FINAL
ENVIRONMENTAL ASSESSMENT

PLANNED DEVIATION FROM THE WATER CONTROL PLAN
ISABELLA DAM AND LAKE, KERN COUNTY, CALIFORNIA
APRIL 2008

US Army Corps of Engineers
Sacramento District

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

Environmental Resources Branch

FINDING OF NO SIGNIFICANT IMPACT

PLANNED DEVIATION FROM THE WATER CONTROL PLAN AT ISABELLA DAM AND LAKE, KERN COUNTY, CALIFORNIA

I have reviewed and evaluated the information presented in this Environmental Assessment (EA) for the planned deviation from the Water Control Plan at Isabella Dam and Lake, Kern County, California. The U.S. Army Corps of Engineers (Corps) initiated an emergency deviation in September 2006 from the Reservoir Regulation Manual (Water Control Plan) for Isabella Dam and Lake, revised January 1978, to operate the project and maintain the reservoir elevation at or below 2,585.5 feet above Mean Sea Level (MSL) (storage at or below approximately 356,700 acre-feet). The purpose of this emergency deviation was to lower the lake level to a safe and acceptable elevation/capacity based upon recent results of the Corps' seismic investigations. The Corps has concluded that Isabella Lake Dam could fail during a low intensity earthquake or maximum credible earthquake event, thus releasing uncontrollable amounts of water and flooding communities downstream of the lake. This proposed action is to extend the emergency deviation annually from March 20, 2007 to September 30, 2015. It is expected that the planned deviation restricting the reservoir level will be necessary until the permanent solution, with its own environmental documentation, for the dam safety remediation is implemented.

During this review, the possible consequences of the planned deviation described in this EA have been studied with consideration given to environmental, economic, social, and engineering feasibility. In evaluating the effects of the proposed project, specific attention has been given to significant environmental conditions that could potentially be affected. I have also considered the views of other interested agencies, organizations, and individuals concerning the study. The effects analysis on the fish and wildlife resources with concurrence that there is no requirement for mitigation has been coordinated with the U.S. Fish and Wildlife Service. It was also determined that there is no potential to cause effects on historic properties and there is no further obligation under Section 106 of the National Historic Preservation Act of 1966.

Based on my review of the EA and my knowledge of the project area, I am convinced that the proposed project is a logical and desirable alternative. Furthermore, I have determined that the action consisting of the planned deviation for this project would have no significant, long-term effects on the environment. No construction is required, and the action will be implemented in strict compliance with applicable Federal, State, and local laws and regulations. Based on the results of the environmental evaluation and completion of interagency coordination, I have determined that the EA and Finding of No Significant Impact provide adequate documentation and that no further environmental document is required.

24 Apr 08
Date

Thomas C. Chapman, P. E.
Colonel, U. S. Army
District Engineer

CONTENTS

TABLE

PLATES

APPENDIXES

1.0 PURPOSE OF AND NEED FOR ACTION

1.1 Proposed Action

The U.S. Army Corps of Engineers (Corps) initiated an emergency deviation in September 2006 from the Reservoir Regulation Manual (Water Control Plan) for Isabella Dam and Lake, revised January 1978, to operate the project and maintain the reservoir elevation at or below 2,585.5 feet above Mean Sea Level (MSL) (storage at or below approximately 356,700 acre-feet (ac-ft)). The purpose of this emergency deviation was to lower the lake level to a safe and acceptable elevation/capacity based upon recent results of the Corps seismic investigations. The Corps has concluded that that Isabella Lake Dam could fail during a low intensity earthquake or maximum credible earthquake event, thus releasing uncontrollable amounts of water and flooding communities downstream of the lake. This proposed action is to extend the emergency deviation annually from March 20, 2007 to September 30, 2015. It is expected that the interim reservoir restriction will be necessary until the preferred selection of the permanent solution and environmental documentation for the dam safety remediation is complete. It is estimated that selecting, designing, and implementing a permanent solution or determination that a threat does not exist could be made by 2015, but it is dependent on many factors including the complexity of the dam safety issues and construction of the remedial measures, environmental factors and issues needing to be analyzed and mitigated, securing necessary funding, and possibly other factors or circumstances that cannot be foreseen at this time resulting in a delay. Every effort will be made to complete remedial repairs to the dam as soon as possible.

The deviation is an interim measure expected to occur annually through 2015 until a permanent solution is implemented for the dam (i.e. remediation project). In collaboration with the Corps and the Water Master, the controlled incremental increases in flows during the spring and summer months (March through September) between 2007 and 2015 would not exceed 4,600 cfs. During most years, the control ensures that downstream flows would not exceed the existing design capacity of the Kern River channel. During the deviation, no overtopping of its banks is expected to result in flooding and loss of riparian habitat supporting numerous wildlife species.

The deviation in lowering the lake elevation was initiated this past March and this Environmental Assessment (EA) addresses the potential effects until the permanent fix is selected and implemented. This operational restriction at or below elevation 2,585.5 feet represents a 37 percent reduction in the maximum conservation storage space of 2,605.5 feet (568,100 ac-ft). Normal routine dam operations for flood damage reduction would continue during the time period between October and February as required under the current Water Control Plan; and to meet water demands for hydroelectric power and during the irrigation season. The Corps will continue its current operational practice of coordinating with the Kern River Watermaster to ensure that operation of the Kern River-California Aqueduct Intertie is avoided as far as possible, because any Kern River water that flows into the California Aqueduct could leave the Southern San Joaquin Valley region. Flooding the Tulare Lake is a last resort action as it causes severe crop damage. The Watermaster controls the water releases from the reservoir to meet hydroelectric and irrigations demands.

The maximum release that can be safely passed through the downstream channel without exceeding channel capacity of the Kern River below Pioneer Turnout near Bakersfield is 4,600 cubic feet/second (cfs). If inflows are greater than the maximum releases, water may need to be temporarily stored above 2,585.5 feet to protect communities downstream of the lake from being inundated. The maximum lake level that occurred during water year 2007 was 2,571.35 feet (245,342-ac-ft) due to snowmelt runoff into the reservoir, which was less than normal with below average precipitation. No infrastructure or additional facilities would be constructed or modified by the Corps or by local public agencies to implement the deviation. Isabella Dam and Lake, the immediate area just above it, and the downstream area of the Kern River are referred to in this assessment as the study area or area of potential effect (Plates 1 and 2). The elevations for the gross pool, restricted pool, and bottom of flood control space are shown in Plate 3.

1.2 Purpose and Need for the Action

Since 1996, the Corps has been conducting engineering studies to determine if Isabella Dam meets its safety regulations regarding earthquake survivability. The conclusions were published in its September 2003 report entitled "Seismic Safety Review: Dam Safety Assurance Program Report for Isabella Dam, Isabella Lake, California." Further investigation in 2005 of the Auxiliary Dam discovered that there were higher foundation pressures than originally believed. Isabella Dam is one of six dams in the country that was classified as a Dam Safety Action Class Level 1 (DSAC 1), which is defined as unsafe; critically near failure or extremely high risk of failing. Table 1 provides an explanation of the different safety classes and actions. A Corps Geotechnical Seepage Study completed in March 2006 concluded that pressures in the foundation of the dam had to be reduced to provide an adequate factor of safety. The only feasible means to accomplish this was to lower the reservoir by 20 feet to an elevation at or below 2,585.5 feet.

These March 2006 findings determined that the dam would fail during low intensity earthquake. The Corps' dam safety regulations (Engineering Regulation 1110-2-1155) state that all dams "are required to survive and remain safe during and following the maximum credible earthquake (MCE) event." These regulations further require that the dam "must also be capable of remaining operational with only minor repairs during and after an operating basis earthquake (OBE)." Finally, it is Corps policy that "seismic safety of its embankment dams, where failure would result in loss of life, must be assured."

During a MCE event, the foundation and embankment of the dam would be damaged, causing the slope to deform. This damage would allow water to either overtop or seep through or under the dam causing flood damages to downstream areas. Since Isabella Lake Dam would be damaged and possibly fail during an earthquake, remediation work is required to prevent loss of life, extensive downstream damage, and functional loss of the project. Therefore, holding the reservoir at or below 2,585.5 feet during the period of in March 20 to September 30 and for each year until dam remediation is completed would reduce the risk, as well as, maintain adequate

Table 1. USACE Dam Safety Action Classification		
Dam Safety Action Class	**Characteristics of this class**	**Actions for dams in this class**
I URGENT AND COMPELLING (Unsafe)	**CRICTICALLY NEAR FAILURE** Progression toward failure is confirmed to be taking place under normal operations. Almost certain to fail under normal operations from immediately to within a few years without intervention. **OR EXTREMELY HIGH RISK** Combination of life or economic consequences with probability of failure is extremely high.	Take immediate action to avoid failure. Validate classification through an external peer review. Implement interim risk reduction measures, including operational restrictions, and ensure that emergency action plan is current and functionally tested for initiating event. Conduct heightened monitoring and evaluation. Expedite investigations to support justification for remediation using all resources and funding necessary. Initiate intensive management and situation reports.
II URGENT (Unsafe or Potentially Unsafe)	**FAILURE INITIATION FORESEEN** For confirmed (unsafe) and unconfirmed (potentially unsafe) dam safety issues, failure could begin during normal operations or be initiated as the consequence of an event. The likelihood of failure from one of these occurrences, prior to remediation, is too high to assure public safety. **OR VERY HIGH RISK** The combination of life or economic consequences with probability of failure is very high.	Implement interim risk reduction measures, including operational restrictions as justified, and ensure that emergency action plan is current, and functionally tested for initiating event. Conduct heightened monitoring and evaluation. Expedite confirmation of classification. Give very high priority for investigations to support justification for remediation.
III HIGH PRIORITY (Conditionally Unsafe)	**SIGNIFICANTLY INADEQUATE OR MODERATE TO HIGH RISK** For confirmed and unconfirmed dam safety issues, the combination of life or economic consequences with probability of failure is moderate to high.	Implement interim risk reduction measures, including operational restrictions as justified, and ensure that emergency action plan is current and functionally tested for initiating event. Conduct heightened monitoring and evaluation. Prioritize for investigations to support justification for remediation considering consequences and other factors.
IV PRIORITY (Marginally Safe)	**INADEQUATE WITH LOW RISK** For confirmed and unconfirmed dam safety issues, the combination of life or economic consequences with probability of failure is low and may not meet all essential USACE guidelines.	Conduct elevated monitoring and evaluation. Give normal priority to investigations to validate classification, but no plan for risk reduction measures at this time.
V Normal (Safe)	**ADEQUATELY SAFE AND RESIDUAL RISK IS CONSIDERED TOLERABLE.** Dam is considered safe, meeting all essential USACE guidelines with no unconfirmed dam safety issues.	Continue routine dam safety activities, normal operation, and maintenance.

water supply for other users in the downstream areas such as agriculture and hydroelectric power. The Corps is currently in the process of updating obsolete inundation maps to determine the economic and estimation of losing lives from a catastrophic failure of the dam. A Corps Geotechnical Seepage Study completed in March 2006 concluded that pressures in the foundation of the dam had to be reduced to provide an adequate factor of safety. The only feasible means to accomplish this was to lower the reservoir by 20 feet to an elevation of 2,585.5 feet.

The Corps is also investigating the main and auxiliary dams at Isabella Lake to determine the probability of which parts of the dam contain weak underlying material that could fail during an MCE. Geotechnical boring operations are commencing on each dam. Samples are taken down to 200 feet below the dam's surface and extracted for laboratory testing for seismic determinations. Results will indicate the probability of which parts of each dam, if not all, are at risk of failure during an earthquake. Statistically, this is an earthquake that would be typically expected once every 144 years. Until the probability of dam failure is verified and ascertained during the on-going investigation, the deviation has been initiated as an interim risk reduction measure rather than a permanent solution to satisfy dam safety requirements.

Other in-progress studies being conducted in 2007 and 2008 include the following:

- Kleinfelder Seepage Study to determine potential seepage characteristics and aid in developing seepage remedial measures.

- Geophysical Study by U.S. Geological Survey to determine the geophysical soil properties of the dam to be used in seismic response analyses, i.e., how the dam responds to an earthquake.

- Main Dam Site Characterization – Additional drilling investigation (drilling, lab testing, and geophysical testing) would be by the Corps' Kansa City District in September and October 2007 to determine geophysical soil properties to be used in seismic response analyses of the dam.

- Deformation Analysis to determine settlement and deformation during an earthquake.

- Updating the Inundation Map to determine the extent of downstream flooding in the event of a dam failure.

- Detailed Risk Assessment to determine the risk of dam failure.

1.3 Purpose of the Environmental Assessment

In compliance with the National Environmental Policy Act, the purpose of this

Environmental Assessment is to determine whether the proposed action consisting of the interim deviation that lowers reservoir levels for the period between March and September extending up to 2015 would result in significant impacts requiring the preparation of an Environmental Impact Statement (EIS). Various resources were evaluated to determine what effects the Proposed Action could have on the environment.

1.4 Decisions Needed

Based on the current investigation, a decision would be made at a later date to determine the preferred alternative for a permanent solution to dam safety and whether or not that action requires another EA or an Environmental Impact Statement (EIS). A decision would be made to select from an array of various pre-conceptual alternatives including 1) No Action, 2) breach the dam, 3) construct a dry dam, 4) implement a permanent restricted level, 5) construct a grout cut-off wall through the auxiliary dam foundation, 6) a complete re-build of the auxiliary dam, 7) major re-construction of the downstream portion of the main dam, 8) a hydrologic fix for the inadequate spillway, which could entail widening and deepening of the spillway, and 9) adding tainter gates or fusegates, and/or a combination of the previous hydrologic fixes with adding some height to both dams (with no raise of the existing gross pool level).

In the interim, the District Engineer, commander of the Sacramento District of the Corps, will decide whether or not the proposed interim deviation from the Water Control Plan that extends up until 2015 qualifies for a finding of no significant impact (FONSI) or whether an EIS must be prepared.

2.0 LAKE OPERATION

2.1 Authorized Project Purpose

The Congressionally authorized project purpose of Isabella Dam and Lake is for flood control (flood damage reduction) with secondary benefits from water conservation. Recreation is not an authorized project purpose.

2.2 General Description

Isabella Dam and Lake are on the Kern River, about 45 miles northeast of Bakersfield and about 160 miles north of Los Angeles, California (Plates 1 and 2). The major physical features of the Isabella Dam and Lake Project include embankments, outlet works, and spillway.

Embankment. The main dam is a zoned, earthfill structure with a maximum height of 185 feet (ft) (56.4 meters (m)), a crest length of 1,695 ft (516.6 m), and a top width of 20 ft (6.1 m). The elevation of the crest is 2,633.5 ft (802.7 m), which provides 6.5 ft (2.0 m) of freeboard above the Spillway Design Flood elevation of 2,627 ft (800.7 m). The auxiliary dam is a homogeneous,

rolled, earthfill structure with a maximum height of 100 feet (30.5 m), a crest length of 3,257 ft (992.7 m), and a top width of 20 feet (6.1 m). The elevation of the crest is 2,633.5 feet (802.7 m), which provides 6.5 ft (2.0 m) of freeboard above the Spillway Design Flood elevation of 2,627 ft (800.7 m).

Outlet Works. The main outlet consists of an intake structure, a 14 feet-9inches (4.5 m) diameter intake conduit, an intake transition section, a control tower and control section with three 5 ft-8-inches by 10 ft-0-inch (172.5 by 308.4 centimeters (cm)) rectangular gated conduits, an outlet transition section, and a 14 ft-9-inches (4.5 m) diameter outlet conduit. Each of the control section conduits has one 5 ft-8inches by 10 ft-0-inch (172.5 by 304.8 cm) service gate and one 5 ft- 8-inches by 10 ft-0" (172.5 x 304.8 cm) emergency gate. The main outlet can release a maximum objective flow of 4,600 cubic feet per second (cfs) (130 m^3/s (cubic meters per second)) at any stage in the reservoir. The controlling invert elevation of the main outlet is at 2,470 ft (752.9 m), and it is located in the approach channel. The outlet structure at the downstream face of the main dam has been constructed to allow for direct releases through the power generation facilities operated by Isabella Partners (IP).

The auxiliary outlet is used to restrict releases to the Borel Canal to a maximum of 605 cfs (17.1 m^3/s). A 12-inches (30.5 cm) bypass valve is provided in each barrel to allow for fine regulation of canal releases. These valves have never been used.

Spillway. The spillway consists of an un-gated concrete ogee section located at the left abutment of the main dam. The elevation of the ogee crest is 2,605.5 ft (794.2 m), with a length of 140.0 ft (42.7 m). The capacity of the spillway is 52,700 cfs (1,492 m^3/s) at the spillway flood pool elevation of 2,627 ft (800.7 m).

Related Control Facilities. The outlet structure on the main outlet is operated to allow for direct releases through the power generation facilities managed by IP. The "Operations Memorandum of Agreement between U.S. Army Corps of Engineers and Isabella Partners" gives a detailed plan of operation for passing flows through the power generation facilities.

Recreational Facilities. Twenty-six areas within the project lake boundaries have been developed for recreation. Facilities, operated by the U.S. Forest Service in these areas include picnicking, camping, boat-launching, swimming, three marina concessions, a visitors' center, public access, parking and hiking, cycling, and equestrian and nature trails. The facilities at these areas have been provided by the Corps, Kern County, California Department of Boating and Waterways, California Wildlife Conservation Board, and private concessionaires. In 1963, an agreement was made between Kern County and the water users to retain 30,000 acre-feet (ac-ft)(37.0 hm^3) of water in the lake for recreational purposes. The elevation for 30,000 ac-ft of water in the reservoir is 2,522 feet.

Current operation is in accordance the Water Control Plan and Flood Control Diagram (also known as the water control or reservoir storage diagram), which is included in the Reservoir Regulation Manual, revised January 1978. The Flood Control Diagram is provided as Plate 4. Water releases are based on snowpack that provides the available water supply in the reservoir and there are releases for irrigation and hydroelectric demand. The history of inflow into the reservoir and outflow releases is provided in Plates 5 - 9. The plates show consistent outflow releases that do not exceed 4,600 cfs except during very wet years. Releases above 8,000 cfs would cause damage to an adjacent oilfield near Pioneer Turnout. Levees protect Bakersfield and other nearby urban areas from flows that are less than 20,000 cfs. During most years between 2007 and 2015, it is anticipated that releases would not exceed 4,600 cfs during the deviation. The only difference compared to current operations is that releases could be higher than normal (i.e. 3,000 cfs versus 1,500 cfs) and commence earlier in the season so that the Corps can control runoff that is higher than normal without encroaching into the restricted pool (the storage available above the restricted elevation that would normally be used to store the additional runoff until needed later in the season).

Whenever runoff flows into Isabella Lake and encroaches into the flood control space (as indicated by the Flood Control Diagram), the Kern River Water Master and the Corps communicate daily to coordinate the operation of Isabella Dam and Lake so that conservation storage can be maximized while providing necessary flood control protection by releasing water from the main and auxiliary dams on a schedule consistent with the objectives of the Water Control Plan. The annual draw downs of the reservoir that also lowers lake elevations for irrigation and hydroelectricity demands are not Federal actions proposed by the Corps, and thereby, those effects are not applicable to an environmental effects analysis in the draft and final EA.

The Auxiliary Dam outlet diverts water down the Borel Canal, approximately 6 miles downstream, to the Borel Powerhouse, owned and operated by the Southern California Edison Company, and returned to the Kern River. The Borel Power right is to divert up to the first 605 cfs of unimpaired Kern River North Fork flow. This release could occur throughout the year.

2.4 Deviations from Approved Flood Damage Reduction Guidelines

Occasional deviations from normal dam operations are expected. Any deviations from normal flood damage reduction procedures must be evaluated in advance by the Sacramento District, and approved by the South Pacific Division Commander of the Corps. Emergency deviations can be made at the discretion of the park manager or Water Management Section staff, as necessary (Reservoir Regulation Manual, revised January 1978, p. A-8). Such emergency deviations are followed by submission of required documentation to the South Pacific Division.

Under the deviation action between 2007 and 2015, the only time that the pool would rise above the restricted level of 2,585 feet would be during high precipitation years with high runoff in the spring. With the restricted pool, it is estimated about half of the snowmelt season

conservation storage space available is lost, and thus, the restriction would send excess water (that water which would be stored above the restricted pool) downstream. This could require that larger releases (but no more than 4,600 cfs) be made for a longer period of time if the runoff/snowmelt is above normal. The only time that flows should exceed the operating criteria (4,600 cfs release from the dam) is if the lake exceeds capacity and water flowing through the spillway exceeds 4,600 cfs. This could occur with a large flood or very heavy snowpack. It has only spilled three times, once in 1969, once in 1980, and the other time was in 1983. In 1983, runoff for the water year was 300 percent of normal. The channel capacity of the Kern River varies along the length of the river (from the dam to the southern San Joaquin Valley). Isabella Dam and Lake is operated so that the maximum flow on the Kern River at the "Pioneer Turnout" (both near Bakersfield) does not exceed 4,600 cfs, the stated channel capacity below Pioneer Turnout. Through daily monitoring, the Corps would ensure that the deviation action would not cause flooding damages downstream of Pioneer Turnout where the channel capacity is only 4,600 cfs as a tradeoff against possible damages that could ensue from a reservoir filling to its gross pool elevation.

