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Table C-1
Special Status Species Known to Inhabit or Potentially Inhabiting the Project Area

Common Name *Scientific Name*	Status Federal/ State/CNPS	Habitat	agriculture	vernal pool	non-native grassland	native grassland	blue oak	valley oak	foothill pine/oak	freshwater marsh	lacustrine	mixed coniferous	cypress	chamise chaparral	Occurrence in the Sacramento River Division
Plants															
Henderson's Bent Grass *Agrostis Hendersonii*	SC/--/3	Valley and foothill grassland, vernal pool, wetland. Moist places in grassland or vernal pool habitat.		x	x	x									P
Jepson's Milk-vetch *Astragalus rattanii* var *jepsonianus*	--/--/1B	Valley and foothill grassland, ultramafic, cismontane woodland. Commonly on serpentine in grassland or openings in chaparral.			x	x									P
Ferris's Milk-vetch *Astragalus tener* var *ferrisiae*	SC/--/1B	Meadow and seep, valley and foothill grassland, wetland. Found on subalkaline flats on overflow land in the Central Valley. Usually dry, adobe soils.			x	x									P
Heartscale *Atriplex cordulata*	SC/--/1B	Meadow and seep, chenopod scrub, valley and foothill grassland. Alkaline flats and scalds in the Central Valley, sandy soils.			x	x									P
Brittlescale *Atriplex cordulata*	--/--/1B	Vernal pool, meadow and seep, wetland, alkali playa, chenopod scrub, valley and foothill grassland. Usually in alkali scalds or alkaline clay in meadows or annual grassland. Rarely associated with riparian areas, marshes, or vernal pools.		x	x	x									P
San Joaquin Saltbush (Valley Spearscale) *Atriplex joaquiniana*	SC/--/1B	Chenopod scrub, meadow and seep, valley and foothill grassland. In seasonal alkali wetlands or alkali sink scrub with distichlis spicata, frankenia, etc.			x	x									P
Persistent-fruited saltscale *Atriplex persistens*	SC/--/--	Wetland, chenopod scrub, vernal pool. Exact habitat unclear from original publication: wet depressions or vernal ponds within some unnamed habitat.		x											P

Table C-1
Special Status Species Known to Inhabit or Potentially Inhabiting the Project Area *(continued)*

Common Name *Scientific Name*	Status Federal/ State/CNPS	Habitat	agriculture	vernal pool	non-native grassland	native grassland	blue oak	valley oak	foothill pine/oak	freshwater marsh	lacustrine	mixed coniferous	cypress	chamise chaparral	Occurrence in the Sacramento River Division
Indian Valley Brodiaea *Brodiaea coronaria* ssp *rosea*	SC/E/1B	Serpentine gravelly creek bottoms and meadows and swales in cismontane woodland, valley and foothill grassland, meadow and seep, closed-cone coniferous forest, chaparral, and ultramafic.													P
Fox sedge *Carex vulpinoidea*	--/--/2	Wet places.													P
Hoover's Spurge *Chamaesyce hooveri*	SC/--/1B	Valley and foothill grassland, wetland, vernal pool. Vernal pools on volcanic mudflow or clay substrate.		x	x	x									P
Plamate-Bracted Bird's Beak *Cordylanthus palmatus*	E/E/1B	Chenopod scrub, meadow and seep, valley and foothill grassland, wetland. Usually on pescadero silty clay which is alkaline with distichlis, frankenia, etc.			x	x									P
Silky Cryptantha *Cryptantha crinita*	SC/--/1B	Gravelly stream beds of lower montane coniferous forest, cismontane woodland, riparian forest, riparian woodlands, valley and foothill grassland.													P
Recurved Larkspur *Delphinium recurvatum*	SC/--/1B	Alkaline soils in valley saltbush or valley chenopod scrub.													U
Dwarf Downingia *Downingia pusilla*	--/--/2	Valley and foothill grassland, vernal pool, wetland. Vernal lake and pool margins with a variety of associates. In several types of vernal pools. 1-485 m.		x	x	x									P
Four-angled Spikerush *Eleocharis quadrangulata*	--/--/2	Marsh and swamp, freshwater marsh, wetland. Freshwater marshes, lake and pond margins. 20-500 m.								x					P
Brandegee's eriastrum *Eriastrum brandegeae*	SC/--/1B	Chaparral, cismontane woodland. On barren volcanic soils; often in open areas. 345-1000 M.													U
Snow mountain buckwheat *Eriogonum nervulosum*	SC/--/1B	Chaparral, ultramafic. Dry serpentine outcrops, balds, and barrens. 300-2100 M.												x	P
Diamond-petaled California poppy *Eschscholzia rhombipetala*	SC/--/1A	Valley and foothill grassland. Alkaline, clay slopes and flats. 0-975 M.			x	x									P
Adobe-lily *Fritillaria Pluriflora*	SC/--/1B	Ultramafic, chaparral, cismontane woodland, valley and foothill grassland. Usually on clay soils; sometimes serpentine. 55-820 m.			x	x								x	P

Table C-1
Special Status Species Known to Inhabit or Potentially Inhabiting the Project Area *(continued)*

Common Name *Scientific Name*	Status Federal/ State/CNPS	Habitat	agriculture	vernal pool	non-native grassland	native grassland	blue oak	valley oak	foothill pine/oak	freshwater marsh	lacustrine	mixed coniferous	cypress	chamise chaparral	Occurrence in the Sacramento River Division
Boggs Lake Hedge-hyssop *Gratiola heterosepala*	--/E/1B	Freshwater marsh, marsh and swamp, vernal pool, wetland. Clay soils; usually in vernal pools, sometimes on lake margins. 5-2400 m.		x						x					P
Drymaria Dwarf-flax *Hesperolinon drymarioides*	SC/--/1B	Chaparral, cismontane woodland, ultramafic, valley and foothill grassland, closed-cone coniferous forest. Serpentine soils, mostly within chaparral. 390-1000 M.			x	x						x			P
Tehama Dwarf-flax *Hesperolinon tehamense*	SC/--/1B	Chaparral, cismontane woodland, ultramafic. Serpentine barrens in chaparral. 545-1155 M.												x	P
Rose-mallow *Hibiscus lasiocarpus*	--/--/2	Freshwater marsh, marsh and swamp, wetland. Moist, freshwater-soaked river banks and low peat islands in sloughs; in California, known from the delta watershed. 0-150 m.								x					P
Red Bluff Dwarf Rush *Juncus leiospermus* var *leiospermus*	--/--/1B	Chaparral, cismontane woodland, valley and foothill grassland, vernal pool, wetland. Vernally mesic sites. Sometimes on edges of vernal pools. 30-1020 m.		x	x	x									P
Colusa layia *Layia septentrionalis*	--/--/1B	Chaparral, cismontane woodland, ultramafic, valley and foothill grassland. Scattered colonies in fields and grassy slopes in sandy or serpentine soil. 145-1095 m.			x	x									P
Legenere *Legenere limosa*	SC/--/1B	Vernal pool, wetland. In beds of vernal pools. 1-880 m.		x											P
Heckard's Pepper-grass *Lepidium latipes* var *heckardii*	--/--/1B	Valley and foothill grassland, vernal pool, wetland. Grassland, and sometimes vernal pool edges. Alkaline soils. 3-30 m.		x	x	x									P
Wooly Meadowfoam *Limnanthes floccosa* ssp *flocosa*	--/--/2	Chaparral, vernal pool, wetland, cismontane woodland, valley and foothill grassland. Vernally wet areas, ditches, and ponds. 60-1275 m.		x	x	x									P
Red-flowered lotus *Lotus rubriflorus*	SC/--/1B	Valley and foothill grassland, cismontane woodland. Most recent sightings from sterile, red soils-volcanic mudflow deposits. 200-425 M.			x	x									P
Milo Baker's lupine *Lupinus milo-bakeri*	SC/T/1B	Cismontane woodland, valley and foothill grassland. In roadside ditches, dry gravelly areas along roads, and along small streams. 360-440 m.			x	x									P

Table C-1
Special Status Species Known to Inhabit or Potentially Inhabiting the Project Area *(continued)*

Common Name *Scientific Name*	Status Federal/ State/CNPS	Habitat	agriculture	vernal pool	non-native grassland	native grassland	blue oak	valley oak	foothill pine/oak	freshwater marsh	lacustrine	mixed coniferous	cypress	chamise chaparral	Occurrence in the Sacramento River Division
Hall's Madia *Madia hallii*	SC/--/1B	Chaparral, ultramafic. Serpentine hills and ridges. Open, rocky areas within chaparral. 270-910 m.												x	P
Little mousetail *Myosurus minimus* ssp *apus*	SC/--/3	Vernal pool, wetland. Alkaline soils. 20-640 M. Note: Central Valley EO's not mapped.)		x											
Baker's Navarretia *Navarretia leucocephala* ssp *bakeri*	--/--/1B	Cismontane woodland, lower montane coniferous forest, meadow and seep, vernal pool, wetland, valley and foothill grassland. Vernal pools and swales; adobe or alkaline soils. 5-950 m.		x	x	x									P
Colusa Grass *Neostapfia colusana*	T/E/1B	Vernal pool, wetland. Usually in large, or deep vernal pool bottoms; adobe soils. 5-110 m.		x											P
Hairy Orcutt Grass *Orcuttia pilosa*	E/E/1B	Vernal pool, wetland. 25-125 m.		x											P
Ahart's Paronychia *Paronychia ahartii*	SC/--/1B	Cismontane woodland, valley and foothill grassland, vernal pool, wetland. Stony, nearly barren clay of swales and higher ground around vernal pools. 30-150 m.		x	x	x									P
Red mountain catchfly *Silene campanulata* ssp *campanulata*	SC/E/1B	Lower montane coniferous forest, ultramafic, chaparral. Rocky dry shallow serpentine soil. 420-1200 M.										x			P
Wright's Trichocoronis *Trichocoronis wrightii* var *wrightii*	--/--/2	Marsh and swamp, riparian forest, wetland, meadow and seep, vernal pool. Mud flats of vernal lakes, drying river beds, alkali meadows. 5-435 m.		x						x					P
Caper-fruited Tropidocarpum *Tropidocarpum capparideum*	SC/--/1A	Valley and foothill grassland. Alkaline hills. 0-455 m.			x	x									P
Invertebrates															
Antioch Dunes Anthicid Beetle Anthicus antiochensis	SC/--	Interior dunes, inhabit sand slipfaces among bamboo and willow.													U
Sacramento Anthicid Beetle *Anthicus Sacramento*	SC/--	Interior dunes, inhabit sand slipfaces among bamboo and willow.													U
Conservancy Fairy Shrimp *Branchinecta conservatio*	E/--	Found in vernal pool, valley and foothill grassland, and wetland habitats. Inhabit astatic pools located in swales formed by old, braided alluvium, filled by winter and spring rains that last until June.		x	x	x									P

Table C-1
Special Status Species Known to Inhabit or Potentially Inhabiting the Project Area *(continued)*

Common Name *Scientific Name*	Status Federal/ State/CNPS	Habitat	agriculture	vernal pool	non-native grassland	native grassland	blue oak	valley oak	foothill pine/oak	freshwater marsh	lacustrine	mixed coniferous	cypress	chamise chaparral	Occurrence in the Sacramento River Division
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	T/--	Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools. Found in vernal pools, valley and foothill grasslands, and wetlands.													P
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus*	T/--	Lays eggs in elderberries 2-8 inches in diameter in riparian areas. Stressed elderberries may be preferred.													P
Vernal Pool Tadpole Shrimp *Lepidurus packardi*	E/--	Vernal pool, valley and foothill grassland, wetland. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.		x	x	x									P
California Linderiella Fairy Shrimp Linderiella occidentalis	SC/--	Vernal pool		x											P
California freshwater shrimp *Syncaris pacifica*	E/E	Aquatic, riparian forest, riparian woodlands, Sacramento/San Joaquin flowing waters. Shallow pools away from main streamflow. Winter: undercut banks with exposed roots. Summer: leafy branches touching water.													U
Fish															
Green Sturgeon Acipenser medirostris	SC/SC	Found in large rivers in the Sacramento and San Joaquin System.													U
Delta smelt *Hypomesus transpacificus*	T/T	Seldom found at salinities > 10 ppt most often at salinities < 2 ppt.													U
River Lamprey Lampetra ayresi	SC/SC	Sacramento and San Joaquin System including tributaries.													P
Pacific Lamprey Lampetra tridentata	SC/--	Sacramento and San Joaquin System including tributaries.													P
Central Valley steelhead Oncorhynchus mykiss	T/--	Utilizes freshwater streams for spawning and rearing.													U
Chinook Salmon Winter Run *Oncorhynchus tshawytscha winter run*	E/E	Requires clean, cold water over gravel beds with water temperatures between 6 and 14°C for spawning.													U

Table C-1
Special Status Species Known to Inhabit or Potentially Inhabiting the Project Area *(continued)*

Common Name *Scientific Name*	Status Federal/ State/CNPS	Habitat	agriculture	vernal pool	non-native grassland	native grassland	blue oak	valley oak	foothill pine/oak	freshwater marsh	lacustrine	mixed coniferous	cypress	chamise chaparral	Occurrence in the Sacramento River Division
Central Valley Chinook Salmon Spring Run *Oncorhynchus tshawytscha spring run*	T/T	Requires clean, cold water over gravel beds with water temperatures between 6 and 14°C for spawning.													U
Central Valley Chinook Salmon Spring Run Critical Habitat *Oncorhynchus tshawytscha spring run*	PX/--														U
Central Valley Chinook Salmon Fall/Late Fall Run*Oncorhynchus tshawytscha fall/ late fall run*	C/--	Utilizes freshwater streams for spawning and rearing.													U
Sacramento splittail *Pogonichthys macrolepidotus*	T/SC	Aquatic, Sacramento/San Joaquin flowign waters, freshwater marsh, estuary. Slow moving river sections, dead end sloughs. Require flooded vegetation for spawning and foraging for young.													U
Longfin Smelt *Spirinchus thaleichthys*	SC/SC	Limited to the Delta.													U
Amphibians and Reptiles															
California Tiger Salamander *Ambystoma californiense*	C/SC	Cismontane woodland, meadow and seep, riparian woodlands, valley and foothill grassland, vernal pool, wetland. Need underground refuges, especially ground squirrel burrows and vernal pools or other seasonal water sources for breeding.		x	x	x									P
Northwestern Pond Turtle *Clemmys marmorata marmorata*	SC/SC	Marsh and swamp, Sacramento/San Joaquin flowing and standing waters, wetland, aquatic, artificial flowing and standing waters. Requires basking sites and nest sites may be up to 0.5km from water.								x					P
San Joaquin whipsnake *Masticophil flagellum ruddocki*	SC/SC	Needs mammal burrows for refuge and oviposition sites.													P

Table C-1
Special Status Species Known to Inhabit or Potentially Inhabiting the Project Area *(continued)*

Common Name *Scientific Name*	Status Federal/ State/CNPS	Habitat	agriculture	vernal pool	non-native grassland	native grassland	blue oak	valley oak	foothill pine/oak	freshwater marsh	lacustrine	mixed coniferous	cypress	chamise chaparral	Occurrence in the Sacramento River Division
California red-legged frog *Rana aurora draytonii*	T/SC	Marsh and swamp, wetland, aquatic, Sacramento/San Joaquin flowing waters, south coastal flowing waters, riparian scrubs, south coastal standing waters, artificial standing waters, artificial flowing waters, Sacramento/San Joaquin standing waters, riparian woodlands, riparian forest, freshwater marsh. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.								x					P
Foothill Yellow-legged Frog *Rana boylii*	SC/--	Aquatic, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, meadow and seep, riparian forest, riparian woodlands, Sacramento/San Joaquin flowing waters, Klamath/North Coast flow waters. Need at least some cobble-sized substrate for egg-laying. Need at least 15 weeks to attain metamorphosis.										x			P
Western Spadefoot *Scaphiopus hammondii*	SC/--	Cismontane woodland, coastal scrub, valley and foothill grassland, vernal pool, wetland. Vernal pools are essential for breeding and egg-laying.		x	x	x									P
Giant Garter Snake *Thamnophis gigas*	T/T	Marsh and swamp, riparian scrubs, wetland. This is the most aquatic of the garter snakes in California.								x					P
Birds															
Northern goshawk *Accipiter gentilis (nesting)*	SC/SC	Subalpine coniferous forest, upper montane coniferous forest, usually nests on north slopes, near water. Red fir, lodgepole pine, Jeffrey pine, and aspens are typical nest trees.										x			P
Tricolored Blackbird *Agelaius Tricolor*	SC/SC	Marsh and swamp Requires open water, protected nesting substrate, & foraging area with insect prey within a few km of the colony.								x					P
Bell's Sage Sparrow Amphispiza belli belli	SC/SC	Foothills of Central Valley. Prefers low, dense stands of shrubs.													P
Golden Eagle (nesting and wintering) *Aquila chrysaetos*	--/SC	Cismontane woodland, coastal prairie, great basin grassland, great basin scrub, valley and foothill grassland. Nesting habitat provided by cliff-walled canyons and large trees in open areas.			x	x									P?

Table C-1
Special Status Species Known to Inhabit or Potentially Inhabiting the Project Area *(continued)*

Common Name *Scientific Name*	Status Federal/ State/CNPS	Habitat	agriculture	vernal pool	non-native grassland	native grassland	blue oak	valley oak	foothill pine/oak	freshwater marsh	lacustrine	mixed coniferous	cypress	chamise chaparral	Occurrence in the Sacramento River Division
Burrowing Owl (Burrow sites) *Athene cunicularia*	SC/SC	Found in coastal prairie and scrub as well as Great Basin and valley and foothill grasslands. As a subterranean nester, dependent upon burrowing mammals such as the California ground squirrel.			x	x									P
Ferruginous Hawk Buteo regalis	SC/SC	Low elevations and open grasslands in Central Valley													P
Swainson's Hawk (Nesting) *Buteo Swainsoni*	--/T	Great Basin grassland, riparian forest, riparian woodlands, valley and foothill grassland with adjacent suitable foraging areas such as grasslands or alfalfa or grain fields supporting rodent populations.	x		x	x									P
Mountain plover *Charadrius montanus (wintering)*	PT/SC	Valley and foothill grassland, chenopod scrub, short vegetation, bare ground and flat topography. Prefer grazed areas and areas with burrowing rodents.	x		x	x									
Western Yellow-billed Cuckoo *Coccyzus americanus occidentalis*	--/E	Dense, humid willow-and cottonwood forests with understory of blackberry, nettles, or wild grape adjacent to sloughs and slow moving rivers													U
Yellow warbler (nesting) *Denfroica petechia brewsteri*	--/SC	Nests in riparian woodlands and montane shrubbery in open coniferous forests.										x			P
White-tailed Kite *Elanus leucurus (nesting)*	--/--	Cismontane woodland, marsh and swamp, riparian woodlands, valley and foothill grassland, wetland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.			x	x				x					P
Greater sandhill crane *Grus canadensis tabida (nesting and wintering)*	--/T	Meadow and seep, marsh and swamp, wetland, prefer grain fields within 4 miles of a shallow body of water used as a communal roost site; irrigated pasture used as loaf sites.	x							x					P
Bald eagle *Haliaeetus leucocephalus (nesting and wintering)*	T/E	Lower montane coniferous forest, old growth, nests in LG, old growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.										x			P
Yellow-breated Chat *Icteria virens (nesting)*	--/--	Riparian forest, riparian scrubs, riparian woodlands. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forage and nest within 10 feet of ground.													P

Table C-1
Special Status Species Known to Inhabit or Potentially Inhabiting the Project Area *(continued)*

Common Name *Scientific Name*	Status Federal/ State/CNPS	Habitat	agriculture	vernal pool	non-native grassland	native grassland	blue oak	valley oak	foothill pine/oak	freshwater marsh	lacustrine	mixed coniferous	cypress	chamise chaparral	Occurrence in the Sacramento River Division
Osprey *Pandion haliaetus (nesting)*	--/--	Riparian forest. Large nests built in treetops within 15 miles of good fish-producing body of water.													U
White-faced Ibis *Plegadis chihi (rookery site)*	SC/--	Marsh and swamp, wetland. Dense tule thickets for nesting interspersed with areas of shallow water for foraging.								x					P
Bank Swallow *Riparia riparia (nesting)*	--/T	Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.													P
Northern spotted owl *Strix occidentalis caurina*	T/SC	North coast coniferous forest, old growth, redwood. High, multistory canopy dominated by big trees, many trees with cavities or broken tops, woody debris and space under canopy.										x			U
Mammals															
Pale Townsend's big-eared bat *Plecotus townsendii pallescens*	SC/SC	Mesic habitats in all but subalpine and alpine areas. Roosts in caves, mines, tunnels, buildings, or other human-made structures. Gleans from brush or trees or feeds along habitat edges.													P
Pacific western big-eared bat *Plecotus townsendii townsendii*	SC/SC	Mesic habitats in all but subalpine and alpine areas. Roosts in caves, mines, tunnels, buildings, or other human-made structures. Gleans from brush or trees or feeds along habitat edges.													P
Marysville Heermann's Kangaroo Rat *Dipodomys californicus eximius*	SC/SC	Annual grassland, coastal scrub, mixed and montane chaparral, and early successional stages (sparse to open canopy) of valley foothill hardwood and valley foothill hardwood-conifer habitats.			x		x	x	x			x		x	P
Spotted Bat *Euderma maculatum*	SC/SC	Lives in desert scrub and open forest areas. Roosts in cliff faces and rock crevices. Eats almost exclusively medium-sized moths, also beetles and caddisflies.													U
Pacific fisher *Martes pennanti pacifica*	SC/SC	North coast coniferous forest, old growth, riparian forest. Use cavities, snags, logs and rocky areas for cover & denning. Need large areas of mature, dense forest.										x			P

Table C-1
Special Status Species Known to Inhabit or Potentially Inhabiting the Project Area *(continued)*

Common Name *Scientific Name*	Status Federal/ State/CNPS	Habitat	agriculture	vernal pool	non-native grassland	native grassland	blue oak	valley oak	foothill pine/oak	freshwater marsh	lacustrine	mixed coniferous	cypress	chamise chaparral	Occurrence in the Sacramento River Division
Small-footed myotis bat *Myotis ciliolabrum*	SC/--	Exists on west and east sides of the Sierra Nevada to about 8,900 feet (2700 meters). Prefer open stands in forests, woodlands and brushy habitats. Roosts in caves, buildings, crevices and sometimes under bark and bridges.					x	x	x			x		x	P
Long-eared myotis bat *Myotis evotis*	SC/--	Lives in coniferous forests in mountain areas. Roosts in small colonies in caves, buildings and under tree bark.										x			P
Fringed myotis bat *Myotis thysanodes*	SC/--	Lives in oak and juniper forests, desert scrub. Roosts in caves, abandoned mines, or buildings.					x	x	x						P
Long-legged myotis bat *Myotis yumanensis*	SC/--	Lives in forested mountainous areas, sometimes desert lowlands. Roosts in tree hollows and under bark, in crevices and buildings.													U
Yuma myotis bat *Myotis yumanensis*	SC/SC	Lives near lakes, creeks or ponds. Roosts by day under building sidings or shingles.													P
San Joaquin Pocket Mouse *Perognathus inornatus inornatus*	SC/--	Coastal scrub, valley and foothill grassland. Needs friable soils.			x	x									P

Sources: California Natural Diversity Database search for the USGS 7.5 minute quadrangle maps for California that encompass the project area, September 2000. US Fish and Wildlife Service letter, September 20, 2000.

Notes:

Federal Status

E = Endangered
T = Threatened
PE = Proposed endangered
PT = Proposed threatened
PX = Proposed critical habitat
C = Candidate
SC = Species of concern
DL = Recently delisted

State Status

E = Endangered
T = Threatened
SC = California species of special concern
R = Rare

California Native Plant Society (CNPS) Status

1A = Plants presumed extinct in California
1B = Rare, threatened, and endangered in California and elsewhere
2 = Rare, threatened, and endangered in California but more common elsewhere
3 = Plants about which more information is needed

Occurrence

C = Confirmed
P = Possible
U = Unlikely

Economic Analysis of November 1999 Tiered Pricing Proposal for PEIS Preferred Alternative

Date: October 2, 2000

This submittal presents the results of an Economic Analysis of the application to the PEIS Preferred Alternative of the November 1999 unit rates for CVP water and Tiered Pricing Proposal.

The PEIS Preferred Alternative included assumptions for the tiered pricing of CVP water that were developed during the preparation of the Draft PEIS. Subsequent to completion of the Final PEIS, a different tiered pricing proposal was developed. In addition, the PEIS assumed 1992 CVP water rates. This analysis includes the 1999 water rates. This submittal applies the new water rates and the November 1999 proposal to the Preferred Alternative and compares the results to the impact analysis of the PEIS Preferred Alternative. The level of detail presented in this submittal is consistent with the level of detail presented in the main PEIS document and the technical appendices. Tables are presented in the same format as used in the PEIS.

The economic analysis includes an evaluation of agricultural economics using Central Valley Production Model (CVPM), municipal and industrial water use economics for CVP water using the spreadsheet presented with the PEIS, and regional economics using IMPLAN. This memorandum discusses the new assumptions in the November 1999 proposal. However, this memorandum does not discuss the basic assumptions used in the PEIS models and analytical tools. This memorandum must be used in conjunction with the Draft PEIS and Final PEIS, including the methodology and modeling technical appendices, to explain the overall assumptions for evaluating the Preferred Alternative in the PEIS.

For the Agricultural Land Use and Economics analysis, the methodology used for applying CVP water rates was modified to allow for the new tiered pricing and the use of blended rates to determine a total water rate for all CVP water applied by an irrigation district or agency. These changes result in changes in water use due to the affordability of CVP water supplies, not a change in reliability.

For the Municipal and Industrial Water Use Economics analysis, blended rates had been used in the PEIS analysis. In addition, this analysis assumes that the municipal and industrial users will be able to afford the calculated water costs, as described in the PEIS. Therefore, CVP water deliveries do not change for the municipal and industrial analysis. The Regional Economics analysis reflects only changes to agricultural and municipal and industrial sectors, but not recreation sectors.

Table of Contents for Technical Memorandum

Section 1 Agricultural Land Use and Economics

SECTION 1

AGRICULTURAL LAND USE AND ECONOMICS

CONTRACT RENEWAL PROPOSAL WITH BLENDED WATER RATES

In the November 1999 proposal, Reclamation has proposed that water sold to CVP water service contractors be sold according to tiered water rates as required by CVPIA section 3404. Reclamation has also proposed that two categories of water be identified. Category 1 water would be calculated as the average delivery of the previous five years, and would be split into three tiers according to the 80-10-10 quantities defined in the CVPIA. Category 2 water would be any water available in excess of the 5-year rolling average, up to the total contract amount as defined by the Needs Analysis.

Tier 1 water rates include the cost-of-service rate and any applicable Restoration charges and surcharges. Both the Restoration Charge and the capital component of the cost-of-service rate are subject to ability-to-pay limits. These limits are in effect for Bella Vista WD and Clear Creek CSD, contractors on the Corning and Tehama-Colusa Canals, and contractors receiving water from New Melones.

Tier 3 water rates include the full-cost rate (as defined in the Reclamation Reform Act) and any applicable Restoration Charges. No ability-to-pay relief is provided in this Tier. The Tier 2 water rate is the average of the applicable Tier 1 and Tier 3 rates. Category 2 water has the same rate as Tier 3.

For this proposal, it is assumed that water conservation guidelines allow contractors to blend the rate of CVP water delivered in any tier or Category, and that they do blend the rates. This is different from the assumption used to assess alternatives in the PEIS, in which contractors were assumed to sell CVP water to growers at tiered rates. Differences between PEIS pricing assumptions and this analysis are:

- This analysis assumes that contractors blend the price of all CVP water received at tiered rates into a single rate. Tiered rates to growers are assumed in the PEIS.

- The project water portion of Sacramento River settlement contracts are not subject to the new pricing policy in this analysis. In the PEIS it was assumed that it was subject to tiered rates.

- Rates are based on the Irrigation Water Rates spreadsheets provided by Reclamation in November 1999. PEIS rates used the 1994 Irrigation Water Rates manual.

- Ability-to-pay relief is incorporated using the current payment capacity studies for Shasta County irrigation contractors, Corning Canal contractors, Tehama-Colusa Canal contractors, and New Melones contractors. In the PEIS, payment capacity was based on a 1992 regional study (PEIS, 1999).

- In this analysis, ability to pay relief is provided in Tier 1, with none in Tier 3 - Tier 2 is the average of Tiers 1 and 3, and so provides 50% relief. In the PEIS, the same dollar amount of ability to pay relief is applied in all pricing tiers.

- A $7.00 per acre-foot Restoration Charge is assumed in this analysis. A $6.50 per acre-foot charge was used in the PEIS. The Friant surcharge was $7.00 per acre-foot in both studies.

- There is no lower bound on the usage of CVP water. In the PEIS each subregion was restricted to using at least the Tier 1 quantity of CVP supplies.

METHODOLOGY

Other than the differences listed above, the modeling approach and underlying data were the same as used for the PEIS. The Central Valley Production Model (CVPM) was used in this analysis, with modifications needed to assess the specific water pricing conditions proposed. Table 1 shows the regions of the CVPM and the corresponding service areas. Groundwater hydrology was not assessed as it was in the PEIS alternatives. Therefore, for purposes of analysis, most regions were assumed to have access to replacement groundwater if needed. Based on groundwater hydrology as described in the PEIS, the following subregions are assumed to be unable to replace any CVP water with groundwater on a long term basis: Shasta County irrigation contractors (subregion 1), Corning Canal contractors (subregion 2), and the Tehama-Colusa service area (subregion 3B).

Water deliveries from the CVPIA Preferred Alternative were used (Reclamation CVPIA PEIS, 1999). These deliveries were allocated on a yearly basis into pricing tiers and categories according to the rules described above. Weighted average (i.e., blended) prices were calculated for each year, with quantities in each tier and category based on the previous five years of delivery. In any given year, the quantity and blended price of water depends on the six-year sequence leading up to and including the current year. Throughout this report the following conventions are use: an Average year represents the average 1922-1990 water delivery from the CVPIA Preferred Alternative (Reclamation CVPIA PEIS, 1999); a Wet year represents the average delivery for the period of 1967-1971 from the CVPIA Preferred Alternative; and a Dry year is the average 1928-1934 delivery from the CVPIA Preferred Alternative.

A total of nine water supply sequences are assessed in this analysis and compared to the CVPIA Preferred Alternative:

Average-Average:	An average water year following a five-year sequence of average years.
Wet-Average:	An average water year following a five-year sequence of wet years.
Dry-Average:	An average water year following a five-year sequence of dry years.
Average-Wet:	A wet water year following a five-year sequence of average years.
Wet-Wet:	A wet water year following a five-year sequence of wet years.
Dry-Wet:	A wet water year following a five-year sequence of dry years.

Average-Dry: A dry water year following a five-year sequence of average years.
Wet-Dry: A dry water year following a five-year sequence of wet years.
Dry-Dry: A dry water year following a five-year sequence of dry years.

The CVP water rates used for each of the nine sequences described above and the CVPIA Preferred Alternative tiered prices are shown in Table 3. Tables 4-12 show the available CVP water service contract supplies by tier and the blended price for each of the 22 subregions under the nine sequences proposed for the Long-Term Contract Renewal analysis.

Results are shown for each of the nine sequences presented as differences compared to the CVPIA Preferred Alternative. When calculating differences from the CVPIA Preferred Alternative, sequences ending in an Average, Wet and Dry years are compared to the Average, Wet and Dry year CVPIA Preferred Alternative results respectively.

IRRIGATED ACRES

Changes in irrigated acres from the Preferred Alternative are summarized by region in Table 13. A complete list of changes by crop and subregion is provided as Table 17.

Both the Average-Average and Wet-Average scenarios show little difference from the Preferred Alternative under the Average hydrology conditions. The Dry-Average sequence shows a larger reduction in irrigated acres almost all of which comes from the Sacramento River region. Compared to the Wet year Preferred Alternative results, there is a similar pattern for the three Long-Term Contract Renewal sequences ending with Wet years. For all three of the Long-Term Contract Renewal Sequences ending in a dry year there are minimal increases in irrigated acreage compared to the Dry year CPVIA Preferred Alternative results. Irrigated acres remain unchanged under all nine sequences in the San Felipe Division.

The reduction in acreage in Average and Wet years preceded by a series of Dry years is a result of higher CVP water costs. Since the quantity of Category 1 water is based on the average deliveries of the preceding five years, the quantity of water eligible for Category 1 classification shrinks when a sustained drought is experienced. When an average or wet year follows a drought period, water becomes available; however a large portion is classified as Category 2 and is priced at the full cost rate. This can be seen in Tables 6 and 9. When this relatively large block of full cost water is incorporated into the blended water price, all CVP supplies become more expensive, and sometimes unaffordable. This result is not seen in the dry-dry sequence because there is not excess water that gets classified as Category 2.

GROSS AND NET REVENUE

Gross revenue (value of production) impacts follow acreage impacts quite closely, and are shown by region in Table 14. Compared to the Average Preferred Alternative, a small reduction of less than $1 million is estimated for the Average-Average and Wet-Average scenarios, and a $39 million reduction is estimated in Dry-Average scenario. Gross revenue also declines compared to the Wet Preferred Alternative with approximately $5 million reductions in Average

and Wet years and a larger reduction of $29 million in the Dry-Wet scenario. In dry years preceded by all three hydrologic conditions, gross revenue is slightly higher when compared to the Preferred Alternative Dry year results. There were no changes in gross revenue for the San Felipe Division since there were no changes in irrigated acres compared to the CVPIA Preferred Alternative. A complete list of changes in gross revenue by crop and subregion is provided as Table 18.

Net revenue impacts are separated into five components; Fallowed land, Groundwater pumping costs, Irrigation Costs, CVP water costs and higher crop prices. The CVP water cost component represents the impact to net revenue from changes in both the quantity of CVP water used and the price of CVP water. Therefore when the blended CVP water price increases, farmers frequently use less water, and the net impact to the CVP water cost component can be positive even when the water price is higher. Table 15 summarizes the net income impacts by component. A negative entry in the table indicates a reduction in net revenue. A complete list of changes in net income by component for each subregion is provided as Table 19.

Relatively small net income impacts are seen in all water supply sequences at the State level. The Average-Average sequence compared to the Average year Preferred Alternative shows a decline of $2 million in net revenue for all of California. The Wet-Average scenario is estimated to have a net increase of approximately $4 million and the Dry-Average sequence a decrease of $12 million.

The net revenue impact in wet years relative to the Preferred Alternative wet results show a pattern similar to the Average year results. Dry years preceded by a series of Average and Wet years both show a net decrease in revenue of about $12 million while the Dry-Dry sequence results in a $15 million decrease in State wide net revenue relative the Preferred Alternative Dry results.
Notice that following a series of dry years, the net revenue component associated with crop prices often results in a positive impact to net revenue. This occurs because some subregions are forced to reduce acreage because of higher blended CVP water prices, resulting in higher crop prices received for acreage that remains in production.

There is a negative impact to net revenue from irrigation costs in the Sacramento and San Joaquin River regions in each of the nine Long-Term Contract Renewal sequences. This impact is derived from the irrigation efficiency improvements induced by higher CVP water prices in the Average year sequences. The change in irrigation efficiency carries through to the Wet and Dry year sequences because they are short run analyses and irrigation technology is fixed in the short run. The increase in irrigation efficiency results in a reduction in the total water used in some subregions while irrigated acreage remains constant.

WATER USE

Table 16 summarizes water use changes by region. A complete list of changes in CVP water use and groundwater use by subregion is provided as Table 20. Water supplies other than CVP project water and groundwater are unaffected and not shown. The San Joaquin River region and most of the sequences for the Sacramento River region show the typical response represented by a shift away from CVP supplies to groundwater as CVP water becomes more expensive under the new pricing schemes. The Tulare Lake region and the Sacramento River region during wet years preceded by a series of Average and Wet years show what would be considered an atypical response.

In the Sacramento River region when five years of Wet and Average conditions are followed by a Wet year, the model predicts that both groundwater and CVP water use will decline relative to the Preferred Alternative Wet condition. The decrease in groundwater use is mostly attributed to subregion 3b. In this subregion in a Wet year coming out of a series of Average or Wet years the blended price is cheaper than the Preferred Alternative Tier 2 water cost as well as the cost of pumping groundwater. Therefore there is a shift away from groundwater to CVP supplies. In Average years preceded by Average or Wet years, the subregion is prevented from shifting to CVP because they are already using their full CVP supply.

In the Tulare Lake region there is a pattern of shifting from groundwater to CVP water that can be attributed to subregions 17. This subregion shifts because under the blended pricing scheme the CVP water becomes cheaper than pumping groundwater; therefore they maximize their CVP water use.

In Average and Wet years preceded by a series of Dry years, there is a large decrease in CVP water use in both the Sacramento and San Joaquin River regions. This is driven by the relatively high cost of CVP supplies under these conditions. Since many subregions receive less water in Dry years or the water falls into the higher tiers and it becomes unaffordable, then the base from which the blended price tier quantities is calculated shrinks. This sets up a condition where an Average or Wet year comes along; the additional water is classified as Category 2 and assessed the full cost price. The CVP blended price is a weighted average of all CVP supplies therefore the cost for all CVP water increases and the supplies often become unaffordable.

LOCALIZED IMPACTS

Certain subregions are substantially affected by the proposed water pricing.

- The Tehama-Colusa Canal service area is the most-affected region. Limited groundwater availability and very high full-cost price relative to the value of water in agricultural production result in almost 60,000 acres out of production in the Dry-Average sequence and substantially higher cost for lands remaining in production. This analysis shows a one-year snapshot. Because water pricing is based on historic delivery, a region (such as the Tehama-Colusa Canal region)

may never be able to “buy its way” back out from a drought. Looked at over a sequence of dry years such as 1928-34 or 1987-92, many or most of the districts in this area could not survive as CVP contractors.

- The analysis predicts that the Delta subregion will make a complete switch to groundwater supplies in all nine hydrologic sequences, assuming groundwater is available in all parts of the service area.

- The analysis estimates that once an extended drought is experienced, the Delta-Mendota service area would switch from its CVP water service supply to groundwater, assuming groundwater is available in all parts of the service area.

- Westlands Water District and many of the Friant Unit contractors would likely continue purchasing CVP water. Since these areas continue to purchase CVP supplies in all years coming out of drought conditions, they would eventually build their base deliveries up or "buy their way" back to pre-drought tier quantities and prices.

TABLE 1
CVPM SUBREGIONS AND DESCRIPTIONS

CVPM Subregion	Description of Major Water Users
1	CVP Users: Anderson-Cottonwood, Clear Creek, Bella Vista, Sacramento River miscellaneous users.
2	CVP Users: Corning Canal, Kirkwood, Tehama, Sacramento River miscellaneous users.
3	CVP Users: Glenn-Colusa ID, Provident, Princeton-Codora, Glenn, Maxwell, and Colusa Basin Drain MWC.
3B	Tehama-Colusa Canal Service Area. CVP Users: Orland-Artois WD, most of County of Colusa, Davis, Dunnigan, Glide, Kanawha, La Grande, Westside WD.
4	CVP Users: Princeton-Codora-Glenn, Meridian Farms WC, Pelger Mutual WC, Recl. Dist. 1004, Recl. Dist. 108, Roberts Ditch, Sartain MWC, Sutter MWC, Swinford Tract IC, Tisdale Irrigation, Sacramento River miscellaneous users.
5	Most Feather River Region riparian and appropriative users.
6	Yolo, Solano Counties. CVP Users: Conaway Ranch, Sacramento River miscellaneous users.
7	Sacramento Co. north of American River. CVP Users: Natomas-Central MWC, Sacramento River miscellaneous users, Pleasant Grove-Verona, San Juan Suburban.
8	Sacramento Co. south of American River, San Joaquin Co.
9	Delta Regions. CVP Users: Banta Carbona, West Side, Plainview.
10	Delta Mendota Canal. CVP Users: Pacheco, Del Puerto, Hospital, Sunflower, West Stanislaus, Mustang, Orestimba, Patterson, Foothill, San Luis WD, Broadview, Eagle Field, Mercy Springs, Pool Exchange Contractors, Schedule II water rights, more.
11	Stanislaus River water rights: Modesto ID, Oakdale ID, South San Joaquin ID.
12	Turlock ID.
13	Merced ID. CVP Users: Madera, Chowchilla, Gravely Ford.
14	CVP Users: Westlands WD.
15	Tulare Lake Bed. CVP Users: Fresno Slough, James, Tranquility, Traction Ranch, Laguna, Real. Dist. 1606.
16	Eastern Fresno Co. CVP Users: Friant-Kern Canal. Fresno ID, Garfield, International.
17	CVP Users: Friant-Kern Canal. Hills Valley, Tri-Valley Orange Cove.
18	CVP Users: Friant-Kern Canal, County of Fresno, Lower Tule River ID, Pixley ID, portion of Rag Gulch, Ducor, County of Tulare, most of Delano Earlimart, Exeter, Ivanhoe, Lewis Cr., Lindmore, Lindsay-Strathmore, Porterville, Sausalito, Stone Corral, Tea Pot Dome, Terra Bella, Tulare.
19	Kern Co. SWP Service Area.
20	CVP Users: Friant-Kern Canal. Shafter-Wasco, S. San Joaquin.
21	CVP Users: Cross Valley Canal, Friant-Kern Canal. Arvin Edison.

TABLE 2

CVP WATER RATES USED FOR LONG TERM CONTRACT RENEWAL ANALYSIS ($)

CVPM Subregion	Tiered Water Rates Used for LTCR analysis			Proposed Blended Water Rates for Water Service Contracts								
				Average	Wet	Dry	Average	Wet	Dry	Average	Wet	Dry
	Tier 1	Tier 2	Tier 3	Followed by Average			Followed by Wet			Followed by Dry		
1	12.01	37.56	63.12	19.67	14.98	14.14	23.91	19.67	18.20	25.19	21.09	19.67
2	10.71	36.40	62.09	18.42	10.71	49.66	29.55	18.42	52.83	10.71	10.71	18.42
3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3B	10.25	40.73	71.21	19.39	10.25	58.15	32.35	19.39	61.42	10.25	10.25	19.39
4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	20.65	23.01	25.36	21.35	21.18	21.77	21.52	21.35	21.92	20.90	20.81	21.35
6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	11.77	12.07	12.37	11.86	11.86	11.86	11.86	11.86	11.86	11.86	11.86	11.86
8	10.00	27.46	44.92	15.24	10.00	30.36	25.64	15.24	35.47	10.00	10.00	15.24
9	24.79	55.14	85.50	33.89	24.79	64.53	55.27	33.89	73.22	24.79	24.79	33.89
10	31.15	40.16	49.16	33.85	31.15	42.94	38.01	33.85	44.63	31.15	31.15	33.85
11	0.00	0.00	0.00	NA	NA	NA	NA	NA	NA	NA	NA	NA
12	0.00	0.00	0.00	NA	NA	NA	NA	NA	NA	NA	NA	NA
13	32.16	38.41	44.65	34.04	33.25	37.44	34.77	34.04	37.94	32.16	32.16	34.04
14	32.62	46.48	60.33	36.78	32.62	50.76	43.17	36.78	53.36	32.62	32.62	36.78
15	32.71	41.91	51.10	35.47	34.55	38.10	36.34	35.47	38.82	33.07	32.71	35.47
16	40.48	46.78	53.08	42.37	41.22	45.32	43.40	42.37	46.07	40.48	40.48	42.37
17	34.18	40.49	46.79	36.07	35.15	39.28	36.92	36.07	39.88	34.18	34.18	36.07
18	33.63	40.48	47.33	35.69	34.73	39.16	36.57	35.69	39.78	33.63	33.63	35.69
19	34.58	42.16	49.73	36.86	35.00	41.21	38.84	36.86	42.52	34.58	34.58	36.86
20	34.58	42.16	49.73	36.86	35.70	40.85	37.92	36.86	41.58	34.58	34.58	36.86
21	32.70	39.00	45.31	34.59	32.98	39.01	36.33	34.59	40.03	32.70	32.70	34.59

NOTES:

1. Blended rates used pricing components from the November, 1999 Irrigation Water Rates spreadsheets, Restoration Charge of $7.00
2. PEIS rates used regional estimates of payment capacity and allowed the same ATP relief in all tiers.
3. Blended rates use most recent available payment capacity studies from Reclamation, and allow ATP relief in Tier 1 but not in Tier 3.
4. Only Class 1 rates are shown for Friant Division. Friant surcharge is $7.00 in all rates.

TABLE 3

CVP WATER RATES USED IN PREFERRED ALTERNATIVE ($)

CVPM Subregion	Tiered Water Rates Used in the PEIS Preferred Alternative ($)		
	Tier 1	Tier 2	Tier 3
1	5.91	14.63	23.35
2	11.83	24.7	37.57
3	2.83	5.27	7.71
3B	17.16	36.225	55.29
4	5.32	7.625	9.93
5	4.53	6.965	9.4
6	4.53	6.82	9.11
7	6.63	8.83	11.03
8	4.53	7.095	9.66
9	28.54	35.245	41.95
10	33.46	40.015	46.57
11	0	0	0
12	0	0	0
13	33.65	39.395	45.14
14	39.31	54.385	69.46
15	28.16	34.875	41.59
16	38.25	44.255	50.26
17	35.58	41.905	48.23
18	35.01	41.255	47.5
19	36.68	42.885	49.09
20	36.68	42.885	49.09
21	35.4	42.01	48.62

NOTES:

1. PEIS rates used pricing components from the 1994 Irrigation Water Rates Manual, Restoration Charge of $6.50
2. PEIS rates used regional estimates of payment capacity and allowed the same ATP relief in all tiers.
3. Only Class 1 rates are shown for Friant Division. Friant surcharge is $7.00 in all rates.

TABLE 4

PROJECT WATER APPLIED BY PRICING TIERS
AVERAGE YEAR FOLLOWING AVERAGE 5-YEAR BASE CONDITION

CVPM Subregion	Tier 1	Tier 2	Tier 3	Category 2	Blended Price ($/AF)
	(1000 AF)				
1	9.4	1.2	1.2	-	$ 19.67
2	21.9	2.7	2.7	-	$ 18.42
3	-	-	-	-	NA
3B	159.7	20.0	20.0	-	$ 19.39
4	-	-	-	-	NA
5	16.0	2.0	2.0	-	$ 21.35
6	-	-	-	-	NA
7	12.0	1.5	1.5	-	$ 11.86
8	41.3	5.2	5.2	-	$ 15.24
9	22.5	2.8	2.8	-	$ 33.89
10	231.4	28.9	28.9	-	$ 33.85
11	-	-	-	-	
12	-	-	-	-	
13	153.6	19.2	19.2	-	$ 34.04
14	539.1	67.4	67.4	-	$ 36.78
15	32.3	4.0	4.0	-	$ 35.47
16	18.9	2.4	2.4	-	$ 42.37
17	34.9	4.4	4.4	-	$ 36.07
18	484.2	60.5	60.5	-	$ 35.69
19	13.1	1.6	1.6	-	$ 36.86
20	194.2	24.3	24.3	-	$ 36.86
21	129.7	16.2	16.2	-	$ 34.59

Table 5

PROJECT WATER APPLIED BY PRICING TIERS
AVERAGE YEAR FOLLOWING WET 5-YEAR BASE CONDITION

CVPM Subregion	Tier 1	Tier 2	Tier 3	Category 2	Blended Price ($/AF)
	(1000 AF)				
1	10.4	1.3	0.0	-	$ 14.98
2	27.3	-	-	-	$ 10.71
3	-	-	-	-	NA
3B	199.6	-	-	-	$ 10.25
4	-	-	-	-	NA
5	16.6	2.1	1.2	-	$ 21.18
6	-	-	-	-	NA
7	12.0	1.5	1.5	-	$ 11.86
8	51.6	-	-	-	$ 10.00
9	28.2	-	-	-	$ 24.79
10	289.2	-	-	-	$ 31.15
11	-	-	-	-	NA
12	-	-	-	-	NA
13	165.0	20.6	6.3	-	$ 33.25
14	673.8	-	-	-	$ 32.62
15	34.2	4.3	1.9	-	$ 34.55
16	21.0	2.6	0.1	-	$ 41.22
17	37.9	4.7	1.0	-	$ 35.15
18	523.8	65.5	15.9	-	$ 34.73
19	15.5	0.9	-	-	$ 35.00
20	211.7	26.5	4.6	-	$ 35.70
21	154.9	7.2	-	-	$ 32.98

Table 6

PROJECT WATER APPLIED BY PRICING TIERS
AVERAGE YEAR FOLLOWING DRY 5-YEAR BASE CONDITION

CVPM Subregion	Tier 1	Tier 2	Tier 3	Category 2	Blended Price ($/AF)
	(1000 AF)				
1	10.8	1.0	-	-	$ 14.14
2	6.2	0.8	0.8	19.6	$ 49.66
3	-	-	-	-	NA
3B	40.2	5.0	5.0	149.3	$ 58.15
4	-	-	-	-	NA
5	14.3	1.8	1.8	2.1	$ 21.77
6	-	-	-	-	NA
7	12.0	1.5	1.5	-	$ 11.86
8	20.2	2.5	2.5	26.3	$ 30.36
9	9.2	1.1	1.1	16.7	$ 64.53
10	94.0	11.8	11.8	171.7	$ 42.94
11	-	-	-	-	NA
12	-	-	-	-	NA
13	104.4	13.0	13.0	61.6	$ 37.44
14	219.1	27.4	27.4	400.0	$ 50.76
15	26.8	3.4	3.4	6.8	$ 38.10
16	13.7	1.7	1.7	6.5	$ 45.32
17	24.5	3.1	3.1	13.1	$ 39.28
18	339.7	42.5	42.5	180.6	$ 39.16
19	8.7	1.1	1.1	5.6	$ 41.21
20	133.9	16.7	16.7	75.3	$ 40.85
21	76.2	9.5	9.5	66.8	$ 39.01

Table 7

PROJECT WATER APPLIED BY PRICING TIERS
WET YEAR FOLLOWING AVERAGE 5-YEAR BASE CONDITION

CVPM Subregion	Tier 1	Tier 2	Tier 3	Category 2	Blended Price ($/AF)
	(1000 AF)				
1	9.4	1.2	1.2	1.3	$ 23.91
2	21.9	2.7	2.7	9.4	$ 29.55
3	-	-	-	-	NA
3B	159.7	20.0	20.0	66.6	$ 32.35
4	-	-	-	-	NA
5	16.0	2.0	2.0	0.9	$ 21.52
6	-	-	-	-	NA
7	12.0	1.5	1.5	-	$ 11.86
8	41.3	5.2	5.2	27.8	$ 25.64
9	22.5	2.8	2.8	19.9	$ 55.27
10	231.4	28.9	28.9	107.8	$ 38.01
11	-	-	-	-	NA
12	-	-	-	-	NA
13	153.6	19.2	19.2	14.3	$ 34.77
14	539.1	67.4	67.4	251.2	$ 43.17
15	32.3	4.0	4.0	2.4	$ 36.34
16	18.9	2.4	2.4	2.5	$ 43.40
17	34.9	4.4	4.4	3.8	$ 36.92
18	484.2	60.5	60.5	49.6	$ 36.57
19	13.1	1.6	1.6	3.0	$ 38.84
20	194.2	24.3	24.3	21.9	$ 37.92
21	129.7	16.2	16.2	31.5	$ 36.33

Table 8

PROJECT WATER BY PRICING TIERS
WET YEAR FOLLOWING WET 5-YEAR BASE CONDITION

CVPM Subregion	Tier 1	Tier 2	Tier 3	Category 2	Blended Price ($/AF)
	(1000 AF)				
1	10.4	1.3	1.3	-	$ 19.67
2	29.4	3.7	3.7	-	$ 18.42
3	-	-	-	-	NA
3B	212.9	26.6	26.6	-	$ 19.39
4	-	-	-	-	NA
5	16.6	2.1	2.1	-	$ 21.35
6	-	-	-	-	NA
7	12.0	1.5	1.5	-	$ 11.86
8	63.5	7.9	7.9	-	$ 15.24
9	38.5	4.8	4.8	-	$ 33.89
10	317.6	39.7	39.7	-	$ 33.85
11	-	-	-	-	NA
12	-	-	-	-	NA
13	165.0	20.6	20.6	-	$ 34.04
14	740.0	92.5	92.5	-	$ 36.78
15	34.2	4.3	4.3	-	$ 35.47
16	21.0	2.6	2.6	-	$ 42.37
17	37.9	4.7	4.7	-	$ 36.07
18	523.8	65.5	65.5	-	$ 35.69
19	15.5	1.9	1.9	-	$ 36.86
20	211.7	26.5	26.5	-	$ 36.86
21	154.9	19.4	19.4	-	$ 34.59

Table 9

PROJECT WATER APPLIED BY PRICING TIERS
WET YEAR FOLLOWING DRY 5-YEAR BASE CONDITION

CVPM Subregion	Tier 1	Tier 2	Tier 3	Category 2	Blended Price ($/AF)
	(1000 AF)				
1	10.8	1.3	0.9	-	$ 18.20
2	6.2	0.8	0.8	28.9	$ 52.83
3	-	-	-	-	NA
3B	40.2	5.0	5.0	215.9	$ 61.42
4	-	-	-	-	NA
5	14.3	1.8	1.8	2.9	$ 21.92
6	-	-	-	-	NA
7	12.0	1.5	1.5	-	$ 11.86
8	20.2	2.5	2.5	54.1	$ 35.47
9	9.2	1.1	1.1	36.7	$ 73.22
10	94.0	11.8	11.8	279.5	$ 44.63
11	-	-	-	-	NA
12	-	-	-	-	NA
13	104.4	13.0	13.0	75.9	$ 37.94
14	219.1	27.4	27.4	651.1	$ 53.36
15	26.8	3.4	3.4	9.1	$ 38.82
16	13.7	1.7	1.7	9.1	$ 46.07
17	24.5	3.1	3.1	16.8	$ 39.88
18	339.7	42.5	42.5	230.2	$ 39.78
19	8.7	1.1	1.1	8.5	$ 42.52
20	133.9	16.7	16.7	97.2	$ 41.58
21	76.2	9.5	9.5	98.3	$ 40.03

Table 10

PROJECT WATER APPLIED BY PRICING TIERS
DRY YEAR FOLLOWING AVERAGE 5-YEAR BASE CONDITION

CVPM Subregion	Tier 1	Tier 2	Tier 3	Category 2	Blended Price ($/AF)
	(1000 AF)				
1	9.4	1.2	1.2	1.7	$ 25.19
2	7.8	-	-	-	$ 10.71
3	-	-	-	-	NA
3B	50.3	-	-	-	$ 10.25
4	-	-	-	-	NA
5	16.0	1.9	-	-	$ 20.90
6	-	-	-	-	NA
7	12.0	1.5	1.5	-	$ 11.86
8	25.3	-	-	-	$ 10.00
9	11.5	-	-	-	$ 24.79
10	117.5	-	-	-	$ 31.15
11	-	-	-	-	NA
12	-	-	-	-	NA
13	130.4	-	-	-	$ 32.16
14	273.9	-	-	-	$ 32.62
15	32.3	1.3	-	-	$ 33.07
16	17.1	-	-	-	$ 40.48
17	30.6	-	-	-	$ 34.18
18	424.6	-	-	-	$ 33.63
19	10.9	-	-	-	$ 34.58
20	167.4	-	-	-	$ 34.58
21	95.3	-	-	-	$ 32.70

