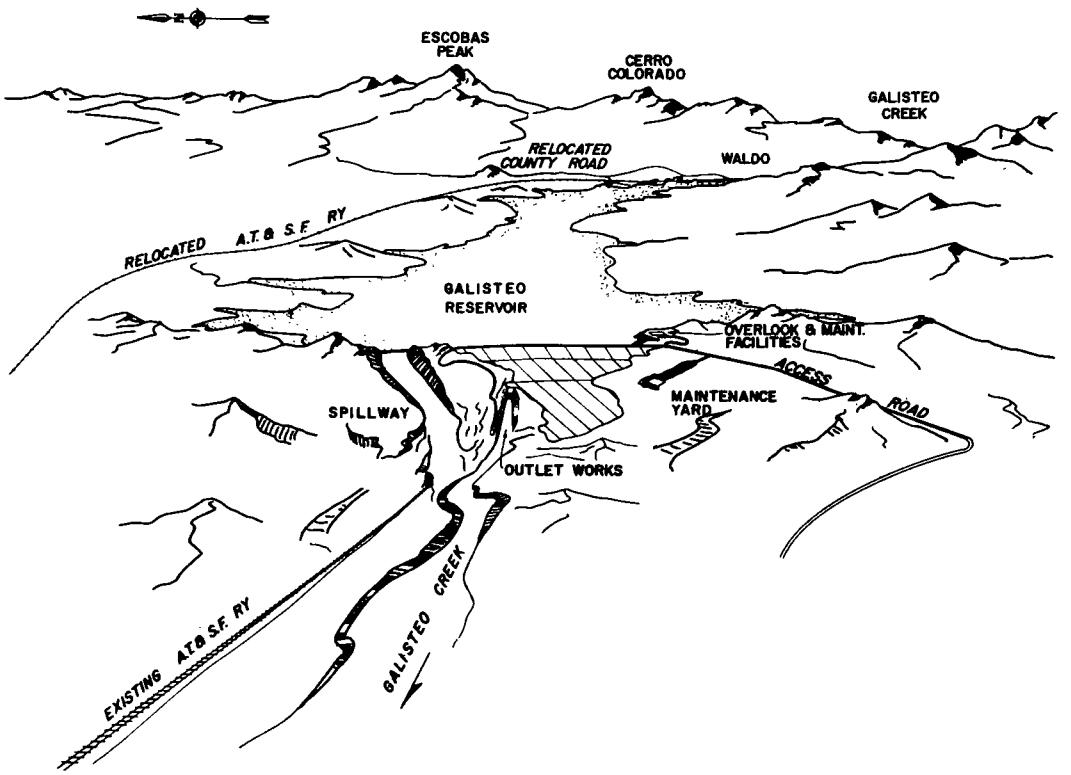
VIEW SOUTH OF UPSTREAM FACE OF ROCKY DAM

## SOCORRO DIVERSION CHANNEL

The Socorro Diversion Project, authorized under the Flood Control Act of 1958, was begun in 1962 and completed in 1964. Practically the entire city of Socorro, New Mexico had been subject to damage from flash floods originating in the mountains to the west of the city. The project consisted of a combination of channels and levees for the diversion of arroyo floodwaters into the Rio Grande. The improvement included modification of the previously existing Matanza Diversion constructed in 1904 by local interests, and the construction of the Socorro Main Diversion Channel.

The project consists of two sections: the main channel, with a levee on the west bank only, extends northward for about four miles to a point on Nogal Canyon--about 2,000 feet west of U.S. Highway 60-85; and the outfall channel on Nogal Canyon, which is about 1.2 miles long with levees on both banks. The outfall channel connects the main channel to the Rio Grande. This combination of diversions and levees provided the city of Socorro much needed flood protection.

## GALISTEO DAM

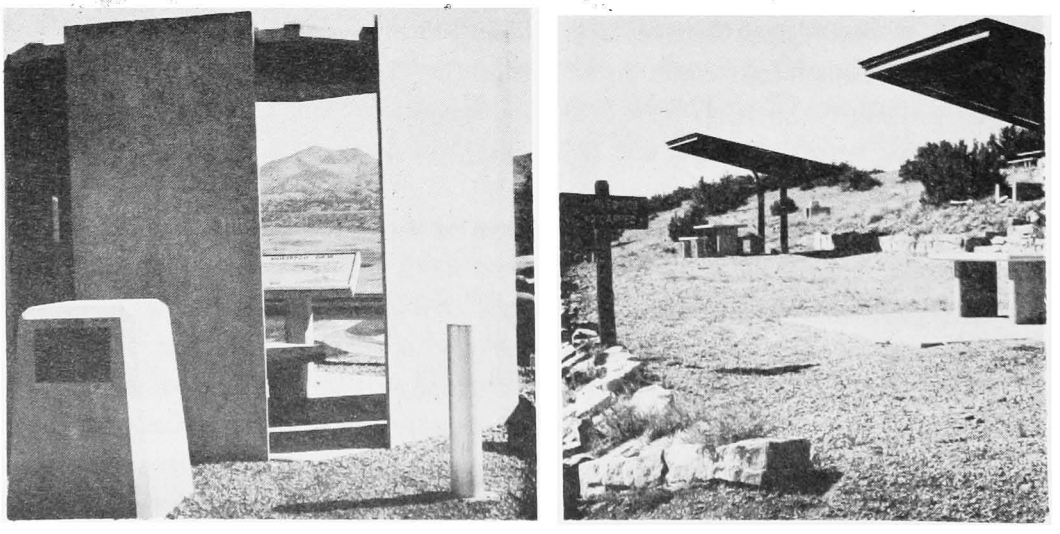



Galisteo Dam, a dry-stream flood control facility, is situated on Galisteo Creek, a tributary to the Rio Grande, about 20 miles south of Santa Fe, New Mexico. The creek has had a long history of violent flash floods which carried tons of sediment, rock, and other debris downstream into the Rio Grande. The Galisteo Dam Project was authorized by the Flood Control Act of 1960. This dam, begun in 1967 and completed in 1970, is one of four units in the Albuquerque District's comprehensive plan for flood and sediment control in the Rio Grande Basin (the others are Jemez Dam, Abiquiu Dam, and Cochiti Dam).

Land for the project, 4,109 acres, was purchased by the District from owners and, where practicable, was secured through right of easement. The dam is a 2,820-foot long earthfill structure with a maximum height of 158 feet above streambed. The spillway consists of a channel, 1,000 feet long, which narrows at the bottom to a width of only 250 feet. A 10-foot diameter uncontrolled outlet was installed in the right abutment. At spillway crest elevation the reservoir has a storage capacity of 89,800 acre-feet, of which 10,200 acre-feet is reserved for sediment control. Designed only for flood and sediment control, the reservoir contains water only during the snowmelt season and when rainstorms create floodflows in its watershed. The waters empty through the dam's uncontrolled outlet. For the public's comfort the District has built basic picnic facilities at the site.

GALISTEO DAM, LOOKING UPSTREAM

Besides completing three major civil works projects during the period, 1960-1971, the District began work on four others: Cochiti Lake, New Mexico; Trinidad Lake, Colorado; the Albuquerque Diversion Channels, New Mexico; and the El Paso Flood Control Project, Texas.

