

October 5, 2006

Mr. Mark Hooper
Land Law Examiner
OEP/DHAC1 (PJ-12)
Federal Energy Regulatory Commission
888 1st St Northeast
Washington, D.C. 20426-0002

Dear Mr. Hooper

This letter consists of a report and recommendations with respect to a petition for determination requested by the U.S. Forest Service (BLM File Code: AZA 33339), and is in accord with the Inter-agency Memorandum of Understanding of 1966 between your commission and this Department. The following described lands, aggregating approximately 240 acres, are requested to be cleared from a power withdrawal so that an Education Land Grant and National Forest Townsite sale into non-federal ownership be made between the Town of Camp Verde, Arizona, and the U.S. Forest Service.

Gila and Salt River Meridian, Arizona

T. 13 N., R. 5. E.
sec. 4, S1/2SW1/4
sec. 9, NW1/4

The lands in section 4 and 9 are withdrawn for waterpower purposes in Power Site Classification No. 438., approved on November 16, 1956, and the Bureau of Land Management recommends outright revocation of the power site classification affecting the subject lands.

Power site classification No. 438 was made to protect the Camp Verde Reservoir site on the Verde River. The potential reservoir is located within the Verde River Basin, HUC 15060303, which has an overall drainage area of 5,009 mi², however, only 4,644 mi² contributes to gage records due to the presence of closed basins. Approximately seventy percent of the basin's land cover is forest receiving a mean annual precipitation of 17.6 inches. The Verde River exhibits a channel gradient of 17.9 feet per mile throughout the basin. There are a number of tributaries that contribute to a dendritic drainage pattern that include, but are not limited to, Wilson Valley Wash, Oak Creek, East Verde River, West Clear Creek, and Sycamore Creek¹.

The Verde is one of the largest perennial rivers within the state. Sullivan Lake, an artificial reservoir at the confluence of the Big Chino and Williamson Valley Washes, is the headwater of the Verde River. From Sullivan Lake, the Verde flows freely for 125 miles before encountering Horseshoe Reservoir, a structure operated by the Bureau of Reclamation.

¹ United States Geological Survey. 2006. *Statistical Summary of Streamflow through Water Year 1996* [Electronic Version]. Retrieved October 3, 2006 from <http://az.water.usgs.gov/DataReports/DR05/Basins/VerdeBasin/stats/09506000.pdf>

The dam site for the proposed reservoir site is located approximately in unsurveyed sec.1 of T.12 N., R. 5 E. A dam 210 feet high would create a reservoir, at a maximum high water line of 3,100 feet, with a capacity of 475,000 acre-feet to be used primarily for irrigation but with minor hydropower development². The geology of the site is not known. About three miles above the dam site, the valley widens into a broad basin of large capacity where the town of Camp Verde is located.

The nearest gaging station to the potential dam site is United States Geological Survey (USGS) No. 09506000. Gage records indicate that the Verde River is perennial though flow is highly variable throughout the year. Flows are affected by changes in precipitation, upstream diversions, ground-water pumping, and evapotranspiration³. High runoff occurs from winter cyclonic storms, and (to a lesser extent) from convectional monsoon storms in later summer (July, August, early September). Flows peak irregularly in the winter and spring months of January through April, and reach a minimum in the summer months of May through July when precipitation is low to nonexistent and irrigation diversions are high. Discharge record for the years of 1934-1945 and 1988-2005 show a low flow at 21.4 cfs and a maximum flow of 63,400 cfs. Based on monthly means, Q95 is 52.4 cfs, Q75 111.7, and Q50 is 147.2 cfs. In terms of power generation, a gross head of 210 feet with a mean flow of 412 cfs would generate 5.8 megawatts of power, assuming 80% efficiency. Power generation figures do not take into account instream flow requirements which would be required as a result of irrigation needs throughout the basin.

Past studies evaluating the parcels of interest have recommended restoration. In 1961, the United States Geological Survey Branch of Waterpower Classification evaluated the classified lands and concluded the lands should be restored under Section 24 of the Federal Power Act. This conclusion was based upon the lands having negligible hydroelectric potential along with a remote possibility of development due to high variability in stream flow⁴. Also, high stream flow variability is a reason as to why there are no potential water resource sites withdrawn upstream from the Camp Verde site⁵.

