4. ENVIRONMENTAL ANALYSIS OF PROJECT ALTERNATIVES

CEQA requires that an EIR analyze a range of reasonable alternatives to a proposed project that are capable of avoiding or substantially lessening any significant effects of the project (CEQA Guidelines Section 15126.6). The discussion of alternatives shall focus on alternatives to the project that could feasibly accomplish most of the basic objectives of the project, and shall include alternatives that may not accomplish to some degree the attainment of the project's objectives or would be more costly. Key provisions of the CEQA Guidelines (Section 15126.6) pertaining to the alternatives analysis include:

- The "No Project" Alternative shall be evaluated along with its impacts. The "No Project" analysis shall discuss the existing conditions at the time the EIR's Notice of Preparation is published, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.
- The range of alternatives required in an EIR shall be governed by a "rule of reason;" therefore, the EIR must evaluate only those alternatives necessary to permit a reasoned choice. Alternatives identified shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project.

CEQA requires the identification of only those alternatives necessary to allow a reasoned choice between the alternatives and the proposed project. Factors that may be taken into account when addressing the feasibility of alternatives (as described in CEQA Guidelines Section 15126.6[f][1]) include, but are not necessarily limited to, environmental impacts, site suitability, economic viability, regulatory limitations, jurisdictional boundaries, and whether a project proponent could reasonably acquire, control, or otherwise have access to an alternative location. An EIR does not need to consider an alternative that would have effects that cannot be reasonably identified, or alternatives that would not achieve the basic objectives of the project. Furthermore, if implementation of an alternative is considered to be remote or speculative, it does not need to be evaluated.

Section 15126(f)(2)(B) of the CEQA Guidelines states that if a Lead agency determines that no feasible alternative locations to a proposed project exist, the Lead Agency must describe the reasons for this conclusion in the project EIR. The primary purpose of the proposed project is to avoid the incidental take of the arroyo toad in middle Piru Creek as it relates to operation of Pyramid Dam. Both Middle Piru Creek and the dam are fixed locations, which inherently precludes relocation of the proposed project to another site. Protecting the arroyo toad and its habitat in another creek or watershed would not reduce the potential for incidental take in middle Piru Creek and thus would not accomplish the most basic objective of the proposed project. Therefore, alternative locations for the proposed project are not considered viable.

The CDWR has developed alternatives to the proposed project through (1) consideration of the dam's operational requirements and constraints, both physically and in regard to CDWR's responsibilities for managing and delivering State Water Project water, and (2) discussions with other agencies such as CDFG, USFWS, USFS and United. Feasible project alternatives that were identified through these efforts and are analyzed in this document include:

- **Alternative 1: No Project Alternative.** The No Project Alternative would continue the use of the one-year temporary release schedule approved by the USFWS.
- **Alternative 2: Reversion to FERC License 2426 Article 52 Flow Requirements.** Alternative 2 would change flows back to those stipulated in Article 52 as amended by FERC Order 2426-010, providing for winter base stream releases of 5 cfs and summer base stream releases of ten cfs augmented with additional flows according to air temperature thresholds.

- **Alternative 3: Steady Low Summer Flows Alternative.** Alternative 3 would provide the same winter base and storm release flows as under the No Project Alternative, but summer stream releases would be kept steady at five cfs, or possibly ten cfs, to ensure a constant supply of water to the resident trout populations.
- **Alternative 4: Alternative Summer Flows Alternative.** Alternative 4 would consist of implementation of the No Project Alternative for either two or four years, followed by one year of simulated natural flows such as described for the proposed project.
- **Alternative 5: No State Water Table A Annual Deliveries.** Alternative 5 would be identical to the proposed project except that there would be no annual delivery of up to 3,150 afy of State Water Project Table A water to Lake Piru via middle Piru Creek.

4.1 ALTERNATIVE 1: NO PROJECT ALTERNATIVE

CEQA Guidelines Section 15126.6(e) requires the analysis of a "No Project" Alternative. CEQA Guidelines Section 15126.6(e)(3)(A) states that when a project is the revision of an existing land use or regulatory plan, policy, or ongoing operation, the No Project Alternative will be the continuation of the existing plan, policy, or operation into the future.

Under the No Project Alternative (Alternative 1), the existing temporary operating guidelines being used at the time the Notice of Preparation for this project was published (May 19, 2004) would require a formal Federal Endangered Species Act Section 7 consultation before any further incidental take of the arroyo toad, or any other federally threatened or endangered species, could be authorized. The USFWS would be the administrating agency for a Section 7 consultation, and FERC would be the applicant. As a result of the consultation process the USFWS would likely identify project-specific conditions for the protection of threatened and endangered species, and FERC would be responsible for ensuring that these conditions are complied with. However, predicting the outcome (i.e., required conditions of dam operations) of such a consultation would be highly speculative at this phase in the project's overall environmental review. Without reasonably knowing what the USFWS might require as part of the Section 7 consultation process, the environmental analysis for the No Project Alternative is based on the following parameters:

- March 15th through April 1st: CDWR would gradually ramp up stream releases, by approximately one cfs per day, to 25 cfs, with the exception of the natural storm release option described below.
- April 1st through June 15th: CDWR would keep stream releases constant at 25 cfs. The only exception for the period of March 15th through June 15th would be as follows: If natural storm events were to occur during this period, CDWR would have the option of releasing storm flows as they occur, simulating the natural hydrograph as much as possible, subject to specified operational and safety constraints. The USFWS would not hold CDWR liable for take of arroyo toads caused by natural events during the arroyo toad breeding season (March 15th through June 15th).
- June 16th through August 31st: CDWR would continue to keep stream releases at 25 cfs except for water deliveries to United or for the purpose of bullfrog control, as noted below.
- Water deliveries to United may be made either during the period of June 16th through August 31st, provided that with the exception of natural storm flow releases, total stream releases do not exceed 35 cfs, or during the period of November 1st through February 28th.
- September 1st through October 9th: CDWR would gradually decrease stream releases back to five cfs.
- October 10th through March 14th: CDWR would maintain a minimum winter base flow of five cfs.
- CDWR would release all large storm events as they occur, regardless of the time of year. A large storm event is defined, for the purposes of the project as one that generates flows on upper Piru Creek of 1,000 cfs or more. The maximum stream release during a large storm event would be limited to the maximum controlled

release that Pyramid Dam can safely accommodate, approximately 18,000 cfs; this maximum release could be further reduced as necessitated by other safety considerations.

- Water released into middle Piru Creek in excess of natural inflows into Pyramid Lake may be recovered from small to medium storm flows, defined as events in which flows on upper Piru Creek stay below 1,000 cfs. Water may be recouped from such small to medium natural storm flows at any time of year, including the arroyo toad breeding season (March 15th through June 15th), as long as flows between April 1st and August 31st do not fall below 25 cfs, with the exception of the bullfrog control measures below.
- If natural inflows into Pyramid Lake drop to very low levels after June 15th but before September 15th, CDWR may reduce stream releases to three cfs or less for a two-week period to help control the bullfrog population in middle Piru Creek.
- Short-term releases for testing and maintenance would be as under the proposed project.

4.1.1 Biological Resources

Non-Sensitive Wildlife

Impacts to non-sensitive wildlife would be similar to those identified under the proposed project (Section 3.1.4) and would not be considered significant. Wildlife would maintain access to perennial water and riparian vegetation would continue to provide habitat for foraging, resting and breeding. However, as riparian vegetation continues to expand along middle Piru Creek and stream channel morphology is altered by channel incision and possible changes in stream topography, organisms that require calm water with slow current velocities may be adversely affected. Similarly, maintenance of the current hydrologic regime would continue to provide conditions favorable for exotic predators including bullfrogs, crayfish, and largemouth bass, which would also be considered an adverse effect.

Rainbow Trout. Implementation of the No Project Alternative would not result in direct or indirect impacts to the existing trout fishery in middle Piru Creek. Augmented summer stream flows would continue to provide the additional water required to reduce heat stress on rainbow trout. In addition, the attenuation of winter storms to the extent needed to recover water released during the summer that was in excess of natural inflows into Pyramid Lake would reduce scouring and may reduce the number of rainbow trout that are washed downstream during large storm events. Scheduled water deliveries to United or periodic testing of the radial gates would also occur. Additional water that would be transported downstream under the No Project Alternative would not result in substantial changes to creek hydrology. In fact, scheduled water delivery may provide beneficial effects to rainbow trout by further reducing summer water temperatures. Therefore, impacts would not be considered significant and additional summer flows would provide beneficial impacts to this species.

Sensitive Natural Communities

Under the No Project Alternative, riparian vegetation along middle Piru Creek would continue to expand from the attenuation of some winter storms and augmented summer flows. Scheduled water deliveries to United, if conducted during summer months, would also provide additional water during this period. While many rivers with regulated flow regimes have less riparian vegetation than they would under natural conditions, artificial flow enhancement during the summer tends to cause the establishment and expansion of both native and exotic aquatic plant species. The reduced frequency of disturbance would also lead to the continued colonization of sand bars and terraces by cattails, sedges, and invasive species such salt cedar. Sections of the creek currently dominated by alder thickets would continue to mature and over time and would become increasingly resistant to scour from attenuated winter storms. This could lead to increased channel incision and erosion of creek sediments.