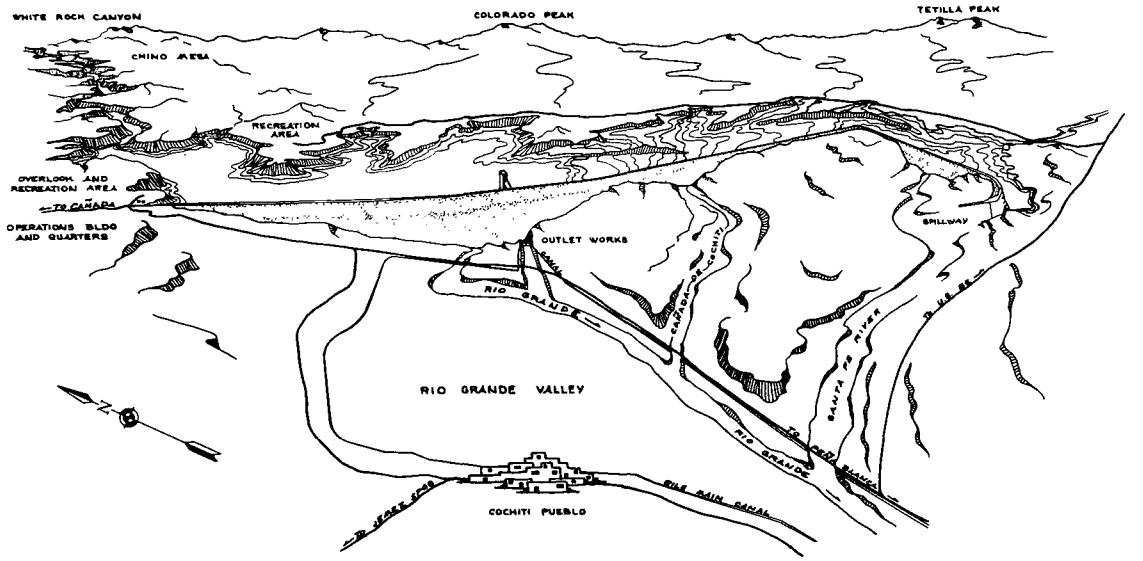


OVERLOOK AND PICNIC SHELTERS, GALISTEO DAM

## COCHITI LAKE

Cochiti Lake, authorized under the Flood Control Act of 1960, was the final unit to be constructed in the Albuquerque District's comprehensive plan for flood and sediment control in the Rio Grande Basin.

The project is located on Indian land near the Pueblo Indian village of Cochiti on the main stem of the Rio Grande about 50 miles upstream from Albuquerque. The District reached the necessary agreements with the Cochiti Pueblo Indians, with the cooperation of the Bureau of Indian Affairs, to secure a "comprehensive easement" for land necessary for the construction of the dam and appurtenant works. The Indians then, working through the BIA, concluded an unique agreement with a large land development company to develop certain recreation, concessionaire, and community facilities. The land company has agreed to develop a city around the Corps' lake on land leased to it by the Indians for 99 years.

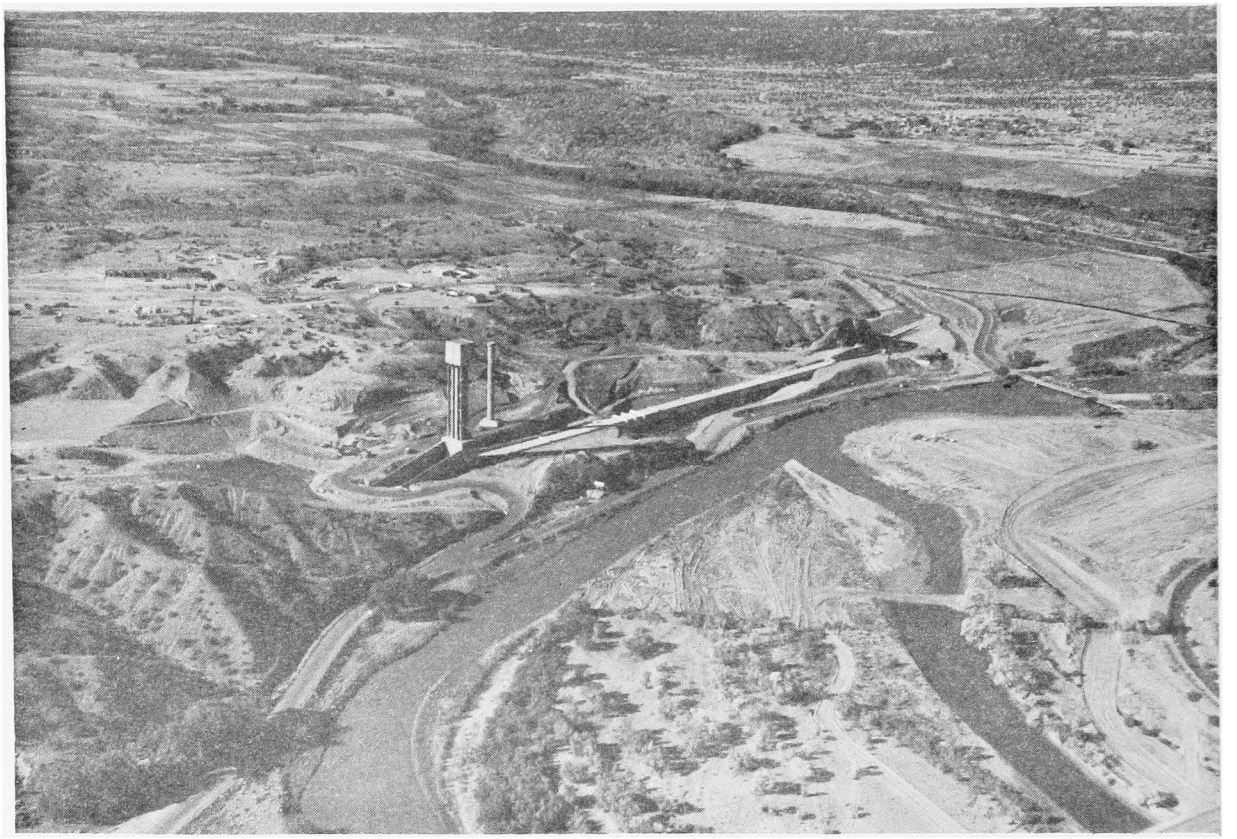



COCHITI LAKE

Original authorization for Cochiti Lake was for flood and sediment control only. The State of New Mexico, several counties, and other local interests gained Congressional approval for the creation of a permanent pool of 50,000 acre-feet for fish and wildlife and recreational purposes.

The project consists of an earthfill dam 251 feet in height and about 5.4 miles long. The embankment will contain about 60-million cubic yards of earth--which will make Cochiti one of the largest earthfill dams in the world. The tower of the outlet works

rises 270 feet above streambed. The bridge connecting the tower with the main embankment will be 430 feet long. Three rectangular conduits, 6.5 feet by 12 feet will carry water under the dam through the outlet works. Three hydraulic gates in the conduits will control the quantity of water passing through the outlet.