Table 11

PROJECT WATER APPLIED BY PRICING TIERS
DRY YEAR FOLLOWING WET 5-YEAR BASE CONDITION

CVPM Subregion	Tier 1	Tier 2	Tier 3	Category 2	Blended Price ($/AF)
	(1000 AF)				
1	10.4	1.3	1.3	0.4	$ 21.09
2	7.8	-	-	-	$ 10.71
3	-	-	-	-	NA
3B	50.3	-	-	-	$ 10.25
4	-	-	-	-	NA
5	16.6	1.2	-	-	$ 20.81
6	-	-	-	-	NA
7	12.0	1.5	1.5	-	$ 11.86
8	25.3	-	-	-	$ 10.00
9	11.5	-	-	-	$ 24.79
10	117.5	-	-	-	$ 31.15
11	-	-	-	-	NA
12	-	-	-	-	NA
13	130.4	-	-	-	$ 32.16
14	273.9	-	-	-	$ 32.62
15	33.6	-	-	-	$ 32.71
16	17.1	-	-	-	$ 40.48
17	30.6	-	-	-	$ 34.18
18	424.6	-	-	-	$ 33.63
19	10.9	-	-	-	$ 34.58
20	167.4	-	-	-	$ 34.58
21	95.3	-	-	-	$ 32.70

Table 12

PROJECT WATER BY PRICING TIERS
DRY YEAR FOLLOWING DRY 5-YEAR BASE CONDITION

CVPM Subregion	Tier 1	Tier 2	Tier 3	Category 2	Blended Price ($/AF)
	(1000 AF)				
1	10.8	1.3	1.3	-	$ 19.67
2	6.2	0.8	0.8	-	$ 18.42
3	-	-	-	-	NA
3B	40.2	5.0	5.0	-	$ 19.39
4	-	-	-	-	NA
5	14.3	1.8	1.8	-	$ 21.35
6	-	-	-	-	NA
7	12.0	1.5	1.5	-	$ 11.86
8	20.2	2.5	2.5	-	$ 15.24
9	9.2	1.1	1.1	-	$ 33.89
10	94.0	11.8	11.8	-	$ 33.85
11	-	-	-	-	NA
12	-	-	-	-	NA
13	104.4	13.0	13.0	-	$ 34.04
14	219.1	27.4	27.4	-	$ 36.78
15	26.8	3.4	3.4	-	$ 35.47
16	13.7	1.7	1.7	-	$ 42.37
17	24.5	3.1	3.1	-	$ 36.07
18	339.7	42.5	42.5	-	$ 35.69
19	8.7	1.1	1.1	-	$ 36.86
20	133.9	16.7	16.7	-	$ 36.86
21	76.2	9.5	9.5	-	$ 34.59

TABLE 13

IRRIGATED ACRES BY SUBREGION (1000 ACRES)

CVPM Subregion	Average Preferred Alternative	Change Compared to Average followed by Average			Wet Preferred Alternative	Change Compared to Wet followed by Wet			Dry Preferred Alternative	Change Compared to Dry followed by Dry		
		Average	Wet	Dry		Average	Wet	Dry		Average	Wet	Dry
Sacramento River	2015.5	-1.7	-0.8	-65.3	2020.0	-4.4	-4.4	-53.0	1984.8	0.1	0.1	0.0
San Joaquin River	2526.6	-0.2	-0.2	-1.2	2529.1	-1.7	-1.6	-1.9	2505.9	-0.1	-0.1	-0.1
Tulare Lake	1992.4	0.0	0.0	-0.2	1996.2	-1.2	-1.2	-1.3	1953.7	0.1	0.1	0.1
San Felipe	50.7	0.0	0.0	0.0	69.5	0.0	0.0	0.0	22.2	0.0	0.0	0.0
California Total	6585.2	-1.9	-1.0	-66.7	6614.8	-7.3	-7.3	-56.2	6466.6	0.1	0.1	0.1

TABLE 14

VALUE OF PRODUCTION BY SUBREGION (Million $)

CVPM Subregion	Average Preferred Alternative	Change Compared to Average followed by Average: Average	Wet	Dry	Wet Preferred Alternative	Change Compared to Wet PA followed by Wet: Average	Wet	Dry	Dry Preferred Alternative	Change Compared to Dry PA followed by Dry: Average	Wet	Dry
Sacramento River	1,825.3	-0.4	-0.2	-37.6	1,828.0	-1.6	-1.6	-26.8	1,810.0	0.4	0.4	0.3
San Joaquin River	4,402.3	-0.1	-0.1	-1.0	4,403.8	-0.9	-0.9	-1.1	4,384.2	-0.2	-0.2	-0.2
Tulare Lake	3,876.3	0.0	0.0	-0.3	3,879.4	-1.0	-1.0	-1.1	3,842.7	0.1	0.1	0.1
San Felipe	68.0	0.0	0.0	0.0	70.0	0.0	0.0	0.0	44.0	0.0	0.0	0.0
California Total	10,172.0	-0.5	-0.4	-38.8	10,181.2	-3.6	-3.6	-28.9	10,080.8	0.3	0.3	0.3

TABLE 15

NET REVENUE CHANGES BY REGION (Million $)

Cause of Net Revenue Change	Compared to Average Year PA			Compared to Wet Year PA			Compared to Dry Year PA		
	Average	Wet	Dry	Average	Wet	Dry	Average	Wet	Dry
	followed by Average			followed by Wet			followed by Dry		
Sacramento River									
Fallowed Land	-0.1	0.0	-6.7	-0.3	-0.3	-4.6	0.0	0.0	0.0
Groundwater Pumping Cost	-0.3	-0.3	-0.4	1.0	1.0	-4.5	-0.2	-0.2	-0.2
Irrigation Cost	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
CVP Water Cost	-0.3	1.7	3.6	-5.1	-1.0	4.6	-0.1	-0.1	-0.7
Higher Crop Prices	0.0	0.0	1.9	0.1	0.1	1.0	0.0	0.0	0.0
Net Change	**-1.0**	**1.0**	**-1.9**	**-4.6**	**-0.5**	**-3.8**	**-0.6**	**-0.6**	**-1.2**
San Joaquin River									
Fallowed Land	0.0	0.0	-0.1	-0.2	-0.2	-0.2	0.0	0.0	0.0
Groundwater Pumping Cost	0.0	0.0	-10.3	-7.4	0.2	-14.1	-1.0	-1.0	-1.0
Irrigation Cost	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
CVP Water Cost	1.0	4.0	2.3	7.9	6.1	6.2	-5.9	-5.9	-7.5
Higher Crop Prices	0.1	0.0	2.5	0.2	0.2	1.0	0.0	0.0	0.0
Net Change	**0.9**	**3.9**	**-5.7**	**0.4**	**6.1**	**-7.3**	**-7.0**	**-7.0**	**-8.6**
Tulare Lake									
Fallowed Land	0.0	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.0
Groundwater Pumping Cost	0.1	0.1	0.1	1.0	1.0	1.0	-3.2	-3.2	-3.2
Irrigation Cost	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CVP Water Cost	-2.3	-1.2	-5.7	-3.1	-2.1	-6.4	-0.9	-0.9	-2.3
Higher Crop Prices	0.0	0.0	1.4	0.1	0.1	0.4	0.0	0.0	0.0
Net Change	**-2.1**	**-1.1**	**-4.2**	**-2.1**	**-1.1**	**-5.1**	**-4.1**	**-4.1**	**-5.5**
San Felipe									
Fallowed Land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Groundwater Pumping Cost	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrigation Cost	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CVP Water Cost	-0.2	0.0	-0.6	-0.5	-0.2	-0.9	0.0	0.0	-0.1
Higher Crop Prices	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Change	**-0.2**	**0.0**	**-0.6**	**-0.5**	**-0.2**	**-0.9**	**0.0**	**0.0**	**-0.1**
Total									
Fallowed Land	-0.1	-0.1	-6.9	-0.6	-0.6	-4.9	0.0	0.0	0.0
Groundwater Pumping Cost	-0.2	-0.2	-10.5	-5.3	2.2	-17.6	-4.4	-4.4	-4.4
Irrigation Cost	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
CVP Water Cost	-1.6	4.5	0.2	-0.3	3.1	4.5	-6.9	-6.8	-10.5
Higher Crop Prices	0.1	0.1	5.8	0.4	0.4	2.3	0.0	0.0	0.0
Net Change	**-2.3**	**3.7**	**-11.9**	**-6.3**	**4.6**	**-16.1**	**-11.7**	**-11.7**	**-15.3**

Note: A negative value in a cost category represents an increase in cost that produces a decrease in net revenue

TABLE 16
IRRIGATION WATER APPLIED BY REGION (1000 AF)

Region	Average Preferred Alternative	Change Compared to Average			Wet Preferred Alternative	Change Compared to Wet PA			Dry Preferred Alternative	Change Compared to Dry PA		
		Average	Wet	Dry		Average	Wet	Dry		Average	Wet	Dry
		followed by Average				followed by Wet				followed by Dry		
Sacramento River												
CVP Water*	625.9	-27.6	-23.4	-243.5	694.3	-2.4	-2.6	-305.5	402.1	-20.3	-20.3	-20.4
Groundwater	2,621.3	10.5	10.7	11.2	2,456.9	-24.5	-24.3	114.7	3,261.6	4.1	4.2	4.0
San Joaquin River												
CVP Water*	960.2	-8.7	-9.0	-269.0	1,226.6	-226.3	-21.0	-378.7	506	-17.5	-17.5	-17.5
Groundwater	3,606.2	3.3	3.5	260.0	2,974.2	215.1	10.3	366.8	4723	12.0	12.0	12.0
Tulare Lake												
CVP Water*	919.5	1.9	2.0	2.0	967.3	3.7	3.8	3.6	685.3	0.1	0.1	0.0
Groundwater	3,369.0	-1.8	-2.0	-2.0	2,683.5	-7.7	-7.7	-7.5	4,542.9	0.0400	0.0400	0.0400
San Felipe												
CVP Water*	71.0	0.0	0.0	0.0	71.0	0.0	0.0	0.0	71.0	0.0	0.0	0.0
Groundwater	na	na	na	na	na	na	na	na	na	na	na	na
Total												
CVP Water*	2,505.5	-34.4	-30.4	-510.5	2,888.2	-224.9	-19.9	-680.6	1,593.9	-37.7	-37.8	-37.8
Groundwater	9,596.5	11.9	12.3	269.2	8,114.6	182.8	-21.6	474.0	12,527.1	16.1	16.2	16.1

*CVP water applied is project water only. It excludes exchange contract delivery and the base supply portion of settlement contracts.

TABLE 17 IRRIGATED ACREAGE BY SUBREGION

CVPM Subregion	Crop Category	Preferred Alternative Average	hanges Compared to Average P Average	Wet	Dry	Preferred Alternative Wet	Changes Compared to Wet PA Average	Wet	Dry	Preferred Alternative Dry	Changes Compared to Dry PA Average	Wet	Dry
			Followed by Average				Followed by Wet				Followed by Dry		
1	Pasture	18.3	-1.2	-0.3	-0.1	18.3	-1.5	-1.5	-1.5	18.1	-1.8	-1.8	-1.8
	Alfalfa	0.9	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.9	0.0	0.0	0.0
	Other Field Crops	1.2	0.0	0.0	0.0	1.2	0.0	0.0	0.0	1.2	0.0	0.0	0.0
	Deciduous Orchard	3.8	0.0	0.0	0.0	3.8	0.0	0.0	0.0	3.8	0.0	0.0	0.0
	Small Grain	2.4	0.0	0.0	0.0	2.4	0.0	0.0	0.0	2.4	0.0	0.0	0.0
	Subtotal	**26.6**	**-1.3**	**-0.3**	**-0.1**	**26.5**	**-1.6**	**-1.6**	**-1.6**	**26.3**	**-1.9**	**-1.9**	**-1.9**
2	Pasture	34.1	0.0	0.0	-3.6	33.9	0.0	0.0	-5.9	33.1	0.0	0.0	0.0
	Alfalfa	9.5	0.0	0.0	-0.3	9.5	0.0	0.0	-0.6	9.4	0.0	0.0	0.0
	Sugar Beets	4.0	0.0	0.0	0.0	4.0	0.0	0.0	-0.1	4.0	0.0	0.0	0.0
	Other Field Crops	17.3	0.0	0.0	-0.5	17.2	0.0	0.0	-0.7	17.1	0.0	0.0	0.0
	Rice	4.5	0.0	0.0	-0.2	4.5	0.0	0.0	-0.3	4.5	0.0	0.0	0.0
	Truck Crops	15.5	0.0	0.0	0.0	15.5	0.0	0.0	0.0	15.5	0.0	0.0	0.0
	Deciduous Orchard	86.0	0.0	0.0	-0.1	86.0	0.0	0.0	0.0	86.0	0.0	0.0	0.0
	Small Grain	14.0	0.0	0.0	-0.2	13.9	0.0	0.0	-0.6	13.7	0.0	0.0	0.0
	Subtropical Orchard	10.2	0.0	0.0	0.0	10.2	0.0	0.0	0.0	10.2	0.0	0.0	0.0
	Subtotal	**195.0**	**0.0**	**0.0**	**-4.9**	**194.7**	**0.0**	**0.0**	**-8.2**	**193.5**	**0.0**	**0.0**	**0.0**
3	Pasture	7.8	0.0	0.0	0.0	7.9	0.0	0.0	0.0	7.5	0.0	0.0	0.0
	Alfalfa	18.2	0.0	0.0	0.0	18.3	0.0	0.0	0.0	18.0	0.0	0.0	0.0
	Sugar Beets	9.9	0.0	0.0	0.0	9.9	0.0	0.0	0.0	9.8	0.0	0.0	0.0
	Other Field Crops	15.7	0.0	0.0	0.0	15.8	0.0	0.0	0.0	15.5	0.0	0.0	0.0
	Rice	138.9	0.0	0.0	0.0	139.5	0.0	0.0	0.0	136.7	0.0	0.0	0.0
	Truck Crops	25.2	0.0	0.0	0.0	25.2	0.0	0.0	0.0	25.2	0.0	0.0	0.0
	Tomatoes	25.9	0.0	0.0	0.0	25.9	0.0	0.0	0.0	25.8	0.0	0.0	0.0
	Deciduous Orchard	17.8	0.0	0.0	0.0	17.8	0.0	0.0	0.0	17.8	0.0	0.0	0.0
	Small Grain	30.5	0.0	0.0	0.0	30.6	0.0	0.0	0.0	29.8	0.0	0.0	0.0
	Subtotal	**289.8**	**0.0**	**0.0**	**0.0**	**290.7**	**0.0**	**0.0**	**0.0**	**286.2**	**0.0**	**0.0**	**0.0**
3B	Pasture	5.7	0.0	0.0	-5.7	5.8	0.1	0.1	-1.5	4.3	0.0	0.0	0.0
	Alfalfa	10.1	0.0	0.0	-10.1	10.2	0.1	0.1	-2.6	7.6	0.0	0.0	0.0
	Sugar Beets	5.6	0.0	0.0	-5.3	5.6	0.0	0.0	-2.8	5.1	0.0	0.0	0.0
	Other Field Crops	13.4	0.0	0.0	-13.4	13.5	0.0	0.0	-13.5	10.4	0.0	0.0	0.0
	Rice	9.6	0.0	0.0	-9.6	9.7	0.1	0.1	-9.7	6.2	0.0	0.0	0.0
	Truck Crops	0.6	0.0	0.0	-0.1	0.6	0.0	0.0	0.0	0.6	0.0	0.0	0.0
	Tomatoes	6.1	0.0	0.0	-3.8	6.1	0.0	0.0	-1.8	5.7	0.0	0.0	0.0
	Deciduous Orchard	26.9	0.0	0.0	-3.3	26.9	0.0	0.0	0.0	26.9	0.0	0.0	0.0
	Small Grain	8.5	0.0	0.0	-8.5	8.6	0.0	0.0	-8.6	6.2	0.0	0.0	0.0
	Subtropical Orchard	1.0	0.0	0.0	-0.1	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
	Subtotal	**87.6**	**0.0**	**0.0**	**-59.9**	**87.9**	**0.3**	**0.3**	**-40.4**	**74.0**	**0.0**	**0.0**	**0.0**

TABLE 17 IRRIGATED ACREAGE BY SUBREGION

CVPM Subregion	Crop Category	Preferred Alternative Average	Changes Compared to Average PA: Average	Wet	Dry	Preferred Alternative Wet	Changes Compared to Wet PA: Average	Wet	Dry	Preferred Alternative Dry	Changes Compared to Dry PA: Average	Wet	Dry
			Followed by Average				Followed by Wet				Followed by Dry		
4	Pasture	1.2	0.0	0.0	0.0	1.2	0.0	0.0	0.0	1.1	0.0	0.0	0.0
	Alfalfa	6.8	0.0	0.0	0.0	6.8	0.0	0.0	0.0	6.8	0.0	0.0	0.0
	Sugar Beets	10.3	0.0	0.0	0.0	10.3	0.0	0.0	0.0	10.3	0.0	0.0	0.0
	Other Field Crops	40.1	0.0	0.0	0.0	40.1	0.0	0.0	0.0	39.8	0.0	0.0	0.0
	Rice	87.8	0.0	0.0	0.0	87.9	0.0	0.0	0.0	87.1	0.0	0.0	0.0
	Truck Crops	17.1	0.0	0.0	0.0	17.1	0.0	0.0	0.0	17.1	0.0	0.0	0.0
	Tomatoes	34.1	0.0	0.0	0.0	34.1	0.0	0.0	0.0	34.0	0.0	0.0	0.0
	Deciduous Orchard	30.6	0.0	0.0	0.0	30.6	0.0	0.0	0.0	30.6	0.0	0.0	0.0
	Small Grain	47.5	0.0	0.0	0.0	47.6	0.0	0.0	0.0	46.8	0.0	0.0	0.0
	Subtotal	**275.3**	**0.0**	**0.0**	**0.0**	**275.7**	**0.0**	**0.0**	**-0.1**	**273.6**	**0.0**	**0.0**	**0.0**
5	Pasture	21.4	0.0	0.0	0.0	21.5	0.0	0.0	0.0	21.0	0.0	0.0	0.0
	Alfalfa	4.7	0.0	0.0	0.0	4.7	0.0	0.0	0.0	4.7	0.0	0.0	0.0
	Sugar Beets	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
	Other Field Crops	15.4	0.0	0.0	0.0	15.4	0.0	0.0	0.0	15.4	0.0	0.0	0.0
	Rice	166.0	0.0	0.0	0.0	166.6	-0.1	-0.1	-0.1	165.2	-0.1	-0.1	-0.1
	Truck Crops	6.6	0.0	0.0	0.0	6.6	0.0	0.0	0.0	6.6	0.0	0.0	0.0
	Tomatoes	1.6	0.0	0.0	0.0	1.6	0.0	0.0	0.0	1.6	0.0	0.0	0.0
	Deciduous Orchard	121.6	0.0	0.0	0.0	121.6	0.0	0.0	0.0	121.6	0.0	0.0	0.0
	Small Grain	22.3	0.0	0.0	0.0	22.4	0.0	0.0	0.0	21.9	0.0	0.0	0.0
	Subtropical Orchard	2.5	0.0	0.0	0.0	2.5	0.0	0.0	0.0	2.5	0.0	0.0	0.0
	Subtotal	**364.1**	**0.0**	**0.0**	**0.0**	**364.9**	**-0.2**	**-0.2**	**-0.1**	**362.4**	**-0.2**	**-0.2**	**-0.2**
6	Pasture	12.1	0.0	0.0	0.0	12.5	-0.4	-0.4	-0.4	11.8	0.0	0.0	0.0
	Alfalfa	28.7	0.0	0.0	0.1	29.0	-0.3	-0.3	-0.3	28.6	0.0	0.0	0.0
	Sugar Beets	21.2	0.0	0.0	0.0	21.2	-0.1	-0.1	-0.1	21.1	0.0	0.0	0.0
	Other Field Crops	59.4	0.0	0.0	0.0	59.9	-0.5	-0.5	-0.5	59.1	0.0	0.0	0.0
	Rice	12.9	0.0	0.0	0.0	13.1	-0.2	-0.2	-0.2	12.8	0.0	0.0	0.0
	Truck Crops	3.4	0.0	0.0	0.0	3.4	0.0	0.0	0.0	3.4	0.0	0.0	0.0
	Tomatoes	45.8	0.0	0.0	0.0	45.9	-0.1	-0.1	-0.1	45.7	0.0	0.0	0.0
	Deciduous Orchard	24.6	0.0	0.0	0.0	24.6	0.0	0.0	0.0	24.6	0.0	0.0	0.0
	Small Grain	64.3	0.0	0.0	0.0	64.6	-0.4	-0.4	-0.4	63.3	0.2	0.2	0.2
	Grapes	8.0	0.0	0.0	0.0	8.0	0.0	0.0	0.0	8.0	0.0	0.0	0.0
	Subtotal	**280.2**	**0.0**	**0.0**	**0.0**	**282.2**	**-1.9**	**-1.9**	**-1.8**	**278.4**	**0.2**	**0.2**	**0.2**
7	Pasture	14.5	0.0	0.0	0.0	14.5	0.0	0.0	0.0	14.2	0.0	0.0	0.0
	Alfalfa	3.1	0.0	0.0	0.0	3.1	0.0	0.0	0.0	3.1	0.0	0.0	0.0
	Sugar Beets	2.5	0.0	0.0	0.0	2.5	0.0	0.0	0.0	2.5	0.0	0.0	0.0
	Other Field Crops	3.8	0.0	0.0	0.0	3.8	0.0	0.0	0.0	3.8	0.0	0.0	0.0
	Rice	48.3	0.0	0.0	0.0	48.3	0.0	0.0	0.0	47.9	0.0	0.0	0.0
	Truck Crops	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0
	Tomatoes	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0
	Deciduous Orchard	8.9	0.0	0.0	0.0	8.9	0.0	0.0	0.0	8.9	0.0	0.0	0.0
	Small Grain	9.4	0.0	0.0	0.0	9.3	0.0	0.0	0.0	9.2	0.0	0.0	0.0
	Grapes	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0
	Subtotal	**91.4**	**0.0**	**0.0**	**0.0**	**91.5**	**0.0**	**0.0**	**0.0**	**90.5**	**0.0**	**0.0**	**0.0**

TABLE 17 IRRIGATED ACREAGE BY SUBREGION

CVPM Subregion	Crop Category	Preferred Alternative Average	Changes Compared to Average PA: Average	Wet	Dry	Preferred Alternative Wet	Changes Compared to Wet PA: Average	Wet	Dry	Preferred Alternative Dry	Changes Compared to Dry PA: Average	Wet	Dry
			Followed by Average				Followed by Wet				Followed by Dry		
8	Pasture	47.7	0.0	0.0	0.0	47.6	0.0	0.0	0.0	46.9	0.0	0.0	0.0
	Alfalfa	12.3	0.0	0.0	0.0	12.3	0.0	0.0	0.0	12.2	0.0	0.0	0.0
	Sugar Beets	12.8	0.0	0.0	0.0	12.8	0.0	0.0	0.0	12.8	0.0	0.0	0.0
	Other Field Crops	42.7	0.0	0.0	0.0	42.7	0.0	0.0	0.0	42.5	0.0	0.0	0.0
	Rice	4.5	0.0	0.0	0.0	4.5	0.0	0.0	0.0	4.5	0.0	0.0	0.0
	Truck Crops	17.1	0.0	0.0	0.0	17.1	0.0	0.0	0.0	17.1	0.0	0.0	0.0
	Tomatoes	12.9	0.0	0.0	0.0	12.9	0.0	0.0	0.0	12.9	0.0	0.0	0.0
	Deciduous Orchard	46.9	0.0	0.0	0.0	46.9	0.0	0.0	0.0	46.9	0.0	0.0	0.0
	Small Grain	29.0	0.0	0.0	0.0	29.1	0.0	0.0	0.0	28.2	0.0	0.0	0.0
	Grapes	58.9	0.0	0.0	0.0	58.9	0.0	0.0	0.0	58.9	0.0	0.0	0.0
	Subtotal	**284.8**	**0.0**	**0.0**	**0.0**	**284.9**	**0.0**	**0.0**	**0.0**	**282.8**	**0.0**	**0.0**	**0.0**
9	Pasture	24.6	-0.2	-0.2	-0.1	24.6	-0.4	-0.4	-0.4	23.4	0.7	0.7	0.7
	Alfalfa	43.8	-0.1	-0.1	0.0	43.8	-0.2	-0.2	-0.2	43.1	0.4	0.4	0.4
	Sugar Beets	28.6	0.0	0.0	0.0	28.6	-0.1	-0.1	0.0	28.5	0.1	0.1	0.1
	Other Field Crops	114.9	-0.2	-0.2	-0.2	115.0	-0.4	-0.4	-0.4	113.6	0.7	0.7	0.7
	Rice	0.9	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.9	0.0	0.0	0.0
	Truck Crops	46.0	0.0	0.0	0.0	46.0	0.0	0.0	0.0	46.0	0.0	0.0	0.0
	Tomatoes	42.5	0.0	0.0	0.0	42.5	0.0	0.0	0.0	42.3	0.1	0.1	0.1
	Deciduous Orchard	21.3	0.0	0.0	0.0	21.3	0.0	0.0	0.0	21.3	0.0	0.0	0.0
	Small Grain	96.8	-0.1	-0.1	-0.1	97.5	-0.3	-0.3	-0.3	93.7	1.0	1.0	1.0
	Grapes	5.8	0.0	0.0	0.0	5.8	0.0	0.0	0.0	5.8	0.0	0.0	0.0
	Subtotal	**425.0**	**-0.6**	**-0.6**	**-0.4**	**425.9**	**-1.5**	**-1.5**	**-1.4**	**418.4**	**3.0**	**3.0**	**3.0**
10	Pasture	13.3	0.0	0.0	-0.2	13.3	0.0	0.0	0.0	13.3	0.0	0.0	0.0
	Alfalfa	40.8	0.0	0.0	-0.3	40.9	-0.1	0.0	-0.1	40.8	0.0	0.0	0.0
	Sugar Beets	13.9	0.0	0.0	0.0	13.9	0.0	0.0	0.0	13.9	0.0	0.0	0.0
	Other Field Crops	48.2	0.0	0.0	-0.1	48.2	0.1	0.0	0.0	48.3	0.0	0.0	0.0
	Rice	2.9	0.0	0.0	0.0	2.9	0.0	0.0	0.0	2.9	0.0	0.0	0.0
	Truck Crops	112.9	0.0	0.0	0.0	112.9	0.0	0.0	0.0	113.0	0.0	0.0	0.0
	Tomatoes	40.2	0.0	0.0	0.0	40.2	0.0	0.0	0.0	40.2	0.0	0.0	0.0
	Deciduous Orchard	36.6	0.0	0.0	0.0	36.6	0.0	0.0	0.0	36.6	0.0	0.0	0.0
	Small Grain	14.0	0.0	0.0	0.0	14.0	0.1	0.0	0.1	14.0	0.0	0.0	0.0
	Grapes	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
	Cotton	103.1	0.0	0.0	-0.5	103.1	-0.1	0.0	-0.1	103.1	0.0	0.0	0.0
	Subtropical Orchard	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
	Subtotal	**427.1**	**0.0**	**0.0**	**-1.1**	**427.2**	**-0.1**	**0.0**	**-0.1**	**427.1**	**0.0**	**0.0**	**0.0**
11	Pasture	42.9	0.0	0.0	0.0	43.0	0.0	0.0	0.0	42.7	0.0	0.0	0.0
	Alfalfa	8.4	0.0	0.0	0.0	8.4	0.0	0.0	0.0	8.3	0.0	0.0	0.0
	Sugar Beets	0.4	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.4	0.0	0.0	0.0
	Other Field Crops	17.8	0.0	0.0	0.0	17.9	0.0	0.0	0.0	17.8	0.0	0.0	0.0
	Rice	4.4	0.0	0.0	0.0	4.4	0.0	0.0	0.0	4.4	0.0	0.0	0.0
	Truck Crops	6.3	0.0	0.0	0.0	6.3	0.0	0.0	0.0	6.3	0.0	0.0	0.0
	Tomatoes	0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.0
	Deciduous Orchard	80.8	0.0	0.0	0.0	80.8	0.0	0.0	0.0	80.8	0.0	0.0	0.0
	Small Grain	1.8	0.0	0.0	0.0	1.8	0.0	0.0	0.0	1.8	0.0	0.0	0.0
	Grapes	10.4	0.0	0.0	0.0	10.4	0.0	0.0	0.0	10.4	0.0	0.0	0.0
	Subtotal	**174.0**	**0.0**	**0.0**	**0.0**	**174.2**	**0.0**	**0.0**	**0.0**	**173.7**	**0.0**	**0.0**	**0.0**

TABLE 17 IRRIGATED ACREAGE BY SUBREGION

CVPM Subregion	Crop Category	Preferred Alternative Average	Changes Compared to Average PA: Average	Wet	Dry	Preferred Alternative Wet	Changes Compared to Wet PA: Average	Wet	Dry	Preferred Alternative Dry	Changes Compared to Dry PA: Average	Wet	Dry
			Followed by Average				Followed by Wet				Followed by Dry		
12	Pasture	18.3	0.0	0.0	0.0	18.0	0.0	0.0	0.0	18.0	0.0	0.0	0.0
	Alfalfa	18.2	0.0	0.0	0.0	18.1	0.0	0.0	0.0	18.1	0.0	0.0	0.0
	Sugar Beets	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
	Other Field Crops	41.2	0.0	0.0	0.0	41.0	0.0	0.0	0.0	41.0	0.0	0.0	0.0
	Truck Crops	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
	Deciduous Orchard	94.0	0.0	0.0	0.0	94.0	0.0	0.0	0.0	94.0	0.0	0.0	0.0
	Small Grain	10.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	9.9	0.0	0.0	0.0
	Grapes	14.0	0.0	0.0	0.0	14.0	0.0	0.0	0.0	14.0	0.0	0.0	0.0
	Cotton	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
	Subtropical Orchard	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
	Subtotal	**200.8**	**0.0**	**0.0**	**0.0**	**200.2**	**0.0**	**0.0**	**0.0**	**200.1**	**0.0**	**0.0**	**0.0**
13	Pasture	39.6	0.0	0.0	0.0	39.9	-0.2	-0.2	-0.3	39.5	-0.3	-0.3	-0.3
	Alfalfa	41.8	0.0	0.0	0.1	42.1	-0.2	-0.2	-0.2	41.8	-0.2	-0.2	-0.2
	Sugar Beets	5.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0
	Other Field Crops	54.8	0.0	0.0	0.0	55.0	-0.1	-0.1	-0.2	54.6	-0.1	-0.1	-0.1
	Rice	3.9	0.0	0.0	0.0	3.9	0.0	0.0	0.0	3.9	0.0	0.0	0.0
	Truck Crops	18.0	0.0	0.0	0.0	18.0	0.0	0.0	0.0	18.0	0.0	0.0	0.0
	Tomatoes	7.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0
	Deciduous Orchard	135.0	0.0	0.0	0.0	135.0	0.0	0.0	0.0	135.0	0.0	0.0	0.0
	Small Grain	46.9	0.0	0.0	0.0	47.2	-0.1	-0.1	-0.1	46.4	-0.1	-0.1	-0.1
	Grapes	99.0	0.0	0.0	0.0	99.0	0.0	0.0	0.0	99.0	0.0	0.0	0.0
	Cotton	71.8	0.0	0.0	0.0	72.1	-0.2	-0.2	-0.3	71.6	-0.2	-0.2	-0.2
	Subtropical Orchard	9.9	0.0	0.0	0.0	9.9	0.0	0.0	0.0	9.9	0.0	0.0	0.0
	Subtotal	**532.5**	**0.0**	**0.0**	**0.0**	**534.1**	**-0.9**	**-0.9**	**-1.1**	**531.6**	**-0.9**	**-0.9**	**-0.9**
14	Pasture	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
	Alfalfa	14.0	0.0	0.0	0.0	14.0	0.0	0.0	0.0	13.4	0.0	0.0	0.0
	Sugar Beets	4.8	0.0	0.0	0.0	4.8	0.0	0.0	0.0	4.8	0.0	0.0	0.0
	Other Field Crops	18.4	0.0	0.0	0.0	18.3	0.0	0.0	0.0	17.9	0.0	0.0	0.0
	Truck Crops	136.4	0.0	0.0	0.0	136.4	0.0	0.0	0.0	136.2	0.0	0.0	0.0
	Tomatoes	77.0	0.0	0.0	0.1	77.0	0.0	0.0	0.0	76.2	0.0	0.0	0.0
	Deciduous Orchard	24.9	0.0	0.0	0.0	24.9	0.0	0.0	0.0	24.9	0.0	0.0	0.0
	Small Grain	10.4	0.0	0.0	0.0	10.4	0.0	0.0	0.0	9.7	0.0	0.0	0.0
	Grapes	7.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0
	Cotton	206.5	0.0	0.0	-0.1	206.6	0.0	0.0	0.0	198.8	0.0	0.0	0.0
	Subtropical Orchard	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
	Subtotal	**500.4**	**0.0**	**0.0**	**0.0**	**500.5**	**0.0**	**0.0**	**0.0**	**489.9**	**0.0**	**0.0**	**0.0**
15	Pasture	3.9	0.0	0.0	0.0	3.9	0.0	0.0	0.0	3.7	0.0	0.0	0.0
	Alfalfa	83.1	0.0	0.0	0.2	83.4	0.0	0.0	0.1	80.6	0.0	0.0	0.0
	Sugar Beets	5.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0
	Other Field Crops	86.0	0.0	0.0	0.0	86.1	0.0	0.0	0.0	84.2	0.0	0.0	0.0
	Rice	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
	Truck Crops	12.0	0.0	0.0	0.0	12.0	0.0	0.0	0.0	12.0	0.0	0.0	0.0
	Tomatoes	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
	Deciduous Orchard	38.0	0.0	0.0	0.0	38.0	0.0	0.0	0.0	38.0	0.0	0.0	0.0
	Small Grain	71.0	0.0	0.0	0.0	71.6	0.0	0.0	0.0	67.9	0.0	0.0	0.0
	Grapes	56.0	0.0	0.0	0.0	56.0	0.0	0.0	0.0	56.0	0.0	0.0	0.0
	Cotton	242.1	0.0	0.0	-0.2	242.7	0.0	0.0	-0.1	235.5	0.0	0.0	0.0
	Subtropical Orchard	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
	Subtotal	**600.1**	**0.0**	**0.0**	**-0.1**	**601.7**	**0.0**	**0.0**	**0.0**	**585.9**	**0.0**	**0.0**	**0.0**

TABLE 17 IRRIGATED ACREAGE BY SUBREGION

CVPM Subregion	Crop Category	Preferred Alternative Average	Changes Compared to Average PA: Average	Wet	Dry	Preferred Alternative Wet	Changes Compared to Wet PA: Average	Wet	Dry	Preferred Alternative Dry	Changes Compared to Dry PA: Average	Wet	Dry
			Followed by Average				Followed by Wet				Followed by Dry		
16	Pasture	6.2	0.0	0.0	0.0	6.3	-0.2	-0.2	-0.1	6.1	0.0	0.0	0.0
	Alfalfa	5.1	0.0	0.0	0.0	5.2	-0.1	-0.1	-0.1	5.1	0.0	0.0	0.0
	Other Field Crops	6.1	0.0	0.0	0.0	6.1	-0.1	-0.1	-0.1	6.0	0.0	0.0	0.0
	Truck Crops	5.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0
	Deciduous Orchard	16.0	0.0	0.0	0.0	16.0	0.0	0.0	0.0	16.0	0.0	0.0	0.0
	Small Grain	4.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	4.0	0.0	0.0	0.0
	Grapes	55.0	0.0	0.0	0.0	55.0	0.0	0.0	0.0	55.0	0.0	0.0	0.0
	Cotton	5.0	0.0	0.0	0.0	5.1	0.0	0.0	0.0	5.0	0.0	0.0	0.0
	Subtropical Orchard	9.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0
	Subtotal	**111.4**	**-0.1**	**-0.1**	**0.0**	**111.8**	**-0.4**	**-0.4**	**-0.4**	**111.3**	**-0.1**	**-0.1**	**-0.1**
17	Pasture	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0
	Alfalfa	5.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0
	Sugar Beets	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
	Other Field Crops	8.0	0.0	0.0	0.0	8.0	0.0	0.0	0.0	7.1	0.0	0.0	0.0
	Truck Crops	10.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0
	Tomatoes	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
	Deciduous Orchard	73.0	0.0	0.0	0.0	73.0	0.0	0.0	0.0	73.0	0.0	0.0	0.0
	Small Grain	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	5.3	0.0	0.0	0.0
	Grapes	109.0	0.0	0.0	0.0	109.0	0.0	0.0	0.0	109.0	0.0	0.0	0.0
	Cotton	10.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	8.7	0.0	0.0	0.0
	Subtropical Orchard	35.0	0.0	0.0	0.0	35.0	0.0	0.0	0.0	35.0	0.0	0.0	0.0
	Subtotal	**260.1**	**0.0**	**0.0**	**0.0**	**260.3**	**0.0**	**0.0**	**0.0**	**255.3**	**0.0**	**0.0**	**0.0**
18	Pasture	4.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	3.7	0.0	0.0	0.0
	Alfalfa	62.2	0.0	0.0	0.1	62.8	-0.3	-0.3	-0.2	59.0	0.0	0.0	0.0
	Sugar Beets	1.9	0.0	0.0	0.0	1.9	0.0	0.0	0.0	1.9	0.0	0.0	0.0
	Other Field Crops	78.1	0.0	0.0	-0.1	78.5	-0.2	-0.2	-0.2	75.3	0.0	0.0	0.0
	Truck Crops	13.0	0.0	0.0	0.0	13.0	0.0	0.0	0.0	13.0	0.0	0.0	0.0
	Tomatoes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Deciduous Orchard	69.0	0.0	0.0	0.0	69.0	0.0	0.0	0.0	69.0	0.0	0.0	0.0
	Small Grain	41.0	0.0	0.0	0.0	41.4	-0.1	-0.1	-0.1	38.8	0.1	0.1	0.1
	Grapes	56.0	0.0	0.0	0.0	56.0	0.0	0.0	0.0	56.0	0.0	0.0	0.0
	Cotton	170.3	0.0	0.0	-0.1	171.2	-0.5	-0.5	-0.5	163.7	0.0	0.0	0.1
	Subtropical Orchard	97.0	0.0	0.0	0.0	97.0	0.0	0.0	0.0	97.0	0.0	0.0	0.0
	Subtotal	**592.5**	**0.0**	**0.0**	**-0.1**	**594.9**	**-1.2**	**-1.2**	**-1.2**	**577.2**	**0.1**	**0.1**	**0.1**
19	Pasture	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Alfalfa	25.8	0.0	0.0	0.0	25.9	0.0	0.0	0.0	25.2	0.0	0.0	0.0
	Sugar Beets	4.9	0.0	0.0	0.0	5.0	0.0	0.0	0.0	4.9	0.0	0.0	0.0
	Other Field Crops	6.7	0.0	0.0	0.0	6.7	0.0	0.0	0.0	6.7	0.0	0.0	0.0
	Truck Crops	24.0	0.0	0.0	0.0	24.0	0.0	0.0	0.0	24.0	0.0	0.0	0.0
	Tomatoes	1.7	0.0	0.0	0.0	1.7	0.0	0.0	0.0	1.7	0.0	0.0	0.0
	Deciduous Orchard	50.9	0.0	0.0	0.0	50.9	0.0	0.0	0.0	50.9	0.0	0.0	0.0
	Small Grain	7.6	0.0	0.0	0.0	7.6	0.0	0.0	0.0	7.2	0.0	0.0	0.0
	Grapes	10.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0
	Cotton	117.9	0.0	0.0	-0.1	117.8	0.0	0.0	0.0	115.1	0.0	0.0	0.0
	Subtropical Orchard	4.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0
	Subtotal	**253.6**	**0.0**	**0.0**	**0.0**	**253.6**	**0.0**	**0.0**	**0.0**	**249.7**	**0.0**	**0.0**	**0.0**

TABLE 17 IRRIGATED ACREAGE BY SUBREGION

CVPM Subregion	Crop Category	Preferred Alternative Average	hanges Compared to Average P Average	Wet	Dry	Preferred Alternative Wet	Changes Compared to Wet PA Average	Wet	Dry	Preferred Alternative Dry	Changes Compared to Dry PA Average	Wet	Dry
			Followed by Average				Followed by Wet				Followed by Dry		
20	Pasture	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Alfalfa	12.0	0.0	0.0	0.0	12.1	0.0	0.0	0.0	11.0	0.0	0.0	0.0
	Sugar Beets	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0
	Other Field Crops	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0
	Truck Crops	41.0	0.0	0.0	0.0	41.0	0.0	0.0	0.0	40.9	0.0	0.0	0.0
	Tomatoes	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0
	Deciduous Orchard	52.0	0.0	0.0	0.0	52.0	0.0	0.0	0.0	52.0	0.0	0.0	0.0
	Small Grain	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0
	Grapes	33.0	0.0	0.0	0.0	33.0	0.0	0.0	0.0	33.0	0.0	0.0	0.0
	Cotton	33.0	0.0	0.0	0.0	33.1	0.0	0.0	0.0	30.8	0.0	0.0	0.0
	Subtropical Orchard	27.0	0.0	0.0	0.0	27.0	0.0	0.0	0.0	27.0	0.0	0.0	0.0
	Subtotal	**202.8**	**0.0**	**0.0**	**0.0**	**203.0**	**0.0**	**0.0**	**0.0**	**199.3**	**0.0**	**0.0**	**0.0**
21	Pasture	0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.0
	Alfalfa	27.6	0.0	0.0	0.0	27.7	0.0	0.0	0.0	27.3	0.0	0.0	0.0
	Sugar Beets	7.4	0.0	0.0	0.0	7.4	0.0	0.0	0.0	7.4	0.0	0.0	0.0
	Other Field Crops	16.1	0.0	0.0	0.0	16.0	0.0	0.0	0.0	16.0	0.0	0.0	0.0
	Rice	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Truck Crops	107.8	0.0	0.0	0.0	107.8	0.0	0.0	0.0	107.8	0.0	0.0	0.0
	Tomatoes	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
	Deciduous Orchard	25.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0
	Small Grain	1.8	0.0	0.0	0.0	1.9	0.0	0.0	0.0	1.8	0.0	0.0	0.0
	Grapes	36.9	0.0	0.0	0.0	36.9	0.0	0.0	0.0	36.9	0.0	0.0	0.0
	Cotton	120.8	0.0	0.0	-0.1	120.8	0.0	0.0	0.0	119.3	0.0	0.0	0.0
	Subtropical Orchard	14.0	0.0	0.0	0.0	14.0	0.0	0.0	0.0	14.0	0.0	0.0	0.0
	Subtotal	**359.2**	**0.0**	**0.0**	**0.0**	**359.2**	**0.0**	**0.0**	**0.0**	**357.2**	**0.0**	**0.0**	**0.0**

NOTES:
1. All acreage values in thousands.
2. A negative value represents a lower acreage in an alternative than in the Preferred Alternative.
3. Not all 12 crops are grown in all subregions.
4. Subregions 3 and 3B should be added together to get the complete subregion 3. 3B represents the area within this subregion served by the Tehama Colusa Canal.

TABLE 18 VALUE OF PRODUCTION BY SUBREGION (Million $)

CVPM Subregion	Crop Category	Preferred Alternative Average	Changes Compared to Average PA: Average	Wet	Dry	Preferred Alternative Wet	Changes Compared to Wet PA: Average	Wet	Dry	Preferred Alternative Dry	Changes Compared to Dry PA: Average	Wet	Dry
			Followed by Average				Followed by Wet				Followed by Dry		
1	Pasture	2.7	-0.2	0.0	0.0	2.6	-0.2	-0.2	-0.2	2.6	-0.3	-0.3	-0.3
	Alfalfa	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0
	Other Field Crops	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0
	Deciduous Orchard	4.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0
	Small Grain	0.7	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.7	0.0	0.0	0.0
	Subtotal	**8.4**	**-0.2**	**-0.1**	**0.0**	**8.3**	**-0.3**	**-0.3**	**-0.3**	**8.3**	**-0.3**	**-0.3**	**-0.3**
2	Pasture	4.9	0.0	0.0	-0.5	4.9	0.0	0.0	-0.8	4.8	0.0	0.0	0.0
	Alfalfa	5.1	0.0	0.0	-0.2	5.1	0.0	0.0	-0.3	5.0	0.0	0.0	0.0
	Sugar Beets	2.9	0.0	0.0	0.0	2.9	0.0	0.0	0.0	2.9	0.0	0.0	0.0
	Other Field Crops	7.8	0.0	0.0	-0.2	7.8	0.0	0.0	-0.3	7.7	0.0	0.0	0.0
	Rice	3.8	0.0	0.0	-0.1	3.8	0.0	0.0	-0.3	3.8	0.0	0.0	0.0
	Truck Crops	55.1	0.0	0.0	-0.1	55.1	0.0	0.0	-0.1	55.1	0.0	0.0	0.0
	Deciduous Orchard	91.3	0.0	0.0	-0.1	91.3	0.0	0.0	0.0	91.3	0.0	0.0	0.0
	Small Grain	4.0	0.0	0.0	-0.1	3.9	0.0	0.0	-0.2	3.9	0.0	0.0	0.0
	Subtropical Orchard	14.6	0.0	0.0	0.0	14.6	0.0	0.0	0.0	14.6	0.0	0.0	0.0
	Subtotal	**189.5**	**0.0**	**0.0**	**-1.3**	**189.4**	**0.0**	**0.0**	**-2.1**	**189.1**	**0.0**	**0.0**	**0.0**
3	Pasture	1.1	0.0	0.0	0.0	1.1	0.0	0.0	0.0	1.1	0.0	0.0	0.0
	Alfalfa	9.7	0.0	0.0	0.0	9.7	0.0	0.0	0.0	9.6	0.0	0.0	0.0
	Sugar Beets	7.3	0.0	0.0	0.0	7.3	0.0	0.0	0.0	7.2	0.0	0.0	0.0
	Other Field Crops	7.1	0.0	0.0	0.0	7.1	0.0	0.0	0.0	7.0	0.0	0.0	0.0
	Rice	118.1	0.0	0.0	0.0	118.6	0.0	0.0	0.0	116.2	0.0	0.0	0.0
	Truck Crops	89.6	0.0	0.0	0.0	89.6	0.0	0.0	0.0	89.6	0.0	0.0	0.0
	Tomatoes	37.9	0.0	0.0	0.0	38.0	0.0	0.0	0.0	37.9	0.0	0.0	0.0
	Deciduous Orchard	18.9	0.0	0.0	0.0	18.9	0.0	0.0	0.0	18.9	0.0	0.0	0.0
	Small Grain	8.7	0.0	0.0	0.0	8.7	0.0	0.0	0.0	8.5	0.0	0.0	0.0
	Subtotal	**298.4**	**0.0**	**0.0**	**0.0**	**299.0**	**0.0**	**0.0**	**0.0**	**295.9**	**0.0**	**0.0**	**0.0**
3B	Pasture	0.8	0.0	0.0	-0.8	0.8	0.0	0.0	-0.2	0.6	0.0	0.0	0.0
	Alfalfa	5.4	0.0	0.0	-5.4	5.4	0.0	0.0	-1.4	4.1	0.0	0.0	0.0
	Sugar Beets	4.1	0.0	0.0	-3.9	4.1	0.0	0.0	-2.0	3.8	0.0	0.0	0.0
	Other Field Crops	6.1	0.0	0.0	-6.0	6.1	0.0	0.0	-6.1	4.7	0.0	0.0	0.0
	Rice	8.2	0.0	0.0	-8.2	8.2	0.0	0.0	-8.2	5.2	0.0	0.0	0.0
	Truck Crops	2.0	0.0	0.0	-0.2	2.0	0.0	0.0	-0.1	2.0	0.0	0.0	0.0
	Tomatoes	8.9	0.0	0.0	-5.6	8.9	0.0	0.0	-2.7	8.4	0.0	0.0	0.0
	Deciduous Orchard	28.6	0.0	0.0	-3.5	28.6	0.0	0.0	0.0	28.6	0.0	0.0	0.0
	Small Grain	2.4	0.0	0.0	-2.4	2.4	0.0	0.0	-2.4	1.8	0.0	0.0	0.0
	Subtropical Orchard	1.4	0.0	0.0	-0.1	1.4	0.0	0.0	0.0	1.4	0.0	0.0	0.0
	Subtotal	**67.9**	**0.0**	**0.0**	**-36.2**	**68.1**	**0.1**	**0.1**	**-23.1**	**60.5**	**0.0**	**0.0**	**0.0**

TABLE 18 VALUE OF PRODUCTION BY SUBREGION (Million $)

CVPM Subregion	Crop Category	Preferred Alternative Average	Changes Compared to Average PA: Average	Wet	Dry	Preferred Alternative Wet	Changes Compared to Wet PA: Average	Wet	Dry	Preferred Alternative Dry	Changes Compared to Dry PA: Average	Wet	Dry
			Followed by Average				Followed by Wet				Followed by Dry		
4	Pasture	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0
	Alfalfa	3.6	0.0	0.0	0.0	3.7	0.0	0.0	0.0	3.6	0.0	0.0	0.0
	Sugar Beets	7.5	0.0	0.0	0.0	7.5	0.0	0.0	0.0	7.5	0.0	0.0	0.0
	Other Field Crops	18.0	0.0	0.0	0.0	18.1	0.0	0.0	0.0	17.9	0.0	0.0	0.0
	Rice	74.6	0.0	0.0	0.0	74.8	0.0	0.0	0.0	74.1	0.0	0.0	0.0
	Truck Crops	60.8	0.0	0.0	0.0	60.8	0.0	0.0	0.0	60.8	0.0	0.0	0.0
	Tomatoes	49.9	0.0	0.0	0.0	49.9	0.0	0.0	0.0	49.9	0.0	0.0	0.0
	Deciduous Orchard	32.5	0.0	0.0	0.0	32.5	0.0	0.0	0.0	32.5	0.0	0.0	0.0
	Small Grain	13.5	0.0	0.0	0.0	13.5	0.0	0.0	0.0	13.3	0.0	0.0	0.0
	Subtotal	**260.7**	**0.0**	**0.0**	**0.0**	**260.9**	**0.0**	**0.0**	**0.0**	**259.7**	**0.0**	**0.0**	**0.0**
5	Pasture	3.1	0.0	0.0	0.0	3.1	0.0	0.0	0.0	3.0	0.0	0.0	0.0
	Alfalfa	2.5	0.0	0.0	0.0	2.5	0.0	0.0	0.0	2.5	0.0	0.0	0.0
	Sugar Beets	1.5	0.0	0.0	0.0	1.5	0.0	0.0	0.0	1.5	0.0	0.0	0.0
	Other Field Crops	6.9	0.0	0.0	0.0	6.9	0.0	0.0	0.0	6.9	0.0	0.0	0.0
	Rice	141.2	0.0	0.0	0.0	141.7	-0.1	-0.1	-0.1	140.5	-0.1	-0.1	-0.1
	Truck Crops	23.5	0.0	0.0	0.0	23.5	0.0	0.0	0.0	23.5	0.0	0.0	0.0
	Tomatoes	2.3	0.0	0.0	0.0	2.3	0.0	0.0	0.0	2.3	0.0	0.0	0.0
	Deciduous Orchard	129.1	0.0	0.0	0.0	129.1	0.0	0.0	0.0	129.1	0.0	0.0	0.0
	Small Grain	6.3	0.0	0.0	0.0	6.3	0.0	0.0	0.0	6.2	0.0	0.0	0.0
	Subtropical Orchard	3.6	0.0	0.0	0.0	3.6	0.0	0.0	0.0	3.6	0.0	0.0	0.0
	Subtotal	**320.0**	**0.0**	**0.0**	**0.0**	**320.5**	**-0.1**	**-0.1**	**-0.1**	**319.1**	**-0.1**	**-0.1**	**-0.1**
6	Pasture	1.7	0.0	0.0	0.0	1.8	-0.1	-0.1	-0.1	1.7	0.0	0.0	0.0
	Alfalfa	16.8	0.0	0.0	0.0	17.0	-0.2	-0.2	-0.2	16.8	0.0	0.0	0.0
	Sugar Beets	16.2	0.0	0.0	0.0	16.3	-0.1	-0.1	0.0	16.2	0.0	0.0	0.0
	Other Field Crops	28.9	0.0	0.0	0.0	29.2	-0.2	-0.2	-0.2	28.8	0.0	0.0	0.0
	Rice	10.6	0.0	0.0	0.0	10.8	-0.2	-0.2	-0.2	10.5	0.0	0.0	0.0
	Truck Crops	14.1	0.0	0.0	0.0	14.1	0.0	0.0	0.0	14.1	0.0	0.0	0.0
	Tomatoes	70.0	0.0	0.0	0.0	70.2	-0.1	-0.1	-0.1	70.0	0.0	0.0	0.0
	Deciduous Orchard	26.2	0.0	0.0	0.0	26.2	0.0	0.0	0.0	26.2	0.0	0.0	0.0
	Small Grain	21.9	0.0	0.0	0.0	22.0	-0.1	-0.1	-0.1	21.5	0.1	0.1	0.1
	Grapes	13.8	0.0	0.0	0.0	13.8	0.0	0.0	0.0	13.8	0.0	0.0	0.0
	Subtotal	**220.3**	**0.0**	**0.0**	**0.0**	**221.2**	**-0.9**	**-0.9**	**-0.9**	**219.6**	**0.0**	**0.0**	**0.0**
7	Pasture	2.1	0.0	0.0	0.0	2.1	0.0	0.0	0.0	2.1	0.0	0.0	0.0
	Alfalfa	1.8	0.0	0.0	0.0	1.8	0.0	0.0	0.0	1.8	0.0	0.0	0.0
	Sugar Beets	1.9	0.0	0.0	0.0	1.9	0.0	0.0	0.0	1.9	0.0	0.0	0.0
	Other Field Crops	1.8	0.0	0.0	0.0	1.8	0.0	0.0	0.0	1.8	0.0	0.0	0.0
	Rice	39.6	0.0	0.0	0.0	39.7	0.0	0.0	0.0	39.3	0.0	0.0	0.0
	Truck Crops	1.2	0.0	0.0	0.0	1.2	0.0	0.0	0.0	1.2	0.0	0.0	0.0
	Tomatoes	0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.0
	Deciduous Orchard	9.5	0.0	0.0	0.0	9.5	0.0	0.0	0.0	9.5	0.0	0.0	0.0
	Small Grain	3.2	0.0	0.0	0.0	3.2	0.0	0.0	0.0	3.1	0.0	0.0	0.0
	Grapes	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0
	Subtotal	**62.3**	**0.0**	**0.0**	**0.0**	**62.4**	**0.0**	**0.0**	**0.0**	**61.9**	**0.0**	**0.0**	**0.0**

TABLE 18 VALUE OF PRODUCTION BY SUBREGION (Million $)