Indirect effects to riparian communities may also occur from the continued attenuation of winter storms. Pyramid Dam currently reduces the frequency and extent of floodplain inundation, which may alter the composition of riparian habitats. Natural riparian communities in southern California are adapted to a cycle of seasonal disturbance, which is required for the development of a complex community structure containing multiple successional states. However, impounded waterways tend to produce more stable systems that may eventually lead to decreases in biodiversity and monotypic stands of late successional species. Along middle Piru Creek the attenuation of some winter storms and augmented summer flows has led to the development of dense single age stands of willow riparian forests. In some sections of the creek this has reduced recruitment of important canopy species such as cottonwoods. Scour from substantial winter storms is required to clear vegetation and debris and establishes nursery sites for riparian trees such as cottonwoods and willows. While not all winter storms are attenuated under the No Project Alternative, the modified flow regime could eventually lead to the loss of species diversity along sections of middle Piru Creek. Therefore, impacts of the No Project Alternative would be considered potentially adverse but less than significant.

Sensitive Plants

Impacts to sensitive plant species are similar to those described for the proposed project. There is no indication that any sensitive or rare plants would be adversely impacted by implementation of No Project Alternative.

Sensitive Fauna

Fish

State or federally Listed as Endangered or Threatened

There are no State or federally listed endangered or threatened fish with the potential to occur in middle Piru Creek. Therefore, no impacts would occur.

Sensitive Species

Arroyo chub. Implementation of the No Project Alternative would not result in direct or indirect impacts to arroyo chub because this species is no longer believed to occur in middle Piru Creek. If present, potentially adverse impacts to arroyo chub could occur from the maintenance of artificial summer flows that lower water temperatures and support large populations of aquatic predators. However, these impacts would be considered less than significant because stream conditions would still provide possible habitat for this species. No beneficial effects would occur from implementation of the No Project Alternative.

Amphibians

State or federally Listed as Endangered or Threatened

Arroyo toad. Under the No Project Alternative, significant adverse impacts to arroyo toads would continue to occur from the loss of breeding, rearing, and juvenile foraging habitat, increased water current velocities that flush egg masses and tadpoles downstream, and maintenance of large populations of aquatic predators such as bullfrogs, crayfish, and largemouth bass.

Under the current flow regime, some winter storms would continue to be attenuated and summer flows below Pyramid Dam would be maintained above the natural inflow into Pyramid Lake. This would limit the natural disturbance of the creek required for the development of suitable breeding and rearing areas for the toad. Large winter storms are required to scour vegetation from low-lying terraces and for the redistribution of sand and cobble. Cattails, willow saplings, and exotic salt cedar now dominate many sand bars, terraces, and gravel benches previously used by arroyo toads for breeding.

The encroachment of riparian vegetation has also resulted in channel incision and increased water velocities. Arroyo toads require slow moving water for breeding and rearing and do not initiate breeding in areas subject to strong water currents (Sweet, 1992). Augmented summer flows also provide favorable conditions for exotic aquatic predators such as bullfrogs, crayfish, and largemouth bass.

Scheduled water deliveries to United conducted between June 16th and August 31st would also contribute to the maintenance of large predator populations and the expansion of riparian vegetation by further augmenting existing summer flows. Water deliveries that occur during the period of November 1st through February 28th would be similar to natural storm events and would not result in additional impacts to arroyo toads.

One component of the No Project Alternative would provide CDWR with the option to reduce water releases from Pyramid Dam to three cfs or less for a two-week period to help control the population of bullfrogs in middle Piru Creek. This measure could be implemented if natural inflows into Pyramid Lake drop to very low levels, typically less than three cfs, between June 15th and September 15th. The reduction of out-flow from Pyramid Dam during this period could potentially reduce bullfrog populations in some sections of middle Piru Creek. However, the short duration of the low flow period would probably not be effective in substantially reducing populations of bullfrogs in middle Piru Creek. Standing water would remain in many sections of middle Piru Creek, particularly in shaded canyon reaches and existing rock lined pools. These areas would act as a refuge for bullfrogs and other aquatic predators and provide a source population for dispersal in middle Piru Creek. In addition, while periods of limited inflow into Lake Pyramid do occur, stream gauge data recording inflow into the lake indicated that inflow of less than three cfs occurs infrequently and would not provide consistent opportunities for bullfrog control downstream of Pyramid Dam (see section 3.2.1, Figure 3.2-1). Under the No Project Alternative, arroyo toads would be subject to significant adverse impacts that could jeopardize the continued existence of this species in middle Piru Creek.

California red-legged frog. No direct impacts to California red-legged frog are expected to occur from implementation of the No Project Alternative. This species is not known to occur in middle Piru Creek and would not be subject to the effects of the existing flow regime. If it were present, this species could be indirectly impacted by the maintenance of large numbers of aquatic predators known to occur in middle Piru Creek. Reduced levels of disturbance from the attenuation of winter storms and summer flow augmentation provide favorable breeding conditions for exotic predators including bullfrogs, crayfish, and largemouth bass. The presence of bullfrogs has been demonstrated to effectively eliminate California red-legged frogs and other native amphibians from many lakes and streams in California. Implementation of the No Project Alternative would maintain conditions favorable to exotic predators and would not provide the natural stochastic events required for the establishment of suitable breeding and rearing pools for red-legged frogs. However, as this species is not expected to occur, impacts to California red-legged frog would not be significant.

Reptiles

State or Federally Listed as Endangered or Threatened

There are no State or federally listed endangered or threatened reptiles with the potential to occur in middle Piru Creek.

Sensitive Species

Southwestern Pond Turtle. Implementation of the No Project Alternative may have adverse impacts on southwestern pond turtles. Populations of southwestern pond turtles are in decline throughout southern California from human modification of aquatic habitat and increased predation by introduced aquatic predators. As previously described for arroyo toads and red-legged frogs, under the No Project Alternative stream conditions would remain favorable for exotic predators including bullfrogs, crayfish, and largemouth bass. These species are known to prey on juvenile southwestern pond turtles and could effectively eliminate hatchlings from the creek. Impacts could also occur from increased water current velocities. Southwestern pond turtles prefer slow moving water for foraging and are poor swimmers. Increased water current velocities resulting from augmented summer flows and channel incision has the potential to prevent the use of basking areas and can wash juvenile pond turtles downstream. Impacts to southwestern pond turtle under the No Project Alternative would be considered adverse and potentially significant.

Two-striped garter snake. Under the No Project Alternative, no direct or indirect significant adverse impacts to two-striped garter snakes would be expected to occur. However, maintenance of the current flow regime could result in potential increased predation risks to juvenile two-striped garter snakes from exotic aquatic predators. As described for other reptiles and amphibians, summer flow augmentation and scheduled water deliveries to United would continue to provide favorable habitat for exotic predators such as bullfrogs, crayfish, and largemouth bass. Two-striped garter snakes remain relatively common in middle Piru Creek, but the maintenance of large populations of aquatic predators would be considered an adverse but less than significant impact to this species.

Birds

Federally Listed as Endangered or Threatened

California condor. Implementation of the No Project Alternative would limit possible beneficial impacts to California condors because summer flows from Pyramid Dam would continue to support camping and picnicking at Frenchman's Flat. The trash and food waste associated with camping and picnicking has been known to attract condors in other parts of the Los Padres National Forest. However, the impacts of the No Project Alternative on condors would be less than significant.

Southwestern willow flycatcher and least Bell's vireo. Under the No Project Alternative, no direct or indirect impacts to southwestern willow flycatchers or least Bell's vireo would be expected. No substantial changes to the riparian structure would occur, and middle Piru Creek would continue to provide potential foraging and nesting habitat for these species. Implementation of the No Project Alternative could also benefit these species by supporting riparian habitat and perennial water that would otherwise not naturally occur along middle Piru Creek.

State Listed as Endangered or Threatened

Western yellow-billed cuckoo. This species does not occur in the proposed project area and would not be impacted by implementation of the No Project Alternative.

Sensitive Species

Great blue heron and great egret. Implementation of the No Project Alternative would not result in direct or indirect impacts to these species. Under the existing flow regime, foraging and potential nesting habitat for great blue heron and great egret would remain intact. In addition, summer flows would continue to support large numbers of aquatic prey items such as bullfrogs, crayfish, and small fish.

Yellow warbler. Under the No Project Alternative, no direct or indirect impacts to yellow warbler would be expected. No substantial changes to the riparian canopy would occur, and middle Piru Creek would continue to provide potential foraging and nesting habitat for this species. Implementation of the No Project Alternative could benefit this species by supporting riparian habitat and perennial water that would otherwise not naturally occur along middle Piru Creek.

