

RECLAMATION

Managing Water in the West

Draft Environmental Assessment

Geologic Drilling & Aggregate Sampling Program, Upper San Joaquin River Basin Storage Investigation, Fresno and Madera Counties, California

EA-06-54



U.S. Department of the Interior
Bureau of Reclamation
Mid-Pacific Region

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Section 1	PURPOSE AND NEED FOR ACTION.....	3
1.1	Purpose of the Proposed Action.....	3
1.2	Need for the Proposed Action.....	3
1.3	Authority.....	3
Section 2	ALTERNATIVES.....	4
2.1	Proposed Action.....	4
	Geologic Drilling	4
	Aggregate Sampling.....	8
2.2	No Action.....	9
2.3	Reasonable Alternatives.....	9
Section 3	AFFECTED ENVIRONMENT	10
3.1	Geology & Soils.....	10
3.2	Water Quality.....	11
3.3	Air Quality	11
3.4	Aquatic Resources	11
3.5	Biological Resources including Threatened & Endangered Species.....	11
	Threatened and Endangered Species	12
	Vegetation.....	14
3.6	Recreation	15
3.7	Noise	15
3.8	Cultural Resources	15
3.9	Indian Trust Assets	16
3.10	Environmental Justice.....	16
3.11	Socio-economic Resources	16
Section 4	ENVIRONMENTAL CONSEQUENCES	17
4.1	Geology & Soils.....	17
4.2	Water Quality.....	17
4.3	Air Quality	18
4.4	Aquatic Resources	18
4.5	Biological Resources including Threatened and Endangered Species	19
4.6	Recreation	20
4.7	Noise	20
4.8	Cultural Resources	21
4.9	Indian Trust Assets	21

SECTION 1 PURPOSE AND NEED FOR ACTION

1.1 PURPOSE OF THE PROPOSED ACTION

The U.S. Bureau of Reclamation (Reclamation) is proposing to conduct feasibility-level geologic drilling and aggregate sampling investigations (program) at two potential dam sites on the Upper San Joaquin River. The investigations would be conducted as part of the Upper San Joaquin River Basin Storage Investigation Project (USJRBSI), which is investigating the feasibility of implementing various alternatives to provide additional water storage capacity for the San Joaquin River watershed. The two potential sites are located upstream of Friant Dam on Millerton Lake about 25 miles northeast of Fresno, California, and are referred to by river mile (RM) as RM 274 and RM 279.

1.2 NEED FOR THE PROPOSED ACTION

Completing the proposed geologic drilling and aggregate sampling investigations will provide Reclamation with geologic information necessary for more detailed cost estimates and will help determine what kind of dam would be best suited to these sites. This work is part of Reclamation's on-going USJRBSI feasibility study. The two locations selected for evaluation of coarse and fine aggregate are in the vicinity of 2 of the potential dam sites being evaluated in the USJRBSI study. The information gathered through the program will be used to further evaluate the feasibility of constructing a new dam and reservoir. A Feasibility Report and Environmental Impact Statement will be completed by Reclamation prior to any decision on whether to further pursue construction of a new dam.

RELATED EIS's, EA's and other Relevant Environmental Documents

The USJRBSI is one of five surface water storage studies recommended in the CALFED Bay-Delta Program Programmatic Environmental Impact Statement/Report Record of Decision of August 2000.

1.3 AUTHORITY

The USJRBSI is a joint feasibility study by the U.S. Department of the Interior, Bureau of Reclamation and the California Department of Water Resources (DWR). Investigation guidance derives from Federal feasibility study authorization provided in P.L. 108-7 (enacted February 2003) and the CALFED Programmatic Environmental Impact Statement/Report (EIS/R) Record of Decision.

SECTION 2 ALTERNATIVES

2.1 PROPOSED ACTION

The proposed action includes geologic drilling and aggregate sampling on the Upper San Joaquin River (USJR) in Millerton Lake (see Figure 1). The geologic drilling would occur at 8 locations at each of two potential dam sites located at RM 274 and RM 279. A total of 16 bore holes would be drilled on Reclamation land or within Millerton Lake. In addition to the geologic drilling, two aggregate sampling sites are located on the left abutment at RM 279 and on the left abutment at RM 274, each, near a prospective drill hole location.

Geologic Drilling

Drilling would occur between June and November of 2006. The drill sites are located approximately one and six river miles up-river from the entrance of Fine Gold Creek into Millerton Lake. Table 1 shows the approximate drilling locations, depths, county the drill hole is in, and indicates if the drilling would be land or water based.

Eight bore holes would be drilled at each dam site (See Figure 2). One hole would be drilled over land on each side of the river at each of the potential dam sites (total of four over-land drill holes). Six holes would be drilled over water and into bedrock, at each of the two potential dam sites (total of twelve over-water drillings). Drill holes would be 2.98 inches in diameter and would be 50, 100, or 200 feet in depth. Drill sites were selected to correspond to potential dam axis, abutments, diversion tunnels, and/or appurtenant works. The holes at over-land sites would be completed as observation wells at the ground surface, with concrete and flush-mounted locking caps.

Drill Hole	Northing*	Easting*	Drill Depth in feet	County	Land or Water Based Drilling
DH-06-1	2263132	6374486	50	Fresno	Water
DH-06-2	2261980	6376400	100	Fresno	Water
DH-06-3	2261041	6376025	200	Fresno	Land
DH-06-4	2261249	6377107	200	Fresno	Water
DH-06-5	2261585	6377287	200	Madera	Water
DH-06-6	2262244	6377432	200	Madera	Land
DH-06-7	2260108	6378220	100	Madera	Water
DH-06-8	2258647	6376524	50	Fresno	Water
DH-06-9	2268969	6383850	50	Fresno	Water
DH-06-10	2269319	6383432	100	Madera	Water
DH-06-11	2269792	6383683	200	Fresno	Water
DH-06-12	2269972	6383089	200	Madera	Land
DH-06-13	2270105	6383382	200	Madera	Water
DH-06-14	2270282	6383895	200	Fresno	Land
DH-06-15	2270556	6383505	100	Madera	Water
DH-06-16	2271415	6384159	50	Fresno	Water

* Northing and Easting data provided in California State Plan IV

Over-water drilling would be conducted with a drilling barge. The barge is a platform mounted on pontoons which supports a Longyear model 34 skid-mounted core drill. The barge, with platform, is approximately 15 feet by 20 feet in size and is self propelled. This drilling barge