CVPM Subregion	Crop Category	Preferred Alternative Average	Changes Compared to Average PA: Average	Wet	Dry	Preferred Alternative Wet	Changes Compared to Wet PA: Average	Wet	Dry	Preferred Alternative Dry	Changes Compared to Dry PA: Average	Wet	Dry
			Followed by Average				Followed by Wet				Followed by Dry		
8	Pasture	6.9	0.0	0.0	0.0	6.9	0.0	0.0	0.0	6.8	0.0	0.0	0.0
	Alfalfa	7.2	0.0	0.0	0.0	7.2	0.0	0.0	0.0	7.2	0.0	0.0	0.0
	Sugar Beets	9.8	0.0	0.0	0.0	9.8	0.0	0.0	0.0	9.8	0.0	0.0	0.0
	Other Field Crops	20.8	0.0	0.0	0.0	20.8	0.0	0.0	0.0	20.7	0.0	0.0	0.0
	Rice	3.7	0.0	0.0	0.0	3.7	0.0	0.0	0.0	3.7	0.0	0.0	0.0
	Truck Crops	70.9	0.0	0.0	0.0	70.9	0.0	0.0	0.0	70.9	0.0	0.0	0.0
	Tomatoes	19.8	0.0	0.0	0.0	19.8	0.0	0.0	0.0	19.7	0.0	0.0	0.0
	Deciduous Orchard	49.9	0.0	0.0	0.0	49.9	0.0	0.0	0.0	49.9	0.0	0.0	0.0
	Small Grain	9.2	0.0	0.0	0.0	9.2	0.0	0.0	0.0	8.9	0.0	0.0	0.0
	Grapes	101.7	0.0	0.0	0.0	101.7	0.0	0.0	0.0	101.7	0.0	0.0	0.0
	Subtotal	**299.9**	**0.0**	**0.0**	**0.0**	**300.0**	**0.0**	**0.0**	**0.0**	**299.3**	**0.0**	**0.0**	**0.0**
9	Pasture	3.6	0.0	0.0	0.0	3.6	-0.1	-0.1	-0.1	3.4	0.1	0.1	0.1
	Alfalfa	25.6	-0.1	-0.1	0.0	25.7	-0.1	-0.1	-0.1	25.2	0.2	0.2	0.2
	Sugar Beets	22.0	0.0	0.0	0.0	22.0	0.0	0.0	0.0	21.9	0.1	0.1	0.1
	Other Field Crops	55.9	-0.1	-0.1	-0.1	56.0	-0.2	-0.2	-0.2	55.3	0.3	0.3	0.3
	Rice	0.7	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.7	0.0	0.0	0.0
	Truck Crops	190.8	0.0	0.0	0.0	190.8	0.0	0.0	0.0	190.6	0.1	0.1	0.1
	Tomatoes	64.9	0.0	0.0	0.0	65.0	-0.1	-0.1	0.0	64.8	0.1	0.1	0.1
	Deciduous Orchard	22.7	0.0	0.0	0.0	22.7	0.0	0.0	0.0	22.7	0.0	0.0	0.0
	Small Grain	30.7	0.0	0.0	0.0	30.9	-0.1	-0.1	-0.1	29.7	0.3	0.3	0.3
	Grapes	10.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0
	Subtotal	**426.8**	**-0.3**	**-0.3**	**-0.1**	**427.2**	**-0.6**	**-0.6**	**-0.6**	**424.2**	**1.2**	**1.2**	**1.2**
10	Pasture	3.1	0.0	0.0	0.0	3.1	0.0	0.0	0.0	3.1	0.0	0.0	0.0
	Alfalfa	23.6	0.0	0.0	-0.2	23.6	-0.1	0.0	-0.1	23.6	0.0	0.0	0.0
	Sugar Beets	12.2	0.0	0.0	0.0	12.2	0.0	0.0	0.0	12.2	0.0	0.0	0.0
	Other Field Crops	31.0	0.0	0.0	-0.1	31.0	0.0	0.0	0.0	31.0	0.0	0.0	0.0
	Rice	2.3	0.0	0.0	0.0	2.3	0.0	0.0	0.0	2.3	0.0	0.0	0.0
	Truck Crops	718.0	0.0	0.0	0.0	717.9	0.1	0.0	0.1	718.1	0.0	0.0	0.0
	Tomatoes	60.1	0.0	0.0	0.0	60.1	0.0	0.0	0.0	60.1	0.0	0.0	0.0
	Deciduous Orchard	52.4	0.0	0.0	0.0	52.4	0.0	0.0	0.0	52.4	0.0	0.0	0.0
	Small Grain	7.6	0.0	0.0	0.0	7.5	0.1	0.0	0.1	7.6	0.0	0.0	0.0
	Grapes	1.9	0.0	0.0	0.0	1.9	0.0	0.0	0.0	1.9	0.0	0.0	0.0
	Cotton	102.6	0.0	0.0	-0.5	102.7	-0.1	0.0	-0.1	102.6	0.0	0.0	0.0
	Subtropical Orchard	0.4	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.4	0.0	0.0	0.0
	Subtotal	**1015.1**	**0.0**	**0.0**	**-0.8**	**1015.1**	**0.0**	**0.0**	**0.0**	**1015.2**	**0.0**	**0.0**	**0.0**
11	Pasture	10.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	9.9	0.0	0.0	0.0
	Alfalfa	4.8	0.0	0.0	0.0	4.8	0.0	0.0	0.0	4.8	0.0	0.0	0.0
	Sugar Beets	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0
	Other Field Crops	11.5	0.0	0.0	0.0	11.5	0.0	0.0	0.0	11.4	0.0	0.0	0.0
	Rice	3.5	0.0	0.0	0.0	3.6	0.0	0.0	0.0	3.5	0.0	0.0	0.0
	Truck Crops	40.1	0.0	0.0	0.0	40.1	0.0	0.0	0.0	40.0	0.0	0.0	0.0
	Tomatoes	1.2	0.0	0.0	0.0	1.2	0.0	0.0	0.0	1.2	0.0	0.0	0.0
	Deciduous Orchard	115.8	0.0	0.0	0.0	115.8	0.0	0.0	0.0	115.8	0.0	0.0	0.0
	Small Grain	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
	Grapes	19.4	0.0	0.0	0.0	19.4	0.0	0.0	0.0	19.4	0.0	0.0	0.0
	Subtotal	**207.6**	**0.0**	**0.0**	**0.0**	**207.6**	**0.0**	**0.0**	**0.0**	**207.5**	**0.0**	**0.0**	**0.0**

TABLE 18 VALUE OF PRODUCTION BY SUBREGION (Million $)

CVPM Subregion	Crop Category	Preferred Alternative Average	Changes Compared to Average PA: Average	Wet	Dry	Preferred Alternative Wet	Changes Compared to Wet PA: Average	Wet	Dry	Preferred Alternative Dry	Changes Compared to Dry PA: Average	Wet	Dry
			Followed by Average				Followed by Wet				Followed by Dry		
12	Pasture	4.2	0.0	0.0	0.0	4.2	0.0	0.0	0.0	4.2	0.0	0.0	0.0
	Alfalfa	10.5	0.0	0.0	0.0	10.4	0.0	0.0	0.0	10.5	0.0	0.0	0.0
	Sugar Beets	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
	Other Field Crops	26.5	0.0	0.0	0.0	26.4	0.0	0.0	0.0	26.3	0.0	0.0	0.0
	Truck Crops	19.1	0.0	0.0	0.0	19.1	0.0	0.0	0.0	19.1	0.0	0.0	0.0
	Deciduous Orchard	134.7	0.0	0.0	0.0	134.7	0.0	0.0	0.0	134.7	0.0	0.0	0.0
	Small Grain	5.4	0.0	0.0	0.0	5.4	0.0	0.0	0.0	5.3	0.0	0.0	0.0
	Grapes	26.2	0.0	0.0	0.0	26.2	0.0	0.0	0.0	26.2	0.0	0.0	0.0
	Cotton	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
	Subtropical Orchard	3.5	0.0	0.0	0.0	3.5	0.0	0.0	0.0	3.5	0.0	0.0	0.0
	Subtotal	**231.2**	**0.0**	**0.0**	**0.0**	**230.9**	**0.0**	**0.0**	**0.0**	**230.8**	**0.0**	**0.0**	**0.0**
13	Pasture	9.2	0.0	0.0	0.0	9.3	-0.1	-0.1	-0.1	9.2	-0.1	-0.1	-0.1
	Alfalfa	24.2	0.0	0.0	0.0	24.3	-0.1	-0.1	-0.1	24.2	-0.1	-0.1	-0.1
	Sugar Beets	4.4	0.0	0.0	0.0	4.4	0.0	0.0	0.0	4.4	0.0	0.0	0.0
	Other Field Crops	35.2	0.0	0.0	0.0	35.4	-0.1	-0.1	-0.1	35.1	-0.1	-0.1	-0.1
	Rice	3.1	0.0	0.0	0.0	3.1	0.0	0.0	0.0	3.1	0.0	0.0	0.0
	Truck Crops	114.4	0.0	0.0	0.0	114.4	0.0	0.0	0.0	114.4	0.0	0.0	0.0
	Tomatoes	10.5	0.0	0.0	0.0	10.5	0.0	0.0	0.0	10.5	0.0	0.0	0.0
	Deciduous Orchard	193.4	0.0	0.0	0.0	193.4	0.0	0.0	0.0	193.4	0.0	0.0	0.0
	Small Grain	25.3	0.0	0.0	0.0	25.4	0.0	0.0	-0.1	25.0	0.0	0.0	0.0
	Grapes	184.9	0.0	0.0	0.0	184.9	0.0	0.0	0.0	184.9	0.0	0.0	0.0
	Cotton	71.4	0.0	0.0	-0.1	71.8	-0.2	-0.2	-0.3	71.2	-0.2	-0.2	-0.2
	Subtropical Orchard	34.7	0.0	0.0	0.0	34.7	0.0	0.0	0.0	34.7	0.0	0.0	0.0
	Subtotal	**710.6**	**0.0**	**0.0**	**0.0**	**711.5**	**-0.5**	**-0.5**	**-0.7**	**709.9**	**-0.6**	**-0.6**	**-0.6**
14	Pasture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Alfalfa	8.6	0.0	0.0	0.0	8.6	0.0	0.0	0.0	8.2	0.0	0.0	0.0
	Sugar Beets	3.9	0.0	0.0	0.0	4.0	0.0	0.0	0.0	3.9	0.0	0.0	0.0
	Other Field Crops	11.0	0.0	0.0	0.0	10.9	0.0	0.0	0.0	10.7	0.0	0.0	0.0
	Truck Crops	817.9	0.0	0.0	0.0	817.8	0.0	0.0	0.0	816.9	0.0	0.0	0.0
	Tomatoes	114.6	0.0	0.0	0.1	114.6	0.0	0.0	0.0	113.3	0.0	0.0	0.0
	Deciduous Orchard	38.5	0.0	0.0	0.0	38.5	0.0	0.0	0.0	38.5	0.0	0.0	0.0
	Small Grain	5.2	0.0	0.0	0.0	5.2	0.0	0.0	0.0	4.9	0.0	0.0	0.0
	Grapes	15.1	0.0	0.0	0.0	15.1	0.0	0.0	0.0	15.1	0.0	0.0	0.0
	Cotton	234.6	0.0	0.0	-0.1	234.7	0.0	0.0	0.0	225.8	0.0	0.0	0.0
	Subtropical Orchard	3.7	0.0	0.0	0.0	3.7	0.0	0.0	0.0	3.7	0.0	0.0	0.0
	Subtotal	**1253.1**	**0.0**	**0.0**	**0.0**	**1253.1**	**0.0**	**0.0**	**0.0**	**1241.1**	**0.0**	**0.0**	**0.0**
15	Pasture	0.9	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.9	0.0	0.0	0.0
	Alfalfa	51.3	0.0	0.0	0.1	51.4	0.0	0.0	0.0	49.7	0.0	0.0	0.0
	Sugar Beets	4.1	0.0	0.0	0.0	4.1	0.0	0.0	0.0	4.0	0.0	0.0	0.0
	Other Field Crops	51.2	0.0	0.0	0.0	51.3	0.0	0.0	0.0	50.2	0.0	0.0	0.0
	Rice	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
	Truck Crops	72.0	0.0	0.0	0.0	72.0	0.0	0.0	0.0	71.9	0.0	0.0	0.0
	Tomatoes	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
	Deciduous Orchard	58.7	0.0	0.0	0.0	58.7	0.0	0.0	0.0	58.7	0.0	0.0	0.0
	Small Grain	41.6	0.0	0.0	0.0	41.9	0.0	0.0	0.0	39.7	0.0	0.0	0.0
	Grapes	121.7	0.0	0.0	0.0	121.7	0.0	0.0	0.0	121.7	0.0	0.0	0.0
	Cotton	275.0	0.0	0.0	-0.2	275.7	0.0	0.0	-0.1	267.5	0.0	0.0	0.0
	Subtropical Orchard	3.7	0.0	0.0	0.0	3.7	0.0	0.0	0.0	3.7	0.0	0.0	0.0
	Subtotal	**683.2**	**0.0**	**0.0**	**-0.1**	**684.5**	**0.0**	**0.0**	**0.0**	**671.1**	**0.0**	**0.0**	**0.0**

TABLE 18 VALUE OF PRODUCTION BY SUBREGION (Million $)

CVPM Subregion	Crop Category	Preferred Alternative Average	Changes Compared to Average PA: Average	Wet	Dry	Preferred Alternative Wet	Changes Compared to Wet PA: Average	Wet	Dry	Preferred Alternative Dry	Changes Compared to Dry PA: Average	Wet	Dry
			Followed by Average				Followed by Wet				Followed by Dry		
16	Pasture	1.4	0.0	0.0	0.0	1.5	0.0	0.0	0.0	1.4	0.0	0.0	0.0
	Alfalfa	3.1	0.0	0.0	0.0	3.2	0.0	0.0	0.0	3.1	0.0	0.0	0.0
	Other Field Crops	3.6	0.0	0.0	0.0	3.6	0.0	0.0	0.0	3.6	0.0	0.0	0.0
	Truck Crops	30.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0
	Deciduous Orchard	24.7	0.0	0.0	0.0	24.7	0.0	0.0	0.0	24.7	0.0	0.0	0.0
	Small Grain	2.4	0.0	0.0	0.0	2.4	0.0	0.0	0.0	2.3	0.0	0.0	0.0
	Grapes	119.6	0.0	0.0	0.0	119.6	0.0	0.0	0.0	119.6	0.0	0.0	0.0
	Cotton	5.7	0.0	0.0	0.0	5.8	-0.1	-0.1	-0.1	5.7	0.0	0.0	0.0
	Subtropical Orchard	33.7	0.0	0.0	0.0	33.7	0.0	0.0	0.0	33.7	0.0	0.0	0.0
	Subtotal	**224.3**	**0.0**	**0.0**	**0.0**	**224.5**	**-0.2**	**-0.2**	**-0.2**	**224.2**	**0.0**	**0.0**	**0.0**
17	Pasture	0.7	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.5	0.0	0.0	0.0
	Alfalfa	3.1	0.0	0.0	0.0	3.1	0.0	0.0	0.0	2.5	0.0	0.0	0.0
	Sugar Beets	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
	Other Field Crops	4.8	0.0	0.0	0.0	4.8	0.0	0.0	0.0	4.2	0.0	0.0	0.0
	Truck Crops	60.0	0.0	0.0	0.0	60.0	0.0	0.0	0.0	59.7	0.0	0.0	0.0
	Tomatoes	1.5	0.0	0.0	0.0	1.5	0.0	0.0	0.0	1.4	0.0	0.0	0.0
	Deciduous Orchard	112.8	0.0	0.0	0.0	112.8	0.0	0.0	0.0	112.8	0.0	0.0	0.0
	Small Grain	3.5	0.0	0.0	0.0	3.5	0.0	0.0	0.0	3.1	0.0	0.0	0.0
	Grapes	236.9	0.0	0.0	0.0	236.9	0.0	0.0	0.0	236.9	0.0	0.0	0.0
	Cotton	11.4	0.0	0.0	0.0	11.4	0.0	0.0	0.0	9.9	0.0	0.0	0.0
	Subtropical Orchard	131.0	0.0	0.0	0.0	131.0	0.0	0.0	0.0	131.0	0.0	0.0	0.0
	Subtotal	**565.7**	**0.0**	**0.0**	**0.0**	**565.7**	**0.0**	**0.0**	**0.0**	**562.0**	**0.0**	**0.0**	**0.0**
18	Pasture	0.9	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.8	0.0	0.0	0.0
	Alfalfa	38.4	0.0	0.0	0.1	38.7	-0.2	-0.2	-0.2	36.4	0.0	0.0	0.0
	Sugar Beets	1.6	0.0	0.0	0.0	1.6	0.0	0.0	0.0	1.5	0.0	0.0	0.0
	Other Field Crops	46.5	0.0	0.0	0.0	46.7	-0.1	-0.1	-0.1	44.8	0.0	0.0	0.0
	Truck Crops	78.0	0.0	0.0	0.0	78.0	0.0	0.0	0.0	77.9	0.0	0.0	0.0
	Tomatoes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Deciduous Orchard	106.6	0.0	0.0	0.0	106.6	0.0	0.0	0.0	106.6	0.0	0.0	0.0
	Small Grain	24.0	0.0	0.0	0.0	24.3	-0.1	-0.1	-0.1	22.7	0.1	0.1	0.1
	Grapes	121.7	0.0	0.0	0.0	121.7	0.0	0.0	0.0	121.7	0.0	0.0	0.0
	Cotton	193.5	0.0	0.0	-0.1	194.6	-0.6	-0.6	-0.6	186.0	0.0	0.0	0.0
	Subtropical Orchard	363.1	0.0	0.0	0.0	363.1	0.0	0.0	0.0	363.1	0.0	0.0	0.0
	Subtotal	**974.2**	**0.0**	**0.0**	**-0.1**	**976.1**	**-1.0**	**-1.0**	**-1.0**	**961.5**	**0.1**	**0.1**	**0.1**
19	Pasture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Alfalfa	15.7	0.0	0.0	0.0	15.7	0.0	0.0	0.0	15.3	0.0	0.0	0.0
	Sugar Beets	4.3	0.0	0.0	0.0	4.3	0.0	0.0	0.0	4.2	0.0	0.0	0.0
	Other Field Crops	4.5	0.0	0.0	0.0	4.5	0.0	0.0	0.0	4.5	0.0	0.0	0.0
	Truck Crops	147.1	0.0	0.0	0.0	147.0	0.0	0.0	0.0	147.0	0.0	0.0	0.0
	Tomatoes	2.7	0.0	0.0	0.0	2.7	0.0	0.0	0.0	2.7	0.0	0.0	0.0
	Deciduous Orchard	80.2	0.0	0.0	0.0	80.2	0.0	0.0	0.0	80.2	0.0	0.0	0.0
	Small Grain	3.6	0.0	0.0	0.0	3.6	0.0	0.0	0.0	3.5	0.0	0.0	0.0
	Grapes	33.0	0.0	0.0	0.0	33.0	0.0	0.0	0.0	33.0	0.0	0.0	0.0
	Cotton	125.2	0.0	0.0	-0.1	125.1	0.0	0.0	0.0	122.2	0.0	0.0	0.0
	Subtropical Orchard	17.1	0.0	0.0	0.0	17.1	0.0	0.0	0.0	17.1	0.0	0.0	0.0
	Subtotal	**433.3**	**0.0**	**0.0**	**0.0**	**433.3**	**0.0**	**0.0**	**0.0**	**429.7**	**0.0**	**0.0**	**0.0**

TABLE 18 VALUE OF PRODUCTION BY SUBREGION (Million $)

CVPM Subregion	Crop Category	Preferred Alternative Average	Changes Compared to Average PA: Average	Wet	Dry	Preferred Alternative Wet	Changes Compared to Wet PA: Average	Wet	Dry	Preferred Alternative Dry	Changes Compared to Dry PA: Average	Wet	Dry
			Followed by Average				Followed by Wet				Followed by Dry		
20	Pasture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Alfalfa	7.3	0.0	0.0	0.0	7.3	0.0	0.0	0.0	6.7	0.0	0.0	0.0
	Sugar Beets	0.4	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.4	0.0	0.0	0.0
	Other Field Crops	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0
	Truck Crops	251.6	0.0	0.0	0.0	251.6	0.0	0.0	0.0	251.2	0.0	0.0	0.0
	Tomatoes	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0
	Deciduous Orchard	81.8	0.0	0.0	0.0	81.8	0.0	0.0	0.0	81.8	0.0	0.0	0.0
	Small Grain	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.4	0.0	0.0	0.0
	Grapes	109.1	0.0	0.0	0.0	109.1	0.0	0.0	0.0	109.1	0.0	0.0	0.0
	Cotton	35.0	0.0	0.0	0.0	35.2	0.0	0.0	0.0	32.7	0.0	0.0	0.0
	Subtropical Orchard	115.6	0.0	0.0	0.0	115.6	0.0	0.0	0.0	115.6	0.0	0.0	0.0
	Subtotal	**603.9**	**0.0**	**0.0**	**0.0**	**604.1**	**0.0**	**0.0**	**0.0**	**600.4**	**0.0**	**0.0**	**0.0**
21	Pasture	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0
	Alfalfa	16.8	0.0	0.0	0.0	16.8	0.0	0.0	0.0	16.6	0.0	0.0	0.0
	Sugar Beets	6.4	0.0	0.0	0.0	6.4	0.0	0.0	0.0	6.3	0.0	0.0	0.0
	Other Field Crops	10.8	0.0	0.0	0.0	10.8	0.0	0.0	0.0	10.8	0.0	0.0	0.0
	Rice	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Truck Crops	661.4	0.0	0.0	0.0	661.3	0.0	0.0	0.1	661.3	0.0	0.0	0.0
	Tomatoes	1.6	0.0	0.0	0.0	1.6	0.0	0.0	0.0	1.6	0.0	0.0	0.0
	Deciduous Orchard	39.3	0.0	0.0	0.0	39.3	0.0	0.0	0.0	39.3	0.0	0.0	0.0
	Small Grain	0.9	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.9	0.0	0.0	0.0
	Grapes	122.1	0.0	0.0	0.0	122.1	0.0	0.0	0.0	122.1	0.0	0.0	0.0
	Cotton	128.3	0.0	0.0	-0.1	128.3	0.0	0.0	0.0	126.7	0.0	0.0	0.0
	Subtropical Orchard	59.9	0.0	0.0	0.0	59.9	0.0	0.0	0.0	59.9	0.0	0.0	0.0
	Subtotal	**1047.6**	**0.0**	**0.0**	**0.0**	**1047.6**	**0.0**	**0.0**	**0.0**	**1045.7**	**0.0**	**0.0**	**0.0**

NOTES:
1. All values in millions of 1992 dollars.
2. A negative value represents a lower gross revenue in an alternative than in the Preferred Alternative.
3. Not all 12 crops are grown in all subregions.
4. Subregions 3 and 3B should be added together to get the complete subregion 3. 3B represents the area within this subregion served by the Tehama Colusa Canal.

TABLE 19 CHANGES IN NET REVENUE BY SUBREGION (Million $)

CVPM Subregion	Cause of Net Revenue Change		Change Compared to Average PA				Change Compared to Wet PA				Change Compared to Dry PA		
			Average	Wet	Dry		Average	Wet	Dry		Average	Wet	Dry
			Followed By Average				Followed By Wet				Followed By Dry		
1	Fallowed Land	1.8	-0.1	0.0	0.0	1.8	-0.1	-0.1	-0.1	1.7	-0.1	-0.1	-0.1
	Groundwater Pumping Cost	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.1	0.1
	Irrigation Cost	2.3	-0.2	-0.2	-0.2	-2.3	-0.2	-0.2	-0.2	-2.3	-0.2	-0.2	-0.2
	CVP Water Cost	0.6	0.3	0.2	0.1	-0.7	0.4	0.4	0.4	-0.7	0.4	0.4	0.4
	Higher Crop Prices	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Net Change		**0.1**	**0.0**	**0.0**	**-1.2**	**0.2**	**0.2**	**0.2**	**-1.2**	**0.2**	**0.2**	**0.2**
2	Fallowed Land	30.1	0.0	0.0	-0.3	30.1	0.0	0.0	-0.4	30.0	0.0	0.0	0.0
	Groundwater Pumping Cost	20.4	0.0	0.0	0.0	-19.9	0.0	0.0	0.0	-24.6	0.0	0.0	0.0
	Irrigation Cost	22.1	0.0	0.0	0.0	-22.1	0.0	0.0	0.0	-21.9	0.0	0.0	0.0
	CVP Water Cost	0.4	-0.2	0.0	0.1	-0.6	-0.6	-0.2	0.5	-0.1	0.0	0.0	-0.1
	Higher Crop Prices	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0
	Net Change		**-0.2**	**0.0**	**0.0**	**-12.4**	**-0.6**	**-0.2**	**0.1**	**-16.5**	**0.0**	**0.0**	**-0.1**
3	Fallowed Land	39.3	0.0	0.0	0.0	39.4	0.0	0.0	0.0	38.9	0.0	0.0	0.0
	Groundwater Pumping Cost	9.0	0.0	0.0	0.0	-7.9	0.0	0.0	0.0	-14.5	0.0	0.0	0.0
	Irrigation Cost	21.2	0.0	0.0	0.0	-21.3	0.0	0.0	0.0	-21.0	0.0	0.0	0.0
	CVP Water Cost	1.6	0.0	0.0	0.0	-1.6	-0.2	-0.2	-0.2	-1.4	-0.3	-0.3	-0.3
	Higher Crop Prices	0.2	0.0	0.0	0.3	0.1	0.0	0.0	0.2	0.4	0.0	0.0	0.0
	Net Change		**0.0**	**0.0**	**0.3**	**8.7**	**-0.2**	**-0.2**	**0.0**	**2.4**	**-0.3**	**-0.3**	**-0.3**
3B	Fallowed Land	11.9	0.0	0.0	-6.4	11.9	0.0	0.0	-3.8	10.6	0.0	0.0	0.0
	Groundwater Pumping Cost	3.0	0.0	0.0	0.0	-1.8	1.4	1.4	-4.1	-8.3	0.0	0.0	0.0
	Irrigation Cost	9.0	0.0	0.0	0.0	-9.1	0.0	0.0	0.0	-7.7	0.0	0.0	0.0
	CVP Water Cost	3.7	-0.4	1.4	3.7	-4.2	-4.7	-1.2	4.2	-0.9	0.2	0.2	-0.3
	Higher Crop Prices	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
	Net Change		**-0.4**	**1.4**	**-2.8**	**-3.1**	**-3.3**	**0.2**	**-3.7**	**-6.3**	**0.2**	**0.2**	**-0.3**
4	Fallowed Land	34.3	0.0	0.0	0.0	34.3	0.0	0.0	0.0	34.1	0.0	0.0	0.0
	Groundwater Pumping Cost	9.3	0.0	0.0	0.0	-8.5	0.0	0.0	0.0	-13.5	0.0	0.0	0.0
	Irrigation Cost	20.2	0.0	0.0	0.0	-20.3	0.0	0.0	0.0	-20.1	0.0	0.0	0.0
	CVP Water Cost	1.3	0.0	0.0	0.0	-1.3	-0.1	-0.1	-0.1	-1.1	-0.2	-0.2	-0.2
	Higher Crop Prices	0.2	0.0	0.0	0.3	0.1	0.0	0.0	0.1	0.3	0.0	0.0	0.0
	Net Change		**0.0**	**0.0**	**0.3**	**4.4**	**-0.1**	**-0.1**	**0.0**	**-0.3**	**-0.2**	**-0.2**	**-0.2**
5	Fallowed Land	53.4	0.0	0.0	0.0	53.5	0.0	0.0	0.0	53.2	0.0	0.0	0.0
	Groundwater Pumping Cost	14.9	0.0	0.0	0.0	-13.0	0.0	0.0	0.0	-18.7	0.0	0.0	0.0
	Irrigation Cost	22.5	0.0	0.0	0.0	-22.6	0.0	0.0	0.0	-22.4	0.0	0.0	0.0
	CVP Water Cost	0.2	-0.3	-0.3	-0.3	-0.2	-0.3	-0.3	-0.3	-0.2	-0.3	-0.3	-0.3
	Higher Crop Prices	0.1	0.0	0.0	0.3	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0
	Net Change		**-0.3**	**-0.3**	**0.0**	**17.7**	**-0.3**	**-0.3**	**-0.2**	**12.1**	**-0.3**	**-0.3**	**-0.3**

TABLE 19 CHANGES IN NET REVENUE BY SUBREGION (Million $)

CVPM Subregion	Cause of Net Revenue Change		Change Compared to Average PA				Change Compared to Wet PA				Change Compared to Dry PA		
			Average	Wet	Dry		Average	Wet	Dry		Average	Wet	Dry
			Followed By Average				Followed By Wet				Followed By Dry		
6	Fallowed Land	32.3	0.0	0.0	0.0	32.5	-0.2	-0.2	-0.2	32.2	0.0	0.0	0.0
	Groundwater Pumping Cost	14.9	0.0	0.0	0.0	-14.4	0.3	0.3	0.3	-17.6	-0.1	-0.1	-0.1
	Irrigation Cost	21.6	0.0	0.0	0.0	-21.8	0.0	0.0	0.0	-21.5	0.0	0.0	0.0
	CVP Water Cost	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Higher Crop Prices	0.3	0.0	0.0	0.4	0.2	0.0	0.0	0.2	0.5	0.0	0.0	0.0
	Net Change		**0.0**	**0.0**	**0.4**	**-3.6**	**0.1**	**0.1**	**0.3**	**-6.4**	**-0.1**	**-0.1**	**-0.1**
7	Fallowed Land	10.5	0.0	0.0	0.0	10.5	0.0	0.0	0.0	10.4	0.0	0.0	0.0
	Groundwater Pumping Cost	7.6	0.0	0.0	0.0	-6.9	0.0	0.0	0.0	-9.1	0.0	0.0	0.0
	Irrigation Cost	4.4	0.0	0.0	0.0	-4.4	0.0	0.0	0.0	-4.3	0.0	0.0	0.0
	CVP Water Cost	0.3	-0.1	-0.1	-0.1	-0.3	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1
	Higher Crop Prices	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
	Net Change		**-0.1**	**-0.1**	**0.0**	**-1.0**	**-0.1**	**-0.1**	**0.0**	**-3.1**	**-0.1**	**-0.1**	**-0.1**
8	Fallowed Land	46.4	0.0	0.0	0.0	46.5	0.0	0.0	0.0	46.4	0.0	0.0	0.0
	Groundwater Pumping Cost	30.8	0.0	0.0	0.0	-29.1	0.1	0.1	0.1	-35.4	-0.1	-0.1	-0.1
	Irrigation Cost	21.1	0.0	0.0	0.0	-21.1	0.0	0.0	0.0	-21.0	0.0	0.0	0.0
	CVP Water Cost	0.3	-0.8	-0.5	-1.6	-0.5	-2.0	-1.2	-2.8	-0.1	-0.3	-0.3	-0.4
	Higher Crop Prices	0.2	0.0	0.0	0.2	0.2	0.0	0.0	0.1	0.3	0.0	0.0	0.0
	Net Change		**-0.8**	**-0.5**	**-1.3**	**-4.1**	**-1.9**	**-1.0**	**-2.5**	**-9.8**	**-0.3**	**-0.3**	**-0.5**
9	Fallowed Land	52.9	-0.1	-0.1	0.0	52.9	-0.1	-0.1	-0.1	52.4	0.2	0.2	0.2
	Groundwater Pumping Cost	2.5	-0.6	-0.6	-0.6	-2.1	-1.2	-1.2	-1.2	-3.2	-0.4	-0.4	-0.4
	Irrigation Cost	34.4	-0.3	-0.3	-0.3	-34.4	-0.3	-0.3	-0.3	-33.9	-0.3	-0.3	-0.3
	CVP Water Cost	1.2	1.2	1.2	1.2	-2.0	2.0	2.0	2.0	-0.5	0.5	0.5	0.5
	Higher Crop Prices	0.3	0.0	0.0	0.5	0.3	0.0	0.0	0.2	0.6	0.0	0.0	0.0
	Net Change		**0.3**	**0.3**	**0.7**	**14.5**	**0.5**	**0.5**	**0.7**	**15.5**	**0.0**	**0.0**	**0.0**
10	Fallowed Land	97.8	0.0	0.0	-0.1	97.8	0.0	0.0	0.0	97.8	0.0	0.0	0.0
	Groundwater Pumping Cost	15.4	0.0	0.0	-6.8	-12.5	-8.3	-0.8	-8.6	-20.6	0.0	0.0	0.0
	Irrigation Cost	38.9	0.0	0.0	0.0	-38.9	0.0	0.0	0.0	-38.9	0.0	0.0	0.0
	CVP Water Cost	6.3	-0.1	0.4	6.3	-8.1	7.9	0.7	8.1	-3.2	0.2	0.2	-0.1
	Higher Crop Prices	0.5	0.0	0.0	0.4	0.4	0.0	0.0	0.2	0.9	0.0	0.0	0.0
	Net Change		**-0.1**	**0.4**	**-0.1**	**38.7**	**-0.5**	**0.0**	**-0.3**	**36.0**	**0.2**	**0.2**	**-0.1**
11	Fallowed Land	35.5	0.0	0.0	0.0	35.5	0.0	0.0	0.0	35.4	0.0	0.0	0.0
	Groundwater Pumping Cost	1.0	0.0	0.0	0.0	-0.8	0.0	0.0	0.0	-1.1	0.0	0.0	0.0
	Irrigation Cost	16.0	0.0	0.0	0.0	-16.0	0.0	0.0	0.0	-16.0	0.0	0.0	0.0
	CVP Water Cost	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Higher Crop Prices	0.1	0.0	0.0	0.3	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0
	Net Change		**0.0**	**0.0**	**0.3**	**18.7**	**0.0**	**0.0**	**0.1**	**18.6**	**0.0**	**0.0**	**0.0**

TABLE 19 CHANGES IN NET REVENUE BY SUBREGION (Million $)

CVPM Subregion	Cause of Net Revenue Change		Change Compared to Average PA				Change Compared to Wet PA				Change Compared to Dry PA		
			Average	Wet	Dry		Average	Wet	Dry		Average	Wet	Dry
			Followed By Average				Followed By Wet				Followed By Dry		
12	Fallowed Land	41.8	0.0	0.0	0.0	41.7	0.0	0.0	0.0	41.7	0.0	0.0	0.0
	Groundwater Pumping Cost	6.1	0.0	0.0	0.0	-4.8	0.0	0.0	0.0	-8.4	0.0	0.0	0.0
	Irrigation Cost	19.9	0.0	0.0	0.0	-19.8	0.0	0.0	0.0	-19.8	0.0	0.0	0.0
	CVP Water Cost	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Higher Crop Prices	0.1	0.0	0.0	0.3	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0
	Net Change		**0.0**	**0.0**	**0.3**	**17.2**	**0.0**	**0.0**	**0.1**	**13.7**	**0.0**	**0.0**	**0.0**
13	Fallowed Land	112.2	0.0	0.0	0.0	112.3	-0.1	-0.1	-0.1	112.1	-0.1	-0.1	-0.1
	Groundwater Pumping Cost	38.4	0.8	0.7	-2.7	-33.9	1.6	1.6	-4.9	-50.7	0.2	0.2	0.2
	Irrigation Cost	53.6	0.0	0.0	0.0	-53.8	0.0	0.0	0.0	-53.6	0.0	0.0	0.0
	CVP Water Cost	6.8	-0.8	-0.6	2.1	-6.4	-1.7	-1.5	4.3	-5.4	-0.2	-0.2	-0.4
	Higher Crop Prices	0.4	0.0	0.0	0.5	0.4	0.0	0.0	0.2	0.8	0.0	0.0	0.0
	Net Change		**0.0**	**0.1**	**-0.1**	**18.7**	**-0.1**	**0.0**	**-0.5**	**3.3**	**-0.1**	**-0.1**	**-0.3**
14	Fallowed Land	111.5	0.0	0.0	0.0	111.5	0.0	0.0	0.0	110.3	0.0	0.0	0.0
	Groundwater Pumping Cost	81.1	0.0	0.0	0.0	-58.3	0.0	0.0	0.0	-118.6	0.0	0.0	0.0
	Irrigation Cost	62.8	0.0	0.0	0.0	-62.8	0.0	0.0	0.0	-61.1	0.0	0.0	0.0
	CVP Water Cost	32.8	1.3	3.5	-6.0	-45.1	1.8	6.4	-5.5	-14.4	-6.3	-6.3	-7.3
	Higher Crop Prices	0.7	0.0	0.0	0.5	0.6	0.0	0.0	0.2	1.2	0.0	0.0	0.0
	Net Change		**1.3**	**3.5**	**-5.6**	**-53.9**	**1.8**	**6.4**	**-5.3**	**-82.6**	**-6.3**	**-6.3**	**-7.3**
15	Fallowed Land	94.1	0.0	0.0	0.0	94.2	0.0	0.0	0.0	92.6	0.0	0.0	0.0
	Groundwater Pumping Cost	81.0	0.0	0.0	0.0	-69.3	0.3	0.3	0.3	-102.9	-1.5	-1.5	-1.5
	Irrigation Cost	61.8	0.0	0.0	0.0	-61.9	0.0	0.0	0.0	-60.3	0.0	0.0	0.0
	CVP Water Cost	1.8	-0.3	-0.2	-0.4	-1.9	-0.2	-0.2	-0.3	-1.5	-0.4	-0.4	-0.5
	Higher Crop Prices	0.7	0.0	0.0	0.4	0.6	0.1	0.0	0.2	1.5	0.0	0.0	0.0
	Net Change		**-0.3**	**-0.2**	**0.1**	**-38.3**	**0.2**	**0.2**	**0.2**	**-70.7**	**-1.9**	**-1.9**	**-1.9**
16	Fallowed Land	37.3	0.0	0.0	0.0	37.3	0.0	0.0	0.0	37.3	0.0	0.0	0.0
	Groundwater Pumping Cost	1.9	-0.6	-0.6	-0.6	0.0	-0.5	-0.5	-0.5	-4.3	-0.5	-0.5	-0.5
	Irrigation Cost	11.0	0.0	0.0	0.0	-11.1	0.0	0.0	0.0	-11.0	0.0	0.0	0.0
	CVP Water Cost	0.7	0.7	0.7	0.7	-0.7	0.7	0.7	0.7	-0.5	0.5	0.5	0.5
	Higher Crop Prices	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0
	Net Change		**0.0**	**0.0**	**0.1**	**25.7**	**0.1**	**0.1**	**0.1**	**21.6**	**0.0**	**0.0**	**0.0**
17	Fallowed Land	95.8	0.0	0.0	0.0	95.8	0.0	0.0	0.0	95.2	0.0	0.0	0.0
	Groundwater Pumping Cost	17.7	0.2	0.2	0.2	-12.7	0.3	0.3	0.3	-25.5	0.0	0.0	0.0
	Irrigation Cost	27.8	0.0	0.0	0.0	-27.8	0.0	0.0	0.0	-27.4	0.0	0.0	0.0
	CVP Water Cost	1.4	-0.1	-0.1	-0.3	-1.2	-0.4	-0.3	-0.5	-1.1	0.0	0.0	-0.1
	Higher Crop Prices	0.2	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0
	Net Change		**0.0**	**0.1**	**0.1**	**54.2**	**0.0**	**0.0**	**-0.1**	**41.5**	**0.0**	**0.0**	**-0.1**

TABLE 19 CHANGES IN NET REVENUE BY SUBREGION (Million $)

CVPM Subregion	Cause of Net Revenue Change		Change Compared to Average PA: Average Followed By Average	Wet Followed By Average	Dry Followed By Average		Change Compared to Wet PA: Average Followed By Wet	Wet Followed By Wet	Dry Followed By Wet		Change Compared to Dry PA: Average Followed By Dry	Wet Followed By Dry	Dry Followed By Dry
18	Fallowed Land	153.6	0.0	0.0	0.0	153.9	-0.1	-0.1	-0.1	151.9	0.0	0.0	0.0
	Groundwater Pumping Cost	57.9	0.0	0.0	0.0	-46.2	0.2	0.2	0.2	-78.0	0.0	0.0	0.0
	Irrigation Cost	64.9	0.0	0.0	0.0	-65.1	0.0	0.0	0.0	-63.2	0.0	0.0	0.0
	CVP Water Cost	17.7	-1.5	-1.0	-3.3	-17.7	-2.2	-1.7	-3.9	-15.2	0.8	0.8	0.0
	Higher Crop Prices	0.6	0.0	0.0	0.4	0.5	0.0	0.0	0.1	1.1	0.0	0.0	0.0
	Net Change		**-1.5**	**-1.0**	**-2.9**	**25.3**	**-2.1**	**-1.6**	**-3.7**	**-3.4**	**0.8**	**0.8**	**0.0**
19	Fallowed Land	54.3	0.0	0.0	0.0	54.3	0.0	0.0	0.0	53.9	0.0	0.0	0.0
	Groundwater Pumping Cost	31.6	0.0	0.0	0.0	-21.3	0.2	0.2	0.2	-51.5	-1.2	-1.2	-1.2
	Irrigation Cost	28.8	0.0	0.0	0.0	-28.8	0.0	0.0	0.0	-28.3	0.0	0.0	0.0
	CVP Water Cost	0.5	-0.5	-0.5	-0.6	-0.6	-0.5	-0.5	-0.5	-0.4	-0.5	-0.5	-0.5
	Higher Crop Prices	0.3	0.0	0.0	0.2	0.3	0.0	0.0	0.1	0.6	0.0	0.0	0.0
	Net Change		**-0.5**	**-0.5**	**-0.3**	**3.9**	**-0.3**	**-0.3**	**-0.3**	**-25.7**	**-1.8**	**-1.8**	**-1.8**
20	Fallowed Land	81.5	0.0	0.0	0.0	81.5	0.0	0.0	0.0	81.0	0.0	0.0	0.0
	Groundwater Pumping Cost	24.7	0.0	0.0	0.0	-19.7	0.0	0.0	0.0	-36.6	-0.2	-0.2	-0.2
	Irrigation Cost	20.9	0.0	0.0	0.0	-20.9	0.0	0.0	0.0	-20.5	0.0	0.0	0.0
	CVP Water Cost	9.2	-0.1	0.2	-0.9	-9.5	-0.3	-0.1	-1.1	-7.0	-0.2	-0.2	-0.5
	Higher Crop Prices	0.2	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.3	0.0	0.0	0.0
	Net Change		**-0.1**	**0.2**	**-0.8**	**31.5**	**-0.3**	**0.0**	**-1.1**	**17.2**	**-0.3**	**-0.3**	**-0.7**
21	Fallowed Land	112.4	0.0	0.0	0.0	112.4	0.0	0.0	0.0	112.1	0.0	0.0	0.0
	Groundwater Pumping Cost	49.3	0.0	0.0	0.0	-37.6	0.2	0.2	0.2	-68.4	-0.8	-0.8	-0.8
	Irrigation Cost	37.1	0.0	0.0	0.0	-37.1	0.0	0.0	0.0	-36.8	0.0	0.0	0.0
	CVP Water Cost	8.4	0.1	0.3	-0.5	-9.6	0.2	0.5	-0.4	-5.5	-0.7	-0.7	-0.9
	Higher Crop Prices	0.4	0.0	0.0	0.2	0.4	0.0	0.0	0.1	0.7	0.0	0.0	0.0
	Net Change		**0.1**	**0.3**	**-0.3**	**28.5**	**0.4**	**0.7**	**-0.1**	**2.1**	**-1.5**	**-1.5**	**-1.7**
Total	Fallowed Land		-0.1	0.0	-6.8	1100.4	-0.4	-0.3	-4.6	1093.0	-0.2	-0.2	-0.2
	Groundwater Pumping		0.4	0.4	-9.9	-364.0	-4.4	3.1	-16.6	-616.9	-4.0	-4.0	-4.0
	Irrigation Cost		-0.3	-0.3	-0.3	-503.5	-0.3	-0.3	-0.3	-496.0	-0.3	-0.3	-0.3
	CVP Water Cost		-1.3	4.3	2.3	-91.1	0.0	2.9	6.5	-42.5	-8.0	-7.9	-10.7
	Higher Crop Prices		0.1	0.0	4.7	4.1	0.4	0.4	1.9	8.6	0.0	0.0	0.0
	Net Change		**-1.1**	**4.4**	**-10.0**	**146.0**	**-4.6**	**5.8**	**-13.2**	**-53.9**	**-12.4**	**-12.4**	**-15.1**

Notes:
1. All values in millions of 1992 dollars
2. A negative value represents a reduction in net revenue compared to the Preferred Alternative
3. Subregions 3 and 3B should be added together to get the complete subregion 3. 3B represents the area within this subregion served by the Tehama Colusa Canal
4. PA is the Preferred Alternative

TABLE 20 IRRIGATION WATER APPLIED BY SUBREGION

CVPM Subregion	Water Source	Preferred Alternative Average	Changes Compared to Average PA			Preferred Alternative Wet	Changes Compared to Wet PA			Preferred Alternative Dry	Changes Compared to Dry PA		
			Average	Wet	Dry		Average	Wet	Dry		Average	Wet	Dry
			Followed by Average				Followed by Wet				Followed by Dry		
1	CVP Water	19.3	-10.8	-6.4	-5.4	20.5	-13.0	-13.0	-13.0	21.0	-13.5	-13.5	-13.5
	Groundwater	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	-1.5	-1.5	-1.5
2	CVP Water	27.7	0.0	0.0	-21.6	37.1	0.0	0.1	-36.7	8.2	0.0	0.0	0.0
	Groundwater	512.1	0.0	0.0	0.0	506.4	0.0	-0.1	0.0	584.7	0.0	0.0	0.0
3	CVP Water	170.4	0.0	0.0	0.0	174.2	0.0	0.0	0.0	154.3	0.0	0.0	0.0
	Groundwater	248.9	0.0	0.0	0.0	227.0	0.0	0.0	0.0	355.3	0.0	0.0	0.0
3B	CVP Water	199.6	0.1	0.0	-199.6	227.0	39.3	39.1	-227.0	50.3	0.0	0.0	-0.1
	Groundwater	78.7	-0.1	0.0	0.0	50.4	-38.4	-38.2	99.6	191.9	0.0	0.0	0.0
4	CVP Water	129.8	0.0	0.0	0.0	133.1	0.0	0.0	0.0	113.9	0.0	0.0	0.0
	Groundwater	326.6	0.0	0.0	0.0	305.1	0.0	0.0	0.0	442.8	0.0	0.0	0.0
5	CVP Water	19.9	0.1	0.0	0.1	20.8	0.1	0.0	0.0	17.9	0.0	-0.1	0.0
	Groundwater	492.6	-0.1	0.0	-0.1	449.3	-1.1	-1.0	-0.4	588.7	-1.1	-1.0	-1.1
6	CVP Water	2.2	0.0	0.0	0.0	2.4	0.0	0.0	0.0	1.8	0.0	0.0	0.0
	Groundwater	452.8	0.0	0.0	0.0	447.6	-6.4	-6.4	-6.0	521.0	0.0	0.0	0.0
7	CVP Water	22.0	0.0	0.0	0.0	22.6	0.0	0.0	0.0	19.1	0.0	0.0	0.0
	Groundwater	193.2	0.0	0.0	0.0	177.9	0.0	0.0	0.0	217.5	0.0	0.0	0.0
8	CVP Water	51.6	0.1	0.0	-0.1	79.4	0.1	-0.1	-0.1	25.3	0.0	0.0	-0.1
	Groundwater	756.4	-0.1	0.0	0.1	717.3	0.0	0.0	0.0	851.3	-0.2	-0.2	-0.1
9	CVP Water	28.2	-28.2	-28.2	-28.2	48.1	-48.1	-48.1	-48.1	11.5	-11.5	-11.5	-11.5
	Groundwater	80.3	17.9	17.9	18.7	70.2	35.6	35.6	36.0	100.1	11.5	11.5	11.4
10	CVP Water	183.4	0.0	0.0	-183.4	234.4	-228.4	-22.8	-234.4	92.1	0.0	0.0	0.0
	Groundwater	496.2	0.0	0.0	179.4	414.4	227.7	22.7	233.7	632.4	0.0	0.0	-0.1
11	CVP Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Groundwater	34.1	0.0	0.0	0.0	26.8	0.0	0.0	0.0	34.5	0.0	0.0	0.0
12	CVP Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Groundwater	173.1	0.0	0.0	0.0	141.8	0.0	0.0	0.0	228.2	0.0	0.0	0.0
13	CVP Water	163.6	16.7	16.6	-60.2	159.0	33.2	33.1	-113.1	128.2	0.0	0.0	0.0
	Groundwater	912.5	-16.7	-16.6	60.2	812.0	-36.2	-36.2	109.1	1,181.4	-3.8	-3.8	-3.8
14	CVP Water	524.4	0.1	0.0	0.1	719.0	0.1	0.0	0.0	230.2	0.0	0.0	0.0
	Groundwater	826.3	-0.1	0.0	-0.1	603.6	-0.1	0.0	0.0	1,176.4	0.0	0.0	0.0
15	CVP Water	35.1	0.0	0.1	0.1	38.1	0.0	0.1	0.0	28.6	0.0	0.0	0.0
	Groundwater	1,276.6	0.0	-0.1	-0.1	1,099.1	0.0	0.0	0.0	1,600.7	0.0	0.0	0.0
16	CVP Water	16.2	-16.2	-16.2	-16.2	15.7	-15.7	-15.7	-15.7	12.9	-12.9	-12.9	-12.9
	Groundwater	49.6	14.9	14.8	15.0	0.0	13.2	13.2	13.2	107.3	11.5	11.5	11.5
17	CVP Water	34.6	3.9	3.8	4.0	32.5	7.4	7.3	7.4	27.1	0.0	0.0	0.1
	Groundwater	415.1	-3.8	-3.8	-3.9	303.2	-7.4	-7.2	-7.4	577.4	0.0	0.0	0.0
18	CVP Water	517.3	0.0	0.0	0.1	526.3	0.0	0.0	0.1	399.0	0.0	0.0	0.1
	Groundwater	1,018.0	0.0	0.0	-0.1	821.8	-4.0	-4.0	-3.8	1,334.9	0.0	0.0	0.0

TABLE 20 IRRIGATION WATER APPLIED BY SUBREGION

CVPM Subregion	Water Source	Preferred Alternative Average	Changes Compared to Average PA			Preferred Alternative Wet	Changes Compared to Wet PA			Preferred Alternative Dry	Changes Compared to Dry PA		
			Average	Wet	Dry		Average	Wet	Dry		Average	Wet	Dry
			Followed by Average				Followed by Wet				Followed by Dry		
19	CVP Water	13.3	-0.1	0.0	0.1	15.4	-0.1	-0.1	0.0	9.4	0.0	0.0	0.0
	Groundwater	366.8	0.1	0.0	-0.1	250.7	0.0	0.0	0.0	578.4	0.0	0.0	0.0
20	CVP Water	208.7	0.1	0.1	-0.2	219.8	0.1	0.1	-0.1	154.1	0.0	0.0	-0.1
	Groundwater	303.6	-0.1	-0.1	0.1	244.8	0.0	0.0	0.0	437.3	0.0	0.0	0.0
21	CVP Water	138.3	0.0	0.0	-0.1	163.0	0.0	0.1	-0.1	89.3	0.0	0.0	-0.1
	Groundwater	579.4	0.0	0.0	0.1	445.2	0.0	-0.1	0.0	783.1	0.0	0.0	0.0
Total	CVP Water	2,505.5	-34.4	-30.4	-510.5	2,888.2	-224.9	-19.8	-680.6	1,593.9	-37.7	-37.8	-37.8
	Groundwater	9,596.5	11.9	12.3	269.2	8,114.6	182.8	-21.6	474.0	12,527.1	16.1	16.2	16.1

Notes:
1. All quantities in thousands of acre-feet
2. A negative value represents a lower quantitity than in the Preferred Alternative
3. Subregions 3 and 3B should be added together to get the complete subregion 3. 3B represents the area within this subregion served by the Tehama Colusa Canal
4. PA is the Preferred Alternative

TABLE 21 SUBREGION ANALYSIS OF SIGNIFICANT CHANGES IN WATER USE

Subregion	Outcome	Explanation
1	Decrease in CVP use and no GW substitution in all sequences	Less CVP water is used than in the Preferred Alternative because the blended price is 140% to 330% higher than the Preferred Alternative Tier 1 (the only tier of water that was used for this scenario). For hydrologic reasons, subregion 1 is restricted from switching to groundwater.
2	Decrease in CVP use and no GW substitution in Dry to Average and Dry to Wet sequences	Less CVP water is used than in the Preferred Alternative because the blended prices for the Dry to Average and Dry to Wet sequences are 320% and 345% higher than the Preferred Alternative Tier 1 price (the only water tier that was used for this scenario). For hydrologic reasons, subregion 2 is restricted from switching to groundwater.
3B	Decrease CVP and no GW substitution in Dry to Average sequence	Less CVP water is used than in the Preferred Alternative because the blended price is 240% higher than the Tier 1 price from the Preferred Alternative, which is the only tier of water that was used. For hydrologic reasons the region is restricted from switching to groundwater in this long-run scenario.
3B	Decrease in CVP use and GW substitution in Dry to Wet sequence	CVP water use decreases because the blended price is 260% higher than the Preferred Alternative Tier 1 price. The model allowed a shift to groundwater on a short run basis to provide water to permanent crops during the wet year when groundwater would have been recharged.
3B	Shift from Groundwater to CVP water in Average to Wet and Wet to Wet sequences	In the Preferred Alternative wet year analysis subregion 3B has 39 TAF of water that falls in Tiers 2 or 3. Under the LTCR blended pricing mechanism all of the subregions CVP water is priced at a level that is lower than the Preferred Alternative Tier 2. This additional affordable CVP water is used resulting in a less groundwater being pumped.
9	Shift from CVP to Groundwater in all sequences	The blended price of CVP water in subregion 9 is greater than the groundwater pumping cost resulting in the shift from CVP to groundwater.
10	Shift from CVP to Groundwater in Dry to Average and Average, Wet and Dry to Wet sequences	Due to an increase in the CVP price relative to the Preferred Alternative, the depth to which groundwater can be affordably pumped increases resulting in the shift from CVP supplies to groundwater.
13	Shift from groundwater to CVP in Average to Average, Wet to Average, Average to Wet and Wet to Wet sequences	In the Preferred Alternative Average and Wet conditions subregion 13 had water classified as Tier 2 or Tier 3 which was not affordable, and pumped groundwater to supplement it's Tier 1 supply down to a depth at which it was no longer affordable. In the LTCR sequences, the blended price is less expensive than the Preferred Alternative upper Tier price, therefor a shift is made from the deepest groundwater to the now affordable CVP supply.

TABLE 21 SUBREGION ANALYSIS OF SIGNIFICANT CHANGES IN WATER USE

Subregion	Outcome	Explanation
13	Shift from CVP to Groundwater in Dry to Average and Dry to Wet sequences	Under the LTCR blended price mechanism, when coming out of a drought into a Average or Wet year the blended price increases. In these situations, shallow groundwater is less expensive than the CVP blended price. As more groundwater is pumped the cost increases as the pump lift increases and the cost eventually becomes greater than the CVP blended price. When this happens the remainder of the subregions water supply is taken from the CVP supplies.
16	Shift from CVP to Groundwater in all sequences	The blended price of CVP water in subregion 16 is greater than the groundwater pumping cost resulting in the shift from CVP to groundwater.
17	Shift from groundwater to CVP	In the Preferred Alternative Average and Wet conditions this subregion had water classified as Tier 2 or Tier 3 which was not affordable. The subregion pumped groundwater down to a depth at which it was no longer affordable to supplement the CVP water is was able to afford. In the LTCR sequences, the blended price is less expensive than the least expensive CVP tier that was not used, therefor a shift is made from the deepest groundwater to the now affordable CVP supply.
19	Shift from CVP to Groundwater in Dry to Dry sequence	The blended pricing causes the Dry to Dry CVP water cost to rise higher than the groundwater pumping cost resulting in the shift from CVP to groundwater.