Summary

Impacts to sensitive fauna would be adverse and significant for arroyo toad and southwestern pond turtle. Impacts to all other species would be beneficial, have no impact, or be less than significant.

4.1.2 Water Resources

Under the No Project Alternative, existing conditions would continue as described in Section 3.2.2. Summer flows would continue to be higher and steadier than under natural conditions, and winter flows attenuated in terms of peak flow rate and volume. Whereas the sediment transport capacity of the creek would be less than under natural conditions, caused by the lower winter discharges, Pyramid Dam would remain in place and would continue to trap approximately 80 to 100 percent of the watershed bed-material sediments that under natural conditions would be delivered to middle Piru Creek (estimate based on watershed area). Consequently, the long-term trend would be expected to be one of channel degradation (incisement) with a risk of bank erosion, particularly in the upper area just downstream of Pyramid Dam. Scheduled water deliveries to United or periodic testing of the radial gates would not result in substantial changes to creek hydrology.

Since the No Project Alternative would involve no change in the current operation of Pyramid Dam, the water resources impacts described for the proposed project would not apply. However, some of the potential adverse effects described as impacts for the proposed project are occurring under current (without project) conditions, only to a lesser extent, than would occur under the proposed project. Specifically, the potential erosion described for Impact H-3 (Section 3.2.4.4) would occur under the No Project Alternative, but the risk of erosion would be less under the No Project Alternative than with implementation of the proposed project. Siltation of Lake Piru is an ongoing condition and would continue to occur, but at a lesser rate than for the proposed project. The flood hazard described for Impact H-8 occurs under current conditions and would continue to occur under the No Project Alternative, but less frequently than with implementation of the proposed project. The description for Impact H-8 (Section 3.2.4.4) contains a brief comparison of the risks for with and without-project conditions.

4.1.3 Cultural and Paleontological Resources

As described for the proposed project, no historic or prehistoric archeological sites were found in the project area, although there is a potential for historic resources in the immediate vicinity of the Whitaker Ranch property west of the proposed project area. While a road to the property and a road from Blue Point Campground to Kester's Camp were historically located in the project area, no physical evidence of these roads remains. No standing structures were reported in the Whitaker Ranch area that would be within the 100-year flood elevation under the No Project Alternative. There is potential for unidentified components of Whitaker Ranch to be uncovered by high flood flows. The effects of radial gate test releases or water deliveries would be negligible on cultural resources. However, as flows under this alternative would not change from existing conditions, no identified or unidentified historic resources would be subjected to any new impacts. Impacts would therefore be considered adverse but less than significant. No mitigation measures are recommended.

The project area, particularly the northern portion, is considered sensitive for paleontological resources Section 3.3.4). As discussed above for historic and prehistoric resources, paleontological resources may potentially be uncovered by middle Piru Creek flows (Impact C-2). Under the No Project Alternative, the rate of erosion would not change from its present rate. Impacts would therefore be considered adverse but less than significant, and no mitigation measures are recommended.

4.1.4 Recreation

Under the No Project Alternative, the existing release of flows into middle Piru Creek from Pyramid Dam would not change. Consequently, there is no expectation that this alternative would change use of recreation areas along middle Piru Creek or the region. Release of flood flows in the winter would continue to attract rafters and kayakers. Maintenance of 25 cfs flows (or flows up to 35 cfs during water delivery periods) in the summer would continue to attract large numbers of picnickers, hikers and campers. The augmentation of summer flows to 25 cfs would help maintain the naturally reproducing trout population of the creek; therefore, the creek would continue to attract anglers. Radial gate test releases and water deliveries would have a negligible effect on recreation.

The No Project Alternative would not alter stream releases from Pyramid Lake into middle Piru Creek and thus would not alter recreational experiences for visitors in the project area (Impacts R-2, R-3, and R-4, Section 3.4.4). It is anticipated that as the population of surrounding areas grows and the number of visitors to middle Piru Creek increases, overcrowding along Frenchman's Flat would also increase, and the recreational value of the area to visitors would decrease. Currently, the number of visitors along middle Piru Creek exceeds the area's capacity, and this use is already resulting in physical deterioration of the area (USFS, 1987). Continued use at the same or greater levels would reduce the enjoyment of the middle Piru Creek for visitors. Creel survey interviews have already indicated that anglers are discouraged by the existing conditions of the Frenchman's Flat area. Recreational opportunities would be the same as existing conditions. Recreational opportunities under the No Project Alternative would be greater than for the proposed project, but continued deterioration of the recreation areas along middle Piru Creek would reduce opportunities in the future.

The physical deterioration of middle Piru Creek's recreational values under this alternative would not increase recreational uses of the creek and therefore would not increase the existing rate of deterioration (Impact R-1, Section 3.4.4). It cannot be determined at this time, however, if the deterioration of conditions at middle Piru Creek under the No Project Alternative would cause recreational users to relocate to other recreation areas in the region such as Pyramid Lake, Lake Piru, or Castaic Lake. It is

expected that any impacts would be adverse but less than significant. No mitigation measures are considered necessary.

4.2 ALTERNATIVE 2: REVERSION TO FERC LICENSE 2426 ARTICLE 52 FLOW REQUIREMENTS

Alternative 2 would change flows released from Pyramid Dam into middle Piru Creek back to those stipulated in Article 52 as amended by FERC Order 2426-010, issued November 11, 1982. This alternative would provide for winter base stream releases of 5 cfs (plus storm releases matching inflow into Pyramid Lake) from November 16th through April 30th. Between May 1st and November 15th, base stream releases into middle Piru Creek would be increased to a minimum of ten cfs. However, the ten cfs stream release would be augmented with additional flows according to the following air temperature thresholds:

- If, on any given day, the maximum air temperature in the project area is predicted to be between 86°F and 90°F, the minimum continuous flow is to be increased to 15 cfs between 10:00 a.m. and 6:00 p.m.
- If, on any given day, the maximum air temperature in the project area is predicted to range between 91°F and 95°F, the minimum continuous flow is to be increased to 20 cfs between 10:00 a.m. and 6:00 p.m.
- If, on any given day, the maximum air temperature in the project area is predicted to be at or above 96°F, the minimum continuous flow is to be 25 cfs between 10:00 a.m. and 6:00 p.m.

Pursuant to the amended Article 52, releases into middle Piru Creek under Alternative 2 may be temporarily modified if required by operating emergencies beyond the control of CDWR; they may also be modified for short periods for fishery management purposes upon mutual agreement between CDWR and CDFG.

4.2.1 Biological Resources

Non-Sensitive Wildlife

Impacts to non-sensitive wildlife would be similar to those identified under the proposed project and the No Project Alternative (Sections 3.1.4 and 4.1.1, respectively). Impacts to non-sensitive wildlife would not be considered significant.

Rainbow Trout. Implementation of Alternative 2 would adversely impact populations of naturally breeding rainbow trout located in middle Piru Creek. Under Article 52 of the project's FERC license, a minimum flow of ten cfs would be released between May 1st and November 15th. Additional water up to 25 cfs would be released into middle Piru Creek as a function of increasing air temperatures. However, regardless of current air temperatures, water releases would return to the base flow of ten cfs at 6:00 p.m. The CDFG has indicated that during summer months the naturally reproducing populations of rainbow trout that occur in middle Piru Creek are currently exposed to the upper limit of their heat tolerance. In 1994, the CDFG requested that stream flows be maintained at 25 cfs to protect the trout fishery and prevent impacts to sensitive amphibians from fluctuating water flows. Under Alternative 2, rainbow trout would be exposed to additional heat stress as water releases are lowered to base flows during the early evenings while air temperatures remain high. Along middle Piru Creek summer air temperatures often exceed 90°F to 100°F (32°C to 37°C) well into the early evening. By reducing water releases while air temperatures and solar radiation remain high, rainbow trout could be exposed to increased heat stress. In addition, CDFG biologists have indicated that minimum water releases of 25 cfs are currently required during summer months to limit heat stress on rainbow trout in middle Piru Creek (CDFG, 2004b). Although small populations of rainbow trout would probably survive in deep

pools and shaded canyon reaches, implementation of Alternative 2 would result in adverse impacts to naturally breeding rainbow trout in middle Piru Creek.

Scheduled water deliveries to United would occur between November 1st and February 28th each year. Although additional water would be transported downstream during this period, these releases would not occur during periods of peak thermal stress for the trout. Additional water may also be released into middle Piru Creek from periodic test releases of the radial gates on Pyramid Dam. However, radial gate test releases would consist of short-term events that would be very similar to a very small natural rain event and would not result in substantial changes to water surface elevations on middle Piru Creek. Therefore, impacts to rainbow trout would be considered adverse but less than significant because the naturally reproducing populations of rainbow trout occurring in middle Piru Creek are descended from hatchery stock.