Figure 1. Geologic Drilling & Aggregate Sampling Program
San Joaquin River/Millerton Lake
Fresno & Madera Counties
5/1/2006

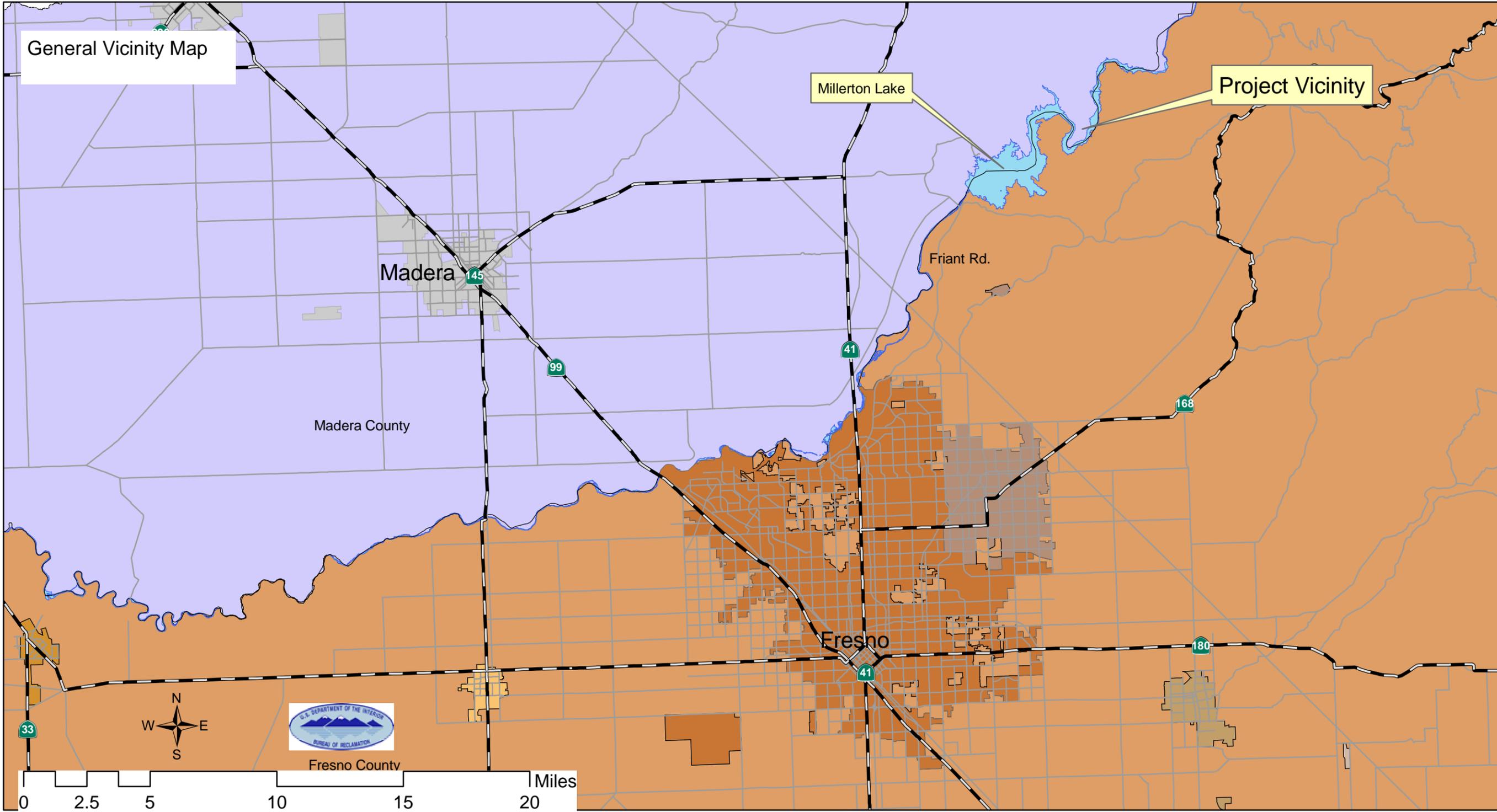
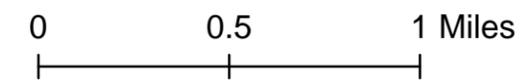
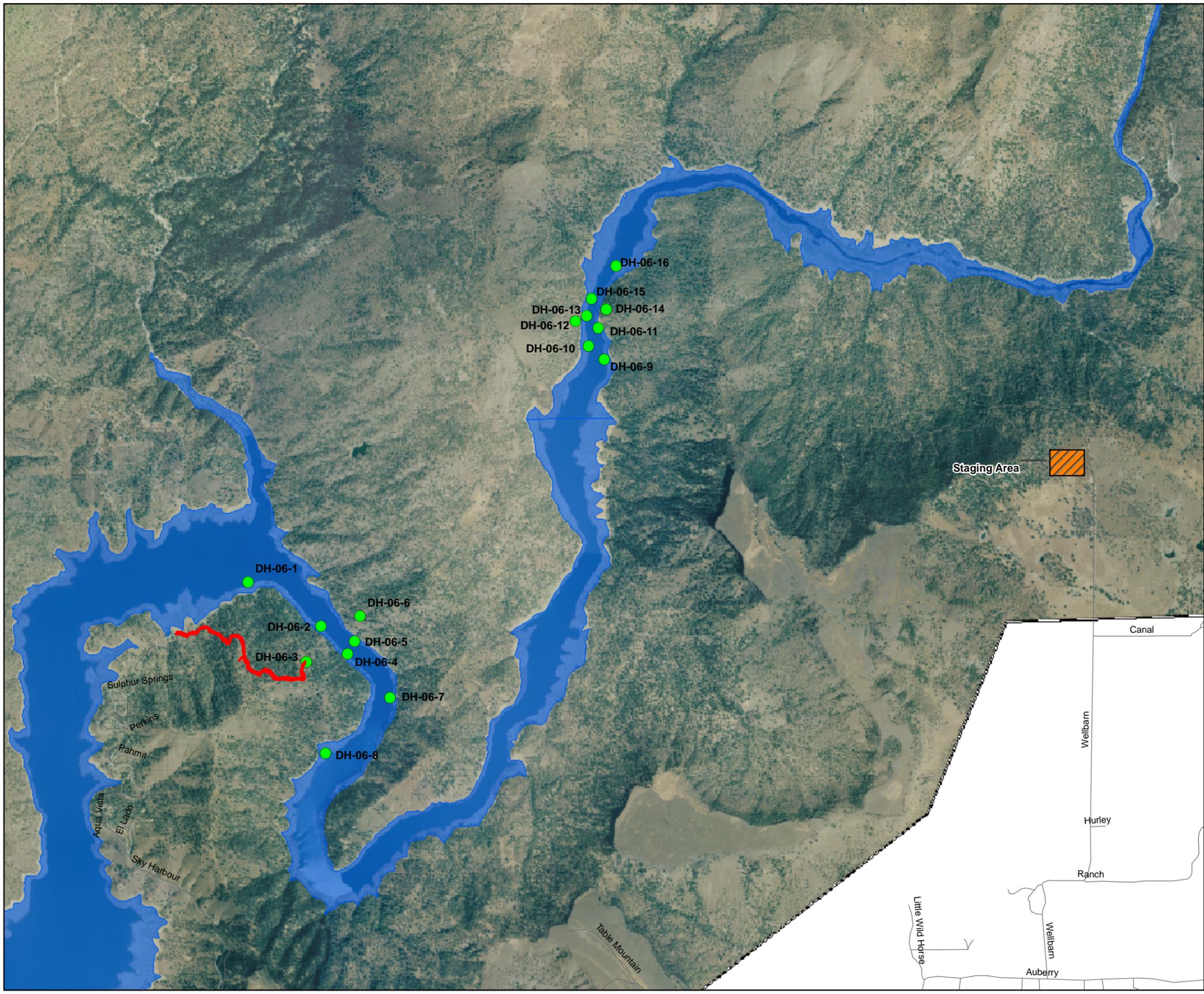


