

Chapter 2: Construction and Water Development Since Reacquisition, 1954.

Introduction.

Fort Huachuca's reactivation and eventual reacquisition by the Army between 1951 and 1954 has led to its permanent use. The long garrison period between WWI and WWII was replaced by training and other activities during WWII. Following the state's acquisition and ^{dedication} ~~use~~ of the area as a game preserve and National Guard training area, its use during the Korean War revolved primarily around training aviation engineer units. However, location of the US Army Electronic Proving Ground (USAEPG) at Fort Huachuca in 1954 ^{REPLACED A} ~~shifted~~ ^{AT} the fort to an emphasis on development and testing of electronic devices to be used in the national defense; although training soldiers in their maintenance and use in a variety of conditions ^{CONTINUED TO} ~~has played~~ an important role. The electronic warfare age replaced garrison life, mobilization and combat training troops, experienced at the fort between 1919 and 1945. Further, with the arrival of the USAEPG came changes in the physical plant. Besides field testing requirements, the ~~USAEPG~~ USAEPG also needed large barracks, offices, and laboratory complexes. As other new tenant units arrived, post planners ~~had~~ built the additional structures needed; Greely Hall is ^{ONE} ~~perhaps the most~~ obvious example. Further, longer-term assignments during peacetime resulted in the need for housing for both military and civilian personnel and their families. While the town of Sierra Vista ~~has~~ grew with the influx of civilian workers, so ~~to~~ grew the number of housing units on post available to military families. These factors led to ^{AN ALMOST} ~~constant~~ concern about the adequacy of the post's water supply.

This chapter will discuss three major topics: the growth and evolution of important tenant units on the post; the mission of important tenant units assigned to the post; and the post's response, both in buildings and resulting requirements for an increased water supply. It will not provide a building-by-building or unit-by-unit discussion, focusing instead on a more broad evaluation of development and construction, and key events during the post-1954 period.

THE USAEPG PERIOD, 1954-1967.

The US Army Electronic Proving Ground (USAEPG) was the first unit to occupy the post upon its permanent reactivation in February 1954. By July two units, the 1st and 505th Signal Groups ~~had~~ arrived. The USAEPG was an arm of the Signal Corps, which up to that time ~~had~~ operated primarily from Fort Monmouth, New Jersey. Fort Huachuca's remote location made it a better area ^{than New Jersey} for testing military electronic devices, as it was free from other signal interference and was far enough away from major cities ^(to not) disrupt civilian radio and television signals. ~~It~~ ^{The Army assigned} ~~was assigned~~ ^{USAEPG} to Fort Huachuca for the purpose of testing and evaluating military electronic equipment developed for the Army, and to assess the performance and dependability of electronic devices relied on and utilized in combat. These include a wide array of items used by soldiers for surveillance, communications, avionics, automatic data processing, meteorology, and electronic warfare. The USAEPG concentrated on testing communication equipment, such as radios, digital data transmission systems, aircraft surveillance systems, among others, as part of the Army's Test and Evaluation Command, a branch of the U.S. Army Material Command. The USAEPG was the main headquarters at the post until the arrival of STRATCOM in July 1967.¹

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The arrival of the USAEPG resulted in a building boom both on and off the post. There was an immediate need for all types of buildings on the post -- technical facilities, barracks, messes, warehouses, shops, and family housing for both military and civilian personnel. The USAEPG used existing structures, particularly WWII era mobilization buildings, to fill immediate needs upon arrival. Folsom Moore, Senator Carl Hayden's long-time friend and political ally from Bisbee, advised ^{him} ~~Hayden~~ that during a visit to the fort, post commander General Emil Lenzner had described needed additional buildings, including recreational facilities,

¹IBID, p. 12; Headquarters, US Army Garrison, Fort Huachuca, Arizona, "Fact Sheet," October 1968. Arizona Collection, HM-60 Fact Sheet, ASU, 20-0136.

industrial and testing centers, and "Wherry housing." The general saw housing as particularly important. Moore noted, "he says that he simply must have housing to obtain the civilian assistance absolutely necessary for the full activation of the Fort." General Lenzner requested \$11 million to cover the necessary construction.² Hayden learned from the Secretary of Defense that until Fort Huachuca became a Class II installation (permanent and under the Chief Signal Officer rather than Sixth Army) it would not be eligible for Wherry housing; the other items were in the budget process and would depend on congressional action.³

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Once Fort Huachuca was declared a Class II installation the Secretary of Defense approved a 500 unit project at the fort on October 8, 1954. The army anticipated that the project would be ready for bid in May 1955. News that it would get Wherry units caused some cheer at the post, although ~~the~~ houses ^{would} ~~might~~ address only a quarter of the overall need. General Lenzner advised the *Phoenix Star* that he was concerned that he would be unable to get the civilian staff he needed without adequate housing. Fort authorities estimated that 2,000 families, both military and civilian, lived off post, some commuting from Tucson and Benson on army-supplied buses. Many of the officers' ^{wives} families were unable to join them, ~~and~~ were living in bachelors quarters. Planned growth was rapid: ^{FROM A SKELETON STAFF OF LESS THAN 100 IN JANUARY, BY} ~~in~~ September 1954 there were 945 civilian employees, along with 3,600 enlisted men and 407 officers on the post. The army planned to have 7,200 enlisted men and 800 officers ^{STATIONED} by January 1955; 9,500 military and civilian personnel would be at the post by mid-1955, with an undetermined number of dependents.⁴

²Folsom Moore to Carl Hayden, 3-22-1954. Hayden Collection, 176/30, Arizona Collection, ASU, 20-0054.

³BG T. A. Carter, GS, Chief, Service Division, to BG R. S. Moore, Special Assistant to Secretary of Defense, 4-26-1954. Hayden Collection, 176/30, Arizona Collection, ASU, 20-0057.

⁴Office of the Chief of Legislative Liason, Department of the Army, "Wherry Housing -- Fort Huachuca, Arizona," 10-11-1954. Hayden Collection

The housing boom also spilled outside the fort's boundaries. On October 15, 1954, the *Tucson Citizen* announced that Busby & Carroll Construction Company, local builders, had plans to build 100 houses at Fry, just outside the fort's main gate. General Lenzner estimated that the town would need 1,000 housing units as the post grew over the next few years; the civilian housing director put the figure at 1,500. Busby wanted to establish a community, donating land for a school and money to start a volunteer fire department. The company also got the franchise for water service in the town, and began drilling a well as a part of a \$50,000 water system. They also had plans for another 450 houses, with room for 1,500 in all. ^{OTHER DEVELOPERS HAD PROJECTS} Two other ~~developments~~ ^{were} also underway, one near Bisbee and the other about 4.5 miles from the post's main gate.⁵

The army ^{TRIED TO} address ~~these requirements~~ ^{HOUSING NEEDS} in its annual requests for military construction funds. In February 1955 the District Engineer, San Francisco District, Corps of Engineers, announced that 500 family units of Wherry Housing ^{were} ~~would be~~ slated for Fort Huachuca. The army planned to finish project design by April and ~~to~~ award bids in May or June. For Fort Huachuca the army planned 100 three bedroom, 300 two bedroom, and 100 duplex one bedroom quarters. By March 21, 1955, the fort planners presented construction project justification data to the Department of the Army for a variety of additional structures and facilities on the post. Among these were the 450 additional family units, a large warehouse, airfield facilities (e.g., control tower, hangar, additional apron area, fuel tanks), a field house with swimming pool, bachelor officer quarters, and other buildings. The airfield was without permanent utilities; water was piped in through an above-ground "invasion type casing" line. This would be remedied by extension of utilities to the airfield.⁶

*3-30-55
District Engineer
San Francisco*

176/30, Arizona Collection, ASU, 20-0060; *Phoenix Star*, 10-15-1954.