Sensitive Natural Communities

Impacts to sensitive natural communities would be similar to the No Project Alternative (Section 4.1.1). Although summer water releases would be lower and could fluctuate throughout the day, this would probably not result in substantial changes to riparian vegetation. Fluctuating water levels would still provide a mesic environment that would encourage the growth of wetland and riparian vegetation and attenuation of winter storms would limit the effects of scour and disturbance. Therefore, no direct or indirect impacts would occur from implementation of Alternative 2.

Sensitive Plants

Impacts to sensitive plant species would be similar to those described for the proposed project (Section 3.1.4). There is no indication that any sensitive or rare plants would be adversely impacted by implementation of Alternative 2.

Sensitive Fauna

Fish

State or federally Listed as Endangered or Threatened

There are no State or federally listed endangered or threatened fish with the potential to occur in middle Piru Creek. Consequently, no impacts would occur.

Sensitive Species

Arroyo chub. Implementation of Alternative 2 would not result in direct or indirect adverse impacts to arroyo chub because this species is no longer believed to exist in middle Piru Creek. No beneficial effects would occur from implementation of Alternative 2.

Amphibians

State or federally Listed as Endangered or Threatened

Arroyo toad. Under Alternative 2, impacts to arroyo toad would be even more severe than under the No Project Alternative (Section 4.1.1) and would result in significant adverse impacts to the species. As described under the No Project Alternative, impacts would include the loss of breeding, rearing, and juvenile foraging habitat and the maintenance of large populations of aquatic predators such as

bullfrogs, crayfish, and largemouth bass. In addition, under Alternative 2, arroyo toads would be exposed to fluctuating daily water levels. Arroyo toads breed between March and July and prefer open sites such as shallow overflow pools, old flood channels, and pools with shallow margins on streams (Sweet, 1992). Under Alternative 2, fluctuating water surface elevations would strand egg masses and tadpoles, causing them to dry out and die. Mortality of juvenile toads would probably also increase. Egg masses and tadpoles would also be washed downstream by the almost daily, abrupt changes in stream velocities. Therefore, Alternative 2 would result in significant adverse impacts to arroyo toad and could jeopardize the existence of this species in middle Piru Creek.

California red-legged frog. Direct impacts to California red-legged frog are not expected to occur from implementation of Alternative 2. If red-legged frogs were present, the impacts of Alternative 2 would be similar to the No Project Alternative (Section 4.1.1). However, this species is not known to occur in middle Piru Creek and therefore unlikely to be subject to the effects of fluctuating water surface elevations.

Reptiles

State or federally Listed as Endangered or Threatened

There are no State or federally listed endangered or threatened reptiles with the potential to occur along middle Piru Creek.

Sensitive Species

Southwestern Pond Turtle. Impacts to southwestern pond turtle from the implementation of Alternative 2 would be similar to the No Project Alternative (Sections 4.1.1). Increased water current velocities resulting from augmented summer flows and fluctuating water surface elevations would still support large numbers of aquatic predators and could wash juvenile pond turtles downstream. Indirect impacts to southwestern pond turtle from Alternative 2 would be considered adverse and potentially significant.

Two-striped garter snake. Impacts to two-striped garter snake would be similar to the No Project Alternative (Sections 4.1.1). As previously described, summer flow augmentation would continue to provide favorable habitat for exotic predators such as bullfrogs, crayfish, and largemouth bass. Since this species of snake is relatively common along middle Piru Creek, this would be considered an adverse but less than significant impact on the two-striped garter snake.

Birds

Federally Listed as Endangered or Threatened

California condor. Impacts to condors would be similar to those described under the proposed project and the No Project Alternative (Sections 3.1.4 and 4.1.1, respectively), and would be considered less than significant.

Southwestern willow flycatcher and least Bell's vireo. Impacts to these species, if present, would be similar to the No Project Alternative (Sections 4.1.1). Implementation of Alternative 2 could provide beneficial impacts to this species. Augmented summer flows would continue to support dense riparian vegetation and perennial water on middle Piru Creek.

State Listed as Endangered or Threatened

Western yellow-billed cuckoo. This species does not occur in the proposed project area and would not be impacted by implementation of Alternative 2.

Sensitive Species

Great blue heron and great egret. Implementation of Alternative 2 would not result in direct or indirect impacts to these species. Impacts would be similar to the proposed project and the No Project Alternative (Section 3.1.4 and 4.1.1respectively) and would not be considered significant.

Yellow warbler. Impacts to yellow warbler would be similar to the No Project Alternative (Section 4.1.1). Implementation of Alternative 2 could provide beneficial impacts to this species. Augmented summer flows would continue to support dense riparian vegetation and perennial water on middle Piru Creek.

Summary

Impacts to sensitive fauna would be adverse and significant for arroyo toad and Southwestern pond turtle. Impacts to all other species would be beneficial, have no impact, or be less than significant.

4.2.2 Water Resources

Alternative 2 would provide for winter base stream releases of five cfs (plus storm releases matching inflow into Pyramid Lake) from November 16th through April 30th Between May 1st and November 15th, base stream releases into middle Piru Creek would be increased to ten cfs. However, the ten cfs stream release would be augmented with additional flows depending on air temperature. Radial gate test releases would consist of short-term events that would be very similar to a small rain event and would not result in substantial changes to creek hydrology under Alternative 2.

From a hydrology and water resources standpoint, there is little difference between Alternative 2 and the proposed project. Impact H-1 (Section 3.2.4.4), violation of water quality standards, would have no impact, as for the proposed project. Impact H-2 (Section 3.2.4.4), reduction in groundwater recharge, would not apply since summer releases into middle Piru Creek would continue at a higher than natural rate. Impacts H-5 to H-8 (Section 3.2.4.4) would apply in the same manner as for the proposed project.

4.2.3 Cultural and Paleontological Resources

As described for the proposed project, the creek's changes in flows resulting from Alternative 2 would not substantially change erosion rates over existing rates of erosion such that previously unidentified historic, prehistoric, or paleontological resources would be uncovered or damaged in a time or manner substantially different from pre-dam conditions. Radial gate test releases and water deliveries would have a negligible effect on cultural resources. Adverse affects on historic, prehistoric, or paleontological resources (Impacts C-1 and C-2) would be considered adverse but less than significant. Consequently, no mitigation measures are recommended.

4.2.4 Recreation

Under Alternative 2, flows in middle Piru Creek would not differ greatly from existing conditions in winter and spring, but flows in the summer could fluctuate between ten cfs and 25 cfs. Because winter flows would remain similar to those under existing conditions, Alternative 2 would not increase

recreational use along middle Piru Creek in the wintertime. However, as summer flows would vary daily under this alternative depending on the prevailing air temperatures, flows during this period would be substantially different than under the current flow regime. This difference would be likely to affect recreational use of middle Piru Creek. As with the proposed project and the No Project Alternative, radial gate test releases and water deliveries would have a negligible effect on recreation.

Changes to summertime flows under Alternative 2 could alter recreational opportunities for picnickers, hikers, and campers wanting to wade or play in the water. Under Alternative 2, during periods colder than 86°F, pools along middle Piru Creek would be shallower than under the existing conditions and would be similar to pools under the proposed project. While this water level would be lower than the level associated with existing conditions, visitors could still wade and play in the shallow water. As temperatures rise under Alternative 2, water levels of the creek would rise correspondingly to levels similar to those under the creek's existing conditions. The general decrease in water depths could discourage some visitors from coming to middle Piru Creek and may encourage users to go to other recreational locations. As discussed under Impacts R-1 and R-2 of the proposed project (Section 3.4.4), this would be an impact to those visitors coming to Piru Creek for swimming and wading, but may result in a beneficial effect as a reduction in visitors would probably reduce the amount of litter and waste that degrades the area's overall recreational appeal. Impacts resulting from Alternative 2 that would alter the existing opportunities for picnickers, hikers, and campers at middle Piru Creek or other locations (Impacts R-1 and R-2) would be adverse but less than significant, or could possibly be beneficial. Therefore, no mitigation measures are considered necessary.

CDFG fishery biologists have concluded that the flows stipulated by FERC Order 2426-010 are insufficient to sustain a healthy, naturally reproducing trout population through the summer. In addition, fluctuating and frequently lower stream flows in the summer may make summer fishing conditions unappealing for some anglers. However, because few anglers fish middle Piru Creek in summer, these effects would not be considered significant. Because summer flows would likely substantially reduce trout populations, this alternative would worsen fishing conditions and would directly impact anglers fishing at middle Piru Creek. These impacts to anglers (Impact R-3) under Alternative 2 would be significant, but could be reduced to less than significant impacts by increasing the amount of trout stocked up to 4,000 pounds as implemented in Mitigation Measure R-3. Recreational opportunities for anglers would be reduced under Alternative 2 compared to existing conditions, but would be similar to the proposed project.

Because winter and spring flows would not change substantially under Alternative 2 when compared to existing conditions and because few, if any, rafters and kayakers use middle Piru Creek during the summer, changes in flows due to Alternative 2 would have a less than significant impact on rafters and kayakers (Impact R-4). Recreational opportunities for rafters and kayakers would be the same as under existing conditions and would be less than under the proposed project.