Figure 2.
Geologic Drilling &
Aggregate Sampling Program



Legend

- Drilling Sites
- Staging Area
- trail



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 Author: serysian
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would motor to drilling sites in the lake, but may be assisted by a work boat. When in operation, the barge platform would be anchored at specific sites near the shoreline of the lake, and secured using a mooring system consisting of cables, deck winches and on-land and in-lake anchors. Marker buoys designating no wake zones, speed limits, and construction zones and restricted areas would be floated. Flagging and flashing lights would be deployed on the floating drilling platform and anchor cables to alert boaters operating in the vicinity.

The Over-water Equipment Includes:

- Diamond drill rig, power pack and control panel
- Stock tank and circulating pump
- Drill rods, core barrels, diamond bits and tools
- Water supply pump and 1 ½ inch PVC water line
- Safety/warning lights and buoys
- Anchoring equipment, ropes and cables

Water needed for the drilling operation would be pumped from Millerton Lake to a stock tank on the barge. Drill water would be re-circulated in the stock tank with very minor amounts of water returned to the lake. Drill cuttings would be shoveled/removed from the stock tank and hauled out along with sediment-filled filter socks via boat for disposal. Rock core would be boxed and transported to the staging area by boat. Drill cuttings of mostly sand would be filtered from the drilling water and hauled out by boat for disposal. The volume of cores would be approximately ½, ¼ and ⅛ of a cubic yard for drilling holes 200, 100 and 50 feet deep, respectively.

All over-water drilling sites are accessible only by water. Equipment will be barged both to and from the sites from a non-public dock at the Millerton Lake State Recreation Area (SRA) South Shore Area, use of which is being provided by State of California Department of Parks and Recreation (CDPR). Daily access to the barge site will be by boat from the Millerton Lake Marina at Winchell Cove.

Over-land drilling would be conducted with equipment similar to that identified above for over-water drilling, other than the barge platform. The drill would use either an Atlas Copco CS100 P4 skid-mounted drill rig or a Longyear model 28 skid rig. Rock core would be boxed and transported from the drill site to the staging area by helicopter or all-terrain vehicle (ATV). Drill cuttings consisting mostly of fine and medium sand would be filtered from the drilling water and spread on the ground surface. Minimal hand excavation is planned at each site for the purpose of leveling the drill rig. Most leveling would be accomplished with leveling legs attached to the rig and with timber blocking. Upon completion of each hole, the drill pad excavation would be backfilled with excavated material and returned to its natural slope.

Daily access to over-land sites at RM 279 and on the north side of the lake at RM 274 would be by boat from Millerton Lake Marina to a foot path leading to the drill sites. The boat would shuttle personnel, hand tools and provide support to the barge-drilling operations. Because the over-land sites are remote and not accessible by road, most drilling equipment would be hauled by truck to a flat staging area and then airlifted by helicopter on a static line to the drill sites. The helicopter would hover over the drill site while equipment is disconnected from the static line.

The drill site on the south side of Millerton Lake at RM 274 is accessible by the existing San Joaquin River Gorge Trail (SJRG), which begins at the Fine Gold Day Use Area (FDUA) (See Figure 2). Distance to the drill site is approximately one mile and daily transportation of personnel, hand tools and fuel to the site would be accomplished with the use of an ATV. To allow ATV use of the SJRG some improvement to the trail would have to be made between the trailhead at the FDU and the drill site, a distance of approximately 1 mile. Temporary widening of the existing SJRG at selected locations would be necessary to accommodate ATV travel, and would require the use of a track-hoe excavator or other specialty trail improvement equipment. All trail improvements would be limited to the existing trail footprint and are considered trail maintenance.

Aggregate Sampling

Aggregate sampling will be done at one site at RM 274 and one site at RM 279. The exact location of the sampling sites will be determined in the field prior to the work being done based on field conditions and rock suitability. The water level fluctuations of reservoir makes picking exact locations impractical since higher or lower water levels could inundate the selected locations. The general vicinities for the sites will be between the high and low waterline on the shore near DH-06-8 at the RM 274 site and near DH-06-16 at the RM 279 site (see Figure 2). The sampling will entail the collection of material for laboratory testing. At each of the sites small scale drilling and blasting operations would be undertaken. Several small diameter holes (approximately 3-inch diameter) will be drilled vertically through the rock walls at a distance approximately seven feet back from the wall face. Drilling will be performed with a rotary drill (similar to a jack-hammer) and compressor staged from a barge floating on Millerton Lake. The holes will be loaded with explosive material and detonators. A single shot (possibly with delays) will create a localized blast that will separate the material from exposed rock surface. The material dislodged by the blasting will be gathered and hauled out of the reservoir via the barge. No material dislodged will be allowed to fall into the water or be left at the site. All loose rock will be pried from the wall resulting in semi-smooth rock similar to naturally occurring rock exposures.