3.0 ALTERNATIVES CONSIDERED INCLUDING THE PROPOSED ACTION

3.1 Alternatives Considered And Were Eliminated From Further Consideration

The following alternatives were considered and eliminated from further consideration due to the reasons stated below:

- Seepage Berm and Relief Wells– A seepage berm alone would not provide the needed safety and relief wells would also be required. Discharge from the wells present a problem with regard to discharging groundwater. There was also the problem of whether the berm and wells could be constructed before the reservoir rises to a significant elevation. The owners of the Borel Canal did not want the water put into the canal and there was a desire to not dispose of the water onto private property.

- Toe Drain – A toe drain could be used to reduce foundation pressures, but there remains the issue of disposing of the groundwater.

- Flood Warning System –An alarm system is already in the process of being installed downstream of the dam to provide early warning to local residences of the problem with the dam.

3.2 No Action

The No Action alternative serves as the baseline for evaluating the effects of the Proposed Action. The Corps would continue to operate Isabella Dam and Lake according to the existing Water Control Plan and Flood Control Diagram included in the Reservoir Regulation Manual, revised January 1978, currently in use for the management of rain flood events. No restrictions or

3.2 No Action

The No Action alternative serves as the baseline for evaluating the effects of the Proposed Action. The Corps would continue to operate Isabella Dam and Lake according to the existing Water Control Plan and Flood Control Diagram included in the Reservoir Regulation Manual, revised January 1978, currently in use for the management of rain flood events. No restrictions or limits on water levels within the lake would be imposed. During high precipitation years water could reach levels above 2,585.5 feet, the intended restriction level, and stay at this level for a longer duration increasing the chances for causing damages if an earthquake occurs. The results would be catastrophic to downstream residential and agricultural communities in the swath of floodwaters if the dam failed during an earthquake with no controlled releases in place.

Isabella Dam was screened by the Screening Portfolio Risk Assessment Team in Fiscal Year 2005 and its findings concluded that it has an unacceptably high probability of failure combined with a very high consequence of failure. A detailed risk analysis will be performed by contract in Fiscal Year 2008. It is likely that the outcome of this study will be that the reservoir could require further restriction in filling the reservoir. Thereby, the Corps has determined that an interim action is necessary to reduce risks to the downstream's public safety and welfare, and to the environment. Outflow releases to the downstream areas below the dam will be controlled during the entire period of the planned deviation to the Water Control Manual.

3.3 Proposed Action (The Preferred Alternative)

The project would be operated to maintain the reservoir elevation at or below 2,585.5 feet (storage at or below approximately 356,700 acre-feet) during the period from March 20, 2007, to September 30, 2015 until dam remediation is completed.

Based on an evaluation of the Isabella Dam project data records and long-range weather forecasts currently being issued by the National Weather Service for water year 2007-2008, it is estimated that there is a better than 90 percent chance that the project could be operated within the existing guidelines in the Water Control Plan.

However, the maximum release that can be safely passed through the downstream channel is 4,600 cfs, depending on conditions. Therefore, if inflows are greater than the maximum releases, water may need to be stored above 2,585.5 feet for a brief period of time to protect lives downstream.

In the unlikely event that any water is stored above elevation 2,585.5 feet due to a rare late season rainstorm (less than 10 percent chance), the reservoir levels would be lowered as rapidly as possible to return the reservoir to an elevation at or below 2,585.5 feet. Releases would be used that can be safely passed downstream by the local interests without exceeding the channel capacities of the downstream area below the dam.

4.0 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

4.1 Environmental Resources Eliminated from Detailed Discussion

Cultural Resources. Exposing portions of the reservoir to periods of drying between March and September or the incremental increase to river flows in the spring to the down stream areas below the dam for this proposed action would have no direct effect on cultural resources when reservoir levels are drawn down to remain at or below 2,585.5 feet in elevation. The proposed deviation in lake elevations would remain within the levels authorized by the existing operations plan. As shown in the photo presented in Section 4.2.2, which was taken in the Fall of 2007 during the deviation, the deviation would not lower the lake to a low enough elevation that would result in effects to cultural resources. Flows below the dam usually won't exceed 4,600 cfs during the deviation period to wash or erode away cultural resources since this is the maximum flow under the current operation. Pursuant to 36 CFR 800.3(a)(1), the Corps has determined that this undertaking has no potential to cause effects on historic properties. Therefore, the Corps has no further obligations under Section 106 of the National Historic Preservation Act of 1966, as amended.

Noise. There are no construction activities that would result in a reduction in storage in Isabella Lake during the deviation period from March 20 to September 30 that would alter noise levels within the vicinity of the lake. No direct or indirect adverse effects due to noise would occur during that time.

Land Use. In the areas within the inundation zone of the reservoir or to the downstream areas below the dam, no land would be sold or converted to another use. With no control, increased flows could cause downstream erosion and affect land use and structures in the area below the dam. In respect to the deviation action, releases would be controlled by the Water Master in collaboration with the Corps. With controlled incremental increases in flows during the spring and summer months (March through September) that ensures downstream flows would not usually exceed 4,600 cfs, no overtopping of its banks are expected to result in flooding or converting existing land uses such as agricultural crops to another use. Lake lowering every year between 2007 and 2015 during the deviation could affect the local groundwater table and adversely adversely affect riparian vegetation and local farming and crop production because of reduced water availability. Lake lowering during periods of drought has occurred over the last 29 years. There have been no observations during willow flycatcher surveys that groundwater levels needed to support riparian vegetation on the North or South Fork Kern River around the reservoir, or along Kern River, or the surrounding land uses are adversely affected to the extent of causing vegetation to die. There are no changes to land use associated with the deviation in drawing down lake levels, and thereby, there are no direct or indirect effects to land use, including lands used for planting agricultural crops.

Prime and Unique Agricultural Lands. There are no Prime and Unique Agricultural lands in the area below the gross pool elevation of the reservoir subject to flooding. In collaboration with the

Corps and the Water Master, the controlled incremental increases in flows during the spring and summer months (March through September) that would not exceed 4,600 cfs ensures that downstream flows would not exceed the existing design capacity of the Kern River channel. No overtopping of its banks is expected to result in flooding or converting Prime and Unique Agricultural Lands to another use. Based upon this control of water releases, there are no direct or indirect effects to Prime and Unique Agricultural Lands. As it has been implemented annually since 1978 by recommendations provided in the Water Control Manual, water would still be maintained to the extent possible to remain above the conservation pool elevation of the reservoir up to the restricted pool elevation of 2,585.5 feet. This ensures that water would be made available under the agreement and request of various water users. The proposed action of March through September draw downs of the lake and controlled river releases below the dam would fall within parameters that simulate dry reservoir conditions currently experienced during prolonged drought years; and would periodically create slightly wetter channel conditions in the river below the dam between March and September.

4.2 Vegetation, Wildlife, and Esthetics

4.2.1 No Action

Under No Action, the Corps would not restrict lake levels below 2,585.5 feet in elevation nor would any planned deviations occur at the lake. Normal routine operations following the existing Water Control Manual would maintain lake levels as agreed upon with the resource agencies. The existing conditions for vegetation, wildlife, and esthetics are expected to remain the same. Lake levels could fluctuate based on weather patterns showing an increase in elevation above 2,585.5 feet during higher than normal precipitation years assuming runoff from snowmelt is a contributing source. Lake levels could also drop significantly as they have in the past during drought. No significant effects to drawing down the lake and its surrounding riparian vegetation and their establishment have been documented over the past 29 years, which experienced lake levels below 2,585.5 feet 5 percent of the time. Without the proposed action, this lake poses an imminent threat to public safety if an earthquake occurs and damages the dams' infrastructure. Uncontrollable releases from the emptied reservoir after a dam breaks from an earthquake could also result in catastrophic flooding of riverine and upland habitat that supports wildlife and erode away banks and the riparian vegetation growing along the river. Many animals would lose their foraging, breeding, and rearing habitat, including hiding and thermal cover; and possibly drown if it can't walk, run, crawl, swim, or fly to higher ground fast enough to escape the uncontrolled river flows. The risk for such a catastrophic failure of the dam remains high.

4.2.2 Proposed Action

Existing Conditions

Vegetation types found above the gross pool elevation in the Isabella Dam and Lake Project area are grassland, brush, woodland, riparian, and wetland communities. The riparian

forest consists of pre-dominant Fremont cottonwood, sandbar willow, black willow, red willow, Oregon ash, white alder, mulefat, and hoary nettle growing in the upper elevations of the reservoir in the immediate area just above the gross pool elevation. In lesser quantities due to topography and the canyon, this vegetation is also found downstream of the dam along the Kern River. The riparian area around the reservoir includes a portion of the 360 acres upstream of the reservoir currently protected in accordance with the 1998 Memorandum of Understanding between the Corps, U.S. Fish and Wildlife Service, National Fish and wildlife Foundation, and Audubon California. The wildlife that inhabits these types of vegetative habitats consists mostly of various migratory birds, raptors, reptiles, amphibians, and small mammals. Less extensive, more scattered riparian areas exist along the North Fork Kern River upstream from Isabella Dam and Lake.

The extensive riparian forest and wetland areas along the South Fork Kern River support yellow-billed cuckoos, brown-crested flycatchers, southwestern flycatchers, and summer tanagers. In the Kern River Valley that includes Isabella Lake, common birds include wintering bald eagle (no known occurrences of nesting bald eagles in the spring and summer), western and Clark's grebe, double-crested cormorants, great blue heron, wood duck, mallard, cinnamon teal, turkey vulture, northern harrier, red-tailed hawk, American kestrel, barn owls, great-horned owl, California quail, mourning dove, black-chinned hummingbird, Anna's hummingbird, belted kingfisher, Nuttall's woodpecker, downy woodpecker, northern woodpecker, northern flicker, western wood-pewee, Pacific-slope flycatcher, black phoebe, ash-throated flycatcher, western kingbird, horned lark, tree swallow, cliff swallow, western scrub jay, common raven, oak titmice, white-breasted nuthatch, Bewick's wren, house wren, western bluebird, American robin, orange-crowned warbler, yellow-rumped warbler, Wilson's warbler, western tanager, black-headed grosbeak, blue grosbeak, lazuli bunting, spotted towhee, California towhee, lesser and American goldfinch, western meadowlark, Bullock's oriole, and house finch. Mammals include mule deer, bobcat, black-tailed jackrabbit, desert cottontail, raccoon, coyote, striped and spotted skunk, Virginia opossum, gray fox, Yuma myotis, western pipistrelle, big brown bat, Townsend's big-eared bat, Brazilian free-tailed bat, pallid bat, ornate shrew, broad-footed mole, California ground squirrel, Botta's pocket gopher, deer mice, brush mice, western harvest mice, dusky-footed woodrat, and California vole. Common reptiles and amphibians that inhabit the area are western toad, Pacific treefrog, bullfrog, western fence lizard, side-blotched lizard, western whiptail, southern alligator lizard, rubber boa, racer, garter snakes, and western rattlesnake (Jones & Stokes, 2000).

Designated critical habitat for the Federally endangered southwestern willow flycatcher and Federally endangered least Bell's vireo are located 2 miles east of Isabella Lake within the South Fork Kern River Wildlife Area that is subject to inundation only above 2,605.5 feet (568,100 acre feet). Most of the riparian vegetation in the South Fork Kern River receives water from a fluctuating water table and surface runoff from snowmelt coming down Sierra Nevada Mountain range. Drainage from local ranches and agricultural operations adjacent to the riparian zone also contribute water for plant establishment, especially during drought conditions.

Effects

Significance Criteria. An alternative would be considered to have a significant direct effect on vegetation supporting Federally listed species if it would result in a substantial disruption in soils where plants grow and/or the loss of a significant quantity of habitat loss, especially riparian, that result in reductions in avian, mammal, and reptile activity and use around Isabella Lake, or substantially diminishes the quality of the habitat where listed plants grow or is used by listed fish and wildlife.

Isabella Lake

The Proposed Action to restrict lake levels at or below 2,585.5 feet is not expected to adversely affect vegetation, wildlife, or esthetic resources found above the gross pool elevation at Isabella Lake or in the downstream area of the lake. No adverse effects to cottonwoods trees or willows are expected to be affected in the lower elevations of the lake, since there are no willows or cottonwoods found growing below the area of effect, (the area of the inundation zone below 2,585.5 feet in elevation); and flows released between the spring and summer that maintain groundwater levels during the irrigation season between March and September would continue to sustain the riparian vegetation found below the dam. As shown in the photo below taken in the Fall of 2007 during the initial year of the deviation draw down, the deviation is not expected to lower the lake to a low enough elevation that would adversely desiccate the vegetation. The deviation elevation of 2,585.5 feet is far above the recreation pool, which is the lower elevation where desiccation effects to vegetation are much more likely to occur when lake levels are gradually drawn down becoming closer to the restricted pool later in the season during the summer/fall months.

Fall of 2007

During Lower Than Normal Water Year When There Is Low Spring Run-Off - Photo of Lake Level at Isabella Lake Taken After the Initial Deviation Draw Down Period and Irrigation and Hydroelectric Demands

Downstream of the Dam

During the period of recorded operation of the project, the average total annual precipitation at Isabella Lake has been approximately 13 inches and the elevation of the lake has ranged from as low as approximately 2,514 feet in 1961 to as high as approximately 2,611 feet in 1983, during the period between March and October. The only time that flows should exceed the operating criteria (4,600 cfs release from the dam) is if the lake exceeds capacity and water flowing through the spillway exceeds 4,600 cfs. This could occur with a large flood or very heavy snowpack. It has only spilled three times, once in 1969, once in 1980, and the other time was in 1983. In 1983, runoff for the water year was 300 percent of normal. The channel capacity of the Kern River varies along the length of the river (from the dam to the southern San Joaquin Valley). Isabella Dam and Lake is operated so that the maximum flow on the Kern River at the "Pioneer Turnout" (both near Bakersfield) does not exceed 4,600 cfs, the stated channel capacity below Pioneer Turnout.

Depending on the type of water year, the proposed deviation could result in a reduction in the reservoir pool elevation and a controlled incremental increase in releasing water during the spring only after late rainstorms or larger than average snowpack. However, releases are not expected to exceed 4,600 cfs in downstream flows during average wet years to avoid adverse effects from flooding. Storm events between May and September are usually not significant in the summer to cause downstream flooding. This deviation action is not anticipated to have a significant adverse effect on vegetation, esthetics, and wildlife resources at Isabella Lake and downstream of the dam because: 1) there has been no known reports collected for willow flycatcher documenting adverse effects to vegetation or wildlife resulting in die-offs, and esthetics during annual draw downs or under drought conditions; and 2) flood damage reduction releases required to hold the reservoir at or below 2,585.5 feet are made within the range experienced during the most recent recorded operational history of the project since 1978.

In collaboration with the Corps and the Watermaster, the controlled incremental increases in flows during the spring and summer months (March through September) between 2007 and 2015 would not exceed 4,600 cfs. During most years, the control ensures that downstream flows would not exceed the existing design capacity of the Kern River channel. During the deviation, no overtopping of its banks is expected to result in flooding and loss of riparian habitat supporting numerous wildlife species. In the long term, the temporary increase in downstream river flows during the spring and summer could increase the amount of streamside wetland and riparian vegetation, which would be beneficial for resident and migratory wildlife that use the riparian habitat of the Kern River.

The deviation is not expected to result in habitat loss since the combination of draw downs and drought conditions since 1978 have not resulted in any measurable loss of riparian habitat growing around the reservoir that is valuable and supports many wildlife species. Wintering bald eagles have used the reservoir on a regular annual basis during their migration periods. The short and long term duration of the Proposed Action between 2007 and 2015 would not likely result in

a significant amount of new wetland or vegetative growth, but could contribute to sustaining vegetation and aquatic life. Subsequently, the direct effects to vegetation, wildlife, and esthetics are within the same range as what occurs under normal operations including periods of drought. No mitigation is required since no direct effects to riparian vegetation are expected; and would be minimal during desiccation periods and not significant in comparison to what effects that could occur under normal operations.

4.3 Federally Listed and Proposed Species

4.3.1 No Action

The Corps would continue routine operation of Isabella Dam and Lake according to the existing Water Control Plan and Flood Control Diagram currently in use for the management of rain flood events. Uncontrollable releases resulting from the emptied reservoir after a dam breaks from an earthquake could also result in catastrophic emptying of the reservoir and downstream flooding of riverine and upland habitat where migratory southwestern willow flycatchers and least Bell's vireo could seasonally use during their migration. The risk for such a catastrophic failure of the dam remains high and could result in the loss of their migratory habitat.

Isabella Lake. During the period of recorded operation of the project, the elevation of the lake has ranged from as low as approximately 2,514 feet in 1961 to as high as approximately 2,611 feet in 1983, during the period between March and October. Tree mortality due to inundation only resulted when the entire canopy was inundated for periods of generally more than 60 days (JSA, 1999). Routine operations have resulted in short-term leaf loss on suitable breeding habitat and the inundation of 4 flycatcher nests in 1995. Beyond the deviated lake draw downs, routine operations are not expected to change in the future. Only the American peregrine falcon has been recorded in the Kern River Valley or is likely to be found there in the future (Jones & Stokes, 2000).

Downstream. Based on the FWS May 16, 1996 Biological Opinion, except for possibly the flycatcher and least Bell's vireo use during their migration, there are no occurrences of other listed species along the Kern River in the downstream areas of the dam (Jones & Stokes, 2002). Only the American peregrine falcon has been recorded in the Kern River Valley or is likely to be found there in the future.

4.3.2 Proposed Action

Pursuant to the ESA, the Corps requested an updated list of special status species from the Service to aid in the preparation of an environmental assessment on the planned deviation action from the Water Control Manual for the adjacent upstream and downstream areas of Isabella Dam and Lake. The Service provided the updated species list on October 24, 2007, for the proposed project (see Appendix A). The area of potential effect for this Proposed Action is also entirely

within Kern County. The updated list includes information on listed, candidate, and proposed species, along with their legal status, California distribution, habitats, reasons for decline or concern, and their potential to be found in the vicinity of Isabella Dam and Lake. The Federally listed critical habitat for the flycatcher and vireo that exists today on the South Fork of the Kern River above the reservoir is maintained as a 1,100-acre wildlife area as a result of the routine operation of the reservoir project. The updated species list also included other listed and candidate species such as: delta smelt, California red-legged frog, California condor and its critical habitat, and candidate western yellow-billed cuckoo and fisher. The county list included California fairy shrimp, valley elderberry longhorn beetle, Kern primrose sphinx moth, California tiger salamander and its critical habitat, blunt-nosed leopard lizard, giant garter snake, western snowy plover, giant kangaroo rat, Tipton kangaroo rat, Sierra Nevada bighorn sheep, Buena Vista Lake shrew, San Joaquin kit fox, California jewelflower, Kern mallow, San Joaquin wooly-threads, Bakersfield cactus San Joaquin adobe sunburst, Keck's checker-mallow and its critical habitat, and candidate mountain and yellow-legged frog. Based upon the initial FWS' May 16, 1996, Biological Opinion, there is no known occurrences for the rest of the species on this updated list for the deviation action, since there is no suitable foraging, nesting, or rearing habitat in the inundation zone of the lake or within the confines of the Kern River to support these other listed species. These listed species will not be discussed any further in this draft EA.

Isabella Lake

Existing Conditions

The population of southwestern willow flycatchers nesting along the South Fork Kern River found above Isabella Lake is the largest in California (U.S. Fish and Wildlife Service, 2000). Since population counts were first made in 1989, this population has ranged from a high of 40 males/30 females in 1989 to a low of 21 males/11 females in 2001 (Whitefield and Cohen, 2005). More than 16 miles of the South Fork Kern River above Isabella Lake support riparian forest, and many stands of well-developed riparian trees and wetland areas appear to offer suitable habitat for nesting southwestern willow flycatchers. However, most riparian areas in the Kern River Valley below the dam are not occupied by breeding pairs. The breeding territories of flycatchers along the South Fork Kern River above the reservoir are distinctly clustered, with most nests documented since 1989 occurring in several core areas at SFWA and KRP (i.e., South Fork Ditch [absent 1998-2005], CDFG ponds, River Channel, Slough Channel, Mariposa Marsh [absent 1998-2002 and 2004-2006], and Prince Pond area) (Jones and Stokes Associates, 2007).