COCHITI OUTLET WORKS UNDER CONSTRUCTION

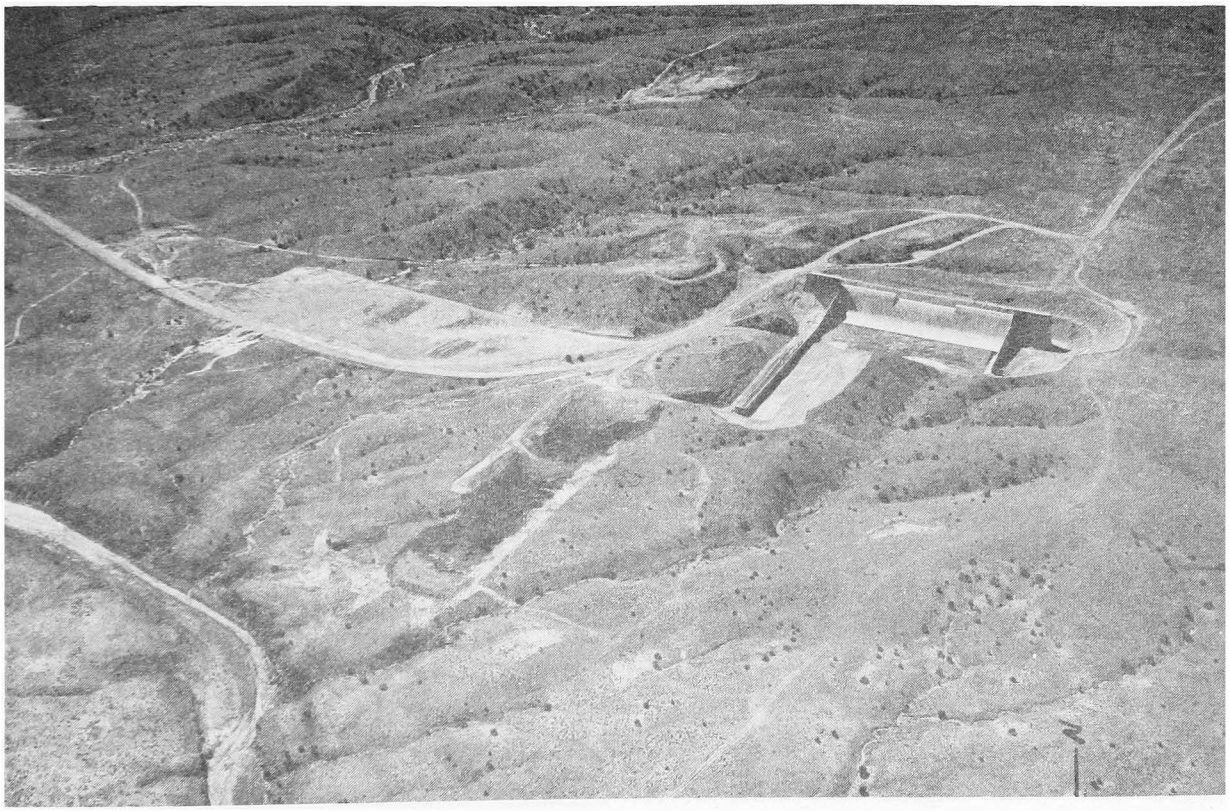
The spillway is located at the south end of the embankment on the left abutment of the Santa Fe River. It is a concrete gravity uncontrolled structure 160 feet wide with a 150-foot wide emergency spillway section on each side of the service spillway.

Capacity of the reservoir has been designed to be 736,000 acre-feet at maximum pool level. Storage allocation is 442,000 acre-feet for flood control, 110,000 for sediment retention, and 50,000 for recreation--thus providing a permanent pool of some 1200 surface acres. Compliance with the Rio Grande Compact between Colorado, New Mexico, and Texas, plus various other compacts and restrictions, forbids permanent storage of Rio Grande water in Cochiti Lake. Water may be stored temporarily as a flood control measure, but Rio Grande water must then be released when any flood danger passes. To create a permanent pool, the city of Albuquerque has agreed to forego rights to 50,000 acre-feet of San Juan River water brought under the Continental Divide by way of a tunnel to the Rio Chama. And to allow for evap-

oration Albuquerque has agreed to forego right to 5,000 acre-feet of water annually from its share of water delivered by the San Juan-Chama Diversion Project.

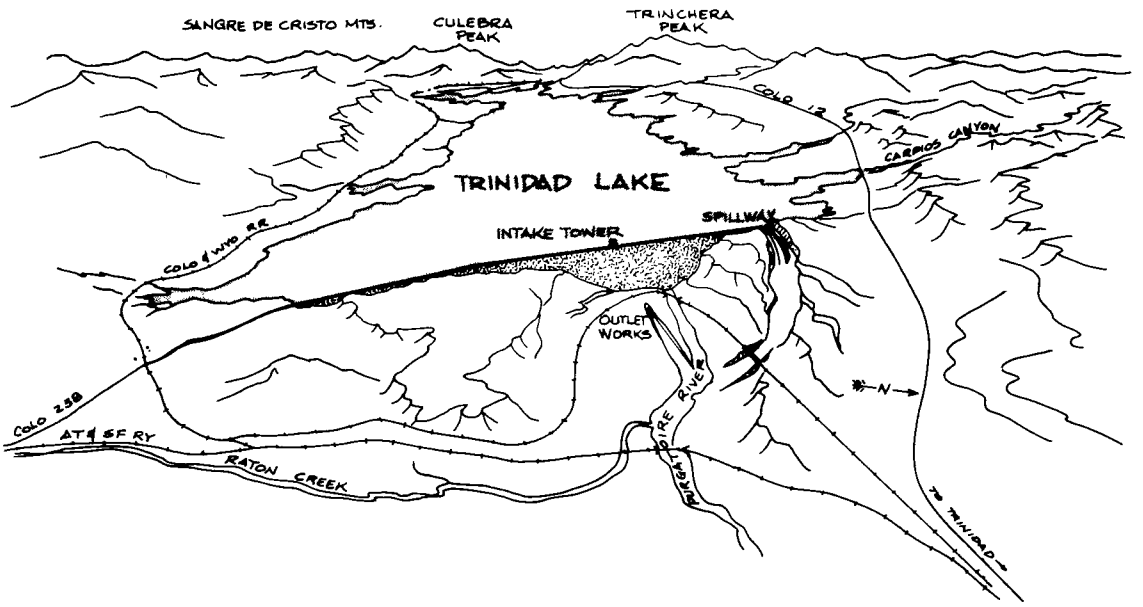
The Albuquerque District, by prior agreement with the Cochiti Pueblo Indians, has plans for the construction of basic recreational facilities which will be turned over to the Indians for operation and maintenance. In keeping with a BIA report, the Indians will construct additional facilities to supplement those to be built by the Corps. The U.S. Forest Service has proposed construction of public facilities in the White Rock Recreation Area.

Construction of the access road and operations building started in February 1965 and was completed the following November. In January 1966 work on the spillway began and it was finished in August 1967. Construction of the outlet works began in June 1967 and was completed by June of 1970. Work on the main embankment started in June 1970 and, along with the entire project, is expected to be finished sometime in the mid-1970's.



SPILLWAY AT COCHITI

## TRINIDAD LAKE




Work on the Trinidad Lake Project, authorized under the Flood Control Act of 1958, began in April 1968 and is expected to be completed by the mid-1970's. Situated on the Purgatoire River about 2 miles southwest of Trinidad, Colorado, this project presented the District some unique problems. The land acquisition program involved the razing of four small mining communities, the relocation of two cemeteries, 13 miles of roadway, nearly 9 miles of railroad trackage, and about 6 miles of power and telephone lines.

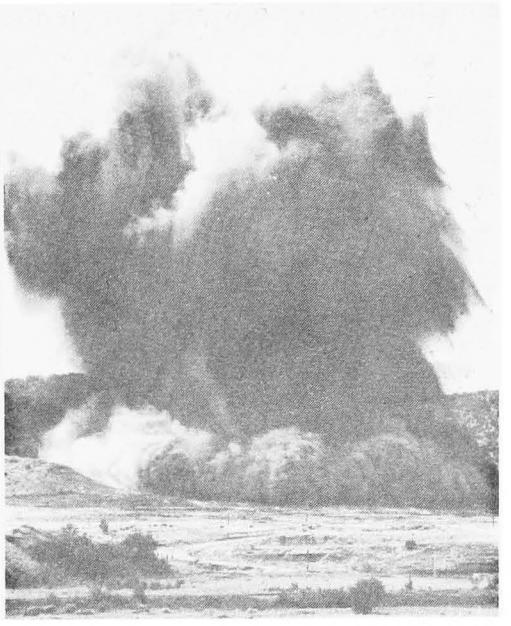
Another unusual feature of the project was the use of explosive cratering to cut two railroad passes through hills on the site in order to relocate tracks of the Colorado and Wyoming Railroad. Explosive cratering is the use of chemical charges to break up ground material and to expel it from the resultant crater. Cratering was performed by the U.S. Army Corps of Engineers' Explosive Excavation Research Office with headquarters in Livermore, California--an activity of the Corps' Waterways Experimental Station, Vicksburg, Mississippi.