A total of no more than 25 cubic yards (CY) of material would be removed (about 12 CY per site). The material would be removed during weekdays (weekend operation would not be permitted). Mobilization, haul, and demobilization would be via barge. The material collected would be transferred to Reclamation at the LaPlaya Use Area. A portion of that material collected would be sent to Reclamation's Materials Engineering and Research Laboratory in Denver, Colorado for material quality and crusher testing the remainder of the material would be collected for disposal.

A procedure for noise abatement, dust control, fly rock protection, and safety would be developed. The air blast pressure would be measured at a distance of 200 feet at both sites to document the intensity of the blasts. The blast size would be the smallest possible to allow for material removal, and would be confined to the wall face. Dust and debris would be limited by the use of sand bags, blasting mats, rock fences, and other protective measures. Dust clouds would not be generated from the blasting operation although some smoke would be produced from the explosives and some cloudiness produced from the rock fall. Sounds produced from the blast would consist of a popping sound as the detonators ignite and a 'bang', similar to a car backfiring, when the charge detonates. Overpressures would not be generated. Blast mats

would be placed over area to be blasted to prevent fly-rock. A safety zone would be created prior to blast by blasting personnel.

Spill prevention control and countermeasure plans and a spill hazard analysis for both over-water and over-land drilling have been drafted and would be implemented. A Fire Prevention and Suppression Plan for land-based drill sites has been drafted as well and would be implemented.

2.2 NO ACTION

Under the no action alternative, Reclamation would not complete geologic drilling and aggregate sampling investigations at two potential dam sites upstream of Friant Dam on Millerton Lake about at RM 274 and RM 279 of the San Joaquin River. Information needed to complete the USJRBSI study which includes evaluating the feasibility of construction of a dam at the two sites could not be completed.

2.3 REASONABLE ALTERNATIVES

Other alternatives considered for gathering the necessary information for the USJRBSI study were similar to the proposed action but larger in scope with potentially greater environmental impacts. The proposed action was developed by modifying the original plan for implementing the program to minimize environmental impacts.

and deep depth to bedrock. Two upland soil groups, shallow depth and deep depth, are found in this geographic region and typically developed on igneous rocks.

3.2 WATER QUALITY

Water quality in the San Joaquin River varies considerably along the river's length. Above Millerton Lake water quality is generally excellent. The upper reaches of the San Joaquin River originate in large drainage areas high on the west side of the Sierra Nevada. The water is generally soft with low mineral concentrations. Water is nutrient- and mineral- poor due to the insolubility of the granite substrate.

3.3 AIR QUALITY

Air quality in the San Joaquin Valley Air Basin (SJVAB) is regulated by the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD), which consists of Merced, Madera, Fresno, Kern, Kings, San Joaquin, Stanislaus, and Tulare counties. The entire SJVAB is designated nonattainment with respect to the National and State ozone (O₃) and particulate matter 10 microns in aerometric diameter or less (PM₁₀) standards, and the urban areas of Fresno, Modesto, and Stockton are nonattainment for the National and State carbon monoxide (CO) standards (California Air Resources Board, 1996).

3.4 AQUATIC RESOURCES

Millerton Lake becomes thermally stratified during summer months and therefore supports a two-stage fishery with coldwater species residing in deep water and warmwater species inhabiting surface waters and areas near shore. Of the large number of fish species that inhabit Millerton Lake, most are introduced game species or forage species (United States Fish and Wildlife Service, 1983). The principal warmwater game species are largemouth bass (*Micropterus salmoides*), smallmouth bass (*M. dolomieu*), spotted bass (*M. punctulatus*), bluegill sunfish (*Lepomis macrochirus*), and striped bass (*Morone saxatilis*); the principal forage species is threadfin shad (*Dorosoma pretense*). Coldwater game species include rainbow trout (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*).

The only known landlocked population of American shad (*Alosa sapidissima*) is present in Millerton Lake. American shad spawn in the San Joaquin River upstream of Millerton Lake and in the portion of the reservoir upstream of Temperance Flat, which is the most riverine portion of the reservoir with turbulent flows (Pacific Gas & Electric, 1990). Several native species also reside in Millerton Lake, including Sacramento sucker (*Catostomus occidentalis*), Sacramento pikeminnow (*Ptychocheilus grandis*), Sacramento blackfish (*Orthodon microlepidotus*), hitch (*Lavinia exilicauda*), and hardhead (*Mylopharodon conocephalus*).

Temperance Flat, in upper Millerton Lake, has a gently sloping shoreline, shallow water, and well-developed shoreline vegetation. It is likely that this area provides good spawning and nursery habitat for important game fish species such as largemouth bass and spotted bass.

3.5 BIOLOGICAL RESOURCES INCLUDING THREATENED & ENDANGERED SPECIES

Millerton Lake hosts a diverse wildlife community, both resident and seasonal. The upper San Joaquin River area is a relatively rich wildlife region of the Sierra foothills. Forest canopy varies considerably by slope and aspect, while the shrub and ground cover layer is greatly affected by land uses such as cattle grazing. Wildlife in the higher elevation portions of the watershed is typical of the mid-elevation Sierra Nevada.

Important deer winter ranges and bear habitat exist in the Temperance Flat area. San Joaquin mule deer (*Odocoileus hemionus*) are year-round residents of the area and mix with migratory herds from higher elevations (United States Forest Service, 2004). Generally, migratory deer move from summer range, elevation 5,000 to 8,000, to lower elevations around mid-October, or later with any significant winter storm (California Department of Fish and Game, 2004). Four major river crossings used by mule deer during migration in the Mammoth reach of the San Joaquin River include near Chawanakee at Dam 6, below the confluence of Rock Creek and the river, the confluence of Shake Flat Creek and the river, and the Mammoth Pool area. Additionally, mule deer cross the San Joaquin River at the confluence of Jackass Creek (Southern California Edison Company, 2003). Avian guilds comprise a number of bird species for oak woodland, and riparian habitats occur throughout the area (United States Forest Service, 2004).

Threatened and Endangered Species

This action area lies within the Millerton West, Millerton East and Friant quadrangles. A species list for these quadrangles and the adjacent Academy Quadrangle was obtained from http://sacramento.fws.gov/es/spp_list.htm on April 4, 2006 (document number 060404051114). Eleven federally listed species under the jurisdiction of U.S. Fish and Wildlife Service (USFWS) were identified. One species under the jurisdiction of the Nation Marine Fisheries Service (NMFS) was identified - Central Valley Steelhead (*Onchorhynchus mykiss*). To this list, records of federally listed species from the California Natural Diversity Database (CNDDDB) (California Department of Fish and Game, 2005) that were recorded within 5 miles of drill site and trail locations were added. Two other species were added, including Hartweg's golden sunburst (*Pseudobahia bahiafolia*), which is known from the vicinity south and west of the South Shore area, and the peregrine falcon (*Falco peregrinus*) which range widely and occur in the San Joaquin River drainage (Table 2).