It would not be expected that the number of visitors going to other facilities instead of middle Piru Creek would be substantial; conversely, it would not be expected that this alternative would result in an increased use of middle Piru Creek compared to the No Project Alternative. No impacts due to increased use of middle Piru Creek would occur under Alternative 2. Impacts to other facilities in the area due to increased (relocated) use could be adverse but less than significant because the overall increase in use of other facilities would be minimal.

4.3 ALTERNATIVE 3: STEADY LOW SUMMER FLOWS

Alternative 3 would provide the same winter base and storm release flows as under the No Project Alternative (Alternative 1); however, summer stream releases (May 1st through November 15th) into middle Piru Creek would be kept steady at five cfs, or possibly ten cfs, to ensure a constant supply of water to the resident trout populations.

4.3.1 Biological Resources

Non-Sensitive Wildlife

Impacts to non-sensitive wildlife would be similar to those identified under the proposed project, the No Project Alternative, and Alternative 2. Impacts to non-sensitive wildlife would not be considered significant.

Rainbow Trout. The summer flows proposed under Alternative 3 are insufficient to sustain the resident trout population, and implementation of this alternative would have the potential to adversely impact these naturally breeding fish. Reducing summer flows to five or ten cfs would increase water temperatures, lower the level of dissolved oxygen in the remaining water, and increase the potential for heat stress on rainbow trout. Increased summer flows now occurring in middle Piru Creek are provided to maintain fish populations through the heat of the summer, and even under existing conditions the trout probably experience some heat stress and reduced fitness (CDFG 2004b). The even lower summer flows proposed under Alternative 3 could substantially reduce the number of rainbow trout that survive the summer. Impacts to rainbow trout would be considered adverse but less than significant, as the naturally reproducing populations of rainbow trout occurring in middle Piru Creek are descended from hatchery stock. Radial gate testing under this alternative would have a negligible effect on rainbow trout.

Sensitive Natural Communities

Impacts to sensitive natural communities for Alternative 3 would be similar to the No Project Alternative and Alternative 2 (Sections 4.1.1 and 4.2.1, respectively). Although reduced summer flows could have the effect of limiting the colonization of some wetland species such as cattails or sedges onto the lower terraces of the creek channel, deeper-rooted riparian vegetation such as willows, alders, and mulefat would probably continue to encroach on the banks of middle Piru Creek. In addition, scour from winter storms would remain limited in middle Piru Creek.

Sensitive Plants

Impacts to sensitive plant species for Alternative 3 are similar to those described for the proposed project (Section 3.1.4). There is no indication that any sensitive or rare plants would be adversely impacted by implementation of this alternative.

Sensitive Fauna

Fish

State or federally Listed as Endangered or Threatened

There are no State or federally listed endangered or threatened fish with the potential to occur in middle Piru Creek. Therefore, no impacts would occur.

Sensitive Species

Arroyo chub. Implementation of Alternative 3 would not result in direct or indirect adverse impacts to arroyo chub, as this species is no longer believed to exist in middle Piru Creek. No beneficial effects would occur from implementation of Alternative 3.

Amphibians

State or federally Listed as Endangered or Threatened

Arroyo toad. The implementation of Alternative 3 would result in potentially significant adverse impacts to arroyo toad. Under Alternative 3 winter flows would be similar to the No Project Alternative, although, since less water in excess of natural inflow into Pyramid Lake would be released into middle Piru Creek each summer, there would be less attenuation of winter storm flows for recovering summer water releases. Summer flows would be maintained at five or possibly ten cfs, which would reduce the potential for arroyo toad egg masses or tadpoles to be swept downstream. However, vegetation would continue to colonize and encroach into the stream channel from augmented summer flows. Even though winter storm flows would be higher than under existing conditions, albeit probably less than under the proposed project, they may not be able to remove the additional riparian vegetation established as a result of the reliable, steady summer water supply. Thus, there would continue to be significant adverse impacts on toad habitat.

The steady flows provided under Alternative 3 would also continue to support large populations of aquatic predators such as bullfrogs, crawfish, and largemouth bass. Predation from these species, particularly bullfrogs, has been demonstrated to pose a substantial threat to juvenile and adult stages of arroyo toads. Impacts to arroyo toad from the loss of breeding and rearing pools and from the presence of aquatic predators would be considered adverse and significant and may jeopardize populations of this species along middle Piru Creek.

California red-legged frog. Direct impacts to California red-legged frog are not expected to occur from implementation of Alternative 3, as this species is not known to occur in middle Piru Creek. If red-legged frogs were present, potential impacts would be similar to the No Project Alternative and Alternative 2 (Sections 4.1.1 and 4.2.1, respectively).

Reptiles

State or federally Listed as Endangered or Threatened

There are no State or federally listed as endangered or threatened reptiles with the potential to occur in middle Piru Creek. Consequently, no impacts would occur.

Sensitive Species

Southwestern Pond Turtle. Impacts to southwestern pond turtle from the implementation of Alternative 3 would be similar to the No Project Alternative and Alternative 2, (Sections 4.1.1 and 4.2.1, respectively). Although reduced water velocities may limit the potential for pond turtles to be swept downstream, augmented summer flows would still support large predator populations. Impacts to southwestern pond turtle from Alternative 3 would be considered adverse and potentially significant.

Two-striped garter snake. Impacts to two-striped garter snake would be similar to the No Project Alternative or Alternative 2. As previously described, summer flow augmentation would continue to provide favorable habitat for exotic predators such as bullfrogs, crayfish, and largemouth bass. This would be considered an adverse but less than significant impact to this species.

Birds

Federally Listed as Endangered or Threatened

California condor. Impacts to condors would be similar to those described under the proposed project, the No Project Alternative, and Alternative 2. Impacts would be considered less than significant.

Southwestern willow flycatcher and least Bell's vireo. Implementation of Alternative 3 would result in no direct or indirect impacts to southwestern willow flycatchers or least Bell's vireo. Impacts to these species would be similar to the No Project Alternative or Alternative 2 (Sections 4.1.1 and 4.2.1, respectively). No substantial changes to the riparian canopy would occur and middle Piru Creek would continue to provide potential foraging and nesting habitat for these species. Implementation of Alternative 3 could also benefit these species by supporting riparian habitat and perennial water.

State Listed as Endangered or Threatened

Western yellow-billed cuckoo. This species does not occur in the proposed project area and would not be impacted by implementation of Alternative 3.

Sensitive Species

Great blue heron and great egret. Implementation of Alternative 3 would not result in direct or indirect impacts to these species. Impacts would be similar to the No Project Alternative, and Alternative 2 (Sections 4.1.1 and 4.2.1, respectively).

Yellow warbler. Impacts to yellow warbler would be similar to the No Project Alternative and Alternative 2 (Sections 4.1.1 and 4.2.1, respectively). No substantial changes to the riparian canopy would occur, and middle Piru Creek would continue to provide potential habitat for this species. Implementation of Alternative 3 could provide beneficial impacts by supporting riparian habitat and perennial water.

Summary

Impacts to sensitive fauna would be adverse and significant for arroyo toad and southwestern pond turtle. Impacts to all other species would be beneficial, have no impact, or be less than significant.

4.3.2 Water Resources

Alternative 3 would provide the same winter base and storm release flows as under the No Project Alternative (Alternative 1); however, summer stream releases (May 1st through November 15th) into middle Piru Creek would be maintained at five cfs, or possibly ten cfs. Radial gate test releases would not result in substantial changes to creek hydrology under Alternative 3.

Alternative 3 winter releases are higher than No Project, but less than the proposed project. Alternative 3 is similar to the No Project Alternative for the winter, but closer to the proposed project in the

summer. Summer flows would be released at five to ten cfs. Streamflow records show that summer inflow to Pyramid Lake averages approximately seven to ten cfs under current conditions. However, summer stream releases would be kept constant regardless of inflow to Pyramid Lake. Impact H-2 (Section 3.2.4.4), groundwater recharge, applies in the same manner as the proposed project. That is, there may be a local reduction in summer groundwater recharge in the lower middle Piru Creek area. However, since this is not an area of groundwater production, this impact is considered not significant. All other impacts to water resources apply in the same manner as described for the No Project Alternative (Section 4.1.2).

Alternative 3 would not achieve the goal of increasing sediment transport rates for the purpose of reworking channel bed and overbank sediment for habitat creation. Most of the sediment transported is in the winter. It is probable that there would be insufficient change in winter sediment transport rates to create new arroyo toad habitat.