The first cratering was conducted in December 1970 and the second in September of 1971. Both craterings were highly successful. The first cut a gap about 400 feet long, 46 feet deep, and 15-20 feet wide. The second cratering cut a 500-foot gap with a depth and width similar in size to the first.

The dam is designed to provide flood protection to the city of Trinidad and vicinity and regulate the available irrigation water supply. By 1971, the operations building, outlet works, and spillway were complete and construction of the main embankment is scheduled to begin in the summer of 1972. Trinidad Dam, when completed, is to be a 200-foot high, 6,610-foot long earthfill structure. An uncontrolled spillway is planned for the left abutment. Flood control and irrigation releases are to be made through a gated conduit 10 feet in diameter, located in the right abutment.

Planned capacity of the reservoir is 114,500 acre-feet, of which 51,000 acre-feet has been allocated to flood control, 20,000 to irrigation, 4,500 for a permanent pool, and 39,000 for sediment retention. The lake is to consist of about 230 surface acres with several areas on the north shore and one on the south being reserved for recreational development.

EXPLOSIVE CRATERING AT
TRINIDAD LAKE, COLORADO



## ALBUQUERQUE DIVERSION CHANNELS

Flooding in Albuquerque is caused by runoff from the ephemeral streams originating in the Sandia Mountains east of the city. Numerous small arroyos run off the western slope of the precipitous mountain range and flow westward across steep, alluvial slopes to the bluff at the edge of the Rio Grande valley. Some minor streams originate on the alluvial plain itself, and Tijeras Canyon, the largest tributary, has its source east of the Sandia range and flows through the mountains in a deeply incised canyon. From the bluff line of the valley the streams debouch onto the lowlands. Since there are no outlets across the valley floor to the river, floodwaters pond in the areas along the river.

To alleviate damage from flash floods the Albuquerque Diversion Channels Project was authorized under the Flood Control Act of 1954. Then in 1963, by legislative enactment, the State of New Mexico created the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) to provide local sponsorship for the project. Land and interests required for the project were acquired by AMAFCA--mostly by condemnation.

The improvement plan provided for construction of two large diversion channels and appurtenant works to be located on high ground east of, and in general parallel to, the Rio Grande. One of the channels drains to the north, intercepting flows from the numerous arroyos north of Interstate 40, for diversion into the river through a drop structure located near Alameda, New Mexico. The other channel intercepts flows from south of Interstate 40 and diverts them into the Rio Grande through an outfall channel at Tijeras Canyon. The North Channel is fully operative while the South Channel is still under construction.

Construction on the project began in February 1965 and by 1971 was over 75 per cent complete. The project is expected to be fully operative early in 1972.

NORTH DIVERSION CHANNEL, ALBUQUERQUE

## EL PASO LOCAL PROTECTION PROJECT

Runoff from tributary arroyos on the eastern, southern, and western slopes of the nearby Franklin Mountains often inundates sections of El Paso, Texas. To alleviate this situation the El Paso Local Protection Project, Texas, was authorized by the Flood Control Act of 1965. Construction of the project began in January of 1971.

The project consists of a single purpose flood control system of detention dams, diversion dikes, and channels to collect, regulate, and discharge arroyo runoff into the Rio Grande. The project has been divided into four units: the Northwest Area; Central Area; and the Copper System and Bluff Channels in the Southeast Area. By recommendation of the International Boundary and Water Commission (IB&WC) improvement plans have been modified to place priority on the Northwest Area with the construction of additional dams and minimal channel work. Meanwhile pre-construction planning for the development of the Central Area is moving ahead.

## EMERGENCY FLOOD RELIEF

During flood emergencies the Corps of Engineers has assisted in flood fighting and rescue operations. When specifically requested by local interests the Corps, after economic and engineering studies are made, has repaired damaged flood control works. The major portion of emergency work performed by the Albuquerque District

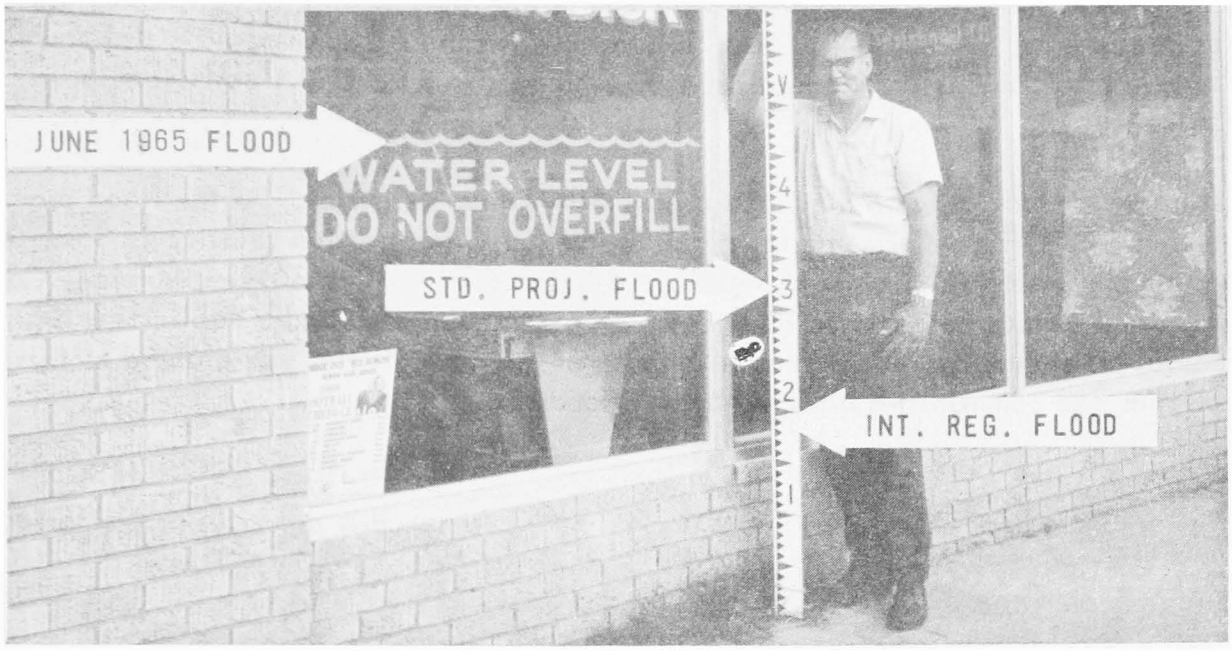
has been along the main stem of the Rio Grande but with the disastrous floods of 1965 in the Upper Arkansas and Canadian River Basins the District's emergency flood relief programs covered a wider area.

On June 17, 1965 an enormous storm, centered near Colorado Springs, Colorado, developed over the Arkansas River Basin and moved eastward into Kansas. In places the rainfall was so intense that up to 12 inches fell in only three hours--transforming the countryside into a flowing lake. Farmland in many areas was inundated to depths of six feet. There was extensive damage to the Colorado communities of Pueblo, North La Junta, Lamar, Granada, and Holly. John Martin Reservoir, empty on June 14 contained 336,000 acre-feet of water by June 30.

These phenomenal floods in Colorado generated a discharge estimated at 200,000 cfs in the Arkansas River where it enters Kansas. As the flow moved east, its intensity gradually decreased. Nevertheless, without any major flood control structures on the main stem of the Arkansas River below John Martin Dam, devastation by flood waters in West Kansas was severe. Uncontrolled, the flood spread across West Kansas' Arkansas River valley, inundating cities, towns, farms, highways, and railroads. Syracuse, Garden City, Dodge City, Kinsley, and Great Bend, Kansas were hard hit.

Agricultural damage in West Kansas was extensive. Thousands of acres of croplands and pastures were flooded and overladen with deep deposits of silt. Wheat ready for harvest was destroyed in the field. Livestock losses were numerous.