The Federally-endangered least Bell's vireo (*Vireo bellii pusillus*) could be present within the riparian vegetation section along the South Fork Kern River above the reservoir where the river empties into, especially within the South Fork Wildlife Area (SFWA). This species prefers early and mid-successional riparian habitats that contain low dense, shrubby vegetation. In California, this species is strongly associated with riparian stands with dense understory vegetation between 2 and 10 feet above ground. In the Kern River Valley below the dam, most mature riparian forest areas lack dense willows or other shrubs beneath the canopy. Lacking

substantial understory vegetation, the mature riparian forests along the South Fork Kern River where it empties into the reservoir appear to be less suitable for nesting least Bell's vireos than early and mid-successional stands where dense understory cover of young trees and shrubs is present.

History of Section 7 Consultation on Effects on Listed Species

Isabella Lake

Deviation of the operation that lowers the lake level would not adversely affect the Federally listed southwestern willow flycatcher and least Bell's vireo and their nesting habitat located upstream from the lake since there has been no recorded die offs since Reasonable and Prudent Measures stated in the FWS 2000 Biological Opinion were implemented. According to the U.S. Fish & Wildlife Service (Formal Consultation and Conference on Long-term Operation of Isabella Dam and Reservoir, 1997; and, Re-initiation of Formal Consultation on Long-term Operation of Isabella Dam and Reservoir, 2000), long term reservoir operations has both long and short-term effects to the southwestern willow flycatcher, the least Bell's vireo, and the riparian habitat that these species depend upon. These effects include direct inundation of flycatcher nests, reduced productivity and survival, increased pressure from both predators and parasites, delayed breeding, loss of available breeding space, and habitat degradation and mortality. The Service states that not allowing the reservoir elevation to rise above 2,585.5 feet "would allow for the vegetation in the South Fork Wildlife Area to develop sufficiently to provide the characteristics necessary for flycatcher breeding habitat when the birds arrive May and later depart in September. The Final Rule on critical habitat designation was made in October of 2005. In effect, the deviation that maintains lower lake levels below the 2,585.5-foot elevation would benefit the listed species of concern and their nesting and foraging habitat since inundation effects would not occur.

The Service also recognized that "periodic flooding of the wildlife area could be necessary to maintain dense stands of riparian vegetation." The Corp's own study on this subject (Isabella Lake and Dam/South Fork Kern River Riparian Vegetation Mapping and Tree Mortality Study, September 2003) concluded that "periodic inundation of the South Fork Wildlife Area and areas west of Patterson Lane is necessary for the regeneration of black willow and long-term maintenance of the riparian forest with diverse riparian vegetation types and canopy structures suitable for southwestern willow flycatchers and least Bell's Vireos. Therefore, any long-term restriction that dries out the lake bottom (more than 3 - 5 years at an elevation below 2,585.5 feet) where the existing riparian habitat grows could severely degrade and desiccate this valuable habitat that these species depend on (FWS, 2002). There are no other listed species that can be found occurring in or around the reservoir that would be affected by the deviation action.

Downstream of the Dam

Downstream on the Kern River, flycatchers and vireos are generally not found nesting in

confined flood plains where only a single narrow strip of riparian vegetation less than 33 feet wide develops, although they could use such vegetation if it extends out from larger patches and during migration (FWS, 2002). There are no wide strips of riparian vegetation below the dam, since some of the habitat is at the bottom of a very narrow canyon, while the majority of the rest of the downstream area is restricted by levees.

Isabella Lake

Effects

Significance Criteria. An alternative would be considered to have a significant adverse effect on vegetation and wildlife if it would result in the loss of habitat supporting Federally listed species and/or results in the death or injury of animals or plants. The significant loss of critical habitat could result in the need to prepare an EIS. The proposed deviation could result in a reduction in the reservoir pool elevation (lake level) and a short term increase in downstream flows during the spring and summer (March through May) when lake levels are annually drawn down to remain below the elevation of 2,585.5 feet between 2007 and 2015.

It was stated in the Corps August 2007 BA that these investigations have determined that Isabella Dam would fail during a low intensity earthquake or maximum credible earthquake event. The deviation is necessary as part of the ongoing seismic investigations related to the Corps' Dam Safety Assurance Program. Therefore, the Corps proposes to restrict the conservation storage limit to a maximum elevation of 2,585.5 feet (356,700 acre-feet) from March 20 to September 30 each year until a permanent solution is implemented. This proposed operational restriction represents a 37 percent reduction in the maximum conservation storage space of 2,605.5 feet (568,100 acre-feet). However, normal lake and dam operations would continue to occur during October to February of each year under the current flood control diagram.

Suitable habitat for the Federally endangered southwestern willow flycatcher and Federally endangered least Bell's vireo exists along the South Fork Kern River above the reservoir, approximately 2 miles east of the lake in a 1,100-acre riparian zone. In accordance with the amended Biological Opinion, dated March 4, 2005 (reference # 1-1-05-F-0067), the USFWS authorized incidental take of flycatcher associated with unrestricted routine operations during the 5-year interim period from 2005 until 2010. The deviation to restrict the lake to 2,585.5 feet is within the scope and effects analysis of this Biological Opinion and Section 7 consultation. The designated critical habitat area would not be affected by the deviation as long as water levels stay at or below elevation 2,585.5 feet. Lake levels would only rise above 2,585.5 feet as shown under its current flood control diagram (Plate 3) and planned deviation if water must be retained to avoid exceeding the downstream channel flow restriction of 4,600 cfs. This exceedance would most likely occur during a high precipitation in the winter which is uncommon in this part of the state. Lake levels have only exceeded 2,585.5 feet during 5 of the past 20 years (25 percent) as recorded by the Corps of Engineers Water Control Data System for lakes and reservoirs in

California. The critical habitat area mainly receives water from runoff and indirect flows via surrounding ranch and farming practices as well as the South Fork Kern River tributary, not directly from Isabella Lake. Therefore, it is common for this area to experience typical drought-induced conditions for most years.

The proposed deviation is not anticipated to have any direct short or long-term inundation effects on the nesting flycatcher and vireo or their habitat on the North or South Fork of the Kern River, which extends farther upstream of Isabella Lake. No direct, indirect, or cumulative adverse effects to the flycatcher and vireo are expected since lake levels would remain at or below the restricted pool elevation of 2,585.5 feet. In wetter years of the deviation between March and May, fluctuations in lake levels would be controlled during major storm events and could be expected to remain above 2,585.5 feet for a period of up to 1 week after the peak event while the lake elevation was reduced back to 2,585.5 feet. The short term deviation effect of lake levels periodically rising above 2,585.5 for about one week during the wetter years would benefit riparian vegetation growing along the shoreline of Isabella Lake, not be detrimental to its health and vigor.

A long term restriction to the pool level could also affect the vegetation when lake lowering could cause the groundwater levels to recede and result in stress and mortality of the riparian habitat found along the shoreline. The restriction could also allow the establishment of vegetation at lower elevations around the reservoir, but such vegetation would be inundated and would likely die when normal operation resumes. During the deviation period from 2007 to 2015, adverse effects from several years of desiccation of the reservoir are not expected; and the proposed action is not expected to result in large areas of affect since the combination of draw downs and drought conditions from1978 to the present have not resulted in any measurable loss of riparian habitat that is valuable to wildlife. As previously shown in the photo presented in Section 4.2.2, which was taken in the Fall of 2007 during the deviation, the deviation would not lower the lake to a low enough elevation that would result in the desiccation of the vegetation and cause mortality or stress. No mitigation is required since the effects during these years for the deviation are not expected and not considered significant in comparison to what desiccation effects occurs under normal operations as irrigation and hydroelectric demands lower the lake level to be lower than the deviated level.

On August 24, 2007, the Corps requested an updated species list (see Appendix A) and submitted its Biological Assessment (BA) to the U.S. Fish and Wildlife Service (FWS) on potential effects to listed species from the proposed restricted dam operation at Isabella Lake near the town of Isabella Lake in Kern County, California. On April 17, 2008, another updated list was requested (See Appendix A). For the proposed deviation in dam operation, the Corps requested concurrence from the FWS on its determination of not likely to adversely affect the Federally endangered southwestern willow flycatcher and least Bell's vireo. The Corps received a concurrence letter from the FWS on January 15, 2008 (see Appendix A). The Service concluded that the effects were fully addressed in their previous biological opinions and the proposed deviation (increased releases) would not impact habitat for the willow flycatcher in a

way not previously considered in their biological opinions. Therefore, there is no need to re-consult for the Federally endangered southwestern willow flycatcher and its designated critical habitat and the Federally endangered least Bell's vireo. The Service considers the 2000 biological opinion and 2005 amendment for the Conservation Plan for the Long-term Operation of Isabella Dam and Reservoir to be in full force and effect.

Downstream of the Dam

The increased downstream flows associated with the Proposed Action would occur on an annual basis for approximately 6 years between 2007 and 2015. Fluctuations in downstream flows for the Kern River would occur during the storm event and could last up to 1 week after the peak event while the lake elevation was restored to a lower elevation of 2,585.5 feet. No other listed species are found below the dam since there is no suitable habitat to support them. This downstream flow fluctuation is within the range experienced during the recent recorded operational history of the project and is expected to have no effects on listed flycatcher and least Bell's vireo since there is no suitable nesting habitat for either bird below the dam. These two listed birds that could seasonally use the area during the migration period would not be directly, indirectly, or cumulatively affected by the deviation action that controls flows to not exceed 4,600 cfs the majority of the time. No adverse effects are expected since a slight incremental increase in flows would not cause the riparian trees to die and the only time that flows would exceed the operating criteria (4,600 cfs release from the dam) is if the lake exceeds capacity and water flowing through the spillway exceeds 4,600 cfs. The only difference compared to current operations is that releases could be higher than normal (i.e., 3,000 cfs versus 1,500 cfs) and commence earlier in the season so that the Corps can control runoff that is higher than normal without encroaching into the restricted pool (the storage available above the restricted elevation that would normally be used to store the additional runoff until needed later in the season). These releases could occur with a large flood or very heavy snowpack. It has only spilled three times, once in 1969, in 1980, and the other time was in 1983. In 1983, runoff for the water year was 300 percent of normal. The channel capacity of the Kern River varies along the length of the river (from the dam to the southern San Joaquin Valley). Isabella Dam and Lake is operated so that the maximum flow at the "Pioneer Turnout" (both near Bakersfield) does not exceed 4,600 cfs, the stated channel capacity below Pioneer Turnout. No mitigation is required since flows would be controlled to not exceed 4,600 cfs the majority of the time and the hydrating effects to riparian vegetation that supports migratory flycatchers and vireos are more beneficial in comparison to what occurs under normal operations.

4.4 Recreation

4.4.1 No Action

Recreational activities and plans are expected to remain the same. No deviation would be implemented and the Corps would continue to manage the recreational features and plans for Isabella Dam and Lake as it has in the past. Without the proposed action, this lake poses an

imminent threat to public safety if an earthquake occurs and damages the dams' infrastructure. Uncontrollable releases from the emptied reservoir after a dam breaks from an earthquake could also result in catastrophic emptying of the reservoir and downstream flooding of the riverine area where recreational users could be found fishing, kayaking, or sightseeing below the dam. The risk for such a catastrophic failure of the dam remains high and could result in death or injury to the recreational users and/or damage or loss of their recreational equipment.

4.4.2 Proposed Action

Existing Conditions

Recreation activities at Isabella Lake include a variety of activities including picnicking, camping, boating, swimming, fishing, hunting, cycling, hiking, and horseback riding. The camping, boat launch, restrooms, trails, parking lots facilities at the ten developed campgrounds and five boat ramps are operated and/or administered by the U.S. Forest Service (Porter, 2007, per.comm.). There are three privately operated marinas at the lake: Dean's North Fork, French Gulch, and Kern Valley. Recreational activities downstream include whitewater boating, camping, picnicking, and fishing. The whitewater boating downstream of the lake takes advantage of the dam releases to extend the boating season into August. Whitewater boating on the North Fork Kern River above the lake is limited to the spring runoff season (April through May). Recreational activities at Isabella Lake generally do not require any specific control of releases. Although recreation is not an authorized purpose of Isabella Lake, an agreement was made in 1963 between Kern County and the water users to maintain a minimum recreation pool of 30,000 acre-feet (Corps, 1978). This level has only occurred four times since 1954 (1954, 1955, 1960, and 1961). The peak recreation season at the lake is generally April through Labor Day weekend (Porter, 2007, per.comm.).

Effects

Significance Criteria. An alternative would be considered to have a significant effect on recreation if it would result in the significant loss of recreational facilities, cause a substantial disruption in a recreational activity or opportunity, or substantially diminish the quality of the recreational experience.

Isabella Lake

Recreational facilities such as six of the 10 campgrounds, five boat launches, roads, trails, and restrooms around the reservoir would not be affected by inundation during the deviation draw downs of the lake level. However, the direct effect of the deviated draw down to the campground facilities at the lake is that people would have to walk or drive further to reach the lake; and three of the boat ramps would become unusable for launching. At the Tillie Creek Day Use Area a canal (the flowline for Southern California Edison's Borel Hydropower Facility) is exposed creating a barrier between the lake and the shoreline, including a boat launch facility and

Dean's North Fork marina. Also located in the Tillie Creek area and therefore affected by the exposure of the Borel Canal are the Tillie Creek Campground, Tillie Creek Group Campgrounds, and Live Oak Campground. The draw down could also make it more difficult for handicapped persons to reach the lake. Recreation use could periodically go down as it sometimes has over the last 29 years. If runoff resulted in a significant draw down of the reservoir during the deviation, this direct effect at Dean's North Fork marina would be reduced to less than significant level with the installation of a portable bridge capable of vehicular traffic that is removed when reservoir levels become higher (Porter, 2007, per.comm.). The other two marinas are designed with cables and deadman anchors to allow them to adjust with the lake level; this process has been regularly used in the past during low water years. The economy of the small businesses in the area around the lake is based, in part, on the revenues generated from people who recreate at the lake. These revenues are not expected to drop significantly when the lake level drops during deviation. This deviation is not considered significant because two of the marinas have adjustable floating docks when lake levels go lower than the deviation draw downs, which allow boaters to continue using two of the marinas. The third marina has not been adversely affected under current operations despite lake levels lowering to the 30,000 ac-ft minimum pool established for recreational purposes.

The economy of the Kern River Valley does not depend on the marinas. The marinas are only a small part of the recreational economy, which also depends on shore based users, whitewater boaters, and especially the campers. While the marinas are able to adjust to accommodate fluctuating lake levels, the Forest Service operated boat launch facilities are not. Of the five boat launch facilities, the two that are located at the northern end of the lake (Tillie Creek & Camp 9) become unusable between the lake levels of 115-110,000 acre-feet storage. Therefore the only launching facilities available to the boating public at these lake levels are on the south and west side of the lake, which increase congestion at these sites and diverts business away from Dean's North Fork marina and the businesses in Wofford Heights and Kernville. There is a period of time between the date that Dean's North Fork marina moves across the Borel Canal and the date that the portable bridge can be placed, because the saturated soil is not able to support the crane and trucks needed to transport and place the bridge. During this time the marina places its own temporary walking bridge, but access is severely limited both for suppliers and persons with disabilities. Maximum pool historically occurs in June. Low water yield years have the most impact on the lake recreation users because of a lower maximum pool and the lake reaches levels that effect recreationists sooner in the year, during the high recreation use period. Whereas, with a higher minimum pool, the effects of lower lake levels (exposure of the Borel canal, increased distance from facilities to shoreline, etc.) generally occur after the high recreation use season (in September or October) and, therefore, have little effect on the economy of the Kern River Valley.

Based on an evaluation of the Isabella Dam project data records and long-range weather forecasts currently being issued by the National Weather Service for water year 2007-2008, it is estimated that there is a better than 90 percent chance that the project can be operated within the existing guidelines in the Water Control Plan; that is, the routine reservoir operations would

continue throughout the recreation season. Conversely, there is less than a 10 percent chance (depending on how much precipitation is received), that the proposed deviation could result in a reduction in the reservoir pool elevation below 2,585.5 in comparison to normal operations under the No-Action plan. However, no specific control of releases is guaranteed for recreational uses except that for the required minimum recreation pool of 30,000 acre-feet. Even if the pool elevation is reduced slightly by diverting snowmelt runoff (between April and May), the deviation of lowering the lake level would not significantly affect recreation.

The Proposed Action is not anticipated to result in significant effects or indirect effects to recreation because the deviation results in reservoir conditions that are similar to what has occured in the past including lower than normal water years. Although recreation is not an authorized purpose of Isabella Lake, an agreement was made in 1963 between Kern County and the water users to maintain a minimum recreation pool of 30,000 acre-feet (Corps, 1978). As previously shown in the photo presented in Section 4.2.2, which was taken in the Fall of 2007 during the initial deviation, the deviation in conjunction with less than normal water year, and releases made for irrigation and hydroelectric demands would not lower the lake to a low enough elevation that would result in significant effects to recreation. This recreation pool is also the fishery pool needed to support the warmwater fishery, including large and smallmouth bass. The combination of a slight incremental change in draw downs and the ability to maintain the recreation pool to remain above 30,000 ac-ft would not result in adverse effects on recreation, and thereby, no mitigation is required.

Downstream of the Dam

During most years, no adverse effects to the recreational fisheries or local businesses associated with kayaking below the dam are expected since the incremental increase in flows during the spring and summer are not expected to exceed 4,600 cfs and last more than a week. The controlled flow releases could benefit fisheries and kayaking conditions on the river. During the deviation period, some effects to the kayaking businesses could occur in rare instances where there is high spring run-off during March through May resulting in an increase in flows. If it is necessary, these increased flows from the reservoir during the deviation period would be made to ensure public safety and protection of property to the downstream areas. The effects are not expected to be significant since, higher than usual releases in the spring is rare and it has only occurred three times in the past, the last time being in 1983.

4.5 Fisheries

The Kern River downstream of the Isabella dam provide habitat for a number of native fish species including Sacramento pike minnow, Sacramento sucker, hardhead, hitch, sculpin, and Kern River rainbow trout (Christenson et al., 1993). A variety of nonnative fish species were introduced to provide both sport fish and food, including hatchery reared rainbow trout, brown trout, carp, smallmouth bass, largemouth bass, spotted bass, white crappie, black crappie, bluegill, green sunfish, redear sunfish, white catfish, channel catfish and brown bullhead,

goldfish, mosquitofish, and golden shiner (Southern California Edison Company (SCE), 1991; Christenson, et al., 1993). In addition, threadfin shad were also introduced into the reservoir as a forage fish. Pursuant to a new Federal Energy Regulatory Commission (FERC) License, an amendment was issued to SCE for the Borel Project on May 17, 2006. The schedule of minimum instream flow releases has been changed and is now in effect. The Corps implements the following new schedule of minimum flow releases for fisheries (Southern California Edison letter, April 2006) downstream of the dam:

1) 25 cfs from November 1 to April 30
2) 30 cfs from May 1 to May31
3) 60 cfs from June 1 to September 30
4) 30 cfs from October 1 to October 31

4.5.1 No Action

The No Action alternative assumes that the Corps would not temporarily deviate from current operations of Isabella Dam and Lake. Current operations of Isabella Dam and Lake that affect fish resources would continue without the temporary deviation. Since there would be no deviation from the current Water Control Plan, the conditions that affect fish resources would remain as they have been since the dam was completed in 1954. The rapid drawdown of the reservoir after a dam breaks from an earthquake would also result in catastrophic drying of the lake, which affects the water quality needed for the fisheries of the lake since it would no longer be stored in a reservoir. The risk for such a catastrophic failure of the dam remains high.

Isabella Lake. Fish resources residing in Isabella Lake would not be affected under the No Action alternative. Since there would be no deviation from the current water control plan, the conditions that affect fish resources would remain the same.

Downstream. Fish resources downstream of Isabella Dam and Lake would not be affected under the No Action alternative. Since there would be no deviation from the current water control plan, the conditions that affect fish resources would remain the same.

4.5.2 Proposed Action

The Kern River and Isabella Lake provide habitat for a number of native and introduced fish species which could be affected by changes in water management operations. The releases that could be needed to manage the lake level for the proposed deviation are likely to be somewhat similar in magnitude to releases used during the recent recorded operational history of the project. The vulnerability of fish resources to the resulting lake level would vary with the biological requirements of the individual species.

Isabella Lake

Effects

The fisheries residing in Isabella Lake could experience changes in aquatic habitat due to fluctuations in lake elevations if a significant storm event occurred. Every attempt would be made to release water gradually from Isabella Dam and Lake. However, in the unlikely event any water is stored above elevation 2,585.5 feet due to a rare late season rainstorm; the lake would be evacuated as rapidly as possible to maintain the elevation at or below 2,585.5 feet. These fluctuations would occur during the storm event and up to 1 week after the event while the lake elevation was restored to 2,585.5 feet. Releases from Isabella Dam and Lake would be gradually changed, not increasing by more than 500 cfs per hour or decreasing by more than 1,000 cfs per hour. This temporary lake level fluctuation is within the range experienced during the recent recorded operational history of the project and would have minor effects to fish resources.