SECTION 2
REGIONAL ECONOMICS

REGIONAL ECONOMICS

This analysis identifies the regional economic impacts of two out of the nine total Long-Term Contract Renewal sequences; an Average year following an Average five-year base condition, and an Average year following a Dry five-year base condition. The regional economic analysis is restricted to these sequences because they are the only sequences that represent long-run conditions. The Input-Output model used in the regional economic analysis assumes a long run equilibrium is reached, therefore it is inappropriate to model short run responses represented by the Wet and Dry year conditions. While the Average year following the Dry five-year base condition is not strictly a long-run scenario, as described in the Agricultural and Land Use and Economics section, there are some regions that will be permanently impacted by a five year series of drought years. Because of this, the results can be considered long run.

The assumptions and baseline data used in this analysis are the same as what was used in the Preferred Alternative. Tables 23 and 24 show the results of the Average year following an Average five-year base condition, Tables 25 and 26 the Average year following a Wet five-year base condition, and Tables 27 and 28 the Average year following a Dry five-year base condition. Tables 23, 25, and 27 present the impacts by economic sectors that are aggregations of Standard Industrial Classification (SIC)industries. Tables 24, 26, and 28 present the regional economic impacts broken out by the source of the impact including reduced agricultural output, changes in net farm income, and changes in M&I water costs. Note that regional economic impacts are not reported for the North Coast or the Central and South Coast regions because the rolling five year average tiered pricing mechanism has no impact on these regions.

AVERAGE YEAR FOLLOWING AVERAGE FIVE-YEAR BASE CONDITION

Table 23 shows the employment, output and income effects on all sectors in each regional economy of the long-term contract renewals. Most of the impacts are felt in the Manufacturing, Trade and Services sectors. These impacts are derived from the impact to net income. The economic impacts by region from each source can be seen in Table 24. Reduction in net income resulting from changes in CVP water cost, groundwater pumping, irrigation costs and changes in crop prices have the greatest impact at the statewide level.

AVERAGE YEAR FOLLOWING DRY FIVE-YEAR BASE CONDITION

Table 27 shows the employment, output and income effects for each regional economy and the State as a whole broken out by the impacted sectors. Table 28 shows how each of the impact sources contribute to the total impact. The reduction in agricultural output in the Sacramento River region relative to the Preferred Alternative dominates the statewide impact.

TABLE 22

REGIONAL ECONOMIC IMPACTS ON ALL SECTORS: AVERAGE YEAR FOLLOWING AVERAGE 5-YEAR BASE CONDITION COMPARED TO THE PREFERRED ALTERNATIVE AVERAGE YEAR CONDITION

	Impacts on all Sectors					
	Employment (# of jobs)		Output ($MM)		PoW Income ($MM)	
Region Directly Impacted	**Direct**	**Total**	**Direct**	**Total**	**Direct**	**Total**
Sacramento River						
Agriculture						
Reduced Output	-10	-20	-0.5	-1.2	-0.2	-0.6
Reduced Net Income	-20	-50	-0.9	-2.3	-0.5	-1.3
Total Agriculture	-30	-60	-1.4	-3.5	-0.7	-1.9
M&I Water Costs	-60	-130	-3.9	-8.5	-2.0	-4.7
TOTAL 1/	**-90**	**-190**	-5.3	-12.0	-2.8	-6.6
San Joaquin River						
Agriculture						
Reduced Output	0	0	-0.2	-0.3	-0.1	-0.2
Reduced Net Income	20	40	0.8	1.8	0.5	1.0
Total Agriculture	20	30	0.7	1.5	0.4	0.9
M&I Water Costs	-80	-150	-5.0	-9.4	-2.6	-5.1
TOTAL 1/	**-60**	**-120**	-4.3	-7.9	-2.2	-4.2
Tulare Lake						
Agriculture						
Reduced Output	0	0	0.0	0.0	0.0	0.0
Reduced Net Income	-50	-80	-2.1	-4.1	-1.1	-2.2
Total Agriculture	-50	-80	-2.1	-4.1	-1.1	-2.2
M&I Water Costs	0	0	0.0	0.0	0.0	0.0
TOTAL 1/	**-50**	**-80**	-2.1	-4.1	-1.1	-2.2
Bay Area						
Agriculture						
Reduced Output	0	0	0.0	0.0	0.0	0.0
Reduced Net Income	0	-10	-0.2	-0.4	-0.1	-0.2
Total Agriculture	0	-10	-0.2	-0.4	-0.1	-0.2
M&I Water Costs	-60	-130	-4.4	-9.4	-2.4	-5.4
TOTAL 1/	**-60**	**-130**	-4.6	-9.8	-2.5	-5.6
California Total						
Agriculture						
Reduced Output	-10	-20	-0.7	-1.5	-0.3	-0.8
Reduced Net Income	-50	-100	-2.3	-5.0	-1.2	-2.7
Total Agriculture	-60	-120	-3.0	-6.5	-1.6	-3.5
M&I Water Costs	-200	-410	-13.3	-27.4	-7.0	-15.1
TOTAL 1/	**-260**	**-530**	**-16.3**	**-33.9**	**-8.6**	**-18.6**

Note: (1) May differ from sum of elements due to rounding.

TABLE 23

REGIONAL ECONOMIC IMPACT: AVERAGE YEAR FOLLOWING AVERAGE 5-YEAR BASE CONDITION COMPARED TO THE PREFERRED ALTERNATIVE AVERAGE YEAR CONDITION

	Employment (# of jobs)		Output ($MM)		PoW Income ($MM)	
Region and Affected Sector	**Direct**	**Total**	**Direct**	**Total**	**Direct**	**Total**
Sacramento River						
Agric., Frst., Fish.	-10	-10	-0.4	-0.5	-0.2	-0.3
Mining	0	0	0.0	0.0	0.0	0.0
Construction	0	0	0.0	-0.2	0.0	-0.1
Manufacturing	-10	-20	-1.6	-2.2	-0.6	-0.8
TCU	0	-10	-0.2	-0.9	-0.1	-0.5
Trade	-40	-70	-1.1	-2.1	-0.7	-1.3
FIRE	-10	-20	-0.8	-2.6	-0.5	-1.7
Services	-20	-60	-0.9	-2.8	-0.6	-1.7
Government	0	-10	-0.2	-0.7	-0.1	-0.3
Misc	0	0	0.0	0.0	0.0	0.0
TOTAL/1	**-90**	**-190**	**-5.3**	**-12.0**	**-2.8**	**-6.6**
San Joaquin River						
Agric., Frst., Fish.	0	-10	-0.2	-0.3	-0.1	-0.1
Mining	0	0	-0.1	-0.1	0.0	0.0
Construction	0	0	0.0	-0.1	0.0	-0.1
Manufacturing	-10	-10	-0.8	-1.1	-0.2	-0.3
TCU	0	-10	-0.3	-0.6	-0.2	-0.3
Trade	-10	-30	-0.4	-1.1	-0.2	-0.6
FIRE	-10	-20	-1.1	-2.1	-0.7	-1.3
Services	-30	-50	-1.2	-2.2	-0.7	-1.3
Government	0	0	-0.2	-0.3	-0.1	-0.1
Misc	0	0	0.0	0.0	0.0	0.0
TOTAL/1	**-60**	**-120**	**-4.3**	**-7.9**	**-2.2**	**-4.2**
Tulare Lake						
Agric., Frst., Fish.	0	0	0.0	0.0	0.0	0.0
Mining	0	0	0.0	0.0	0.0	0.0
Construction	0	0	0.0	0.0	0.0	0.0
Manufacturing	-10	-10	-1.0	-1.3	-0.4	-1.3
TCU	0	0	0.0	-0.2	0.0	-0.2
Trade	-40	-50	-1.0	-1.4	-0.7	-1.4
FIRE	0	0	0.0	-0.4	0.0	-0.4
Services	0	-10	0.0	-0.6	0.0	-0.6
Government	0	0	0.0	-0.1	0.0	-0.1
Misc	0	0	0.0	0.0	0.0	0.0
TOTAL/1	**-50**	**-80**	**-2.1**	**-4.1**	**-1.1**	**-4.1**

TABLE 23

REGIONAL ECONOMIC IMPACT: AVERAGE YEAR FOLLOWING AVERAGE 5-YEAR BASE CONDITION COMPARED TO THE PREFERRED ALTERNATIVE AVERAGE YEAR CONDITION

	Employment (# of jobs)		Output ($MM)		PoW Income ($MM)	
Region and Affected Sector	**Direct**	**Total**	**Direct**	**Total**	**Direct**	**Total**
Bay Area						
Agric., Frst., Fish.	0	0	0.0	-0.1	0.0	0.0
Mining	0	0	0.0	0.0	0.0	0.0
Construction	0	0	0.0	-0.1	0.0	-0.1
Manufacturing	-10	-10	-1.2	-1.9	-0.4	-0.7
TCU	0	-10	-0.3	-0.8	-0.2	-0.4
Trade	-20	-40	-0.9	-1.7	-0.5	-1.0
FIRE	-10	-20	-1.0	-2.3	-0.6	-1.5
Services	-20	-50	-1.1	-2.6	-0.7	-1.6
Government	0	0	-0.2	-0.3	-0.1	-0.1
Misc	0	0	0.0	0.0	0.0	0.0
TOTAL/1	**-60**	**-130**	**-4.6**	**-9.8**	**-2.5**	**-5.6**
California Total						
Agric., Frst., Fish.	-10	-20	-0.6	-0.9	-0.3	-0.5
Mining	0	0	-0.1	-0.1	0.0	0.0
Construction	0	-10	0.0	-0.5	0.0	-0.3
Manufacturing	-30	-50	-4.7	-6.5	-1.6	-3.1
TCU	-10	-20	-0.8	-2.5	-0.4	-1.4
Trade	-110	-190	-3.4	-6.3	-2.2	-4.4
FIRE	-20	-60	-2.9	-7.4	-1.8	-4.9
Services	-70	-180	-3.2	-8.1	-1.9	-5.2
Government	0	-10	-0.6	-1.4	-0.3	-0.7
Misc	0	0	-0.1	-0.1	-0.1	-0.1
TOTAL/1	**-260**	**-530**	**-16.3**	**-33.9**	**-8.6**	**-20.5**

Note:(1) May differ from sum of elements due to rounding.

Table 24

REGIONAL ECONOMIC IMPACTS ON ALL SECTORS: AVERAGE YEAR FOLLOWING WET 5-YEAR BASE CONDITION COMPARED TO THE PREFERRED ALTERNATIVE AVERAGE YEAR CONDITION

	Impacts on all Sectors					
	Employment (# of jobs)		Output ($MM)		PoW Income ($MM)	
Region Directly Impacted	**Direct**	**Total**	**Direct**	**Total**	**Direct**	**Total**
Sacramento River						
Agriculture						
Reduced Output	0	-10	-0.4	-0.8	-0.2	-0.4
Reduced Net Income	30	50	1.0	2.6	0.5	1.4
Total Agriculture	20	40	0.6	1.8	0.4	1.0
M&I Water Costs	-60	-130	-3.9	-8.5	-2.0	-4.7
TOTAL 1/	**-40**	**-90**	**-3.3**	**-6.7**	**-1.6**	**-3.6**
San Joaquin River						
Agriculture						
Reduced Output	0	0	-0.2	-0.3	-0.1	-0.2
Reduced Net Income	100	170	3.7	8.1	2.1	4.5
Total Agriculture	90	160	3.6	7.8	2.0	4.4
M&I Water Costs	-80	-150	-5.0	-9.4	-2.6	-5.1
TOTAL 1/	**20**	**10**	**-1.4**	**-1.6**	**-0.6**	**-0.7**
Tulare Lake						
Agriculture						
Reduced Output	0	0	0.0	0.0	0.0	0.0
Reduced Net Income	-30	-40	-1.1	-2.1	-0.6	-1.1
Total Agriculture	-30	-40	-1.1	-2.1	-0.6	-1.1
M&I Water Costs	0	0	0.0	0.0	0.0	0.0
TOTAL 1/	**-30**	**-40**	**-1.1**	**-2.1**	**-0.6**	**-1.1**
Bay Area						
Agriculture						
Reduced Output	0	0	0.0	0.0	0.0	0.0
Reduced Net Income	0	0	-0.1	-0.2	0.0	-0.1
Total Agriculture	0	0	-0.1	-0.2	0.0	-0.1
M&I Water Costs	-60	-130	-4.4	-9.4	-2.4	-5.4
TOTAL 1/	**-60**	**-130**	**-4.5**	**-9.6**	**-2.5**	**-5.5**
California Total						
Agriculture						
Reduced Output	0	-10	-0.5	-1.1	-0.2	-0.6
Reduced Net Income	100	180	3.6	8.4	2.0	4.7
Total Agriculture	100	170	3.0	7.3	1.7	4.2
M&I Water Costs	-200	-410	-13.3	-27.4	-7.0	-15.1
TOTAL 1/	**-100**	**-240**	**-10.3**	**-20.1**	**-5.3**	**-11.0**

Note: (1) May differ from sum of elements due to rounding.

TABLE 25

REGIONAL ECONOMIC IMPACT: AVERAGE YEAR FOLLOWING WET 5-YEAR BASE CONDITION COMPARED TO THE PREFERRED ALTERNATIVE AVERAGE YEAR CONDITION

	Employment (# of jobs)		Output ($MM)		PoW Income ($MM)	
Region and Affected Sect	**Direct**	**Total**	**Direct**	**Total**	**Direct**	**Total**
Sacramento River						
Agric., Frst., Fish.	0	-10	-0.2	-0.3	-0.1	-0.2
Mining	0	0	0.0	0.0	0.0	0.0
Construction	0	0	0.0	-0.1	0.0	-0.1
Manufacturing	0	-10	-0.7	-0.9	-0.2	-0.3
TCU	0	0	-0.2	-0.6	-0.1	-0.3
Trade	0	-10	-0.2	-0.7	0.0	-0.3
FIRE	-10	-20	-0.8	-1.8	-0.5	-1.1
Services	-20	-40	-0.9	-1.9	-0.6	-1.1
Government	0	0	-0.2	-0.5	-0.1	-0.2
Misc	0	0	0.0	0.0	0.0	0.0
TOTAL/1	**-40**	**-90**	**-3.3**	**-6.7**	**-1.6**	**-3.6**
San Joaquin River						
Agric., Frst., Fish.	0	0	-0.1	-0.2	-0.1	-0.1
Mining	0	0	-0.1	-0.1	0.0	0.0
Construction	0	0	0.0	-0.1	0.0	0.0
Manufacturing	10	10	0.6	0.8	0.3	0.4
TCU	0	0	-0.3	-0.4	-0.2	-0.2
Trade	60	60	1.0	1.1	0.8	0.9
FIRE	-10	-10	-1.1	-1.2	-0.7	-0.8
Services	-30	-30	-1.2	-1.2	-0.7	-0.7
Government	0	0	-0.2	-0.2	-0.1	-0.1
Misc	0	0	0.0	0.0	0.0	0.0
TOTAL/1	**20**	**10**	**-1.4**	**-1.6**	**-0.6**	**-0.7**
Tulare Lake						
Agric., Frst., Fish.	0	0	0.0	0.0	0.0	0.0
Mining	0	0	0.0	0.0	0.0	0.0
Construction	0	0	0.0	0.0	0.0	0.0
Manufacturing	0	-10	-0.5	-0.7	-0.2	-0.7
TCU	0	0	0.0	-0.1	0.0	-0.1
Trade	-20	-30	-0.5	-0.7	-0.4	-0.7
FIRE	0	0	0.0	-0.2	0.0	-0.2
Services	0	-10	0.0	-0.3	0.0	-0.3
Government	0	0	0.0	0.0	0.0	0.0
Misc	0	0	0.0	0.0	0.0	0.0
TOTAL/1	**-30**	**-40**	**-1.1**	**-2.1**	**-0.6**	**-2.1**

TABLE 25

REGIONAL ECONOMIC IMPACT: AVERAGE YEAR FOLLOWING WET 5-YEAR BASE CONDITION COMPARED TO THE PREFERRED ALTERNATIVE AVERAGE YEAR CONDITION

	Employment (# of jobs)		Output ($MM)		PoW Income ($MM)	
Region and Affected Sect	**Direct**	**Total**	**Direct**	**Total**	**Direct**	**Total**
Bay Area						
Agric., Frst., Fish.	0	0	0.0	-0.1	0.0	0.0
Mining	0	0	0.0	0.0	0.0	0.0
Construction	0	0	0.0	-0.1	0.0	-0.1
Manufacturing	-10	-10	-1.2	-1.9	-0.4	-0.7
TCU	0	-10	-0.3	-0.8	-0.2	-0.4
Trade	-20	-40	-0.8	-1.6	-0.5	-1.0
FIRE	-10	-10	-1.0	-2.2	-0.6	-1.5
Services	-20	-50	-1.1	-2.6	-0.7	-1.6
Government	0	0	-0.2	-0.3	-0.1	-0.1
Misc	0	0	0.0	0.0	0.0	0.0
TOTAL/1	**-60**	**-130**	**-4.5**	**-9.6**	**-2.5**	**-5.5**
California Total						
Agric., Frst., Fish.	-10	-10	-0.4	-0.7	-0.2	-0.3
Mining	0	0	-0.1	-0.1	0.0	0.0
Construction	0	0	0.0	-0.3	0.0	-0.2
Manufacturing	-10	-10	-1.7	-2.7	-0.5	-1.2
TCU	-10	-10	-0.8	-1.8	-0.4	-1.0
Trade	20	-20	-0.5	-1.9	-0.1	-1.2
FIRE	-20	-40	-2.9	-5.5	-1.8	-3.6
Services	-70	-130	-3.2	-5.9	-1.9	-3.8
Government	0	-10	-0.6	-1.0	-0.3	-0.5
Misc	0	0	-0.1	-0.1	-0.1	-0.1
TOTAL/1	**-100**	**-250**	**-10.3**	**-20.1**	**-5.3**	**-12.0**

Note:(1) May differ from sum of elements due to rounding.

TABLE 26

REGIONAL ECONOMIC IMPACTS ON ALL SECTORS: AVERAGE YEAR FOLLOWING DRY 5-YEAR BASE CONDITION COMPARED TO THE PREFERRED ALTERNATIVE AVERAGE YEAR CONDITION

	Impacts on all Sectors					
	Employment (# of jobs)		Output ($MM)		PoW Income ($MM)	
Region Directly Impacted	**Direct**	**Total**	**Direct**	**Total**	**Direct**	**Total**
Sacramento River						
Agriculture						
Reduced Output	-700	-2240	-92.1	-194.5	-30.8	-86.9
Reduced Net Income	130	240	4.7	12.4	2.6	6.9
Total Agriculture	-570	-2000	-87.4	-182.1	-28.2	-80.0
M&I Water Costs	-60	-140	0.4	-0.9	-0.2	-0.5
TOTAL 1/	**-630**	**-2140**	**-91.8**	**-191.6**	**-30.5**	**-85.2**
San Joaquin River						
Agriculture						
Reduced Output	-10	-20	-0.7	-1.5	-0.3	-0.7
Reduced Net Income	-140	-240	-5.4	-11.7	-3.0	-6.5
Total Agriculture	-150	-270	-6.1	-13.2	-3.3	-7.3
M&I Water Costs	-80	-150	0.0	0.0	0.0	0.0
TOTAL 1/	**-230**	**-420**	**-11.0**	**-22.7**	**-5.9**	**-12.4**
Tulare Lake						
Agriculture						
Reduced Output	0	-10	-0.2	-0.5	-0.1	-0.2
Reduced Net Income	-100	-170	-3.6	-7.1	-1.9	-3.8
Total Agriculture	-100	-170	-3.8	-7.6	-2.0	-4.0
M&I Water Costs	0	0	0.0	0.0	0.0	0.0
TOTAL 1/	**-100**	**-170**	**-4.4**	**-8.8**	**-2.3**	**-4.6**
Bay Area						
Agriculture						
Reduced Output	0	0	0.0	0.0	0.0	0.0
Reduced Net Income	-10	-20	-0.6	-1.4	-0.3	-0.8
Total Agriculture	-10	-20	-0.6	-1.4	-0.3	-0.8
M&I Water Costs	-60	-130	-0.5	-1.1	-0.3	-0.6
TOTAL 1/	**-70**	**-150**	**-5.0**	**-10.8**	**-2.8**	**-6.2**
California Total						
Agriculture						
Reduced Output	-710	-2270	-93.0	-196.5	-31.2	-87.9
Reduced Net Income	-120	-190	-4.8	-7.8	-2.6	-4.1
Total Agriculture	-830	-2460	-97.8	-204.3	-33.8	-92.0
M&I Water Costs	-200	-420	-0.1	-1.9	-0.5	-1.1
TOTAL 1/	**-1030**	**-2880**	**-112.2**	**-233.8**	**-41.4**	**-108.3**

Note: (1) May differ from sum of elements due to rounding.

TABLE 27

REGIONAL ECONOMIC IMPACT: AVERAGE YEAR FOLLOWING DRY 5-YEAR BASE CONDITION COMPARED TO THE PREFERRED ALTERNATIVE AVERAGE YEAR CONDITION

	Employment (# of jobs)		Output ($MM)		PoW Income ($MM)	
Region and Affected Sector	**Direct**	**Total**	**Direct**	**Total**	**Direct**	**Total**
Region and Affected Sector	**Direct**	**Total**	**Direct**	**Total**	**Direct**	**Total**
Sacramento River						
Agric., Frst., Fish.	-450	-630	-26.1	-33.0	-13.4	-16.6
Mining	0	0	0.0	-0.1	0.0	0.0
Construction	0	-30	0.0	-2.1	0.0	-1.2
Manufacturing	-230	-290	-64.9	-73.1	-16.9	-19.8
TCU	0	-120	-0.2	-16.8	-0.1	-7.5
Trade	90	-310	1.6	-13.8	1.2	-8.1
FIRE	-10	-200	-0.9	-22.7	-0.5	-14.6
Services	-20	-500	-1.0	-22.8	-0.6	-13.8
Government	0	-50	-0.2	-7.2	-0.1	-3.5
Misc	0	0	0.0	0.0	0.0	0.0
TOTAL/1	**-630**	**-2130**	**-91.8**	**-191.6**	**-30.5**	**-85.2**
San Joaquin River						
Agric., Frst., Fish.	-10	-20	-0.8	-1.2	-0.4	-0.5
Mining	0	0	-0.1	-0.1	0.0	0.0
Construction	0	0	0.0	-0.3	0.0	-0.1
Manufacturing	-30	-40	-3.8	-5.1	-1.4	-1.9
TCU	0	-10	-0.3	-1.2	-0.2	-0.6
Trade	-140	-210	-3.6	-5.8	-2.4	-3.7
FIRE	-10	-30	-1.1	-4.2	-0.7	-2.7
Services	-30	-100	-1.2	-4.3	-0.7	-2.6
Government	0	-10	-0.2	-0.5	-0.1	-0.2
Misc	0	0	0.0	0.0	0.0	0.0
TOTAL/1	**-230**	**-420**	**-11.0**	**-22.7**	**-5.9**	**-12.4**
Tulare Lake						
Agric., Frst., Fish.	0	-10	-0.3	-0.4	-0.1	-0.4
Mining	0	0	0.0	0.0	0.0	0.0
Construction	0	0	0.0	-0.1	0.0	-0.1
Manufacturing	-20	-20	-2.1	-2.7	-0.7	-2.7
TCU	0	0	0.0	-0.4	0.0	-0.4
Trade	-80	-110	-2.1	-2.9	-1.5	-2.9
FIRE	0	-10	0.0	-0.9	0.0	-0.9
Services	0	-30	0.0	-1.2	0.0	-1.2
Government	0	0	0.0	-0.2	0.0	-0.2
Misc	0	0	0.0	0.0	0.0	0.0
TOTAL/1	**-100**	**-170**	**-4.4**	**-8.8**	**-2.3**	**-8.8**

TABLE 27

REGIONAL ECONOMIC IMPACT: AVERAGE YEAR FOLLOWING DRY 5-YEAR BASE CONDITION COMPARED TO THE PREFERRED ALTERNATIVE AVERAGE YEAR CONDITION

Region and Affected Sector	Employment (# of jobs)		Output ($MM)		PoW Income ($MM)	
	Direct	Total	Direct	Total	Direct	Total
Region and Affected Sector	**Direct**	**Total**	**Direct**	**Total**	**Direct**	**Total**
Bay Area						
Agric., Frst., Fish.	0	0	0.0	-0.1	0.0	0.0
Mining	0	0	0.0	0.0	0.0	0.0
Construction	0	0	0.0	-0.1	0.0	-0.1
Manufacturing	-10	-10	-1.4	-2.2	-0.5	-0.8
TCU	0	-10	-0.3	-0.8	-0.2	-0.4
Trade	-30	-50	-1.1	-2.0	-0.7	-1.3
FIRE	-10	-20	-1.0	-2.4	-0.6	-1.6
Services	-20	-60	-1.1	-2.8	-0.7	-1.8
Government	0	0	-0.2	-0.3	-0.1	-0.2
Misc	0	0	0.0	0.0	0.0	0.0
TOTAL/1	-70	-150	-5.0	-10.8	-2.8	-6.2
California Total						
Agric., Frst., Fish.	-470	-660	-27.2	-34.6	-13.9	-17.5
Mining	0	0	-0.1	-0.2	0.0	-0.1
Construction	0	-40	0.0	-2.6	0.0	-1.5
Manufacturing	-290	-370	-72.2	-83.1	-19.6	-25.2
TCU	-10	-140	-0.8	-19.3	-0.4	-8.9
Trade	-170	-680	-5.0	-24.5	-3.3	-16.0
FIRE	-20	-260	-2.9	-30.2	-1.8	-19.8
Services	-70	-680	-3.3	-31.1	-2.0	-19.3
Government	0	-60	-0.6	-8.2	-0.3	-4.1
Misc	0	0	-0.1	-0.1	-0.1	-0.1
TOTAL/1	-1030	-2880	-112.2	-233.8	-41.4	-112.5

Note:(1) May differ from sum of elements due to rounding.

SECTION 3

MUNICIPAL AND INDUSTRIAL WATER USE ECONOMICS

MUNICIPAL AND INDUSTRIAL ECONOMICS

The municipal and industrial economics analysis is based upon the Average-Average tiered pricing scenario. This analysis is based upon the impacts to CVP contractors. This is different than the municipal and industrial economic analysis that was included in the PEIS.

The PEIS municipal and industrial water cost analysis primarily evaluated the impacts on the need and cost to transfer water to non-CVP municipalities. Therefore, the analysis included water costs for many non-CVP water users. For example, the municipality in the San Joaquin River Basin was based upon the Cities of Stockton and Fresno water costs which are not based on CVP water, as described in the Municipal Water Costs Methodology and Modeling Technical Appendix to the PEIS.

The analysis included in the following table is based only on CVP contractors in order to define the cost of CVP water under the Tiered Water Pricing proposal.

TABLE 28

SUMMARY OF M&I ECONOMICS ANALYSIS FOR AVERAGE YEAR CONDITIONS FOR REGIONAL ECONOMICS

Result	Preferred Alternative Average	Change from the Preferred Alternative Average		
		Average-Average	Dry-Average	Wet-Average
Average Condition				
Supplies, 1,000 acre-feet (1)				
Sacramento Valley	929.0	0.0	0.0	0.0
Bay Area	1024.0	0.0	0.0	0.0
San Joaquin Valley	704.0	0.0	0.0	0.0
Central and South Coast	5921.0	0.0	0.0	0.0
Average Condition				
Economic Costs, Million $ (2)				
Sacramento Valley	1.1	4.1	4.3	4.1
Bay Area	3.5	4.6	4.6	4.6
San Joaquin Valley	0.3	5.2	5.2	5.2
Central and South Coast	649.0	0.0	0.0	0.0

NOTES:

Water transfers not considered as replacement supplies in this comparison.

(1) After purchase or development of non-transfer replacement supplies to make supply equal demand.

(2) Total costs include replacement supplies, restoration payments and metering. A negative cost means a net gain is estimated.

1 **E.**

APPENDIX E
PUBLIC COMMENTS AND RESPONSES

E.1 INTRODUCTION

This Appendix includes a list of agencies, organizations, and individuals commenting on the previously-circulated Revised Draft EA, copies of their comments, and responses to the substantive environmental issues raised in the comments. The following pages show all the comments received which relate to the project and the Bureau's responses to those comments. The Bureau reviewed and considered all comments and determined whether or not the comments warranted further analysis and documentation. The Bureau noted in the individual responses when further analysis or changes were made.

E.2 INDEX

Comments

Taxpayers for Common Sense

August 18, 2004

VIA FAX and EMAIL

Mr. Kirk Rodgers
Mr. Richard Stevenson
Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825

Ms. Basia Trout
Red Bluff Division Office
Bureau of Reclamation
P.O. Box 159
Red Bluff, CA 96080

Re: Renewal of the Central Valley Project long-term water service contracts with The Sacramento River Division Contractors

Dear Mr. Rodgers, Mr. Stevenson, and Ms. Trout:

TCS-1

Taxpayers for Common Sense (TCS), a nonpartisan budget watchdog group, is extremely concerned about the long-term implications of proposed Central Valley Project (CVP) water service contracts for the Shasta, Trinity River, and Sacramento River Divisions. Specifically, TCS believes these contracts do not fairly represent the interests of federal taxpayers. We strongly urge the Bureau of Reclamation to extend the comment periods on both the environmental documents regarding the renewal of the Sacramento River Division CVP Long-Term Water Service Contracts and also the proposed renewal of 36 long term water service contracts in the Shasta, Trinity River, and Sacramento River Divisions by at least 60 days.

Given the impact these water contracts will have on both California water issues and federal taxpayers for years to come, it is vitally important that all stakeholders have ample opportunity to review these proposals and to be able to give comprehensive input. Although the regular public comment period is generally sufficient, the long-term nature of these contracts combined with the scheduling of the comment period during a traditional time for families to take vacation and for congressional recess makes it necessary for the Bureau to extend the comment period to allow appropriate public input into the process. The Bureau is supposed to be negotiating on behalf of federal taxpayers. As a result, the Bureau owes it to taxpayers to give them every chance to ask questions and understand the impacts of these major 25-year water commitments. The Bureau proposes to renew Sacramento River Division contracts for up to 322,000 acre-feet of CVP water before the public has reviewed the potential impact of these contracts.

Long-term CVP contracts are not permanent entitlements. Instead, these contracts must receive full review in order to consider the constantly evolving needs of California's

Responses

TCS-1

Thank you for your comment. Reclamation has considered requests for extensions of the comment period, and feels adequate time was given for review. The BA for the Sacramento River Division long-term water service contract renewals was completed in August of 2003. The Draft EA was first released on August 19, 2003 and was revised in March of 2004. On July 2, 2004, a 60-day public review and comment period was initiated for the associated long-term CVP water service contracts for the Black Butte Unit, Tehama-Colusa Canal Unit, and the Corning Canal Unit of the Sacramento River Division. The revised draft EA and FONSI were released on July 30, 2004 for an additional 30-day public review.

Taxpayers for Common Sense (cont'd)

Mr. Kirk Rodgers
Mr. Richard Stevenson
Ms. Basia Trout
August 18, 2004

diverse set of water users. California's water needs are constantly in flux and full review of these contracts renewals is the only responsible policy. Contract pricing should also charge markets rates for water.

Again, we urge the Bureau of Reclamation to extend the comment period on these contracts by an additional 60 days to give federal taxpayers the fullest possible opportunity to comment on these long-term contracts. Please feel free to contact me at (202) 546-8500 x126 or aileen@taxpayer.net with any questions.

Sincerely,

Aileen D. Roder
Program Director

Comments

Valley Water Protection Association

From: "Colefarm" <colefarm@shocking.com>
To: <btrout@mp.usbr.gov>
Date: 8/26/04 6:23PM
Subject: Sacramento River and Feather Water Contracts

TO: Ms. Basia Trout, Federal Bureau of Reclamation

FROM: Linda Cole, Valley Water Protection Association

RE: Sacramento River Division contracts, Feather Water District

VWPA-1

These contracts have not been given adequate time for the public to review the reports and to weigh potentials for cumulative impacts within the Sacramento watershed. We respectfully request that an extension be given for review and comment. That extension should include adequate time for the public to consider studies and reports not yet available, and for consideration of proposed actions listed in other contracts within the same water basin. We need to look at cumulative impacts within the total proposed actions from all contracts potentially tapping the same water resources within the valley.

Contract decisions need to responsive to the people's right to know and to comment. These contracts have the potential to drive water management for up to 40 years. At the same time we have political assumptions that shortfalls in water south of the Delta will be made up by water from Northern California... for growth, for drought, for water quality, for fish, for economic stimulus. All these parallel efforts need to be considered once the full scientific studies have been completed. The comment period should reflect the complexity of these issues. Anything less is not following the intent of the law providing for public input.
Thank you,

Linda Cole

Responses

VWPA-1
Reclamation has considered requests for extensions of the comment period and feels adequate time was given for review. The BA for the Sacramento River Division long-term water service contract renewals was completed in August of 2003. The Draft EA was first released on August 19, 2003 and was revised in March of 2004. On July 2, 2004, a 60-day public review and comment period was initiated for the associated long-term CVP water service contracts for the Black Butte Unit, Tehama-Colusa Canal Unit, and the Corning Canal Unit of the Sacramento River Division. The revised draft EA and FONSI were released on July 30, 2004 for an additional 30-day public review.

The cumulative impacts of the CVP were addressed in the PEIS for implementation of the CVPIA. The analysis in the EA finds the renewals of the contract to be a continuation of previous contracts with minor financial and administrative changes, with no changes in either the volumes of water under contract or the places of use. Moreover, most do not involve any change in the type of use, such as the addition of M&I uses. The analysis in the EA addresses the proposed changes to the contract and the potential environmental effects of those changes. As indicated in the EA, these contract changes would not result in significant effects to the environment.

Comments

The Bay Institute

The Bay Institute
Natural Resources Defense Council
Planning and Conservation League

Via Federal Express

August 27, 2004

Ms. Basia Trout
U.S. Bureau of Reclamation
22500 Altube Avenue
P. O. Box 159
Red Bluff, CA 96080

Re: Comments on Revised Draft EA on Sacramento River Division Renewal Contracts

Dear Ms. Trout,

This letter provides comments of The Bay Institute, the Natural Resources Defense Council (NRDC) and the Planning and Conservation League on the Revised Draft Environmental Assessment (EA) for Renewal of the Long-term Contracts for the Sacramento River Division Contractors (U.S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA; July 2004). Additional supplemental comments from our organizations are also being submitted by NRDC under separate cover.

Bay-1

The EA states that it has been prepared to determine whether renewal of long-term water service contracts will result in any significant impacts to the natural and human environment (EA, pg. 1-1). In its current form, the document describes alternatives with few meaningful differences and offers an incomplete, inadequate and contradictory environmental impacts analysis. Much of the information provided in the EA is an incomplete review of analyses conducted by the U.S. Bureau of Reclamation (Reclamation) for its Operation Criteria and Plan Biological Assessment (OCAP BA), which evaluates proposed Reclamation operations in the Sacramento River Division as well as the greater Sacramento-San Joaquin watershed and which identifies numerous instances in which proposed operations will negatively impact the natural environment and valuable biological resources.[1]

[1] The EA states that renewal of Sacramento River Division water service contracts is related to the current update of the Operations Criteria and Plan (OCAP) (EA, pg. 1-5, 6). The project description for the Sacramento River Division contained in the OCAP and accompanying Biological Assessment is essentially the same as that described in the three alternatives in the EA.

Responses

Bay-1
Given legal and regulatory constraints, the two action alternatives in the EA provide a reasonable range of alternatives that meet the stated purpose and need. The EA summarizes key points addressed in the OCAP BA while referring to the more comprehensive and in-depth review of these issues in the BA, where it is discussed at length. The tiered documents used the PEIS by reference as a foundation to avoid duplication and focus more narrowly on the new alternatives or more detailed site-specific effects. Therefore, only changes from the alternatives considered in the PEIS would be addressed in detail in the tiered EA. The No Action Alternative is defined as renewal of existing contracts as modified by non-discretionary CVPIA provisions addressed in the PEIS. The analysis displays the increment of change between that of the No Action Alternative and the other alternatives. The diversion of water is an on-going action and the current condition. Hence, the significant impacts alluded to in this comment are not a result of the proposed action but are the existing/no action conditions.

Comments

The Bay Institute (cont'd)

Bay-2

Other important analyses, including the Draft EIS/EIR for the Fish Passage Improvement Project at the Red Bluff Diversion Dam (TCCA and USBR, 2002), are not even cited. The EA itself, although incomplete, identifies a number of substantial negative impacts. Yet, despite overwhelming evidence to the contrary (including the listing of several fish species dependent on environmental conditions in the Sacramento River Division under state and federal Endangered Species Acts (ESA) in just the last decade), the EA contends that these impacts have no significant or cumulative effects. This conclusion and the Finding of No Significant Impact (FONSI, July 2004) are wholly unsupported by both the readily available scientific evidence and analytical results reported by Reclamation in the EA, OCAP BA, and a number of other documents and reports.

Water project operations on the Sacramento River affect many terrestrial and aquatic plant and animals species that inhabit the river corridor, the Sacramento-San Joaquin Delta and the San Francisco Bay. Our comments focus on the effects of proposed Sacramento River Division operations on native anadromous fish species that rely on the Sacramento River and its tributaries. Several of these species, including winter-run and spring-run Chinook salmon and steelhead, have declined to such low levels that they are now listed under both state and federal Endangered Species Acts. For each of these species, dams and water management operations on the Sacramento River and its tributaries are identified as key factors for the species' declines.

Bay-3

Three components of Reclamation's proposed Sacramento River Division operations have substantial continuing and new negative impacts on the environment and pose significant threats to native anadromous fish species that rely on this river. Only one of these impacts is even identified in the EA, despite other Reclamation analyses that have previously identified the others.

Bay-4

1. Operation of Red Bluff Diversion Dam (RBDD). According to the EA (as well as the Project Description in the OCAP BA), Reclamation proposes to continue closing the RBDD during the May 15-September 15 period. RBDD blocks and/or delays migration of adult anadromous fishes, harms emigrating juvenile anadromous fishes, and degrades habitat and water quality in the Sacramento River upstream and downstream of the facility. Compared to the alternatives analyzed in the Draft EIS/EIR for the Fish Passage Improvement Project at Red Bluff Diversion Dam (August 2002), an effort led by Reclamation and one of its major Sacramento River Division water contractors (Tehama-Colusa Canal Authority), the RBDD operation proposed in the EA, the No Action "4-month gates in" alternative, was determined to have the greatest negative impacts on fishery resources in the Sacramento River. Reclamation's selection of this operational protocol for RBDD as the preferred alternative conflicts with the preferred alternative identified in the Draft EIS/EIR and, in fact, appears to abrogate the EIS/EIR process for

Responses

Bay-2

Impacts resulting from the proposed alternatives would neither be significant, nor would they differ substantially from the No Action Alternative. The diversion and use of water is an on-going action. Dam maintenance and operations are discussed in the CVPIA PEIS and OCAP BA/BO. These impact analyses, although incorporated by reference in the EA, are not applied to the proposed action impact level. The PEIS analyzed cumulative impacts of long-term contract renewals on a regional basis. Because the contract renewals maintain the status quo of water deliveries under ongoing CVP operations, and in essence only change the legal and financial arrangements of a continuing action, they do not contribute to cumulative impacts in any demonstrable manner.

Bay-3

These impacts do not result from the proposed action. As stated earlier, the impacts of continuing the operations of the CVP and the implementation of CVPIA have been discussed in the CVPIA PEIS and OCAP BA/BO.

Bay-4

Any impacts related to the RBDD do not result from the proposed action of water service contract renewal. Future conditions of the RBDD are being addressed in a separate project-specific process.

Comments

The Bay Institute (cont'd)

the Fish Passage Improvement Project, the finalization of which has been "delayed" pending completion of the OCAP process.[2]

Bay-5

2. Elevated water temperature in the Sacramento River below Keswick Dam. According to the OCAP Project Description, Reclamation proposes to change Sacramento River temperature control objectives, relocating the temperature compliance point upstream in the river (OCAP BA, pg. 2-36).[3] Compared to current operations, this will increase mortality of incubating winter-run Chinook salmon eggs and emergent fry and substantially reduce the area of habitat for all salmonid species that use the mainstem Sacramento River. The proposed action violates protections required by the State Water Resources Control Board (Water Rights Orders 90-05 and 91-01) and the Endangered Species Act (Biological Opinion for winter-run Chinook salmon; NOAA Fisheries, 1993). This impact is not discussed in the EA, nor has it been addressed in any NEPA document analyzing Reclamation's new OCAP.

Bay-6

3. Eliminate minimum carryover storage requirements in Shasta Reservoir. According to the OCAP BA (pg. 2-36), Reclamation proposes to no longer operate to maintain a minimum carryover storage in Shasta Reservoir of 1.9 million acre-feet (MAF). This requirement, contained in the winter-run Chinook salmon BO (NOAA Fisheries, 1993), is intended to maintain an adequate cold-water pool in the reservoir to provide for releases of cold water to the river for protection of winter-run Chinook salmon during multi-year dry periods. This impact is not discussed in the EA, nor has it been addressed in any NEPA document analyzing Reclamation's new OCAP.

Bay-7

These operations described in the EA and related OCAP BA also threaten and devalue several large-scale and costly habitat improvement projects that have been already initiated in the Sacramento River and its tributaries upstream of RBDD.[4] In addition, it is noteworthy that none of the three alternatives described in the EA reflect any effort by Reclamation to craft operational protocols that would minimize these (and other) well-documented negative impacts of current operations on the Sacramento River environment and its biota. Indeed, Alternative 2 of the EA is assessed as having greater negative impacts on the wetland and riparian environments than current operations.

The following sections discuss some of the negative impacts of the proposed actions related to renewal of long-term water service contracts in the Sacramento River Division on several native anadromous fish species.

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[2] In response to questions from NOAA Fisheries, Reclamation stated that the preferred alternative for RBDD operations was the "No Action Alternative" described in the 2002 Draft EIS/EIR. Reclamation responses to NOAA Fisheries questions are available at www.usbr.gov/mp/cvo/ocapBA.html.

[3] The temperature compliance point is the location at which specific cool water temperature conditions must be maintained for the protection of winter-run Chinook salmon by Reclamation using reservoir releases and the Shasta Temperature Control Device.

[4] Habitat improvement actions upstream of RBDD include: Battle Creek Restoration Plan; Clear Creek Restoration Plan; ACID fish passage improvements; ongoing improvement of Iron Mountain Mine water quality discharges; and the Temperature Control Device at Shasta Dam.

Responses

Bay-5

The EA alternatives do not include the actions mentioned above. That action is outside of the scope of this document. The proposed action addressed in the EA is renewal of water service contracts, not operations of the CVP.

Bay-6

The proposal of a change in the storage level at Shasta Reservoir is outside the scope of this EA. The hydrologic operation of the CVP is a separate action with its own environmental compliance requirements.

Bay-7

The EA does not assess the continued use of RBDD, as this is a separate action which is assessed in depth in the OCAP BA, and is the subject of its own environmental compliance procedures. Therefore this comment is outside the scope of this document.

The EA does not address operational aspects of water conveyance. This EA tiers off the PEIS to evaluate potential site-specific environmental impacts of renewing the long-term water service contract for the Sacramento River Division contractors. The purpose of this project is to renew the Sacramento River Division water service contracts, consistent with the provisions of CVPIA. The project alternatives include the terms and conditions of the contracts and tiered water pricing.

Operational protocols are not associated with the stated purpose and need, and are therefore not included in either of the proposed actions.

Comments

The Bay Institute (cont'd)

Bay-8

Spring-run Chinook salmon
Historically, the spring run of Chinook salmon was the second largest run in the Central Valley watershed and supported the bulk of the commercial fishery (Yoshiyama et al., 1998; copy enclosed). Based on population declines during the past several decades (and extirpation of spring-run Chinook salmon in the San Joaquin basin), Sacramento basin spring-run Chinook salmon are now listed as threatened under both state and federal ESAs. During the past decade, the run has been the target of a number of protection and recovery efforts, including those focused on tributary streams upstream of RBDD.

The EA states that the majority of spring-run Chinook salmon spawn in three Sacramento River tributaries, Mill, Deer, and Butte Creeks (EA, pg. 3-75), all of which enter the Sacramento River below RBDD. The EA further states that since only a small percentage of spring-run Chinook salmon spawn in the mainstem Sacramento River above (or below) RBDD, no population level impacts are expected. While the description of current spring-run Chinook salmon distribution may be accurate, this explanation inexplicably ignores the fact that as recently as 15 years ago the mainstem Sacramento River supported a substantial population of spring-run Chinook salmon that spawned above RBDD, averaging more than 10,000 fish per year from 1969-1986 (Figure 1, data from California Department of Fish and Game [CDFG]), more than five times as many fish as returned to Mill, Deer and Butte Creeks combined during the same period (Figure 2, data from CDFG). Since the early 1990s, only a few hundred fish have successfully returned to the upper mainstem Sacramento River and, in 2003, preliminary analysis of escapement surveys indicated that no spring-run returned to spawn in this reach of the river. The decline of the Sacramento River population coincided with the 1987-1992 drought and poor water quality conditions in the upper river, particularly below RBDD (use of spawning habitat below RBDD by fish prevented from reaching the upper reach of the river declined during this period as well). Similar low numbers of spring-run Chinook salmon were counted on the three tributary streams downstream of RBDD during the drought. However, since the mid-1990s, although populations recovered somewhat in the downstream tributaries, the mainstem Sacramento River population remained critically low and, based on the 2003 survey, may now be approaching extinction.

Given the current restricted geographic distribution and only two remaining independent natural spring-run Chinook salmon populations (one in Mill and Deer Creeks and the other in Butte Creek), the species is perilously close to extirpation in the Sacramento basin (McElhany et al., 2000; Lindley et al., 2004; copies enclosed). A major focus of protection and recovery efforts is to reestablish the run in other suitable streams. The mainstem Sacramento River below Keswick Dam, which has large amounts of holding and spawning habitat and cool water temperatures, and two tributary streams, Battle and Clear Creeks (both located upstream of RBDD) offer some of the best opportunities for restoring a broader geographic distribution for the spring-run Chinook salmon, increasing its population size, and reducing its vulnerability to extinction. In addition, the

Responses

Bay-8
The suggested timeframe is outside of the EA's baseline conditions. The historical distribution of Chinook, however, is discussed. The EA acknowledges that the placement of dams and water diversions are a major cause of this species decline. It should also be noted that the numbers may be misleading. The NOAA OCAP Supplemental BO 2004-2006 (February 27th 2004) states:

> "[e]valuating the abundance of the ESUs as a whole, however, complicates trend detection. For example, although the mainstem Sacramento River population appears to have undergone a significant decline, the data are not necessarily comparable because coded wire tag information gathered from Central Valley fall-run Chinook salmon (CV fall-run Chinook salmon; *O. tshawytscha*) returns since the early 1990s has resulted in adjustments to ladder counts at Red Bluff Diversion Dam (RBDD) that have reduced the overall number of fish that are categorized as spring-run Chinook salmon."

The EA does not assess the continued use of RBDD, as this is a separate action which is assessed in depth in the OCAP BA, and is the subject of its own environmental compliance procedures.

Comments

The Bay Institute (cont'd)

anadromous fish doubling requirement of the Central Valley Project Improvement Act (CVPIA) includes a doubling goal for spring-run Chinook salmon on the Sacramento River (USFWS, 1995).

Past and current RBDD operations have had significant negative impacts on spring-run Chinook salmon. Continuation of the current RBDD operations, the action proposed in the EA, will likely result in the extirpation of the run from the Sacramento River, failure to meet CVPIA-mandated doubling goal for the run in the Sacramento River, and prevent establishment of the run in newly restored streams upstream of RBDD.

- RBDD prevents or delays upstream migration of 70% of adult fish (OCAP BA, pg. 6-19; Draft EIS/EIR Fish Passage Improvement Project for RBDD, pg. B-6). Fish ladders incorporated into the dam are inefficient at passing spring-run Chinook salmon (CDFG, 1998; copy enclosed).
- Reduced flows and elevated temperatures below RBDD when the gates are closed reduce survival of fish restricted to areas below RBDD.
- Migration delays at RBDD prevent fish that do pass the facility from successfully reaching suitable holding habitat in tributary streams before seasonal decreases in flow and increases in temperature in the lower reaches of these tributaries block their passage (TCCA and USBR, 2002).
- The biological consequences of blocked or delayed passage at RBDD include changes in spawning distribution (Hallock, 1987; copy enclosed), hybridization with fall-run Chinook salmon (CDFG, 1998), increased adult pre-spawning mortality (USBR, 1995), and decreased egg viability (Vogel et al., 1988), all of which contribute to reduced reproductive success.

Bay-9

Winter-run Chinook salmon

Winter-run Chinook salmon historically spawned in several Sacramento River tributaries located far upstream of Shasta Dam (Moyle, 2002). Closure of Shasta and Keswick Dams restricted this unique run to a single location, the Sacramento River below Keswick Dam.[5] Environmental conditions (largely water temperature) in the river further restrict the fish, which return to the river as immature adults during the winter and hold during the spring and summer before spawning in the late summer, to the short reach of the river from immediately below Keswick Dam to approximately Red Bluff Diversion Dam (depending on water temperature and flow conditions). In the mid-1970s, drought and extreme water management operations on the Sacramento River nearly wiped out the run, killing most adult fish holding in the river and most incubating eggs during two consecutive years and resulting in extremely low returns of adult fish three years later

[5] The Sacramento River basin is the only watershed that supports a winter run of Chinook salmon (Moyle, 2002).

Responses

Bay-9

These are not consequences of the proposed action. The EA does not address shifting the compliance point, the removal of the minimum carryover storage, nor the impacts of RBDD. Operations of the CVP are a separate action. Please refer to the CVPIA PEIS and OCAP BA. Cumulative CVP impacts were addressed in the CVPIA PEIS and are incorporated in this EA by reference. Beyond those cumulative impacts discussed in the CVPIA PEIS and BO, there are no additional cumulative impacts that would result from long-term water service contract renewals in the Sacramento River Division.

Comments

The Bay Institute (cont'd)

Bay-9 (cont'd)

(i.e., in 1979 and 1980, Figure 3, data from CDFG, 2004 datum is a preliminary estimate reported to the California Bay-Delta Authority Operations Group). By 1989, after the species had remained at critically low levels for a decade, it was listed by both the state and federal ESAs as threatened. In 1994, the federal ESA listing was changed to endangered.

Given the current extremely restricted geographic distribution of winter-run Chinook salmon and the concentration of the entire Evolutionarily Significant Unit (ESU) into a single population, this species is also highly vulnerable to extinction (Lindley et al., 2004). A major focus of protection and recovery efforts is to protect remaining habitat below Keswick Dam by using the Shasta Temperature Control Device[6] and controlled reservoir releases to maintain suitably cool temperatures for adult holding, spawning, egg incubation and early rearing, improve passage of immigrating adults to the upper Sacramento River by opening RBDD gates during September 15-May 15 period, improve survival of emigrating juveniles, and reestablish the run in other suitable streams, with the greatest emphasis on Battle Creek. And as existing state bond funding for CALFED restoration activity dries up and federal funding for and authorization of CALFED languish, it is at best uncertain whether, let alone when, winter-run Chinook salmon will be successfully restored to Battle Creek.

The EA states that, in some years, water temperatures "may reach levels that are detrimental to survivorship" (pg. 3-75) for winter-run Chinook salmon but implies that the run will respond by spawning closer to the dam. The effects of reduced summer flow (predicted by the OCAP BA analyses) and the effects of elevated water temperature resulting from this and Reclamation's proposed upstream shift in the temperature compliance point on this run (or on spring-run Chinook salmon and steelhead), and the resultant reduction in critical habitat area are not described in the EA or included in the summary table of potential impacts (EA Table 2-2, pg. 2-15, 16). The OCAP BA provides more analysis of the multiple potential impacts of planned operations for the delivery of water by Reclamation to its Sacramento River Division contractors as well as downstream contractors and the Delta.

- Reclamation's plan to shift the temperature compliance point to a location 18 miles upstream of that presently required under the winter-run Chinook salmon BO (NOAA Fisheries, 1993) is likely to undo some or all of the progress towards recovery of the species made during the past decade (see Figure 3). Even during the past decade Reclamation has failed to meet current temperature compliance requirements, with the largest exceedences occurring during the past four to seven years (OCAP BA, pg. 9-29). These exceedences are the likely explanation of Reclamation's observation in the OCAP BA that winter-run Chinook salmon now spawn in areas closer to Keswick Dam than in the past and, rather than justifying

[6] Before the Temperature Control Device was completed, cool water from deep in Shasta Reservoir was released from lower outlets by bypassing the power generation turbines.

Responses

The Bay Institute (cont'd)

Bay-9 (cont'd)

a harmful change in the temperature compliance point proposed by Reclamation, may in fact be contributing to the slowed rate of population increase observed in the past three to four years. In addition, Reclamation predicts that Sacramento River flows during the critical late summer and early fall period will be lower, exacerbating water temperature problems (OCAP BA, pg. 9-27).

- Results of analyses reported in the OCAP BA (pg. 9-32, Figure 9-32) indicate that future operations will increase egg mortality (above current levels) by an average of 5-10% and by as much as 20-25% in critically dry years.

- The upstream shift in the temperature compliance point reduces winter-run Chinook salmon habitat by 40% (as linear river miles), effectively eliminating access to 18 miles of river channel in many years.

Reclamation's plan to no longer operate to meet the minimum 1.9 MAF of carryover storage threatens the survival of winter-run Chinook salmon during multi-year droughts. The potential impacts of this action were not reported in the EA.

- Maintenance of a minimum of 1.9 MAF is intended to preserve enough water in Shasta Reservoir's cold-water pool to support flow releases for temperature control in the upper Sacramento River in years following dry and critically dry years. Failure to maintain sufficient reserves and resultant inability to threatens the survival of entire cohorts of the winter-run Chinook salmon ESU.

- Based on this proposed less conservative storage management plan, Reclamation's OCAP BA (pg. 9-28-32) predicted that, on average during dry and critically dry years, 45% of incubating eggs would be killed each year. This mortality rate is approximately two to ten times higher than that predicted for wetter years.

While current operations of RBDD improve passage for adult fish, the RBDD gates remain closed during the period when a large percentage of juvenile winter-run Chinook salmon migrate downstream. These fish must pass under the gates or through the ladders and their auxiliary water systems, or they are entrained and impinged into the Tehama-Colusa Canal headworks or the Research Pumping Plant screens and bypasses. The well-documented negative impacts of RBDD on survival of emigrating juvenile salmon, which were likely part of the basis for the Draft EIS/EIR for the RBDD Fish Passage Improvement Project to recommend as a preferred alternative that RBDD gates be raised year-round (Executive Summary, pg. V), were not reported in the EA.