4.3.3 Cultural and Paleontological Resources

Under Alternative 3, winter flow conditions would be intermediate between the No Project Alternative and existing conditions, while summer flow conditions would be low but constant. Under this alternative, the potential for damage to identified historic resources would thus be intermediate between the potential impacts of the No Project Alternative and existing conditions, as would the rate at which unidentified historic, prehistoric and paleontological resources would be uncovered. Radial gate test releases and water deliveries would have a negligible effect on cultural resources. Any impacts to prehistoric, historic (Impact C-1), or paleontological resources (Impact C-2) would be adverse but considered less than significant. No mitigation measures are recommended.

4.3.4 Recreation

Under Alternative 3 winter flows would be greater than those described for Alternative 1 (No Project Alternative), but less than those described for the proposed project. However, reductions in summertime flows could result in substantial changes in recreation along middle Piru Creek. As described for Alternative 2, maintaining ten cfs flows would reduce water depths for wading and water play. However, as opposed to Alternative 2, there would be no augmentation of flows in response to air temperature. These water levels would be similar to those described for the proposed project and would have a similar effect on recreational users. As with the proposed project, No Project Alternative, and Alternative 2, radial gate test releases and water deliveries would have a negligible effect on recreation.

The reduced summer flows would impact visitors wanting to play in the water. The recreational value of middle Piru Creek for picnickers, hikers, and campers, particularly those visiting the creek to swim and wade would be decreased in a manner similar to the proposed project (Impact R-1). These impacts to users coming to swim and wade could cause them to choose to visit other recreational facilities in the area. This could potentially benefit the visitors who choose to continue coming to middle Piru Creek area by reducing the amount of waste and litter left by large numbers of visitors. As with the proposed project, impacts to picnickers, hikers, and campers would be adverse, but with the presence of other recreation areas nearby would be less than significant. Recreational opportunities for picnickers, hikers, and campers would be less than under existing conditions, and approximately the same as under the proposed project.

Low but steady summer flows would probably be insufficient to sustain the trout population through the summer and would reduce the numbers of trout, both stocked and naturally occurring, in middle Piru

Creek. While this would substantially reduce the number of trout available for anglers to catch in the summer, because few anglers fish middle Piru Creek in the summer, this would not be a substantial impact anglers. In the long term, however, flows of five or ten cfs would probably not be sufficient to maintain low water temperatures that would allow the naturally reproducing trout population to survive through the summer. Long-term reductions in the trout stock at middle Piru Creek would be likely to drive anglers from middle Piru Creek to other fishing areas in the region. As with the hikers, picnickers, and campers, this would be an impact to the anglers. Reduction of the naturally reproducing trout population and its effect on anglers in middle Piru Creek would be considered a significant impact (Impact R-3), but, as with the proposed project, could be mitigated to a less than significant level by stocking fish above the weir as described in Mitigation Measure R-3 (Section 3.4.4). Recreational opportunities for anglers would be less than under existing conditions, and would be similar to the proposed project.

Alternative 3 would increase winter storm releases from Pyramid Lake into middle Piru Creek above existing conditions but less than the proposed project would. Few, if any, rafters and kayakers use middle Piru Creek in summer but the somewhat greater winter storm releases might encourage some additional rafters and kayakers to visit the area. Similar to the proposed project, Alternative 3 would have a slightly positive impact (Impact R-4) on rafting and kayaking compared to existing conditions.

Visitors going to other locations could potentially contribute to the physical deterioration of those other locations (Impact R-2), which could also impact the other users at these locations. Impacts to other nearby recreation areas such as Pyramid and Castaic Lakes due to visitors relocating from middle Piru Creek would likely be adverse but less than significant due to the existing capacities of these other facilities. These impacts would be similar to those resulting from the proposed project.

4.4 ALTERNATIVE 4: ALTERNATING SUMMER FLOWS

Alternative 4 would consist of implementation of the No Project Alternative for a predetermined number of years (two or four years), followed by one year of simulated natural flows. Simulation of a natural flow regime would require the same operational assumptions as described for the proposed project (Section 2.3). Under this alternative, flow regimes in middle Piru Creek would alternate over a three or five year cycle, that is, a cycle of two years of existing conditions followed by one year of simulated natural flows or a cycle of four years of existing conditions followed by one year of simulated natural flows.

4.4.1 Biological Resources

Non-Sensitive Wildlife

Impacts to non-sensitive wildlife would be similar to those identified under the proposed project, the No Project Alternative, Alternative 2, and Alternative 3. Impacts to non-sensitive wildlife would not be considered significant.

Rainbow Trout. Under this alternative, for a predetermined period of time (two or four years), water releases from Pyramid Dam would be the same as under the No Project Alternative and would provide conditions favorable to rainbow trout. Radial gate testing would have a negligible effect on rainbow trout under this alternative. Augmented summer stream flow would continue to provide the additional water required during periods of high heat to reduce heat stress on rainbow trout in the catch and release area. Similarly, populations of rainbow trout occurring in other sections of middle Piru Creek would benefit from the additional summer water releases. Although the CDFG does not stock rainbow

trout at Frenchman's Flat during the summer due to increasing air temperatures, steady flows of 25 cfs would provide beneficial impacts to any holdovers (hatchery raised rainbow trout that remain in the creek during summer months) that may remain in this area.

However, under Alternative 4, natural flows would be simulated every third or fifth year. Although higher storm flows would probably occur in middle Piru Creek during the rainy season (November through April), inflows to Pyramid Lake have occasionally been reduced to little or no water during summer and fall periods. Decreased stream releases into middle Piru Creek during such periods would increase the potential for heat stress on rainbow trout and may lead to stranding of eggs or tadpoles. Rainbow trout could probably survive periods of simulated natural flows during years with particularly high rainfall, such as El Niño events. However, periods of increased summer flows in middle Piru Creek are atypical, and stream gauge data indicate that late summer months sometimes have reduced or on-existent stream flows. Under Alternative 4 reduced summer flows could substantially reduce the number of rainbow trout that survive the summer season. Therefore, impacts to rainbow trout would be considered adverse but less than significant because the naturally reproducing populations of rainbow trout occurring in middle Piru Creek are descended from hatchery stock.

Sensitive Natural Communities

Impacts to sensitive natural communities would be similar to the No Project Alternative. Under Alternative 4 riparian vegetation would continue to expand from augmented summer flows and reduced levels of disturbance from the attenuation of winter storms. The periodic simulation of natural flows would temporally increase the potential for storm-related disturbance, but it is unlikely that this would result in substantial changes to riparian vegetation.

Sensitive Plants

Impacts to sensitive plant species are similar to those described for the proposed project. There is no indication that any sensitive or rare plants would be adversely impacted by implementation of the Alternative 4.

Sensitive Fauna

Fish

State or federally Listed as Endangered or Threatened

There are no State or federally listed endangered or threatened fish with the potential to occur in middle Piru Creek. Consequently, no impacts would occur.

Sensitive Species

Arroyo chub. Implementation of Alternative 4 would not result in direct or indirect adverse impacts to arroyo chub because this species is no longer believed to exist in middle Piru Creek. No beneficial effects would occur from implementation of Alternative 4.

Amphibians

State or Federally Listed as Endangered or Threatened

Arroyo toad. Alternative 4 would result in the same stream flow conditions as the No Project Alternative for a period of two or four years, prior to a single year of simulated natural flows. Under this alternative, significant impacts to arroyo toads would continue to occur from the loss of breeding, rearing, and juvenile foraging habitat as described under the No Project Alternative. Similarly, there would be no substantial change in water velocities that have been identified as a potential source of arroyo toad mortality. In addition, summer flow augmentation would continue to support large populations of aquatic predators such as bullfrogs, crayfish, and largemouth bass in middle Piru Creek.

As the existing conditions of middle Piru Creek have been determined to be detrimental to the arroyo toad, the continuation of the current flow regime would be considered an adverse significant direct impact to this species. The potential benefits of simulating natural flows in middle Piru Creek on a three to five year cycle would not be sufficient to alter substantially the negative consequences of the current altered hydrology. Implementation of this alternative would continue to jeopardize the existence of this species in middle Piru Creek and would have an adverse and potentially significant impact to the arroyo toad.

California red-legged frog. Direct impacts to California red-legged frog are not expected to occur from implementation of Alternative 4, as this species is not known to occur in middle Piru Creek. Potential impacts would be similar to the No Project Alternative and Alternatives 2 and 3 (Sections 4.1, 4.2 and 4.3, respectively).

Reptiles

State or federally Listed as Endangered or Threatened

There are no State or federally listed endangered or threatened reptiles with the potential to occur in middle Piru Creek. No impacts would occur.

Sensitive Species

Southwestern Pond Turtle. Impacts from the implementation of Alternative 4 would be similar to the No Project Alternative, Alternative 2, or Alternative 3. As previously described under the No Project Alternative (Section 4.1), stream conditions would remain favorable for exotic predators including bullfrogs, crayfish, and largemouth bass. These species are known to prey on juvenile southwestern pond turtles and could effectively eliminate hatchlings from the creek. The simulation of natural flows once every three or five years would probably not substantially reduce the populations of aquatic predators or result in beneficial effects to stream hydrology. Therefore, impacts to southwestern pond turtle from Alternative 4 would be considered adverse and potentially significant.