⁵*Tucson Citizen*, 10-15-1954. By (1974) SIERRA VISTA HAD _____ WELLS CLUSTERED NEAR THE MAIN GATE. (SEE CQE 1974)

⁶District Engineer, San Francisco District, USCOE, Press Release, 2-24-1955. Hayden Collection, 176-30, Arizona Collection, ASU, 20-0062;

Senator Hayden ~~had~~ asked the Secretary of the Army about rehabilitation of family housing at Fort Huachuca in March, 1955. The secretary's legislative liason, Major Guy McConnell, advised Hayden that 74 units of permanent quarters were to be rehabilitated, along with 379 units of temporary quarters, besides the 450 new units planned by the fort.⁷

Development on the post continued into the next year, and Congress and the army responded by approving another 575 units of Capehart housing.⁸ In November, General Lenzner described the building program and housing situation for Hayden. For officers there were 571 family units either existing, being built or programmed; for NCOs there were 802 existing, being built or planned. The new housing was a mixture of Wherry and Capehart program funds. "It should be noted that these figures do not include any quarters which now exist and are of a temporary nature," added Lenzner. "I am vacating as promptly as possible undesirable family quarters in East Apache now occupied by NCO's and will, as promptly as possible, convert those into efficiency apartments for single civilians, particularly women. Here I have a morale problem and I think this will alleviate the situation materially." Another 75 temporary units in the area known as Bonnie Blink were to be sold to make room for the Capeharts.⁹

 Department of the Army Construction Project Justification Data FY 1956, 3-21-55. Hayden Collection, 176-30, Arizona Collection, ASU, 20-0063.

⁷Major Guy McConnell to Senator Carl Hayden, 4-5-1955. Hayden Collection, 564:3, Arizona Collection, ASU, 20-0026.

⁸"Units of Capehart Housing Approved by Department of Defense for Installations Being Served by Existing Wherry Housing, as of February 13, 1956." Hayden Collection, 564:3, Arizona Collection, ASU, 20-0027. "Wherry" and "Capehart" refer to housing produced under different acts authored by Representatives Wherry and Capehart, and are different styles of housing on the post. Wherry units are the older of the two; Capeharts are the flat roofed units seen west of Myers School.

⁹General Lenzner to Carl Hayden, 11-5-1956. Hayden Collection, 563:10, Arizona Collection, ASU, 20-0029.

*Units of Capehart housing
 at Capehart
 program's end*

At the end of the year Moore visited General Lenzner ^{AND ASKED} ~~again to ask~~ that he send a prioritized list of desired construction to Hayden. General Lenzner sent his list on December 28, 1956. It contained 16 items, the first being a battalion headquarters building, followed by recreational facilities for the barracks area, motor park and shops, two classroom buildings, roads and utilities, two enlisted barracks without mess, a four-company mess hall, 60 man BOQ, two civilian dormitories, and a variety of other buildings. Also underway was planning for a large "Technical Building" which has since become known as Greely Hall.¹⁰

General Lenzner described the post's growth in a presentation before the Third Arizona Industrial Development Conference in March, 1957. He sent Hayden an advance copy of his speech, in which he outlined construction to date and plans for the next years. "Of the hundreds of military establishments operated by our national defense less than twenty-five fall into the pattern of Fort Huachuca," wrote Lenzner. "Certainly, the direction, control and operation is exercised by personnel in army uniform but in every other respect Fort Huachuca is not unlike a multi-million dollar industrial organization." Limited construction in FY 1955 gave way to \$12 million in FY 1956; for FY 1957 expenditures would range near \$16 million. He hoped that over the five year period starting with FY 1956 to invest ^S \$50 million in the fort, in particular for "1600 family homes, troop barracks and a ^N technical engineering building." Rehabilitation of existing ^X facilities, including buildings and utilities, had run to as much as \$6 million; "we feel that this activity will be stabilized at an amount of six to seven million dollars annually." The post was fully staffed by nearly 7,000 troops (90% enlisted, 10% ^{BUT AT LESS THAN FULL STRENGTH} officers) ^A given that additional barracks would not be available for several years; ~~another~~ 1800 civilians were also on staff.¹¹ ~~Folsom~~ Moore visited the post in May and

¹⁰General Emil Lenzner to Carl Hayden, 12-28-1956. Hayden Collection, 563/8 #3, Arizona Collection, ASU, 20-0117.

¹¹General Emil Lenzner to Carl Hayden, 3-8-1957, enclosing "Looking Forward with Fort Huachuca." Hayden Collection, 563/8 #3, Arizona

reported to Hayden that "the ^{the} progress in the building program is astounding." Within the year the post should be completely staffed and planning for the "Technical Building" ^{was} well underway. Additional barracks were still needed, however. The Field House (recreational facility) was under construction, as was the BOQ building. Post planners also had negotiations underway for "the final increment of Capehart housing -- the 297 houses for civilian employees."¹²

The new family housing caused a need to adjust and augment the water system. In 1956 the post installed a 1,500 gpm booster station to support the needs of the 500 Wherry units. Three 500 gpm pumps drew on the 3 million gallon tank (installed in 1942), feeding a 10,000 gallon pressure tank that ^{supplied} ~~fed~~ the Wherry distribution system.¹³

Overall, for FYs 1956 and 1957 the Army planned 1,275 units of family housing. In August, 1957, Frank Dryden of the Senate Committee on Appropriations, informed Hayden (the committee chairman) that some \$2.703 million in supplemental appropriations for Fort Huachuca were before President Eisenhower for his signature. The projects included two 326-man barracks, a battalion mess and administration and supply building, plus a hangar and shops. "Indications from the Army are that these items will be placed under contract during the year." Dryden said that the Army was uncertain about "future plans," but noted that "long-range plans for Fort Huachuca are such as to safely anticipate that construction will continue for several years, current world situations remaining unchanged."¹⁴

Collection, ASU, 20-0018.

¹²Folsom Moore to Carly Hayden, May 8, 1957. Hayden Collection, 563/8 #3, Arizona Collection, ASU, 20-0119.

¹³"Military Construction Line Item Data," January 1963, prepared by Col. T. J. Seigler, "Supplemental Data, History of Development of Post Water Supply." Hayden Collection, 275/118 #4, Arizona Collection, ASU, 20-0130.

¹⁴"Fort Huachuca, Arizona," (general fact sheet, ca. 1957). Hayden Collection, 563:10, Arizona Collection, ASU, 20-0030; Franklin B. Dryden

The post continued to develop. On December 1, 1957, the US Army Combat Surveillance and Target Acquisition Training Command was activated at the fort. Its mission was "to train selected individuals in the utilization, operation, amintenance and repair of ground or airborne combat surveillance, and target acquisition equipment."¹⁵

In fact, the building program at Fort Huachuca was extensive. MCA Construction summaries presented to Senator Hayden in January 1958 showed plans for FY 1956 through 1964:

FY	Amount	Comments
1956	\$6,488,200	11 projects including 200 housing units and extension of utilities; all completed or under construction.
1957	\$17,575,100	11 projects including 615 housing units and work on roads and utilities, and \$3.932 million for the first increment of the USAEPG Technical Building.
1958	\$2,249,965	Proposed program for 8 projects, among which were barracks, mess, testing and laboratory buildings.
1959	\$3,738,000	Proposed program for 8 projects, including battalion Hq building, 3 barracks, technical facilities, shops.
1960-64	\$36,079,000	Proposed program for 89 projects, including final increments of the Technical Building, 200 family housing units, a 72 unit trailer court, 6 barracks (of which four were 326 man), 2 civilian dormitories, a 250-bed hospital, BOQs, and a variety of technical, maintenance, and testing facilities. (Averaged \$7.2 million per year.)

to Carl Hayden, 8-27-1957. Hayden Collection, 563:10, Arizona Collection, ASU, 20-0035.

¹⁵"Fact Sheet," Department of the Army, US Army Combat Surveillance School, Fort Huachuca, Arizona, 7-12-1965. Hayden Collection, 275:119, Arizona Collection, ASU, 20-0023. By 1965 this command had 357 officers, enlisted personnel, and civilian staff. The command noted that its strength had increased 37% over the last two years.

The *Tucson Daily Citizen* announced in May that there were about 11,000 adults and children on the post, and that the "building boom expected to last for years."¹⁶

The continuing expansion of the fort family housing supply led to increased pressure on the water system. The post took two actions to ameliorate the situation. One was construction of a 1.5 million gallon concrete tank/reservoir at the base of Reservoir Hill west of the Officers' Club. It was "at an intermediate elevation between the 3 million gallon reservoir and the 450,000 gallon reservoirs" located at the top of the hill. "This reservoir was constructed to provide additional storage in support of 575 units of Capehart Housing as well as MCA construction projects." The 10,000 gallon pressure tank was taken off line and the three booster pumps used ^{to} feed the new reservoir and ^{directly} into the system. The second action was ^{INSTALLATION} ~~the drilling~~ of Well No. 6. ^{PUMP} ~~This well was~~ located west of and between wells 3 and 4. The well was drilled to ~~1,312 feet~~ under the direction of the USGS, and could produce 750 gpm. It was not connected to the system until 1960, when a pump and surge tank was added. It fed into the 3 million gallon reservoir.¹⁷

At the end of 1959 the water distribution system still had problems. Major General R. T. Nelson, the Chief Signal Officer, advised Senator Hayden that the Secretary of the Army had "concurred in the improvement of the Water Distribution System at Fort Huachuca as an urgent-type project which qualified for inclusion in the FY 60 Military Construction, Army program in the amount of \$165,000." Fort Huachuca's CO was to provide detailed design and justifications, and Moore anticipated that funds would be available within six months. At the same time, Nelson noted that

¹⁶"MCA Construction." Hand dated 1-6-1958. Hayden Collection, 563:10, Arizona Collection, ASU, 20-0036; *Tucson Daily Citizen*, 5-22-58.