Baseline for Critical Habitat and Listed Species

"Critical habitat" is defined in section 3(5)(A) of the Federal Endangered Species Act and includes:

- Areas within a listed species' current (at time of listing) range that contain the physical or biological features that are essential to that species' conservation or that for some reason require special management; and
- Areas outside the species' current range that the secretary determines to be essential to its conservation.

Primary constituent elements (PCEs) are those physical and biological features of designated or proposed critical habitat essential to the conservation of the species, including, but not limited to: (1) space for individual and population growth, and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and (5) habitats that are protected from disturbance or are representative of the historic geographic and ecological distributions of a species (ESA §3(5)(A)(i), 50 CFR §424.12(b)).

Table 2. Federally protected species¹ and critical habitat under the jurisdiction of USFWS or NMFS that were identified for Millerton West, Millerton East, Friant and Academy quadrangles, with additional species added from the CNDDDB and knowledge of local distributions.

Common Name	Scientific Name	Status - Federal	Status - State	Critical Habitat in Action Area
Bald eagle	<i>Haliaeetus leucocephalus</i>	FT	SE	No
Blunt-nosed leopard lizard	<i>Gambelia (=Crotaphytus) sila</i>	FE	SE	No
California red-legged frog	<i>Rana aurora draytonii</i>	FT	--	No
California tiger salamander	<i>Ambystoma californiense</i>	FT	--	No
Central Valley Steelhead	<i>Onchorhynchus mykiss</i>	FT	--	No
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	FE	--	No
Delta smelt	<i>Hypomesus transpacificus</i>	FT	ST	No
Fresno kangaroo rat	<i>Dipodomys nitratoides exilis</i>	FE	SE	No
Giant garter snake	<i>Thamnophis gigas</i>	FT	--	No
Golden eagle	<i>Aquila chrysaetos</i>	--	--	No
Hartweg's golden sunburst	<i>Pseudobahia bahiifolia</i>	FE	SE	No
Peregrine falcon	<i>Falco peregrinus</i>	FD	SE	No
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	FE	ST	No
San Joaquin Valley orcutt grass	<i>Orcuttia inaequalis</i>	FT	SE	No
Succulent owl's-clover	<i>Castilleja campestris ssp. succulenta</i>	FT	SE	No
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT	--	No
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT	--	No
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	FT	--	No

¹ Protected under the Endangered Species Act; Bald and Golden Eagle Protection Act; Migratory Bird Treaty Act

² Includes its host plant, *Sambucus mexicana*.

There is no critical habitat in the action area for species under the jurisdiction of USFWS. The nearest critical habitat is for California tiger salamander (CTS), and for vernal pool associated species. The critical habitat for these species would not be affected, as the action area does not overlap these locations and all activity would take place down-slope of the critical habitat. Aerial conveyance of materials would not cross critical habitat.

Species Not Expected to Occur in Action Area

All but two species identified in Table 2 would not be expected to occur in the action area. Blunt-nosed leopard lizards (BNLL) prefer alkali sink scrub or open grassland habitats. They could be found on the valley floor, but would not be expected to occur in the action area, that includes foothill woodland habitat with an associated steeply graded understory of annual grassland and lake habitats. Fresno kangaroo rats have not been observed since the early 1990's, even though searches of designated critical habitat at presumed preferred habitat have been made (P. Kelly, pers. Comm.). This species also prefers alkali scrub sink or annual grassland with sparsely covered habitat (USFWS 1994). The nearest existing suitable habitat for BNLL and FKR is several miles away.

There are several vernal pool affiliated species, including CTS, conservancy fairy shrimp, San Joaquin Valley orcutt grass, succulent owl's clover, vernal pool fairy shrimp and vernal pool tadpole shrimp. There is no vernal pool habitat in the action area. Although CTS can occur in upland areas in oak savannah and grassland habitat up to a mile away from wetland breeding sites, which can include vernal pools, ephemeral streams and stock ponds that lack predatory fish, these habitats are mostly too far from the action area to be of concern. An exception is the unit 2 of critical habitat for CTS in Fresno County, south of the Millerton Lake Marina which is within travel distance of dispersing CTS. However, the project work activity would occur at the lakeshore and in developed areas that would not support CTS. Additionally, most activity would occur during the summer and early fall, outside of periods when CTS would be expected to occur above ground.

Hartweg's golden sunburst is known from areas south and west of the South Shore area in the low foothills, but this plant is localized in its distribution, being primarily found on the western facing slope of pure stands of annual grassland south and west of the action area. It would not be found in the higher elevation areas with foothill woodland and its associated understory of annual grassland.

Species Expected to Occur in Action Area

The bald eagle, is known to occur in the action area. Bald eagles are known to frequent Lake Millerton, particularly in the wintertime, when maximal counts of eagles are recorded. Arrival of eagles may occur in early October. Telemetry studies of banded eagles revealed that the lakes population breeds on the Great Slave Lake area of Canada, Northwest Territories. These features are essential for conservation because without them juveniles cannot forage and grow to adulthood.

Valley elderberry plants, which serve as habitat for the valley elderberry longhorn beetle, have been identified in the vicinity of work areas. The presence of valley elderberry plants indicated that valley elderberry longhorn beetles may be present.

Vegetation

Vegetation around Millerton Lake is mostly foothill woodland and grassland habitat, and riparian vegetation along the shoreline. Adjacent hillsides are foothill pine (*Pinus sabiniana*) - blue oak (*Quercus douglasii*) woodland with abundant grass/forb and shrub understory. Open grassland and savanna type habitat conditions also exist in some areas. Vernal pools and associated special status plant and animal species do not occur along this stretch of the San Joaquin River. Several large basalt tables known to have vernal pools surround the canyon, well above elevation 1,600.

Upland vegetation is dominated by foothill woodland with areas of open grassland and rock outcroppings. The predominant vegetation includes foothill pine, blue oak, and interior live oak (*Q. wislizeni*).