Two-striped garter snake. Impacts to two-striped garter snake would be similar to the No Project Alternative, Alternative 2, or Alternative 3. As previously described, summer flow augmentation would continue to provide favorable habitat for exotic predators such as bullfrogs, crayfish, and largemouth bass. This would be considered an adverse but less than significant impact to this species.

Birds

Federally Listed as Endangered or Threatened

California condor. Impacts to condors would be similar to those described under the proposed project, the No Project Alternative, Alternative 2, or Alternative 3. Potential impacts to this species would be considered less than significant.

Southwestern willow flycatcher and least Bell's vireo. Implementation of Alternative 4 would result in no direct or indirect impacts to southwestern willow flycatchers or least Bell's vireo. No substantial changes to the riparian canopy would occur, and riparian vegetation on middle Piru Creek would continue to provide potential habitat for these species. Implementation of this alternative could provide beneficial impacts to these species by supporting riparian habitat and perennial water.

State Listed as Endangered or Threatened

Western yellow-billed cuckoo. This species does not occur in the proposed project area and would not be impacted by implementation of Alternative 4.

Sensitive Species

Great blue heron and great egret. Implementation of Alternative 4 would not result in direct or indirect impacts to these species. Impacts would be similar to the proposed project, the No Project Alternative, or Alternative 3.

Yellow warbler. Impacts to yellow warbler would be similar to the No Project Alternative, Alternative 2, or Alternative 3. No substantial changes to the riparian canopy would occur, and middle Piru Creek would continue to provide potential habitat for this species. Implementation of Alternative 3 could provide beneficial impacts by supporting riparian habitat and perennial water.

Summary

Impacts to sensitive fauna would be adverse and significant for arroyo toad and southwestern pond turtle. Impacts to all other species would be beneficial, have no impact, or be less than significant.

4.4.2 Water Resources

Alternative 4, the Alternating Summer Flows Alternative, would implement the proposed project for one year at a time every three or five years. The rest of the time the condition of the creek would be the same as under the No Project Alternative. Impacts to water resources are the same as those described for the proposed project (Section 3.2.4.4), with the same levels of significance and mitigation measures. However, the long-term flood risk would be closer to the No Project Alternative condition than to the proposed project. For instance, Impact H-3 (section 3.2.4.4), increased erosion potential, would occur once every three or five years, rather than every year as with the proposed project. Impact H-4, long-term sediment delivery to Lake Piru, would increase in comparison the No Project Alternative; but since the potential increased rate of sediment transport would occur once every three or five years, overall sediment delivery would more closely approximate the without-project condition. The risk of flood hazard (Impact H-8) would increase once every three or five years, rather than every year as with the proposed project (Section 3.2.4.4). Radial gate testing would not substantially change

creek hydrology under this alternative. As with the proposed project, this impact would be considered significant and unavoidable.

Alternative 4 may well not achieve the desired results in reworking sediments for arroyo toad habitat creation. As was shown for the proposed project's analysis (Section 3.2.4), the 5-year flood has the greatest increase in overbank sediment transport potential, particularly in the Frenchman's Flat area. The 5-year flood occurs, on the average, once every five years. However, there is no way to predict in advance which years would have floods of this magnitude. Limiting the proposed project condition to once every five years eliminates four of those years from consideration, even though the flood may occur during one of them. Under this alternative, the desired unattenuated 5-year flood would occur once every 25 years on average.

4.4.3 Cultural and Paleontological Resources

Under Alternative 4 impacts to cultural and paleontological resources would be largely similar to those described for the No Project Alternative, although increased winter flows during the simulated natural flow years would increase the rates of erosion during those years. As with the proposed project, identified historic resources would be located outside the 18,000 cfs water surface elevation flows and so would not be affected by winter flows. Also as described for the proposed project it is unlikely that the change in flows would change erosion rates in a manner which would substantially increase the rate at which unidentified historic, prehistoric, or paleontological resources would be uncovered. Radial gate test releases and water deliveries would have a negligible effect on cultural resources. Because of this, adverse affects on historic or prehistoric resources in the project area (Impact C-1) or on paleontological resources (Impact C-2) would be considered less than significant. Consequently, no mitigation measures are recommended.

4.4.4 Recreation

No changes would be made to the release of flows into middle Piru Creek from Pyramid Lake for the first two or four years; consequently, there would be no expectation that this alternative would result in any change in use of the recreation areas along middle Piru Creek or in the surrounding areas during that period. After this initial period of no change, however, flow changes as described for the proposed project would result in changes in recreational use of middle Piru Creek and nearby recreational facilities as described for the proposed project (Section 3.4.2). As with the proposed project, No Project Alternative, Alternative 2, and Alternative 3, radial gate test releases and water deliveries would have a negligible effect on recreation.

Reduced summer flows during periods when natural flows are simulated would impact picnickers, hikers, and campers coming to middle Piru Creek to wade or swim (Impact R-1). These impacts to users coming to swim and wade could cause them to choose to visit other recreational facilities in the area. This could potentially benefit the visitors who choose to continue coming to middle Piru Creek area by reducing the amount of waste and litter left by large numbers of visitors. Although visitors to middle Piru Creek would be impacted by reduced flows, some impacts associated with a reduction in users along middle Piru Creek could be considered a beneficial impact. During years of simulated natural flows, impacts to picnickers, hikers, and campers would be adverse, but with the presence of other nearby recreation areas would be less than significant. Impacts during simulated natural flow periods would be similar to those resulting from the proposed project.

With the return to higher summer flows, water levels in pools along the creek would increase and benefit swimmers and waders. Benefits to visitors would increase the number of users to existing levels and the deterioration of the area along middle Piru Creek, particularly in the Frenchman's Flat area, would continue as under existing conditions. No new impacts would occur upon returning to the creek's existing flow regime. Recreational opportunities for picnickers, hikers, and campers would ultimately be slightly less under Alternative 4 than under existing conditions and would be slightly greater than under the proposed project.

During the first period of simulated natural flows, low summer flow rates would increase trout mortality and would reduce the numbers of trout, both stocked and naturally reproducing, in middle Piru Creek. As with the proposed project, the naturally reproducing trout population would be substantially reduced during this period. This would also result in substantially reduced numbers of trout through the rest of the year and through the following years after the flow regime would return to the existing conditions. Once the naturally reproducing trout population is severely reduced, it is unlikely to recover before the next year of simulated natural flows. A long-term reduction in the trout stock at middle Piru Creek could adversely impact anglers (Impact R-3). The reduction of the naturally reproducing trout population and its effect on anglers fishing middle Piru Creek would be considered a significant impact but, as with the proposed project, could be mitigated to a less than significant level by the stocking of fish above the weir as described in Mitigation Measure R-3 (Section 3.4.4). Recreation opportunities for anglers would ultimately be less than under the existing conditions and would be approximately the same as under the proposed project.

Increased storm releases during winters of simulated natural flows would be a beneficial impact to rafters and kayakers and could increase the use of middle Piru Creek by these users (Impact R-4). Following each year of simulated natural flows, winter flows would be somewhat reduced again, and benefits to kayakers and rafters would go down accordingly, as would their usage. This cycle would continue with the repetition of the changes to the flow regime. Impacts to rafters and kayakers would be beneficial. Recreational opportunities for rafters and kayakers would be increased compared to existing conditions and would be slightly less than under the proposed project.

Impacts due to the deterioration of recreational areas or facilities would only occur during periods of simulated natural flows (Impact R-2). Visitors going to other locations could potentially contribute to their physical deterioration. Impacts to other nearby recreation areas such as Pyramid and Castaic Lakes due to visitors relocating from middle Piru Creek would likely be adverse but less than significant due to the existing capacities of these other facilities. These impacts would be similar to those resulting from the proposed project.

4.5 ALTERNATIVE 5: NO STATE WATER PROJECT TABLE A ANNUAL DELIVERIES

Alternative 5 would be identical to the proposed project, as described in Section 2.3, except that there would be no annual delivery of up to 3,150 afy of State Water Project Table A water to Lake Piru via middle Piru Creek.

4.5.1 Biological Resources

Non-Sensitive Wildlife

Impacts to non-sensitive wildlife would be similar to those identified under the proposed project, the No Project Alternative, Alternative 2, Alternative 3, or Alternative 4. Impacts to non-sensitive wildlife would not be considered significant.

Rainbow Trout. As noted in Section 3.1.2, the naturally reproducing populations of rainbow trout occurring in middle Piru Creek are descended from hatchery stock. Impacts to rainbow trout would be similar to those described for the proposed project. Radial gate testing would have a negligible effect on rainbow trout. Direct impacts from reduced summer flows would include a reduction in aquatic habitat, increased heat stress, and increased predation by aquatic and terrestrial predators. The natural flows proposed under Alternative 5 would be insufficient to sustain the resident trout population during summer months and would result in adverse impacts to populations of rainbow trout. The elimination of additional flows that would have occurred during scheduled water delivery to United would be inconsequential and would not alter the effects of reduced summer flows. Scheduled water deliveries to United would occur between November 1st and February 28th each year would not provide additional water during times of heat stress to rainbow trout. Therefore, direct and indirect impacts to rainbow trout would be considered adverse but less than significant.