DELMONICO RESTAURANT, DODGE CITY 1965




DODGE CITY BUSINESSMAN POINTS OUT 1965 HIGH WATER MARK

The flood of 1965 is legendary with inhabitants of the Upper Arkansas River Basin and of course--with the personnel of the Albuquerque District. But Colorado and West Kansas were not the only areas of serious flooding within the District in 1965.

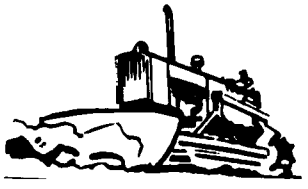
The Canadian River Basin in northeastern New Mexico had already experienced a wet spring when storms broke over the eastern slopes of the Sangre de Cristo Mountains on June 14, 16, and 17, 1965. The intense rainfall created a runoff which descended from the high country and spread across the plains washing out fences, bridges, and roads. In some areas the floodwaters spread to a width of two miles. Sediment and debris were deposited on hundreds of acres of grasslands. In the brief period between June 14 and 18 water storage in Conchas Reservoir increased some 160,200 acre-feet.

Damage from the flood was limited because of the sparsely settled region involved. Hardest hit was the Philmont Scout Ranch where flood waters damaged fishing and water supply lakes, tent camps, and some permanent improvements. Ten thousand Boy Scouts enroute to the ranch were stranded by the floods in communities throughout New Mexico, Colorado, and Kansas.

Cleanup and rehabilitation efforts associated with the June 1965 floods were impressive. Local, state, and federal agencies received invaluable assistance from a host of religious, civic, business, and social organizations.

District field offices were temporarily established in Pueblo, Colorado and Dodge City, Kansas to direct emergency repair and rehabilitation work as authorized under Public Laws 99 and 875. Close liaison between the Albuquerque District and the Office of Emergency Planning continued throughout flood and post-flood activities.

Estimates of damage were furnished by the Albuquerque District. As the flood progressed, the Office of Emergency Planning compiled information relative to damage and recommended to President Lyndon B. Johnson that portions of New Mexico, Colorado, and Kansas be declared disaster areas. Consequently, under Public Law 875, federal assistance for repairs and restoration of public facilities was granted to those counties and communities affected by the floods.



# CHAPTER VI

# THE ALBUQUERQUE DISTRICT AFTER THIRTY SIX YEARS

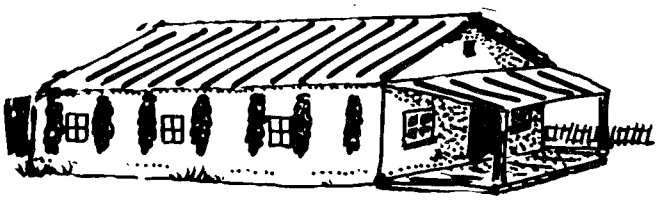
## PRECONSTRUCTION PLANNING

During the 1960's, the Albuquerque District had seven projects on which preconstruction planning was virtually complete: Los Esteros Lake, New Mexico; and local protection projects at Alamogordo, Espanola, Las Cruces, New Mexico; Dodge City, Kansas; Las Animas, Colorado; and Pecos, Texas.

Los Esteros Project. This project provides for a dam on the Pecos River seven miles upstream from Santa Rosa, New Mexico. The dam is to be 1,950 feet long and 212 feet high with an uncontrolled spillway. Controlled outlet works are to be located under the left abutment. The reservoir is designed to hold 529,500 acre-feet, of which 247,500 is for flood control, 200,000 for irrigation, and 82,000 for sediment retention. Los Esteros Dam is to be operated in conjunction with the existing Alamogordo Dam, downstream on the Pecos, under terms of the Pecos River Compact for Flood Control and Irrigation.

Alamogordo Diversion Channel Project. Flooding at Alamogordo, New Mexico results from storm runoff descending from the western slopes of the nearby Sacramento Mountains. In recent years, the city has experienced rapid growth and has built into areas unprotected from flooding. Waterflow from Dry, Beeman, and Marble Canyons presents a problem which is beyond solution by local interests alone.

The authorized improvement plan consists of a diversion channel about seven miles long aligned generally in a north-south direction east of the city. The channel is designed to have sufficient capacity to intercept flood waters from all arroyos in its path and to convey the waters westward through Dillard Draw to an undeveloped area where the water will be dissipated by evaporation and percolation.



The Espanola Valley Unit, Rio Grande Floodway. This unit extends about 24 miles downstream from Velarde, New Mexico to the Otowi Bridge. District work in this reach of the Rio Grande is limited to providing flood protection to urban developments on both banks of the river within the town of Espanola. The proposal calls for about 2.3 miles of existing levees to be raised and strengthened. Rebuilt levees are to have a maximum height of 14 feet, a crest width of 12 feet, and a minimum freeboard of three feet above the planned surface level of the river. Levees are to be protected from scour by flexible-type steel jetties. Initiation of construction depends on fulfillment of requirements of local cooperation by the town of Espanola, sponsor of the project.

Las Cruces, New Mexico. Situated on the eastern bank of the Rio Grande, this city is in the path of numerous tributary streams which head on the western slope of the Organ Mountains, or on the alluvial outwash plain, and flow through the city to the Rio Grande. The principal damage-producing streams are Las Cruces and Alameda Arroyos and, to a lesser degree, Campus Arroyo, which drains into the campus of New Mexico State University. The Rio Grande itself is not a threat.

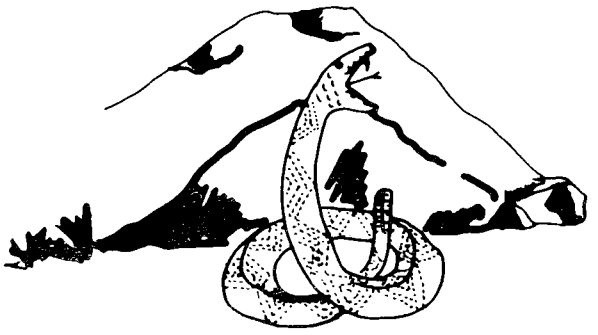
The authorized plan of improvement consists of construction of Las Cruces Dam to be built east of the city to impound waters from Las Cruces and Alameda Arroyos. Local interests have requested that further studies of the Campus Arroyo be discontinued. The project is designed to provide Las Cruces a high degree of protection from flash flooding. The dam is to be an earthfill structure 15,570 feet long, and 67 feet high. Preconstruction planning is complete but initiation of the project awaits the fulfillment of local cooperation required by law.

Dodge City, Kansas. This city, located on the Arkansas River about 130 miles downstream from the Colorado line, has a lengthy history of flood damage. However, the construction of John Martin Dam upstream some 188 miles has lessened the threat of flood damage somewhat. Construction of a local protection improvement to prevent flooding of Dodge City and vicinity was authorized under the Flood Control Act of 1962. The project is to consist of seven miles of levees along both banks of the river through the city; enlargement of the channel between the levees to form a floodway; and construction of interior drainage facilities as required. Preconstruction planning is virtually complete.

Las Animas, Colorado. Located on the south bank of the Arkansas River just upstream from its confluence with the Purgatoire River, this town has been threatened by floodwaters from both rivers. The planned improvement calls for a 9.6-mile long levee on the south bank of the Arkansas River and a one mile long levee along the north bank. Appurtenant works include levee protection, construction of intake structures for irrigation canals, an interior drainage system, and a ditch and ponding area.

Pecos, Texas Local Protection Project. This improvement, authorized under the Flood Control Act of 1954, provides for the construction of an integral system of diversion floodways and levees to protect the city from floodwaters originating in such streams as Hurds Well Draw, Cottonwood Creek, Nine Mile Draw, and the Pecos River. The diversion channel is to convey flows from the streams down into the Pecos River while a levee and drainage ditch near the northern limits of the city are to control runoff below the diversion project and prevent backwater flooding from the river.