There are no construction activities to affect the recreational fisheries consisting of trout and warm water species such as, largemouth bass, bluegill, carp, and brown, black, and bullhead catfish and their habitat. Between 2007 and 2015, drawing down the reservoir levels in March through May could result in desiccation effects to spawning, rearing, and foraging habitat. Lowering the lake could result in a smaller pool resulting in a slight reduction in populations due to increased predation, competition, and degraded water quality. It would also result in a minor increase in water temperatures and lower dissolved oxygen levels. The trout fishery is a put-and-take resource with most of the trout that are not harvested by fishermen dying in the summer once lake levels begin warming up above 70 degrees Fahrenheit. However, the draw downs from the deviation would not go further than 2,585.5 except during severe late spring storms. The minimum recreation pool of 30,000 ac-ft, which is what is needed to sustain a warmwater fishery, would also lessen any adverse effects from the deviation. As previously shown in the photo presented in Section 4.2.2, which was taken in the Fall of 2007 during the deviation, the deviation would not lower the lake to a low enough elevation that would result in significant effects to fisheries or to bass tournaments since bass tournaments occur regularly every year during the spring or early summer months despite annual draw downs. Therefore, the Proposed Action to deviate the reservoir level to be at or below 2,585.5 between March and September would not require mitigation.

Downstream of the Dam

The timing of controlled flow releases from March through September would benefit the fisheries found in the Kern River below the dam. The fisheries residing in the Kern River below Isabella Dam and Lake could experience temporary changes in aquatic habitat due to fluctuations in downstream flows if there is a significant change in the deviation. Every attempt by the dam operator would be made to release water gradually from Isabella Dam and Lake. However, in the unlikely event any water is stored above elevation 2,585.5 feet due to a rare late season rainstorm, lake levels would be lowered as rapidly as possible to maintain the elevation at or

below 2,585.5 feet. These fluctuations would occur during the storm event and last up to 1 week after the event while the lake elevation was restored back to 2,585.5 feet. This downstream flow fluctuation is within the range experienced during the recent recorded operational history of the project and would have minor beneficial effects to the fish resources. No mitigation is required since there are no adverse effects with releases not exceeding 4,600 cfs in most years.

4.6 Air Quality

4.6.1 No Action

The Corps would continue routine operation of Isabella Dam and Lake according to the existing Water Control Plan and Flood Control Plan currently in use for the management of rain flood events. No changes to air quality are expected from vehicle or heavy equipment emissions because there is no use of construction or heavy equipment to control lake levels. Uncontrollable releases from the reservoir after a dam breaks from an earthquake could also result in catastrophic drying of the lake bottom. Dust storms would occur more frequently and blowing dust would lower the air quality causing irritation to recreational users during the drier summer months. The risk for such a catastrophic failure of the dam remains high.

4.6.2 Proposed Action

Existing Conditions

Air quality in the air basin is regulated at the Federal, State, and regional levels. At the Federal level, the U.S. Environmental Protection Agency (EPA) is responsible for overseeing implementation of the Federal Clean Air Act. The Air Resources Board is the State agency that regulates mobile sources and oversees the State air quality laws, including the California Clean Air Act. Tulare County is located within the San Joaquin Valley Air Basin (SJVAB) which includes Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare Counties. The basin is bordered by mountains on the west, south, and east; to the north, the basin extends to the Sacramento Valley Air Basin. Locally, the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is responsible for ensuring compliance with Federal, State, and local air quality regulations. Specifically, SJVUAPCD issues permits and enforces the regulations to protect the public health and environment in accordance with Federal and State Clean Air Acts through guidelines developed by Federal and State agencies. Tulare County is in nonattainment for both PM10 and ozone (Federal Highway Administration 2005).

Current lake levels are much lower than the deviation elevation of 2,585.5 feet due to a continuous drought in this part of the state. These drier conditions under normal routine operations have routinely exposed the shoreline to potential wind and dust hazards on an annual basis. The Proposed Action does not involve construction or use of any kind of heavy equipment use. Directly, planned deviations between March and September of each year until a decision is

made on designing and implementing a permanent solution on dam remediation could result in a small incremental change in drier than usual shorelines.

Effects

Significance Criteria. An alternative would be considered to have a significant effect on air quality resources if it would result in emissions that pollute the environment and exceed Federal, State, and local levels. An EIS would have to be prepared if the action results in significant adverse effects on air quality.

The proposed action would not result in any direct effects on air quality, since there are no construction activities involving the use of vehicle and heavy equipment to lower the lake level. However, in the long term, there are indirect effects resulting from the deviation. Over the 6-year period between March and September 2015, the deviation could result in exposed lake bottoms drying out to the extent where blowing dust affects people living at nearby houses, the lake businesses (3 marinas), and to the recreational users at the lake. However, these indirect effects are not considered significant since they would occur at about the same level as what occurs under current operations, and typically, the blowing dust would not last all day providing some relief from the irritation. No mitigation is required since the effects are about the same as what occurs for the current operation under the No Action Plan.

4.7 Flood Damage Reduction

4.7.1 No Action

Flood control under the No Action alternative would be the same as what was discussed for Environmental Justice and Land Use, and more specifically set forth in the Reservoir Regulation Manual for Isabella Dam and Lake, revised January 1978. The dam reduces the risks to the downstream's public safety and welfare. Uncontrollable releases from the reservoir after a dam breaks from an earthquake could also result in catastrophic flooding of urban and agricultural areas where humans reside. Many people would lose their houses and businesses and possibly drown if they can't escape to higher ground fast enough to avoid the uncontrolled river flows in the valley below the dam. The risk for such a catastrophic failure of the dam remains high.

4.7.2 Proposed Action

Existing Conditions

The principal purpose of the Isabella Dam and Lake Project is flood damage reduction in the agricultural, urban, and suburban areas downstream of the dam, all the way to the Tulare Lake Basin. The potential increase in the flood threat due to the increased releases during the rain flood season is expected to be very minor as long as dry conditions persist and the potential for significant lake inflow is monitored carefully. The Corps receives real-time data for this

project, which is used to constantly update working models. Operation consistent with the criteria discussed for the Proposed Action would ensure prompt response to changing conditions.

Based on an evaluation of the Isabella Dam project data records and long-range weather forecasts currently being issued by the National Weather Service for water year 2000, it is estimated that there is a better than 90 percent chance that the project can be operated within the existing guidelines in the Water Control Plan. Under the proposed operating scenarios, the project storage is not expected to exceed elevation 2,585.5 feet between March 1, 2007, and September 30, 2007.

The maximum release that can be safely passed through the downstream channel is 4,600 cfs, depending on conditions. Therefore, if inflows are greater than the maximum releases, water may need to be stored above 2,585.5 feet for a brief period of time to protect lives downstream. In the unlikely event that any water is stored above elevation 2,585.5 feet due to a rare late season rainstorm (less than 10 percent chance), the reservoir would be evacuated as rapidly as possible to return the reservoir to an elevation at or below 2,585.5 feet. Releases would be used that can be safely passed downstream by the local interests without exceeding the channel capacities of the downstream distribution systems. Local water interests could use excess water for groundwater recharge by diverting the water into percolation ponds (see also Section 4.7). However, the Kern River Water Master has determined that it is more expensive to regulate water once it is downstream (in the Tulare Lake Basin) than when it is stored at Isabella Lake (Williams, 1998).

When local water interests have extra water that they cannot use, two other options are available to water managers: (1) if the State of California is willing, the extra water can be diverted to the Kern River Intertie, which allows water to flow into the California Aqueduct system for use further south, or (2) if not already inundated to capacity, the Tulare Lake Bed can provide up to approximately 100,000 acre-feet of water storage. If neither of these options is available for management of locally unusable water, flows from a late season rainstorm may remain in the Tulare Lake Basin. This last resort action could cause severe crop damage due to flooding downstream of the project, all the way to the Tulare Lake Bed. In January and February 1997 (171 percent of normal year), lands in Tulare Lake were flooded, resulting in estimated damages of $45 million, according to the Kern River Watermaster (Williams, 1998). Water managers estimate that cropland flooding of this magnitude is very unlikely; that is, less than a 10 percent chance based on current conditions. Based on the forecast issued on February 23, 2000, runoff (between April and July) is estimated to be 66 percent of a normal year. The Proposed Action is not anticipated to result in significant socioeconomic effects because a dry water year is forecasted.

Effects

Significance Criteria. An alternative would be considered to have a significant effect on people dependent on flood damage reduction if it would result in population changes, residential

relocations, business losses, job losses, changes in public services, and/or losses of local tax revenues that are compatible with local agency goals or projections. An EIS would have to be prepared if the action results in significant adverse effects on people dependent on flood damage reduction.

Lake lowering has occurred over the last 29 years and there has been no known documentation or indication that groundwater levels needed to support land uses such as agricultural crops are affected to the extent of causing crops to die. While ensuring irrigation water is available throughout the drier spring and early fall months (March-September) between 2007 and 2015, the Corps and Water Master would control the incremental increase in flows to not exceed 4,600 cfs below the dam. Controlling the flows under the proposed deviation would not result in downstream flows to exceed the design capacity of the Kern River channel and cause overtopping of levees or natural banks that induce flooding of farmland. With the expectation that there is a very low possibility of flooding of farmland expected during the deviation of drawing down lake levels between 2007 and 2015, there are no significant changes associated with the deviation to affect the economy or housing of low income families, and thereby, there are also no direct or indirect effects to Environmental Justice. There are no changes to the farmer's socioeconomics associated with the deviation in drawing down lake levels, and thereby, there are no direct or indirect effects to downstream land use, including agricultural crops.

4.8 Water Supply and Quality

For operation for irrigation, all inflow into the lake in excess of irrigation demands is stored up to the maximum permitted by flood control operation requirements. Releases for irrigation are in accordance with the requirements determined by the Kern River Watermaster, unless release is required for flood control purposes. Ordinarily, daily irrigation and hydroelectric releases are coordinated between the Kern River Watermaster and Corps operators at Isabella Lake who are responsible for the operation of Isabella Dam.

4.8.1 No Action

If the winter is relatively dry, as forecasted, the water users may likely elect to release as little water as possible to save more water for later in the irrigation season, while still cooperating in the operation of the project within the guidelines of the Water Control Plan. That is, under the No Action alternative, a dry winter might allow the project to both operate within the Water Control Plan now in effect and stay below 2,585.5 feet. Even under normal operations, such dry conditions may leave very little water available for urban, agricultural, and recreational uses. The rapid drawdown of the emptied reservoir after a dam breaks from an earthquake would also result in catastrophic drying of the lake, which affects the water supply and quality of the lake since it would no longer be stored in a reservoir. The risk for such a catastrophic failure of the dam remains high.

4.8.2 Proposed Action

Existing Conditions

If the winter is relatively dry, as forecasted, the reservoir might not even fill to elevation 2,585.5 feet. In that case, it would be operated in a manner similar to the No Action alternative; that is, it would still be able to be operated within the Water Control Plan. However, in the unlikely event that any water is stored above elevation 2,585.5 feet due to a late season rainstorm, the lake would be evacuated as rapidly as possible to return the lake to at or below 2,585.5 feet. Therefore, the reservoir would not fill as it would under normal operations. Holding the reservoir at or below 2,585.5 feet may potentially leave less water available for urban, agricultural, and recreational uses than with the No Action alternative. Inflows above necessary irrigation requirements during the period from March 20, 2007 to September 30, 2007, would be released to maintain 2,585.5 feet. These releases could lead to a reduced lake level at the end of the Fall of 2007. (However, Kern County and the water users are required to maintain a minimum recreation pool of 30,000 acre-feet.)

The farming economy downstream of Isabella Dam and Lake is completely dependent on the availability of irrigation water in the basin. Therefore, releases of inflows above necessary irrigation requirements to hold the lake level at or below 2,585.5 feet could reduce the available water supply and have an adverse effect on the farming economy during the irrigation season from April to October. Less water would also likely affect the price of water available to farmers. An analysis done in 1998, by the Kern River Watermaster estimated that if the reservoir was held at or below 2,585.5 feet, there would be a total loss of approximately 95,000 acre-feet of Kern River surface water (Williams, 1998). According to the Kern River Watermaster: "This surface water resource would be capable of being partially mitigated by putting this water into underground storage at percolation ponds located in and near the service areas of the Kern River interests downstream of Isabella Lake. Notwithstanding the ability to place this water in subsurface storage, [the Proposed Action] would result in additional water management cost of approximately $5.00 per acre-foot for operation and maintenance costs to spread the water, and approximately $65.00 per acre-foot to extract the water, which otherwise would be available for surface irrigation if the water had been conserved and stored at Isabella Lake. This total cost is $70.00 per acre-foot, at 95,000 acre-feet, results in an additional cost of $6.65 million to the local public agencies responsible for managing this water supply." Except in extreme conditions, the Proposed Action is not anticipated to result in significant water supply effects such as these because a dry water year is forecasted.

Effects

Significance Criteria. An alternative would be considered to have a significant effect on water supply and quality if it would substantially reduce the available supply of water available to water users, substantially deplete ground-water resources, or interfere with ground-water recharge. Any significant effect could require the preparation of an EIS.

Isabella Lake

The Proposed Action does not include construction activities that involve placement of fill material into the waters of the United States. Drawing down the reservoir levels during the deviation between March and September would not come close to reaching the recreation pool elevation of 30,000 ac-ft resulting in long term effects. As previously shown in the photo presented in Section 4.2.2, which was taken in the Fall of 2007 during the deviation, the deviation would not lower the lake to a low enough elevation that would result in significant effects to water supply and quality needed by the fisheries, downstream users, or other aquatic organisms. In addition, the deviation draw downs would not go further than the minimum gross pool elevation needed to sustain the water quality for a warmwater fishery, and thereby, the Proposed Action is considered a minimal affect to water quality and supply.

Downstream of the Dam

The slight incremental increase in water released below the dam during the deviation would benefit water quality in the Kern River and would meet current supply needs between March and September, not adversely affect it. Under extreme conditions, the deviation could result in indirect effects on agriculture, reducing crop production with more fallow fields, and possibility of increased groundwater pumping and aquifer overdraft. Control of flows to meet water supply would minimize those effects, and thereby no mitigation is required.

5.0 GROWTH-INDUCING EFFECTS

Growth inducement is sometimes characterized as a secondary or indirect project effect. The proposed action would not result in population growth or density since it is an interim measure that does not provide additional lands for development in the area of the reservoir or downstream.

6.0 CUMULATIVE EFFECTS

The NEPA requires that an environmental evaluation discuss project effects which, when combined with the effects of other past, present, or foreseeable future projects, could result in significant cumulative effects. In the past, the flood control project consisting of construction of the dam resulted in the loss of riparian and terrestrial habitat as the result of inundation. In the Spring of1999, normal operations resulted in the flooding of flycatcher and vireo nests, but no riparian habitat was lost by inundation. The Final January 2000 EA that was done on the acquisition of 1,100 acres of land was implemented as a measure to protect flycatcher and vireo habitat so it did not result in cumulative effects and was considered a benefit to the species, not

an adverse detrimental effect. No deviation was done under this action and there was no discussion in the EA that there were cumulative effects. A February 2000 draft EA was prepared for the planned deviation and the May 2000 EA was finalized after the public review period. Due to continued drought conditions, it was not necessary for the District to approve the document and implement any measures so the deviation described in the final EA did not inundate riparian vegetation supporting willow flycatchers and vireos.

Presently, the deviation that slightly lowers the reservoir pool during March through September between 2007 and 2015 is not expected to result in the loss of riparian vegetation affecting fish and wildlife found at Isabella Lake or the downstream area, even during drought conditions. Drawing down this reservoir does not result in flooding of vegetation found growing around the perimeter of the reservoir, including the area immediately upstream of it. No cumulative adverse effects to the flycatcher and vireo are expected since lake levels would remain below the restricted pool elevation of 2,585.5 feet. In wetter years of the deviation between March and May, fluctuations in lake levels would be controlled during major storm events and could be expected to remain above 2,585.5 feet for a period of up to 1 week after the peak event while the lake elevation was reduced back to 2,585.5 feet. The short term deviation effect of lake levels periodically rising above 2,585.5 for about one week during the wetter years would benefit riparian vegetation growing along the shoreline of Isabella Lake, not be detrimental to its health and vigor resulting in the loss of habitat. The increase of 1.5 feet over the 2000 restricted lake level of 2,584 feet is not expected to inundate willow flycatcher or vireo nests.

The controlled incremental amount of downstream releases between March and September would benefit riparian vegetation below the dam, not stress it or cause it to die. Cumulative effects to downstream recreational kayaking would only occur in those rare years when there is late spring run-off. Effects from desiccation of the reservoir is not expected to result, since the groundwater table above the reservoir where the Kern River flows into the lake have been supporting riparian vegetation; and the combination of draw downs and drought conditions from1978 to the present have not resulted in any measurable loss of riparian habitat that is valuable to wildlife. Based upon no loss expected, there are no cumulative effects to riparian vegetation or the wildlife including Federal listed species that depend on this habitat either in the area at the reservoir or in the area below the dam along the Kern River.

In the future, only if the permanent solution to remediate the dam or other activity that includes the fluctuation of lake levels results in the loss of riparian habitat or floods willow flycatcher and vireo nests, would there be cumulative effects to riparian vegetation and Federally listed species. If the permanent solution does not affect riparian habitat or inundates willow flycatcher or vireo nest, there would be no cumulative effects.

The temporary deviation resulting in draw downs of the reservoir could cause some effects to recreation when water users decide to find another source of water, and recreational users could want to go to other lakes, rivers, and streams to recreate. The proposed deviation that

lowers lake levels is also not likely to result in cumulative effects on water supply and quality or other resources. Therefore, the proposed action would not result in cumulative effects since there is no loss in comparison to what could occur under normal operations.

7.0 CONCLUSION

The interim proposed action of deviating the Water Control Plan to restrict Isabella Lake levels at or below 2,585.5 feet in elevation between March and September for the years 2007 through 2015 is not anticipated to have any effect on cultural resources or riparian vegetation found within the lake's perimeter or in the downstream areas of the Kern River below the dam. The deviation could result in minimal effects to recreation, socioeconomics, (local businesses that are seasonally dependent on some of the revenues provided by recreational users), air quality, water quality, and fisheries as lower lake levels make access more difficult for boaters and other recreational users, water temperatures warm up, dissolved oxygen levels decrease, and when exposed reservoir bottoms dry out and are blown around by winds. These effects are not expected to be significant requiring mitigation since the effects would typically simulate what normally has been occurring on an annual basis since 1978 with no requirement from the resource agencies to do mitigation nor has there been any reported fish kills during draw downs of the lake in the spring. In addition, there are no anticipated adverse effects to Federally listed threatened and endangered species such as southwestern willow flycatcher and least Bell's vireo since the riparian vegetation around the reservoir would not be inundated during this deviation for extended periods; and there is no documentation or observations made during annual surveys for the flycatcher that reservoir draw downs between March and September have resulted in significant adverse effects to the existing riparian vegetation that support these listed species. Based upon the public comments submitted, the determination of no significant impacts to the environment, and there is no mitigation required to compensate for effects, a FONSI is appropriate for this proposed action.

8.0 COMPLIANCE WITH APPLICABLE LAWS, POLICIES, AND PLANS

The relationship of the Proposed Action to applicable Federal, State, and local environmental requirements is outlined below. The Proposed Action is in compliance with all laws, regulations, and executive orders.

8.1 Federal Requirements

Clean Air Act (42 U.S.C. '1857 et seq. (1970), as amended and recodified, 42 U.S.C. '741 et seq. (Supp. II 1978)). Full Compliance. In general, the purpose of this statute is to "protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare" and "to encourage and assist the development and operation of regional air pollution prevention and control programs." The Proposed Action does not involve any construction or other activity

that could significantly increase air pollutants. Therefore, the Proposed Action is in compliance with the Clean Air Act.

Clean Water Act (33 U.S.C. && 1251 et seq. (1976 and Supp. 1978)). Full Compliance. The purpose of this statute is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" by preventing, reducing, or eliminating pollution. The Proposed Action does not involve the release of any pollutants or fill into waters of the United States. Therefore, the Proposed Action is in full compliance with the Clean Water Act.

Endangered Species Act (16 U.S.C. && 1531 et seq.). Full Compliance. The general purpose of this statute is to conserve and protect threatened and endangered species of fish, wildlife, and plants. Section 7 of the act requires Federal agencies, in consultation with the Secretary of the Interior and the Secretary of Commerce, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of their critical habitat. The Corps has requested concurrence from the Service that the Proposed Action would not adversely affect any endangered or threatened species or their critical habitat. In their comment letter on the draft EA, the Service stated that it was not necessary to re-initiate Section 7 consultation for the deviation action and concurred there would be no effects to the southwestern willow flycatcher and least Bell's vireo. Coordination with the U.S. Fish and Wildlife Service under this act is shown in Appendix A.