¹⁷"Military Construction Line Item Data," ^{FORM 1341} January 1963, prepared by Col. T. J. Seigler, "Supplemental Data, History of Development of Post Water Supply." Hayden Collection, 275/118 #4, Arizona Collection, ASU, 20-0130.

additional housing was also planned, including 200 units of Capeharts for FY 60 (project to be under contract within six months); another 344 units of Capeharts were requested for FY 61, but only 100 were included in the Department of Defense's requirement in that year's construction budget.¹⁸

The fort provided a summary of "Water Problems at Fort Huachuca" to Senator Hayden in 1959. The post ~~survived on~~ ^{was not} groundwater, pumped from the five wells previously mentioned, providing 3,350 gpm or 4.82 mgd when pumped around the clock. Well No. 6 had been drilled and cased, but had no pumps or related equipment. The post ^{PLANNERS OPTIMISTICALLY} believed that if it were added they would have ^{AVAILABLE} 5.9 mgd on a 24 hour pumping schedule, "which will suffice for all foreseeable future needs." Storage in post reservoirs supplied various zones on the post. The upper reservoirs (450,000 gallons) supplied the old post area; the 1.5 million gallon reservoir supplied the Wherry Housing, all MCA areas, and a portion of the Capehart Housing area. The 3 million gallon concrete reservoir, and a 500,000 gallon tower tank supplied the "old mobilization areas" (i.e., the WWII construction). Another 500,000 gallon tank had been disconnected by the WAA; the post proposed that it be ^{USED} ~~reconnected to supply~~ for fire fighting ~~water~~ in the hospital area.¹⁹

^{EVEN WITH THE ADDITION OF WELL No. 6} The water supply system needed ~~some~~ improvements. The post's FY 60 MCA minor new construction program included ^{ITEMS} ~~features~~ to accomplish this need. Wells No. 1 and 2 supplied the old post reservoirs through a 10 inch main, so supply was cut off if a pump broke down or the main broke. ^{FURTHER,} One half of the ^{OLD RESERVOIR POST} reservoirs' storage was held for fire reserve. ^{PLANNERS} The ~~post~~ suggested changes in the supply system to allow better shifting of water among the reservoirs/ so that all wells could provide water to all storage, ^{and} ~~For FY60~~ ^{the post had} requested funds to connect the 10 inch line to the old post

¹⁸Maj. Gen. R. T. Nelson to Carl Hayden, 12-3-1959. Hayden Collection, 403:9, Arizona Collection, ASU, 20-0003.

¹⁹Fort Huachuca [?], "Water Problems at Fort Huachuca," ca. 1959-60. Hayden Collection, 563:9, Arizona Collection, ASU, 20-0041.

reservoirs ^{TO A LINE TO} ~~with that~~ of the 3 million gallon reservoir; installation of a 750 gpm booster pump to help feed the 1.5 million gallon reservoir, and another 1500 gpm booster station to feed the old post reservoirs (\$47,500); reconnect the old 500,000 gallon ^{tower} tank (as mentioned above); and connect Well No. 6 into the system (\$89,000). This work would total \$172,900. The need for these improvements was made clear by the fact that on May 13, 1959, ~~post~~ water consumption reached 3.54 million gallons; the post command ordered a "more stringent watering schedule" for fire protection. "If this had not been done, water consumption would have reached approximately 4,000,000 gallons per day which is beyond the capability of the post supply system."²⁰

By March of 1960, the USAEPG Technical Building's first increment was completed and the second increment had construction underway. Other projects completed included three additional barracks, extension of utilities, and a variety shops and technical buildings; those underway included another barracks, shop facilities, and test units. ~~Another 100 units of Capehart family housing had been passed by the House~~ ^{APPROXIMATELY THE HOUSE AUTHORIZED FUNDS FOR} on March 6, but had not yet been enacted. ^{21 BY THE SENATE NON SIGNED INTO LAW.}

~~The~~ growth forced the fort, as noted above, to continue development of its water system, and in June ~~of~~ 1960 the House passed \$84,000 for expansion of the water distribution system. This was apparently passed and increased, as the congress allotted \$165,000 under "Urgent Minor New Construction -- FY 60" and the fort had the project advertised. At the same time the post had received a bid (considered unresponsive and readvertised) for 200 Capehart family housing units. Another 100 units were under FY 61 funding. At the end of the year the Capehart Program on the post featured 575 units completed, another 60 under construction, with

*See p. 9.
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²⁰Fort Huachuca [?], "Water Problems at Fort Huachuca," ca. 1959-60. Hayden Collection, 563:9, Arizona Collection, ASU, 20-0041.

²¹Lt. Col. M. C. Harrison to Leonard Edwards, Military Construction Subcommittee, Senate Appropriations Committee, 3-18-1960. Hayden Collection, 403:9, Arizona Collection, ASU, 20-0006.

300 "in process." In May, 1961, the USAEPG estimated that, once construction on the additional Capehart units was finished, the post would have 1,968 sets of family quarters.²² In 1961 a booster pumping station with three 500 gpm pumps was installed at the base of the 1.5 million gallon reservoir to feed the small "Old Post" reservoirs at the top of the hill. An additional 500 gpm pump was also added to the Wherry booster pumping station, so that it could handle 2000 gpm.²³

Part of the pressure for growth probably came from the arrival in 1960 of an additional unit to Fort Huachuca, the US Army Security Agency Test and Evaluation Center (USASATEC). USASATEC was responsible for testing the effectiveness and dependability of equipment produced by research and development of the U.S. Army Security Agency. USASATEC used Fort Huachuca's varied terrain as a test environment to evaluate newly developed systems and equipment, both offensive to defensive systems.²⁴ See note

As mentioned above, in 1958 the post installed Well No. 6. It was drilled to a depth of 1,230 feet and given a 16 inch in diameter casing to 803 feet, which then descended open another 12 feet, followed by an 8 inch uncased shaft to 1,230.²⁵ Well No. 6 was fitted with pumps and other

²²Paul R. Eaton to Carl Hayden, memorandum, 6-13-1960. Hayden Collection, 403:9, Arizona Collection, ASU, 20-0007; "MCA Construction Program - FY 60 (and prior) [date?]. Hayden Collection, 403:9, Arizona Collection, ASU, 20-0008; Office of the Assistant Secretary of Defense (Properties and Installations), "Status of Title VIII (Capehart) Housing Program as of December 31, 1960." Hayden Collection, 403:9, Arizona Collection, ASU, 20-0009; USAEPG, "Status of Construction (MCA and Capehart) as of May 1st, 1961, Ft. Huachuca, Arizona." Hayden Collection, 403:9, Arizona Collection, ASU, 20-0010.

²³"Military Construction Line Item Data," January 1963, prepared by Col. T. J. Seigler, "Supplemental Data, History of Development of Post Water Supply." Hayden Collection, 275/118 #4, Arizona Collection, ASU, 20-0130.

²⁴↔ Fort Huachuca, Arizona: History 1974, p. 13.