Planning of the project began in 1958 and was suspended in 1960 when the city was unable to meet local cooperation requirements. Then, in 1965, the City Council pledged the necessary cooperation with the federal government and the Albuquerque District accepted the project. When funding is available, preconstruction planning is to be resumed.



## DISTRICT CONSOLIDATION AND REORGANIZATION

On March 6, 1970, the Chief of Engineers, Lieutenant General Frederick J. Clarke, with the approval of the Secretary of Defense, informed the Albuquerque District of the transfer of all its military construction and civil defense functions--except those related to Real Estate--to the Fort Worth District, Fort Worth, Texas. The change was made in the interest of economy.

While the effective date of the transfer was March 29, there was of necessity a period of transition during which personnel and record data were relocated at Fort Worth. By July 1, the transfer was virtually complete.

Final report on reduction of personnel was issued by the District on August 31, 1970. At the initiation of the transfer the District had 471 employees while at its completion there were only 245--including a few temporary workers. A total of 226 positions were abolished. Of these, 95 were transferred to positions with the Fort Worth District, 34 retired, 14 resigned, 62 were placed with other federal agencies, and 21 were terminated for various reasons. On August 31, 1970 there were only 245 employees left with the Albuquerque District--including 17 engaged in Real Estate functions for military works. The belt had been tightened indeed!

# ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS

## EXECUTIVE OFFICE

COL J. L. Sutton — District Engineer — Ext 2732 — SWADC

LTC W. D. Horton, Jr. — Deputy District Engineer — Ext 2733 — SWADD

1Lt D. H. Carver
1LT B. Garcia
1LT R. C. Kirchner
1Lt S. M. Kirk
1LT R. J. Leon
1LT R. D. Monclieth
1LT I. W. Muir
1LT F. F. Snipes
1LT G. S. Tiracorda

517 Gold Avenue SW
P. O. Box 1580
Albuquerque, New Mexico 87103 — FTS: 505-846+Extension

## FT. WORTH DISTRICT (SUPPORT)

Functions provided by Support District:

Personnel Office

## SPECIAL ASSISTANTS

- D. C. Cleghorn, EEOO — SWAEE — Ext 2735
- J. T. Guiney, VE Officer — SWAVE — Ext 2710
- J. Ramsey, Jr. Emerg Opns Planner — SWAOP — Ext 2689
- C. E. Wisner, Scty Off — SWAPM — Ext 2738

## BOARDS AND COMMITTEES

ADP Coordinating Committee
ADP Steering Committee
A-E Preselection Board
A-E Selection Board
Board of Awards
Contract Termination Board
Engineer Recreation Association
Honorary Awards Committee
Incentive Awards Committee
Message Review Board
Safety Improvement Committee
Symposium Committee
Training Committee

## ADVISORY AND ADMINISTRATIVE STAFF

### OFFICE OF THE COMPTROLLER

U. J. Miller — Compt. — Ext 2734 — SWADC

| MANAGEMENT ANALYSIS BR. | FINANCE & ACCTG BRANCH |
|---|---|
| D. C. Cleghorn, Chief — Ext 2735 — SWADC-M | T. J. Gilbert, Chief — Ext 2696 — SWADC-F |
| **AUDIT BRANCH** | **BUDGET BRANCH** |
| W. E. Marrable, Chief — Ext 2737 — SWADC-A | Mrs P. A. Paschke, Chief — Ext 2747 — SWADC-H |

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### PUBLIC AFFAIRS OFFICE

- C. E. Wisner — Chief — Ext 2738 — SWAPA

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### ADP CENTER

T. F. Heidt, Jr. — Chief — Ext 2630 — SWAAD

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### OFFICE OF COUNSEL

S. G. Henry — Dist Counsel — Ext 2725 — SWAOC

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### SAFETY OFFICE

- J. Ramsey, Jr. — Chief — Ext 2689 — SWASO

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### OFFICE OF ADMIN SERVICES

Miss A. M. Woelk — Chief — Ext 2731 — SWAAS

| GENERAL SVC BRANCH | REPRODUCTION BRANCH |
|---|---|
| Mrs G. G. Wallace, Chief — Ext 2732 | H. Sanchez, Chief — Ext 2670 |

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## TECHNICAL STAFF

### OPERATIONS DIVISION

L. H. Plett — Chief — Ext 2721 — SWAOD
J. E. Butterworth — Asst — Ext 2722

**PROJECT OPERATIONS BRANCH**
- J. E. Butterworth — Chief — Ext 2722 — SWAOD-P

**PLANT BRANCH**
- G. O. Perrin — Chief — 264-5321 — SWAOD-A

**OFFICE OPERATIONS BRANCH**
- D. W. Janssen — Chief — Ext 2723 — SWAOD-O

**PERMITS & STATISTICS BRANCH**
- Vacant — Chief — Ext 2723 — SWAOD-R

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### ENGINEERING DIVISION

G. A. Walhood — Chief — Ext 2611 — SWAED

| DESIGN BRANCH | PROGRAM DEVELOPMENT BR. |
|---|---|
| C. R. Henry, Chief — Ext 2613 — SWAED-T | G. Lasley, Chief — Ext 2787 — SWAED-G |
| **PLANNING & REPORTS BRANCH** | **FOUNDATIONS & MATERIALS BR** |
| F. G. Corle, Jr., Chief — Ext 2610 — SWAED-E | L. C. Slack, Chief — Ext 2714 — SWAED-F |
| **FLOOD PLAIN MGT. SERVICES BR.** | |
| H. W. Hill, Chief — Ext 2615 — SWAED-P | |

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### CONSTRUCTION DIVISION

J. L. Jones — Chief — Ext 2764 — SWACD
A. C. Frank — Asst — Ext 2765

**OFFICE ENGINEERING BR.**
- W. M. Criswell — Chief — Ext 2760 — SWACD-O

**SUPERVISON & INSP BR.**
- L. G. Bradley — Chief — Ext 2775 — SWACD-S

**CONSTRUCTION SVC. BR.**
- Miss O. S. Fernandez — Chief — Ext 2765 — SWACD-C

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### SUPPLY DIVISION

- M. C. Apodaca — Chief — Ext 2680 — SWASD

**CONTRACTS ADMIN. BR.**
- M. C. Apodaca — Chief — Ext 2680

**PROCUREMENT BR.**
- E. M. Garcia — Chief — Ext 2694

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### REAL ESTATE DIVISION

L. A. Guenther — Chief — Ext 2701 — SWARE

**ACQUISITION BR.**
- T. C. Moody — Chief — Ext 2703 — SWARE-A

**APPRAISAL BR**
- H. D. Clayton — Chief — Ext 2709 — SWARE-E

**PLANNING & CONTROL BR.**
- H. C. Clement — Chief — Ext 2707 — SWARE-P

**MANAGEMENT & DISPOSAL BR.**
- F. B. Martinez — Actg Chief — Ext 2815 — SWARE-M

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## FIELD OFFICES

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### GALISTEO DAM PROJECT OFC

- L. E. Reynolds — Supt — Santa Fe Co., NM — SWAOD-PG

### JEMEZ CANYON DAM PROJ. OFC

- L. E. Reynolds — Supt — Bernalillo, NM — SWAOD-PJ

### TWO RIVERS RESV. PROJ. OFC

R. C. Roberts — Supt — Roswell, NM — SWAOD-PT

### ALBUQUERQUE RESIDENT OFC

- R. D. Blum — Res Engr — 843-2754 — SWARC-A — Albuquerque, NM — AC 505

### COCHITI RESIDENT OFC

C. C. Johanson — Res Engr — 242-8302 — SWARC-C — Pena Blanca, NM — AC 505

### EL PASO RESIDENT OFC

- R. D. Blum — Res Engr — 568-6985 — SWARC-E — El Paso, TX — AC 915

### TRINIDAD RESIDENT OFC

B. J. Cheatham — Res Engr — 846-7990 — SWARC-T — Trinidad, CO — AC 303

### ABIQUIU DAM RESIDENT OFC

J. R. Hurt — Res Supt — 685-2234 — SWARC-A — Abiquiu, NM — AC 505

### CONCHAS LAKE RESIDENT OFC

R. A. Buchhagen — Res Supt — 868-2221 — SWARC-C — Tucumcari, NM — AC 505

### JOHN MARTIN RESV RES. OFC

W. L. Lindsey — Res Supt — 855-2321 — SWARC-J — Hasty, CO — AC 303

APPROVED:

JAMES L. SUTTON
COLONEL, CE
DISTRICT ENGINEER

After the transfer of all military construction to the Fort Worth District it was necessary for the Albuquerque District to consolidate and reorganize in order to fully utilize its remaining personnel. Adjustments were made throughout the entire organization so that optimum achievement could be attained by a staff greatly reduced in number.