Fish and Wildlife Coordination Act (16 U.S.C. 0661 et seq.). Full Compliance. This act requires Federal agencies to coordinate with the Service and the California Department of Fish and Game before undertaking projects or actions that control or modify surface water. This coordination is intended to promote the conservation of wildlife resources by preventing loss of or damage to fish and wildlife resources and to provide for the development and improvement of fish and wildlife resources in connection with water projects. The reports and recommendations of these two agencies must be integrated into any report that seeks permission or authority to construct a project or modify or supplement plans for previously authorized projects. The draft Environmental Assessment was provided to the Service to review during the public comment period. The Service concurred with the effects analysis on fish and wildlife.

National Environmental Policy Act (NEPA). Full Compliance. This act requires the full disclosure of the environmental effects, alternatives, potential mitigation, and environmental compliance procedures of the Proposed Action. This Environmental Assessment provides NEPA compliance. The draft Finding of No Significant Impact has been prepared, and after it is signed, will complete the environmental documentation required by the NEPA.

Flood Control Act of 1944. Full Compliance. In this act Congress authorized the construction of Isabella Dam and Lake. The Proposed Action is consistent with the directives of the Flood Control Act of 1944.

National Historic Preservation Act of 1966, as amended (16 U.S.C. Section 470 et seq.). Full Compliance. The purpose of this act is to protect, preserve, rehabilitate, or restore significant

historical and archaeological data, objects, or structures. The Corps has determined that the deviation from the Water Control Plan does not have the potential to cause effects to historic properties as defined in 36 CFR 800.3(a)(1), the implementing regulations for the National Historic Preservation Act. The deviation represents only a change in the timing of releases from Isabella Dam; therefore, there is no potential to change the character or use of historic properties. The proposed deviation of the water elevation is not determined to be the type of undertaking that would has an affect on historic properties if they were present. Therefore, pursuant to 36 CFR 800.3(a) No Potential to cause effects, it has been determined that the project as planned is in compliance with Section 106 of the National Historic Preservation, and no consultation with SHPO is required.

Executive Order 11988, Flood Plain Management. This Executive Order requires the Corps to provide leadership and take action to (1) avoid development in the base or 100-year flood plain (unless such development is the only practicable alternative); (2) reduce the hazards and risk associated with floods; (3) minimize the effect of floods on human safety, health, and welfare; and (4) restore and preserve the natural and beneficial values of the base flood plain. In this regard, the policy of the Corps is to formulate projects that, to the extent possible, avoid or minimize adverse effects associated with the use of the base flood plain and avoid inducing development in the base flood plain unless there is no practicable alternative. The Proposed Action is in compliance with this Executive Order because it does not induce such development. Based on an evaluation of Isabella Dam and Lake project data records and long-range weather forecasts currently being issued by the National Weather Service for water year 2000, it is estimated that there is a better than 90 percent chance that the project can be operated within the existing guidelines of the Water Control Plan. Under the proposed operating scenarios, the project storage is not expected to exceed elevation 2,585.5 feet between March 1, 2000, and September 30, 2000.

9.0 COORDINATION AND REVIEW OF THE ENVIRONMENTAL ASSESSMENT

The draft Environmental Assessment and Finding of No Significant Impact has been coordinated with U.S. Fish and Wildlife Service, California Department of Fish and Game, U.S. Forest Service, U.S. Bureau of Reclamation, Department of Water Resources, and Kern River Watermaster. The draft Environmental Assessment was circulated for a 15-day public review. All comments were considered and incorporated into the final document, as appropriate. Comments and Corps responses are included in Appendix B of this Final EA.

10.0 REFERENCES

Christenson, D.P., S. J. Stephens, D. Lentz, M. Lechner, and H. Werner. 1993. Draft Upper Kern River Fishery Management Plan.

Entrix, Inc. 1995. Draft Environmental Assessment, Temporary Carryover In Flood Control Space (November 1995 through January 1996), Isabella Reservoir, Kern River, CA.

Jones and Stokes, Inc. (JSA). 1999. Biological studies in support of Endangered Species Act compliance for operation of Isabella Dam and Lake, California. Environmental services contract no. DACW05-95-D-0003. Task 2: Evaluation of the Effects of 1997 and 1998 Isabella Dam and Lake Operations on Riparian Vegetation.

_____. 2000. Final Environmental Assessment for Protection of 1,100 Acres Upstream of Isabella Dam and Lake. Prepared for U.S. Army Corps of Engineers by Jones and Stokes Associates, Inc.

_____. 2000a. Biological studies in support of Endangered Species Act compliance for operation of Isabella Dam and Lake, California. Environmental services contract no. DACW05-98-D-0020. Tasks 4 and 7: Conduct 1999 Southwestern Willow Flycatcher and Least Bell's vireo surveys, and prepare comprehensive summary report. Prepared for U.S. Army Corps of Engineers, Sacramento District, Sacramento, California.

Southern California Edison Company. 1991. Draft Kern River No. 3 Water Power Project, Application for New License for Major Project, Existing Dam, Vol. 2 of 2: Exhibit E.

U.S. Army Corps of Engineers. (Corps). 1978. Reservoir Regulation Manual For Isabella Lake Kern River, California. Appendix II to Master Manual of Reservoir Regulation, Tulare Lake Basin, California.

U.S. Fish and Wildlife Service. 2007. Endangered Species List, October 24, 2007.

_____. August 2002. Southwestern Willow Flycatcher Recovery Plan.

Whitfield, M. J., K. M. Enos, and S. P. Rowe. 1997. Draft Reproductive Response of the southwestern willow flycatcher (*Empidonax traillii extimus*) to the removal of brown-headed cowbirds. Prepared for the U.S. Army Corps of Engineers, Sacramento District, Purchase Order DACW05-97-P-0670.

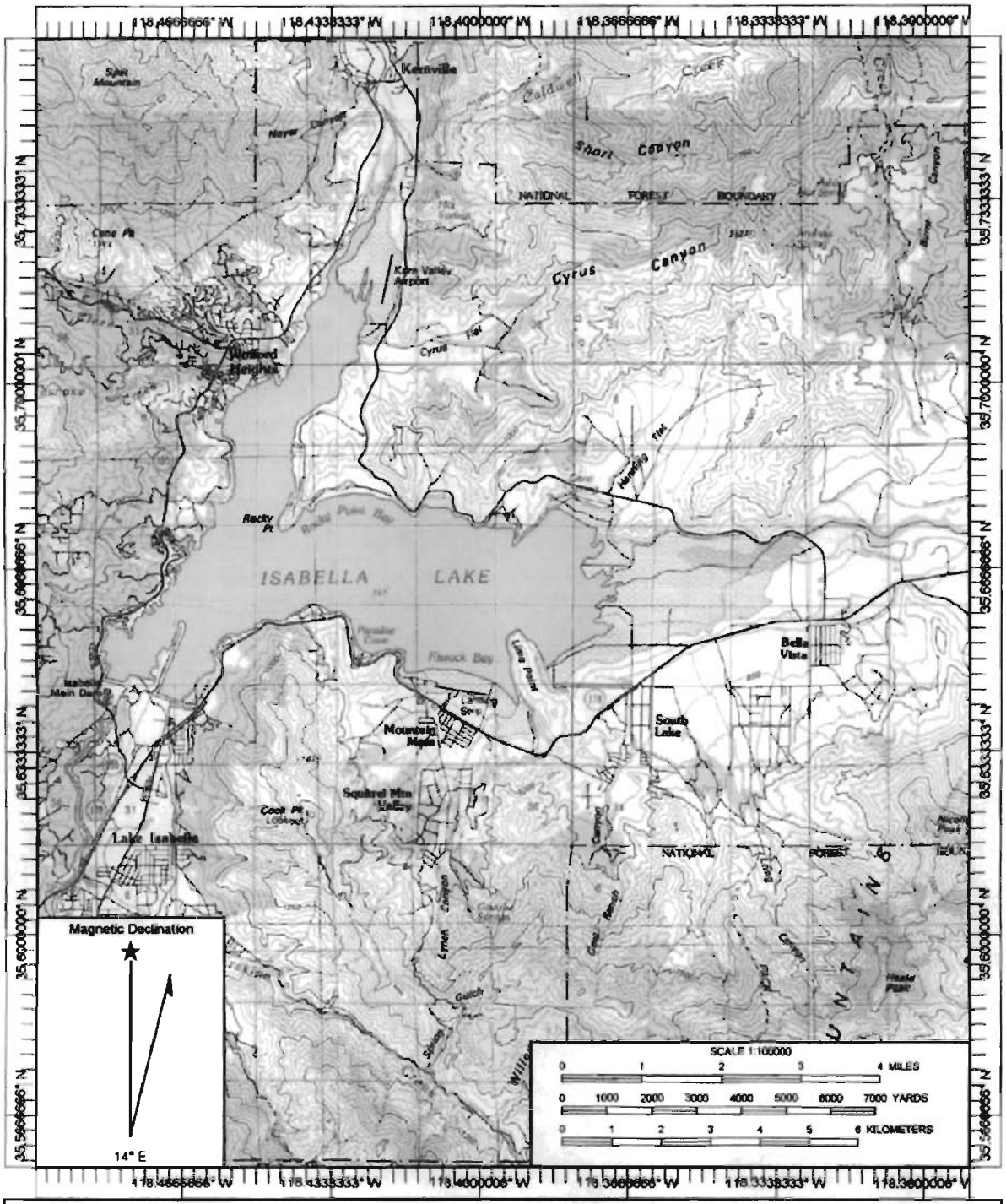
Whitfield, M. J., K. M. Enos, and S. P. Rowe. 1999. Is Brown-headed cowbird trapping effective for managing populations of the endangered southwestern willow flycatcher? Studies in Avian Biology 18: 260-266.

Williams, C. H. 1998. Declaration of C. H. Williams, Kern River Watermaster, in support of Opposition to Motion for Preliminary Injunction. February 17. Case No. S-97-1969-GEB/JFM.

Personal Communication

Porter, S. November, 2007. U.S. Forest Service.

Plate 1. General Location of Isabella Lake, California.



Name: ISABELLA LAKE
Date: 7/26/2007
Scale: 1 inch equals 1.578 miles

Location: 035.6602661° N 118.3949159° W WGS 84
Caption: Plate 2. USGS Location Map of Lake Isabella, California

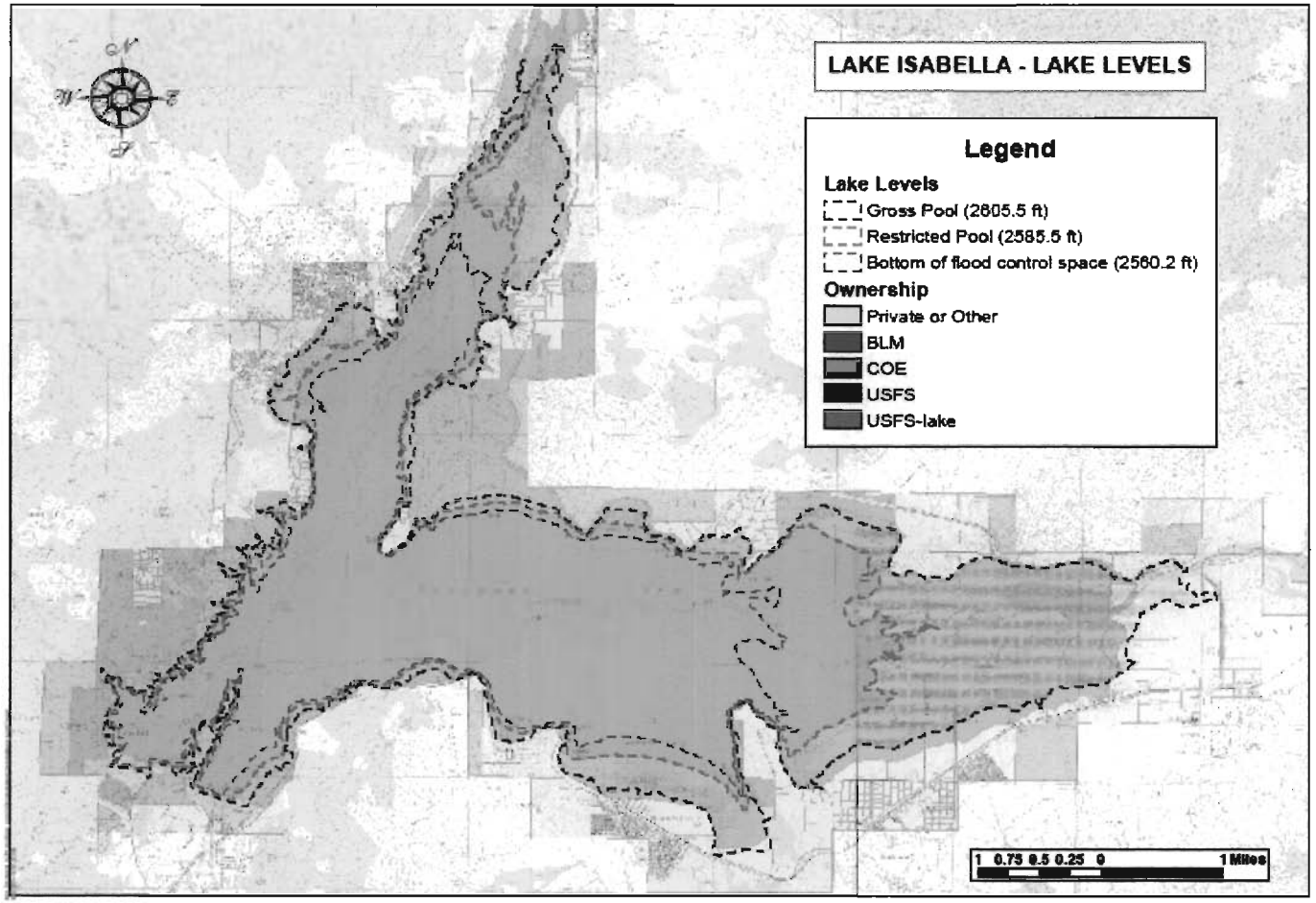
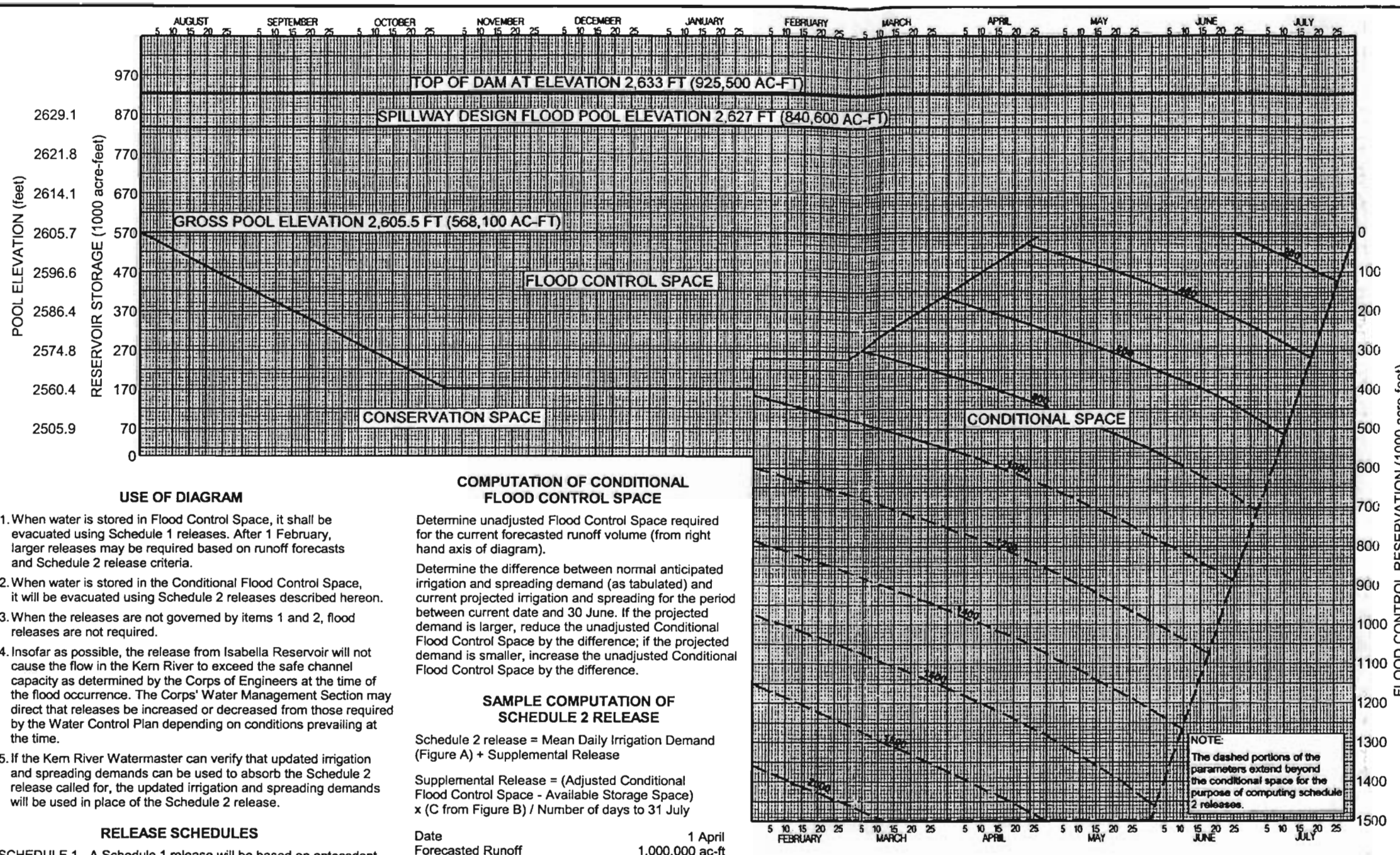


Plate 3. Isabella Lake - Lake Level Elevations.



USE OF DIAGRAM

1. When water is stored in Flood Control Space, it shall be evacuated using Schedule 1 releases. After 1 February, larger releases may be required based on runoff forecasts and Schedule 2 release criteria.
2. When water is stored in the Conditional Flood Control Space, it will be evacuated using Schedule 2 releases described hereon.
3. When the releases are not governed by items 1 and 2, flood releases are not required.
4. Insofar as possible, the release from Isabella Reservoir will not cause the flow in the Kern River to exceed the safe channel capacity as determined by the Corps of Engineers at the time of the flood occurrence. The Corps' Water Management Section may direct that releases be increased or decreased from those required by the Water Control Plan depending on conditions prevailing at the time.
5. If the Kern River Watermaster can verify that updated irrigation and spreading demands can be used to absorb the Schedule 2 release called for, the updated irrigation and spreading demands will be used in place of the Schedule 2 release.

RELEASE SCHEDULES

SCHEDULE 1 - A Schedule 1 release will be based on antecedent basin conditions, forecasted rain, and forecasted runoff. Release of water stored above 170,000 acre-feet will be at a rate sufficient to maintain available flood control space at a level to allow storage of an event or events without releases exceeding downstream irrigation and spreading demand.

SCHEDULE 2 - A Schedule 2 release will be initiated when water is stored in Conditional Space that is identified for flood control. The conditional space required for flood control is equal to the runoff in excess of irrigation and spreading demands adjusted for the expected "fill date" and "timing of the runoff." A Schedule 2 release will be comprised of the irrigation and spreading demand plus a supplemental release.

FLOOD CONTROL - Refer to the sample computation of the supplemental release. Specific computations to determine the flood control space and supplemental release for each water year will be done using models which simulate historical events and parameters using this season's conditions. The results of these simulations will provide several scenarios from which the operation for the current season's event may be forecasted.

COMPUTATION OF CONDITIONAL FLOOD CONTROL SPACE

Determine unadjusted Flood Control Space required for the current forecasted runoff volume (from right hand axis of diagram).

Determine the difference between normal anticipated irrigation and spreading demand (as tabulated) and current projected irrigation and spreading for the period between current date and 30 June. If the projected demand is larger, reduce the unadjusted Conditional Flood Control Space by the difference; if the projected demand is smaller, increase the unadjusted Conditional Flood Control Space by the difference.