3.6 RECREATION

Millerton Lake is a major low-elevation recreation destination in the region, providing a variety of recreation opportunities, including fishing, swimming, boating, and water skiing. Several developed recreation facilities associated with the Millerton Lake SRA are present along the reservoir margins, including boat launching areas, developed campgrounds and day use areas, and recreation residences. The primary launching area is located on the south side of the reservoir near Friant Dam. This launch area is accessible by paved road and includes large paved parking areas and several boat ramps. Smaller, less heavily used boat launches are located elsewhere on the lake. Paved and unpaved roads provide access to the lake's shoreline. The area upstream of Big Bend, beginning at about RM 274.5, is relatively remote and accessible only by boat or unpaved roads. Dispersed use occurs along the entire shoreline and along the San Joaquin River upstream from Millerton Lake. The San Joaquin River Trail traverses the southern portion of Millerton Lake to Temperance Flat. The Temperance Flat area is relatively undeveloped and is accessible only by boat or a few mostly unpaved roads.

The SJRGT connects the FDUA picnic area in the SRA to the BLM primitive campground off Smalley Road, crosses a footbridge, and climbs the terrain north of the river.

3.7 NOISE

Noise at Millerton Lake is generally affected by the presence of boats and personal watercraft and vehicular traffic in areas with paved roadways.

3.8 CULTURAL RESOURCES

Cultural resources is a term used to describe both archaeological sites and the "built environment" such as dams, roadways, and buildings. The National Historic Preservation Act (NHPA) and other Federal laws and regulations protect and promote scientific study of cultural resources, specifically historic properties. Historic properties are any prehistoric or historic district, site, building, structure, or object which meet certain criteria outlined in the NHPA eligible for inclusion in the National Register of Historic Places. Examples are archaeological sites such as lithic scatters; bedrock mortars; or camp sites, and historic sites such as homesteads; irrigation canals and structures; and bridges.

Section 106 of the NHPA requires Federal agencies to: 1) consider the affects of an undertaking on historic properties, and 2) consult with the State Historic Preservation Office, tribes, interested parties, and the public regarding these affects. Before conducting Section 106, the Area of Potential Effects (APE) must first be identified. Reclamation has determined the APE includes lands located at RM 274 and RM 279 that will be impacted by test drilling and test blasting, including staging areas and ATV access trails.

A cultural resource survey of the APE was conducted by Far Western Anthropological Research Group (Far Western), Inc. and documented in a March 17, 2006 letter report to Reclamation. The survey was conducted to evaluate the affects the preferred alternative would have on potential historic properties pursuant to Section 106 of the NHPA (16 U.S.C. 470f). No historic properties were identified during the survey conducted by Far Western.

3.9 INDIAN TRUST ASSETS

Indian trust assets (ITAs) are legal interests in assets that are held in trust by the U.S. Government for federally recognized Indian tribes or individuals. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the Interior is the trustee for the United States on behalf of federally recognized Indian tribes. "Assets" are anything owned that holds monetary value. "Legal interests" means there is a property interest for which there is a legal remedy, such a compensation or injunction, if there is improper interference. Assets can be real property, physical assets, or intangible property rights, such as a lease, or right to use something. Indian trust assets can not be sold, leased or otherwise alienated without United States' approval. Trust assets may include lands, minerals, and natural resources, as well as hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, Indian trust assets may be located off trust land.

Reclamation shares the Indian trust responsibility with all other agencies of the Executive Branch to protect and maintain Indian Trust assets reserved by Indian tribes, or individual Indians by treaty, statute, or Executive Order.

The nearest Indian trust assets are located on the trust lands of the Table Mountain Rancheria about 2.5 miles south of DH-06-3.

3.10 ENVIRONMENTAL JUSTICE

The February 11, 1994, Executive Order requires federal agencies to ensure that their actions do not disproportionately impact minority and disadvantaged populations.

3.11 SOCIO-ECONOMIC RESOURCES

California's population is estimated to increase from about 34 million in 2000 to about 48 million by 2030. The population of the San Joaquin Valley is expected to increase from approximately 3.6 million people in 2000 to about 6.5 million people by 2030. In the San Joaquin River basin, the population is expected to nearly double from about 1.8 million to nearly 3.4 million by 2030. The areas surrounding Millerton Lake include some small communities and housing near the lake with large areas of undeveloped natural lands.

SECTION 4 ENVIRONMENTAL CONSEQUENCES

Proposed Action Alternative

Under the Proposed Action Alternative all work described in the Proposed Action heading under Section 2 would take place.

No Action Alternative

As described in Section 2, the No Action Alternative provides a base condition for comparison with the Proposed Action. Under the No Action Alternative the proposed geologic drilling or aggregate sampling program would not take place.

4.1 GEOLOGY & SOILS

Proposed Action Alternative

A total of 16 holes approximately 2.98-inches in diameter would be drilled at two potential dam site locations to gather geologic information. The drill holes would be completed to depths shown in Table 1 using both water-based drilling operations and land-based drilling operations. The small diameter drill holes would naturally fill with silt and sediment from the surrounding environment leaving no lasting effects of the drilling.

In addition, aggregate sampling would occur on the shore of Millerton Lake near drill hole DH-06-8 and drill hole DH-06-16. The aggregate sampling would remove up to 25 CY of rock from the shore. The material removed would be hauled out of the area by barge. Some of the material collected would be sent to Denver for testing and the remainder would be hauled off for disposal. Removal of up to 25 CY of granite rock from the area is minor given the abundance of granite rock in the area.

The blast size for the aggregate sampling would be the smallest possible to allow for material removal, and would be confined to the rock wall face or area considered suitable. Dust and debris impacts would be minimized through the use of sand bags, blasting mats, rock fences, and other protective measures. All loose rock would be pried from the wall resulting in semi-smooth rock similar to naturally occurring rock outcrops to preserve aesthetics and to prevent any potential safety concerns from loose rock. The material dislodged by the blasting will be gathered and hauled out of the reservoir via the barge. No material dislodged will be allowed to fall into the water or be left at the site.

Improvements to the SJRGT at selected locations would be completed to accommodate ATV travel, and would require the use of a track-hoe excavator or other specialty trail improvement equipment. Trail improvements would entail some additional minor disturbances to previously disturbed soil and be limited to the existing trail footprint and is considered trail maintenance.

No Action Alternative

Under the no action alternative, Reclamation would not complete geologic drilling and aggregate sampling investigations at two potential dam sites upstream of Friant Dam on Millerton Lake at RM 274 and RM 279 of the San Joaquin River and no impacts to geology or soils would occur.

4.2 WATER QUALITY

Proposed Action Alternative.