In a sense the Albuquerque District has traveled full circle: it had begun as a civil works District; with the outbreak of World War II and the continuation of "cold war" tensions military assignments became commonplace; but with the directive of March 6, 1970 the District reverted to its former status.

In its first 36 years, the Albuquerque District has accomplished many worthy projects. Major dams and reservoirs provide flood protection, water resources for recreation, irrigation, and municipal use. Floodways and diversion channels protect urban areas from the danger of floods. Communities both large and small can take pride in military bases the District has built in their vicinity. Near the center of the District's territory lies the largest missile range and proving grounds in the United States; and the Los Alamos-Sandia Base complex gives testimony to the District's role in the development of the nation's nuclear capabilities.

The District has moved forward from the days of the "pick and shovel" to the era of space travel, lunar landings, and vehicular exploration of the moon's surface. The work of the Albuquerque District continues amidst profound change.

ESSAYONS

# APPENDIX

## ALBUQUERQUE DISTRICT ENGINEERS

| Name | Rank | Date Assigned |
|---|---|---|
| Hans Kramer | Captain, U.S.A. (Brig. General) | August 1935 |
| James H. Stratton | Captain, C.E. (Brig. General) | November 1939 |
| Lyle Rosenberg | Colonel, C.E. | December 1941 |
| Reuben E. Cole | Lt. Colonel, C.E. | May 1943 |
| Henry F. Hannis | Colonel, C.E. | May 1946 |
| Joseph O. Killian | Colonel, C.E. | June 1948 |
| Charles H. McNutt | Colonel, C.E. (Brig. General) | December 1949 |
| Lynn C. Barnes | Colonel, C.E. | January 1953 |
| Robert E. Cron, Jr. | Colonel, C.E. | September 1955 |
| Albert L. Reed | Colonel, C.E. | September 1957 |
| John F. Arfman | Colonel, C.E. | August 1960 |
| Gerald W. Homann | Colonel, C.E. | August 1963 |
| James H. Hottenroth | Colonel, C.E. | August 1966 |
| Richard L. West | Colonel, C.E. (Brig. General) | August 1969 |
| James L. Sutton | Colonel, C.E. | July 1971 |

## MAJOR DAMS CONSTRUCTED BY THE ALBUQUERQUE DISTRICT

| Name | Reservoir Capacity (acre-feet) | Cost (million) | Year Completed |
|---|---|---|---|
| Conchas Lake (New Mexico) | 550,800 | $15.75 | 1939 |
| John Martin Reservoir (Colorado) | 618,600 | $15 | 1948 |
| Jemez Canyon Dam (New Mexico) | 111,700 | $4.1 | 1953 |
| Abiquiu Dam (New Mexico) | 1,215,800 | $21.2 | 1963 |
| Galisteo Dam (New Mexico) | 153,400 | $14.1 | 1970 |
| Cochiti Lake (New Mexico) | 736,000* | $85.9* | mid-1970's* |
| Trinidad Lake (Colorado) | 150,000* | $43.8* | mid-1970's* |

*estimated

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## TRANSFER OF MILITARY WORKS FROM ALBUQUERQUE, 1970

| Unit | Military | Civil (March ) | Military | Civil (August) |
|---|---|---|---|---|
| Executive Office | 1 | 3 | -- | 1 |
| ADP | 2 | 5 | -- | 3 |
| Public Affairs Office | -- | 2 | -- | 2 |
| Safety | 1 | 1 | -- | 1 |
| Counsel | 3 | 4 | -- | 4 |
| Personnel | 5 | 5 | -- | -- |
| Comptroller | 15 | 19 | -- | 20 |
| Office of Administrative Services | 12 | 9 | -- | 17 |
| Operations Division | 2 | 35 | -- | 43 |
| Supply Division | 2 | 4 | -- | 4 |
| Construction Division | 62 | 31 | -- | 31 |
| Engineering Division | 96 | 118 | -- | 89 |
| Real Estate | 25 | 9 | 17 | 13 |
| sub-total | 226 | 245 | 17 | 228 |
| Total | 471 | | 245 | |

## ALBUQUERQUE DISTRICT FLOOD CONTROL WORK UNDER SPECIAL CONTINUING AUTHORITIES

The following tabulation lists emergency work performed by the Albuquerque District over the years in the Rio Grande, Pecos River, and Arkansas River watersheds under various Congressional continuing authorities:

Emergency Repairs. Authority: Public Law No. 138, 78th Congress; Public Law No. 75, 79th Congress; and Public Laws Nos. 102 and 858, 80th Congress.

| Locality | Type of Work | Federal Cost | FY Completed |
|---|---|---|---|
| New Mexico | | | |
| Middle Rio Grande Valley | Levee repairs | $396,400 | 1945 |
| Arroyo de la Matanza, Socorro | Diversion dike repair | $6,900 | 1948 |
| Middle Rio Grande Valley | Levee repairs | $272,900 | 1950 |
| Rio Grande, Santa Cruz Irrigation District | Levee protection | $41,300 | 1952 |
| Colorado | | | |
| Arkansas and Purgatoire Rivers | Various | $13,270 | 1949 |
| Arkansas and Purgatoire Rivers | Various | $73,934 | 1950 |
| Arkansas and Purgatoire Rivers | Various | $15,562 | 1955 |
| Arkansas and Purgatoire Rivers | Various | $181,797 | 1965 |
| Arkansas and Purgatoire Rivers | Various | $477,885 | 1966 |
| Arkansas and Purgatoire Rivers | Various | $11,306 | 1967 |

Emergency Flood Control Activities: Authority: Public Law No. 99, 84th Congress, 1st Session, and antecedent legislation:

| | | | |
|---|---|---|---|
| New Mexico | | | |
| Middle Rio Grande Valley | Levee repairs and flood fighting operations | $49,100 | 1943 |
| Middle Rio Grande Valley | Plans for levee repairs | $12,300 | 1950 |
| Middle Rio Grande Valley | Levee repairs and flood fighting operations | $48,400 | 1953 |
| Rio Hondo, Roswell | Levee repairs | $4,300 | 1954 |
| Rio Grande, Riverside and Espanola | Channel improvement and repair | $56,400 | 1955 |
| Rio Grande, Socorro | Channelization and levee protection | $42,900 | 1956 |
| Raton Creek, Raton | Channel repair and restoration | $78,700 | 1957 |

| | | | |
|---|---|---|---|
| Arroyo Mascaras, Santa Fe | Channel repair and restoration | $104,400 | 1959 |
| Rio Grande, Santo Domingo | Repair of bank protective works | $35,300 | 1959 |
| Santa Fe River and Arroyo Mascaras, Santa Fe | Channel repair and restoration | $200,000 | 1971 |

Emergency Repairs. Authority: Public Law 371, 82nd Congress, approved on June 4, 1952.