²⁵S. G. Brown, E. S. Davidson, L. R. Kister, and B. W. Thomsen, *Water Resources of Fort Huachuca Military Reservation, Southeastern Arizona*. Water Supply Paper 1819-D. Prepared in cooperation with the

equipment in 1960 and attached to the system. Post planners believed before it was connected that it would provide an answer to the installation's water problems; however, they also were aware that the aquifer was a finite resource. ~~For the previous years~~ ^{BEGINNING IN THE FALL OF 1959} the USGS Ground Water Branch, at the request of Fort Huachuca and at Department of the Army expense, studied water resources available to the post. General Uhrhane advised Senator Hayden that the USGS recommended "maximum utilization of the spring water [in Huachuca and Garden Canyons] for recharging the underground water supply which is being depleted at an ever-increasing rate^d due to heavy pumping both on the installation and in surrounding communities."²⁶

General Uhrhane based this comment on the USGS study, which ran from 1959 to June 1963 and examined wells, aquifers, surface flows and spring flows in and around Fort Huachuca. Its aim was to "locate additional water supplies and ~~appraise the water sources, in use~~" ^{EVALUATE EXISTING}. The scientists inventoried wells in the study area and fitted three with recording gages, examined all springs and gaged those with substantial flows, and gaged surface flows in Garden and Huachuca canyons. The authors noted that "the flow from springs generally is not used by the fort, but it is sufficient to supply the entire water demand during some periods." In addition, "spring flow, if used to supplement the ground-water supply, will decrease the draft on the ground-water reservoir in the two basin-fill ^{EXPOSURE} units; or it could be used for artificial recharge to these aquifers." Finally, the authors noted that if a second well field were developed near North Gate-Libby Field, ^{IT} "would partly accomplish the same result by decreasing the heavily concentrated draft on the ground water reservoir of the Fort Huachuca well field, and by utilizing ground water that now moves unused

 U.S. Army Electronic Proving Ground Fort Huachuca, Arizona. (Washington: GPO, 1966), p. D-26. Hereafter cited *Water Resources of Fort Huachuca*, 1966.

²⁶Major General F. F. Uhrhane to Carl Hayden, 2-28-1963. Hayden Collection, 275/118 #4, Arizona Collection, ASU, 20-0128.

northeastward to the San Pedro River."²⁷

The post's only supply was from wells and springs; surface water flowing^{ed} to the San Pedro and Babocomari rivers only at times of prolonged precipitation or torrential downpour. ~~The USGS team stated that~~ Only a small portion of water precipitated ever reached the aquifer, the great bulk of it lost to evapotranspiration. Of the springs, only those in Garden and Huachuca canyons were sufficiently large to be useful to the fort. As to the aquifer, the researchers noted that not all of the decline in the aquifer around the fort and Sierra Vista was caused by their well fields, but the fact that the wells in Fort Huachuca and Sierra Vista experienced a greater rate of decline than other wells scattered in the region indicated that the difference was caused by the influence of heavy pumping.²⁸

Garden Canyon's recharge under natural conditions could be ~~as~~ high as 1 mgd, but only when flows were high and evapotranspiration was negligible. Heavy summer rains, they noted, evaporated almost immediately. Further, an underlying, (below ground surface) ridge separated the aquifer feeding the fort wells from that fed by Garden Canyon.~~29~~ Fort Huachuca's main wells produced a total of 1,514.65 million gallons between October 1959 and June 1961; the maximum month was May 1960, when 104.2 million gallons was pumped, for an average of 3.36 mgd; the minimum month was November 1959, when 43.69 million gallons was pumped, averaging only 1.45 mgd.³⁰ Pumping had a ^{Substantial} ~~large~~ effect on aquifer draw down, the authors noting that if wells No. 1 through 5 were pumped at 600, 600, 500, 600, and 500 gpm respectively for a year, water levels in Well No. 6 would be drawn down 15.8 feet. If operated at this level 18 hours a day,

²⁷ *Water Resources of Fort Huachuca*, 1966, pp. D-1 - D-3.

²⁸ *Water Resources of Fort Huachuca*, 1966, pp. D-20 - 21.

²⁹ *Water Resources of Fort Huachuca*, 1966, pp. D-24 - 25.

³⁰ *Water Resources of Fort Huachuca*, 1966, pp. D-20, 24-26

combine

however, the drawdown was three feet.³¹

Springs in Garden and Huachuca canyon might provide substantial flows if collected. The average spring flow in Garden Canyon between October 1959 and June 1963 was 413 gpm, or .059 mgd. Total surface flows in Garden Canyon during this period was 3,040 acre-feet, or 994 mg, and averaged about 503 gpm. Huachuca Canyon's geological structure was less conducive to springs, so runoff tended to be higher and spring flows lower. However, Huachuca Canyon had an "underflow" between October and November 1959 of 200 to 300 gpm.³²

The USGS wanted to judge how runoff in Garden Canyon compared to the fort's well field production. They noted that there were only two instances during their study where runoff exceeded pumping: January to June 1960, and December 1961 through May 1962. However, runoff would supply a substantial percentage of the fort's needs -- approximately 30% during the period of the study. "For protracted periods, however, the flow of Garden Canyon Creek was less than 10 million gallons per month," and during the period of study Huachuca Canyon's runoff was one tenth that of Garden Canyon.³³

The point of the USGS study was to evaluate additional sources of supply. They suggested 1) collecting and diverting to the fort spring flows in Garden Canyon, and 2) using any "excess water" for recharge in the well field aquifer. In summary, "from October 1959 to June 1963, more than 1 billion gallons of spring flow and runoff was measured at the gaging stations in Garden Canyon, and more than 3.2 billion gallons was pumped from the Fort Huachuca well field. Therefore, the spring flow can significantly add to the fort's water supply." Because these flows came at times when pumping needs were low, storage in a surface reservoir or by recharge would be necessary. This would relieve to ^{a degree} ~~an extent~~ the "cone of

³¹Water Resources of Fort Huachuca, 1966, pp. D-31-32.

³²Water Resources of Fort Huachuca, 1966, pp. D-37, D-42.

³³Water Resources of Fort Huachuca, 1966, pp. D-43.

depression" caused by Fort Huachuca and Sierra Vista well fields. ~~THE RESIDUAL DRAWDOWN MEASURED IN WELL NO. 6 DROPPED AN AVERAGE OF THREE FEET PER YEAR~~ Residual draw down measured in well 6 from November 1959 through May 1961, "caused by pumping of the fort well field and interference from the Sierra Vista well field," ~~averaged 3 feet per year.~~³⁴

The USGS report formed the basis for suggested improvements to the water supply system at the fort in the years that followed. Post engineers designed plans to implement the spring collection and recharge system; and later plans added the use of reclaimed waste water for irrigation. ~~AS NOTED ABOVE, THE POST BEGAN EXAMINING USE OF THE SPRINGS~~ ^{AS NOTED ABOVE, THE} Plans were laid even during the USGS field work. Post planners estimated that if post troops performed rehabilitation and construction on the Huachuca Canyon and Garden Canyon pipelines the project the total cost would be \$387,700; if done by outside contractor it might reach \$858,935. In both instances rehabilitation entailed replacement of water lines; work in Huachuca Canyon included construction of dikes, while in Garden Canyon the requirement was for dams to collect spring water.³⁵

In January 1963 Fort Huachuca requested \$1.197 million to develop the spring water supply in Huachuca and Garden canyons. ~~THE POST MADE THE APPLICATION BEFORE THE USGS REPORT WAS PUBLISHED.~~ Deputy Post Commander Col. T. J. Seigler prepared an application for a project that would implement most of the recommendations made by the USGS. ^{THE PROJECT} "remove and ~~ENHANCED SALVAGE OF EXCAVATION AND CONSTRUCTION OF DIKES AND DAMS AND INFILTRATION~~ salvage existing pipelines, ~~remove and stockpile usable sand, rock and gravel for re-use in locations of~~ ^{AND INFILTRATION GALLERIES} infiltration galleries. Excavate to bedrock in locations of dams, infiltration gallery headers and lines, form and pour concrete dams, infiltration gallery headers. Lay pipe lines, install chlorination equipment, ^{AND REQUIRED WELLS FOR TESTING AND RECHARGING} drill, ~~case and test wells,~~ install deep well pump, clear well and booster pump, balance recharging system and place in operation." The USGS would supervise construction of recharging

³⁴Water Resources of Fort Huachuca, 1966, pp. D-53-56.