Water-based drilling may increase suspended sediments and elevate turbidity above natural levels. Though drilling activities could contribute to suspended sediment and increase turbidity Geologic Drilling & Aggregate Sampling Program, Upper San Joaquin River Basin Storage Investigation EA-06-54

due to the small area this project would directly affect, and the short duration of turbidity events, very minor impacts to aquatic habitat would occur. A Spill Prevention and Countermeasure Plan has been developed to minimize the risk of a spill and lay out a contingency plan in case of an equipment leak. Absorbent pads and “oil booms” would be available at the drilling sites in case of an oil or hydraulic fluid leak.

Section 401 of the Clean Water Act establishes a program to allow States and Tribes to review and approve, condition, or deny all Federal permits or licenses that might result in a discharge to State or Tribal waters, including wetlands. The Central Valley Regional Water Quality Control Board (RWQCB) administers the 401 program for the Central Valley region of California. The drilling aspects of the proposed action are regulated under Section 401. Reclamation has applied for a 401 Water Quality Certification from the RWQCB. Reclamation would not undertake any drilling activities in Millerton Lake prior to receiving certification from the RWQCB.

No Action Alternative

Under the no action alternative, Reclamation would not complete geologic drilling and aggregate sampling investigations at two potential dam sites upstream of Friant Dam on Millerton Lake at RM 274 and RM 279 of the San Joaquin River and no impacts to water quality would occur.

4.3 AIR QUALITY

Proposed Action Alternative

Fossil-fuel powered equipment including a drill rig, ATV, barge, helicopter, trail improvement equipment, and vehicles to transport workers to and from Millerton Lake would be used. The duration of the entire program would be no more than 6 months. Impacts to air quality would be localized and short term in nature. All program activities would be carried out in accordance with applicable Federal, State, and local laws and regulations concerning the prevention and control of air pollution. The lack of heavy construction and construction equipment and the short term nature of the work support the determination that implementation of the program is not expected to exceed Environmental Protection Agency (EPA) established *de minimus* thresholds of 50 tons of volatile organic carbon (VOC) or nitrous oxide (NO_x) (based on severe nonattainment status for ozone) or 70 tons of particulate matter 10 microns or smaller (PM₁₀) (based on severe nonattainment status for PM₁₀) there for a conformity analysis is not necessary.

No Action Alternative

Under the no action alternative, Reclamation would not complete geologic drilling and aggregate sampling investigations at two potential dam sites upstream of Friant Dam on Millerton Lake at RM 274 and RM 279 of the San Joaquin River and no impacts to air quality would occur.

4.4 AQUATIC RESOURCES

Proposed Action Alternative

Though drilling activities could contribute to suspended sediment and increase turbidity due to the small area this project would directly affect, and the short duration of turbidity events, very minor impacts to aquatic habitat would occur. Use of the barge and boats to access the work areas would cause disturbances similar to recreational boating that takes place within Millerton Lake. A Spill Prevention and Countermeasure Plan has been developed to minimize the risk of a spill and lay out a contingency plan in case of equipment leaks.

Section 404 of the Clean Water Act establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Activities in waters of the United States regulated under this program include fill for development, water resource projects, infrastructure development and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into waters of the United States, unless the activity is exempt from Section 404 regulation. The drilling aspects of the proposed action includes work in a Water of the United States and would be completed in compliance with the requirements of a U.S. Army Corps of Engineers (USACE) Nationwide Permit #6 (NWP 6) under Section 404. The NWP 6 does not require reporting to USACE as long as all permit conditions are met.

No work is would take place in areas considered wetlands.

No Action Alternative

Under the no action alternative, Reclamation would not complete geologic drilling and aggregate sampling investigations at two potential dam sites upstream of Friant Dam on Millerton Lake at RM 274 and RM 279 of the San Joaquin River and no impacts to aquatic resources would occur.

4.5 BIOLOGICAL RESOURCES INCLUDING THREATENED AND ENDANGERED SPECIES

Proposed Action Alternative

Some wildlife may be disturbed by or could temporarily move to avoid work areas. Boat traffic is common within the lake and the area is also an active recreation area for hiking and other outdoor activities. The effects of the program on wildlife are expected to be similar to the effects caused by existing boat traffic and effects from human recreational use of the area.

Threatened and Endangered Species

Of the species federally listed as threatened or endangered, or proposed as threatened or endangered, only the bald eagle and potentially valley elderberry longhorn beetles could occur in the action area. Valley elderberry plants, which serve as habitat for the valley elderberry longhorn beetle, have been identified in the vicinity of work areas. Bald eagles are known to frequent Millerton Lake, particularly in the wintertime, when maximal counts of eagles are recorded though arrival of eagles may occur in early October. Equipment noise and the presence of people in the area could cause eagles to avoid the immediate areas were work is being performed. Avoidance measures would be implemented to prevent disturbance of valley elderberry plants and associated valley elderberry longhorn beetles that could be present on the plants.

Reclamation has determined that the proposed action would have no effect on listed species or their designated critical habitat with the exception of the bald eagle and valley elderberry longhorn beetle. In the case of the bald eagle and the valley elderberry longhorn beetle Reclamation has determined that the proposed project may affect but is not likely to adversely affect the species and has requested the concurrence from the USFWS on the effects determination.

Vegetation

A single grey pine would be cut down to allow for a larger, safer unloading zone and to remove a serious obstruction to helicopter operations prior to the helicopter fly-in at the DH-06-6. The tree would be felled next to, and sub-parallel to, an existing nearby fallen grey pine, and would be left

uncut once initially felled. In addition, some trimming of vegetation is expected as a result of the trail improvements near DH-06-3.

No Action Alternative

Under the no action alternative, Reclamation would not complete geologic drilling and aggregate sampling investigations at two potential dam sites upstream of Friant Dam on Millerton Lake at RM 274 and RM 279 of the San Joaquin River and no impacts to biological resources would occur.

4.6 RECREATION

Proposed Action Alternative

As the barge would be anchored at several locations in the lake during the investigation, marker buoys (designating no wake zones, speed limits, and construction zones/restricted areas), and flagging and flashing lights would be deployed on the floating drilling platform and anchor cables to alert boaters operating in the vicinity of the work. The barge and drilling operations could displace some recreational boaters and fisherman to other areas temporarily.