New Mexico

| | | | |
|---|---|---|---|
| Middle Rio Grande Valley | Levee repair and rehabilitation | $540,000 | 1954 |

Snagging and Clearing. Authority: Section 2 of the Flood Control Act approved August 28, 1937, as amended.

New Mexico

| | | | |
|---|---|---|---|
| Rio Hondo, Roswell | Channel clearing and straightening | $40,200 | 1951 |
| Rio Grande, Espanola | Plans for channel snagging and clearing | $800 | 1952 |
| Rio Grande, Velarde Valley | Channel clearing and straightening | $16,800 | 1953 |
| Rio San Jose, Casa Blanca | Channel clearing and snagging | $29,400 | 1956 |
| Rio Chama, Chili | Channel clearing and snagging | $25,000 | 1970 |

Colorado

| | | | |
|---|---|---|---|
| Greenhorn Creek, Rye | Channel clearing and snagging | $11,660 | 1948 |
| Eight Mile Creek, Florence | Channel clearing and snagging | $21,328 | 1951 |
| Wildhorse Creek, Holly | Channel clearing and snagging | $21,222 | 1951 |
| Arkansas River, Las Animas | Channel clearing and snagging | $35,818 | 1956 |
| Arkansas River, La Junta | Channel clearing and snagging | $66,609 | 1956 |
| Arkansas River, Canon City | Channel clearing and snagging | $74,609 | 1961 |
| Rio Grande, Alamosa | Channel clearing and snagging | $15,813 | 1949 |

Emergency Bank Protection Work. Authority: Flood Control Act approved December 22, 1944, as amended.

| | | | |
|---|---|---|---|
| New Mexico | | | |
| Rio Grande, Espanola Valley | Structural steel jetties; bank protection and channelization | $28,200 | 1952 |
| Mora River, Mora | Bank protection and channelization | $25,400 | 1960 |
| Rio Chama, Chili | Bank protection and channelization | $59,750 | 1970 |
| Colorado | | | |
| Arkansas River, Florence | Bank protection and channelization | $22,608 | 1950 |
| Arkansas River, Manzanola | Bank protection and channelization | $32,175 | 1950 |
| Purgatoire River, Trinidad | Bank protection and channelization | $3,880 | 1950 |
| Purgatoire River, Higbee | Bank protection and channelization | $30,120 | 1950 |
| Arkansas River, Fowler | Bank protection and channelization | $12,055 | 1951 |
| Arkansas River, Las Animas | Bank protection and channelization | $25,614 | 1952 |
| Purgatoire River, Trinidad | Bank protection and channelization | $43,034 | 1956 |
| Arkansas River, Rocky Ford | Bank protection and channelization | $18,921 | 1958 |
| Arkansas River, La Junta | Bank protection and channelization | $27,955 | 1959 |
| Arkansas River, Canon City | Bank protection and channelization | $46,380 | 1961 |

ALBUQUERQUE DISTRICT GENERAL INVESTIGATIONS, 1960-1971: STUDIES COMPLETED AND IN PROGRESS

| Locality | Initiated | Completed | Cost to June 30, 1971 |
|---|---|---|---|
| Rio Grande, and Tributaries, Las Cruces, New Mexico | 1957 | 1961 | $84,183 |
| Arkansas River, Dodge City, Kansas | 1957 | 1962 | $24,237 |
| Alamogordo, New Mexico and Vicinity | 1959 | 1962 | $60,000 |

| | | | |
|---|---|---|---|
| El Paso, El Paso County, Texas | 1960 | 1965 | $158,500 |
| Arkansas River and Tributaries, Las Animas, Colorado and Vicinity (Interim) | 1961 | 1964 | $53,131 |
| Arkansas River, Great Bend, Kansas and Vicinity (Interim) | 1961 | 1964 | $74,018 |
| Arkansas River and Tributaries above John Martin Dam, Colorado (Exclusive of Las Animas, Colorado) | 1958 | -- | $517,368 |
| Rio Grande and Tributaries, New Mexico (Rio Puerco and Rio Salado Interim Report) | 1962 | -- | $137,517 |
| Arkansas River from Great Bend, Kansas to John Martin Dam, Colorado (Exclusive of the Great Bend Interim Report) | 1963 | -- | $545,482 |
| Santa Fe River and Mascaras Arroyo, Santa Fe, New Mexico | 1963 | -- | $148,502 |
| Pecos River Basin above Santa Rosa, New Mexico | 1963 | -- | $216,225 |
| Rio Hondo and Tributaries, and Rio Felix and Tributaries Pecos River Basin, New Mexico | 1964 | -- | $229,682 |
| Pecos River and Tributaries at and in the Vicinity of Alpine, Texas | 1966 | -- | $167,833 |
| Sanderson, Terrell County, Texas (inactive as of June 1971) | 1967 | -- | $5,000 |
| Cibola Creek at and in the Vicinity of Presidio, Texas | 1968 | -- | $59,636 |
| Pecos River and Tributaries, Carlsbad, New Mexico, and Vicinity | 1969 | -- | $24,386 |
| Pojoaque River and Tributaries, New Mexico | 1969 | -- | $34,711 |
| Rio Grande and Tributaries, New Mexico (Excluding Rio Puerco and Rio Salado Interim Report) | 1970 | -- | $19,000 |

## PUBLICATIONS PRODUCED BY THE FLOOD PLAIN MANAGEMENT SERVICES BRANCH

| Title | Date |
|---|---|
| Flood Plain Management Services (5-panel folder) | July 1967 |
| Flood Plain Information, Arroyo de los Chamisos and Arroyo Hondo, Santa Fe, New Mexico (report and brochure) | December 1967 |
| Flood Plain Information, Santa Fe River, Santa Fe, New Mexico (report and brochure) | May 1968 |
| Flood Plain Information, Fountain Creek, Pueblo, Colorado (report and brochure) | October 1968 |
| Flood Plain Information, Goodnight Arroyo, Dry Creek and Wild Horse-Dry Creek, Pueblo, Colorado (report and brochure) | April 1969 |
| Existing Legislation and Proposed Model Flood Plain Ordinance for New Mexico Municipalities (report by the University of New Mexico) | May 1969 |
| Flood Plain Information, Rio Grande, Monte Vista, Colorado (report and brochure) | June 1969 |
| Flood Plain Information, Arkansas River, Dodge City, Kansas (report and brochure) | December 1969 |
| Flood Plain Information, St. Charles River, Pueblo, Colorado (report and brochure) | March 1970 |
| Special Flood Hazard Information, Arkansas River, Fort Dodge-Wilroads Gardens, Vicinity of Dodge City, Kansas (report) | June 1970 |
| Flood Plain Information, Albuquerque Arroyos, Part I, Albuquerque, New Mexico (report and brochure) | June 1970 |
| Supplemental Flood Plain Information to Albuquerque Arroyos, Part I, Albuquerque, New Mexico, June 1970 (report) | February 1971 |

| | |
|---|---|
| Flood Plain Information, Arkansas and Pawnee Rivers, Lamed, Kansas (report and brochure) | February 1971 |
| Flood Insurance Study, Las Cruces, New Mexico (report prepared for HUD Federal Insurance Administration; not released other than to FIA and within COE) | April 1971 |
| Flood Plain Information, Monument Creek, Colorado Springs, Colorado (report and brochure) | May 1971 |
| Special Flood Hazard Information, Alameda and Las Cruces Arroyos, Las Cruces, New Mexico (report) | June 1971 |
| Flood Plain Information, Albuquerque Arroyos, Part II, Albuquerque, New Mexico (report and brochure) | July 1971 |

Additional information may be obtained from:

Public Affairs Office
USA Engineer District, Albuquerque
P. O. Box 1580
Albuquerque, New Mexico 87103

517 Gold Avenue, SW Room 8005
Telephone number: 505-843-2738