³⁵"Engineer Troop Construction and Maintenance Projects, EETF Facility Requirements -- FY 62 and Development of Fort Huachuca Water Resources." [1961?]. Hayden Collection, 403:9, Arizona Collection, ASU, 20-0012.

wells and collection works.³⁶

Col. Seigler explained that pumping had, between 1954 and 1963, lowered the groundwater level 18 feet. "The demand for water on the Installation as well as surrounding communities, ^{AS HE ADVISED,} "has increased over the past 8 years from approximately 1,140,000 gallons per day to 6,600,000 gallons per day." The post hoped to supplement that supply -- a draw of 4 million gallons per day during the peak months of March-June -- by fully using water available in the canyons. According to Seigler, the USGS estimated an average monthly flow of 30.25 million gallons, the bulk of which was lost to evaporation and transpiration. During the wet winter months (December - March), water collected in the canyon system would replace groundwater and any surpluses would be pumped into the aquifer; in the summer it would augment supplies pumped from the wells. They estimated that ~~X~~ ^{THE SPRINKLER SYSTEM} would produce ~~for the post~~ 350 million gallons per year (average flow), "of which it is estimated that 250,000,000 gallons can be utilized directly to provide a portion of the Post domestic water supply." Besides saving \$35,000 annually it would also conserve a "critical natural resource which is being depleted," the USGS showing an annual decline in the water table of 2.4 feet. "Furthermore, the rate of this depletion is continually increasing as more and more new wells are drilled adjacent to this Installation by the City of Sierra Vista and Fry." Sierra Vista pumped 1.4 million gallons per day.³⁷

The ^{EXISTING} system of wells, booster pumps and reservoirs produced a maximum output of 4.2 million gallons per day with all wells and pumps working around the clock, "as compared to a peak consumption of 4,461,000 gallons per day." The excess consumption of 300,000 gallons was handled by post storage facilities. Col. Seigler feared that an extended period of

³⁶"Military Construction Line Item Data," January 1963, "Supplemental Data, History of Development of Post Water Supply," prepared by Col. T. J. Seigler. Hayden Collection, 275/118 #4, Arizona Collection, ASU, 20-0130.

³⁷"Military Construction Line Item Data," January 1963, "Supplemental Data, History of Development of Post Water Supply," p. 5. Hayden

over-draft on storage would jeopardize the post's ability to fight fire.³⁸

Col. Seigler also evaluated alternatives. The post's wells were already as deep as the entire existing aquifer, so ~~extending~~^{maint.} them deeper would not likely produce additional supply; plus, water pumped from such deep wells would be expensive. Drilling additional wells would produce immediate relief but would also increase over-all depletion of the aquifer.³⁹ Despite the application and the sense of impending shortages it imparted, the project was not immediately approved, and ~~it~~ appeared in later requests, along with requests for additional barracks, BOQs, and office and administrative buildings.⁴⁰

Rodney Roeske of the USGS prepared an internal, administrative report on streamflow and spring discharge in August, 1964, that covered October 1959 through April 1964. Roeske's summary of flows from the mountain springs and streams supported the concept delineated earlier by the USGS and Col. Seigler. He reported that during the period studied some 4,900 acre-feet (or 1.6 billion gallons) came from Garden Canyon; Huachuca Canyon contributed about 490 acre-feet. Roeske noted that the "major springs in Garden Canyon are Spring 2, Spring 1, and Picnic Spring." Spring 2 had a continuous flow averaging 237 gpm; Spring 1 had a continuous flow averaging 208 gpm. Maximum streamflows occurred near the gaging station in Garden Canyon, past which during the four years between October 1959 through September 1963 flowed the equivalent of 44% of the fort's

Collection, 275/118 #4, Arizona Collection, ASU, 20-0130.

³⁸"Military Construction Line Item Data," January 1963, prepared by Col. T. J. Seigler. Hayden Collection, 275/118 #4, Arizona Collection, ASU, 20-0130.

³⁹"Military Construction Line Item Data," January 1963, "Supplemental Data, History of Development of Post Water Supply," p. 5. Hayden Collection, 275/118 #4, Arizona Collection, ASU, 20-0130.

⁴⁰Mike Rexroad to Carl Hayden, Memorandum, "Ft. Huachuca Arizona fiscal year 1966 military construction program," 4-30-1965. Hayden

needs during that period.⁴¹

The post continued to grow in the 1960s, though not perhaps at the hectic pace of the period between 1954 and 1960. The fort's commander, Maj. Gen. B. H. Pochyla, described the post population to Congressman Morris Udall in May 1965. The total daytime population was about 13,100, while at night this dropped to 10,400. He noted that since July 1960 ~~soon~~ 3000 military personnel had been withdrawn from the post for other duties around the world, only partially balanced by the arrival of 1000 troops from other forts. Maj. Gen. Pochyla also listed the major units on the post and their "working strength":

<u>Unit</u>	<u>Total</u> (mil. and civ.)
USAEPG	4474
Sixth US Army Support Element	43
US Army Hospital	246
160th Signal Group	1987
US Army Electronic Research and Development Activity, Arizona	263
US Army Combat Development Command Communications-Electronic Agency	94
Command Control Information System, Systems Design and Engineering Division	378
US Army Combat Development Command, Command Control Information System Group	48
52nd US Army Security Agency Special Operations Command	499
US Army Combat Surveillance School	340
Total	8372

Collection, 275-119, Arizona Collection, ASU, 20-0021.

⁴¹Rodney H. Roeske, USGS, "Streamflow and spring discharge in Garden and Huachuca Canyons, Fort Huachuca Military Reservation, Arizona." Prepared in cooperation with the US Army Electronic Proving Ground. Labeled: "Administrative report for U.S. Government Use Only." Tucson, Arizona, August 1964, p. 26. Hayden Collection, 275:121, Arizona Collection, ASU, 20-0002.

The USAEPG and 160th Signal Group were the largest two commands, accounting for more than three-quarters of the total working strength at the post.⁴²

In May 1965 the Army proposed shifting some personnel from Fort Huachuca to Fort Monmouth. This led Senator Hayden to express concern over decreasing use of the fort to Secretary of the Army Stephen Ailes. Ailes soothed Hayden's concerns by pointing out the relatively small numbers in the proposed transfer, and by sending Hayden a confidential extract from the army's five year construction plan that showed proposed development at the fort. A \$4.6 million army hospital was planned for FY65, BOQs for FY66 and 67, a telephone exchange for FY68, and medical barracks, water supply development (\$1.197 million, the same figure proposed by Col. Seigler), commissary and street extension in FY 1969, and two barracks complexes (\$3 and \$6.5 million respectively) and another street extension for FY69 and 70.⁴³

Hayden's worries must have been further assuaged by the army's decision to send the 11th Signal Group to Fort Huachuca in 1966, from Fort Lewis, Washington. The 11th formed an integral part of Fort Huachuca's communications network. It is responsible for initiating and operating emergency communications systems and has provided rapid mobile communication networks in emergency situations.⁴⁴ The group has also been instrumental in installing and maintaining disaster relief area communications networks. Senator Hayden announced in April that the 3,500 man combat training brigade would begin arriving in September, "at the rate of 450 per week and continue up to the 3,500 capacity. Along with the troops some 1400 administrative and training personnel will also arrive." The

⁴²Maj. Gen. B. H. Pochyla to Morris K. Udall, 5-6-1965. Hayden Collection, 275:119, Arizona Collection, ASU, 20-0022.

⁴³Secretary of the Army Stephen Ailes to Carl Hayden, 5-28-1965. Hayden Collection, 275:119, Arizona Collection, ASU, 20-0024.

⁴⁴Fort Huachuca, Arizona: History, 1974, p. 10.

brigade was to train in combat support services, "such as the clerical, mechanical, and vehicular operation fields."⁴⁵ Also in that year the Army established its Electronic Warfare School at the fort as a part of the Combat Surveillance School. This school presents courses in operation and maintenance of "electronic warfare equipment." It, like the Combat Surveillance School and other smaller units on the post, was a unit of the Sixth Army. Other Sixth Army units included the Raymond Bliss Army Hospital. In addition, units such as Meteorological Support Activity, US Army Security Agency Test and Evaluation Command, and Area Frequency Coordinator under the Chief of Communications-Electronics were also posted to the fort.⁴⁶

The post renewed its request for funds to tap Garden and Huachuca canyons spring supplies in September, 1966. In fact, the post commander, Major General B. H. Pochyla, had two Military Construction Line Item Data sheets prepared. One suggested essentially the same project as had Col. Seigler in 1963, and at the same cost (\$1.197 million); the second added additional sewage treatment and pumping facilities to enable the post to use treated effluent water for irrigation, at a cost of \$1.754 million. Major General Pochyla's requests drew heavily on the language and statistics presented earlier by Col. Seigler.⁴⁷

Senator Hayden's staffer, Roy Elson, met with Sam Sage, Deputy post engineer and two officials of the Army Material Command about the fort's water development plan in March 1967. Sage and the two officials believed that the program would be in upcoming plans ^{and} at a high priority. "Sage further remarked that when the project was first proposed in 1965, it was

l.c.

[1963]

⁴⁵Press Release, US Senate Committee on Appropriations, 4-13-1966. Hayden Collection, 275:119, Arizona Collection, ASU, 20-0025.