By 1972, the recommendation changed from a restoration from under Section 24 of the Federal Power Act to an outright revocation. In addition to the earlier findings ten years prior, the combination of a lack of interest in developing the site and increased recreational use of the basin called for the revocation of power site classification in T. 13 N., R. 5 E.⁶. Currently, interest in the site continues to be minimal since there are no known records indicating that Federal Power Projects have been filed.

Other alternative sites along the Verde River have had a greater interest in development than the Camp Verde site. Horseshoe Reservoir is located approximately sixty miles down stream from Camp Verde and produces no electricity. Discussion in the 1940s focused upon increasing the dam height allowing an additional 166,600 acre-feet of storage⁷. The added storage would be enough to operate a power plant at the toe of the dam utilizing the increased power head. If carried through, and the Camp Verde site remained undeveloped, the increased storage capacity

² Teft, Henry D. Jr (USGS). 1961. *Review of Withdrawals: Gila River, Arizona (From the Mouth to San Carlos Lake, Exclusive of the Salt River Drainage Basin)*. For Administrative Use. [Arizona]: Conservation Division Branch of Waterpower Classification.

³ United States National Park Service. [2003]. *Verde River: AZ*. [Electronic Version]. Retrieved October 3, 2006 from <http://www.nps.gov/rivers/wsr-verde.html>

⁴ *Ibid.*

⁵ Teft, Henry D. Jr (USGS). 1972. *Review of Withdrawals: Gila River, Arizona (From the Mouth to San Carlos Lake, Exclusive of the Salt River Drainage Basin)*. [Arizona]: Conservation

⁶ *Ibid.*

⁷ United States Bureau of Reclamation. 1947. *Report on the Central Arizona Project*. [Boulder City, Nevada]: Region III

at Horseshoe Reservoir would greatly lessen the waterpower value of the Camp Verde site⁸. Other proposed sights on the Verde River include the Orme Dam at the confluence of the Salt and Verde Rivers, and the Cliff Dam located just a few miles south of Horseshoe Dam. The Orme dam was proposed in the late 1970s and the Cliff Dam in 1987. Still authorized by Congress, neither facility was constructed because of cost considerations, a lack of demand for the water, and environmental constraints⁹. Yet, above average precipitation in early 2005 for the Phoenix area called for revisiting these two structures for capturing excess runoff¹⁰.

Other social considerations include Federal legislation and settlement relocation. Congress designated the Verde River as "Wild and Scenic" on August 28, 1984¹¹. The boundary of the Scenic River Area begins at the section line between Section 26 and 27, T. 13 N., R. 5 E., of the Gila-Salt River Meridian, and extends southward to Section 11, T. 11 N., R. 6 E. The northern most portion of the Scenic Area directly overlaps the southern most portions of the Camp Verde Reservoir and potential dam site. This designation prevents the Federal Regulatory Commission from licensing new construction that is on or directly affects a Wild and Scenic River. Also, the Camp Verde Reservoir, if developed, would inundate a southern portion of the town Camp Verde. The town of Camp Verde has an estimated population of 9,451 as of 2000¹². Using 2000 figures, population density within the town boundary is 222 per mi². The potential inundation area of the reservoir is 6.21 mi² and would displace approximately 1,377 people increasing the project cost. These figures are conservative and current unofficial estimates bring the population to between 10,000 and 12,000. Neither Federal legislation nor issues affiliated with settlement relocation due to reservoir development should be the sole basis for the revocation of lands having power potential because legislation can change and relocation issues addressed. However, these two social considerations, in particular, make the site unattractive and economically less feasible along with site's variable stream flow.

Taking into the consideration the high variability of stream flow, inadequate power potential¹³, and much greater interest in improving upon or developing structures downstream, the Bureau of Land Management's findings concur with previous recommendations by the USGS for restoring the affected subject lands.

Cordially,

Victor W. Lozano
National Program Lead
Waterpower and Reservoir Resources Program
Division of Lands, Realty, and Cadastral Survey
Bureau of Land Management

⁸ *Ibid.*

⁹ United States Bureau of Reclamation. [2003]. *Colorado River Basin Project: Central Arizona Project* [Electronic Version]. Retrieved October 3, 2006 from <http://www.usbr.gov/dataweb/html/crbpcap.html>.