SAMPLE COMPUTATION OF SCHEDULE 2 RELEASE

Schedule 2 release = Mean Daily Irrigation Demand (Figure A) + Supplemental Release

Supplemental Release = (Adjusted Conditional Flood Control Space - Available Storage Space) x (C from Figure B) / Number of days to 31 July

Date	1 April
Forecasted Runoff	1,000,000 ac-ft
Available Storage Space	300,000 ac-ft
Projected Irrigation Demand from 1 April to 30 June	500,000 ac-ft
Normal Anticipated Irrigation Demand from date to 30 June (from tabulation)	354,000 ac-ft
Irrigation Demand Adjustment 354,000 - 500,000 =	-146,000 ac-ft
Unadjusted Conditional Flood Control Space (from diagram)	555,000 ac-ft
Adjusted Conditional Flood Control Space 555,000 - 146,000 =	409,000 ac-ft
Value of C from Figure B for date	0.453
Number of days from date to 31 July	122
Irrigation Demand (from Figure A) for date	1,600 cfs
Supplemental Release = ((409,000 - 300,000) x 0.453) / 122 =	405 cfs
Schedule 2 Release = 405 + 1,600 =	2,005 cfs

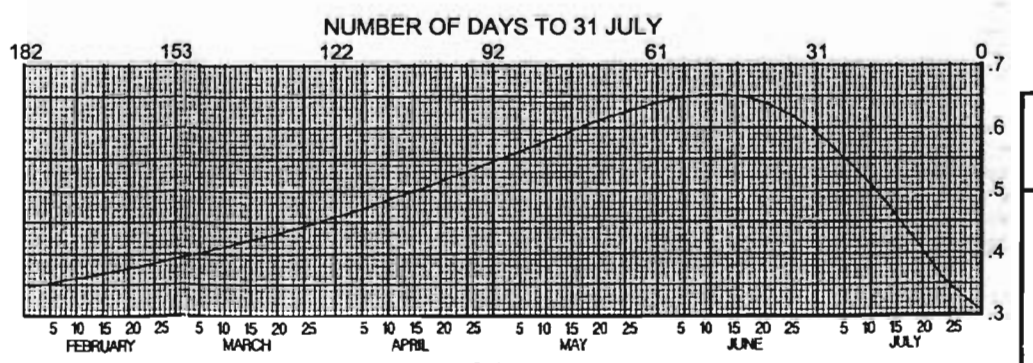


FIGURE B

Prepared by J.S.M.

MEAN DAILY IRRIGATION DEMAND (cfs)

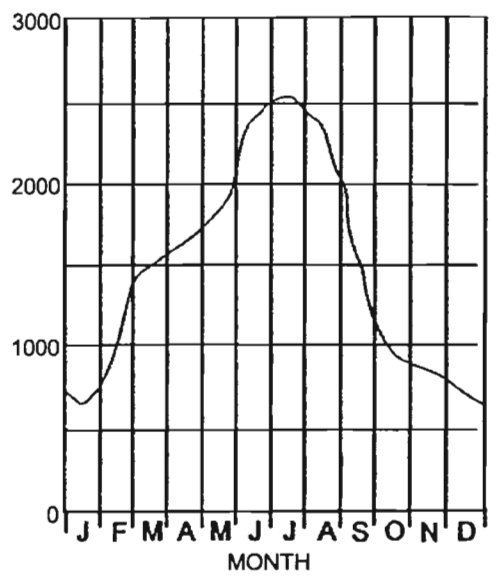


FIGURE A

NORMAL ANTICIPATED IRRIGATION AND SPREADING DEMANDS

	IRRIGATION		SPREADING	
	1,000 ac-ft/ month	mean monthly cfs	1,000 ac-ft/ month	mean monthly cfs
January	41	670	33	550
February	59	1,050	33	550
March	92	1,510	33	550
April	99	1,660	33	550
May	112	1,830	34	550
June	143	2,410	36	610
July	153	2,500	36	590
August	142	2,320	36	590
September	91	1,530	34	570
October	58	950	33	550
November	51	870	33	550
December	44	710	33	550

ISABELLA DAM AND LAKE
KERN RIVER, CALIFORNIA

WATER CONTROL DIAGRAM

U.S. ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT

Plate 4. Lake Isabella Flood Control Diagram

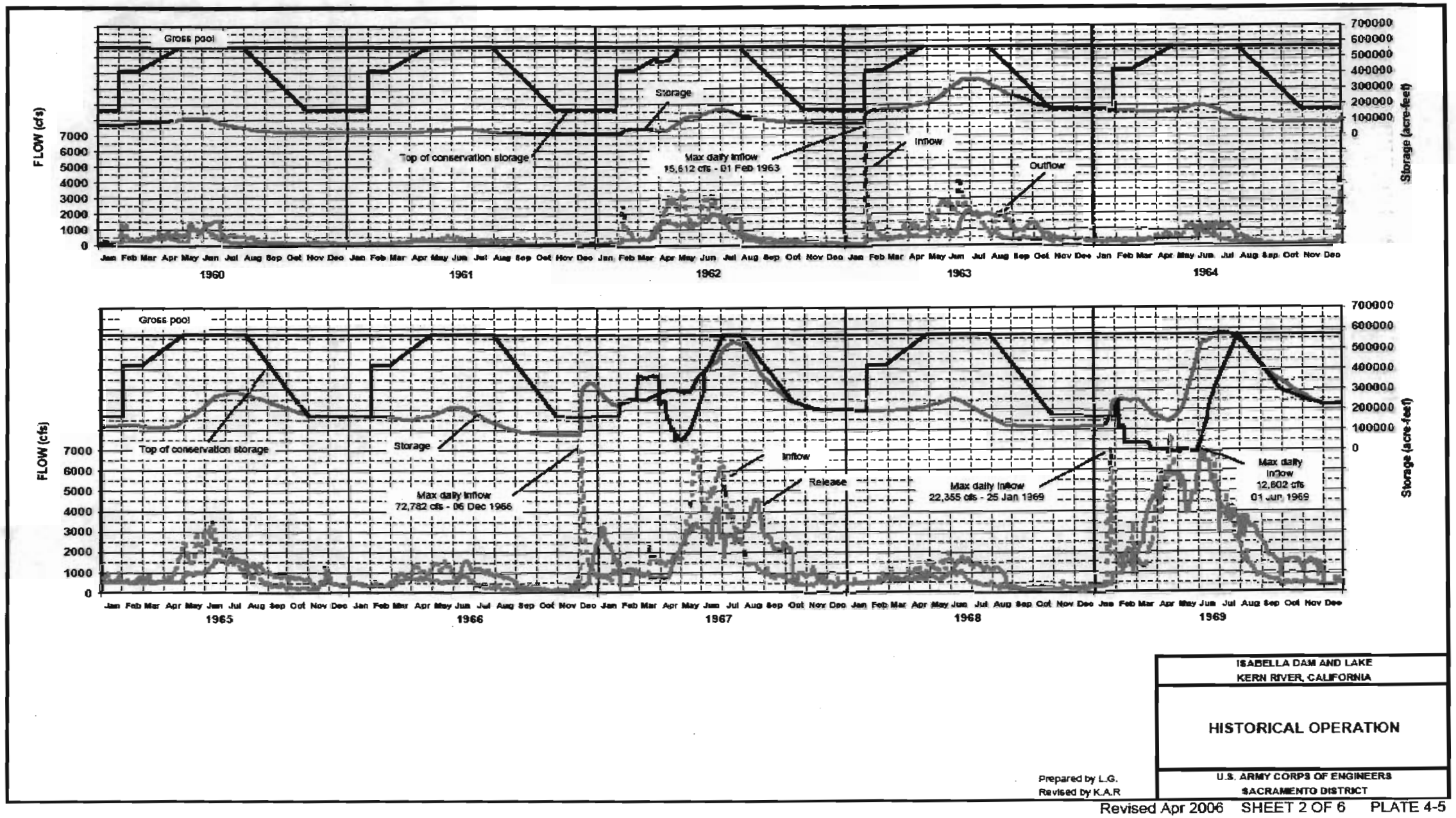
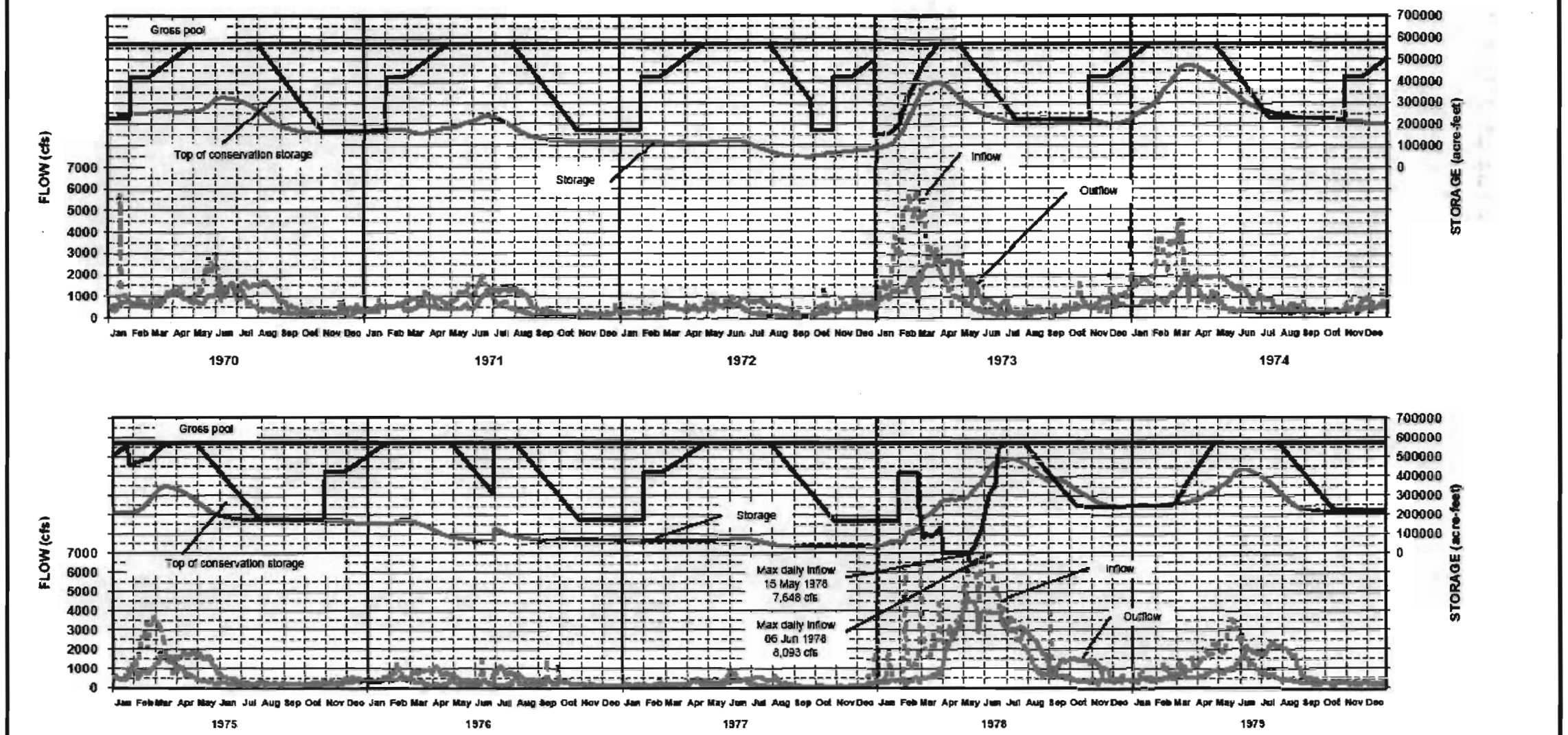


Plate 5. Isabella Lake Historical Flows



ISABELLA DAM AND LAKE
KERN RIVER, CALIFORNIA

HISTORICAL OPERATION

Prepared by L.G.
Revised by K.A.R

U.S. ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT

Revised Apr 2006 SHEET 3 OF 6 PLATE 4-5

Plate 6. Isabella Lake Historical Flows

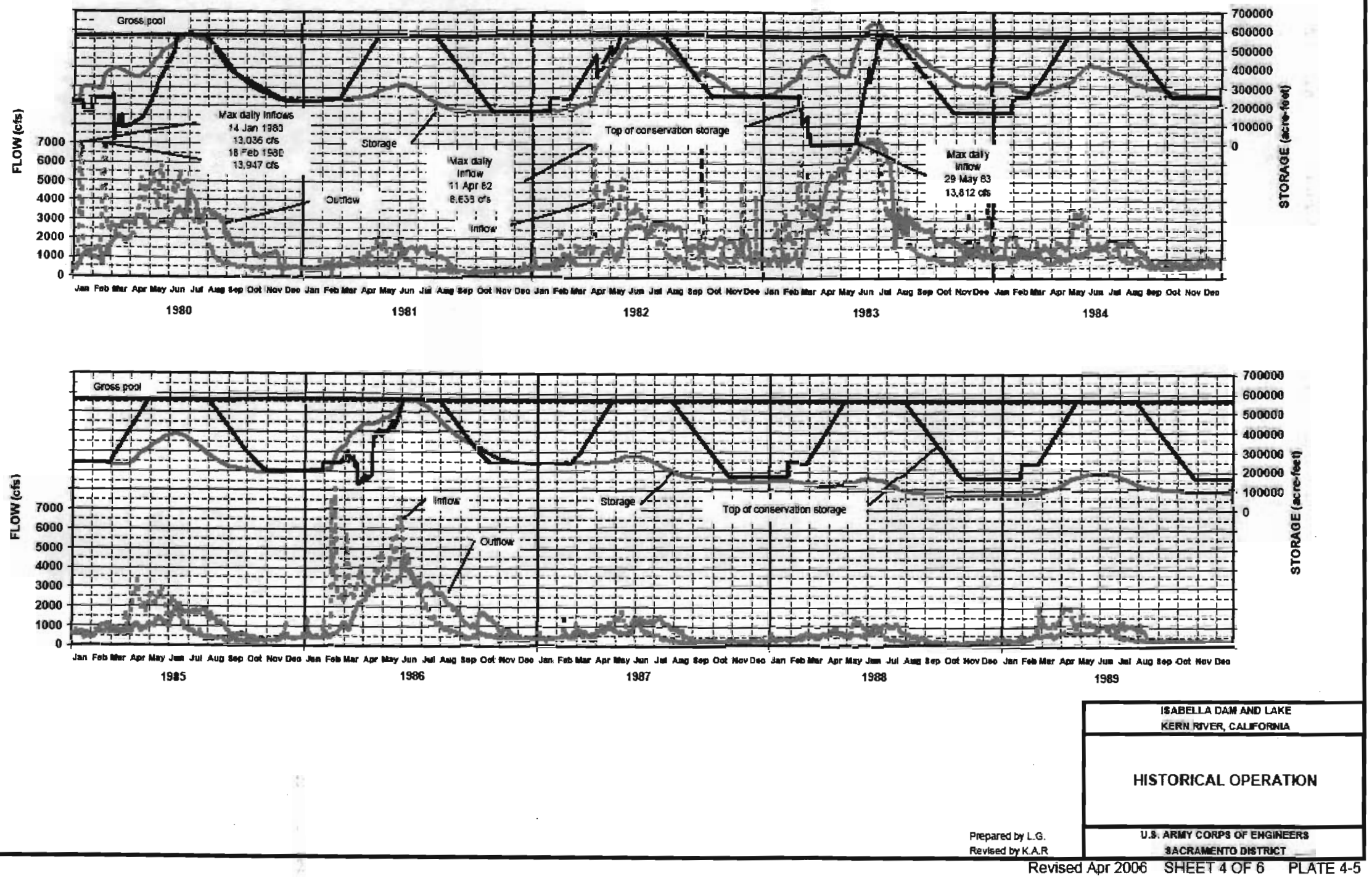


Plate 7. Isabella Lake Historical Flows

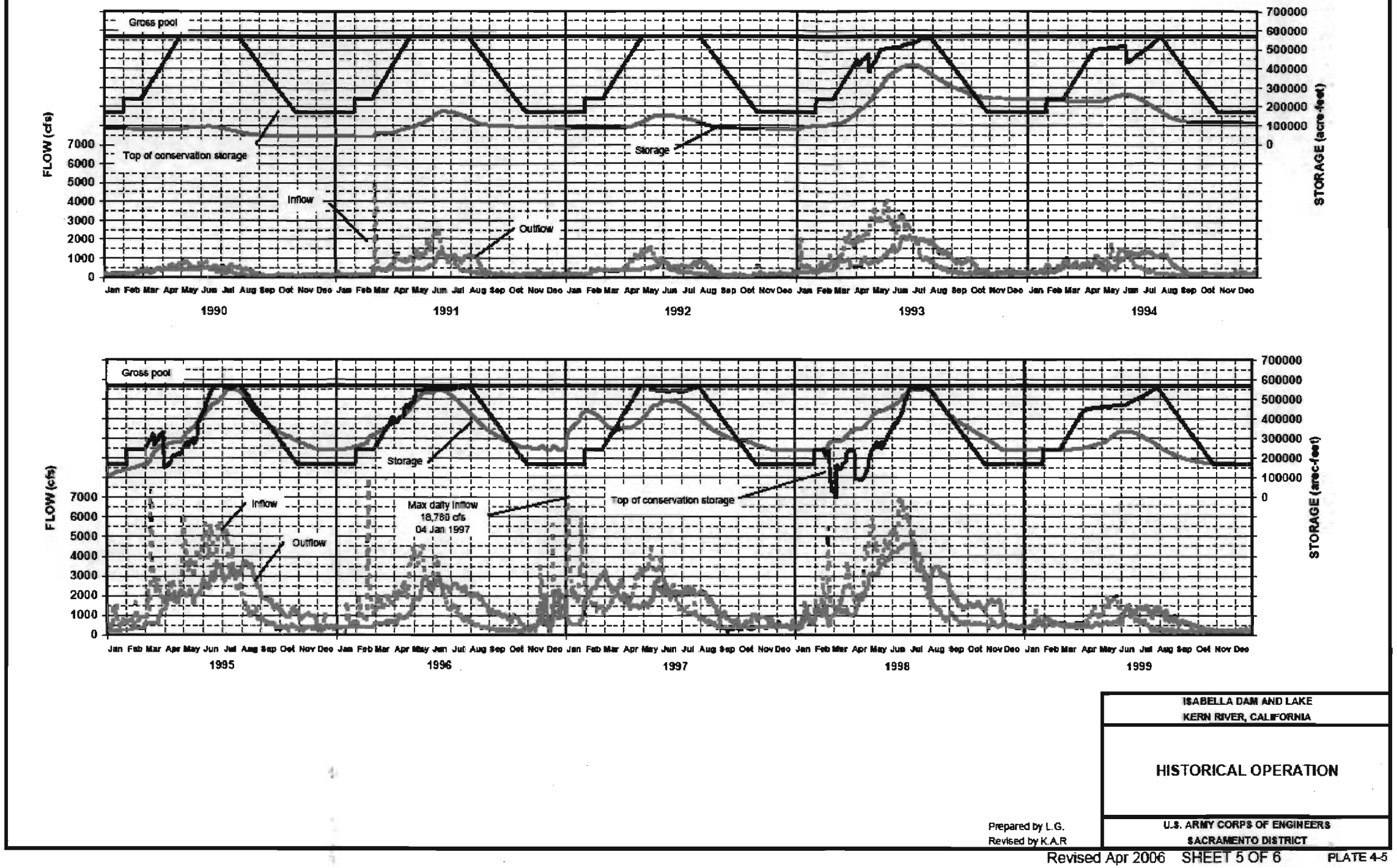
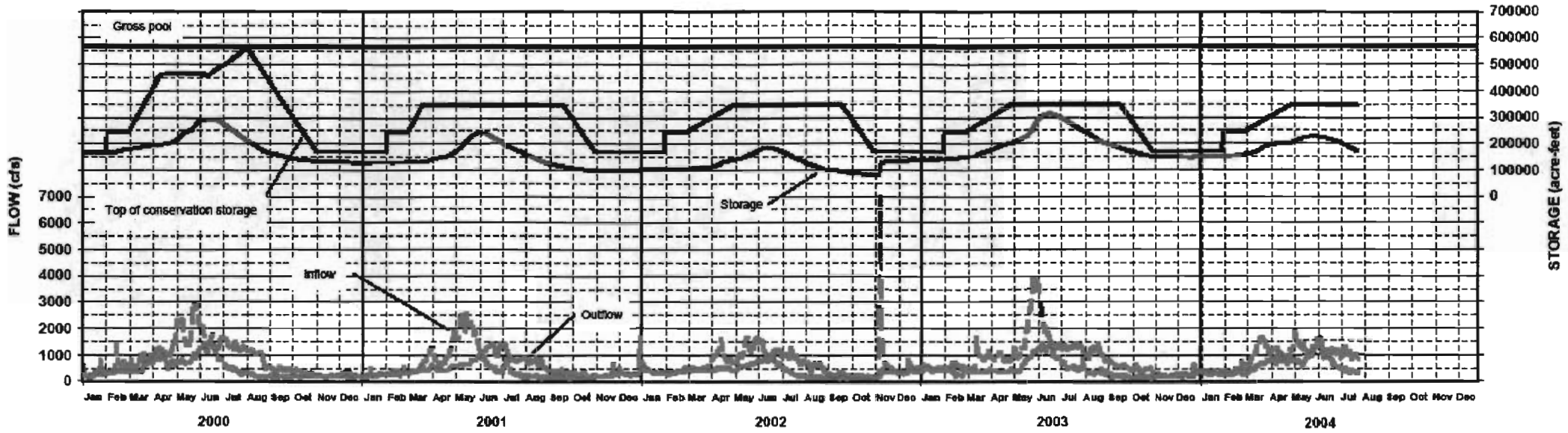