Improvements to the SJRGT would necessitate portions of the trail be temporarily closed to the public. A portion of the SJRGT would also be closed when drilling is in progress which for DH-06-3 between approximately mid-September and mid-October 2006. A sign will be posted at the FDUA warning trail users of the work. Also the trail would be closed for drilling work at DH-06-14 between approximately mid-July and mid-August 2006. A sign would be posted at Wellbarn Road or in the vicinity warning of trail closures. All trail closures would be coordinated with the CDPR. Closure of the SJRGT would temporarily displace some recreational hikers to other trails in the area or other portions of the SJRGT.

No Action Alternative

Under the no action alternative, Reclamation would not complete geologic drilling and aggregate sampling investigations at two potential dam sites upstream of Friant Dam on Millerton Lake at RM 274 and RM 279 of the San Joaquin River and no impacts to recreation would occur.

4.7 NOISE

Proposed Action Alternative

Noise associated with the barge and drilling would be similar to recreational boating noise that is common in the area. Daily drilling operations would occur Monday through Saturday between approximately 6 am to 6 pm. Helicopter transports are estimated to be necessary about every 3 weeks with no more than 15-20 trips leaving from the staging area to the work areas in any one day. The helicopter transport trips would occur during day light hours and would be delivering material to and from the staging area and work areas. The staging and work areas are not located near sensitive noise receptors such as churches, hospitals, schools, etc. Some homes could be affected by the short duration fly over that are anticipated. Noise from the helicopter, drilling, blasting associated with the aggregate sampling and other associated work could temporary drive wildlife to other areas.

No Action Alternative

Under the no action alternative, Reclamation would not complete geologic drilling and aggregate sampling investigations at two potential dam sites upstream of Friant Dam on Millerton Lake at RM 274 and RM 279 of the San Joaquin River and no impacts from noise would occur.

4.8 CULTURAL RESOURCES

Proposed Action Alternative

A cultural resource survey of the APE was conducted by Far Western Anthropological Research Group (Far Western), Inc. and documented in a March 17, 2006 letter report to Reclamation. The survey was conducted to evaluate the affects the preferred alternative would have on potential historic properties pursuant to Section 106 of the NHPA (16 U.S.C. 470f). No historic properties were identified during the survey conducted by Far Western.

As a result of the findings documented in the March 17, 2006 letter report, Reclamation concludes that no historic properties will be affected pursuant to 36 CFR Part 800.4(d)(1) by implementing the preferred alternative. Before implementation of the proposed action alternative, Reclamation is required to consult with the State Historic Preservation Office (SHPO) on the findings documented in the letter report and the determination of affect pursuant to 36 CFR Part 800.3(c)(3). Upon receiving concurrence from the SHPO, Reclamation may implement the actions outlined in the proposed action alternative.

No Action Alternative

Under the no action alternative, Reclamation would not complete geologic drilling and aggregate sampling investigations at two potential dam sites upstream of Friant Dam on Millerton Lake at RM 274 and RM 279 of the San Joaquin River and no impacts to archeological or cultural resources would occur.

4.9 INDIAN TRUST ASSETS

Proposed Action Alternative

There are no tribes possessing legal property interests held in trust by the United States in the areas involved with this action, therefore Indian trust assets are not affected by this action.

No Action Alternative

Under the no action alternative, Reclamation would not complete geologic drilling and aggregate sampling investigations at two potential dam sites upstream of Friant Dam on Millerton Lake at RM 274 and RM 279 of the San Joaquin River and no impacts to Indian trust assets would occur.

4.10 ENVIRONMENTAL JUSTICE

Proposed Action Alternative

Implementing the program would only cause minor temporary impacts to the environment. No human health impacts would occur. The work proposed would take place on existing federal lands that are for the most part managed for recreational uses. The temporary impacts expected to occur would not disproportionately affect any minority or disadvantaged populations within the project area.

No Action Alternative

Under the no action alternative, Reclamation would not complete geologic drilling and aggregate sampling investigations at two potential dam sites upstream of Friant Dam on Millerton Lake at RM 274 and RM 279 of the San Joaquin River and no environmental justice impacts would occur.

4.11 SOCIO-ECONOMIC RESOURCES

Proposed Action Alternative

Carrying out the program could create a small temporary increase in the amount work and jobs in the immediate area which could have a slight positive impact on the local economy.

No Action Alternative

Under the no action alternative, Reclamation would not complete geologic drilling and aggregate sampling investigations at two potential dam sites upstream of Friant Dam on Millerton Lake at RM 274 and RM 279 of the San Joaquin River and no impacts to socio-economic resources would occur.

4.12 CUMULATIVE EFFECTS

Due to the short-term duration and the temporary nature of the impacts associated with this project, there are no cumulative impacts associated with this project. Approval would not have highly controversial or uncertain environmental effects or involve unique or unknown environmental risks. One potential outcome from the information gathered through carrying out the activities of the program could lead to a recommendation to Congress to implement the construction of a new dam. The future cumulative affects of any possible future construction activities and their impacts would be analyzed in future environmental analyses and, at present, are speculative and beyond the scope of the Federal action analyzed in this environmental assessment.

Executive Order 11988 – Floodplain Management and Executive Order 11990 – Protection of Wetlands

Executive Order 11988 requires federal agencies to prepare floodplain assessments for actions located within or effecting floodplains, and similarly, Executive Order 11990 places similar requirements for actions in wetlands. The Proposed Action would not affect either floodplains or wetlands.

Clean Water Act (33 USC Sec. 1251 et. seq.)

Section 404 of the Clean Water Act establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Activities in waters of the United States regulated under this program include fill for development, water resource projects, infrastructure development and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into waters of the United States, unless the activity is exempt from Section 404 regulation. The drilling aspects of the proposed action includes work in a Water of the United States and would be completed in compliance with the requirements of a USACE NWP 6 under Section 404. The NWP 6 does not require reporting to USACE as long as all permit conditions are met.

Section 401 of the Clean Water Act establishes a program to allow States and Tribes to review and approve, condition, or deny all Federal permits or licenses that might result in a discharge to State or Tribal waters, including wetlands. The RWQCB administers the 401 program for the Central Valley region of California. The drilling aspects of the proposed action are regulated under Section 401. Reclamation has applied for a 401 Water Quality Certification from the RWQCB. Reclamation would not undertake any drilling activities in Millerton Lake prior to received certification from the RWQCB.

SECTION 6 REFERENCES

- California Air Resources Board. 1996. Amendments to the Designation Criteria and to the Area Designations for State Ambient Air Quality Standards, Amendments to the San Joaquin Valley and Southeast Desert Air Basin Boundaries, and Maps of Area Designations for the State and National Ambient Air Quality Standards. January.
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