- More than one third (39%) of emigrating juvenile winter-run try to pass RBDD when the gates are closed (TCCA and USBR, 2002, pg. B-8). Compared to fish that pass the RBDD when the gates are open, these fish are subjected to increased stress, physical injury and mortality.

Comments

The Bay Institute (cont'd)

- Vondracek and Moyle (1983) reported that the predominant cause of mortality of juvenile salmonids passing through the RBDD was a dysfunctional predator-prey created by the RBDD. USFWS (1981) reported that greater than 50% of juvenile Chinook salmon passing through RBDD when the gates were down died.

Steelhead

Steelhead, which spawn in the Sacramento River above RBDD and in upstream tributaries, will be negatively affected by Reclamation's proposed renewal of long-term water service contracts and associated operations in a variety of ways.

Bay-10

- RBDD blocks passage of at least 17% of immigrating adult steelhead (TCCA and USBR, 2002).
- More than a third (36%) of juvenile emigrants are negatively affected by RBDD. Mortality rates of juvenile steelhead passing through the dam are 42% (TCCA and USBR, 2002).
- Increases in water temperature resulting from the upstream shift in the temperature compliance point and reduced flows during the summer will increase mortality (above current rates) of both adult and juvenile steelhead.

Green sturgeon

Green sturgeon populations have been reduced throughout their range and today only three known spawning populations still exist, including one on the Sacramento River (Moyle et al, 1995). Among the causes for the species' decline are loss of access to spawning habitat by dam construction and degradation of spawning habitat quality (OCAP BA, pg. B-12).

Bay-11

- As much as 35% of the immigrating adult green sturgeon are blocked by RBDD. Green sturgeon do not readily ascend fish ladders designed for passage of salmonid fishes, therefore any green sturgeon that reach RBDD when the gates are closed are completely prevented from ascending the river beyond that point (OCAP BA, pg. B-16). Emigrating adult fish are also blocked by RBDD.
- During the May 15-September 15 period when the RBDD gates are closed, nearly 100% of emigrating larval and juvenile green sturgeon must pass under the gates, through the fish ladders, or become entrained at the two diversion facilities where, like juvenile salmonids they are subject to stress, injury, mortality, and high rates of predation

Bay-12

During the past few decades, the effects of water management operations on the Sacramento River, its environment, and its valuable biological resources have been observed, investigated and extensively documented. For many specific impacts, the mechanisms underlying their effects have been identified and alternative infrastructure

Responses

Bay-10

See response to Bay-9, above.

Bay-11

See response to Bay-9, above.

Bay-12

The alternatives assessed in the EA represent a range of water service agreement provisions that meet the project purpose and need. The No Action Alternative consists of renewing existing water service contracts as described by the Preferred Alternative of the PEIS. In November 1999, Reclamation published a proposed long-term water service

Comments

The Bay Institute (cont'd)

Bay-12 (cont'd)

design, operation and/or management approaches that minimize their adverse impacts have been devised. The three alternatives evaluated by Reclamation in the draft EA to support renewal of long-term water service contracts in the Sacramento River Division fail to consider or implement any such improvements, despite compelling evidence that continued operations threaten the continued existence of several priority fish species and despite federal laws such as the CVPIA that mandate such reforms. Further, the impacts analysis reported in the EA ignores a large body of evidence, much published by Reclamation itself, of adverse impacts of current and planned actions and draws a false and unsupported conclusion of no significant impact.

Bay-13

For all of the above reasons, and for the reasons set out in our supplemental comments being submitted under separate cover, as well as based on the materials attached with both sets of our comments and/or incorporated or referenced therein, the revised draft EA and the draft FONSI are technically and legally inadequate and contrary to law. We strongly urge Reclamation to prepare new environmental documentation for the proposed action, including an EIS/EIR, that includes among other things a more robust range of alternatives, including at least one that, at a minimum, is designed to address the negative impacts discussed in these comments, and that provides a much more comprehensive and rigorous evaluation of negative impacts to the River's environment and biological resources.

Sincerely,

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encl.

Responses

Bay 12 (cont'd)

contract. In April 2000, the CVP Contractors presented an alternative long-term water service contract. Reclamation and the CVP Contractors continued to negotiate the CVP-wide terms and conditions with these proposals serving as "bookends." This EA considers these proposals as bookends in the environmental documentation to evaluate the impacts and benefits of renewing the long-term water service contracts.

Reduction of contract amounts was considered in certain cases but rejected from analysis. The reason for this was twofold. First, water needs analyses have been completed for all contractors and in almost all cases the needs exceed or equal the current total contract amount. Second, in order to implement good water management, the contractors must be able to store or immediately use water available in years when more water is available. By quantifying contract amounts in terms of the needs analyses and the CVP delivery capability, the contractors can make their own economic decisions. Allowing the contractors to retain the full water quantity gives the contractors assurance that the water will be available to them for storage investments. In addition the CVPIA, in and of itself, achieves a balance through its dedication of significant amounts of CVP water and actions to acquire water for environmental purposes.

Non-renewal of existing contracts is considered infeasible based on Section 3404(c) of the CVPIA. This alternative was considered but eliminated from analysis in this EA because Reclamation has no discretion not to renew the contracts.

Bay-13

Reclamation has analyzed the Proposed Action in accordance with NEPA. The range of alternatives is based on the proposed contracts under negotiation when the NEPA process was initiated, and provides an adequate range of contract provisions consistent with the purpose and need of the contract renewal. The EA, tiered to the CVPIA PEIS, deals with the local effects of water pricing and how that may affect the Sacramento River Division's water purchases. The determination of no significant impact is based on the absence of changes to the infrastructure, physical disturbances, or water delivery, because few changes are expected in water quantities purchased by the contractors or in acreage cultivated as a result of the proposed action.

In addition, as stated in an earlier response, the CVPIA, through its numerous environmental actions, is addressing fish and wildlife that have been impacted by the CVP. The contracts need to be considered in the context of the CVPIA as a whole.

The Bay Institute (cont'd)

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The Bay Institute (cont'd)

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The Bay Institute (cont'd)

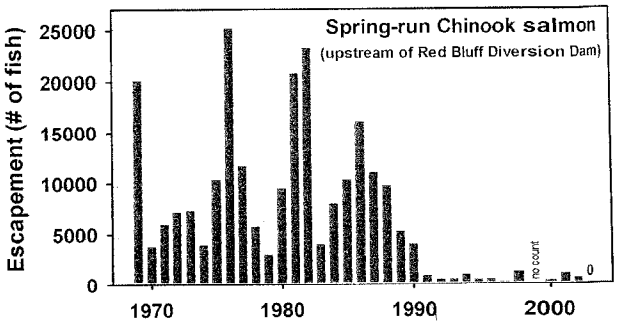

Figure 1. Escapement (number of adult fish) of spring-run Chinook salmon to the mainstem Sacramento River upstream of Red Bluff Diversion Dame, Data from CDFG.

The Bay Institute (cont'd)

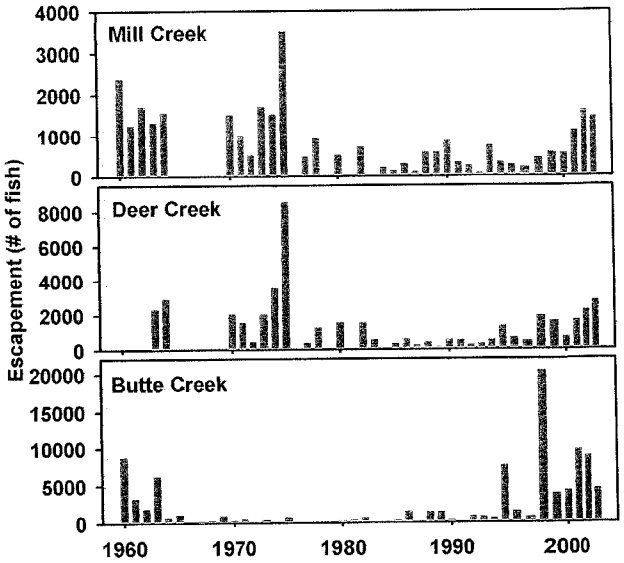

Figure 2. Escapement (number of adult fish) of spring-run Chinook salmon to Mill, Deer, and Butte Creeks. Data from CDFG.

The Bay Institute (cont'd)

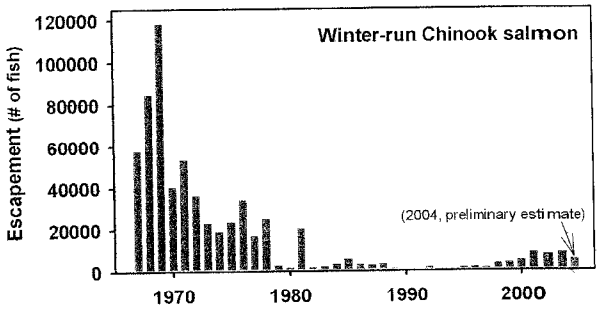

Figure 3. Escapement (number of adult fish) of winter-run Chinook salmon to the mainstem Sacramento River. Datum for 2004 is a preliminary estimate. Data from CDFG.

Comments

Natural Resource Defense Council

NRDC
THE EARTH'S BEST DEFENSE

NATURAL RESOURCES DEFENSE COUNCIL

August 28, 2004

Ms. Basia Trout
U.S. Bureau of Reclamation
22500 Altube Avenue
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RE: Supplemental Comments on Revised EA for Sacramento River Division Contracts

Dear Ms. Trout:

These are the supplemental comments of the Natural Resources Defense Council (NRDC), The Bay Institute, and the Planning & Conservation League (PCL) on the Revised Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for Renewal of the Long-term Contracts for the Sacramento River Division Contractors (proposed contracts), U.S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA; July 2004. Separately, our three organizations are submitting detailed technical comments on the revised draft EA/FONSI, along with extensive attachments, under separate cover. (A copy of those separate August 27, 2004 comments, without the attachments, is also enclosed herein for your convenience.) In addition, we are enclosing with these supplemental comments numerous materials that are relevant to the proposed renewal contracts and the revised draft EA/FONSI. We request full consideration of both sets of comments, along with all materials attached to or submitted with each of our comment letters or incorporated or referenced therein.

1. Request for Extension of Comment Deadline

NRDC-1

The Bureau has not provided adequate time for the public to review the EA and FONSI or the proposed contracts. For all of the reasons stated in the attached letters from the Pacific Coast Federation of Fishermen's Associations (PCFFA), Taxpayers for Common Sense, Northern California/Nevada Council-Federation of Fly Fishers, and Rep. George Miller and five other Members of Congress, we urge you to reopen or extend (or both) the public comment periods for the contracts and the EA/FONSI so that there will be at least 60 days of public comment allowed after the completion and public distribution of the final Biological Opinion of NOAA Fishers (NMFS) on the new OCAP for the Central Valley Project (CVP) and the State Water Project (SWP).

2. The Revised Draft EA and the proposed FONSI are Legally Inadequate.

NRDC-2

The Bureau has failed to correct the numerous deficiencies in its prior environmental review documents pertaining to CVP long-term renewal contracts and interim renewal

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Responses

NRDC-1

Reclamation has considered requests for extensions of the comment period but feels adequate time was given for review. The draft OCAP BO has been reviewed and the final OCAP BOs did not alter the analysis presented in the EA.

NRDC-2

The EA and the scope of the analysis were developed consistent with NEPA regulations and guidance from the Council on Environmental Quality (CEQ), and in conformance with the direction provided by NRDC vs Patterson, Civ. No. S-88-1658 (Patterson), which specifically addressed the application of NEPA relative to contract renewals. In Patterson the court found that "…ongoing projects and activities require NEPA procedures only when they undergo changes amounting in themselves to further "major action." The court went further to state that the NEPA

Comments

Natural Resource Defense Council (cont'd)

NRDC-2 (cont'd)

contracts. Numerous comments criticizing these earlier documents have been submitted to the Bureau and are contained in the administrative records on those contracts and their associated NEPA review processes, including NRDC's own extensive comments dated December 7, 2000, which are attached and incorporated herein, and the comments of the Hoopa Valley Tribe (letter of Thomas Schlosser to Frank Michny), which are also attached. Among other things, the Bureau has failed to meet its legal obligation to prepare a full Environmental Impact Statement (EIS) on these proposed contracts, failed to consider a reasonable range of alternatives, and failed to disclose and analyze adequately the environmental impacts of the proposed action, including cumulative impacts. Associated CEQA review is likewise insufficient. Some of these defects are more fully addressed below.

NRDC-3

3. The Bureau has failed to address the concerns previously identified by EPA and failed to comply with the Findings of the Council on Environmental Quality.

In a series of letters, the US EPA has expressed repeated concern over the adequacy of the Bureau's environmental review process for its contract renewal program, including but not limited to the attached letters dated December 8, 2000, August 30, 2001, January 4, 2002, and January 23, 2004. Yet the Bureau has failed to adequately address those concerns in its new EA/FONSI. Similarly, back in 1989, EPA challenged the Bureau's failure to complete a full EIS on each group of CVP renewal contracts and the Council on Environmental Quality (CEQ) upheld EPA's critique. See 54 Fed. Reg. 28477 (July 6, 1989). The Bureau has numerous copies of the complete record of that proceeding, including in its copies of the court record in *NRDC v. Patterson*, Civ. No. S-88-1658-LKK, and should review and reconsider that record, including EPA's numerous submissions, and the CEQ findings.

NRDC-4

4. The Bureau has failed to adequately consider the effects of its operations and proposed contracts.

Among many other defects, the Bureau has failed to adequately consider the impacts to fish species and fish habitat from its operations on the Sacramento River, including but not limited to the operation of Red Bluff Diversion Dam and the Tehama-Colusa Canal and the Bureau's new overall OCAP. In addition to the information provided in and referenced in our separate technical comments on this EA/FONSI, we also attach and direct your attention to the following relevant documents, and incorporate each of them by reference:

a. July 11, 2003 letter from NRDC and The Bay Institute to Ms. Ann Lubas-Williams on the Draft OCAP and Draft OCAP Biological Assessment.
b. July 28, 2004 letter from NRDC to Mr. Wayne White of US FWS re ESA Consultation on OCAP.

Responses

NRCD-2 (cont'd)

statutory requirement applies only to those changes. The analysis in the EA finds the renewals of the contract to be a continuation of previous contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. Moreover, most contracts do not involve any change in the type of use, such as the addition of M&I uses. The analysis in the EA addresses the proposed changes to the contract and the potential environmental effects of those changes. As indicated in the EA, these contract changes would not result in significant effects to the environment.

NRDC-3

Please see response to NRDC-2, above.

NRDC-4

The analysis in the EA addresses the proposed changes to the contract and the potential environmental effects of those changes. As indicated in the EA, these contract changes would not result in significant effects to the environment. The proposed action that is being analyzed in this EA is water service contract renewal and the delivery of water to the contractors. The impacts to fish species as a result of contractor's water use and Reclamation's operations and maintenance activities are discussed in the documents you mentioned. This EA does not disregard the findings of other reports, but is focusing on the proposed action of incorporating administrative conditions into renewed contracts to ensure CVPIA compliance.

In regard to the Fish Passage Improvement Project, Reclamation is continuously working with NOAA Fisheries to minimize impacts to salmonids at the RBDD and decisions about the next steps will be made after the OCAP BA consultation is completed. This is a separate action subject to its own environmental compliance requirements. Permanent, structural fixes at the RBDD would cost on the order of 100 million dollars, so decisions as to what to do are not easily reached. It may be that lower costs, seasonal fixes can be designed, but that remains to be seen.

Natural Resource Defense Council (cont'd)

NRDC-4 (cont'd)

Similarly, the EA/FONSI disregards the concerns, findings and analysis previously provided on these Sacramento River environmental issues by the Bureau itself or other federal agencies, including but not limited to the attached letter of July 23, 2004 from NMFS to Mr. Thomas Stokely and the attached February 1998 Supplemental Fish & Wildlife Coordination Act Report by the US FWS on the Red Bluff Diversion Dam and the Tehama-Colusa Canal, as well as the August 2002 Draft EIS/EIR for the Fish Passage Improvement Project at Red Bluff Diversion Dam, available at www.tccafishpassage.org.

NRDC-5

5. The Bureau fails to analyze meaningful alternatives on the key terms of the contracts including price and water quantity.

Numerous members of the public have written to the Bureau in past years urging the Bureau to evaluate a broader range of alternatives to its current policy of rolling over most water quantity terms in its long term renewal contracts and keeping water prices significantly below cost and below market without any adjustment for conservation incentives or environmental repayment. The EA/FONSI has utterly failed to evaluate such alternatives, including those discussed in the attached May 3, 2004 letter of National Taxpayers Union & Taxpayers for Common Sense, the attached letter of January 9, 2001 of NRDC, and the attached March 2, 1994 brief on ratesetting filed by plaintiffs in *NRDC v. Patterson*, Civ. No. S-88-1658-LKK.

NRDC-6

6. The Bureau is acting in an arbitrary and capricious manner in its NEPA process on contract renewals.

This EA/FONSI is part of a larger pattern of arbitrary NEPA compliance by the CVP in addressing its OCAP and contract-renewal program. For example, the Bureau is proposing significant changes in its operations in its OCAP, yet failing to do any NEPA or CEQA review. The Bureau is conducting an EIS on the Sacramento River Settlement Contracts, the American River Division renewal contracts and the San Luis Unit renewal contracts, yet relying on a mere EA/FONSI for its Sacramento River Division contracts. The current proposed FONSI refers to a project description in OCAP, yet the 3 different versions of the OCAP BA, the final OCAP itself, the final FWS Biological Opinion on OCAP, and the ongoing ESA consultation with NMFS on OCAP involve different project descriptions. In sum, the approach is irrational and arbitrary and contrary to NEPA and its implementing regulations. We urge you to withdraw the revised draft EA and FONSI and proceed with a more adequate analysis in a full draft EIS on the proposed contracts.

Sincerely,

Hamilton Candee
Senior Attorney

NRDC-5

A needs analysis was conducted for each contractor within the various units of the CVP to determine the historic and projected water demands and supplies, and historic and projected cropping patterns. Comprehensive information on each contractor's surface and groundwater supplies was collected together with information in the contractor's Water Management Plans. In regards to groundwater supplies, the initial calculation of CVP water needs was limited by the assumption that groundwater pumping would not exceed the safe yield of the aquifer. The average of 19 years of historical water deliveries was compared to a calculated average past beneficial use. Because the CVP was initially established as a supplemental water supply for areas without adequate supplies, the needs for most contractors are at least equal to the CVP water service contract and frequently exceeded the previous contract amount.

The water pricing contract rates are defined by the CVP rate-setting policies, P.L. 99-546 and the Reclamation Reform Act (RRA). The prices of CVP water used in the No Action Alternative are based upon 1994 irrigation and municipal/industrial CVP water rates.

The No Action alternative together with negotiated proposals for CVP-wide terms and conditions are the basis for the action alternatives. The preferred alternative essentially maintains the status quo apart from changes mandated by the CVPIA. The analysis displays the increment of change between the No Action Alternative and the other alternatives.

NRDC-6

Project operations as described in the OCAP BA are a separate action from contract renewal. The OCAP BA/BO process is subject to its own environmental compliance requirements which are being addressed as may be required. A consistent project description was utilized in both Biological Opinions received on the CVP operations.

Comments

Defenders of Wildlife

Butte Environmental Council

August 30, 2004

Basra Trout
P.O. Box 159
Red Bluff CA 96080.

Mr. Richard Stevenson
Bureau of Reclamation
2800 Cottage Way, MP-440,
Sacramento CA 95825.

Re: Sacramento River Division Environmental Assessment and Contracts

Dear Ms. Trout and Mr. Stevenson:

On behalf of Butte Environmental Council, Defenders of Wildlife, and the Lassen Forest Preservation Group, we would like to thank you and your staff for the opportunity to comment on and pose questions about the Sacramento River Division Environmental Assessment and Contracts.

Process

We request that the Bureau of Reclamation (BR) extend the comment period on the Sacramento River Division Environmental Assessment (EA) and the Sacramento River Division Contracts. We have been unable to download the sizable documents from your web site. In addition, we need access to the Biological Opinions (BOs) by the U.S. Fish and Wildlife Service and NOAA Fisheries to adequately comment and these documents have not been completed.

We request a hard copy of this EA, and when available, the BOs, the Sacramento River Settlement Contractors Environmental Impact Statement, and the Feather Water District Environmental Assessment.

Substantive Issues

DOW-1 1) Are there operational conservation plans for each of the contractors as required by the Central Valley Project Improvement Act (CVPIA)? If so, will you please send us copies?

DOW-2 2) There are severe water quality issues in the Colusa drain, which fails both state and federal standards. When and how will you address these violations of the Clean Water Act and Porter Cologne?

Responses

DOW-1

All M&I contractors with more than 2000 af of Project Water or Irrigation contractors with more than 2000 irrigable acres are required to have water conservation plans. All available Water District (contractor) Water Conservation or Water Management Plans are on file at the Regional office and can be made available for review there. The contact point for those plans would be Lucille Billingsley in the Mid-Pacific's Regional Office, who can be reached at (916) 978-5215.

Sacramento River Settlement contractors, as holders of water rights, are distinct from water service contractors and are still developing their plans as part of a 'Regional' plan. The City of Redding, which has both a settlement contract and a water service contract, and the contractors which hold only water service contracts, such as the TCCA districts, Bella Vista, Clear Creek, and the City of Shasta Lake have prepared plans.

DOW-2

Reclamation is unaware of any specific violations of the Clean Water Act or Porter Cologne Act in the Colusa Drain resulting from its actions of renewing water service contracts. We have received no notices of any such violations. Reclamation does not own these facilities and cannot address violations which do not directly result from the proposed action of contract renewal. Please see comment FOR-16.

Comments

Defenders of Wildlife (cont'd)

DOW-3 3) The model used for benchmark studies for this process, CalSIM II, is highly flawed (Sjovold 2004). How will the BR correct these significant failings?

DOW-4 4) The operation of the Red Bluff diversion violates the CVPIA. It currently prevents migration of 70% of threatened spring run Chinook salmon and 17% of steelhead adults. There has been no quantification of impacts to all juvenile fish species. What does the BR plan to do to rectify this violation?

DOW-5 5) The Tehama Colusa Canal and the Corning Canal pose serious problems for fish migration on all the westside tributaries. As you are aware, Stoney Creek is so impacted that it runs unnaturally dry a significant part of the year. What does the BR propose to do to restore flows to these tributaries?

DOW-6 6) What analysis has been conducted to determine the impacts to ground water, the local economy, and the environment if surface waters are sold and ground water is used to replace the surface water for existing operations? What analysis has been done to determine the impacts to the local economy and the environment if surface waters are sold and agricultural land is fallowed?

DOW-7 7) The Sacramento River has minimum flow standards for salmonids and no ecosystem flow standards for riparian restoration, a significant CalFed goal.

DOW-8 8) What analysis has been conducted to determine the possible impacts from proposed water storage projects like Sites Reservoir and raising Shasta dam?

DOW-9 9) Where is the cumulative impact analysis for all the contracts, possible ground water substitution, and proposed storage projects?

DOW-10 10) The contract renewals are an opportunity to quantify the value of water flowing from upper watersheds. How will the BR fund the studies to provide this watershed information? The contractors should assist with the funding.

Thank you for the opportunity to comment.

Sincerely,

Barbara Vlamis, Executive Director
Butte Environmental Council
116 W. Second Street, Suite 3
Chico, CA 95928

Kelly McDonald, California Program Associate
Defenders of Wildlife
926 J Street, Suite 522
Sacramento, CA 95814

James Brobeck, Forestry Policy Analyst
Lassen Forest Preservation Group
1605 Manzanita
Chico, CA 95926

Responses

DOW-3
In conducting studies for this process, we used the best available information at our disposal. New information will be taken into account as it is provided.

DOW-4
Only about 7% of the total spring run population currently migrates into the upper Sacramento Valley and is either delayed or blocked at the RBDD. Conversely, 93% of spring-run experience no delays or they spawn downstream of the RBDD. The earliest arriving fish have the best chance of making it to the upper reaches of tributary streams where they hold over the summer before spawning, encountering no obstacles. Permanent, structural fixes would cost in the order of 100 million dollars, so decisions as to what to do are not easily reached. It may seasonal fixes can be designed at lower costs, but that remains to be seen. Reclamation is continuously working with NOAA Fisheries to minimize impacts to salmonids at the RBDD and decisions about the next steps will be made after the OCAP BA consultation is completed.

DOW-5
The TC and Corning Canals do not impact fish migration in most west side streams. These canals pass under these streams by means of siphons, leaving them unobstructed with the exception of Funks Creek and, seasonally, Stony Creek. However, all west side streams south of Stony Creek, including Funks, terminate in the Colusa Basin Drain. The Drain is a privately constructed feature that predates the canals by decades, which blocks or impedes access from the Sacramento River. All streams north of Stony Creek connect to the Sacramento River, but most, except Cottonwood Creek were seasonal before the onset of agricultural diversions. While these diversions surely shorten the period of flow, they are all private, not CVP diversions. The only water removed from tributaries to the Sacramento by the TC and Corning Canals is a portion of the water stored in Black Butte Reservoir at the end of the flood season. Part of that stored water, as noted above, is devoted to in-stream flows that tend to extend the period of potential passage.

Defenders of Wildlife (cont'd)

DOW-5 (cont'd)

Historically, flows in Stony Creek occurred intermittently in the late fall, winter, and spring months. With the installation of Black Butte Dam, flows in Stony Creek have been regulated by the COE for the purpose of flood control primarily from November through March. After the threat of floods has passed, Reclamation controls releases of stored water for the purpose of irrigation. When water is being diverted for irrigation using a temporary diversion dam, a minimum of 40 cfs is being released downstream for fishery benefits. Reclamation and the COE are currently consulting with NOAA Fisheries on the effects of water operations in lower Stony creek to anadromous fish. A short-term BO was issued in 2002 and a long-term BO is expected by March of 2005. The terms and conditions of the BO suggest increased releases to benefit salmonids.

DOW-6

This EA does not evaluate exchanges or transfers. Water transfers are considered actions separate from contract renewal that require their own action-specific environmental compliance. The CVPIA has allowed water transfers upon approval by Reclamation; transfers were evaluated in the Programmatic Environmental Impact Statement for the Preferred Alternative. Reclamation will continue to require separate environmental review of proposed transfer requests. At this time, however, some sense of the potential effects can be obtained from, or soon will be obtainable, from the reports of the Sacramento Valley Water Management Program, the EIS for the renewal of the Sacramento River Settlement Contracts (SRSC), and the Sacramento River Basinwide Water Management Plan. The effects predicted by modeling for the SRSC EIS were surprisingly small in the context of the basin as a whole.

The CVP was initially established as a supplemental water supply for areas without adequate supplies. A needs analysis was conducted for each contractor within the various units of the CVP. In regards to groundwater supplies, the initial calculation of CVP water needs was limited by the assumption that groundwater pumping would not exceed the safe yield of the aquifer.

Defenders of Wildlife (cont'd)

DOW-6 (cont'd)
The Agricultural Economics and Regional Economy sections under each of the alternatives in the EA analyzes which scenario would result in the greatest economic effects when applied to the gross value of production, the fallowing of land, and the increased cost of CVP water.

DOW-7
Comment noted. The subject of this EA is the renewal of existing contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. The analysis in the EA concerns Reclamation's delivery of CVP water to CVP contract areas. The comments regarding minimum flow standards are outside the scope of this document.

DOW-8
The subject of this EA is the renewal of existing contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. The analysis in the EA concerns Reclamation's delivery of CVP water to CVP contract areas. The comments regarding water storage projects are outside the scope of this document.

DOW-9
The cumulative impacts of the CVP were addressed in the PEIS for implementation of the CVPIA. Analysis of potential impacts on agricultural land use and economics of the Sacramento River Division CVP contract renewal is conducted at the level of the specific CVP contractors that would be affected. The analysis of potential regional level water projects is beyond the scope of the action analyzed in this EA.

DOW-10
The subject of this EA is the renewal of existing contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. The analysis in the EA concerns Reclamation's delivery of CVP water, not its use. The comments regarding watershed studies are outside the scope of this document.

Taxpayers for Common Sense

Comments

August 30, 2004

VIA FAX AND EMAIL

Mr. Kirk Rodgers
Mr. Richard Stevenson
Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825

Ms. Basia Trout
Red Bluff Division Office
Bureau of Reclamation
P.O. Box 159
Red Bluff, CA 96080

RE: Sacramento River Division Contractors Draft Revised Environmental Assessment (EA) and Finding of No Significant Impact (FONSI)

Dear Mr. Rodgers, Mr. Stevenson, and Ms. Trout:

With this letter, Taxpayers for Common Sense (TCS), a nonpartisan budget watchdog, submits our comments regarding the Bureau of Reclamation's draft EA and FONSI for the Sacramento River Division contracts. TCS is extremely concerned about the way in which the Bureau of Reclamation is renewing Central Valley Project (CVP) water service contracts. According to the Bureau of Reclamation's July 30, 2004 press release, the Sacramento River Division contracts include the Tehama-Colusa Canal Unit, the Corning Canal Unit, and the Black Butte Unit. These proposed contracts will restrict up to 322,000 acre feet of CVP water for 25 to 40 years.

TCS-2-1

It is vital that the Bureau of Reclamation recognize that it is representing the interests of federal taxpayers when it is negotiating CVP water service contracts. The Bureau owes it to taxpayers to give them every chance to ask questions and understand the impacts of these major 25- to 40-year water commitments. It is disturbing that the Bureau has basically ignored numerous letters asking it to extend the comment period on the Sacramento River Division EA and FONSI. Instead, the Bureau proposes to renew Sacramento River Division contracts for up to 322,000 acre-feet of CVP water before the public has had a full opportunity to review the potential impact of these contracts or the proposed environmental documentation. To add insult to injury, the internet link to these important documents is down on the day that public comments are due, making it almost impossible for the public to comment on this vital documentation.

A non-partisan budget watchdog
651 Pennsylvania Avenue, SE • Washington, DC 20003 • Tel: (202) 546-8500 • Fax: (202) 546 8511 • staff@taxpayer.net • www.taxpayer.net

Responses

TCS-2-1

Reclamation has considered requests for extension of the comment period and feels adequate time was given for review. The analysis in the EA finds the renewals of the contract to be a continuation of previous contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. Moreover most do not involve any change in the type of use, such as the addition of M&I uses. The analysis in the EA addresses the proposed changes to the contract and the potential environmental effects of those changes. As indicated in the EA, these contract changes would not result in significant effects to the environment.

A needs analysis was conducted for each contractor within the various units of the CVP to determine the historic and projected water demands and supplies, and historic and projected cropping patterns. Comprehensive information on each contractor's surface and groundwater supplies was collected together with the contractor's Water Management Plans. In regards to groundwater supplies, the initial calculation of CVP water needs was limited by the assumption that groundwater pumping would not exceed the safe yield of the aquifer. The average of 19 years of historical water deliveries was compared to a calculated average past beneficial use. Because the CVP was initially established as a supplemental water supply for areas without adequate supplies, the needs for most contractors are at least equal to the CVP water service contract and have frequently exceeded the previous contract amount.

Comments

Taxpayers for Common Sense (cont'd)

Ms. Basia Trout
August 30, 2004

Public involvement must be the cornerstone of the water contract process. Without it, taxpayers face the negative fiscal ramifications of federal water service contracts that they had little part in shaping. The public should be given every chance to comment on the draft EA and FONSI for the Sacramento River Division contracts. Protecting taxpayers' interests requires that full opportunity be given for them to comment on all facets of water contract negotiations. The impact of these contracts on federal taxpayers as well as their potential consequences for water quality, wildlife and wildlife habitat, the fishing industry, urban and rural water users throughout California, and other important community concerns require that the public be fully engaged before decisions are made.

TCS believes these contracts do not represent the interests of federal taxpayers. Instead, they provide extremely favorable conditions to water service contractors while failing to ensure essential taxpayer protections, promised in the Central Valley Project Improvement Act (CVPIA) of 1992, are included. CVPIA and CALFED signified a commitment to ending the age of big subsidies and waste in California water policy. The Bureau of Reclamation needs to renew CVP contracts in a way that represents a responsible vision of future water needs in California. All proposed CVP contracts should reflect realistic water delivery amounts at far less subsidized prices.

Unfortunately, the Bureau of Reclamation is poised to enter into 25- to 40-year contracts with Sacramento River Division contractors which will not implement the important contract reforms envisioned by the CVPIA. The Bureau owes it to taxpayers to reduce promised quantities in the proposed contracts to reflect realistic water delivery levels. Inflated promises of water and large subsidies will increase pressure for new dam projects and threaten the delicate balance negotiated in the CALFED Record of Decision (ROD). Such promises will continue a vicious cycle of the federal government promising unreachable amounts of water at cheap prices to CVP contractors and then federal taxpayers being forced to fund massive new water projects to try to meet these demands.

TCS-2-2

Long-term CVP contracts are not permanent entitlements. Instead, contracts must receive full review in order to consider the constantly evolving needs of California's diverse set of water users. Contract pricing should also charge markets rates for water. The Bureau of Reclamation must also enforce tiered water pricing when drafting Sacramento River Division contract renewals. Under CVPIA, CVP contracts should be written to apply tiered water pricing when water consumption exceeds 80% of the annual contract maximum. Tiered pricing encourages wise use of water, therefore reducing the federal taxpayer's responsibility for providing highly subsidized water that will be wasted by contractors. We ask the Bureau of Reclamation to set annual contract maximums at more realistic levels that the CVP will be able to achieve.

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Responses

TCS-2-2

The water pricing contract rates are defined by the CVP rate-setting policies, P.L. 99-546, and the Reclamation Reform Act (RRA). The prices of CVP water used in the No Action Alternative are based upon 1994 irrigation and municipal/industrial CVP water rates. The contracts will use tiered water pricing and in the No Action Alternative it is based upon use of a "80/10/10" Tiered Water Pricing from Contract Rate to Full Cost Rate" including appropriate Ability-To-Pay limitations. Under this approach the first 80% of the maximum contract total would be priced at a rate equal to the average of the contract Rate and Full Cost rate. The final 10% of the contract total would be priced at the Full Cost rate.

The No Action Alternative, together with negotiated proposals for CVP-wide terms and conditions, are the basis for the action alternatives. The preferred alternative essentially maintains the status quo apart from changes mandated by the CVPIA. The analysis displays the increment of change between the No Action Alternative and the other alternatives.

Taxpayers for Common Sense (cont'd)

Mr. Kirk Rodgers
Mr. Richard Stevenson
Ms. Basia Trout
August 30, 2004

TCS strongly urges the Bureau of Reclamation to redraft Sacramento River Division contract renewals to ensure that federal taxpayers are protected and the Central Valley Project Improvement Act of 1992 is accurately and legally implemented. We also urge the Bureau to give the public every possible opportunity to participate in the contract negotiation process. Please contact me at (202) 546-8500 x130 or aileen@taxpayer.net with any questions.

Sincerely,

Aileen D. Roder
Program Director

A non-partisan budget watchdog
651 Pennsylvania Avenue, SE. • Washington, DC 20003 • Tel: (202) 546-8500 • Fax: (202) 546-8711 • staff@taxpayer.net • www.taxpayer.net

Comments

Taxpayers for Common Sense

August 30, 2004

VIA FAX AND EMAIL

Ms. Basia Trout
Red Bluff Division Office
Bureau of Reclamation
P.O. Box 159
Red Bluff, CA 96080

RE: Sacramento River Division Contractors Draft Revised Environmental Assessment (EA) and Finding of No Significant Impact (FONSI)

Dear Ms. Trout:

Taxpayers for Common Sense (TCS), a nonpartisan budget watchdog group, would like to reiterate our concerns regarding the comment period for the Sacramento River Division draft EA and FONSI. On August 30, 2004, while finishing TCS' comments regarding these important documents, I noted that the link provided in the Bureau of Reclamation's July 30, 2004 press release entitled "Environmental Documents Available for the Renewal of the Sacramento River Division CVP Long-Term Water Service Contracts," was down. Given that August 30 is the deadline for the public to comment on these important documents, it is especially critical that these documents be readily available to the public at this time. Instead, as of 2:00 PM (EDT), the link continues to be down.

TCS-3-1

As you know, I alerted you to the problem associated with the Bureau of Reclamation's website link via email. TCS finds this development very disturbing. Despite numerous requests, the Bureau has refused to extend the comment period for these documents, yet the very documents that the public is being asked to review are unavailable on the final day of the comment period. In fact, there is no telling how long the link to these documents has been inactive. The scheduling of the comment period during a traditional time of family vacations and congressional recess combined with the documents being unavailable to the public on the last day of the comment period makes it necessary for the Bureau to extend the comment period to allow appropriate public input into the process.

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Responses

TCS-3-1

Reclamation has considered requests for extensions of the comment period and feels adequate time was given for public review. The BA for the Sacramento River Division long-term water service contract renewals was completed on August of 2003. The Draft EA was first released on August 19, 2003 and was revised in March of 2004. On July 2, 2004, a 60-day public review and comment period was initiated for the associated long-term CVP water service contracts for the Black Butte Unit, Tehama-Colusa Canal Unit, and the Corning Canal Unit of the Sacramento River Division. The revised draft EA and FONSI were released on July 30, 2004 for an additional 30-day public review.

Taxpayers for Common Sense (cont'd)

I appreciate your attention on this matter. Please contact me if you have any questions at (202) 546-8500 x130 or aileen@taxpayer.net.

Sincerely,

Aileen D. Roder
Program Director

Cc: Mr. Kirk Rodgers

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Comments

Friends of the River

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FRIENDS OF THE RIVER

~~September~~ 30, 2004
aus

Ms. Basia Trout
U.S. Bureau of Reclamation
P.O. Box 159
Red Bluff, CA 96080

Mr. Richard Stevenson
U.S. Bureau of Reclamation
2800 Cottage Way, MP-440
Sacramento, CA 95825

Re: **Sacramento River Division CVP Long-Term Contracts**
Joint Comments on Contracts and Environmental Assessment

Dear Ms. Trout and Mr. Stevenson:

These are the comments of Friends of the River in combined response to the Sacramento River Division CVP Long-Term Contracts and Environmental Assessment (EA). Friends of the River is California's statewide river conservation organization, with more than 5,000 members dedicated to the protection and restoration of the state's free flowing rivers and watersheds.

Extension of Comment Period

The public comment period deadlines for the Sacramento River Division Contracts and its EA are August 30 and 31 respectively. But commenting effectively on these key documents within the short time period allotted has proven difficult.

FOR-1

The Bureau of Reclamation's Operations Criteria and Plan (OCAP) for the re-operation of the Central Valley Project (CVP) in cooperation with State Water Project facilities is intended to meet all future Bureau water obligations, including renewed CVP contracts. OCAP must therefore be considered a crucial component of the Sacramento River Division contracts. The National Marine Fisheries Service's (NMFS) biological opinion for threatened and endangered salmon and steelhead in response to OCAP is not yet available to the public. This makes it virtually impossible to submit relevant comments in regard the contracts' potential impacts on threatened and endangered salmonids.

The U.S. Fish and Wildlife Service's Biological Opinion for the endangered Delta Smelt in response to OCAP (dated 7/30/04) was not available to the public until the first week of

Responses

FOR-1

Reclamation has considered requests to extend the comment period and feels adequate time was given for public review. The BA for the Sacramento River Division long-term water service contract renewals was completed on August of 2003. The Draft EA was first released on August 19, 2003 and was revised in March of 2004. On July 2, 2004, a 60-day public review and comment period was initiated for the associated long-term CVP water service contracts for the Black Butte Unit, Tehama-Colusa Canal Unit, and the Corning Canal Unit of the Sacramento River Division. The revised draft EA and FONSI were released on July 30, 2004 for an additional 30-day public review. Reclamation considered extensions of the comment period but feels adequate time was given for review. The OCAP BO and the NOAA Fisheries BO is not expected to significantly change the analysis of this draft EA. The analysis in the EA addresses the proposed changes to the contract and the potential environmental effects of those changes. As indicated in the EA, these contract changes would not result in significant effects to the environment.

Comments

Friends of the River (cont'd)

August. Friends of the River is still reviewing this detailed 231 page document in regard to its relevancy with Sacramento River Division contracts.

Copies of the contracts and the EA are difficult for the public to access. General public access to the documents were primarily via the internet. Perhaps due to technical interface problems, Friends of the River has found it impossible to download the relevant documents from the Bureau's web site. The Bureau's web site was inaccessible to us and appeared to be over-loaded by public queries on Sept. 30. The lack of easily accessible documents made it quite difficult to develop comprehensive comments.

Friends of the River respectfully requests a 90-day extension of time to review all pertinent background information and comment on these complex and lengthy documents.

FOR-2

Shasta Reservoir Carry-Over Storage

Proposed changes in CVP operations outlined in OCAP indicate that the Bureau intends to eliminate the 1.9 million acre feet of Shasta reservoir carry-over storage used to maintain adequate cold water flows for the endangered Sacramento River winter run chinook salmon. To the extent that the elimination of cold water carry-over storage is needed to meet CVP contract renewals and other Bureau obligations, this could eliminate or reduce critical habitat in the Sacramento River for the endangered winter run chinook and other listed species.

FOR-3

Sacramento River Temperature Standard

In conjunction with the elimination of cold water carry-over storage, OCAP proposes to eliminate up to 20 miles of critical habitat for the endangered winter run chinook by moving the Sacramento River temperature standard for salmonids from Red Bluff upstream to Ball's Ferry. To the extent that the temperature standard change is needed to meet CVP contract renewals and other Bureau obligations, this could eliminate critical habitat for the endangered winter run chinook and other listed species.

FOR-4

Red Bluff Diversion Dam

The Red Bluff Diversion Dam (RBDD) diverts most of the water used by the Sacramento River Division contractors. The Contract EA and OCAP indicate that the Bureau intends to continue the current operation of the RBDD. The RBDD is a well-known fish killer. The current operation of the RBDD creates migration problems for up to 70% of the threatened spring run chinook salmon that spawn upstream of Red Bluff. It also blocks passage for at least 17% of threatened steelhead adults and negatively impacts juvenile steelhead migrants. The RBDD also blocks as much as 35% of migrating green sturgeon, which are now found only in the Sacramento and Klamath rivers.

Ironically, the Tehama-Colusa Canal Authority and several state and federal agencies proposed in 2003 a solution to the RBDD fish passage problems which called for the permanent raise of the RBDD gates to provide 100% effective passage for all fish species. The dam's diversion function would be replaced with new water pumps and

Responses

FOR-2

Operations of the CVP as addressed in the OCAP BA/BO process is a separate action subject to its own environmental compliance requirements. Management of the cold water pool at Shasta Reservoir is being addressed in the OCAP consultation process and BO.

FOR-3

A change in the cold water management is not related to several of these contracts. The changes being addressed are necessitated by physical changes to water availability and other environmental requirements that have occurred since 1992. See response to FOR-2.

FOR-4

Only about 7% of the total spring run population currently migrates into the upper Sacramento Valley and is either delayed or blocked at the RBDD. Conversely, 93% of spring-run experience no delays or they spawn downstream of the RBDD. The earliest arriving fish have the best chance of making it to the upper reaches of tributary streams where they hold over the summer before spawning, encountering no obstacles. Permanent, structural fixes would cost in the order of 100 million dollars, so decisions as to what to do are not easily reached. It may be that seasonal fixes can be designed at lower costs, but that remains to be seen. Reclamation is continuously working with NOAA Fisheries to minimize impacts to salmonids at the RBDD and decisions about the next steps will be made after the BA consultation is completed. This is a separate action subject to its own environmental compliance requirements.

Comments

Friends of the River (cont'd)

fish screens. The Bureau was instrumental in shelving this proposal in favor of continuing the current fish-killing operation.

FOR-5

Continued operation of the RBDD is not acceptable. It fails to provide the salmon mitigation and enhancement originally promised in the federal authorizing legislation for the RBDD. It violates the mandates of the Central Valley Project Improvement Act (CVPIA) and the California Bay-Delta Restoration Program to resolve fish passage problems, as well as the Anadromous Fish Restoration Plan (AFRP) to double the Central Valley's salmonid population. It fails to comply with section 5931 of the California Fish and Game Code requiring the free passage of fish over or around dams. Even worse, it ignores the million of taxpayer dollars spent to study and resolve fish passage problems at RBDD and will negate millions more that have been or will be spent to improve salmon and steelhead habitat on Battle Creek, Clear Creek, and other upstream tributaries.

Fish passage problems at the RBDD must be resolved before the CVP contracts are renewed, or the contract renewals will violate state and federal law and contribute to unacceptable adverse impacts on threatened and endangered fish species.

Tehama-Colusa Canal and Corning Canal

FOR-6

The Tehama-Colusa Canal and Corning Canal distribute Sacramento River Division contract water diverted by the RBDD. The canals cross several west-side tributaries of the Sacramento River that formerly provided habitat for salmon and steelhead. The canal crossings have played a key role in the reduction or elimination of salmonid habitat on these tributaries.

The Corning Canal siphon creates a barrier to migrating salmon and steelhead in Elder Creek during low to moderate flow conditions. The Tehama-Colusa Canal siphon is a partial barrier to salmon and steelhead migration in Thomes Creek due to stream degradation associated with downstream gravel mining. The Tehama-Colusa Canal turn-out structure on Stony Creek not only acts as a partial barrier to salmon and steelhead migration, it actually diverts water from the creek into the canal. The diversion virtually dewaters for much of the year the lower portion of Stony Creek.

Ironically, both Thomes Creek and Stony Creek were targeted for salmon enhancement in the original RBDD authorizing legislation. But CVP operations have actually negatively impacted salmon and steelhead on these streams and other west-side tributaries. The canal siphons and diversion structures on Elder, Thomes, and Stony creeks and other tributary streams violate sections 5931 and 5937 of the California Fish and Game Code requiring fish passage and adequate flows downstream of dams to maintain fish in good condition. This situation is contrary to the intent of the California Bay-Delta Restoration Program to restore salmonid habitat in the Sacramento watershed and the AFRP fish-doubling mandate.

Fish migration and downstream flow problems created by the Tehama-Colusa Canal and Corning Canal must be resolved before the Sacramento River Division Contracts are renewed, or the contract renewals will violate existing restoration policies and both state and federal law.

Responses

FOR-5

Reclamation is continuously working with NOAA Fisheries to minimize impacts to salmonids at the RBDD and decisions about the next steps will be made after the OCAP BA consultation is completed. This is a separate action with its own planning and environmental compliance requirements.

FOR-6

The TC and Corning Canals do not impact fish migration in most west side streams. These canals pass under these streams by means of siphons, leaving them unobstructed with the exception of Funks Creek and, seasonally, Stony Creek. However, all west side streams south of Stony Creek, including Funks, terminate in the Colusa Basin Drain, a privately constructed feature that predates the canals by decades, which blocks or impedes access from the Sacramento River. All streams north of Stony Creek connect to the Sacramento River, but most, except Cottonwood Creek, were seasonal before the onset of agricultural diversions. While these diversions surely shorten the period of flow, they are all private, non-CVP diversions. The only water removed from tributaries to the Sacramento by the TC and Corning Canals is a portion of the water stored in Black Butte Reservoir at the end of the flood season. Part of that stored water, as noted above, is devoted to in-stream flows that tend to extend the period of potential passage.

Historically, flows in Stony Creek occurred intermittently in the late fall, winter, and spring months. With the installation of Black Butte Dam, flows in Stony Creek have been regulated by the COE for the purpose of flood control primarily from November through March. After the threat of floods has passed, Reclamation controls releases of stored water for the purpose of irrigation. When water is being diverted for irrigation, using a temporary diversion dam, a minimum of 40 cfs is being released downstream for fishery benefits. Reclamation and the COE are currently consulting with NOAA Fisheries on the effects of water operations in lower Stony creek to anadramous fish. A short-term BO was issued in 2002 and a long-term BO is expected by March of 2005. The terms and conditions of the BO suggest increased releases to benefit salmonids.

Comments

Friends of the River (cont'd)

Sacramento River Flow Standard

A key ecosystem restoration goal of the California Bay-Delta Restoration Program is to restore the natural stream meander and its associated aquatic and riparian habitats in the Sacramento River. These habitats support a wide range of sensitive, threatened, and endangered fish and wildlife species.

FOR-7

Although studies are still on-going, it is generally accepted that a comprehensive Sacramento River flow standard will require flows beyond the minimum levels needed for anadromous fish. Restoration of the river's natural meander and associated habitat will require bed-mobilization and streambank erosion flows to re-establish gravel bars. It will also require a naturally declining late spring flow to renew riparian habitat.

Renewal of the Sacramento River Division contracts could perpetuate flow conditions in the Sacramento River that are detrimental to the restoration of its natural meander ecosystem. Contracts should not be renewed until studies are completed identifying the flow standard needed to restore the river ecosystem. The flow standard should then be incorporated into the contracts when they are renewed. Adoption of this flow standard as part of the contracts is required by section 5937 of the California Fish and Game Codes, which mandates flows sufficient to maintain fish in good condition below dams.

Delta Smelt Biological Opinion

The U.S. Fish and Wildlife Service issued a no-jeopardy opinion for the endangered Delta smelt in regard to the Bureau's changes in CVP operations proposed in OCAP. Since these operational changes include CVP contract renewals, the Delta Smelt Biological Opinion (BO) is directly pertinent to the renewal of the Sacramento River Division contracts.

FOR-8

The Service's no-jeopardy decision is based on a confluence of actions and standards that have yet to be achieved, including full funding and implementation of the Environmental Water Account, providing 100% of the CVPIA's water mandate to the environment, and meeting water quality standards in the Delta and at Vernalis. Given the long and sad history of these unmet standards, it is likely that in most years, the Delta smelt will indeed be in jeopardy.

Upstream contract renewals will likely contribute to the further decline of this endangered species. The contracts should be modified to ensure that all standards needed to keep the Delta smelt out of jeopardy are met.

Threatened & Endangered Species

FOR-9

The renewal of the Sacramento River Division contracts effect the entire river and its adjacent terrestrial habitat, as well as the Bay-Delta ecosystem downstream. Unfortunately, the EA focuses primarily on fish species and gives short-shrift to terrestrial species dependent on river-associated wetlands, riparian forests, and adjacent grasslands. Contract renewals could modify flows needed to renew gravel bars and

Friends of the River's Sacramento River Division Contracts & EA Comments *Page 4*

Responses

FOR-7

General ecosystem goals for the Sacramento River are beyond the scope of the proposed action. The water service contracts contain provisions that call for reductions in deliveries to meet applicable environmental requirements. Contracts can adjust to such a flow standard, should one be adopted in the future.

FOR-8

The subject of this EA is the renewal of existing contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. The analysis in the EA concerns Reclamation's delivery of CVP water to CVP service areas. In addition, contracts contain provisions to reduce deliveries to meet environmental requirements, including relevant biological opinions. Delta smelt issues are being analyzed in the OCAP BA/BO.

FOR-9

The EA has discussed effects to plants, invertebrates, amphibians and reptiles, birds, mammals, as well as fish. But since the subject of this EA is the renewal of existing contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use, effects to terrestrial species are minimal, and have been analyzed in the OCAP BA/BO and/or the PEIS.

Comments

Friends of the River (cont'd)

FOR-9 (cont'd)

eroded banks, reducing habitat for riparian species such as the bank swallow, yellow-billed cuckoo, and valley elderberry longhorn beetle. The contract renewals could reduce overflow into adjacent wetlands and vernal grasslands, which provide habitat for the giant garter snake and Swainson's hawk. The EA should fully disclose the potential impacts to these listed species and their habitat.

New Surface Storage Projects

The Bureau of Reclamation is involved in two surface storage project investigations that directly pertain to the Sacramento River Division contract renewals. These include the Shasta Dam Storage Investigation and the North of Delta Offstream Storage Investigation.

The Shasta Dam Storage Investigation is focusing on increasing storage by raising Shasta dam anywhere from 6 to 200 feet. This project could significantly modify flows in the Sacramento River and the operation of downstream diversion facilities used by the Sacramento River Division contractors.

FOR-10

The North of Delta Offstream Storage Investigation is focusing on developing offstream storage in the western portion of the Sacramento Valley. The potential offstream storage sites would be fed by the existing or expanded RBDD and Tehama-Colusa Canal. There would also be considerable water wheeling between the Tehama-Colusa Canal and Glen-Colusa Irrigation District Canal, the diversion facility for which would also be used to supply water for offstream storage. In addition, a new third diversion facility from the Sacramento River is contemplated.

The environmental impacts on the Sacramento River and its tributaries, and their threatened and endangered fish and wildlife species and habitat that could be caused by these new storage facilities in conjunction with the contract renewals must be fully considered.

Water Conservation

The CVPIA requires effective water conservation plans to be in place and implemented before contracts are renewed. It is not clear that the required plans are in place for the contract renewals.

FOR-11

In reviewing the proposed long-term contracts for Sacramento Valley water users, Friends of the River questions why the Bureau is relying on the ineffectual water conservation guidelines of the Reclamation Reform Act rather than the Mid-Pacific Region's own Criteria for Evaluating Water Conservation Plans. The Mid-Pacific Region's Criteria, written to comply with the CVPIA, are far superior in helping water districts manage their water more efficiently for beneficial uses.

FOR-12

The current draft of the Sacramento Valley long-term contracts seems to leave it to the complete discretion of the Contracting Officer to determine if the water conservation plan meets Federal Law. This is far too anemic oversight. At a minimum, Reclamation should insert the following language into the contracts:

Friends of the River's Sacramento River Division Contracts & EA Comments *Page 5*

Responses

FOR-10

The subject of this EA is the renewal of existing contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. The analysis in the EA concerns Reclamation's delivery of CVP water within the CVP service area. The comments regarding future water storage projects are outside the scope of this document.

FOR-11

All M&I contractors with more than 2000 af of Project Water, or Irrigation contractors with more than 2000 irrigable acres, are required to have water conservation plans. All available Water District (contractor) Water Conservation or Water Management Plans are on file at the Regional office and can be made available for review there. Contact point for those would be Lucille Billingsley, MP-402.

Sacramento River Settlement contractors, as holders of water rights, are distinct from water service contractors and are still developing their plans as part of a 'Regional' plan. The City of Redding, which has both a settlement contract and a water service contract, and the contractors which hold only water service contracts, such as the TCCA districts, Bella Vista, Clear Creek, and the City of Shasta Lake have prepared plans.

Reclamation believes that Regional Criteria can be as effective as the existing Standard Criteria. Reclamation has agreed to consider Regional Criteria as a pilot program and these criteria must be found as effective as the Standard Criteria to continue after the first 5 years.

As you may recall, the Regional Criteria started back in 1997. At that time public meetings were held, and the "objectives driven" approach was the preferred alternative. The current Regional Criteria "piggy-back" off of these previous meetings.

Comments

Friends of the River (cont'd)

"Water delivery pursuant to this Contract shall be contingent upon Contractor's continued implementation of such revised water conservation program, as documented in an annual update report on the conservation plan implementation. This plan must be made available to the public."