Plate 8. Isabella Lake Historical Flows



ISABELLA DAM AND LAKE
KERN RIVER, CALIFORNIA

HISTORICAL OPERATION

Prepared by L.G.
Revised by K.A.R

U.S. ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT

Revised Apr 2006 SHEET 6 OF 6 PLATE 4-5

Plate 9 Isabella Lake Historical Flows

APPENDIX A
COORDINATION WITH U.S. FISH AND WILDLIFE SERVICE

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

April 17, 2008

Document Number: 080417055531

Mario Parker
U.S. Army Corps of Engineers
1325 J Street
10th Floor, PD-R
Sacramento, CA 95814

Subject: Species List for Planned Deviation From the Water Control Plan

Dear: Mr. Parker

We are sending this official species list in response to your April 17, 2008 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be July 16, 2008.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 080417054620

Database Last Updated: January 31, 2008

Quad Lists

Listed Species

Fish

- Hypomesus transpacificus
  - delta smelt (T)

Amphibians

- Rana aurora draytonii
  - California red-legged frog (T)

Birds

- Empidonax traillii extimus
  - southwestern willow flycatcher (E)
- Gymnogyps californianus
  - California condor (E)
- Vireo bellii pusillus
  - Least Bell's vireo (E)

Candidate Species

Birds

- Coccyzus americanus occidentalis
  - Western yellow-billed cuckoo (C)

Mammals

- Martes pennanti
  - fisher (C)

Quads Containing Listed, Proposed or Candidate Species:

LAKE ISABELLA NORTH (260B)

County Lists

Listed Species

Invertebrates

- Branchinecta conservatio
  - Conservancy fairy shrimp (E)

- Branchinecta longiantenna
  - Critical habitat, longhorn fairy shrimp (X)
  - longhorn fairy shrimp (E)

- Branchinecta lynchi
  - Critical habitat, vernal pool fairy shrimp (X)
  - vernal pool fairy shrimp (T)

- Desmocerus californicus dimorphus
  - valley elderberry longhorn beetle (T)

- Euproserpinus euterpe
  - Kern primrose sphinx moth (T)

Amphibians

- Ambystoma californiense
  - California tiger salamander, central population (T)
  - Critical habitat, CA tiger salamander, central population (X)

- Rana aurora draytonii
  - California red-legged frog (T)

- Dipodomys nitratoides nitratoides
  - Tipton kangaroo rat (E)

- Ovis canadensis californiana
  - Sierra Nevada (=California) bighorn sheep (E)

- Sorex ornatus relictus
  - Buena Vista Lake shrew (E)
  - Critical habitat, Buena Vista Lake shrew (X)

- Vulpes macrotis mutica
  - San Joaquin kit fox (E)

Plants

- Caulanthus californicus
  - California jewelflower (E)

- Eremalche kernensis
  - Kern mallow (E)

- Monolopia congdonii (=Lembertia congdonii)
  - San Joaquin woolly-threads (E)

- Opuntia treleasei
  - Bakersfield cactus (E)

- Pseudobahia peirsonii

- Critical habitat, California red-legged frog (X)

Reptiles

- Gambelia (=Crotaphytus) sila
  - blunt-nosed leopard lizard (E)

- Thamnophis gigas
  - giant garter snake (T)

Birds

- Charadrius alexandrinus nivosus
  - western snowy plover (T)

- Empidonax traillii extimus
  - Critical habitat, southwestern willow flycatcher (X)
  - southwestern willow flycatcher (E)

- Gymnogyps californianus
  - California condor (E)
  - Critical habitat, California condor (X)

- Vireo bellii pusillus
  - Least Bell's vireo (E)

Mammals

- Dipodomys ingens
  - giant kangaroo rat (E)

- San Joaquin adobe sunburst (T)

- Sidalcea keckii
  - Critical habitat, Keck's checker-mallow (X)
  - Keck's checker-mallow (=checkerbloom) (E)

Candidate Species

Amphibians

- Rana muscosa
  - mountain yellow-legged frog (C)

Birds

- Coccyzus americanus occidentalis
  - Western yellow-billed cuckoo (C)

Mammals

- Martes pennanti
  - fisher (C)

Key:

- (E) Endangered - Listed as being in danger of extinction.
- (T) Threatened - Listed as likely to become endangered within the foreseeable future.
- (P) Proposed - Officially proposed in the Federal Register for listing as endangered or threatened.
- (NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.
- Critical Habitat - Area essential to the conservation of a species.
- (PX) Proposed Critical Habitat - The species is already listed. Critical habitat is being proposed for it.
- (C) Candidate - Candidate to become a proposed species.
- (V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
- (X) Critical Habitat designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, or may be affected by projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.
- During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.
- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.
- Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our critical habitat page for maps.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information

for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be July 16, 2008.

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

October 24, 2007

Document Number: 071024041149

Mario Parker
U.S. Army Corps of Engineers
1325 J Street
Sacramento, CA 95814

Subject: Species List for Planned Deviation From the Water Control Plan - Isabella Dam and Lake

Dear: Mr. Parker

We are sending this official species list in response to your October 24, 2007 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be January 22, 2008.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division

TAKE PRIDE IN AMERICA

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 071025034117

Database Last Updated: August 16, 2007

Quad Lists

Listed Species

Fish

- Hypomesus transpacificus
    - delta smelt (T)

Amphibians

- Rana aurora draytonii
    - California red-legged frog (T)

Birds

- Empidonax traillii extimus
    - southwestern willow flycatcher (E)
- Gymnogyps californianus
    - California condor (E)
- Vireo bellii pusillus
    - Least Bell's vireo (E)

Candidate Species

Birds

- Coccyzus americanus occidentalis
    - Western yellow-billed cuckoo (C)

Mammals

- Martes pennanti
    - fisher (C)

Quads Containing Listed, Proposed or Candidate Species:

LAKE ISABELLA NORTH (260B)

County Lists

Listed Species

Invertebrates

- Branchinecta conservatio
    - Conservancy fairy shrimp (E)
- Branchinecta longiantenna
    - Critical habitat, longhorn fairy shrimp (X)
    - longhorn fairy shrimp (E)
- Branchinecta lynchi
    - Critical habitat, vernal pool fairy shrimp (X)
    - vernal pool fairy shrimp (T)
- Desmocerus californicus dimorphus
    - valley elderberry longhorn beetle (T)
- Euproserpinus euterpe
    - Kern primrose sphinx moth (T)

Amphibians

- Ambystoma californiense
    - California tiger salamander, central population (T)
    - Critical habitat, CA tiger salamander, central population (X)

- Rana aurora draytonii
    - California red-legged frog (T)
    - Critical habitat, California red-legged frog (X)

Reptiles

- Gambelia (=Crotaphytus) sila
    - blunt-nosed leopard lizard (E)

- Thamnophis gigas
    - giant garter snake (T)

Birds

- Charadrius alexandrinus nivosus
    - western snowy plover (T)

- Empidonax traillii extimus
    - Critical habitat, southwestern willow flycatcher (X)
    - southwestern willow flycatcher (E)

- Gymnogyps californianus
    - California condor (E)
    - Critical habitat, California condor (X)

- Vireo bellii pusillus
    - Least Bell's vireo (E)

Mammals

- Dipodomys ingens
    - giant kangaroo rat (E)
- Dipodomys nitratoides nitratoides
    - Tipton kangaroo rat (E)
- Ovis canadensis californiana
    - Sierra Nevada (=California) bighorn sheep (E)
- Sorex ornatus relictus
    - Buena Vista Lake shrew (E)
    - Critical habitat, Buena Vista Lake shrew (X)
- Vulpes macrotis mutica
    - San Joaquin kit fox (E)

Plants

- Caulanthus californicus
    - California jewelflower (E)
- Eremalche kernensis
    - Kern mallow (E)
- Monolopia congdonii (=Lembertia congdonii)
    - San Joaquin woolly-threads (E)
- Opuntia treleasei

- Bakersfield cactus (E)

- Pseudobahia peirsonii
  - San Joaquin adobe sunburst (T)

- Sidalcea keckii
  - Critical habitat, Keck's checker-mallow (X)
  - Keck's checker-mallow (=checkerbloom) (E)

Candidate Species

Amphibians

- Rana muscosa
  - mountain yellow-legged frog (C)

Birds

- Coccyzus americanus occidentalis
  - Western yellow-billed cuckoo (C)

Mammals

- Martes pennanti
  - fisher (C)

Key:

- (E) Endangered - Listed as being in danger of extinction.
- (T) Threatened - Listed as likely to become endangered within the foreseeable future.
- (P) Proposed - Officially proposed in the Federal Register for listing as endangered or threatened.
- (NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

- Critical Habitat - Area essential to the conservation of a species.
- (PX) Proposed Critical Habitat - The species is already listed. Critical habitat is being proposed for it.
- (C) Candidate - Candidate to become a proposed species.
- (V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
- (X) Critical Habitat designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, or may be affected by projects within, the quads covered by the list.

Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.

Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.

Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:
If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.
During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.
If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project. Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.
Critical Habitat
When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.
Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.
If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our critical habitat page for maps.
Candidate Species
We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.
Species of Concern
The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be January 23, 2008.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

REPLY TO
ATTENTION OF

Environmental Resources Branch

Ms. Susan Moore, Field Supervisor
U.S. Fish and Wildlife Service
2800 Cottage Way, Room 2605
Sacramento, California 95825-1846

AUG 24 2007

Dear Ms. Moore:

This letter is our biological assessment of potential effects to listed and proposed species from the proposed restricted dam operation at Lake Isabella near the town of Lake Isabella in Kern County, California (enclosures 1 and 2). For the proposed deviation in dam operation, we are requesting concurrence with our determination of not likely to adversely affect the Federally endangered southwestern willow flycatcher and least Bell's vireo. The deviation is necessary as part of the ongoing seismic investigations related to the Corps' Dam Safety Assurance Program.

These investigations have determined that Lake Isabella Dam would fail during a low intensity earthquake or maximum credible earthquake event. Therefore, the Corps proposes to restrict the conservation storage limit to a maximum elevation of 2,585.5 feet (356,700 acre-feet) from March 20 to September 30 each year until a permanent solution is implemented. This proposed operational restriction represents a 37 percent reduction in the maximum conservation storage space of 2,605.5 feet (568,100 acre-feet). However, routine lake and dam operations would continue during October through February of each year under the current flood control diagram.

Suitable habitat for the Federally endangered southwestern willow flycatcher and Federally endangered least Bell's vireo exists along the South Fork Kern River, approximately 2 miles east of the lake in a 1,100-acre riparian zone. Prior to 2005, water levels were restricted to 2,584 feet as required by the U.S. Fish and Wildlife Service's June 14, 2000, Biological Opinion (reference # 1-1-99-F-216) to prevent inundation of the 1,100 acres of critical habitat. On March 4, 2005, the Service issued an amended Biological Opinion (reference # 1-1-05-F-0067) in which they authorized incidental take of the flycatcher associated with unrestricted routine operations during the 5-year interim period from 2005 until 2010. The proposed deviation to restrict the lake to 2,585.5 feet is within the scope of this amended Biological Opinion and Section 7 consultation.

The Corps believes that the critical riparian habitat would not be affected as a result of restricting Lake Isabella to 2,585.5 feet between March and September of each year until remediation of the dam is complete. Water levels at Lake Isabella were restricted to an even lower level of 2,584 feet from 2000 to 2005 as required by the 2000 Biological Opinion. No significant effects to riparian vegetation were identified in the 2000 Biological Opinion, as well as the amended 2005 Biological Opinion.

Since 2000, water levels at Lake Isabella have only exceeded 2,585.5 feet one time; that is, during the 2005-2006 high precipitation year. Furthermore, lake levels have only exceeded the 2,585.5-foot elevation 5 out of the past 20 years (25 percent) since 1988 as recorded by the Corps' Water Control Data System for lakes and reservoirs in California. Riparian vegetation would continue to establish and replenish after a normal precipitation season, as well as receive surface runoff and indirect flows from surrounding ranches and agricultural operations.

Based on this information, we request your concurrence with our determination that this work is not likely to adversely affect the Federally endangered southwestern willow flycatcher and least Bell's vireo. If you have any questions, please contact Mr. Donald Lash, Environmental Resources Branch, at (916) 557-5172 or email: Donald.W.Lash@usace.army.mil. Thank you for your attention to this matter.

Sincerely,

Francis C. Piccola
Chief, Planning Division

Enclosures

Copy furnished w/encl:
Mr. Doug Weinrich, U.S. Fish and Wildlife Service, 2800 Cottage Way, Suite W2605, Sacramento, California 95825-1846
Ms. Kim Turner, U.S. Fish and Wildlife Service, 2800 Cottage Way, Suite W2605, Sacramento, California 95825-1846

Appendix B
Public Review Comments and Responses

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

In reply refer to:
81420-2008-I-0044-2

JAN 15 2008

Mr. Francis C. Piccola
Chief, Planning Division
U.S. Army Corps of Engineers
1325 J Street
Sacramento, California 95814-2922

Subject: Planned Deviation from the Water Control Plan, Isabella Dam and Lake, Kern County, California

Dear Mr. Piccola:

The U.S. Fish and Wildlife Service (Service) has reviewed your draft Environmental Assessment (EA) for the Planned Deviation from the Water Control Plan, Isabella Dam and Lake, Kern County, California (project). The draft EA addresses the extension of the emergency deviation from March 20, 2007 to September 30, 2013, and possibly for additional years thereafter, if necessary, until a permanent solution is implemented for the dam. The Service has reviewed the: 1) November 2007, draft EA for the project; 2) the U.S. Army Corps of Engineers (Corps) August 24, 2007, letter to the Service requesting concurrence with a may affect not likely to adversely affect determination for the proposed deviation in dam operations at Lake Isabella, Kern County, California; 3) the Service's December 4, 2007, letter to the Corps requesting additional information on the effects of the project on federally-listed species (Service Reference No. 81420-2008-I-0044); and 4) other information available to the Service. Our response is prepared pursuant to the Endangered Species Act of 1973, as amended.

The purpose of the emergency deviation was to lower the lake level to a safe and acceptable elevation/capacity based upon recent results of the Corps seismic investigations. The Corps has concluded that the Isabella Lake Dam could fail during a low intensity earthquake or maximum credible earthquake event, thus releasing uncontrollable amounts of water and flooding of communities downstream of the lake. Until the probability of dam failure is verified and ascertained during the on-going investigation, the deviation has been initiated as an interim risk reduction measure rather than a permanent solution to satisfy dam safety requirements. The project includes restricting lake levels at or below 2585.5 feet.

During earlier discussions, the Corps requested that the project be considered a separate project from the Conservation Plan for the Long-term Operation of Isabella Dam and Reservoir project.

However, since that request, the Service has reviewed your November 2007, draft EA for the project, which was received in our office on December 6, 2007. After review of your project description and additional information in our files, we have determined that the effects of your proposed action (emergency deviation) have been fully addressed in our previous biological opinion on the Conservation Plan for the Long-term Operation of Isabella Dam and Reservoir project.

Thus, the 2000, biological opinion and 2005, amendment (Service Reference No. 1-1-99-F-0216 and 1-1-05-F-0067, respectively) for the Conservation Plan for the Long-Term Operation of Isabella Dam and Reservoir are in full force and effect. The actions proposed and addressed in our previous biological opinions were anticipated to mimic historical operations without restrictions. This gives the operators flexibility to manage water levels within broad deviations based on water year type, runoff, demand, etc. The Corps has determined that the only anticipated difference compared to current operations is that releases could be higher than normal (i.e. 3,000 cfs verses 1,500 cfs) and commence earlier in the season so that the Corps can control runoff that is higher than normal without encroaching into the restricted pool. The Service recommends that the Corps continue to monitor populations of southwestern willow flycatchers, least Bell's vireos, and other sensitive species around the reservoir to document any changes to the populations that may occur. We believe this proposed deviation (increased releases) would not impact habitat for the willow flycatcher in a way not previously considered in our biological opinions. Therefore, there is no need to re-consult under the Endangered Species Act, as amended, on the project for the federally-endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and its designated critical habitat and the federally-endangered least Bell's vireo (*Vireo bellii pusillus*).

Additionally, in Section 4.3.2 of the EA, reference is made to federally-listed species occurrences within the project area from a document dated, May 16, 1996. To ensure the quality of the biological information used in your analysis it is the policy of the Service that species lists be updated every 90 days. A current species list can be created from our website: www.fws.gov/sacramento.

Thank you for a chance to comment on the project. If you have any questions or concerns, please contact Stephanie Rickabaugh, at (916) 414-6600.

Sincerely,

Peter A. Cross

Peter A. Cross
Deputy Assistant Field Supervisor

cc:
Mario Parker, Corps, Sacramento, California
Donald Lash, Corps, Sacramento, California

BAKERSFIELD

WATER RESOURCES DEPARTMENT
Florn Core • Water Resources Manager

December 19, 2007

Mario Parker
U.S. Army Corps of Engineers
Environmental Resources Branch
1325 "J" St.
Sacramento, CA 95814

RE: COMMENTS ON DRAFT ENVIRONMENTAL ASSESSMENT; PLANNED DEVIATION FROM THE WATER CONTROL PLAN, ISABELLA DAM AND LAKE, KERN COUNTY, CA – NOVEMBER 2007.

Dear Mr. Parker:

The City of Bakersfield ("City") has reviewed the draft Environmental Assessment of the Planned Deviation from the Water Control Plan for Isabella Dam and Lake, Kern County, California, dated November 2007 ("EA") issued by the US Army Corps of Engineers, Sacramento District ("Corps") and we offer the following comments:

Although the Corps has repeatedly assured the Bakersfield community that the dams are safe with the lowered water levels, the perception of dam failure remains in the minds of the citizens and residents of our City. The Corps should minimize this perception of failure and destruction by accelerating the investigation and repairs to the dams. At several points within the EA the timeline is given to September 30, 2013 or extended "possibly for a couple of more each year thereafter until remediation is completed" (Page 8, Section 3.3, first paragraph). We feel that this is allowing for a certain amount of vagueness in the timeline on the dam's repairs that erode confidence in the public's perception of "safe".

Section 1.0, 1.1; Page 1 & Section 3.0, 3.3; Page 8 – The City requests the language referring to the timeline of March 20, 2007 to September 30, 2013 be changed to "This proposed action is to extend the emergency deviation from March 20, 2007 until a permanent solution is implemented or a determination that a threat does not exist is made. It is estimated this will occur prior to the year 2013."

Discussions in various sections of the EA including Section 4.7, relate to flood damage reductions and water management activities. The City operates all Kern River channel facilities, including weirs, bypass channels and canal headgates throughout the City

1000 Buena Vista Road • Bakersfield • California 93311
(661) 326-3715 • Fax (661) 852-2127 • E-Mail: water@bakersfieldcity.us

area. We also operate and maintain the Kern River Levee system. The City understands that the Corps will continue to coordinate its actions in the operation of Isabella Dam and Lake with the Kern River Watermaster and the City of Bakersfield to maximize the beneficial and efficient use of determined reservoir releases and minimize flooding and resultant damages.

The City wishes to reiterate that a complete remediation and repair of the dams should remain the highest priority within the Corps. We support the Corps in the expeditious restoration of the full capacities of Isabella Dam and Lake for flood control and water management activities.

Thank you for the opportunity to comment on the EA. Please feel free to contact me or my office at your convenience if you have questions or comments.

Sincerely,

Florn Core
Manager

cc: Honorable Mayor Hall and City Council, City of Bakersfield
Kevin McCarthy, Congressman 22nd District
Jim Costa, Congressman 20th District
Kern River Interests

1000 Buena Vista Road • Bakersfield • California 93311
(661) 326-3715 • Fax (661) 852-2127 • E-Mail: water@bakersfieldcity.us

KERN RIVER WATERMASTER

33380 Cawelo Avenue
Bakersfield, CA 93308-9575
Telephone (661) 393-2696

P. O. Box 81435
Bakersfield, CA 93380-1435
Facsimile (661) 393-6884

December 20, 2007

United States Army Corps of Engineers
Environmental Resources Branch (CESPK-PD-R)
Attention: Mr. Mario Parker
1325 J Street
Sacramento, CA 95814

Re: Comments on Draft Environmental Assessment (EA) for the "Planned Deviation From the Water Control Plan Isabella and Lake, Kern County, California", November 2007.

Dear Mr. Parker:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (EA) for the "Planned Deviation From the Water Control Plan Isabella and Lake, Kern County, California", dated November 2007.

These comments are prepared by the Kern River Watermaster on behalf of City of Bakersfield, Kern Delta Water District, North Kern Water Storage District, Buena Vista Water Storage District, Kern County Water Agency, Henry Miller Water District and Tulare Lake Basin Water Storage District (collectively "Kern River Interests".) As you well know, each of these districts is dependent on the continued conservation storage of Kern River water in Isabella Reservoir ("Reservoir") for the beneficial use of groundwater storage and irrigation, and flood control.