Sensitive Natural Communities

Impacts to sensitive natural communities under Alternative 5 would be similar to the proposed project (Section 3.1.4). Changes to riparian vegetation could occur through increased scour and the elimination of augmented summer flows. However, these are natural processes and would not be considered significant. In addition, while the elimination of scheduled water releases would reduce the total amount of water available to riparian vegetation at any given time, this water is not a function of the natural system and may artificially support riparian vegetation that would not otherwise occur on middle Piru Creek. Restoring natural stream processes and eliminating supplemental flows would probably result in the restoration of a more natural riparian community and would be considered a beneficial impact on middle Piru Creek.

Sensitive Plants

Impacts to sensitive plant species under Alternative 5 are similar to those described for the proposed project (Section 3.1.4). There is no indication that any sensitive or rare plants would be adversely impacted by implementation of this alternative.

Sensitive Fauna

Fish

State or federally Listed as Endangered or Threatened

There are no State or federally listed endangered or threatened fish with the potential to occur in middle Piru Creek. Therefore, no impacts would occur.

Sensitive Species

Arroyo chub. Implementation of Alternative 5 would not result in direct or indirect adverse impacts to arroyo chub, as this species is no longer believed to exist in middle Piru Creek. If present, impacts to arroyo chub for Alternative 5 would be similar to those described for the proposed project (Section 3.1.4).

Amphibians

State or federally Listed as Endangered or Threatened

Arroyo toad. Impacts to arroyo toad under Alternative 5 would be similar to those described for the proposed project (Section 3.1.4) and would be anticipated to result in beneficial impacts to arroyo toad. The elimination of scheduled water deliveries to United during winter months would provide for the most natural conditions that could be simulated on middle Piru Creek. Restoring natural flows to middle Piru Creek would also provide beneficial effects to this species from restored stream processes including the development of natural pools, sand bars and terraces, increased summer water temperatures required for juvenile development, and the recruitment and establishment of native riparian vegetation. Additionally, implementation of Alternative 5 would reduce populations of exotic predatory species such as largemouth bass, crayfish, and bullfrogs.

California red-legged frog. Direct impacts to California red-legged frog are not expected to occur from implementation of Alternative 5, as this species is not known to occur in middle Piru Creek. If red-legged frogs were present, potential impacts would be similar to the proposed project (Section 3.1.4).

Reptiles

State or federally Listed as Endangered or Threatened

There are no State or federally listed as endangered or threatened reptiles with the potential to occur in middle Piru Creek. Therefore, no impacts would occur.

Sensitive Species

Southwestern Pond Turtle. Impacts to southwestern pond turtle from the implementation of Alternative 5 would be similar to the proposed project and would result in beneficial impacts to this species (Section 3.1.4).

Two-striped garter snake. Impacts to two-striped garter snake would be similar to the proposed project and would result in beneficial impacts to this species (Section 3.1.4). The restoration of natural flows would restore natural stream processes and reduce populations of exotic predatory species such as largemouth bass, crayfish, and bullfrogs.

Birds

Federally Listed as Endangered or Threatened

California condor. Impacts to condors would be similar to those described under the proposed project. Impacts would be considered less than significant. Implementation of Alternative 5 could result in beneficial impacts to condors from reduced recreational use of Frenchman's Flat. Reduced summer flows would lower stream elevations and may reduce recreational activities including fishing, swimming, picnicking, and camping. This may result in a reduction in trash and food waste that has been known to attract condors in other parts of the Los Padres National Forest.

Southwestern willow flycatcher and least Bell's vireo. Impacts to these species, if present, would be similar to those described for the proposed project (Section 3.1.4). Analysis of potential impacts that may occur to southwestern willow flycatchers and least Bell's vireo from implementation of alternative

5 is considered speculative, which is discouraged under CEQA (CEQA Guidelines Sections 15144 and 15145). No mitigation for this species is therefore proposed.

State Listed as Endangered or Threatened

Western yellow-billed cuckoo. This species does not occur in the proposed project area and would not be directly or indirectly impacted by implementation of Alternative 5.

Sensitive Species

Great blue heron and great egret. Implementation of Alternative 5 would not result in direct or indirect impacts to these species. No mitigation is proposed.

Yellow warbler. Impacts to yellow warbler would be similar to the proposed project and would be considered less than significant (Section 3.1.4.). Therefore, no mitigation is proposed.

Summary

Impacts to sensitive fauna would be adverse and significant for arroyo toad and southwestern pond turtle. Impacts to all other species would be beneficial, have no impact, or be less than significant.

4.5.2 Water Resources

Under Alternative 5, delivery of 3,150 afy of State Water Project Table A water to Lake Piru via middle Piru Creek would not occur. Under the proposed project, the 3,150 acre feet of State Water Project water would be delivered between the months of November through February. Removal of the subject 3,150 afy under Alternative 5 would result in November and December total flows being approximately half of that for the proposed project (Section 3.2.4). Natural January and February flows are typically high enough that the 3,150 afy of water, whether present or not, would have little effect on total flows. Similarly, radial gate testing under this alternative would have little effect on flows or creek hydrology under this alternative. Alternative 5 would more closely approximate the natural condition than the proposed project, particularly for the months of November and December. Impacts for Alternative 5 are the same as for the proposed project, with a slightly lower potential for erosion during November and December. The same mitigation measures that are recommended for the proposed project would apply to Alternative 5. Under this alternative, the same impact due to increased flood hazard risk would occur as for the proposed project.

4.5.3 Cultural and Paleontological Resources

Under Alternative 5 the creek's overall hydrology and rates of erosion would not be appreciably different than anticipated under the proposed project (Section 3.2.4). As with the proposed project, increases in the creek's erosion rates would increase the potential to uncover previously unidentified cultural and paleontological resources (Section 3.3.4). However, because the uncovering of such resources would (1) not be directly human induced, and (2) occur under natural flooding (pre-dam) conditions, associated impacts are considered adverse but less than significant. Additionally, potential impacts associated with exceptions to the dam's overall operation (such as testing of the radial gates) would be the same as for the proposed project (adverse but less than significant). No mitigation measures are therefore recommended.

4.5.4 Recreation

Recreation impacts under Alternative 5 would be functionally identical to those described for the proposed project (Section 3.4.4). As United's water deliveries were described for the proposed project as having a negligible effect on the creek's overall water flows, and subsequently on recreational activities along middle Piru Creek, no water deliveries under Alternative 5 would result in the same impacts as the proposed project.

Impacts of Alternative 5 on picnickers, hikers, and campers would be adverse, but less than significant. As described for the proposed project, the decrease in summer flows would diminish the recreational value of the creek for picnickers, hikers, and campers, many of whom come to middle Piru Creek specifically for wading and water play. These impacts to users coming to swim and wade could cause them to choose to visit other recreational facilities in the area. The diminished recreational value for picnickers, hikers, and campers would be considered adverse, but with the presence of other recreational areas nearby would be less than significant. No mitigation measures for Impact R-1 would be required for this alternative. Recreation opportunities for picnickers, hikers, and campers would be the same as for the proposed project and would be less than under existing conditions.

Impacts of Alternative 5 on anglers would be adverse, but could be mitigated to a less than significant level. Storm flows could lower stream bed levels and improve pools, improving conditions for trout, and consequently improving fishing conditions for anglers. Lower flows in the summer would impact anglers, however, as low summer flows would reduce the fish populations and reduce the catch of anglers. Reductions in fish populations could be substantial enough to result in significant impacts to angler's enjoyment of their fishing experience in middle Piru Creek. Mitigation Measure R-3 would increase the amount of fish stocked in middle Piru Creek up to 4,000 pounds per year. Implementation of this mitigation measure would reduce impacts to anglers (Impact R-3) to less than significant levels. Recreation opportunities for anglers would be the same as for the proposed project and would be less than under existing conditions.

Rafters and kayakers would not be adversely impacted by Alternative 5 and could possibly be impacted beneficially by increased storm flows. These increased storm flows would improve water levels and could remove woody debris that is hazardous to rafters and kayakers. No mitigation measures would be required for Impact R-4. Recreation opportunities for rafters and kayakers would be the same as for the proposed project and would be better than the existing conditions.

Deterioration of recreational areas or facilities due to increased use would be adverse, but less than significant. Increased storm flows would not significantly increase the use of middle Piru Creek by kayakers and rafters. Decreased summer flows could result in the creek providing diminished recreational value to visitors and could cause the relocation of some visitors to other recreation areas in the region. Impacts to these other recreation areas could be adverse, but would be less than significant. No mitigation measures for Impact R-2 are proposed for this alternative.