⁴⁶Headquarters, US Army Garrison, Fort Huachuca, Arizona, "Fact Sheet," 10-1968. Arizona Collection, HM-60, ASU, 20-0136.

⁴⁷"Military Construction Line Item Data," two sets, both dated 9-15-1966, prepared by Major General B. H. Pochyla. Hayden Collection, 306:20, Arizona Collection, ASU, 20-0013 and 20-0014.

estimated that Ft. Huachuca would face a critical water shortage by 1970. Ft. Huachuca has experienced a buildup not foreseen in 1965, especially with the 6,000 new troops added last year and and with the transfer of the Strategic Communications Command this year." Sage believed that it was crucial, given the increased demand, to get the project underway.⁴⁸ In June Hayden was informed that the water development project would "definitely" be in FY 1969 Military Construction Authorization. It was not in FY 1968 because the Corps of Engineers had not developed plans for the project.⁴⁹

The Army moved a major new tenant into the post in April 1967. This was USA Strategic Communications Command (STRATCOM), which took command of the fort from the USAEPG that July. The USAEPG then became a tenant unit under STRATCOM. STRATCOM as a command answered directly to the Army Chief of Staff, on the same level as other major field commands such as the Continental Army Command or Army Material Command. The 11th Signal Group ~~also~~ came under STRATCOM's command, providing "transportable communications facilities for quick installation in emergency anywhere in the world." It was also at this time that the US Army Garrison Fort Huachuca was created as a subcommand of STRATCOM to handle the day-to-day operations at the fort, including police and fire protection, food services, maintenance, and providing 3 million gallons per day of water.⁵⁰

Folsom Moore praised the ^{ARRIVAL of STRATCOM} ~~move~~ highly in ~~a letter~~ to Carl Hayden. He noted that "we are very much on the main line," and no longer downgraded as had been the case after Robert McNamara became secretary of defense.

⁴⁸JAF to Carl Hayden, 3-28-1967, "Memorandum for Senator Hayden re: Water Development Program for Ft. Huachuca." Hayden Collection, 306:20, Arizona Collection, ASU, 20-0017.

⁴⁹JAF to files, 6-26-1967, "Re: Ft. Huachuca Water Development." Hayden Collection, 306:20, Arizona Collection, ASU, 20-0018.

⁵⁰Hq, USA Garrison, Fort Huachuca, "Fact Sheet," October 1968. HM-60 Fact Sheet, Arizona Collection, ASU, 20-0136; Sierra Vista Printers, *Unofficial Guide to Fort Huachuca*, 1968, pp. 7-8. Arizona Collection, HM-63, ASU, 20-0139.

Moore saw the FY 69 military construction program, "which is now on the desk of the Chief of Engineers, and which will go to Congress before the first of January, 1968 ... Fort Huachuca has top priority; there is no question of its importance." He added that water development was first on the list of priorities, followed by a complex of five barracks, an academic building for the Combat Surveillance School, barracks for hospital enlisted personnel, and other facilities. "The Fort Huachuca items will be coming before Congress for the first time in many years," noted Moore, "without you having to ask for them."⁵¹ In August the Phoenix press evaluated STRATCOM's impact on Sierra Vista, observing that its arrival in June stimulated construction of 200 new homes, new sewers, and public amenities like a public swimming pool and city park. New businesses also arose in the city. STRATCOM in 1967 added 900 to Fort Huachuca's population.⁵²

The water supply problem continued to plague the post, made potentially worse with STRATCOM as a new tenant. As Folsom Moore noted, water development was a high priority item, the top on a revised list of MCA projects for FYs 1969-1973. The post commander, Col. N. C. Angel, submitted a ^{noted} "Military Construction Line Item Data" application for "Water Development Canyons and Water Conservation." ^{LIKE GENERAL POLUYLAIS,} This application borrowed heavily from language in the January 1963 application prepared by Col. Seigler, particularly in terms of statistics and description of the problem facing the post. However, it differed in several important aspects. First, Col. Angel proposed that treated sewage effluent be drawn from new oxidation ponds, and used as irrigation water for the post lawns, landscaping, and golf course. delivered by a 1000 gpm pump. Second, Col. Angel's figures for current system capacity were different. In 1963, Seigler stated that the system could produce 4.2 million gallons per day

⁵¹Folsom Moore to Carl Hayden, 7-2-1967. Hayden Collection, 295/150 #8, Arizona Collection, ASU, 20-0131.

⁵²*The Arizona Republic*, August 13, 1967, "STRATCOM Comes to Sierra Vista."

(mgd); Angel stated that the system in 1967 could produce 5.6 mgd with all wells and booster pumps working around the clock. Both estimated that the springs in Garden and Huachuca canyons would provide about 1 mgd (Seigler thought a monthly average of 30.25 mg, Angel 1 mgd). Like Seigler, Angel noted that Sierra Vista pumped 1.4 mgd. The combination of increased pumping at the fort and in the adjacent town meant that "the installation is constantly drawing upon a steadily decreasing resource at a steadily increasing rate." In the end this would mean "complete depletion of a critical natural resource." However, by 1967 the cost of the project, with the additional feature of reclaimed water for landscape irrigation, rose to \$1.754 million (up from \$1.197 million in 1963).⁵³

Col. Angel presented a table showing the previous eleven years' annual use, average daily use, and maximum daily use. This table is reproduced below, with post population statistics added:

Water Consumption at Fort Huachuca, 1956-1966
[in millions of gallons]⁵⁴

<u>Year:</u>	<u>Average Day</u>	<u>Maximum Day</u>	<u>Year Total</u>	<u>Population*</u>
1956	1.226	2.622	447.005	7,086
1957	1.524	3.207	556.121	8,800
1958	1.874	3.460	683.968	11,000
1959	2.055	3.540	750.228	
1960	2.200	4.205	802.806	13,117
1961	2.250	3.990	821.217	13,296
1962	2.476	4.461	903.730	11,326
1963	2.187	4.416	798.217	12,000
1964	2.115	4.020	771.858	
1965	2.530	3.580	912.366	
1966	2.398	4.464	863.532	

⁵³"Military Construction Line Item Data," 4-24-1967, prepared by Col. N. C. Angel. Hayden Collection, 306/25 #9, Arizona Collection, ASU, 20-0126; "Military Construction Line Item Data," January 1963, Prepared by Col. T. J. Seigler. Hayden Collection, 275/118 #4, Arizona Collection, ASU, 20-0130.

⁵⁴Fort Huachuca, "Water Development Canyons and Water Conservation," Military Construction Line Item Data, 4-24-1967, section C.1. Hayden Collection, 306/25 #9, Arizona Collection, ASU, 20-0126. This project line item was for \$1.754 million.

*[Population statistics ^{were} derived from ^{available} estimates, letters, fact sheets, reports, and other sources taken at different times of the year, independent of water consumption figures, and are included for comparison only.]

The post MCA program shown Senator Hayden in July, 1967, ranged from \$14.48 million in FY 1969, \$1.8 million in FY 1970, \$5 million in FY 1971, \$3.45 million in FY 1972, and \$3.74 million in FY 1973. Besides the water development and reclamation project mentioned above, plans called for, among other things, five additional barracks, a 40 man BOQ, a new commissary, enlisted men's service club, post library, a variety of shops and maintenance facilities, warehouses, road and street extensions, a baseball field and 2,000 seat stadium, and automatic irrigation systems at a variety of places around the post.⁵⁵

What was requested and what was eventually authorized and ^{for which} funds ^{were} appropriated ~~for~~ were often not the same. In March 1968, Folsom Moore, tireless promoter of the fort, devoted three separate letters on the same day to Hayden on three important subjects. First, he advised Senator Hayden that what he had hoped would be an eight-barrack complex had been reduced to three, and he hoped that with Hayden's influence they might be able to raise the project to five barracks. ~~He noted that~~ Troops were being housed in 1942 mobilization barracks because of a lack of modern quarters. "The five Barrack complex will go a long way to providing adequate housing for permanent personnel at Fort Huachuca. It leaves some seven or eight other Barrack buildings for future construction, but only three of these are for the present permanent personnel." To Moore, the more permanent developments could be built on post, the less likely that the Defense Department would inactivate or close the post. Closure would

⁵⁵"Revised FY 1969 - 1973 Fort Huachuca MCA Program," 7-19-1967. Hayden Collection, 306/25 #9, Arizona Collection, ASU, 20-0125.