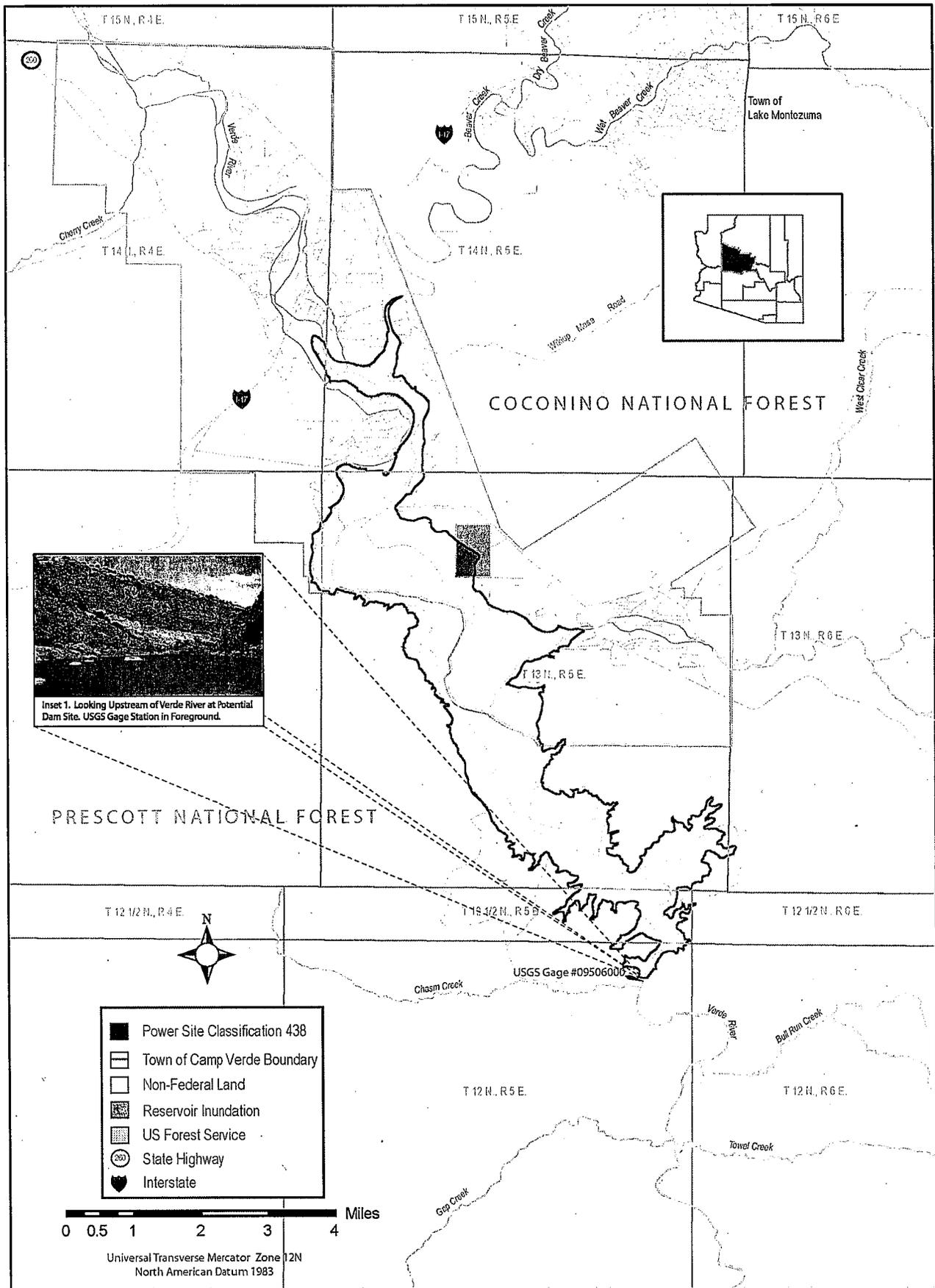
¹⁰ McKinnon, Shaun. (January 4, 2005). *Never-Built Reservoirs could have Captured Runoff*. [Electronic Version]. Retrieved October 3, 2006 from <http://www.azcentral.com/specials/special26/articles/0104dams04.html>.

¹¹ Public Law No. 98-406, 98 Stat. 1485.

¹² United States Census Bureau. Summary File 1 and Summary File 3 for the Town of Camp Verde, Arizona.

¹³ Evaluating power potential includes adequacy of water supply, the number of Federal Power Projects that have been filed for the site, economic feasibility, and evaluating lands for higher uses that improve land administration (*Department of Interior: Geological Survey – Conservation Division: Branch of Waterpower Classification Manual 633.2.1*)

Potential Camp Verde Reservoir Site
 Camp Verde, Arizona
 Yavapi County



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