FOR-13

Friends of the River reiterates the objections it made during the draft phase of the Basin-Wide Water Management Plans. The Basin-Wide Plan is an exercise in paperwork, not an effort to implement effective, proven water management practices. The basin-wide plan, created by and for the exclusive benefit of Sacramento Valley contractors, has no requirements, no standards, no oversight by federal agencies or the public, and is completely pointless. The Mid-Pacific Region's existing Criteria for Evaluating Water Conservation Plans provide sufficient flexibility to the contractors and accountability to the U.S. taxpayers, making a Basin-Wide Plan absolutely unnecessary.

Water Transfers and Groundwater Measurement

FOR-14

Contract water should not be transferred unless both the willing seller and buyer can demonstrate they are already using existing water supplies as efficiently as possible. Friends of the River recommends the following language:

"Any transfer of Federal water between a willing seller Contractor and a willing buyer will only be allowed if the contracting officer determines that the Contractor is implementing an effective water conservation program, as detailed in the Criteria for Evaluating Water Conservation Plans, based on 3405 (e) of the CVPIA. If the willing buyer is a Federal Water Contractor, the contractor will will only be allowed to receive transferred Federal Water if the contracting officer determines that the Contractor is implementing an effective water conservation plan, as detailed in the same Criteria."

FOR-15

Contract language regarding the measurement of water within the contractor boundaries must be expanded to include the following:

"...the Contractor has established a measuring program satisfactory to the Contracting Officer. The Contractor shall ensure that all surface water *and groundwater that results from a recharge program using, at least in part, Federal Water...*"

Colusa Drain Water Quality Problems

FOR-16

Much of the irrigation water provided to the Sacramento River Division Contractors drains into the Colusa drain. Water in the Colusa drain fails to meet state water quality and federal Clean Water Act standards.

In addition to state and federal water quality laws, the CVPIA also requires resolution of the Colusa drain's chronic water pollution problems. Contracts must not be renewed until the water quality problems are resolved. Resolution of this problem should not include diverting the polluted water elsewhere, such as the Yolo bypass.

Friends of the River's Sacramento River Division Contracts & EA Comments *Page 6*

Responses

FOR-12

The contracts connected to the Standard Criteria do not contain the suggested language that would condition water deliveries on plan implementation. The Criteria do state that the Regional plans will be noticed in the federal register, which provides the public with the opportunity to review the plans prior to being deemed adequate by Reclamation.

FOR-13

The Regional plan is only a part of the Basin Wide Management Plan. See response to comments regarding Regional Criteria being developed in response to administrative proposal.

FOR-14

Reclamation utilizes the water transfer guidelines developed under CVPIA to determine whether transfers should be approved or not. To be approved, the transfers must be consistent with state law including provisions concerning reasonable and beneficial use of water.

FOR-15

Reclamation considers it inappropriate to use the contracts to establish Regional criteria; rather, the approach that keeps the criteria timely and appropriate is to reference the required (and updated) criteria in the contracts.

FOR-16

Comment noted. Reclamation provides water to our customers and, although we are not responsible for how our customers use and dispose of the water, we support the need to improve the water quality in the Colusa Basin Drain. Currently, there are many ongoing efforts to improve the water quality in the Drain. The impacts of pesticides on water quality in the Colusa Drain are being addressed in the Colusa Basin Drainage District's Coordinated Resource Management Plan project. The project uses Integrated Resource Management to bring together representatives from diverse groups to resolve the identified issues, including improving water quality caused by pesticide use. U.C. Davis together with the CALFED Ecosystem Restoration Program are implementing the Alternative Pesticide Use Phase II (B211)(97-C12) to identify, promote,

Friends of the River (cont'd)

Thank you for soliciting our comments in response to the Sacramento River Division CVP Long-Term Contracts and EA.

Sincerely,

Steven L. Evans
Conservation Director

Friends of the River's Sacramento River Division Contracts & EA Comments *Page 7*

FOR-16 (cont'd)

and monitor alternative practices to reduce biological impacts of pesticides, as well as impacts from agricultural and urban sources on the water quality of all priority aquatic habitats identified by CalFed. The Colusa Basin Drain Sub-Watershed Project: Sand and Salt Creek Watershed (5-081-255-0), in affiliation with the Colusa County Resource Conservation District, State Water Resources Control Board and the Regional Water Quality Control Board is expected to yield survey results, water quality plan results, and water quality monitoring results, which will all be made available to all interested parties making recommendations on how landowners will comply with the Clean Water Act.

Reclamation supports these activities to improve water quality while it meets its obligation to renew water service contracts and provide water for irrigation.

Comments

Hoopa Valley Tribe

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Re: Comments on Revised Draft Environmental Assessment and Draft FONSI for Sacramento River Division Long Term Contract Renewals (July 2004).

Dear Ms. Trout:

On behalf of the Hoopa Valley Indian Tribe, we have reviewed and now submit the following comments on the above referenced Draft Revised Environmental Assessment (REA) and Draft Finding of No Significant Impact (FONSI). These comments reflect the Tribe's ongoing concern with management of the Central Valley Project ("CVP"), which includes the Trinity River Division. Because of the CVP's effect on fisheries reserved for the Tribe, we are committed to ensuring that Reclamation actions subject to the National Environmental Policy Act (NEPA) reflect and comply with court decisions requiring, for example, that mitigation measures imposed as a result of consultation under Section 7 of the Endangered Species Act be addressed in draft environmental review documentation prepared pursuant to NEPA. *See e.g. Westlands v. United States*, 275 F.Supp.2d 1157 (E.D. Cal. 2002*), rev'd on other grounds*, No. 03-15194 (9th Cir. July 13, 2004) (discussed below). This approach ensures that the public is fully informed and has the opportunity to comment and participate in the decision-making process on all aspects of projects affecting the human environment.

Hoopa-1

Reclamation has tentatively concluded that the proposed project, the renewal of eighteen (18) water service contracts for the delivery of up to 322,000 acre feet of CVP water for a term of up to 40 years in some cases, will have no significant impact requiring an Environmental Impact Statement. Draft FONSI at 2. That conclusion, however, is unsupported in a number of particulars described below. It also relies in part on deferral of consideration of impacts to threatened and endangered species pending completion of consultation with NOAA-Fisheries and the Fish and Wildlife Service. *Id.* at 3. Such an approach is legally impermissible.

Responses

Hoopa-1

The No Action Alternative consists of renewing existing water service contracts as described by the Preferred Alternative of the PEIS. The No Action Alternative together with negotiated proposals for CVP-wide terms and conditions are the basis for the action alternatives. The preferred alternative essentially maintains the status quo apart from changes mandated by the CVPIA. The analysis displays the increment of change between the No Action Alternative and the other alternatives.

Hoopa Valley Tribe (cont'd)

1. Scope of Analysis

The REA states that it is limited in its scope to determining whether renewal of Sacramento River Division long-term water service contracts will have "site specific" impacts. Draft EA at 1-1. This focus on site-specific impacts is reflected in the document's "area of analysis" as the land within the district and counties of the Sacramento River Division project area and vicinity that may be affected by renewal of these 18 contracts. Draft EA at ES-3. Accordingly, there is no analysis of how the associated diversions will affect other portions of the CVP service area, such as the Trinity River basin or the Bay/Delta region. For example, it is likely that an alternative requiring lower volumes of diversions would make more water from the upper Sacramento River and Shasta Reservoir available for temperature control in the upper Sacramento River, thus reducing the need to rely on diversion from the Trinity River for those purposes. Lower level diversions from the Sacramento River to contractors may also provide higher Sacramento River flow into the Delta, thus improving water quality in the Delta and the availability of Delta resources for fishery, agricultural, municipal and industrial uses in southern California. The EA presents only the most cursory analysis of the interrelationship between these diversions and other portions of the CVP. *E.g.* Draft EA at 3-75 (noting that diversions have effect on amount and timing of freshwater flow in the Sacramento River and Delta). However, such considerations receive relatively short-shrift in this EA, as a result both of the site-specific focus of the document and the improvident omission of lower-diversion alternatives from the range of alternatives considered.

The EA states that its site-specific focus is warranted by the fact that the document is "tiered" off a Programmatic Environmental Impact Statement (PEIS) prepared in October 1999, which evaluated the impacts of implementing the CVPIA, including the renewal of existing long-term contracts. However, the EA also acknowledges that the PEIS preferred alternative included a set of contract terms and conditions represented by the No Action alternative of this EA, and that the final Sacramento River renewal contracts will not incorporate that particular set of terms and conditions. Draft EA at ES-3 through ES-4 (stating that final contracts will include terms negotiated between Alternatives 1 and 2). It is therefore possible that the actual contract terms will have CVP-wide impacts that were not analyzed in the CVPIA PEIS.

For example, the PEIS preferred alternative assumed that tiered pricing would be a component of any renewal contracts. The lack of tiered pricing in the proposed contracts may have significant effects on volumes of water actually requested for delivery under the contracts, which in turn will affect CVP-wide availability and reliability of supplies, carryover storage, and the finances resources available to the Bureau to fund fishery and wildlife measures required by the CVPIA. The set of impacts addressed on a programmatic and CVP- wide level in the PEIS therefore may be very different from the impacts that will actually result from implementation of the proposed action as presented in this EA.

Comments

Hoopa Valley Tribe (cont'd)

Bureau of Reclamation
ATTN: Basia Trout
August 27, 2004
Page 3

2. Failure to Include an Alternative that Includes Contract Language Reflecting CVPIA Mandated Fishery Restoration Flows.

Hoopa-2

The proposed action is the renewal of Sacramento River Division contracts for 25 or 40 years, depending on the type of contract, under terms and conditions that are substantially similar to the existing interim renewal contracts, which expire February 28, 2006. The language of the proposed contracts states generally that deliveries (and by implication the diversions necessary to accomplish those deliveries) will comply with the requirements of federal law. The contract language does not specifically reference the requirements of federal law that require priority be given to providing sufficient flows to protect and restore specified anadromous fisheries, including those of the Trinity River, *e.g.* Trinity River Act of 1955, Pub. L. 84-386, 69 Stat. 710 (1955); CVPIA § 3406(b)(23); *see also* Solicitor's Opinion, "Proposed Contract with Grasslands Water District," U.S. Dept. of Interior (Dec. 7, 1979). The EA should have considered an alternative that incorporates language specifically referencing those obligations.

On December of 2003, the Hoopa Valley Tribe ("Tribe") filed an administrative appeal of the Bureau Regional Director's denial of the Tribe's request that language referencing the instream fishery flow requirements of the Trinity River be incorporated into the terms of long term renewal contracts between the Bureau of Reclamation ("Bureau") and Central Valley Project ("CVP") water service contractors. This language is authorized by section 3404 of the Central Valley Project Improvement Act, Pub. L. 102-575, 106 Stat. 4600 (1992) ("CVPIA"), which subjects new and renewal CVP water service contracts to the fishery restoration provisions of the CVPIA, which includes the Bureau's obligation to meet the fishery restoration requirements of the Trinity River as established by the Trinity River Flow Evaluation-Final Report ("Flow Study"). *See* CVPIA § 3406(b)(23).

Contract language acknowledging Trinity River restoration requirements also reflects long-standing congressional directives that prioritize Trinity fishery releases over transbasin diversions to Central Valley contractors and is consistent with the federal government's trust responsibility to protect and preserve the Hoopa Valley Tribe's federally reserved fishing right. The Tribe's request was narrowly tailored to require compliance with scientifically based fishery flow requirements set forth in the Flow Study. Those requirements must be implemented pursuant to CVPIA § 3406(b)(23), and should be included as conditions on supply made available for delivery to Central Valley Project contractors.

The decisions of the federal courts since the enactment of the CVPIA make clear that the Bureau can and should reduce quantities of water delivered when fishery needs demand greater allocations. *See O'Neill v. United States*, 50 F.3d 677, 686 (9th Cir. 1998) (holding that the CVPIA modified priority of water users and thus changed contractual obligations under pre-existing long-term water delivery contracts); *NRDC v. Houston*, 146 F.3d 1118, 1126 (9th Cir. 1998) (invalidating CVP renewal contracts for failure to comply with environmental requirements); *Klamath Water Users Protective Ass'n v. Patterson*, 204 F.3d 1206, 1213 (9th Cir. 1999) (recognizing Bureau's responsibility to manage project operations to "meet the requirements of the ESA, requirements that override the water rights of the Irrigators"). The

Responses

Hoopa-2

Fishery restoration flows are issues related to the operation of facilities to store and deliver water to the contractors, and were addressed in the PEIS and again in the OCAP BA/BO consultation; whereas the contracts that are the subject of this EA concern the delivery of water and the class of use (ag, M&I). In addition, the CVPIA has separate programs dealing specifically with fishery restoration flows.

Your comments concern issues affecting availability of stored water, whereas the EA addresses the delivery of water when it is available.

Comments

Hoopa Valley Tribe (cont'd)

Ninth Circuit has expressly recognized the Bureau's obligation to operate to meet the water needs of vested tribal fishing rights. *Klamath Water Users*, 204 F.3d at 1214 (holding that the Bureau has "a responsibility to divert the water and resources needed to fulfill the Tribes' rights, rights that take precedence over any alleged rights of the Irrigators"). Accordingly, the terms of interim renewal contracts should expressly acknowledge those requirements, and the impacts of incorporating those requirements into the contracts should be assessed in an EIS.

Express subordination of water service delivery obligations to fishery restoration needs is hardly unprecedented. *E.g., id.* The Bureau has historically included fishery restoration requirements as among the conditions on supply available to satisfy interim renewal contracts. For example, in *California Trout v. Schaefer*, 58 F.3d 469 (9th Cir. 1995), the court noted that an interim renewal contract for allocations from the New Melones Reservoir provided "a maximum of 75,000 acre-feet of water annually, subject to availability after the Bureau satisfied the water needs of in-basin users and higher priority out-of-basin users." *Id.* at 471 (emphasis added). The "in-basin" needs given priority under that contract included those of "fish and wildlife resources" in the Stanislaus River Basin established under CVPIA § 3406(c)(2). *Id.* Given that precedent, the Bureau should consider an alternative heeding the command of CVPIA § 3404(c) in the terms of interim renewal contracts.

Improper Deferral of Mitigation.

Hoopa-3

The EA improperly defers consideration of impacts to threatened and endangered species pending completion of ESA § 7 consultation with NOAA-Fisheries and the Fish and Wildlife Service. Draft FONSI at 3; Draft EA at 4-3. Such an approach is impermissible under NEPA, as illustrated by the ruling in *Westlands*, 275 F.Supp. 2d at 1182 -1185, *rev'd in part on other grounds*, No. 03-15194 (9th Cir. July 13, 2004). In that case, the court found that a Draft Environmental Impact Statement (DEIS) did not adequately analyze the impact of the proposed action on certain ESA-listed species. *Id.* at 1183. Further, the court found that the DEIS "did not consider or identify mitigation measures" for those impacts, other than to "specify that mitigation for impacts…would consist of consulting with the Service on impacts and implementing any required conservation measures." *Id.* The court concluded that Reclamation violated NEPA.

That is precisely the approach adopted in this document, which acknowledges that ESA § 7 consultation both on the CVP-OCAP and on the localized impacts of the particular contracts at issue here has yet to be completed. It is likely that significant mitigation requirements will be imposed because of that consultation, as the EA acknowledges that diversions required to supply these contracts will "negatively affect[]" winter-run, spring-run and fall/late fall-run Chinook and Central Valley Steelhead. Draft EA at ES-6 through ES-7, Table ES-2. In the words of the *Westlands* court, this approach "defers consideration of mitigation efforts" and "precludes the parties from meaningful analysis." *Id.* at 1184. See also *id.* at 1188 ("The omission of discussion of mitigation measures foreclosed any public input on the issues of whether and what CVP operations management alternatives existed and were feasible; and whether alternate water sources existed or if reduced flows could reduce the impact on species and other CVP users.").

Responses

Hoopa-3

The Draft NEPA document reflects Reclamation's assessment of impacts on listed species based on our Biological Assessment. The NEPA document will be amended, if necessary, in the Final EA to reflect any findings of the Biological Opinions that differ. The decision of what action, if any, to take will be based on the Final EA, not the Draft.

Comments

Hoopa Valley Tribe (cont'd)

Moreover, to the extent that mitigation measures are imposed as a result of deferred ESA § 7 consultation, either in the form of Reasonable and Prudent Measures (RPMs) or other terms and conditions that may have significant impacts beyond those of the proposed action, the *Westlands* case requires that the environmental impacts of those mitigation measures be discussed "with reasonable thoroughness." *Id.* at 1192. These measures and their environmental impacts must be disclosed to the public in a process that "included public participation", *i.e.* they must be disclosed in a manner that allows meaningful public scrutiny, comment, and participation. *Id.* at 1198. By deferring discussion of species impacts pending completion of consultation with the fisheries agencies, the Draft EA/FONSI for interim contract renewals fails to meet these requirements.

We are particularly concerned about the potential effects that may arise from RPMs under consideration by NOAA Fisheries in their review of the CVP-OCAP. As you know, NOAA is considering including in their Biological Opinion certain RPMs regarding temperature requirements in the upper Sacramento River and operation of the Red Bluff diversion dam. Both of these may have discrete as well as cumulative impacts on water supplies available for diversion to meet the contractual obligations proposed here, as well as impacts to fishery and power resources that are not fully disclosed and addressed in this draft EA. The public has thus been deprived of the opportunity to meaningfully review the cumulative impacts of diverting up to 322,000 acre feet of water from the natural course of the Sacramento River and the associated actions that will be required under the ESA to mitigate the effect of those diversions.

3. Inadequate Discussion of Alternatives.

Hoopa-4

The Draft EA is also insufficient because it lacks an adequate discussion of the "environmental impacts of the proposed action and alternatives" 40 C.F.R. § 1508.9. Council on Environmental Quality (CEQ) regulations require that an environmental assessment "shall include" a discussion of the environmental impacts "of the proposed action and alternatives…." *Id.* The Draft EA/FONSI, however, discusses only three alternatives: no action, the Bureau's proposed contract terms, and the Contractor's proposed contract terms. The EA does not identify the actual proposed terms of the renewed contracts, but states that, as a result of ongoing negotiations between contractors and the Bureau, the actual terms of contracts to be executed will fall somewhere in between the "bookends" represented by the three alternatives. Draft EA at ES-4; *Id.* at 2-8. The EA thus fails to identify a preferred alternative that accurately describes the actual action and associated impacts that will likely result. This approach is somewhat disingenuous in light of the fact that on July 30, 2004 the Bureau announced that it had concluded negotiation on contract terms and at that time released the negotiated terms for a 60 day public review. *See* Bureau of Reclamation Press Release No. MP-04-054 (available at << http://www.usbr.gov/mp/ Mp140/news/2004/MP-04-054.html>>).

Responses

Hoopa-4

The EA and the scope of the analysis were developed consistent with NEPA regulations and guidance from the Council on Environmental Quality (CEQ), and in conformance with the direction provided by NRDC vs Patterson, Civ. No. S-88-1658 (Patterson) which specifically addressed the application of NEPA relative to contract renewals. In Patterson the court found that "…ongoing projects and activities require NEPA procedures only when they undergo changes amounting in themselves to further "major action." The court went further to state that the NEPA statutory requirement applies only to those changes. The analysis in the EA finds the renewals of the contract to be a continuation of previous contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. Moreover, most do not involve any change in the type of use, such as the addition of M&I uses. The analysis in the EA addresses the proposed changes to the contract and the potential environmental effects of those changes. As indicated in the EA, these contract changes would not result in significant effects to the environment.

The two action alternatives represent the terms of the final contract, and a copy of a representative contract is provided in Appendix F of the final EA.

Comments

Hoopa Valley Tribe (cont'd)

Bureau of Reclamation
ATTN: Basia Trout
August 27, 2004
Page 6

Hoopa-5

The analysis also expressly excludes from consideration a number of reasonable alternatives, including non-renewal, and renewal at reduced delivery amounts that would more accurately reflect current delivery constraints. *See* Draft EA at 2-8. These alternatives warrant further consideration. A comparative analysis of differential environmental impacts of a wide range of alternatives to the proposed action must be undertaken in order to allow the public a meaningful opportunity to assess the proposed action.

5. M&I Shortage Policy

Hoopa-6

The terms of the contracts at issue, as disclosed on July 30, 3004, do not specifically reference Reclamation's proposed revised M&I Shortage Policy, which has been under development for a number of years and has yet to be completed or subjected to necessary review under NEPA or the ESA. According to the Project Description for the Biological Assessment on the CVP-OCAP, any contract that does not specifically refer to the revised policy will not be subject to its provisions. Long Term CVP and SWP OCAP Biological Assessment (June 30, 2004) at p. 2-20. The Draft EA does not discuss the revised policy, its impacts or implications. In the event that the revised M&I Shortage Policy is completed prior to execution of these contracts, and the final contracts as released for public comment on July 30, 2004 are further revised to reflect that policy, recirculation of this EA will be necessary in order to assess the impacts of incorporating those revised shortage provisions into these contracts.

6. Indian Trust Assets

Hoopa-7

The draft FONSI states that "continued delivery of project water to the existing contracts will not affect any Indian Trust Assets because existing rights will not be affected." That statement fails to acknowledge the nature of water rights associated with tribal fishing rights. For example, the Hoopa Valley Tribe's federally protected fishing right guarantees to the Tribe the right to a fishery that is supportive of a moderate standard of living. As has been repeatedly acknowledged by the federal courts, tribes are entitled to sufficient water in rivers flowing through their lands to support a fishery that will meet those needs. Accordingly, as the needs of the Tribe and the fishery change, so do the water rights associated with the need to sustain that fishery. We accordingly remain very concerned that contractually dedicating the vast amounts of water that are specified in the CVP long term contracts will make it increasingly difficult for the CVP to adequately protect tribal fishery resources, as the limited supply that is available for these purposes is subject to increasingly greater demands as a result of foreseeable drought, global warming, population growth, and urban development. The EA fails to adequately address the cumulative impacts of these various factors on Bureau's ability to provide for and protect the fishery resources within its charge. *See e.g.* CVPIA § 3406 (b)(23) (identifying trust responsibility to protect the fishery resources of the Hoopa Valley Tribe as constraint on operation of CVP facilities).

Responses

Hoopa-5
The alternatives present a range of water service agreement provisions that could be implemented for long term contract renewals. The No Action Alternative consists of renewing existing water service contracts as described by the Preferred Alternative of the PEIS. The No Action alternative together with negotiated proposals for CVP-wide terms and conditions are the basis for the alternatives. Reduction of contract amounts were considered in certain cases but rejected from analysis. The needs analyses performed resulted in a need for water which equals or exceeds the current total contract amount. The existing and proposed renewal contracts both include provisions for reductions in deliveries in those years in which insufficient water is available.

Non-renewal of existing contracts is considered infeasible based on Section 3404(c) of the CVPIA. Reclamation is mandated by law to renew the contracts and thus lacks discretion to not renew the contracts.

Hoopa-6
Those impacts are being discussed in a separate EA specific to the revised M&I policy.

Hoopa-7
Those issues were the subject of the Trinity River EIS and the PEIS. They do not need to be reanalyzed in documents focused upon the maximum quantities under contract. As noted in a prior response the requirements for flows in the Trinity Basin affect how much water is available to fulfill contracts, whereas this document addresses the maximum amount that would be delivered. This EA addresses how much may be delivered if available, whereas the comment addresses factors affecting how much will be available.

Hoopa Valley Tribe (cont'd)

August 27, 2004
Page 7

Thank you for allowing us the opportunity to comment on the Draft EA/FONSI. We trust that our comments will be appropriately considered and addressed in any final NEPA documentation for this proposed action.

Sincerely yours,

MORISSET, SCHLOSSER, JOZWIAK & McGAW

Thomas P. Schlosser
Regina M. Cutler
Attorneys for the Hoopa Valley Tribe

cc: Bennett Raley
Kirk Rodgers
Steve Thompson

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amc:8/27/04

River Partners Organization

From: "Daniel Efseaff" <defseaff@riverpartners.org>
To: <btrout@mp.usbr.gov>
Date: 9/1/04 11:42AM
Subject: Request for extension

RPO-1

Please extend the period for comments on the Reclamation Board Water contracts that are coming up.

I would like copies of the documents and a list of the contracts that are coming up.

Sincerely,

Dan Efseaff
Restoration Ecologist
River Partners
539 Flume Street, Chico, California 95928
(530)894-5401, ext 21
defseaff@riverpartners.org
www.riverpartners.org

RPO-1

Reclamation considered extensions of the comment period but feels adequate time was given for review. The BA for the Sacramento River Division long-term water service contract renewals was completed on August of 2003. The Draft EA was first released on August 19, 2003 and was revised in March of 2004. On July 2, 2004, a 60-day public review and comment period was initiated for the associated long-term CVP water service contracts for the Black Butte Unit, Tehama-Colusa Canal Unit, and the Corning Canal Unit of the Sacramento River Division. The revised draft EA and FONSI were released on July 30, 2004 for an additional 30 day public review.

Documents have been available onsite at www.usbr.gov/mp/cvpia/3404c/index.html.

Comments

Sacramento River Preservation Trust

From: "John Merz" <jmerz@inreach.com>
To: "Basia Trout" <btrout@mp.usbr.gov>
Date: 9/3/04 3:31PM
Subject: Sacramento River Division,CVP Contracts& EA/FONSI

Dear Basia,

SRPT-1

I have reviewed the comments submitted to the Bureau concerning the proposed Sacramento River Division, CVP Contracts and related EA/FONSI by both the NRDC,TBI&PCL and FOR and am in complete agreement with every point made. Please add the Sacramento River Preservation Trust (Trust) and the Sacramento Valley Environmental Water Caucus (SVEWC) to the list of groups and individuals requesting an extension of the comment period for both the contracts and the supporting environmental documents. Please note that we are incorporating by reference the comments submitted by NRDC, et al as mentioned above and hereby request to be kept informed of any and all activities associated with this project.

Sincerely,

John Merz
President
Sacramento River Preservation Trust
PO Box 5366
Chico, CA 95927
530-345-1865 (Phone)
530-899-5105 (Fax)
jmerz@sacrivertrust.org

Co-chair,SVEWC

Responses

SRPT-1

Comment noted. Reclamation considered extensions of the comment period but feels adequate time was given for review. The BA for the Sacramento River Division long-term water service contract renewals was completed in August of 2003. The Draft EA was first released on August 19, 2003 and was revised in March of 2004. On July 2, 2004, a 60-day public review and comment period was initiated for the associated long-term CVP water service contracts for the Black Butte Unit, Tehama-Colusa Canal Unit, and the Corning Canal Unit of the Sacramento River Division. The revised draft EA and FONSI were released on July 30, 2004 for an additional 30-day public review.

State Clearinghouse and Planning Unit

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse and Planning Unit

Arnold
Schwarzenegger
Governor

Jan Boel
Acting Director

September 3, 2004

Basia Trout
U.S. Bureau of Reclamation, Red Bluff Field Office
22500 Altube Avenue
Red Bluff, CA 96080

Subject: Renewal of Long-term Contracts for the Sacramento River Division
SCH#: 2004082017

Dear Basia Trout:

The State Clearinghouse submitted the above named Environmental Assessment to selected state agencies for review. The review period closed on September 2, 2004, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

State Clearinghouse and Planning Unit

State Clearinghouse Data Base

SCH#	2004082017
Project Title	Renewal of Long-term Contracts for the Sacramento River Division
Lead Agency	U.S. Bureau of Reclamation
Type	EA Environmental Assessment
Description	Renewal of long-term water service contracts for water contractors in the Western Sacramento Valley for a period of 25 years or 40 years, depending on water use.

Lead Agency Contact

Name	Basia Trout
Agency	U.S. Bureau of Reclamation, Red Bluff Field Office
Phone	530-528-0512 **Fax**
email	
Address	22500 Altube Avenue
City	Red Bluff **State** CA **Zip** 96080

Project Location

County	Glenn, Tehama, Colusa
City	Willows
Region	
Cross Streets	
Parcel No.	
Township	**Range** **Section** **Base**

Proximity to:

Highways	
Airports	
Railways	
Waterways	
Schools	
Land Use	

Project Issues	Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Cumulative Effects; Economics/Jobs; Geologic/Seismic; Landuse; Recreation/Parks; Soil Erosion/Compaction/Grading; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife
Reviewing Agencies	Resources Agency; Regional Water Quality Control Bd., Region 5 (Sacramento); Regional Water Quality Control Bd., Region 5 (Redding); Department of Parks and Recreation; Native American Heritage Commission; Reclamation Board; Department of Fish and Game, Region 2; Department of Fish and Game, Region 1; Department of Water Resources; Caltrans, Division of Transportation Planning; State Water Resources Control Board, Division of Water Rights; State Water Resources Control Board, Division of Water Quality; State Water Resources Control Board, Clean Water Program; State Lands Commission
Date Received	08/04/2004 **Start of Review** 08/04/2004 **End of Review** 09/02/2004

Note: Blanks in data fields result from insufficient information provided by lead agency.

Comments

Department of Fish & Game

State of California - The Resources Agency — ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF FISH AND GAME

http://www.dfg.ca.gov

Street
A 96001
S-2300

September 9, 2004

Ms. Basia Trout
US Bureau of Reclamation
22500 Altube Avenue – Hwy 99W
Red Bluff CA 96080

Dear Ms. Trout:

The Department of Fish and Game has reviewed the "Revised Draft Environmental Assessment for Renewal of Long-Term Contracts for Sacramento Canals Unit of the Central Valley Project (CVP)." According to the document, the purpose of the project is to renew the "Canals Unit" water service contracts consistent with the provisions of the Central Valley Project Improvement Act (CVPIA) as developed in the programmatic environmental impact statement for the CVPIA. The stated need for long-term contract renewal includes achieving a reasonable balance among competing demands including irrigation; fish and wildlife protection, restoration and mitigation and enhancement; and ensures CVP compliance with applicable laws including the Federal Endangered Species Act. While we did not see an explicit statement of need to achieve compliance with relevant State laws such as the California Endangered Species Act, we do recommend the US Bureau of Reclamation (Reclamation) support the State's efforts to protect fish and wildlife.

At this time, the Department of Fish and Game believes it is appropriate to delay proceeding with the environmental decision making process for the Long-Term Contract for the Sacramento Canals Unit until finalization of the Federal Endangered Species Act Biological Opinion which is due to be released by National Oceanic and Atmospheric Administration Fisheries in the near future

DFG-1

The Environmental Analysis (EA) relies on inappropriate and outdated assessments and omits relevant analyses for determining protection of Federal- and State-listed species including:

- Biological Opinion of 1993 for the CVP which only addresses effects to winter-run Chinook salmon. This document, which is being updated and replaced, cannot be used for assessing effects on the two other listed anadromous salmonid species, Central Valley spring-run Chinook salmon and Central Valley steelhead.

Conserving California's Wildlife Since 1870

Responses

DFG-1

Information and assessment of affects on all listed anadramous fish is taken from the referenced March 22, 2004 CVP and State Water Project OCAP BA, which is the best information available. Updated versions did not significantly change the outcome of the assessments. The action being addressed in the EA is the delivery of water within CVP service areas. Updated ESA consultations have addressed all listed species affected by CVP operations.

Comments

Department of Fish & Game (cont'd)

Ms. Basia Trout
September 9, 2004
Page Two

DFG-2

- The referenced March 22, 2004, Long-term Central Valley Project and State Water Project Operations Criteria and Plan (OCAP) Biological Assessment is out of date. The document has been updated with different versions several times since March. The current version in our opinion still contains some conclusions on the habitat and passage needs of some of the State listed anadromous species that we do not agree with; however, we understand there may be another version forthcoming.

DFG-3

- The determination of the effects Red Bluff Diversion Dam (RBDD) has on winter-run, spring-run and fall/late fall-run Chinook salmon and Central Valley steelhead is referenced to the 1993 Biological Opinion for winter-run Chinook which is not usable for spring-run Chinook salmon, fall-run Chinook salmon and steelhead. CVPIA Section 3406 b (10) requires the development and implementation of measures to minimize fish passage problems experienced by juvenile and adult anadromous fish at RBDD. In 2002 Reclamation lead the preparation and public review of a draft EIS/EIR addressing CVPIA requirement to minimize fish passage problems at RBDD. Reclamation has suspended the decision making process started by the document without responding to comments and we have not been notified when the suspension may end.

DFG-4

- The preferred alternative is overly vague in that it is a "negotiated position between Alternative 1 and Alternative 2." The formal project description for Alternative 1 does not clearly state what types of protections would be in place for endangered species; therefore, it is possible that the preferred alternative may not comply with the Endangered Species Act. The document should clearly describe what is included in the preferred alternative that is applicable and relevant to Federal and State endangered species acts and CVPIA anadromous fish restoration requirements.

The existing operation of the Sacramento Canal's Unit RBDD with its undersized fish ladders currently impairs passage of anadromous fish when the gates are installed and river flows are elevated due to runoff events. The species that endures the most impairment under existing conditions is spring-run Chinook which include adult migrants traveling to Battle Creek and Clear Creek. In addition, existing conditions can impair passage of the very last portion of the adult winter-run migration and juvenile anadromous fish traveling downstream under certain conditions. The fish ladders at the dam are over 40 years old and do not perform to currently accepted standards. The Draft Environmental Impact Statement/Environmental Impact Report for Fish Passage Improvement Project for RBBD describes the existing conditions explained above for both ladder performance and impaired passage of spring-run and winter-run Chinook.

Responses

DFG-2
The draft OCAP BA/BO documents have been reviewed and the final OCAP BA/BO documents did not change the information or determination of effects in the EAs. Also see response to comment DFG-1.

DFG-3
The RBDD EIS/EIR passage process is postponed until the final OCAP BO is issued. Reclamation is continuously working with NOAA Fisheries to minimize impacts to salmonids at the RBDD and decisions about the next steps will be made after the OCAP BA consultation is completed and implemented. This is a separate action subject to its own environmental compliance requirements. Please see earlier comments regarding the RBDD EIS/EIR process.

DFG-4
The No Action Aternative together with negotiated proposals for CVP-wide terms and conditions are the basis for the action alternatives. The preferred alternative, essentially maintains the status quo apart from changes mandated by the CVPIA. The analysis displays the increment of change between the No Action Alternative and the other alternatives. The contracts will comply with all relevant environmental requirements.

Comments

Department of Fish & Game (cont'd)

Ms. Basia Trout
September 9, 2004
Page Three

In addition to our general concerns with the EA, the Department has the following specific comments:

DFG-5 Page 3-67, Paragraph 1, Last sentence: This sentence is unclear as to what type of Chinook salmon is being analyzed for negative effects at RBDD and when the negative effects occur with respect to existing conditions or historical conditions. The sentence is in past tense implying negative effects are no longer occurring. This sentence and the one before it should be revised to clearly indicate that: (1) spring-run, winter-run and fall-run Chinook occur at RBDD; and (2) spring-run and winter-run Chinook are still affected negatively by RBDD to differing degrees.

DFG-6 Page 3-67, Paragraph 2, Section Title and Contents: Coho do not occur in the Sacramento River. Remove all references to coho from the document.

DFG-7 Page 3-75, Paragraph 2: The document states 98 percent of the spawning winter-run are protected. This conclusion is based upon an incomplete data set. The winter-run Chinook spawning distribution in the analysis was limited to an upstream area based on data for a few select years. Since it is known winter-run spawn as far downstream as RBDD and since the EA covers up to 40 years into the future, the complete data set should be used to characterize spawning winter-run distribution.

DFG-8 Page 3-74, Paragraph 3, last two sentences: These sentences need further explanation.

The Department recommends the "Long-Term Water Supply Contracting Environmental" document be retracted and reissued with appropriate modifications upon completion of the Biological Opinion for the CVP OCAP. Reclamation should also complete the environmental document for RBDD by responding to comments and issuing a "Record of Decision." Thank you for your considerations of our comments. If there are any questions regarding this matter, please contact Staff Environmental Scientist Harry Rectenwald at (530) 225-2368.

Sincerely,

DONALD B. KOCH
Regional Manager

cc: Messrs. Harry Rectenwald, Steve Turek,
and Randal C. Benthin and Ms. Alice Low
Department of Fish and Game
601 Locust Street
Redding, CA 96001

Responses

DFG-5
Comment noted. Text was changed to reflect the current status.

DFG-6
The EA will be modified to more clearly state that coho salmon are unlikely to occur within the project-affected waterways.

DFG-7
Par 2. states that incubation conditions for winter-run Chinook salmon are estimated to cover 98% of winter-run spawning even with increased temperatures due to lowered water levels in the Sacramento River. The information was based on the best information available, as referenced in the Long-term CVP and State Water project OCAP BA.

DFG-8
Reclamation provides CVP water to contractors to the point of diversion. Most adverse impacts occur to fish as a result of taking and using the water, which is not a Reclamation action.

1 **E.**

APPENDIX E
PUBLIC COMMENTS AND RESPONSES

E.1 INTRODUCTION

This Appendix includes a list of agencies, organizations, and individuals commenting on the previously-circulated Revised Draft EA, copies of their comments, and responses to the substantive environmental issues raised in the comments. The following pages show all the comments received which relate to the project and the Bureau's responses to those comments. The Bureau reviewed and considered all comments and determined whether or not the comments warranted further analysis and documentation. The Bureau noted in the individual responses when further analysis or changes were made.

E.2 INDEX

Comments

Taxpayers for Common Sense

August 18, 2004

VIA FAX and EMAIL

Mr. Kirk Rodgers
Mr. Richard Stevenson
Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825

Ms. Basia Trout
Red Bluff Division Office
Bureau of Reclamation
P.O. Box 159
Red Bluff, CA 96080

Re: Renewal of the Central Valley Project long-term water service contracts with The Sacramento River Division Contractors

Dear Mr. Rodgers, Mr. Stevenson, and Ms. Trout:

TCS-1

Taxpayers for Common Sense (TCS), a nonpartisan budget watchdog group, is extremely concerned about the long-term implications of proposed Central Valley Project (CVP) water service contracts for the Shasta, Trinity River, and Sacramento River Divisions. Specifically, TCS believes these contracts do not fairly represent the interests of federal taxpayers. We strongly urge the Bureau of Reclamation to extend the comment periods on both the environmental documents regarding the renewal of the Sacramento River Division CVP Long-Term Water Service Contracts and also the proposed renewal of 36 long term water service contracts in the Shasta, Trinity River, and Sacramento River Divisions by at least 60 days.

Given the impact these water contracts will have on both California water issues and federal taxpayers for years to come, it is vitally important that all stakeholders have ample opportunity to review these proposals and to be able to give comprehensive input. Although the regular public comment period is generally sufficient, the long-term nature of these contracts combined with the scheduling of the comment period during a traditional time for families to take vacation and for congressional recess makes it necessary for the Bureau to extend the comment period to allow appropriate public input into the process. The Bureau is supposed to be negotiating on behalf of federal taxpayers. As a result, the Bureau owes it to taxpayers to give them every chance to ask questions and understand the impacts of these major 25-year water commitments. The Bureau proposes to renew Sacramento River Division contracts for up to 322,000 acre-feet of CVP water before the public has reviewed the potential impact of these contracts.

Long-term CVP contracts are not permanent entitlements. Instead, these contracts must receive full review in order to consider the constantly evolving needs of California's

Responses

TCS-1

Thank you for your comment. Reclamation has considered requests for extensions of the comment period, and feels adequate time was given for review. The BA for the Sacramento River Division long-term water service contract renewals was completed in August of 2003. The Draft EA was first released on August 19, 2003 and was revised in March of 2004. On July 2, 2004, a 60-day public review and comment period was initiated for the associated long-term CVP water service contracts for the Black Butte Unit, Tehama-Colusa Canal Unit, and the Corning Canal Unit of the Sacramento River Division. The revised draft EA and FONSI were released on July 30, 2004 for an additional 30-day public review.

Taxpayers for Common Sense (cont'd)

Mr. Kirk Rodgers
Mr. Richard Stevenson
Ms. Basia Trout
August 18, 2004

diverse set of water users. California's water needs are constantly in flux and full review of these contracts renewals is the only responsible policy. Contract pricing should also charge markets rates for water.

Again, we urge the Bureau of Reclamation to extend the comment period on these contracts by an additional 60 days to give federal taxpayers the fullest possible opportunity to comment on these long-term contracts. Please feel free to contact me at (202) 546-8500 x126 or aileen@taxpayer.net with any questions.

Sincerely,

Aileen D. Roder
Program Director

Comments

Valley Water Protection Association

From: "Colefarm" <colefarm@shocking.com>
To: <btrout@mp.usbr.gov>
Date: 8/26/04 6:23PM
Subject: Sacramento River and Feather Water Contracts

TO: Ms. Basia Trout, Federal Bureau of Reclamation

FROM: Linda Cole, Valley Water Protection Association

RE: Sacramento River Division contracts, Feather Water District

VWPA-1

These contracts have not been given adequate time for the public to review the reports and to weigh potentials for cumulative impacts within the Sacramento watershed. We respectfully request that an extension be given for review and comment. That extension should include adequate time for the public to consider studies and reports not yet available, and for consideration of proposed actions listed in other contracts within the same water basin. We need to look at cumulative impacts within the total proposed actions from all contracts potentially tapping the same water resources within the valley.

Contract decisions need to responsive to the people's right to know and to comment. These contracts have the potential to drive water management for up to 40 years. At the same time we have political assumptions that shortfalls in water south of the Delta will be made up by water from Northern California... for growth, for drought, for water quality, for fish, for economic stimulus. All these parallel efforts need to be considered once the full scientific studies have been completed. The comment period should reflect the complexity of these issues. Anything less is not following the intent of the law providing for public input.
Thank you,

Linda Cole

Responses

VWPA-1
Reclamation has considered requests for extensions of the comment period and feels adequate time was given for review. The BA for the Sacramento River Division long-term water service contract renewals was completed in August of 2003. The Draft EA was first released on August 19, 2003 and was revised in March of 2004. On July 2, 2004, a 60-day public review and comment period was initiated for the associated long-term CVP water service contracts for the Black Butte Unit, Tehama-Colusa Canal Unit, and the Corning Canal Unit of the Sacramento River Division. The revised draft EA and FONSI were released on July 30, 2004 for an additional 30-day public review.

The cumulative impacts of the CVP were addressed in the PEIS for implementation of the CVPIA. The analysis in the EA finds the renewals of the contract to be a continuation of previous contracts with minor financial and administrative changes, with no changes in either the volumes of water under contract or the places of use. Moreover, most do not involve any change in the type of use, such as the addition of M&I uses. The analysis in the EA addresses the proposed changes to the contract and the potential environmental effects of those changes. As indicated in the EA, these contract changes would not result in significant effects to the environment.

Comments

The Bay Institute

The Bay Institute
Natural Resources Defense Council
Planning and Conservation League

Via Federal Express

August 27, 2004

Ms. Basia Trout
U.S. Bureau of Reclamation
22500 Altube Avenue
P. O. Box 159
Red Bluff, CA 96080

Re: Comments on Revised Draft EA on Sacramento River Division Renewal Contracts

Dear Ms. Trout,

This letter provides comments of The Bay Institute, the Natural Resources Defense Council (NRDC) and the Planning and Conservation League on the Revised Draft Environmental Assessment (EA) for Renewal of the Long-term Contracts for the Sacramento River Division Contractors (U.S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA; July 2004). Additional supplemental comments from our organizations are also being submitted by NRDC under separate cover.

Bay-1

The EA states that it has been prepared to determine whether renewal of long-term water service contracts will result in any significant impacts to the natural and human environment (EA, pg. 1-1). In its current form, the document describes alternatives with few meaningful differences and offers an incomplete, inadequate and contradictory environmental impacts analysis. Much of the information provided in the EA is an incomplete review of analyses conducted by the U.S. Bureau of Reclamation (Reclamation) for its Operation Criteria and Plan Biological Assessment (OCAP BA), which evaluates proposed Reclamation operations in the Sacramento River Division as well as the greater Sacramento-San Joaquin watershed and which identifies numerous instances in which proposed operations will negatively impact the natural environment and valuable biological resources.[1]

[1] The EA states that renewal of Sacramento River Division water service contracts is related to the current update of the Operations Criteria and Plan (OCAP) (EA, pg. 1-5, 6). The project description for the Sacramento River Division contained in the OCAP and accompanying Biological Assessment is essentially the same as that described in the three alternatives in the EA.

Responses

Bay-1
Given legal and regulatory constraints, the two action alternatives in the EA provide a reasonable range of alternatives that meet the stated purpose and need. The EA summarizes key points addressed in the OCAP BA while referring to the more comprehensive and in-depth review of these issues in the BA, where it is discussed at length. The tiered documents used the PEIS by reference as a foundation to avoid duplication and focus more narrowly on the new alternatives or more detailed site-specific effects. Therefore, only changes from the alternatives considered in the PEIS would be addressed in detail in the tiered EA. The No Action Alternative is defined as renewal of existing contracts as modified by non-discretionary CVPIA provisions addressed in the PEIS. The analysis displays the increment of change between that of the No Action Alternative and the other alternatives. The diversion of water is an on-going action and the current condition. Hence, the significant impacts alluded to in this comment are not a result of the proposed action but are the existing/no action conditions.

Comments

The Bay Institute (cont'd)

Bay-2

Other important analyses, including the Draft EIS/EIR for the Fish Passage Improvement Project at the Red Bluff Diversion Dam (TCCA and USBR, 2002), are not even cited. The EA itself, although incomplete, identifies a number of substantial negative impacts. Yet, despite overwhelming evidence to the contrary (including the listing of several fish species dependent on environmental conditions in the Sacramento River Division under state and federal Endangered Species Acts (ESA) in just the last decade), the EA contends that these impacts have no significant or cumulative effects. This conclusion and the Finding of No Significant Impact (FONSI, July 2004) are wholly unsupported by both the readily available scientific evidence and analytical results reported by Reclamation in the EA, OCAP BA, and a number of other documents and reports.

Water project operations on the Sacramento River affect many terrestrial and aquatic plant and animals species that inhabit the river corridor, the Sacramento-San Joaquin Delta and the San Francisco Bay. Our comments focus on the effects of proposed Sacramento River Division operations on native anadromous fish species that rely on the Sacramento River and its tributaries. Several of these species, including winter-run and spring-run Chinook salmon and steelhead, have declined to such low levels that they are now listed under both state and federal Endangered Species Acts. For each of these species, dams and water management operations on the Sacramento River and its tributaries are identified as key factors for the species' declines.

Bay-3

Three components of Reclamation's proposed Sacramento River Division operations have substantial continuing and new negative impacts on the environment and pose significant threats to native anadromous fish species that rely on this river. Only one of these impacts is even identified in the EA, despite other Reclamation analyses that have previously identified the others.

Bay-4

1. Operation of Red Bluff Diversion Dam (RBDD). According to the EA (as well as the Project Description in the OCAP BA), Reclamation proposes to continue closing the RBDD during the May 15-September 15 period. RBDD blocks and/or delays migration of adult anadromous fishes, harms emigrating juvenile anadromous fishes, and degrades habitat and water quality in the Sacramento River upstream and downstream of the facility. Compared to the alternatives analyzed in the Draft EIS/EIR for the Fish Passage Improvement Project at Red Bluff Diversion Dam (August 2002), an effort led by Reclamation and one of its major Sacramento River Division water contractors (Tehama-Colusa Canal Authority), the RBDD operation proposed in the EA, the No Action "4-month gates in" alternative, was determined to have the greatest negative impacts on fishery resources in the Sacramento River. Reclamation's selection of this operational protocol for RBDD as the preferred alternative conflicts with the preferred alternative identified in the Draft EIS/EIR and, in fact, appears to abrogate the EIS/EIR process for

Responses

Bay-2

Impacts resulting from the proposed alternatives would neither be significant, nor would they differ substantially from the No Action Alternative. The diversion and use of water is an on-going action. Dam maintenance and operations are discussed in the CVPIA PEIS and OCAP BA/BO. These impact analyses, although incorporated by reference in the EA, are not applied to the proposed action impact level. The PEIS analyzed cumulative impacts of long-term contract renewals on a regional basis. Because the contract renewals maintain the status quo of water deliveries under ongoing CVP operations, and in essence only change the legal and financial arrangements of a continuing action, they do not contribute to cumulative impacts in any demonstrable manner.

Bay-3

These impacts do not result from the proposed action. As stated earlier, the impacts of continuing the operations of the CVP and the implementation of CVPIA have been discussed in the CVPIA PEIS and OCAP BA/BO.

Bay-4

Any impacts related to the RBDD do not result from the proposed action of water service contract renewal. Future conditions of the RBDD are being addressed in a separate project-specific process.

Comments

The Bay Institute (cont'd)

the Fish Passage Improvement Project, the finalization of which has been "delayed" pending completion of the OCAP process.[2]

Bay-5

2. Elevated water temperature in the Sacramento River below Keswick Dam. According to the OCAP Project Description, Reclamation proposes to change Sacramento River temperature control objectives, relocating the temperature compliance point upstream in the river (OCAP BA, pg. 2-36).[3] Compared to current operations, this will increase mortality of incubating winter-run Chinook salmon eggs and emergent fry and substantially reduce the area of habitat for all salmonid species that use the mainstem Sacramento River. The proposed action violates protections required by the State Water Resources Control Board (Water Rights Orders 90-05 and 91-01) and the Endangered Species Act (Biological Opinion for winter-run Chinook salmon; NOAA Fisheries, 1993). This impact is not discussed in the EA, nor has it been addressed in any NEPA document analyzing Reclamation's new OCAP.

Bay-6

3. Eliminate minimum carryover storage requirements in Shasta Reservoir. According to the OCAP BA (pg. 2-36), Reclamation proposes to no longer operate to maintain a minimum carryover storage in Shasta Reservoir of 1.9 million acre-feet (MAF). This requirement, contained in the winter-run Chinook salmon BO (NOAA Fisheries, 1993), is intended to maintain an adequate cold-water pool in the reservoir to provide for releases of cold water to the river for protection of winter-run Chinook salmon during multi-year dry periods. This impact is not discussed in the EA, nor has it been addressed in any NEPA document analyzing Reclamation's new OCAP.

Bay-7

These operations described in the EA and related OCAP BA also threaten and devalue several large-scale and costly habitat improvement projects that have been already initiated in the Sacramento River and its tributaries upstream of RBDD.[4] In addition, it is noteworthy that none of the three alternatives described in the EA reflect any effort by Reclamation to craft operational protocols that would minimize these (and other) well-documented negative impacts of current operations on the Sacramento River environment and its biota. Indeed, Alternative 2 of the EA is assessed as having greater negative impacts on the wetland and riparian environments than current operations.

The following sections discuss some of the negative impacts of the proposed actions related to renewal of long-term water service contracts in the Sacramento River Division on several native anadromous fish species.

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[2] In response to questions from NOAA Fisheries, Reclamation stated that the preferred alternative for RBDD operations was the "No Action Alternative" described in the 2002 Draft EIS/EIR. Reclamation responses to NOAA Fisheries questions are available at www.usbr.gov/mp/cvo/ocapBA.html.

[3] The temperature compliance point is the location at which specific cool water temperature conditions must be maintained for the protection of winter-run Chinook salmon by Reclamation using reservoir releases and the Shasta Temperature Control Device.

[4] Habitat improvement actions upstream of RBDD include: Battle Creek Restoration Plan; Clear Creek Restoration Plan; ACID fish passage improvements; ongoing improvement of Iron Mountain Mine water quality discharges; and the Temperature Control Device at Shasta Dam.

Responses

Bay-5

The EA alternatives do not include the actions mentioned above. That action is outside of the scope of this document. The proposed action addressed in the EA is renewal of water service contracts, not operations of the CVP.

Bay-6

The proposal of a change in the storage level at Shasta Reservoir is outside the scope of this EA. The hydrologic operation of the CVP is a separate action with its own environmental compliance requirements.

Bay-7

The EA does not assess the continued use of RBDD, as this is a separate action which is assessed in depth in the OCAP BA, and is the subject of its own environmental compliance procedures. Therefore this comment is outside the scope of this document.

The EA does not address operational aspects of water conveyance. This EA tiers off the PEIS to evaluate potential site-specific environmental impacts of renewing the long-term water service contract for the Sacramento River Division contractors. The purpose of this project is to renew the Sacramento River Division water service contracts, consistent with the provisions of CVPIA. The project alternatives include the terms and conditions of the contracts and tiered water pricing.

Operational protocols are not associated with the stated purpose and need, and are therefore not included in either of the proposed actions.

Comments

The Bay Institute (cont'd)

Bay-8

Spring-run Chinook salmon
Historically, the spring run of Chinook salmon was the second largest run in the Central Valley watershed and supported the bulk of the commercial fishery (Yoshiyama et al., 1998; copy enclosed). Based on population declines during the past several decades (and extirpation of spring-run Chinook salmon in the San Joaquin basin), Sacramento basin spring-run Chinook salmon are now listed as threatened under both state and federal ESAs. During the past decade, the run has been the target of a number of protection and recovery efforts, including those focused on tributary streams upstream of RBDD.

The EA states that the majority of spring-run Chinook salmon spawn in three Sacramento River tributaries, Mill, Deer, and Butte Creeks (EA, pg. 3-75), all of which enter the Sacramento River below RBDD. The EA further states that since only a small percentage of spring-run Chinook salmon spawn in the mainstem Sacramento River above (or below) RBDD, no population level impacts are expected. While the description of current spring-run Chinook salmon distribution may be accurate, this explanation inexplicably ignores the fact that as recently as 15 years ago the mainstem Sacramento River supported a substantial population of spring-run Chinook salmon that spawned above RBDD, averaging more than 10,000 fish per year from 1969-1986 (Figure 1, data from California Department of Fish and Game [CDFG]), more than five times as many fish as returned to Mill, Deer and Butte Creeks combined during the same period (Figure 2, data from CDFG). Since the early 1990s, only a few hundred fish have successfully returned to the upper mainstem Sacramento River and, in 2003, preliminary analysis of escapement surveys indicated that no spring-run returned to spawn in this reach of the river. The decline of the Sacramento River population coincided with the 1987-1992 drought and poor water quality conditions in the upper river, particularly below RBDD (use of spawning habitat below RBDD by fish prevented from reaching the upper reach of the river declined during this period as well). Similar low numbers of spring-run Chinook salmon were counted on the three tributary streams downstream of RBDD during the drought. However, since the mid-1990s, although populations recovered somewhat in the downstream tributaries, the mainstem Sacramento River population remained critically low and, based on the 2003 survey, may now be approaching extinction.

Given the current restricted geographic distribution and only two remaining independent natural spring-run Chinook salmon populations (one in Mill and Deer Creeks and the other in Butte Creek), the species is perilously close to extirpation in the Sacramento basin (McElhany et al., 2000; Lindley et al., 2004; copies enclosed). A major focus of protection and recovery efforts is to reestablish the run in other suitable streams. The mainstem Sacramento River below Keswick Dam, which has large amounts of holding and spawning habitat and cool water temperatures, and two tributary streams, Battle and Clear Creeks (both located upstream of RBDD) offer some of the best opportunities for restoring a broader geographic distribution for the spring-run Chinook salmon, increasing its population size, and reducing its vulnerability to extinction. In addition, the

Responses

Bay-8
The suggested timeframe is outside of the EA's baseline conditions. The historical distribution of Chinook, however, is discussed. The EA acknowledges that the placement of dams and water diversions are a major cause of this species decline. It should also be noted that the numbers may be misleading. The NOAA OCAP Supplemental BO 2004-2006 (February 27th 2004) states:

> "[e]valuating the abundance of the ESUs as a whole, however, complicates trend detection. For example, although the mainstem Sacramento River population appears to have undergone a significant decline, the data are not necessarily comparable because coded wire tag information gathered from Central Valley fall-run Chinook salmon (CV fall-run Chinook salmon; *O. tshawytscha*) returns since the early 1990s has resulted in adjustments to ladder counts at Red Bluff Diversion Dam (RBDD) that have reduced the overall number of fish that are categorized as spring-run Chinook salmon."