be devastating to southeastern Arizona.⁵⁶

Moore's second letter stressed the need at the post for water development -- "at Fort Huachuca it is of supreme importance." By 1968 the post had a population of 20,000, "and it is growing." Moore noted that the USGS had made an "exhaustive survey," but he placed more faith in the comments of local well drillers, who believed that wells near the North Gate in the Babocomari Valley "will provide all the water that may be needed at Fort Huachuca." The USGS's proposed dams (collecting water in the canyons) were "alright," Moore said, "but I want a permanent water supply."⁵⁷ Moore's last letter urged Hayden to support a 40 man BOQ for the fort. "There is an immediate need at Fort Huachuca for six BOQs; there are two." Most of the single officers lived off post. He urged that money be added to an FY 1966 appropriation allowing for a 24 man BOQ (yet unbuilt) so that it could be increased to 40.⁵⁸ However, later that year the commander of STRATCOM stressed the need for the canyon system and sewage lagoons, advising senators Hayden and Fannon that it was "the first priority item." In his notes the commander stated:

The dollar value of this project is \$1,750,000. It consists essentially of the construction of cut-off dams with infiltration galleries and collection piping. The dams are essentially below the surface, extending from the stream bed level in both Huachuca and Garden canyons down to bedrock. This item is essential to provide additional water resources for domestic and irrigational use at Ft. Huachuca. The conservation and utilization of the water resources of these two canyons will reduce the amount of water withdrawn from the diminishing underground water basin. This conservation not only effects ~~the~~ Ft.

⁵⁶Folsom Moore to Carl Hayden, 3-14-1968. Hayden Collection, 306/#23, Arizona Collection, ASU, 20-0121.

⁵⁷Folsom Moore to Carl Hayden, 3-14-1968. Hayden Collection, 306/#23, Arizona Collection, ASU, 20-0122.

⁵⁸Folsom Moore to Carl Hayden, 3-14-1968. Hayden Collection, 306/#23, Arizona Collection, ASU, 20-0123.

Huachuca but has a corresponding impact on the surrounding communities in that the water resources of Sierra Vista and Huachuca City are supplied from generally the same underground basin. Since 1959 the static level of the water basin has lowered some 19 feet and the rate of annual fall is increasing.⁵⁹

[NEED TO ADD here materials collected at Laguna Niguel 06-0001.]

Work done @ Springs under contract 1964

The water situation was put under further pressure between 1969 and 1971 with the arrival or creation of five major units: Safeguard Communications Agency (SAFCA, 1969); US Army Communications-Electronics Engineering Installation Agency (CEEIA) (1970); US Army Combat Surveillance and Electronic Warfare School (1970); and most important, the US Army Intelligence Center and School (USAICS) (1971, transferred to Fort Huachuca from Fort Holabird, Maryland)

SAFCA was responsible for developing and maintaining the communications system for the SAFEGUARD missile system. It was reorganized and renamed the Ballistic Missile Defense Communications Activity (BMDCA) in July of 1975⁽⁶⁰⁾. The BMDCA oversaw the installation and operation of intrasite and intersite communication systems for support of ballistic missile projects. BMDCA was also responsible for testing the resilience of their systems.⁽⁶¹⁾

Communications-Electronics Engineering Agency (CEEIA) is responsible for the engineering development of communications systems and communications safeguards. This involved the development of new communications systems utilizing radio, telephone, and television media, and both electronic and physical safeguards for communications systems used by the

⁵⁹STRATCOM Command [?], "Fort Huachuca 5-Year MCA Program," ca. 1967. Hayden Collection, 306/#23 MCA Req, Arizona Collection, ASU, 20-0124.

⁶⁰ Headquarters, Fort Huachuca: 1975 History, p. 8.

⁶¹ Fort Huachuca, Arizona: History 1974, p. 9.

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armed forces⁶² CEEIA directed operations for research and development of satellite and microwave communications systems, airfield navigational systems, construction of protective devices for communications systems, and radio, telephone, and television transmission and reception systems. Together with the research and development of the various systems, CEEIA supervised installation, maintenance, and management of communications systems around the world⁶³

The U.S. Army Intelligence Center and School (USAICS) moved to Fort Huachuca in 1971.⁶⁴ In 1973 USAICS merged with the Combat Developments Command Intelligence Agency, the Combat Surveillance and Electronic Warfare School, and the Sixth Army Training Aids Center, combining various functions of the component agencies under one command.⁶⁵ The duties of USAICS were divided into two functions. The first, Combat and Training Developments, is determination of future requirements for combat and specialist intelligence systems in support of the army in the field. Six combat development programs within this function included Organization, Training Literature, Management Information Systems, Studies, User Experiments and Tests, and Material Requirements. The second, Training and Education, developed, implemented, directed, and managed USAICS training programs of determined intelligence requirements. Academic training was offered to military personnel in the fields of Combat, Intelligence, Strategic Intelligence, Counterintelligence, and Combat Surveillance. USAICS offered basic and advanced training for officers in Intelligence and Aerial Surveillance (radar, navigation, etc.). USAICS also offered basic courses to non-commissioned officers, as well as a Training Support Program designed for the National Guard and Army Reserve. USAICS was not

62 ○ Fort Huachuca, Arizona: History, 1974, p. 9.

63 ○ Fort Huachuca, Arizona: History 1974, p. 9.

64 Fort Huachuca, Arizona: History 1974, p. 10.

65 ○ Fort Huachuca, Arizona: History 1974, p. 10.

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only responsible for training the U.S. Army, but also instructs personnel from the Department of Defense and selected civilian and military personnel from foreign nations in four resident programs: Tactical Intelligence and Military Science, Exploitation and Counterintelligence, Aerial Surveillance, and Ground Sensors.⁶⁶

The Annual Historical Review for Fort Huachuca for 1971 referred to the arrival of the USAICS and US Army Combat Development Command Intelligence Agency from Fort Holabird as "a major event of the past year." The move added 3,000 to the post population as compared to the previous December. "This population increase plus the construction of permanent type buildings was evidence of the increased importance of Fort Huachuca." It also pressed available facilities. "At year's end, important problems affecting the fort's future included a serious housing shortage, and concern about the water supply," observed the annual review. "The Facilities Engineer reported adequate water for current needs, but recommended continued emphasis on water conservation programs." The water system had to handle the new population, and feed new sets of housing and facilities, including 100 units of ^{four} bedroom housing and a new laundry and dry cleaning plant. Additional projects started in 1971 included another 100 units of ^{three} and ^{four} bedroom housing, a new service club, a religious education center, and new troops billet complex.⁶⁷

In 1974 one of the two 500,000 gallon steel water tank towers was taken off-line, sold and demolished. It had stood near the corner of North Railroad Avenue and Irwin Street.⁶⁸ The post had plans for addi-

⁶⁶ Fort Huachuca, Arizona: History 1974, p. 11.

⁶⁷ Fort Huachuca Post Museum, "History, 1971," p. 1, 7. Fort Huachuca Post Museum, History Binder 1970-71, 10-0150.

⁶⁸ Fort Huachuca Post Museum, "Fort Huachuca, Arizona, History, 1974," p. 41. Fort Huachuca Post Museum, History Binder 1974, 10-0153. This tower may not have been operative for some time before its demolition. A schematic of the water system ca. 1966 showed only one 500,000 gallon tank

tional construction projects, continuing work on an another 100 units (20 two bedroom, 80 four bedroom of company and NCO grade) of housing, as well as barracks modernization and existing housing rehabilitation in 1975.⁶⁹

[NEED TO ADD HERE materials from "Report on Water Supply, Fort Huachuca and Vicinity, Arizona, Appendixes, USA LAD 3-29-1974.

During these years the army established two new organizations at the post, and redesignated STRATCOM as US Army Communications Command (USACC). The two new units were US Army Commercial Communications Office (USARCCO) and US Army Communications Management Information Systems Activity (USACOMISA). The army established USARCCO to administer leasing commercial communications systems and facilities to augment its own systems. The unit was provisionally initiated in November of 1974 as a USACC Headquarters field operating activity, and became an active unit in February 1975.⁷⁰ The army assigned USARCCO ^{WHAT HAD BEEN} the ^{FUNCTION OF} Telecommunications Certification Office, ~~functions~~ including ensuring that specific telecommunication services and facilities leased from commercial carriers were true, secure, and suitable for use by the Army. ^{USARCCO ALSO} ~~Other responsibilities~~ included administering ^{ed} contracts for leased services and facilities, and certifying ^{ed} to the Defense Communications Agency leasing department ~~of the Defense Commercial Communications Office~~ that the U.S. Army ^{WILL} adhere to contract payment schedules. ^{THE OFFICE} ~~USARCCO~~ also provided management and policy procedure regarding the Army's global leased communications system's rules, regulations, and standards.⁷¹ USACOMISA was a branch of USACC established in February of 1975 as a USACC field operation. Supervised by the Management Information Systems Office, USACOMISA provided centralized

in use.