General Comments

We greatly appreciate the U.S. Army Corps of Engineers (Corps) renewing its firm commitment to expedite the investigation, remediation and restoration of the Reservoir to full operational capacity at the earliest date possible. The Kern River Interests likewise remain committed to working with the Corps and providing assistance on the various tasks so that all the necessary study and work is completed in a safe, timely and cost effective manner for the benefit of the entire Kern County community. It is our understanding the Corps has selected the year 2013 as a target date for completion of remediation for the purpose of completing the

EA. However, we understand that this proposed completion date is not a rigid certainty and the Corps will endeavor to have the dam remediation completed before 2013 if at all possible. At various points in the EA, it is acknowledged by the Corps that it is likely there will be hydrologic conditions which will necessitate the 2,585.5 foot target elevation be exceeded for varying periods of time in order to provide the necessary flood control protection for the region. It is our understanding that as these events occur the Corps will continue to coordinate its operations with the Kern River Watermaster for purposes of directing releases and restoring the Reservoir to target levels. Further, consistent with past practices and the Flood Control Diagram, any releases will, as far as possible, not cause the Kern River to exceed the safe channel capacity or the level that the Kern River Watermaster has verified to be the updated downstream irrigation and spreading demand. Likewise it is understood the Corps will continue its current operational practice of coordinating with the Kern River Watermaster to ensure that operation of Kern River-California Aqueduct Intertie is avoided, as far as possible, because any Kern River water that flows into the California Aqueduct may leave the Southern San Joaquin Valley region which is suffering from a severe water shortage. Finally, the Corps recognizes flooding the Tulare Lake is a last resort action as it causes severe crop damage.

Specific Comments

1. Page 1, Para. 1: Throughout the EA reference is made to the target level of 2,585.5. The EA should be reviewed for consistency as some citations have inadvertently been made to incorrect elevations (e.g., Page 3, Para. 1; Page 27, Para. 4) In addition, based on this elevation and the September 1978 Area Capacity Table for Isabella Reservoir (Page 63) the storage is 361,250 acre-feet not 356,700 af. The citation on this page as well as other references (e.g., Page 8, Section 3.3) in the EA should be reviewed and corrected;

2. Page 6, Para. 1: The maintenance of 30,000 af in the Reservoir for recreation purposes in not part of the conservation storage space. The second to last sentence should be revised by striking "conservation storage space of the";

3. Page 7, Para. 2: The Spillway was also used in 1980. The EA should be reviewed and corrected to include 1980 at this page and others. (e.g., Page 12, Para. 2.);

4. Page 7, Para. 2: Reference to "the 'First Point of Measurement' gage on the Kern River" is not correct and should be deleted;

5. Pages 27-28: The Corps has properly recognized that a forced and rapid evacuation of Kern River water in the Reservoir, at rates in excess of updated irrigation and spreading demand, could cause adverse impacts to the local water supply and farming economy in Kern County. To provide consistency with the earlier text of Section 4.8.2, we suggest the last sentence be revised to read, "Except in extreme conditions, the Proposed Action is not

anticipated to result in significant water supply effects provided that any release flows are controlled to meet updated downstream irrigation and spreading demand."

Conclusion

Overall, we concur with the Corps that the proposed action qualifies for a finding of no significant impact (FONSI) and no environmental impact statement need be prepared. I appreciate having the opportunity to assist the Corps on this most important matter. Please do not hesitate to contact this office at your convenience should you have any questions or require additional information.

Very truly yours,

C.H. Williams
Kern River Watermaster

SKK:CHW:bg

cc: Congressman Jim Costa
Congressman Kevin McCarthy
Kern County Board of Supervisors
City of Bakersfield, City Council
Buena Vista Water Storage District
Henry Miller Water District
Kern County Water Agency
Kern Delta Water District
North Kern Water Storage District
Tulare Lake Basin Water Storage District

-----Original Message-----
From: Susan M Porter [mailto:smporter@fs.fed.us]
Sent: Friday, February 01, 2008 11:29 AM
To: Petrovsky, Veronica V SPK
Cc: Rick Larson; Cheryl A Bauer
Subject: Comments on the EA for Isabella DSAP Reservoir Restriction

Veronica,

I apologize for sending this a day late and hope you will consider it.
I've only commented on the Recreation portion of the EA as I provided information for this section and felt the need to clarify what is presented in the document.

I don't believe there will be any other comments on the document from our office.

Thank you for allowing us this additional time for review. If you have any questions on my comments please call or email me.

(See attached file: COE_EA_Comments_smp_2008-01-31.doc)

Sue Porter
Ecosystem Manager
R5, Sequoia National Forest
Kern River Ranger District
P.O. Box 3810, Lake Isabella, CA 93240
(760) 379-5646, ext. 530

COE_EA_Comments
_smp_2008-01-31...

smporter@fs.fed.us

Attachment – U.S. Forest Service's Comments & Errata to the Draft Environmental Assessment for Planned Deviation From the Water Control Plan Isabella Dam and Lake, Kern County, California

Recreation (pages 19-20):

4.4.2 Proposed Action
Existing Condition

Recreation activities at Isabella Lake include a variety of activities including picnicking, camping, boating, swimming, fishing, hunting, cycling, hiking, and horseback riding. The camping, boat launch, restrooms, trails, parking lots facilities at the ten developed campgrounds and five boat ramps are operated and/or administered by the U.S. Forest Service (Porter, 2007, per.comm.). There are three privately operated marinas at the lake: Dean's North Fork, French Gulch, and Kern Valley. Recreational activities downstream include whitewater boating, camping, picnicking, and fishing. The whitewater boating downstream of the lake takes advantage of the dam releases to extend the boating season into August. Whitewater boating on the North Fork Kern River above the lake is limited to the spring runoff season (April through May). Recreational activities at Isabella Lake generally do not require any specific control of releases. Although recreation is not an authorized purpose of Isabella Lake, an agreement was made in 1963 between Kern County and the water users to maintain a minimum recreation pool of 30,000 acre-feet (Corps, 1978). This level has only occurred four times since 1954 (1954, 1955, 1960, and 1961) The peak recreation season at the lake is generally April through Labor Day weekend (Porter, 2007, per.comm.).

Effects

Isabella Lake

Recreational facilities such as six of the 10 campgrounds, five boat launches, roads, trails, and restrooms around the reservoir would not be affected by inundation during the deviation draw downs of the lake level. However, the direct effect of the deviated draw down to the campground facilities at the lake is that people would have to walk or drive further to reach the lake; and three of the boat ramps would become unusable for launching. At the Tillie Creek Day Use Area a canal (the flowline for Southern California Edison's Borel Hydropower Facility) is exposed creating a barrier between the lake and the shoreline, including a boat launch facility and Dean's North Fork marina. Also located in the Tillie Creek area and therefore affected by the exposure of the Borel Canal are the Tillie Creek Campground, Tillie Creek Group Campgrounds, and Live Oak Campground. The draw down could also make it more difficult for handicapped persons to reach the lake. Recreation use could periodically go down as it sometimes has over the last 29 years. If runoff resulted in a significant draw down of the reservoir during the deviation, this direct effect at Dean's North Fork marina would be reduced to less than significant level with the installation of a portable bridge capable of vehicular traffic that is removed when reservoir levels become higher (Porter, 2007, per.comm.). The other two marinas are designed with cables and deadman anchors to allow them to adjust with the lake

marinas are designed with cables and deadman anchors to allow them to adjust with the lake level; this process has been regularly used in the past during low water years. The economy of the area around the lake is based, in part, on the revenues generated from people who recreate at the lake. These revenues could slightly drop when the lake level drops during deviation. This deviation is not considered significant because two of the marinas have adjustable floating docks when lake levels go lower than the deviation draw downs, which allow boaters to continue using two of the marinas. The third marina has not been adversely affected under current operations despite lake levels lowering to the 30,000 ac-ft minimum pool established for recreational purposes The economy of the Kern River Valley does not depend on the marinas. The marinas are only a small part of the recreation economy, which also depends on shore based users, whitewater boaters, and especially the campers. While the marinas are able to adjust to accommodate fluctuating lake levels, the Forest Service operated boat launch facilities are not. Of the five boat launch facilities, the two that are located at the northern end of the lake (Tillie Creek & Camp 9) become unusable between the lake levels of 115-110,000 acre-feet storage. Therefore the only launching facilities available to the boating public at these lake levels are on the south and west side of the lake, which increase congestion at these sites and diverts business away from Dean's North Fork marina and the businesses in Wofford Heights and Kernville. There is a period of time between the date that Dean's North Fork marina moves across the Borel Canal and the date that the portable bridge can be placed, because the saturated soil is not able to support the crane and trucks needed to transport and place the bridge. During this time the marina places its own temporary walking bridge, but access is severely limited both for suppliers and persons with disabilities.

Maximum pool historically occurs in June. Low water yield years have the most impact on the lake recreation users because of a lower maximum pool and the lake reaches levels that effect recreationists sooner in the year, during the high recreation use period. Whereas, with a higher minimum pool, the effects of lower lake levels (exposure of the Borel canal, increased distance from facilities to shoreline, etc.) generally occur after the high recreation use season (in September or October) and, therefore, have little effect on the economy of the Kern River Valley.

WHITEWATER VOYAGES
5225 San Pablo Dam Road • El Sobrante, CA 94803-3309 • Fax 510-758-7238
info@whitewatervoyages.com • 800-488-RAFT • www.whitewatervoyages.com

Dear Ms. Petrovsky,

My company Whitewater Voyages has guided whitewater rafting trips on the Kern River since 1980 and has, over the years, played a role in attracting hundreds of thousands of people to the Kern River Valley, much to the benefit of the valley's tourism-based economy.

Proposals to limit lake levels in Lake Isabella would have extremely negative impacts on our trips on the Lower Kern. For one thing, allowing full water storage in the lake in wet years means that in dry years flow releases can provide a good, summer-long season of whitewater rafting. For another, limiting water storage in the lake can, during spring runoff, result in unnecessarily high flow releases which in turn can increase the difficulty level of the run and adversely impact our trips.

I realize that many important factors must be taken into account in determining maximum (and minimum) lake levels. On behalf of the thousands of people we serve each year--and the KRV economy as a whole--I ask that due importance be given to the negative impacts of limiting lake levels on Kern River whitewater boating.

Sincerely,

William McGinnis

William McGinnis,
Founder & President
Whitewater Voyages
5225 San Pablo Dam Road
El Sobrante, California 94803
800-400-RAFT
Direct Line: 510-223-3693
bill@whitewatervoyages.com

Public Review and Responses

The Draft November 2007 EA and its appendixes, prepared by the Corps, were distributed to the public on December 5, 2007. The public comment period closed on December 21, 2007. The U.S. Forest Service requested for an extension to the public comment period. The submitted comments are included in this appendix for the EA. Comments were received from the following offices:

1. U.S. Fish and Wildlife Service - letter dated January 15, 2008, signed by Peter A. Cross, Deputy Assistant Field Supervisor.

2. City of Bakersfield – Department of Water Resources – letter dated December 19, 2007, signed by Florn Core, Manager.

3. Kern River Watermaster – letter dated December 20, 2007, signed by C.H. Williams, Kern River Watermaster.

4. U.S. Forest Service. R5, Sequoia National Forest, Kern River Ranger District, email dated February 1, 2008, sent electronically by Sue Porter, Environmental Manager.

5. Whitewater Voyages. No date, signed by William McGinnis, Founder and President.

The Corps received five public comments on the Draft EA. This document presents paraphrased comments submitted by Federal and local agencies on the Draft EA for the proposed action of the planned deviation from the Water Control Plan for Isabella Dam and Lake and also represents responses to comments. The National Environmental Policy Act requires the Federal lead agency to respond to public comments received during the public review period. This document has been prepared in accordance with these requirements.

The responses below generally clarify information in the Draft EA, and occasionally include changes or additions to the text as indicated in the responses to the comments.

U.S. FISH AND WILDLIFE SERVICE

1) Comment: We have determined that the effects of your proposed action (emergency deviation) have been fully addressed in our previous biological opinion on the Conservation Plan for the Long-term Operation of Isabella Dam and Reservoir. The Service recommends that the Corps continue to monitor populations of southwestern willow flycatchers, least Bell's vireos, and other sensitive species around the reservoir to document any changes to the populations that may occur. We believe this proposed deviation would not impact habitat for the willow flycatcher in a way not previously considered in our biological opinions, and therefore, there is no need to re-consult.

Response: Comments noted. The Corps will continue to monitor populations of southwestern

willow flycatchers, least Bell's vireos, and other sensitive species around the reservoir to document any changes to the populations that may occur.

2) Comment: In Section 4.3.2, reference is made to federally-listed species occurrences within the project area from a document dated May 16, 1996. To ensure the quality of the biological information used in your analysis, it is the policy of the Service that species lists be updated every 90 days.

Response: The discussion in the EA was provided to document the history on previous species that were previously consulted on, as well as, the effects analysis resulting from the deviation from the Water Control Plan on species identified in the updated species list. Our cover letter on October 24, 2007, documented our request for an updated species list. The cover latter and updated list was provided in Appendix A of the draft EA at the time the document was sent out for public review. The final EA was revised to better clarify and inform the reader that an updated species list was requested prior to release of the draft EA for public review and refers the reader to look at Appendix A. A more recent updated species list has also been added to the final EA.

CITY OF BAKERSFIELD– WATER RESOURCES DEPARTMENT

1) Comment: Although the Corps has repeatedly assured the Bakersfield community that the dams are safe with the lowered water levels, the perception of dam failure remains in the minds of the citizens and residents of our City. The Corps should minimize this perception of failure and destruction by accelerating the investigation and repairs to the dams. At several points within the EA the timeline is given to September 30, 2013 or extended "possibly for a couple more each year thereafter until remediation is completed (Page 8, Section 3.3, first paragraph). We feel that this is allowing for a certain amount of vagueness in the timeline on the dam's repairs that erode confidence in the public's perception of "safe."

Response: The Corps would like to clarify that a time line for the period of environmental effects analysis needed to be identified in the draft EA, and as previously stated in Section 1.1, page 1, first paragraph, that the period of the environmental effects analysis for the extended deviation only covers this period of time between March 2007 and September 2013 and possibly one or two years after (couple of years), if necessary. For consistency, the September 2013 date was revised to read 2015 throughout the EA to clarify the period of effects analysis. As indicated in their comment letter, the U.S. Fish and Wildlife Service concurred with the effects analysis for this period of time. It is estimated that refinement of action alternatives with project description and cost estimates, selecting, designing, and implementing a permanent solution, or making a determination that a threat does not exist could be made by 2015, but it is dependent on many factors including the complexity of the dam safety issues and construction of the remedial measures, environmental factors and issues needing to be analyzed and mitigated, securing necessary funding, and possibly other factors or circumstances that cannot be foreseen at this time resulting in a delay. Every effort will be made to complete remedial repairs as soon as possible. The EA was revised to better clarify that there are several factors that could influence

selecting and implementing a permanent solution; and the Corps will make every effort to complete remedial repairs for the dam as soon as possible.

2) Comment: Section 1.0, 1.1; Page 1 & Section 3.0, 3.3; Page 8 – The City requests the language referring to the timeline of March 20, 2007 to September 30, 2013 be changed to "This proposed action is to extend the emergency deviation from March 20, 2007 until a permanent solution is implemented or a determination that a threat does not exist is made. It is estimated this will occur prior to the year 2013."

Response: See response to Comment 1 above with revisions made to the final EA.

3) Comment: The City understands that the Corps will continue to coordinate its actions in the operation of Isabella Dam and Lake with the Kern River Watermaster and the City of Bakersfield to maximize the beneficial and efficient use of determined reservoir releases and minimize flooding and resultant damages. The City wishes to reiterate that a complete remediation and repair of the dams should remain the highest priority within the Corps. We support the Corps in the expeditious restoration of the full capacities of Isabella Dam and Lake for flood control and water management activities.

Response: Comments noted.

KERN RIVER WATERMASTER

1) Comment -General: We greatly appreciate the U.S. Army Corps of Engineers renewing its firm commitment to expedite the investigation, remediation and restoration of the reservoir to full operational capacity at the earliest date possible. It is our understanding the Corps has selected the year 2013 as a target date for completion of remediation for the purpose of completing the EA. However, we understand that this proposed completion date is not a rigid certainty and the Corps will endeavor to have the dam remediation completed before 2013 if at all possible. It is expected that the interim reservoir restriction will be necessary until the preferred selection of the permanent solution and environmental documentation for the dam safety remediation is complete. The Corps acknowledges that there will be hydrologic conditions which will necessitate the 2,585.5 foot target elevation be exceeded periodically and that the Corps would continue to coordinate its operations with the Kern River Watermaster for directing releases, restoring the Reservoir to target levels, and ensuring that operation of Kern River-California Aqueduct Intertie is avoided, as far as possible.

Response: Comments noted. See the responses to the City of Bakersfield's Comments Number 1 and 2 above in regards to the Corps selecting 2013 as a target date for completion of remediation. The draft EA for the interim deviation action is now complete and has been finalized. As stated in the draft EA, it will be determined at a later date if preparing another EA or an EIS is necessary depending upon what alternative is selected as the preferred plan for the permanent solution.

2) Comment –Specific: - Page 1, Para. 1, Throughout the EA, reference is made to the target level of 2,585.5. The EA should be reviewed for consistency as some citations have inadvertently been made to incorrect elevations (e.g., Page 3, Para. 1; Page 27, Para. 4). In addition, based on this elevation and the September 1978 Area Capacity Table for Isabella Reservoir (Page 63) the storage is 361,250 acre-feet, not 356,700 af. The citation on this page as well as other references (e.g., Page 8, Section 3.3) in the EA should be reviewed and corrected.

Response: The EA has been revised throughout the document per the comment.

3) Comment: Page 6, Para. 1, The maintenance of 30,000 af in the reservoir for recreation purposes is not part of the conservation storage space. The second to last sentence should be revised by striking "conservation storage space of the."

Response: The EA has been revised per the comment.

4) Comment: Page 7, Para. 2, The spillway was also used in 1980. The EA should be reviewed and corrected to include 1980 at this page and others (e.g., Page 12, Para. 2.)

Response: The EA has been revised per the comment.

5) Comment: Page7, Para. 2, Reference to "the 'First Point of Measurement' gage on the Kern River" is not correct and should be deleted.

Response: The EA has been revised per the comment.

6) Comment: Pages 27-28, The Corps has properly recognized that a forced and rapid evacuation of Kern River water in the reservoir, at rates in excess of updated irrigation and spreading demand, could cause adverse impacts to the local water supply and farming economy in kern County. To provide consistency with the earlier text of Section 4.8.2, we suggest the last sentence to read "Except in extreme conditions, the Proposed Action is not anticipated to result in significant water supply effects provided that any release flows are controlled to meet the updated downstream irrigation and spreading demand."

Response: The EA has been revised per the comment.

U.S. FOREST SERVICE

1) Comment: In a mark-up of the EA (see comment letters provided at the beginning of this appendix), Forest Service staff provided several suggested revisions to the discussion on recreation.

Response: Comments noted. The recreation discussion in the EA was revised according to the suggested revisions made by the Forest Service staff.

WHITEWATER VOYAGES

1) Comment: My company Whitewater Voyages has guided whitewater rafting trips on the Kern River since 1980 and has, over the years, plated a role in attracting hundreds of thousands of people to the Kern River Valley, much to the benefit of the valley's tourism-base economy. Proposals to limit lake levels in Lake Isabella would have extremely negative impacts on our trips on the Lower Kern. For one thing, allowing full water storage in the lake in wet years means that in dry years flow releases can provide a good, summer-long season of whitewater rafting. For another, limiting water storage in the lake can, during spring runoff, result in unnecessarily high flow releases which in turn can increase the difficulty level of the run and adversely impact our trips. I realize that many important factors must be taken into account in determining maximum and minimum lake levels. On behalf of the thousands of people we serve each year – and the KRV economy as a whole – I ask that due importance be given to the negative impacts of limiting lake levels on Kern River whitewater boating.

Response: As mentioned in the EA, the Corps decided that an interim emergency deviation is necessary and would be implemented on an annual basis through 2015 to provide public safety and protect property to the downstream areas until a permanent solution to remediate the dam is implemented. Flow releases during the deviation period are dependent on how much run off there is in the spring. During periods of drought, there could be years when the lake level is already at or below 2,585.5 feet in elevation between March and May, in which case, it would not be necessary to implement the deviation action. As stated in the EA, any increased flow releases in the spring are not expected to last more than a week; and there is less than a 10 percent chance (depending on how much precipitation is received), that the proposed deviation could result in a reduction in the reservoir pool elevation below 2,585.5 in comparison to normal operations under the No-Action plan. In addition, it is stated in the EA that increased releases in the spring beyond what would be released during the deviation period is rare and has only occurred 3 times in the past, the last time occurring in 1983. The EA also states that the flow releases are not expected to exceed 4,600 cfs except in rare run-off events between March and May. Due to the Corps' and Watermaster's coordination efforts to control the flows and gradually return the releases to a normal rate within a week's time to maintain the recreation pool in the lake, any noticeable effects to the local economy supported by kayaking enthusiasts would be minimal lasting about a week in any given year; and the incremental increase to flows, if necessary, would be made to ensure public and dam safety.