The EA does not assess the continued use of RBDD, as this is a separate action which is assessed in depth in the OCAP BA, and is the subject of its own environmental compliance procedures.

Comments

The Bay Institute (cont'd)

anadromous fish doubling requirement of the Central Valley Project Improvement Act (CVPIA) includes a doubling goal for spring-run Chinook salmon on the Sacramento River (USFWS, 1995).

Past and current RBDD operations have had significant negative impacts on spring-run Chinook salmon. Continuation of the current RBDD operations, the action proposed in the EA, will likely result in the extirpation of the run from the Sacramento River, failure to meet CVPIA-mandated doubling goal for the run in the Sacramento River, and prevent establishment of the run in newly restored streams upstream of RBDD.

- RBDD prevents or delays upstream migration of 70% of adult fish (OCAP BA, pg. 6-19; Draft EIS/EIR Fish Passage Improvement Project for RBDD, pg. B-6). Fish ladders incorporated into the dam are inefficient at passing spring-run Chinook salmon (CDFG, 1998; copy enclosed).
- Reduced flows and elevated temperatures below RBDD when the gates are closed reduce survival of fish restricted to areas below RBDD.
- Migration delays at RBDD prevent fish that do pass the facility from successfully reaching suitable holding habitat in tributary streams before seasonal decreases in flow and increases in temperature in the lower reaches of these tributaries block their passage (TCCA and USBR, 2002).
- The biological consequences of blocked or delayed passage at RBDD include changes in spawning distribution (Hallock, 1987; copy enclosed), hybridization with fall-run Chinook salmon (CDFG, 1998), increased adult pre-spawning mortality (USBR, 1995), and decreased egg viability (Vogel et al., 1988), all of which contribute to reduced reproductive success.

Bay-9

Winter-run Chinook salmon

Winter-run Chinook salmon historically spawned in several Sacramento River tributaries located far upstream of Shasta Dam (Moyle, 2002). Closure of Shasta and Keswick Dams restricted this unique run to a single location, the Sacramento River below Keswick Dam.[5] Environmental conditions (largely water temperature) in the river further restrict the fish, which return to the river as immature adults during the winter and hold during the spring and summer before spawning in the late summer, to the short reach of the river from immediately below Keswick Dam to approximately Red Bluff Diversion Dam (depending on water temperature and flow conditions). In the mid-1970s, drought and extreme water management operations on the Sacramento River nearly wiped out the run, killing most adult fish holding in the river and most incubating eggs during two consecutive years and resulting in extremely low returns of adult fish three years later

[5] The Sacramento River basin is the only watershed that supports a winter run of Chinook salmon (Moyle, 2002).

Responses

Bay-9

These are not consequences of the proposed action. The EA does not address shifting the compliance point, the removal of the minimum carryover storage, nor the impacts of RBDD. Operations of the CVP are a separate action. Please refer to the CVPIA PEIS and OCAP BA. Cumulative CVP impacts were addressed in the CVPIA PEIS and are incorporated in this EA by reference. Beyond those cumulative impacts discussed in the CVPIA PEIS and BO, there are no additional cumulative impacts that would result from long-term water service contract renewals in the Sacramento River Division.

Comments

The Bay Institute (cont'd)

Bay-9 (cont'd)

(i.e., in 1979 and 1980, Figure 3, data from CDFG, 2004 datum is a preliminary estimate reported to the California Bay-Delta Authority Operations Group). By 1989, after the species had remained at critically low levels for a decade, it was listed by both the state and federal ESAs as threatened. In 1994, the federal ESA listing was changed to endangered.

Given the current extremely restricted geographic distribution of winter-run Chinook salmon and the concentration of the entire Evolutionarily Significant Unit (ESU) into a single population, this species is also highly vulnerable to extinction (Lindley et al., 2004). A major focus of protection and recovery efforts is to protect remaining habitat below Keswick Dam by using the Shasta Temperature Control Device[6] and controlled reservoir releases to maintain suitably cool temperatures for adult holding, spawning, egg incubation and early rearing, improve passage of immigrating adults to the upper Sacramento River by opening RBDD gates during September 15-May 15 period, improve survival of emigrating juveniles, and reestablish the run in other suitable streams, with the greatest emphasis on Battle Creek. And as existing state bond funding for CALFED restoration activity dries up and federal funding for and authorization of CALFED languish, it is at best uncertain whether, let alone when, winter-run Chinook salmon will be successfully restored to Battle Creek.

The EA states that, in some years, water temperatures "may reach levels that are detrimental to survivorship" (pg. 3-75) for winter-run Chinook salmon but implies that the run will respond by spawning closer to the dam. The effects of reduced summer flow (predicted by the OCAP BA analyses) and the effects of elevated water temperature resulting from this and Reclamation's proposed upstream shift in the temperature compliance point on this run (or on spring-run Chinook salmon and steelhead), and the resultant reduction in critical habitat area are not described in the EA or included in the summary table of potential impacts (EA Table 2-2, pg. 2-15, 16). The OCAP BA provides more analysis of the multiple potential impacts of planned operations for the delivery of water by Reclamation to its Sacramento River Division contractors as well as downstream contractors and the Delta.

- Reclamation's plan to shift the temperature compliance point to a location 18 miles upstream of that presently required under the winter-run Chinook salmon BO (NOAA Fisheries, 1993) is likely to undo some or all of the progress towards recovery of the species made during the past decade (see Figure 3). Even during the past decade Reclamation has failed to meet current temperature compliance requirements, with the largest exceedences occurring during the past four to seven years (OCAP BA, pg. 9-29). These exceedences are the likely explanation of Reclamation's observation in the OCAP BA that winter-run Chinook salmon now spawn in areas closer to Keswick Dam than in the past and, rather than justifying

[6] Before the Temperature Control Device was completed, cool water from deep in Shasta Reservoir was released from lower outlets by bypassing the power generation turbines.

Responses

The Bay Institute (cont'd)

Bay-9 (cont'd)

a harmful change in the temperature compliance point proposed by Reclamation, may in fact be contributing to the slowed rate of population increase observed in the past three to four years. In addition, Reclamation predicts that Sacramento River flows during the critical late summer and early fall period will be lower, exacerbating water temperature problems (OCAP BA, pg. 9-27).

- Results of analyses reported in the OCAP BA (pg. 9-32, Figure 9-32) indicate that future operations will increase egg mortality (above current levels) by an average of 5-10% and by as much as 20-25% in critically dry years.

- The upstream shift in the temperature compliance point reduces winter-run Chinook salmon habitat by 40% (as linear river miles), effectively eliminating access to 18 miles of river channel in many years.

Reclamation's plan to no longer operate to meet the minimum 1.9 MAF of carryover storage threatens the survival of winter-run Chinook salmon during multi-year droughts. The potential impacts of this action were not reported in the EA.

- Maintenance of a minimum of 1.9 MAF is intended to preserve enough water in Shasta Reservoir's cold-water pool to support flow releases for temperature control in the upper Sacramento River in years following dry and critically dry years. Failure to maintain sufficient reserves and resultant inability to threatens the survival of entire cohorts of the winter-run Chinook salmon ESU.

- Based on this proposed less conservative storage management plan, Reclamation's OCAP BA (pg. 9-28-32) predicted that, on average during dry and critically dry years, 45% of incubating eggs would be killed each year. This mortality rate is approximately two to ten times higher than that predicted for wetter years.

While current operations of RBDD improve passage for adult fish, the RBDD gates remain closed during the period when a large percentage of juvenile winter-run Chinook salmon migrate downstream. These fish must pass under the gates or through the ladders and their auxiliary water systems, or they are entrained and impinged into the Tehama-Colusa Canal headworks or the Research Pumping Plant screens and bypasses. The well-documented negative impacts of RBDD on survival of emigrating juvenile salmon, which were likely part of the basis for the Draft EIS/EIR for the RBDD Fish Passage Improvement Project to recommend as a preferred alternative that RBDD gates be raised year-round (Executive Summary, pg. V), were not reported in the EA.

- More than one third (39%) of emigrating juvenile winter-run try to pass RBDD when the gates are closed (TCCA and USBR, 2002, pg. B-8). Compared to fish that pass the RBDD when the gates are open, these fish are subjected to increased stress, physical injury and mortality.

Comments

The Bay Institute (cont'd)

- Vondracek and Moyle (1983) reported that the predominant cause of mortality of juvenile salmonids passing through the RBDD was a dysfunctional predator-prey created by the RBDD. USFWS (1981) reported that greater than 50% of juvenile Chinook salmon passing through RBDD when the gates were down died.

Steelhead

Steelhead, which spawn in the Sacramento River above RBDD and in upstream tributaries, will be negatively affected by Reclamation's proposed renewal of long-term water service contracts and associated operations in a variety of ways.

Bay-10

- RBDD blocks passage of at least 17% of immigrating adult steelhead (TCCA and USBR, 2002).
- More than a third (36%) of juvenile emigrants are negatively affected by RBDD. Mortality rates of juvenile steelhead passing through the dam are 42% (TCCA and USBR, 2002).
- Increases in water temperature resulting from the upstream shift in the temperature compliance point and reduced flows during the summer will increase mortality (above current rates) of both adult and juvenile steelhead.

Green sturgeon

Green sturgeon populations have been reduced throughout their range and today only three known spawning populations still exist, including one on the Sacramento River (Moyle et al, 1995). Among the causes for the species' decline are loss of access to spawning habitat by dam construction and degradation of spawning habitat quality (OCAP BA, pg. B-12).

Bay-11

- As much as 35% of the immigrating adult green sturgeon are blocked by RBDD. Green sturgeon do not readily ascend fish ladders designed for passage of salmonid fishes, therefore any green sturgeon that reach RBDD when the gates are closed are completely prevented from ascending the river beyond that point (OCAP BA, pg. B-16). Emigrating adult fish are also blocked by RBDD.
- During the May 15-September 15 period when the RBDD gates are closed, nearly 100% of emigrating larval and juvenile green sturgeon must pass under the gates, through the fish ladders, or become entrained at the two diversion facilities where, like juvenile salmonids they are subject to stress, injury, mortality, and high rates of predation

Bay-12

During the past few decades, the effects of water management operations on the Sacramento River, its environment, and its valuable biological resources have been observed, investigated and extensively documented. For many specific impacts, the mechanisms underlying their effects have been identified and alternative infrastructure

Responses

Bay-10

See response to Bay-9, above.

Bay-11

See response to Bay-9, above.

Bay-12

The alternatives assessed in the EA represent a range of water service agreement provisions that meet the project purpose and need. The No Action Alternative consists of renewing existing water service contracts as described by the Preferred Alternative of the PEIS. In November 1999, Reclamation published a proposed long-term water service

Comments

The Bay Institute (cont'd)

Bay-12 (cont'd)

design, operation and/or management approaches that minimize their adverse impacts have been devised. The three alternatives evaluated by Reclamation in the draft EA to support renewal of long-term water service contracts in the Sacramento River Division fail to consider or implement any such improvements, despite compelling evidence that continued operations threaten the continued existence of several priority fish species and despite federal laws such as the CVPIA that mandate such reforms. Further, the impacts analysis reported in the EA ignores a large body of evidence, much published by Reclamation itself, of adverse impacts of current and planned actions and draws a false and unsupported conclusion of no significant impact.

Bay-13

For all of the above reasons, and for the reasons set out in our supplemental comments being submitted under separate cover, as well as based on the materials attached with both sets of our comments and/or incorporated or referenced therein, the revised draft EA and the draft FONSI are technically and legally inadequate and contrary to law. We strongly urge Reclamation to prepare new environmental documentation for the proposed action, including an EIS/EIR, that includes among other things a more robust range of alternatives, including at least one that, at a minimum, is designed to address the negative impacts discussed in these comments, and that provides a much more comprehensive and rigorous evaluation of negative impacts to the River's environment and biological resources.

Sincerely,

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encl.

Responses

Bay 12 (cont'd)

contract. In April 2000, the CVP Contractors presented an alternative long-term water service contract. Reclamation and the CVP Contractors continued to negotiate the CVP-wide terms and conditions with these proposals serving as "bookends." This EA considers these proposals as bookends in the environmental documentation to evaluate the impacts and benefits of renewing the long-term water service contracts.

Reduction of contract amounts was considered in certain cases but rejected from analysis. The reason for this was twofold. First, water needs analyses have been completed for all contractors and in almost all cases the needs exceed or equal the current total contract amount. Second, in order to implement good water management, the contractors must be able to store or immediately use water available in years when more water is available. By quantifying contract amounts in terms of the needs analyses and the CVP delivery capability, the contractors can make their own economic decisions. Allowing the contractors to retain the full water quantity gives the contractors assurance that the water will be available to them for storage investments. In addition the CVPIA, in and of itself, achieves a balance through its dedication of significant amounts of CVP water and actions to acquire water for environmental purposes.

Non-renewal of existing contracts is considered infeasible based on Section 3404(c) of the CVPIA. This alternative was considered but eliminated from analysis in this EA because Reclamation has no discretion not to renew the contracts.

Bay-13

Reclamation has analyzed the Proposed Action in accordance with NEPA. The range of alternatives is based on the proposed contracts under negotiation when the NEPA process was initiated, and provides an adequate range of contract provisions consistent with the purpose and need of the contract renewal. The EA, tiered to the CVPIA PEIS, deals with the local effects of water pricing and how that may affect the Sacramento River Division's water purchases. The determination of no significant impact is based on the absence of changes to the infrastructure, physical disturbances, or water delivery, because few changes are expected in water quantities purchased by the contractors or in acreage cultivated as a result of the proposed action.

In addition, as stated in an earlier response, the CVPIA, through its numerous environmental actions, is addressing fish and wildlife that have been impacted by the CVP. The contracts need to be considered in the context of the CVPIA as a whole.

The Bay Institute (cont'd)

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The Bay Institute (cont'd)

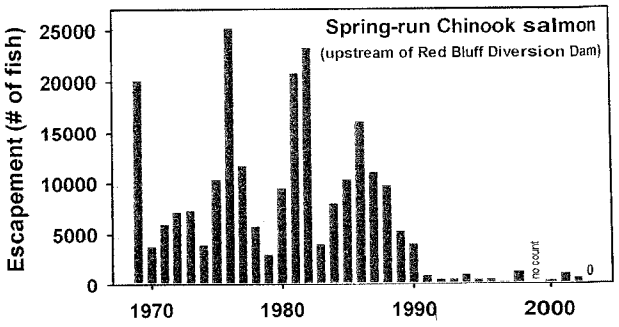

Figure 1. Escapement (number of adult fish) of spring-run Chinook salmon to the mainstem Sacramento River upstream of Red Bluff Diversion Dame, Data from CDFG.

The Bay Institute (cont'd)

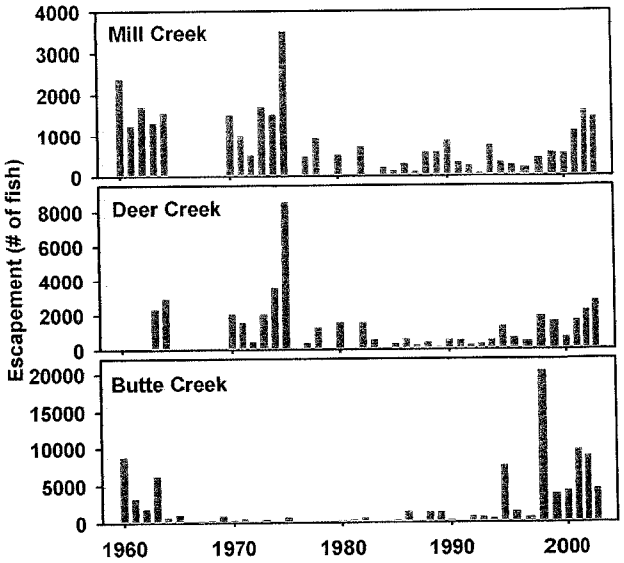

Figure 2. Escapement (number of adult fish) of spring-run Chinook salmon to Mill, Deer, and Butte Creeks. Data from CDFG.

The Bay Institute (cont'd)

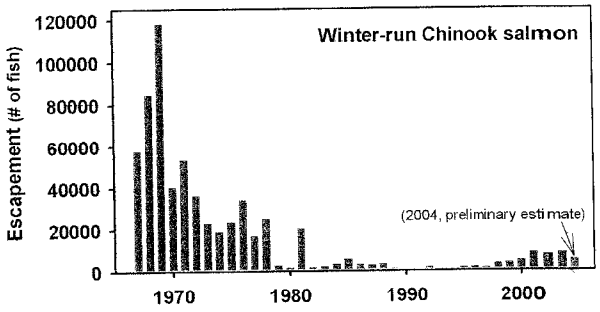

Figure 3. Escapement (number of adult fish) of winter-run Chinook salmon to the mainstem Sacramento River. Datum for 2004 is a preliminary estimate. Data from CDFG.

Comments

Natural Resource Defense Council

NRDC
THE EARTH'S BEST DEFENSE

NATURAL RESOURCES DEFENSE COUNCIL

August 28, 2004

Ms. Basia Trout
U.S. Bureau of Reclamation
22500 Altube Avenue
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Red Bluff, CA 96080

RE: Supplemental Comments on Revised EA for Sacramento River Division Contracts

Dear Ms. Trout:

These are the supplemental comments of the Natural Resources Defense Council (NRDC), The Bay Institute, and the Planning & Conservation League (PCL) on the Revised Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for Renewal of the Long-term Contracts for the Sacramento River Division Contractors (proposed contracts), U.S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA; July 2004. Separately, our three organizations are submitting detailed technical comments on the revised draft EA/FONSI, along with extensive attachments, under separate cover. (A copy of those separate August 27, 2004 comments, without the attachments, is also enclosed herein for your convenience.) In addition, we are enclosing with these supplemental comments numerous materials that are relevant to the proposed renewal contracts and the revised draft EA/FONSI. We request full consideration of both sets of comments, along with all materials attached to or submitted with each of our comment letters or incorporated or referenced therein.

1. Request for Extension of Comment Deadline

NRDC-1

The Bureau has not provided adequate time for the public to review the EA and FONSI or the proposed contracts. For all of the reasons stated in the attached letters from the Pacific Coast Federation of Fishermen's Associations (PCFFA), Taxpayers for Common Sense, Northern California/Nevada Council-Federation of Fly Fishers, and Rep. George Miller and five other Members of Congress, we urge you to reopen or extend (or both) the public comment periods for the contracts and the EA/FONSI so that there will be at least 60 days of public comment allowed after the completion and public distribution of the final Biological Opinion of NOAA Fishers (NMFS) on the new OCAP for the Central Valley Project (CVP) and the State Water Project (SWP).

2. The Revised Draft EA and the proposed FONSI are Legally Inadequate.

NRDC-2

The Bureau has failed to correct the numerous deficiencies in its prior environmental review documents pertaining to CVP long-term renewal contracts and interim renewal

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Responses

NRDC-1

Reclamation has considered requests for extensions of the comment period but feels adequate time was given for review. The draft OCAP BO has been reviewed and the final OCAP BOs did not alter the analysis presented in the EA.

NRDC-2

The EA and the scope of the analysis were developed consistent with NEPA regulations and guidance from the Council on Environmental Quality (CEQ), and in conformance with the direction provided by NRDC vs Patterson, Civ. No. S-88-1658 (Patterson), which specifically addressed the application of NEPA relative to contract renewals. In Patterson the court found that "…ongoing projects and activities require NEPA procedures only when they undergo changes amounting in themselves to further "major action." The court went further to state that the NEPA

Comments

Natural Resource Defense Council (cont'd)

NRDC-2 (cont'd)

contracts. Numerous comments criticizing these earlier documents have been submitted to the Bureau and are contained in the administrative records on those contracts and their associated NEPA review processes, including NRDC's own extensive comments dated December 7, 2000, which are attached and incorporated herein, and the comments of the Hoopa Valley Tribe (letter of Thomas Schlosser to Frank Michny), which are also attached. Among other things, the Bureau has failed to meet its legal obligation to prepare a full Environmental Impact Statement (EIS) on these proposed contracts, failed to consider a reasonable range of alternatives, and failed to disclose and analyze adequately the environmental impacts of the proposed action, including cumulative impacts. Associated CEQA review is likewise insufficient. Some of these defects are more fully addressed below.

NRDC-3

3. The Bureau has failed to address the concerns previously identified by EPA and failed to comply with the Findings of the Council on Environmental Quality.

In a series of letters, the US EPA has expressed repeated concern over the adequacy of the Bureau's environmental review process for its contract renewal program, including but not limited to the attached letters dated December 8, 2000, August 30, 2001, January 4, 2002, and January 23, 2004. Yet the Bureau has failed to adequately address those concerns in its new EA/FONSI. Similarly, back in 1989, EPA challenged the Bureau's failure to complete a full EIS on each group of CVP renewal contracts and the Council on Environmental Quality (CEQ) upheld EPA's critique. See 54 Fed. Reg. 28477 (July 6, 1989). The Bureau has numerous copies of the complete record of that proceeding, including in its copies of the court record in *NRDC v. Patterson*, Civ. No. S-88-1658-LKK, and should review and reconsider that record, including EPA's numerous submissions, and the CEQ findings.

NRDC-4

4. The Bureau has failed to adequately consider the effects of its operations and proposed contracts.

Among many other defects, the Bureau has failed to adequately consider the impacts to fish species and fish habitat from its operations on the Sacramento River, including but not limited to the operation of Red Bluff Diversion Dam and the Tehama-Colusa Canal and the Bureau's new overall OCAP. In addition to the information provided in and referenced in our separate technical comments on this EA/FONSI, we also attach and direct your attention to the following relevant documents, and incorporate each of them by reference:

a. July 11, 2003 letter from NRDC and The Bay Institute to Ms. Ann Lubas-Williams on the Draft OCAP and Draft OCAP Biological Assessment.
b. July 28, 2004 letter from NRDC to Mr. Wayne White of US FWS re ESA Consultation on OCAP.

Responses

NRCD-2 (cont'd)

statutory requirement applies only to those changes. The analysis in the EA finds the renewals of the contract to be a continuation of previous contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. Moreover, most contracts do not involve any change in the type of use, such as the addition of M&I uses. The analysis in the EA addresses the proposed changes to the contract and the potential environmental effects of those changes. As indicated in the EA, these contract changes would not result in significant effects to the environment.

NRDC-3

Please see response to NRDC-2, above.

NRDC-4

The analysis in the EA addresses the proposed changes to the contract and the potential environmental effects of those changes. As indicated in the EA, these contract changes would not result in significant effects to the environment. The proposed action that is being analyzed in this EA is water service contract renewal and the delivery of water to the contractors. The impacts to fish species as a result of contractor's water use and Reclamation's operations and maintenance activities are discussed in the documents you mentioned. This EA does not disregard the findings of other reports, but is focusing on the proposed action of incorporating administrative conditions into renewed contracts to ensure CVPIA compliance.

In regard to the Fish Passage Improvement Project, Reclamation is continuously working with NOAA Fisheries to minimize impacts to salmonids at the RBDD and decisions about the next steps will be made after the OCAP BA consultation is completed. This is a separate action subject to its own environmental compliance requirements. Permanent, structural fixes at the RBDD would cost on the order of 100 million dollars, so decisions as to what to do are not easily reached. It may be that lower costs, seasonal fixes can be designed, but that remains to be seen.

Natural Resource Defense Council (cont'd)

NRDC-4 (cont'd)

Similarly, the EA/FONSI disregards the concerns, findings and analysis previously provided on these Sacramento River environmental issues by the Bureau itself or other federal agencies, including but not limited to the attached letter of July 23, 2004 from NMFS to Mr. Thomas Stokely and the attached February 1998 Supplemental Fish & Wildlife Coordination Act Report by the US FWS on the Red Bluff Diversion Dam and the Tehama-Colusa Canal, as well as the August 2002 Draft EIS/EIR for the Fish Passage Improvement Project at Red Bluff Diversion Dam, available at www.tccafishpassage.org.

NRDC-5

5. The Bureau fails to analyze meaningful alternatives on the key terms of the contracts including price and water quantity.

Numerous members of the public have written to the Bureau in past years urging the Bureau to evaluate a broader range of alternatives to its current policy of rolling over most water quantity terms in its long term renewal contracts and keeping water prices significantly below cost and below market without any adjustment for conservation incentives or environmental repayment. The EA/FONSI has utterly failed to evaluate such alternatives, including those discussed in the attached May 3, 2004 letter of National Taxpayers Union & Taxpayers for Common Sense, the attached letter of January 9, 2001 of NRDC, and the attached March 2, 1994 brief on ratesetting filed by plaintiffs in *NRDC v. Patterson*, Civ. No. S-88-1658-LKK.

NRDC-6

6. The Bureau is acting in an arbitrary and capricious manner in its NEPA process on contract renewals.

This EA/FONSI is part of a larger pattern of arbitrary NEPA compliance by the CVP in addressing its OCAP and contract-renewal program. For example, the Bureau is proposing significant changes in its operations in its OCAP, yet failing to do any NEPA or CEQA review. The Bureau is conducting an EIS on the Sacramento River Settlement Contracts, the American River Division renewal contracts and the San Luis Unit renewal contracts, yet relying on a mere EA/FONSI for its Sacramento River Division contracts. The current proposed FONSI refers to a project description in OCAP, yet the 3 different versions of the OCAP BA, the final OCAP itself, the final FWS Biological Opinion on OCAP, and the ongoing ESA consultation with NMFS on OCAP involve different project descriptions. In sum, the approach is irrational and arbitrary and contrary to NEPA and its implementing regulations. We urge you to withdraw the revised draft EA and FONSI and proceed with a more adequate analysis in a full draft EIS on the proposed contracts.

Sincerely,

Hamilton Candee
Senior Attorney

NRDC-5

A needs analysis was conducted for each contractor within the various units of the CVP to determine the historic and projected water demands and supplies, and historic and projected cropping patterns. Comprehensive information on each contractor's surface and groundwater supplies was collected together with information in the contractor's Water Management Plans. In regards to groundwater supplies, the initial calculation of CVP water needs was limited by the assumption that groundwater pumping would not exceed the safe yield of the aquifer. The average of 19 years of historical water deliveries was compared to a calculated average past beneficial use. Because the CVP was initially established as a supplemental water supply for areas without adequate supplies, the needs for most contractors are at least equal to the CVP water service contract and frequently exceeded the previous contract amount.

The water pricing contract rates are defined by the CVP rate-setting policies, P.L. 99-546 and the Reclamation Reform Act (RRA). The prices of CVP water used in the No Action Alternative are based upon 1994 irrigation and municipal/industrial CVP water rates.

The No Action alternative together with negotiated proposals for CVP-wide terms and conditions are the basis for the action alternatives. The preferred alternative essentially maintains the status quo apart from changes mandated by the CVPIA. The analysis displays the increment of change between the No Action Alternative and the other alternatives.

NRDC-6

Project operations as described in the OCAP BA are a separate action from contract renewal. The OCAP BA/BO process is subject to its own environmental compliance requirements which are being addressed as may be required. A consistent project description was utilized in both Biological Opinions received on the CVP operations.

Comments

Defenders of Wildlife

Butte Environmental Council

August 30, 2004

Basra Trout
P.O. Box 159
Red Bluff CA 96080.

Mr. Richard Stevenson
Bureau of Reclamation
2800 Cottage Way, MP-440,
Sacramento CA 95825.

Re: Sacramento River Division Environmental Assessment and Contracts

Dear Ms. Trout and Mr. Stevenson:

On behalf of Butte Environmental Council, Defenders of Wildlife, and the Lassen Forest Preservation Group, we would like to thank you and your staff for the opportunity to comment on and pose questions about the Sacramento River Division Environmental Assessment and Contracts.

Process

We request that the Bureau of Reclamation (BR) extend the comment period on the Sacramento River Division Environmental Assessment (EA) and the Sacramento River Division Contracts. We have been unable to download the sizable documents from your web site. In addition, we need access to the Biological Opinions (BOs) by the U.S. Fish and Wildlife Service and NOAA Fisheries to adequately comment and these documents have not been completed.

We request a hard copy of this EA, and when available, the BOs, the Sacramento River Settlement Contractors Environmental Impact Statement, and the Feather Water District Environmental Assessment.

Substantive Issues

DOW-1 1) Are there operational conservation plans for each of the contractors as required by the Central Valley Project Improvement Act (CVPIA)? If so, will you please send us copies?

DOW-2 2) There are severe water quality issues in the Colusa drain, which fails both state and federal standards. When and how will you address these violations of the Clean Water Act and Porter Cologne?

Responses

DOW-1

All M&I contractors with more than 2000 af of Project Water or Irrigation contractors with more than 2000 irrigable acres are required to have water conservation plans. All available Water District (contractor) Water Conservation or Water Management Plans are on file at the Regional office and can be made available for review there. The contact point for those plans would be Lucille Billingsley in the Mid-Pacific's Regional Office, who can be reached at (916) 978-5215.

Sacramento River Settlement contractors, as holders of water rights, are distinct from water service contractors and are still developing their plans as part of a 'Regional' plan. The City of Redding, which has both a settlement contract and a water service contract, and the contractors which hold only water service contracts, such as the TCCA districts, Bella Vista, Clear Creek, and the City of Shasta Lake have prepared plans.

DOW-2

Reclamation is unaware of any specific violations of the Clean Water Act or Porter Cologne Act in the Colusa Drain resulting from its actions of renewing water service contracts. We have received no notices of any such violations. Reclamation does not own these facilities and cannot address violations which do not directly result from the proposed action of contract renewal. Please see comment FOR-16.

Comments

Defenders of Wildlife (cont'd)

DOW-3 3) The model used for benchmark studies for this process, CalSIM II, is highly flawed (Sjovold 2004). How will the BR correct these significant failings?

DOW-4 4) The operation of the Red Bluff diversion violates the CVPIA. It currently prevents migration of 70% of threatened spring run Chinook salmon and 17% of steelhead adults. There has been no quantification of impacts to all juvenile fish species. What does the BR plan to do to rectify this violation?

DOW-5 5) The Tehama Colusa Canal and the Corning Canal pose serious problems for fish migration on all the westside tributaries. As you are aware, Stoney Creek is so impacted that it runs unnaturally dry a significant part of the year. What does the BR propose to do to restore flows to these tributaries?

DOW-6 6) What analysis has been conducted to determine the impacts to ground water, the local economy, and the environment if surface waters are sold and ground water is used to replace the surface water for existing operations? What analysis has been done to determine the impacts to the local economy and the environment if surface waters are sold and agricultural land is fallowed?

DOW-7 7) The Sacramento River has minimum flow standards for salmonids and no ecosystem flow standards for riparian restoration, a significant CalFed goal.

DOW-8 8) What analysis has been conducted to determine the possible impacts from proposed water storage projects like Sites Reservoir and raising Shasta dam?

DOW-9 9) Where is the cumulative impact analysis for all the contracts, possible ground water substitution, and proposed storage projects?

DOW-10 10) The contract renewals are an opportunity to quantify the value of water flowing from upper watersheds. How will the BR fund the studies to provide this watershed information? The contractors should assist with the funding.

Thank you for the opportunity to comment.

Sincerely,

Barbara Vlamis, Executive Director
Butte Environmental Council
116 W. Second Street, Suite 3
Chico, CA 95928

Kelly McDonald, California Program Associate
Defenders of Wildlife
926 J Street, Suite 522
Sacramento, CA 95814

James Brobeck, Forestry Policy Analyst
Lassen Forest Preservation Group
1605 Manzanita
Chico, CA 95926

Responses

DOW-3
In conducting studies for this process, we used the best available information at our disposal. New information will be taken into account as it is provided.

DOW-4
Only about 7% of the total spring run population currently migrates into the upper Sacramento Valley and is either delayed or blocked at the RBDD. Conversely, 93% of spring-run experience no delays or they spawn downstream of the RBDD. The earliest arriving fish have the best chance of making it to the upper reaches of tributary streams where they hold over the summer before spawning, encountering no obstacles. Permanent, structural fixes would cost in the order of 100 million dollars, so decisions as to what to do are not easily reached. It may seasonal fixes can be designed at lower costs, but that remains to be seen. Reclamation is continuously working with NOAA Fisheries to minimize impacts to salmonids at the RBDD and decisions about the next steps will be made after the OCAP BA consultation is completed.

DOW-5
The TC and Corning Canals do not impact fish migration in most west side streams. These canals pass under these streams by means of siphons, leaving them unobstructed with the exception of Funks Creek and, seasonally, Stony Creek. However, all west side streams south of Stony Creek, including Funks, terminate in the Colusa Basin Drain. The Drain is a privately constructed feature that predates the canals by decades, which blocks or impedes access from the Sacramento River. All streams north of Stony Creek connect to the Sacramento River, but most, except Cottonwood Creek were seasonal before the onset of agricultural diversions. While these diversions surely shorten the period of flow, they are all private, not CVP diversions. The only water removed from tributaries to the Sacramento by the TC and Corning Canals is a portion of the water stored in Black Butte Reservoir at the end of the flood season. Part of that stored water, as noted above, is devoted to in-stream flows that tend to extend the period of potential passage.

Defenders of Wildlife (cont'd)

DOW-5 (cont'd)

Historically, flows in Stony Creek occurred intermittently in the late fall, winter, and spring months. With the installation of Black Butte Dam, flows in Stony Creek have been regulated by the COE for the purpose of flood control primarily from November through March. After the threat of floods has passed, Reclamation controls releases of stored water for the purpose of irrigation. When water is being diverted for irrigation using a temporary diversion dam, a minimum of 40 cfs is being released downstream for fishery benefits. Reclamation and the COE are currently consulting with NOAA Fisheries on the effects of water operations in lower Stony creek to anadromous fish. A short-term BO was issued in 2002 and a long-term BO is expected by March of 2005. The terms and conditions of the BO suggest increased releases to benefit salmonids.

DOW-6

This EA does not evaluate exchanges or transfers. Water transfers are considered actions separate from contract renewal that require their own action-specific environmental compliance. The CVPIA has allowed water transfers upon approval by Reclamation; transfers were evaluated in the Programmatic Environmental Impact Statement for the Preferred Alternative. Reclamation will continue to require separate environmental review of proposed transfer requests. At this time, however, some sense of the potential effects can be obtained from, or soon will be obtainable, from the reports of the Sacramento Valley Water Management Program, the EIS for the renewal of the Sacramento River Settlement Contracts (SRSC), and the Sacramento River Basinwide Water Management Plan. The effects predicted by modeling for the SRSC EIS were surprisingly small in the context of the basin as a whole.

The CVP was initially established as a supplemental water supply for areas without adequate supplies. A needs analysis was conducted for each contractor within the various units of the CVP. In regards to groundwater supplies, the initial calculation of CVP water needs was limited by the assumption that groundwater pumping would not exceed the safe yield of the aquifer.

Defenders of Wildlife (cont'd)

DOW-6 (cont'd)
The Agricultural Economics and Regional Economy sections under each of the alternatives in the EA analyzes which scenario would result in the greatest economic effects when applied to the gross value of production, the fallowing of land, and the increased cost of CVP water.

DOW-7
Comment noted. The subject of this EA is the renewal of existing contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. The analysis in the EA concerns Reclamation's delivery of CVP water to CVP contract areas. The comments regarding minimum flow standards are outside the scope of this document.

DOW-8
The subject of this EA is the renewal of existing contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. The analysis in the EA concerns Reclamation's delivery of CVP water to CVP contract areas. The comments regarding water storage projects are outside the scope of this document.

DOW-9
The cumulative impacts of the CVP were addressed in the PEIS for implementation of the CVPIA. Analysis of potential impacts on agricultural land use and economics of the Sacramento River Division CVP contract renewal is conducted at the level of the specific CVP contractors that would be affected. The analysis of potential regional level water projects is beyond the scope of the action analyzed in this EA.

DOW-10
The subject of this EA is the renewal of existing contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. The analysis in the EA concerns Reclamation's delivery of CVP water, not its use. The comments regarding watershed studies are outside the scope of this document.

Taxpayers for Common Sense

Comments

August 30, 2004

VIA FAX AND EMAIL

Mr. Kirk Rodgers
Mr. Richard Stevenson
Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825

Ms. Basia Trout
Red Bluff Division Office
Bureau of Reclamation
P.O. Box 159
Red Bluff, CA 96080

RE: Sacramento River Division Contractors Draft Revised Environmental Assessment (EA) and Finding of No Significant Impact (FONSI)

Dear Mr. Rodgers, Mr. Stevenson, and Ms. Trout:

With this letter, Taxpayers for Common Sense (TCS), a nonpartisan budget watchdog, submits our comments regarding the Bureau of Reclamation's draft EA and FONSI for the Sacramento River Division contracts. TCS is extremely concerned about the way in which the Bureau of Reclamation is renewing Central Valley Project (CVP) water service contracts. According to the Bureau of Reclamation's July 30, 2004 press release, the Sacramento River Division contracts include the Tehama-Colusa Canal Unit, the Corning Canal Unit, and the Black Butte Unit. These proposed contracts will restrict up to 322,000 acre feet of CVP water for 25 to 40 years.

TCS-2-1

It is vital that the Bureau of Reclamation recognize that it is representing the interests of federal taxpayers when it is negotiating CVP water service contracts. The Bureau owes it to taxpayers to give them every chance to ask questions and understand the impacts of these major 25- to 40-year water commitments. It is disturbing that the Bureau has basically ignored numerous letters asking it to extend the comment period on the Sacramento River Division EA and FONSI. Instead, the Bureau proposes to renew Sacramento River Division contracts for up to 322,000 acre-feet of CVP water before the public has had a full opportunity to review the potential impact of these contracts or the proposed environmental documentation. To add insult to injury, the internet link to these important documents is down on the day that public comments are due, making it almost impossible for the public to comment on this vital documentation.

A non-partisan budget watchdog
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Responses

TCS-2-1

Reclamation has considered requests for extension of the comment period and feels adequate time was given for review. The analysis in the EA finds the renewals of the contract to be a continuation of previous contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. Moreover most do not involve any change in the type of use, such as the addition of M&I uses. The analysis in the EA addresses the proposed changes to the contract and the potential environmental effects of those changes. As indicated in the EA, these contract changes would not result in significant effects to the environment.

A needs analysis was conducted for each contractor within the various units of the CVP to determine the historic and projected water demands and supplies, and historic and projected cropping patterns. Comprehensive information on each contractor's surface and groundwater supplies was collected together with the contractor's Water Management Plans. In regards to groundwater supplies, the initial calculation of CVP water needs was limited by the assumption that groundwater pumping would not exceed the safe yield of the aquifer. The average of 19 years of historical water deliveries was compared to a calculated average past beneficial use. Because the CVP was initially established as a supplemental water supply for areas without adequate supplies, the needs for most contractors are at least equal to the CVP water service contract and have frequently exceeded the previous contract amount.

Comments

Taxpayers for Common Sense (cont'd)

Ms. Basia Trout
August 30, 2004

Public involvement must be the cornerstone of the water contract process. Without it, taxpayers face the negative fiscal ramifications of federal water service contracts that they had little part in shaping. The public should be given every chance to comment on the draft EA and FONSI for the Sacramento River Division contracts. Protecting taxpayers' interests requires that full opportunity be given for them to comment on all facets of water contract negotiations. The impact of these contracts on federal taxpayers as well as their potential consequences for water quality, wildlife and wildlife habitat, the fishing industry, urban and rural water users throughout California, and other important community concerns require that the public be fully engaged before decisions are made.

TCS believes these contracts do not represent the interests of federal taxpayers. Instead, they provide extremely favorable conditions to water service contractors while failing to ensure essential taxpayer protections, promised in the Central Valley Project Improvement Act (CVPIA) of 1992, are included. CVPIA and CALFED signified a commitment to ending the age of big subsidies and waste in California water policy. The Bureau of Reclamation needs to renew CVP contracts in a way that represents a responsible vision of future water needs in California. All proposed CVP contracts should reflect realistic water delivery amounts at far less subsidized prices.

Unfortunately, the Bureau of Reclamation is poised to enter into 25- to 40-year contracts with Sacramento River Division contractors which will not implement the important contract reforms envisioned by the CVPIA. The Bureau owes it to taxpayers to reduce promised quantities in the proposed contracts to reflect realistic water delivery levels. Inflated promises of water and large subsidies will increase pressure for new dam projects and threaten the delicate balance negotiated in the CALFED Record of Decision (ROD). Such promises will continue a vicious cycle of the federal government promising unreachable amounts of water at cheap prices to CVP contractors and then federal taxpayers being forced to fund massive new water projects to try to meet these demands.

TCS-2-2

Long-term CVP contracts are not permanent entitlements. Instead, contracts must receive full review in order to consider the constantly evolving needs of California's diverse set of water users. Contract pricing should also charge markets rates for water. The Bureau of Reclamation must also enforce tiered water pricing when drafting Sacramento River Division contract renewals. Under CVPIA, CVP contracts should be written to apply tiered water pricing when water consumption exceeds 80% of the annual contract maximum. Tiered pricing encourages wise use of water, therefore reducing the federal taxpayer's responsibility for providing highly subsidized water that will be wasted by contractors. We ask the Bureau of Reclamation to set annual contract maximums at more realistic levels that the CVP will be able to achieve.

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Responses

TCS-2-2

The water pricing contract rates are defined by the CVP rate-setting policies, P.L. 99-546, and the Reclamation Reform Act (RRA). The prices of CVP water used in the No Action Alternative are based upon 1994 irrigation and municipal/industrial CVP water rates. The contracts will use tiered water pricing and in the No Action Alternative it is based upon use of a "80/10/10" Tiered Water Pricing from Contract Rate to Full Cost Rate" including appropriate Ability-To-Pay limitations. Under this approach the first 80% of the maximum contract total would be priced at a rate equal to the average of the contract Rate and Full Cost rate. The final 10% of the contract total would be priced at the Full Cost rate.

The No Action Alternative, together with negotiated proposals for CVP-wide terms and conditions, are the basis for the action alternatives. The preferred alternative essentially maintains the status quo apart from changes mandated by the CVPIA. The analysis displays the increment of change between the No Action Alternative and the other alternatives.

Taxpayers for Common Sense (cont'd)

Mr. Kirk Rodgers
Mr. Richard Stevenson
Ms. Basia Trout
August 30, 2004

TCS strongly urges the Bureau of Reclamation to redraft Sacramento River Division contract renewals to ensure that federal taxpayers are protected and the Central Valley Project Improvement Act of 1992 is accurately and legally implemented. We also urge the Bureau to give the public every possible opportunity to participate in the contract negotiation process. Please contact me at (202) 546-8500 x130 or aileen@taxpayer.net with any questions.

Sincerely,

Aileen D. Roder
Program Director

A non-partisan budget watchdog
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Comments

Taxpayers for Common Sense

August 30, 2004

VIA FAX AND EMAIL

Ms. Basia Trout
Red Bluff Division Office
Bureau of Reclamation
P.O. Box 159
Red Bluff, CA 96080

RE: Sacramento River Division Contractors Draft Revised Environmental Assessment (EA) and Finding of No Significant Impact (FONSI)

Dear Ms. Trout:

Taxpayers for Common Sense (TCS), a nonpartisan budget watchdog group, would like to reiterate our concerns regarding the comment period for the Sacramento River Division draft EA and FONSI. On August 30, 2004, while finishing TCS' comments regarding these important documents, I noted that the link provided in the Bureau of Reclamation's July 30, 2004 press release entitled "Environmental Documents Available for the Renewal of the Sacramento River Division CVP Long-Term Water Service Contracts," was down. Given that August 30 is the deadline for the public to comment on these important documents, it is especially critical that these documents be readily available to the public at this time. Instead, as of 2:00 PM (EDT), the link continues to be down.

TCS-3-1

As you know, I alerted you to the problem associated with the Bureau of Reclamation's website link via email. TCS finds this development very disturbing. Despite numerous requests, the Bureau has refused to extend the comment period for these documents, yet the very documents that the public is being asked to review are unavailable on the final day of the comment period. In fact, there is no telling how long the link to these documents has been inactive. The scheduling of the comment period during a traditional time of family vacations and congressional recess combined with the documents being unavailable to the public on the last day of the comment period makes it necessary for the Bureau to extend the comment period to allow appropriate public input into the process.

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Responses

TCS-3-1

Reclamation has considered requests for extensions of the comment period and feels adequate time was given for public review. The BA for the Sacramento River Division long-term water service contract renewals was completed on August of 2003. The Draft EA was first released on August 19, 2003 and was revised in March of 2004. On July 2, 2004, a 60-day public review and comment period was initiated for the associated long-term CVP water service contracts for the Black Butte Unit, Tehama-Colusa Canal Unit, and the Corning Canal Unit of the Sacramento River Division. The revised draft EA and FONSI were released on July 30, 2004 for an additional 30-day public review.

Taxpayers for Common Sense (cont'd)

I appreciate your attention on this matter. Please contact me if you have any questions at (202) 546-8500 x130 or aileen@taxpayer.net.

Sincerely,

Aileen D. Roder
Program Director

Cc: Mr. Kirk Rodgers

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Comments

Friends of the River

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FRIENDS OF THE RIVER

~~September~~ 30, 2004
aus

Ms. Basia Trout
U.S. Bureau of Reclamation
P.O. Box 159
Red Bluff, CA 96080

Mr. Richard Stevenson
U.S. Bureau of Reclamation
2800 Cottage Way, MP-440
Sacramento, CA 95825

Re: **Sacramento River Division CVP Long-Term Contracts**
Joint Comments on Contracts and Environmental Assessment

Dear Ms. Trout and Mr. Stevenson:

These are the comments of Friends of the River in combined response to the Sacramento River Division CVP Long-Term Contracts and Environmental Assessment (EA). Friends of the River is California's statewide river conservation organization, with more than 5,000 members dedicated to the protection and restoration of the state's free flowing rivers and watersheds.

Extension of Comment Period

The public comment period deadlines for the Sacramento River Division Contracts and its EA are August 30 and 31 respectively. But commenting effectively on these key documents within the short time period allotted has proven difficult.

FOR-1

The Bureau of Reclamation's Operations Criteria and Plan (OCAP) for the re-operation of the Central Valley Project (CVP) in cooperation with State Water Project facilities is intended to meet all future Bureau water obligations, including renewed CVP contracts. OCAP must therefore be considered a crucial component of the Sacramento River Division contracts. The National Marine Fisheries Service's (NMFS) biological opinion for threatened and endangered salmon and steelhead in response to OCAP is not yet available to the public. This makes it virtually impossible to submit relevant comments in regard the contracts' potential impacts on threatened and endangered salmonids.

The U.S. Fish and Wildlife Service's Biological Opinion for the endangered Delta Smelt in response to OCAP (dated 7/30/04) was not available to the public until the first week of

Responses

FOR-1

Reclamation has considered requests to extend the comment period and feels adequate time was given for public review. The BA for the Sacramento River Division long-term water service contract renewals was completed on August of 2003. The Draft EA was first released on August 19, 2003 and was revised in March of 2004. On July 2, 2004, a 60-day public review and comment period was initiated for the associated long-term CVP water service contracts for the Black Butte Unit, Tehama-Colusa Canal Unit, and the Corning Canal Unit of the Sacramento River Division. The revised draft EA and FONSI were released on July 30, 2004 for an additional 30-day public review. Reclamation considered extensions of the comment period but feels adequate time was given for review. The OCAP BO and the NOAA Fisheries BO is not expected to significantly change the analysis of this draft EA. The analysis in the EA addresses the proposed changes to the contract and the potential environmental effects of those changes. As indicated in the EA, these contract changes would not result in significant effects to the environment.

Comments

Friends of the River (cont'd)

August. Friends of the River is still reviewing this detailed 231 page document in regard to its relevancy with Sacramento River Division contracts.

Copies of the contracts and the EA are difficult for the public to access. General public access to the documents were primarily via the internet. Perhaps due to technical interface problems, Friends of the River has found it impossible to download the relevant documents from the Bureau's web site. The Bureau's web site was inaccessible to us and appeared to be over-loaded by public queries on Sept. 30. The lack of easily accessible documents made it quite difficult to develop comprehensive comments.

Friends of the River respectfully requests a 90-day extension of time to review all pertinent background information and comment on these complex and lengthy documents.

FOR-2

Shasta Reservoir Carry-Over Storage

Proposed changes in CVP operations outlined in OCAP indicate that the Bureau intends to eliminate the 1.9 million acre feet of Shasta reservoir carry-over storage used to maintain adequate cold water flows for the endangered Sacramento River winter run chinook salmon. To the extent that the elimination of cold water carry-over storage is needed to meet CVP contract renewals and other Bureau obligations, this could eliminate or reduce critical habitat in the Sacramento River for the endangered winter run chinook and other listed species.

FOR-3

Sacramento River Temperature Standard

In conjunction with the elimination of cold water carry-over storage, OCAP proposes to eliminate up to 20 miles of critical habitat for the endangered winter run chinook by moving the Sacramento River temperature standard for salmonids from Red Bluff upstream to Ball's Ferry. To the extent that the temperature standard change is needed to meet CVP contract renewals and other Bureau obligations, this could eliminate critical habitat for the endangered winter run chinook and other listed species.

FOR-4

Red Bluff Diversion Dam

The Red Bluff Diversion Dam (RBDD) diverts most of the water used by the Sacramento River Division contractors. The Contract EA and OCAP indicate that the Bureau intends to continue the current operation of the RBDD. The RBDD is a well-known fish killer. The current operation of the RBDD creates migration problems for up to 70% of the threatened spring run chinook salmon that spawn upstream of Red Bluff. It also blocks passage for at least 17% of threatened steelhead adults and negatively impacts juvenile steelhead migrants. The RBDD also blocks as much as 35% of migrating green sturgeon, which are now found only in the Sacramento and Klamath rivers.

Ironically, the Tehama-Colusa Canal Authority and several state and federal agencies proposed in 2003 a solution to the RBDD fish passage problems which called for the permanent raise of the RBDD gates to provide 100% effective passage for all fish species. The dam's diversion function would be replaced with new water pumps and

Responses

FOR-2

Operations of the CVP as addressed in the OCAP BA/BO process is a separate action subject to its own environmental compliance requirements. Management of the cold water pool at Shasta Reservoir is being addressed in the OCAP consultation process and BO.

FOR-3

A change in the cold water management is not related to several of these contracts. The changes being addressed are necessitated by physical changes to water availability and other environmental requirements that have occurred since 1992. See response to FOR-2.

FOR-4

Only about 7% of the total spring run population currently migrates into the upper Sacramento Valley and is either delayed or blocked at the RBDD. Conversely, 93% of spring-run experience no delays or they spawn downstream of the RBDD. The earliest arriving fish have the best chance of making it to the upper reaches of tributary streams where they hold over the summer before spawning, encountering no obstacles. Permanent, structural fixes would cost in the order of 100 million dollars, so decisions as to what to do are not easily reached. It may be that seasonal fixes can be designed at lower costs, but that remains to be seen. Reclamation is continuously working with NOAA Fisheries to minimize impacts to salmonids at the RBDD and decisions about the next steps will be made after the BA consultation is completed. This is a separate action subject to its own environmental compliance requirements.

Comments

Friends of the River (cont'd)

fish screens. The Bureau was instrumental in shelving this proposal in favor of continuing the current fish-killing operation.

FOR-5

Continued operation of the RBDD is not acceptable. It fails to provide the salmon mitigation and enhancement originally promised in the federal authorizing legislation for the RBDD. It violates the mandates of the Central Valley Project Improvement Act (CVPIA) and the California Bay-Delta Restoration Program to resolve fish passage problems, as well as the Anadromous Fish Restoration Plan (AFRP) to double the Central Valley's salmonid population. It fails to comply with section 5931 of the California Fish and Game Code requiring the free passage of fish over or around dams. Even worse, it ignores the million of taxpayer dollars spent to study and resolve fish passage problems at RBDD and will negate millions more that have been or will be spent to improve salmon and steelhead habitat on Battle Creek, Clear Creek, and other upstream tributaries.

Fish passage problems at the RBDD must be resolved before the CVP contracts are renewed, or the contract renewals will violate state and federal law and contribute to unacceptable adverse impacts on threatened and endangered fish species.

Tehama-Colusa Canal and Corning Canal

FOR-6

The Tehama-Colusa Canal and Corning Canal distribute Sacramento River Division contract water diverted by the RBDD. The canals cross several west-side tributaries of the Sacramento River that formerly provided habitat for salmon and steelhead. The canal crossings have played a key role in the reduction or elimination of salmonid habitat on these tributaries.

The Corning Canal siphon creates a barrier to migrating salmon and steelhead in Elder Creek during low to moderate flow conditions. The Tehama-Colusa Canal siphon is a partial barrier to salmon and steelhead migration in Thomes Creek due to stream degradation associated with downstream gravel mining. The Tehama-Colusa Canal turn-out structure on Stony Creek not only acts as a partial barrier to salmon and steelhead migration, it actually diverts water from the creek into the canal. The diversion virtually dewaters for much of the year the lower portion of Stony Creek.

Ironically, both Thomes Creek and Stony Creek were targeted for salmon enhancement in the original RBDD authorizing legislation. But CVP operations have actually negatively impacted salmon and steelhead on these streams and other west-side tributaries. The canal siphons and diversion structures on Elder, Thomes, and Stony creeks and other tributary streams violate sections 5931 and 5937 of the California Fish and Game Code requiring fish passage and adequate flows downstream of dams to maintain fish in good condition. This situation is contrary to the intent of the California Bay-Delta Restoration Program to restore salmonid habitat in the Sacramento watershed and the AFRP fish-doubling mandate.

Fish migration and downstream flow problems created by the Tehama-Colusa Canal and Corning Canal must be resolved before the Sacramento River Division Contracts are renewed, or the contract renewals will violate existing restoration policies and both state and federal law.

Responses

FOR-5

Reclamation is continuously working with NOAA Fisheries to minimize impacts to salmonids at the RBDD and decisions about the next steps will be made after the OCAP BA consultation is completed. This is a separate action with its own planning and environmental compliance requirements.

FOR-6

The TC and Corning Canals do not impact fish migration in most west side streams. These canals pass under these streams by means of siphons, leaving them unobstructed with the exception of Funks Creek and, seasonally, Stony Creek. However, all west side streams south of Stony Creek, including Funks, terminate in the Colusa Basin Drain, a privately constructed feature that predates the canals by decades, which blocks or impedes access from the Sacramento River. All streams north of Stony Creek connect to the Sacramento River, but most, except Cottonwood Creek, were seasonal before the onset of agricultural diversions. While these diversions surely shorten the period of flow, they are all private, non-CVP diversions. The only water removed from tributaries to the Sacramento by the TC and Corning Canals is a portion of the water stored in Black Butte Reservoir at the end of the flood season. Part of that stored water, as noted above, is devoted to in-stream flows that tend to extend the period of potential passage.

Historically, flows in Stony Creek occurred intermittently in the late fall, winter, and spring months. With the installation of Black Butte Dam, flows in Stony Creek have been regulated by the COE for the purpose of flood control primarily from November through March. After the threat of floods has passed, Reclamation controls releases of stored water for the purpose of irrigation. When water is being diverted for irrigation, using a temporary diversion dam, a minimum of 40 cfs is being released downstream for fishery benefits. Reclamation and the COE are currently consulting with NOAA Fisheries on the effects of water operations in lower Stony creek to anadramous fish. A short-term BO was issued in 2002 and a long-term BO is expected by March of 2005. The terms and conditions of the BO suggest increased releases to benefit salmonids.