⁶⁹Fort Huachuca Post Museum, "Headquarters Fort Huachuca 1975 History," p. 34. Fort Huachuca Post Museum, History Binder 1975, 10-0154.

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- 70 ○ Headquarters, Fort Huachuca, Arizona, 1977, p. 14.
- 71 ○ Headquarters, Fort Huachuca, Arizona, 1977, p. 14.

automatic data processing support at Fort Huachuca. USACOMISA activities included systems analysis, design, and development and operation of Management Information Systems.⁽⁷²⁾ Thus by January 1976 the USACC had under its command USARCCO, USACOMISA, the BMDCA (descendent of SAFCA), 11th Signal Group, CEEIA, and several other smaller commands, with a total authorized strength of 3,673. The various offices of the Fort Huachuca Garrison Headquarters had an authorized strength of 2,107, and the various tenant elements (USAEPG, USAICS, hospital and dental services, and other smaller units) contributed to the post total an authorized strength of 2,816. Another 6,139 dependents lived on post. The total post population was 16,625.⁷³

In 1977 the post engineers ~~managed~~^{undertook} several water system repairs. In the late spring the 1.5 million gallon reservoir was "structurally repaired." During the work Grierson Swimming Pool was employed as a makeshift surge tank for the system. The water system was also affected by the failure of pumps at Wells No. 5 and No. 6 "for most of the irrigation season." ^{THE GARRISON ORDERED} Water schedules were restricted during the period the wells were out of service. Well No. 6 came back on line in mid-July and Well No. 5 in early September. In early October the water collection systems tapping springs and streamflows in Garden and Huachuca canyons were damaged by flood flows. By the end of 1977 the collection lines were still out of service, although Facilities Engineering anticipated they would be operable in January 1978.⁷⁴

NEED TO ADD NOTE regarding wells 7 and 8 in the east range; take a leaf from the USGS in 1966, who suggested a new well field out by the airfield or north gate. Moore too, although the 1391's by Siegler, Pringle and Angel were not in favor of additional wells.

(72)? Check Dave's Mission doc.

⁷³Fort Huachuca Post Museum, "Headquarters Fort Huachuca 1976 History," post population appendix, 31 Jan 76. Fort Huachuca Post Museum, History Binder 1976, 10-0155.

⁷⁴Fort Huachuca Post Museum, "Headquarters Fort Huachuca Arizona 1977," pp. 50-51. Fort Huachuca Post Museum, History Binder 1977, 10-0156.

Water Consumption, Fort Huachuca, Dec. 1942 - Dec. 1944
[in gallons per day]

<u>AVE. X DAY/MO =</u>	Month	Year	Maximum	Minimum	Average	Ave/Capita	Sources
65,859,500	DEC	1942	2,603,000	1,119,000	2,124,500	103	Sp. & W1 thru 3
73,227,485	JAN	1943	2,126,900	n.a.	2,364,435	90	Sp. & W1 thru 4
	FEB	1943					Sp. & W1 thru 3
	MAR	1943					Sp. & W1 thru 4
50,430,000	APR	1943	2,554,000		1,681,000	141	Sp. & W1 thru 4
71,952,000	MAY	1943	2,989,000	1,441,000	2,322,000	103	→ Sp. & W1 thru
28,000,000	<u>5*</u> JUN	1943	3,200,000	1,800,000	2,600,000	110	Sp. & W1 thru 5
80,600,000	JUL	1943	3,400,000	1,900,000	2,600,000	114	Sp. & W1 thru 5
80,600,000	AUG	1943	3,500,000	1,600,000	2,600,000	122	Sp. & W1 thru 5
75,000,000	SEP	1943	2,900,000	1,900,000	2,500,000	116	Sp. & W1 thru 5
77,500,000	OCT	1943	3,700,000	2,000,000	2,500,000	122	Sp. & W1 thru 5
72,000,000	NOV	1943	2,900,000	1,700,000	2,400,000	116	Sp. & W1 thru 5
44,600,000	DEC	1943	2,400,000	1,000,000	1,600,000	115	Sp. & W1 thru 5
56,265,000	JAN**	1944	2,702,000	608,000	1,815,000	88	Sp. & W1 thru 5
L 24,739,484	FEB	1944	1,312,073	637,073	883,553	144	Sp. & W1 thru 5
28,609,993	MAR	1944	1,612,503	651,503	922,903	138	Sp. & W1 thru 5
55,556,100	APR	1944	2,787,670	1,057,670	1,851,870	111	Sp. & W1 thru 5
87,506,800	MAY	1944	3,454,000	2,158,000	2,822,800	118	Sp. & W1 thru 5
I 93,978,300	JUN	1944	3,666,280	2,439,280	3,132,610	144	Sp. & W1 thru 5
80,579,323	JUL	1944	3,182,333	1,706,333	2,599,333	137	Sp. & W1 thru 5
89,182,877	AUG	1944	3,901,867	2,043,867	2,876,867	162	Sp. & W1 thru 5
55,704,000	SEP	1944	2,829,000	1,083,000	1,856,800	168	Sp. & W1 thru 5
32,027,247	OCT	1944	1,358,467	558,467	1,033,137	272	Sp. & W1 thru 5
34,800,990	NOV	1944	1,617,333	864,333	1,160,033	284	Sp. & W1 thru 5
38,843,000	DEC	1944	1,571,000	831,000	1,253,000	173***	Sp. & W1 thru 5

[Sources: 02-0016 through 02-0040]

Total FM
1944 =
677,793,114

*Virtually the entire water supply was pumped from wells because continuing drought conditions reduced the flow from springs to a negligible amount.

**Beginning in January 1944 only daily averages are reported for spring production. Overall maximum and minimum consumption figures were computed by adding well production to average daily spring yield.

***Drop in per capita consumption explained by cold weather and repair of leaking fixtures. It is interesting to note the average per capita use in the Tucson urban area from 1950 to 1968 was 160 g.p.d. The City of Phoenix reported a higher use in 1968 of about 225 g.p.d. per capita. [Faculty of the University of Arizona, Department of Hydrology and Water Resources, *Arizona: its People and Resources* (Tucson: University of Arizona Press, 1972), p. 112.]

Water Consumption, ~~at~~ Fort Huachuca, 1956-1966, 1982-1989
[in millions of gallons]⁷⁵

<u>Year:</u>	<u>Average Day</u>	<u>Maximum Day</u>	<u>Year Total</u>	<u>Population*</u>
1956	1.226	2.622	447.005	7,086 (173 gpd/c)***
1957	1.524	3.207	556.121	8,800
1958	1.874	3.460	683.968	11,000
→ 1959	2.055	3.540	750.228	
1960	2.200	4.205	802.806	13,117
1961	2.250	3.990	821.217	13,296 (169 gpd/c)
1962	2.476	4.461	903.730	11,326
1963	2.187	4.416	798.217	12,000
1964	2.115	4.020	771.858	
1965	2.530	3.580	912.366	13,000 (192 gpd/c)
1966	2.398	4.464	863.532	
1967	**	**	**	16,000
1968-1981: no figures found.				
1982	** 2.44	**	891.502	
1983	** 2.58	**	937.042	
1984	** 2.74	**	1,000.780	16,154 (Jan.) 179 gpd/c
1985	** 2.67	**	972.903	
1986	** 2.59	**	944.207	
1987	** 2.03	**	740.676	
1988	** 2.86	**	1,043.198	
1989	** 2.32	**	847.522	

* [Population statistics derived from estimates, letters, fact sheets, reports, and other sources taken at different times of the year, independent of water consumption figures, and are included for comparison only.]

** [Figures unavailable.]

*** [Gpd/c = gallons per day per capita.]

⁷⁵Fort Huachuca, "Water Development Canyons and Water Conservation," Military Construction Line Item Data, 4-24-1967, section C.1. Hayden Collection, 306/25 #9, Arizona Collection, ASU, 20-0126. This project line item was for \$1.754 million. Annual well production figures for 1982-1989 contributed by Ft. Huachuca DEH, February 1990. 11-0082.