Comments

Friends of the River (cont'd)

Sacramento River Flow Standard

A key ecosystem restoration goal of the California Bay-Delta Restoration Program is to restore the natural stream meander and its associated aquatic and riparian habitats in the Sacramento River. These habitats support a wide range of sensitive, threatened, and endangered fish and wildlife species.

FOR-7

Although studies are still on-going, it is generally accepted that a comprehensive Sacramento River flow standard will require flows beyond the minimum levels needed for anadromous fish. Restoration of the river's natural meander and associated habitat will require bed-mobilization and streambank erosion flows to re-establish gravel bars. It will also require a naturally declining late spring flow to renew riparian habitat.

Renewal of the Sacramento River Division contracts could perpetuate flow conditions in the Sacramento River that are detrimental to the restoration of its natural meander ecosystem. Contracts should not be renewed until studies are completed identifying the flow standard needed to restore the river ecosystem. The flow standard should then be incorporated into the contracts when they are renewed. Adoption of this flow standard as part of the contracts is required by section 5937 of the California Fish and Game Codes, which mandates flows sufficient to maintain fish in good condition below dams.

Delta Smelt Biological Opinion

The U.S. Fish and Wildlife Service issued a no-jeopardy opinion for the endangered Delta smelt in regard to the Bureau's changes in CVP operations proposed in OCAP. Since these operational changes include CVP contract renewals, the Delta Smelt Biological Opinion (BO) is directly pertinent to the renewal of the Sacramento River Division contracts.

FOR-8

The Service's no-jeopardy decision is based on a confluence of actions and standards that have yet to be achieved, including full funding and implementation of the Environmental Water Account, providing 100% of the CVPIA's water mandate to the environment, and meeting water quality standards in the Delta and at Vernalis. Given the long and sad history of these unmet standards, it is likely that in most years, the Delta smelt will indeed be in jeopardy.

Upstream contract renewals will likely contribute to the further decline of this endangered species. The contracts should be modified to ensure that all standards needed to keep the Delta smelt out of jeopardy are met.

Threatened & Endangered Species

FOR-9

The renewal of the Sacramento River Division contracts effect the entire river and its adjacent terrestrial habitat, as well as the Bay-Delta ecosystem downstream. Unfortunately, the EA focuses primarily on fish species and gives short-shrift to terrestrial species dependent on river-associated wetlands, riparian forests, and adjacent grasslands. Contract renewals could modify flows needed to renew gravel bars and

Friends of the River's Sacramento River Division Contracts & EA Comments *Page 4*

Responses

FOR-7

General ecosystem goals for the Sacramento River are beyond the scope of the proposed action. The water service contracts contain provisions that call for reductions in deliveries to meet applicable environmental requirements. Contracts can adjust to such a flow standard, should one be adopted in the future.

FOR-8

The subject of this EA is the renewal of existing contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. The analysis in the EA concerns Reclamation's delivery of CVP water to CVP service areas. In addition, contracts contain provisions to reduce deliveries to meet environmental requirements, including relevant biological opinions. Delta smelt issues are being analyzed in the OCAP BA/BO.

FOR-9

The EA has discussed effects to plants, invertebrates, amphibians and reptiles, birds, mammals, as well as fish. But since the subject of this EA is the renewal of existing contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use, effects to terrestrial species are minimal, and have been analyzed in the OCAP BA/BO and/or the PEIS.

Comments

Friends of the River (cont'd)

FOR-9 (cont'd)

eroded banks, reducing habitat for riparian species such as the bank swallow, yellow-billed cuckoo, and valley elderberry longhorn beetle. The contract renewals could reduce overflow into adjacent wetlands and vernal grasslands, which provide habitat for the giant garter snake and Swainson's hawk. The EA should fully disclose the potential impacts to these listed species and their habitat.

New Surface Storage Projects

The Bureau of Reclamation is involved in two surface storage project investigations that directly pertain to the Sacramento River Division contract renewals. These include the Shasta Dam Storage Investigation and the North of Delta Offstream Storage Investigation.

The Shasta Dam Storage Investigation is focusing on increasing storage by raising Shasta dam anywhere from 6 to 200 feet. This project could significantly modify flows in the Sacramento River and the operation of downstream diversion facilities used by the Sacramento River Division contractors.

FOR-10

The North of Delta Offstream Storage Investigation is focusing on developing offstream storage in the western portion of the Sacramento Valley. The potential offstream storage sites would be fed by the existing or expanded RBDD and Tehama-Colusa Canal. There would also be considerable water wheeling between the Tehama-Colusa Canal and Glen-Colusa Irrigation District Canal, the diversion facility for which would also be used to supply water for offstream storage. In addition, a new third diversion facility from the Sacramento River is contemplated.

The environmental impacts on the Sacramento River and its tributaries, and their threatened and endangered fish and wildlife species and habitat that could be caused by these new storage facilities in conjunction with the contract renewals must be fully considered.

Water Conservation

The CVPIA requires effective water conservation plans to be in place and implemented before contracts are renewed. It is not clear that the required plans are in place for the contract renewals.

FOR-11

In reviewing the proposed long-term contracts for Sacramento Valley water users, Friends of the River questions why the Bureau is relying on the ineffectual water conservation guidelines of the Reclamation Reform Act rather than the Mid-Pacific Region's own Criteria for Evaluating Water Conservation Plans. The Mid-Pacific Region's Criteria, written to comply with the CVPIA, are far superior in helping water districts manage their water more efficiently for beneficial uses.

FOR-12

The current draft of the Sacramento Valley long-term contracts seems to leave it to the complete discretion of the Contracting Officer to determine if the water conservation plan meets Federal Law. This is far too anemic oversight. At a minimum, Reclamation should insert the following language into the contracts:

Friends of the River's Sacramento River Division Contracts & EA Comments *Page 5*

Responses

FOR-10

The subject of this EA is the renewal of existing contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. The analysis in the EA concerns Reclamation's delivery of CVP water within the CVP service area. The comments regarding future water storage projects are outside the scope of this document.

FOR-11

All M&I contractors with more than 2000 af of Project Water, or Irrigation contractors with more than 2000 irrigable acres, are required to have water conservation plans. All available Water District (contractor) Water Conservation or Water Management Plans are on file at the Regional office and can be made available for review there. Contact point for those would be Lucille Billingsley, MP-402.

Sacramento River Settlement contractors, as holders of water rights, are distinct from water service contractors and are still developing their plans as part of a 'Regional' plan. The City of Redding, which has both a settlement contract and a water service contract, and the contractors which hold only water service contracts, such as the TCCA districts, Bella Vista, Clear Creek, and the City of Shasta Lake have prepared plans.

Reclamation believes that Regional Criteria can be as effective as the existing Standard Criteria. Reclamation has agreed to consider Regional Criteria as a pilot program and these criteria must be found as effective as the Standard Criteria to continue after the first 5 years.

As you may recall, the Regional Criteria started back in 1997. At that time public meetings were held, and the "objectives driven" approach was the preferred alternative. The current Regional Criteria "piggy-back" off of these previous meetings.

Comments

Friends of the River (cont'd)

"Water delivery pursuant to this Contract shall be contingent upon Contractor's continued implementation of such revised water conservation program, as documented in an annual update report on the conservation plan implementation. This plan must be made available to the public."

FOR-13

Friends of the River reiterates the objections it made during the draft phase of the Basin-Wide Water Management Plans. The Basin-Wide Plan is an exercise in paperwork, not an effort to implement effective, proven water management practices. The basin-wide plan, created by and for the exclusive benefit of Sacramento Valley contractors, has no requirements, no standards, no oversight by federal agencies or the public, and is completely pointless. The Mid-Pacific Region's existing Criteria for Evaluating Water Conservation Plans provide sufficient flexibility to the contractors and accountability to the U.S. taxpayers, making a Basin-Wide Plan absolutely unnecessary.

Water Transfers and Groundwater Measurement

FOR-14

Contract water should not be transferred unless both the willing seller and buyer can demonstrate they are already using existing water supplies as efficiently as possible. Friends of the River recommends the following language:

"Any transfer of Federal water between a willing seller Contractor and a willing buyer will only be allowed if the contracting officer determines that the Contractor is implementing an effective water conservation program, as detailed in the Criteria for Evaluating Water Conservation Plans, based on 3405 (e) of the CVPIA. If the willing buyer is a Federal Water Contractor, the contractor will will only be allowed to receive transferred Federal Water if the contracting officer determines that the Contractor is implementing an effective water conservation plan, as detailed in the same Criteria."

FOR-15

Contract language regarding the measurement of water within the contractor boundaries must be expanded to include the following:

"...the Contractor has established a measuring program satisfactory to the Contracting Officer. The Contractor shall ensure that all surface water *and groundwater that results from a recharge program using, at least in part, Federal Water...*"

Colusa Drain Water Quality Problems

FOR-16

Much of the irrigation water provided to the Sacramento River Division Contractors drains into the Colusa drain. Water in the Colusa drain fails to meet state water quality and federal Clean Water Act standards.

In addition to state and federal water quality laws, the CVPIA also requires resolution of the Colusa drain's chronic water pollution problems. Contracts must not be renewed until the water quality problems are resolved. Resolution of this problem should not include diverting the polluted water elsewhere, such as the Yolo bypass.

Friends of the River's Sacramento River Division Contracts & EA Comments *Page 6*

Responses

FOR-12

The contracts connected to the Standard Criteria do not contain the suggested language that would condition water deliveries on plan implementation. The Criteria do state that the Regional plans will be noticed in the federal register, which provides the public with the opportunity to review the plans prior to being deemed adequate by Reclamation.

FOR-13

The Regional plan is only a part of the Basin Wide Management Plan. See response to comments regarding Regional Criteria being developed in response to administrative proposal.

FOR-14

Reclamation utilizes the water transfer guidelines developed under CVPIA to determine whether transfers should be approved or not. To be approved, the transfers must be consistent with state law including provisions concerning reasonable and beneficial use of water.

FOR-15

Reclamation considers it inappropriate to use the contracts to establish Regional criteria; rather, the approach that keeps the criteria timely and appropriate is to reference the required (and updated) criteria in the contracts.

FOR-16

Comment noted. Reclamation provides water to our customers and, although we are not responsible for how our customers use and dispose of the water, we support the need to improve the water quality in the Colusa Basin Drain. Currently, there are many ongoing efforts to improve the water quality in the Drain. The impacts of pesticides on water quality in the Colusa Drain are being addressed in the Colusa Basin Drainage District's Coordinated Resource Management Plan project. The project uses Integrated Resource Management to bring together representatives from diverse groups to resolve the identified issues, including improving water quality caused by pesticide use. U.C. Davis together with the CALFED Ecosystem Restoration Program are implementing the Alternative Pesticide Use Phase II (B211)(97-C12) to identify, promote,

Friends of the River (cont'd)

Thank you for soliciting our comments in response to the Sacramento River Division CVP Long-Term Contracts and EA.

Sincerely,

Steven L. Evans
Conservation Director

Friends of the River's Sacramento River Division Contracts & EA Comments *Page 7*

FOR-16 (cont'd)

and monitor alternative practices to reduce biological impacts of pesticides, as well as impacts from agricultural and urban sources on the water quality of all priority aquatic habitats identified by CalFed. The Colusa Basin Drain Sub-Watershed Project: Sand and Salt Creek Watershed (5-081-255-0), in affiliation with the Colusa County Resource Conservation District, State Water Resources Control Board and the Regional Water Quality Control Board is expected to yield survey results, water quality plan results, and water quality monitoring results, which will all be made available to all interested parties making recommendations on how landowners will comply with the Clean Water Act.

Reclamation supports these activities to improve water quality while it meets its obligation to renew water service contracts and provide water for irrigation.

Comments

Hoopa Valley Tribe

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August 27, 2004

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Re: Comments on Revised Draft Environmental Assessment and Draft FONSI for Sacramento River Division Long Term Contract Renewals (July 2004).

Dear Ms. Trout:

On behalf of the Hoopa Valley Indian Tribe, we have reviewed and now submit the following comments on the above referenced Draft Revised Environmental Assessment (REA) and Draft Finding of No Significant Impact (FONSI). These comments reflect the Tribe's ongoing concern with management of the Central Valley Project ("CVP"), which includes the Trinity River Division. Because of the CVP's effect on fisheries reserved for the Tribe, we are committed to ensuring that Reclamation actions subject to the National Environmental Policy Act (NEPA) reflect and comply with court decisions requiring, for example, that mitigation measures imposed as a result of consultation under Section 7 of the Endangered Species Act be addressed in draft environmental review documentation prepared pursuant to NEPA. *See e.g. Westlands v. United States*, 275 F.Supp.2d 1157 (E.D. Cal. 2002*), rev'd on other grounds*, No. 03-15194 (9th Cir. July 13, 2004) (discussed below). This approach ensures that the public is fully informed and has the opportunity to comment and participate in the decision-making process on all aspects of projects affecting the human environment.

Hoopa-1

Reclamation has tentatively concluded that the proposed project, the renewal of eighteen (18) water service contracts for the delivery of up to 322,000 acre feet of CVP water for a term of up to 40 years in some cases, will have no significant impact requiring an Environmental Impact Statement. Draft FONSI at 2. That conclusion, however, is unsupported in a number of particulars described below. It also relies in part on deferral of consideration of impacts to threatened and endangered species pending completion of consultation with NOAA-Fisheries and the Fish and Wildlife Service. *Id.* at 3. Such an approach is legally impermissible.

Responses

Hoopa-1

The No Action Alternative consists of renewing existing water service contracts as described by the Preferred Alternative of the PEIS. The No Action Alternative together with negotiated proposals for CVP-wide terms and conditions are the basis for the action alternatives. The preferred alternative essentially maintains the status quo apart from changes mandated by the CVPIA. The analysis displays the increment of change between the No Action Alternative and the other alternatives.

Hoopa Valley Tribe (cont'd)

1. Scope of Analysis

The REA states that it is limited in its scope to determining whether renewal of Sacramento River Division long-term water service contracts will have "site specific" impacts. Draft EA at 1-1. This focus on site-specific impacts is reflected in the document's "area of analysis" as the land within the district and counties of the Sacramento River Division project area and vicinity that may be affected by renewal of these 18 contracts. Draft EA at ES-3. Accordingly, there is no analysis of how the associated diversions will affect other portions of the CVP service area, such as the Trinity River basin or the Bay/Delta region. For example, it is likely that an alternative requiring lower volumes of diversions would make more water from the upper Sacramento River and Shasta Reservoir available for temperature control in the upper Sacramento River, thus reducing the need to rely on diversion from the Trinity River for those purposes. Lower level diversions from the Sacramento River to contractors may also provide higher Sacramento River flow into the Delta, thus improving water quality in the Delta and the availability of Delta resources for fishery, agricultural, municipal and industrial uses in southern California. The EA presents only the most cursory analysis of the interrelationship between these diversions and other portions of the CVP. *E.g.* Draft EA at 3-75 (noting that diversions have effect on amount and timing of freshwater flow in the Sacramento River and Delta). However, such considerations receive relatively short-shrift in this EA, as a result both of the site-specific focus of the document and the improvident omission of lower-diversion alternatives from the range of alternatives considered.

The EA states that its site-specific focus is warranted by the fact that the document is "tiered" off a Programmatic Environmental Impact Statement (PEIS) prepared in October 1999, which evaluated the impacts of implementing the CVPIA, including the renewal of existing long-term contracts. However, the EA also acknowledges that the PEIS preferred alternative included a set of contract terms and conditions represented by the No Action alternative of this EA, and that the final Sacramento River renewal contracts will not incorporate that particular set of terms and conditions. Draft EA at ES-3 through ES-4 (stating that final contracts will include terms negotiated between Alternatives 1 and 2). It is therefore possible that the actual contract terms will have CVP-wide impacts that were not analyzed in the CVPIA PEIS.

For example, the PEIS preferred alternative assumed that tiered pricing would be a component of any renewal contracts. The lack of tiered pricing in the proposed contracts may have significant effects on volumes of water actually requested for delivery under the contracts, which in turn will affect CVP-wide availability and reliability of supplies, carryover storage, and the finances resources available to the Bureau to fund fishery and wildlife measures required by the CVPIA. The set of impacts addressed on a programmatic and CVP- wide level in the PEIS therefore may be very different from the impacts that will actually result from implementation of the proposed action as presented in this EA.

Comments

Hoopa Valley Tribe (cont'd)

Bureau of Reclamation
ATTN: Basia Trout
August 27, 2004
Page 3

2. Failure to Include an Alternative that Includes Contract Language Reflecting CVPIA Mandated Fishery Restoration Flows.

Hoopa-2

The proposed action is the renewal of Sacramento River Division contracts for 25 or 40 years, depending on the type of contract, under terms and conditions that are substantially similar to the existing interim renewal contracts, which expire February 28, 2006. The language of the proposed contracts states generally that deliveries (and by implication the diversions necessary to accomplish those deliveries) will comply with the requirements of federal law. The contract language does not specifically reference the requirements of federal law that require priority be given to providing sufficient flows to protect and restore specified anadromous fisheries, including those of the Trinity River, *e.g.* Trinity River Act of 1955, Pub. L. 84-386, 69 Stat. 710 (1955); CVPIA § 3406(b)(23); *see also* Solicitor's Opinion, "Proposed Contract with Grasslands Water District," U.S. Dept. of Interior (Dec. 7, 1979). The EA should have considered an alternative that incorporates language specifically referencing those obligations.

On December of 2003, the Hoopa Valley Tribe ("Tribe") filed an administrative appeal of the Bureau Regional Director's denial of the Tribe's request that language referencing the instream fishery flow requirements of the Trinity River be incorporated into the terms of long term renewal contracts between the Bureau of Reclamation ("Bureau") and Central Valley Project ("CVP") water service contractors. This language is authorized by section 3404 of the Central Valley Project Improvement Act, Pub. L. 102-575, 106 Stat. 4600 (1992) ("CVPIA"), which subjects new and renewal CVP water service contracts to the fishery restoration provisions of the CVPIA, which includes the Bureau's obligation to meet the fishery restoration requirements of the Trinity River as established by the Trinity River Flow Evaluation-Final Report ("Flow Study"). *See* CVPIA § 3406(b)(23).

Contract language acknowledging Trinity River restoration requirements also reflects long-standing congressional directives that prioritize Trinity fishery releases over transbasin diversions to Central Valley contractors and is consistent with the federal government's trust responsibility to protect and preserve the Hoopa Valley Tribe's federally reserved fishing right. The Tribe's request was narrowly tailored to require compliance with scientifically based fishery flow requirements set forth in the Flow Study. Those requirements must be implemented pursuant to CVPIA § 3406(b)(23), and should be included as conditions on supply made available for delivery to Central Valley Project contractors.

The decisions of the federal courts since the enactment of the CVPIA make clear that the Bureau can and should reduce quantities of water delivered when fishery needs demand greater allocations. *See O'Neill v. United States*, 50 F.3d 677, 686 (9th Cir. 1998) (holding that the CVPIA modified priority of water users and thus changed contractual obligations under pre-existing long-term water delivery contracts); *NRDC v. Houston*, 146 F.3d 1118, 1126 (9th Cir. 1998) (invalidating CVP renewal contracts for failure to comply with environmental requirements); *Klamath Water Users Protective Ass'n v. Patterson*, 204 F.3d 1206, 1213 (9th Cir. 1999) (recognizing Bureau's responsibility to manage project operations to "meet the requirements of the ESA, requirements that override the water rights of the Irrigators"). The

Responses

Hoopa-2

Fishery restoration flows are issues related to the operation of facilities to store and deliver water to the contractors, and were addressed in the PEIS and again in the OCAP BA/BO consultation; whereas the contracts that are the subject of this EA concern the delivery of water and the class of use (ag, M&I). In addition, the CVPIA has separate programs dealing specifically with fishery restoration flows.

Your comments concern issues affecting availability of stored water, whereas the EA addresses the delivery of water when it is available.

Comments

Hoopa Valley Tribe (cont'd)

Ninth Circuit has expressly recognized the Bureau's obligation to operate to meet the water needs of vested tribal fishing rights. *Klamath Water Users*, 204 F.3d at 1214 (holding that the Bureau has "a responsibility to divert the water and resources needed to fulfill the Tribes' rights, rights that take precedence over any alleged rights of the Irrigators"). Accordingly, the terms of interim renewal contracts should expressly acknowledge those requirements, and the impacts of incorporating those requirements into the contracts should be assessed in an EIS.

Express subordination of water service delivery obligations to fishery restoration needs is hardly unprecedented. *E.g., id.* The Bureau has historically included fishery restoration requirements as among the conditions on supply available to satisfy interim renewal contracts. For example, in *California Trout v. Schaefer*, 58 F.3d 469 (9th Cir. 1995), the court noted that an interim renewal contract for allocations from the New Melones Reservoir provided "a maximum of 75,000 acre-feet of water annually, subject to availability after the Bureau satisfied the water needs of in-basin users and higher priority out-of-basin users." *Id.* at 471 (emphasis added). The "in-basin" needs given priority under that contract included those of "fish and wildlife resources" in the Stanislaus River Basin established under CVPIA § 3406(c)(2). *Id.* Given that precedent, the Bureau should consider an alternative heeding the command of CVPIA § 3404(c) in the terms of interim renewal contracts.

Improper Deferral of Mitigation.

Hoopa-3

The EA improperly defers consideration of impacts to threatened and endangered species pending completion of ESA § 7 consultation with NOAA-Fisheries and the Fish and Wildlife Service. Draft FONSI at 3; Draft EA at 4-3. Such an approach is impermissible under NEPA, as illustrated by the ruling in *Westlands*, 275 F.Supp. 2d at 1182 -1185, *rev'd in part on other grounds*, No. 03-15194 (9th Cir. July 13, 2004). In that case, the court found that a Draft Environmental Impact Statement (DEIS) did not adequately analyze the impact of the proposed action on certain ESA-listed species. *Id.* at 1183. Further, the court found that the DEIS "did not consider or identify mitigation measures" for those impacts, other than to "specify that mitigation for impacts…would consist of consulting with the Service on impacts and implementing any required conservation measures." *Id.* The court concluded that Reclamation violated NEPA.

That is precisely the approach adopted in this document, which acknowledges that ESA § 7 consultation both on the CVP-OCAP and on the localized impacts of the particular contracts at issue here has yet to be completed. It is likely that significant mitigation requirements will be imposed because of that consultation, as the EA acknowledges that diversions required to supply these contracts will "negatively affect[]" winter-run, spring-run and fall/late fall-run Chinook and Central Valley Steelhead. Draft EA at ES-6 through ES-7, Table ES-2. In the words of the *Westlands* court, this approach "defers consideration of mitigation efforts" and "precludes the parties from meaningful analysis." *Id.* at 1184. See also *id.* at 1188 ("The omission of discussion of mitigation measures foreclosed any public input on the issues of whether and what CVP operations management alternatives existed and were feasible; and whether alternate water sources existed or if reduced flows could reduce the impact on species and other CVP users.").

Responses

Hoopa-3

The Draft NEPA document reflects Reclamation's assessment of impacts on listed species based on our Biological Assessment. The NEPA document will be amended, if necessary, in the Final EA to reflect any findings of the Biological Opinions that differ. The decision of what action, if any, to take will be based on the Final EA, not the Draft.

Comments

Hoopa Valley Tribe (cont'd)

Moreover, to the extent that mitigation measures are imposed as a result of deferred ESA § 7 consultation, either in the form of Reasonable and Prudent Measures (RPMs) or other terms and conditions that may have significant impacts beyond those of the proposed action, the *Westlands* case requires that the environmental impacts of those mitigation measures be discussed "with reasonable thoroughness." *Id.* at 1192. These measures and their environmental impacts must be disclosed to the public in a process that "included public participation", *i.e.* they must be disclosed in a manner that allows meaningful public scrutiny, comment, and participation. *Id.* at 1198. By deferring discussion of species impacts pending completion of consultation with the fisheries agencies, the Draft EA/FONSI for interim contract renewals fails to meet these requirements.

We are particularly concerned about the potential effects that may arise from RPMs under consideration by NOAA Fisheries in their review of the CVP-OCAP. As you know, NOAA is considering including in their Biological Opinion certain RPMs regarding temperature requirements in the upper Sacramento River and operation of the Red Bluff diversion dam. Both of these may have discrete as well as cumulative impacts on water supplies available for diversion to meet the contractual obligations proposed here, as well as impacts to fishery and power resources that are not fully disclosed and addressed in this draft EA. The public has thus been deprived of the opportunity to meaningfully review the cumulative impacts of diverting up to 322,000 acre feet of water from the natural course of the Sacramento River and the associated actions that will be required under the ESA to mitigate the effect of those diversions.

3. Inadequate Discussion of Alternatives.

Hoopa-4

The Draft EA is also insufficient because it lacks an adequate discussion of the "environmental impacts of the proposed action and alternatives" 40 C.F.R. § 1508.9. Council on Environmental Quality (CEQ) regulations require that an environmental assessment "shall include" a discussion of the environmental impacts "of the proposed action and alternatives…." *Id.* The Draft EA/FONSI, however, discusses only three alternatives: no action, the Bureau's proposed contract terms, and the Contractor's proposed contract terms. The EA does not identify the actual proposed terms of the renewed contracts, but states that, as a result of ongoing negotiations between contractors and the Bureau, the actual terms of contracts to be executed will fall somewhere in between the "bookends" represented by the three alternatives. Draft EA at ES-4; *Id.* at 2-8. The EA thus fails to identify a preferred alternative that accurately describes the actual action and associated impacts that will likely result. This approach is somewhat disingenuous in light of the fact that on July 30, 2004 the Bureau announced that it had concluded negotiation on contract terms and at that time released the negotiated terms for a 60 day public review. *See* Bureau of Reclamation Press Release No. MP-04-054 (available at << http://www.usbr.gov/mp/ Mp140/news/2004/MP-04-054.html>>).

Responses

Hoopa-4

The EA and the scope of the analysis were developed consistent with NEPA regulations and guidance from the Council on Environmental Quality (CEQ), and in conformance with the direction provided by NRDC vs Patterson, Civ. No. S-88-1658 (Patterson) which specifically addressed the application of NEPA relative to contract renewals. In Patterson the court found that "…ongoing projects and activities require NEPA procedures only when they undergo changes amounting in themselves to further "major action." The court went further to state that the NEPA statutory requirement applies only to those changes. The analysis in the EA finds the renewals of the contract to be a continuation of previous contracts with minor financial and administrative changes with no changes in either the volumes of water under contract or the places of use. Moreover, most do not involve any change in the type of use, such as the addition of M&I uses. The analysis in the EA addresses the proposed changes to the contract and the potential environmental effects of those changes. As indicated in the EA, these contract changes would not result in significant effects to the environment.

The two action alternatives represent the terms of the final contract, and a copy of a representative contract is provided in Appendix F of the final EA.

Comments

Hoopa Valley Tribe (cont'd)

Bureau of Reclamation
ATTN: Basia Trout
August 27, 2004
Page 6

Hoopa-5

The analysis also expressly excludes from consideration a number of reasonable alternatives, including non-renewal, and renewal at reduced delivery amounts that would more accurately reflect current delivery constraints. *See* Draft EA at 2-8. These alternatives warrant further consideration. A comparative analysis of differential environmental impacts of a wide range of alternatives to the proposed action must be undertaken in order to allow the public a meaningful opportunity to assess the proposed action.

5. M&I Shortage Policy

Hoopa-6

The terms of the contracts at issue, as disclosed on July 30, 3004, do not specifically reference Reclamation's proposed revised M&I Shortage Policy, which has been under development for a number of years and has yet to be completed or subjected to necessary review under NEPA or the ESA. According to the Project Description for the Biological Assessment on the CVP-OCAP, any contract that does not specifically refer to the revised policy will not be subject to its provisions. Long Term CVP and SWP OCAP Biological Assessment (June 30, 2004) at p. 2-20. The Draft EA does not discuss the revised policy, its impacts or implications. In the event that the revised M&I Shortage Policy is completed prior to execution of these contracts, and the final contracts as released for public comment on July 30, 2004 are further revised to reflect that policy, recirculation of this EA will be necessary in order to assess the impacts of incorporating those revised shortage provisions into these contracts.

6. Indian Trust Assets

Hoopa-7

The draft FONSI states that "continued delivery of project water to the existing contracts will not affect any Indian Trust Assets because existing rights will not be affected." That statement fails to acknowledge the nature of water rights associated with tribal fishing rights. For example, the Hoopa Valley Tribe's federally protected fishing right guarantees to the Tribe the right to a fishery that is supportive of a moderate standard of living. As has been repeatedly acknowledged by the federal courts, tribes are entitled to sufficient water in rivers flowing through their lands to support a fishery that will meet those needs. Accordingly, as the needs of the Tribe and the fishery change, so do the water rights associated with the need to sustain that fishery. We accordingly remain very concerned that contractually dedicating the vast amounts of water that are specified in the CVP long term contracts will make it increasingly difficult for the CVP to adequately protect tribal fishery resources, as the limited supply that is available for these purposes is subject to increasingly greater demands as a result of foreseeable drought, global warming, population growth, and urban development. The EA fails to adequately address the cumulative impacts of these various factors on Bureau's ability to provide for and protect the fishery resources within its charge. *See e.g.* CVPIA § 3406 (b)(23) (identifying trust responsibility to protect the fishery resources of the Hoopa Valley Tribe as constraint on operation of CVP facilities).

Responses

Hoopa-5
The alternatives present a range of water service agreement provisions that could be implemented for long term contract renewals. The No Action Alternative consists of renewing existing water service contracts as described by the Preferred Alternative of the PEIS. The No Action alternative together with negotiated proposals for CVP-wide terms and conditions are the basis for the alternatives. Reduction of contract amounts were considered in certain cases but rejected from analysis. The needs analyses performed resulted in a need for water which equals or exceeds the current total contract amount. The existing and proposed renewal contracts both include provisions for reductions in deliveries in those years in which insufficient water is available.

Non-renewal of existing contracts is considered infeasible based on Section 3404(c) of the CVPIA. Reclamation is mandated by law to renew the contracts and thus lacks discretion to not renew the contracts.

Hoopa-6
Those impacts are being discussed in a separate EA specific to the revised M&I policy.

Hoopa-7
Those issues were the subject of the Trinity River EIS and the PEIS. They do not need to be reanalyzed in documents focused upon the maximum quantities under contract. As noted in a prior response the requirements for flows in the Trinity Basin affect how much water is available to fulfill contracts, whereas this document addresses the maximum amount that would be delivered. This EA addresses how much may be delivered if available, whereas the comment addresses factors affecting how much will be available.

Hoopa Valley Tribe (cont'd)

August 27, 2004
Page 7

Thank you for allowing us the opportunity to comment on the Draft EA/FONSI. We trust that our comments will be appropriately considered and addressed in any final NEPA documentation for this proposed action.

Sincerely yours,

MORISSET, SCHLOSSER, JOZWIAK & McGAW

Thomas P. Schlosser
Regina M. Cutler
Attorneys for the Hoopa Valley Tribe

cc: Bennett Raley
Kirk Rodgers
Steve Thompson

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amc:8/27/04

River Partners Organization

From: "Daniel Efseaff" <defseaff@riverpartners.org>
To: <btrout@mp.usbr.gov>
Date: 9/1/04 11:42AM
Subject: Request for extension

RPO-1

Please extend the period for comments on the Reclamation Board Water contracts that are coming up.

I would like copies of the documents and a list of the contracts that are coming up.

Sincerely,

Dan Efseaff
Restoration Ecologist
River Partners
539 Flume Street, Chico, California 95928
(530)894-5401, ext 21
defseaff@riverpartners.org
www.riverpartners.org

RPO-1

Reclamation considered extensions of the comment period but feels adequate time was given for review. The BA for the Sacramento River Division long-term water service contract renewals was completed on August of 2003. The Draft EA was first released on August 19, 2003 and was revised in March of 2004. On July 2, 2004, a 60-day public review and comment period was initiated for the associated long-term CVP water service contracts for the Black Butte Unit, Tehama-Colusa Canal Unit, and the Corning Canal Unit of the Sacramento River Division. The revised draft EA and FONSI were released on July 30, 2004 for an additional 30 day public review.

Documents have been available onsite at www.usbr.gov/mp/cvpia/3404c/index.html.

Comments

Sacramento River Preservation Trust

From: "John Merz" <jmerz@inreach.com>
To: "Basia Trout" <btrout@mp.usbr.gov>
Date: 9/3/04 3:31PM
Subject: Sacramento River Division,CVP Contracts& EA/FONSI

Dear Basia,

SRPT-1

I have reviewed the comments submitted to the Bureau concerning the proposed Sacramento River Division, CVP Contracts and related EA/FONSI by both the NRDC,TBI&PCL and FOR and am in complete agreement with every point made. Please add the Sacramento River Preservation Trust (Trust) and the Sacramento Valley Environmental Water Caucus (SVEWC) to the list of groups and individuals requesting an extension of the comment period for both the contracts and the supporting environmental documents. Please note that we are incorporating by reference the comments submitted by NRDC, et al as mentioned above and hereby request to be kept informed of any and all activities associated with this project.

Sincerely,

John Merz
President
Sacramento River Preservation Trust
PO Box 5366
Chico, CA 95927
530-345-1865 (Phone)
530-899-5105 (Fax)
jmerz@sacrivertrust.org

Co-chair,SVEWC

Responses

SRPT-1

Comment noted. Reclamation considered extensions of the comment period but feels adequate time was given for review. The BA for the Sacramento River Division long-term water service contract renewals was completed in August of 2003. The Draft EA was first released on August 19, 2003 and was revised in March of 2004. On July 2, 2004, a 60-day public review and comment period was initiated for the associated long-term CVP water service contracts for the Black Butte Unit, Tehama-Colusa Canal Unit, and the Corning Canal Unit of the Sacramento River Division. The revised draft EA and FONSI were released on July 30, 2004 for an additional 30-day public review.

State Clearinghouse and Planning Unit

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse and Planning Unit

Arnold
Schwarzenegger
Governor

Jan Boel
Acting Director

September 3, 2004

Basia Trout
U.S. Bureau of Reclamation, Red Bluff Field Office
22500 Altube Avenue
Red Bluff, CA 96080

Subject: Renewal of Long-term Contracts for the Sacramento River Division
SCH#: 2004082017

Dear Basia Trout:

The State Clearinghouse submitted the above named Environmental Assessment to selected state agencies for review. The review period closed on September 2, 2004, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

State Clearinghouse and Planning Unit

State Clearinghouse Data Base

SCH#	2004082017
Project Title	Renewal of Long-term Contracts for the Sacramento River Division
Lead Agency	U.S. Bureau of Reclamation
Type	EA Environmental Assessment
Description	Renewal of long-term water service contracts for water contractors in the Western Sacramento Valley for a period of 25 years or 40 years, depending on water use.

Lead Agency Contact

Name	Basia Trout
Agency	U.S. Bureau of Reclamation, Red Bluff Field Office
Phone	530-528-0512 **Fax**
email	
Address	22500 Altube Avenue
City	Red Bluff **State** CA **Zip** 96080

Project Location

County	Glenn, Tehama, Colusa
City	Willows
Region	
Cross Streets	
Parcel No.	
Township	**Range** **Section** **Base**

Proximity to:

Highways	
Airports	
Railways	
Waterways	
Schools	
Land Use	

Project Issues	Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Cumulative Effects; Economics/Jobs; Geologic/Seismic; Landuse; Recreation/Parks; Soil Erosion/Compaction/Grading; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife
Reviewing Agencies	Resources Agency; Regional Water Quality Control Bd., Region 5 (Sacramento); Regional Water Quality Control Bd., Region 5 (Redding); Department of Parks and Recreation; Native American Heritage Commission; Reclamation Board; Department of Fish and Game, Region 2; Department of Fish and Game, Region 1; Department of Water Resources; Caltrans, Division of Transportation Planning; State Water Resources Control Board, Division of Water Rights; State Water Resources Control Board, Division of Water Quality; State Water Resources Control Board, Clean Water Program; State Lands Commission
Date Received	08/04/2004 **Start of Review** 08/04/2004 **End of Review** 09/02/2004

Note: Blanks in data fields result from insufficient information provided by lead agency.

Comments

Department of Fish & Game

State of California - The Resources Agency — ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF FISH AND GAME

http://www.dfg.ca.gov

Street
A 96001
S-2300

September 9, 2004

Ms. Basia Trout
US Bureau of Reclamation
22500 Altube Avenue – Hwy 99W
Red Bluff CA 96080

Dear Ms. Trout:

The Department of Fish and Game has reviewed the "Revised Draft Environmental Assessment for Renewal of Long-Term Contracts for Sacramento Canals Unit of the Central Valley Project (CVP)." According to the document, the purpose of the project is to renew the "Canals Unit" water service contracts consistent with the provisions of the Central Valley Project Improvement Act (CVPIA) as developed in the programmatic environmental impact statement for the CVPIA. The stated need for long-term contract renewal includes achieving a reasonable balance among competing demands including irrigation; fish and wildlife protection, restoration and mitigation and enhancement; and ensures CVP compliance with applicable laws including the Federal Endangered Species Act. While we did not see an explicit statement of need to achieve compliance with relevant State laws such as the California Endangered Species Act, we do recommend the US Bureau of Reclamation (Reclamation) support the State's efforts to protect fish and wildlife.

At this time, the Department of Fish and Game believes it is appropriate to delay proceeding with the environmental decision making process for the Long-Term Contract for the Sacramento Canals Unit until finalization of the Federal Endangered Species Act Biological Opinion which is due to be released by National Oceanic and Atmospheric Administration Fisheries in the near future

DFG-1

The Environmental Analysis (EA) relies on inappropriate and outdated assessments and omits relevant analyses for determining protection of Federal- and State-listed species including:

- Biological Opinion of 1993 for the CVP which only addresses effects to winter-run Chinook salmon. This document, which is being updated and replaced, cannot be used for assessing effects on the two other listed anadromous salmonid species, Central Valley spring-run Chinook salmon and Central Valley steelhead.

Conserving California's Wildlife Since 1870

Responses

DFG-1

Information and assessment of affects on all listed anadramous fish is taken from the referenced March 22, 2004 CVP and State Water Project OCAP BA, which is the best information available. Updated versions did not significantly change the outcome of the assessments. The action being addressed in the EA is the delivery of water within CVP service areas. Updated ESA consultations have addressed all listed species affected by CVP operations.

Comments

Department of Fish & Game (cont'd)

Ms. Basia Trout
September 9, 2004
Page Two

DFG-2

- The referenced March 22, 2004, Long-term Central Valley Project and State Water Project Operations Criteria and Plan (OCAP) Biological Assessment is out of date. The document has been updated with different versions several times since March. The current version in our opinion still contains some conclusions on the habitat and passage needs of some of the State listed anadromous species that we do not agree with; however, we understand there may be another version forthcoming.

DFG-3

- The determination of the effects Red Bluff Diversion Dam (RBDD) has on winter-run, spring-run and fall/late fall-run Chinook salmon and Central Valley steelhead is referenced to the 1993 Biological Opinion for winter-run Chinook which is not usable for spring-run Chinook salmon, fall-run Chinook salmon and steelhead. CVPIA Section 3406 b (10) requires the development and implementation of measures to minimize fish passage problems experienced by juvenile and adult anadromous fish at RBDD. In 2002 Reclamation lead the preparation and public review of a draft EIS/EIR addressing CVPIA requirement to minimize fish passage problems at RBDD. Reclamation has suspended the decision making process started by the document without responding to comments and we have not been notified when the suspension may end.

DFG-4

- The preferred alternative is overly vague in that it is a "negotiated position between Alternative 1 and Alternative 2." The formal project description for Alternative 1 does not clearly state what types of protections would be in place for endangered species; therefore, it is possible that the preferred alternative may not comply with the Endangered Species Act. The document should clearly describe what is included in the preferred alternative that is applicable and relevant to Federal and State endangered species acts and CVPIA anadromous fish restoration requirements.

The existing operation of the Sacramento Canal's Unit RBDD with its undersized fish ladders currently impairs passage of anadromous fish when the gates are installed and river flows are elevated due to runoff events. The species that endures the most impairment under existing conditions is spring-run Chinook which include adult migrants traveling to Battle Creek and Clear Creek. In addition, existing conditions can impair passage of the very last portion of the adult winter-run migration and juvenile anadromous fish traveling downstream under certain conditions. The fish ladders at the dam are over 40 years old and do not perform to currently accepted standards. The Draft Environmental Impact Statement/Environmental Impact Report for Fish Passage Improvement Project for RBBD describes the existing conditions explained above for both ladder performance and impaired passage of spring-run and winter-run Chinook.

Responses

DFG-2
The draft OCAP BA/BO documents have been reviewed and the final OCAP BA/BO documents did not change the information or determination of effects in the EAs. Also see response to comment DFG-1.

DFG-3
The RBDD EIS/EIR passage process is postponed until the final OCAP BO is issued. Reclamation is continuously working with NOAA Fisheries to minimize impacts to salmonids at the RBDD and decisions about the next steps will be made after the OCAP BA consultation is completed and implemented. This is a separate action subject to its own environmental compliance requirements. Please see earlier comments regarding the RBDD EIS/EIR process.

DFG-4
The No Action Aternative together with negotiated proposals for CVP-wide terms and conditions are the basis for the action alternatives. The preferred alternative, essentially maintains the status quo apart from changes mandated by the CVPIA. The analysis displays the increment of change between the No Action Alternative and the other alternatives. The contracts will comply with all relevant environmental requirements.

Comments

Department of Fish & Game (cont'd)

Ms. Basia Trout
September 9, 2004
Page Three

In addition to our general concerns with the EA, the Department has the following specific comments:

DFG-5 Page 3-67, Paragraph 1, Last sentence: This sentence is unclear as to what type of Chinook salmon is being analyzed for negative effects at RBDD and when the negative effects occur with respect to existing conditions or historical conditions. The sentence is in past tense implying negative effects are no longer occurring. This sentence and the one before it should be revised to clearly indicate that: (1) spring-run, winter-run and fall-run Chinook occur at RBDD; and (2) spring-run and winter-run Chinook are still affected negatively by RBDD to differing degrees.

DFG-6 Page 3-67, Paragraph 2, Section Title and Contents: Coho do not occur in the Sacramento River. Remove all references to coho from the document.

DFG-7 Page 3-75, Paragraph 2: The document states 98 percent of the spawning winter-run are protected. This conclusion is based upon an incomplete data set. The winter-run Chinook spawning distribution in the analysis was limited to an upstream area based on data for a few select years. Since it is known winter-run spawn as far downstream as RBDD and since the EA covers up to 40 years into the future, the complete data set should be used to characterize spawning winter-run distribution.

DFG-8 Page 3-74, Paragraph 3, last two sentences: These sentences need further explanation.

The Department recommends the "Long-Term Water Supply Contracting Environmental" document be retracted and reissued with appropriate modifications upon completion of the Biological Opinion for the CVP OCAP. Reclamation should also complete the environmental document for RBDD by responding to comments and issuing a "Record of Decision." Thank you for your considerations of our comments. If there are any questions regarding this matter, please contact Staff Environmental Scientist Harry Rectenwald at (530) 225-2368.

Sincerely,

DONALD B. KOCH
Regional Manager

cc: Messrs. Harry Rectenwald, Steve Turek,
and Randal C. Benthin and Ms. Alice Low
Department of Fish and Game
601 Locust Street
Redding, CA 96001

Responses

DFG-5
Comment noted. Text was changed to reflect the current status.

DFG-6
The EA will be modified to more clearly state that coho salmon are unlikely to occur within the project-affected waterways.

DFG-7
Par 2. states that incubation conditions for winter-run Chinook salmon are estimated to cover 98% of winter-run spawning even with increased temperatures due to lowered water levels in the Sacramento River. The information was based on the best information available, as referenced in the Long-term CVP and State Water project OCAP BA.

DFG-8
Reclamation provides CVP water to contractors to the point of diversion. Most adverse impacts occur to fish as a result of taking and using the water, which is not a Reclamation action.

AG & M&I
R. O. Final CVP-Wide Draft 4/19-2004
Corning WD Draft 7/22-2003
Corning WD Draft 6/26-2003
Corning WD Draft 6/25-2003
R.O. Final CVP-Wide 6/10-2003
Sac.Valley Division Draft 5/28-2003
CVP-Wide Draft 5/23-2003
Contract No.
14-06-200-6575-LTR1

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

LONG-TERM RENEWAL CONTRACT BETWEEN THE UNITED STATES AND CORNING WATER DISTRICT PROVIDING FOR PROJECT WATER SERVICE FROM THE SACRAMENTO RIVER DIVISION

Table of Contents

Table of Contents - continued

AG & M&I
R. O. Final CVP-Wide Draft 4/19-2004
Corning WD Draft 7/22-2003
Corning WD Draft 6/26-2003
Corning WD Draft 6/25-2003
R.O. Final CVP-Wide 6/10-2003
Sac.Valley Division Draft 5/28-2003
CVP-Wide Draft 5/23-2003
Contract No.
14-06-200-6575-LTR1

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

LONG-TERM RENEWAL CONTRACT BETWEEN THE UNITED STATES
AND
CORNING WATER DISTRICT
PROVIDING FOR PROJECT WATER SERVICE
FROM THE SACRAMENTO RIVER DIVISION

THIS CONTRACT, made this _____ day of _____, 20___, in pursuance generally of the Act of June 17, 1902 (32 Stat. 388), and acts amendatory or supplementary thereto, including, but not limited to, the Acts of August 26, 1937 (50 Stat. 844), as amended and supplemented, August 4, 1939 (53 Stat. 1187), as amended and supplemented, July 2, 1956 (70 Stat. 483), June 21, 1963 (77 Stat. 68), October 12, 1982 (96 Stat. 1263), October 27, 1986 (100 Stat. 3050), as amended, and Title XXXIV of the Act of October 30, 1992 (106 Stat. 4706), all collectively hereinafter referred to as Federal Reclamation law, between THE UNITED STATES OF AMERICA, hereinafter referred to as the United States, and CORNING WATER DISTRICT, hereinafter referred to as the Contractor, a public agency of the State of California, duly organized, existing, and acting pursuant to the laws thereof;

WITNESSETH, That:

EXPLANATORY RECITALS

[1st] WHEREAS, the United States has constructed and is operating the Central Valley Project (Project), California, for diversion, storage, carriage, distribution and beneficial use, for flood control, irrigation, municipal, domestic, industrial, fish and wildlife mitigation, protection and restoration, generation and distribution of electric energy, salinity control, navigation and other beneficial uses, of waters of the Sacramento River, the American River, the Trinity River, and the San Joaquin River and their tributaries; and

[2nd] WHEREAS, the United States constructed the Red Bluff Diversion Dam, and the Corning Canal and related delivery facilities including pumping plants, hereinafter collectively referred to as the Canal Facilities, which will be used in part for the furnishing of water to the Contractor pursuant to the terms of this Contract; and

[3rd] WHEREAS, the rights to Project Water were acquired by the United States pursuant to California law for operation of the Project; and

[4th] WHEREAS, the Contractor and the United States entered into Contract No. 14-06-200-6575, as amended on March 9, 1962, and August 4, 1971, which established terms for the delivery to the Contractor of Central Valley Project Water from the Canal Facilities from August 1, 1957, through February 28, 1995, and under which the initial date of water delivery to the Contractor was April 15, 1961; and

[5th] WHEREAS, the Contractor and the United States have pursuant to subsection 3404(c)(1) of the Central Valley Project Improvement Act (CVPIA), subsequently entered into interim renewal contract(s) identified as Contract No(s). 14-06-200-6575-IR1, 14-06-200-6575-IR2, 14-06-200-6575-IR3, 14-06-200-6575-IR4, 14-06-200-6575-IR5, 14-06-200-6575-IR6,

14-06-200-6575-IR7, and 14-06-200-6575-IR8, the current of which is hereinafter referred to as the Existing Contract, which provided for the continued water service to the Contractor from March 1, 2004, through February 28, 2006; and

[6th] WHEREAS, Section 3404(c) of the CVPIA provides for long-term renewal of the Existing Contract following completion of appropriate environmental documentation, including a programmatic environmental impact statement (PEIS) pursuant to the National Environmental Policy Act (NEPA), analyzing the direct and indirect impacts and benefits of implementing the CVPIA and the potential renewal of all existing contracts for Project Water; and

[7th] WHEREAS, the United States has completed the PEIS and all other appropriate environmental review necessary to provide for long-term renewal of the Existing Contract; and

[8th] WHEREAS, the Contractor has requested the long-term renewal of the Existing Contract, pursuant to the terms of the Existing Contract, Federal Reclamation law, and the laws of the State of California, for water service from the Project; and

[9th] WHEREAS, the United States has determined that the Contractor has fulfilled all of its obligations under the Existing Contract; and

[10th] WHEREAS, the Contractor has demonstrated to the satisfaction of the Contracting Officer that the Contractor has utilized the Project Water supplies available to it for reasonable and beneficial use and, based upon a needs analysis cooperatively prepared by the Contracting Officer and the Contractor, has demonstrated projected future demand for water use that exceeds the Contract Total to be made available to it pursuant to this Contract; and

[11th] WHEREAS, water obtained from the Project has been relied upon by urban and agricultural areas within California for more than 50 years, and is considered by the Contractor as an essential portion of its water supply; and

[12th] WHEREAS, the economies of regions within the Project, including the Contractor's, depend upon the continued availability of water, including water service from the Central Valley Project; and

[13th] WHEREAS, the Secretary intends through coordination, cooperation, and partnerships to pursue measures to improve water supply, water quality, and reliability of the Project for all Project purposes; and

[14th] WHEREAS, the mutual goals of the United States and the Contractor include: to provide for reliable Project Water supplies; to control costs of those supplies; to achieve repayment of the Project as required by law; to guard reasonably against Project Water shortages; to achieve a reasonable balance among competing demands for use of Project Water; and to comply with all applicable environmental statutes, all consistent with the legal obligations of the United States relative to the Project; and

[15th] WHEREAS, the parties intend by this Contract to develop a more cooperative relationship in order to achieve their mutual goals; and

[16th] WHEREAS, the United States and the Contractor are willing to enter into this Contract pursuant to Federal Reclamation law on the terms and conditions set forth below;

NOW, THEREFORE, in consideration of the mutual and dependent covenants herein contained, it is hereby mutually agreed by the parties hereto as follows:

DEFINITIONS

1. When used herein unless otherwise distinctly expressed, or manifestly incompatible with the intent of the parties as expressed in this Contract, the term:

(a) "Calendar Year" shall mean the period January 1 through December 31, both dates inclusive;

(b) "Charges" shall mean the payments required by Federal Reclamation law in addition to the Rates and Tiered Pricing Component specified in this Contract as determined annually by the Contracting Officer pursuant to this Contract;

(c) "Condition of Shortage" shall mean a condition respecting the Project during any Year such that the Contracting Officer is unable to deliver sufficient water to meet the Contract Total;

(d) "Contracting Officer" shall mean the Secretary of the Interior's duly authorized representative acting pursuant to this Contract or applicable Federal Reclamation law or regulation;

(e) "Contract Total" shall mean the maximum amount of water to which the Contractor is entitled under subdivision (a) of Article 3 of this Contract;

(f) "Contractor's Boundaries" shall mean the area to which the Contractor is permitted to provide Project Water under this Contract as described in Exhibit "A" attached hereto, which may be modified from time to time in accordance with Article 35 of this Contract without amendment of this Contract;

(g) "CVPIA" shall mean the Central Valley Project Improvement Act, Title XXXIV of the Act of October 30, 1992 (106 Stat. 4706);

(h) "Eligible Lands" shall mean all lands to which Irrigation Water may be delivered in accordance with Section 204 of the Reclamation Reform Act of October 12, 1982 (96 Stat. 1263), as amended, hereinafter referred to as RRA;

(i) "Excess Lands" shall mean all lands in excess of the limitations contained in Section 204 of the RRA, other than those lands exempt from acreage limitation under Federal Reclamation law;

(j) "Full Cost Rate" shall mean an annual rate as determined by the Contracting Officer that shall amortize the expenditures for construction properly allocable to the Project Irrigation or M&I functions, as appropriate, of facilities in service including all O&M deficits funded, less payments, over such periods as may be required under Federal Reclamation law, or applicable contract provisions. Interest will accrue on both the construction expenditures and funded O&M deficits from October 12, 1982, on costs outstanding at that date, or from the date incurred in the case of costs arising subsequent to October 12, 1982, and shall be calculated in accordance with subsections 202(3)(B) and (3)(C) of the RRA. The Full Cost Rate includes actual operation, maintenance, and replacement costs consistent with Section 426.2 of the Rules and Regulations for the RRA. The Full Cost Rate used to compute the Tiered Pricing Component defined in subdivision (y) of this Article does not include the costs associated with the Contractor's Irrigation Water distribution works constructed by the United States. However, the Irrigation Full Cost Water Rate defined in subdivision (l) of this Article does include such costs;

(k) "Ineligible Lands" shall mean all lands to which Irrigation Water may not be delivered in accordance with Section 204 of the RRA;

(l) "Irrigation Full Cost Water Rate" shall mean the Full Cost Rate applicable to the delivery of Irrigation Water;

(m) "Irrigation Water" shall mean water made available from the Project that is used primarily in the production of agricultural crops or livestock, including domestic use incidental thereto, and watering of livestock;

(n) "Landholder" shall mean a party that directly or indirectly owns or leases nonexempt land, as provided in 43 CFR 426.2;

(o) "Municipal and Industrial (M&I) Water" shall mean Project Water, other than Irrigation Water, made available to the Contractor. M&I Water shall include water used for human use and purposes such as the watering of landscaping or pasture for animals (e.g., horses) which are kept for personal enjoyment or water delivered to land holdings operated in units of less than five acres unless the Contractor establishes to the satisfaction of the Contracting Officer that the use of water delivered to any such landholding is a use described in subdivision (m) of this Article;

(p) "M&I Full Cost Water Rate" shall mean the Full Cost Rate applicable to the delivery of M&I Water;

(q) "Operation and Maintenance" or "O&M" shall mean normal and reasonable care, control, operation, repair, replacement (other than capital replacement), and maintenance of Project facilities;

(r) "Operating Non-Federal Entity" shall mean the Tehama-Colusa Canal Authority, its successors or assigns, a non-Federal entity which has the obligation to operate and maintain all or a portion of the Canal Facilities pursuant to an agreement with the United States, and which may have funding obligations with respect thereto;

(s) "Project" shall mean the Central Valley Project owned by the United States and managed by the Department of the Interior, Bureau of Reclamation;

(t) "Project Contractors" shall mean all parties who have water service contracts for Project Water from the Project with the United States pursuant to Federal Reclamation law;

(u) "Project Water" shall mean all water that is developed, diverted, stored, or delivered by the Secretary in accordance with the statutes authorizing the Project and in accordance with the terms and conditions of water rights acquired pursuant to California law;

(v) "Rates" shall mean the payments determined annually by the Contracting Officer in accordance with the then-current applicable water ratesetting policies for the Project, as described in subdivision (a) of Article 7 of this Contract;

(w) "Recent Historic Average" shall mean the most recent five-year average of the final forecast of Water Made Available to the Contractor pursuant to this Contract or its preceding contract(s);

(x) "Secretary" shall mean the Secretary of the Interior, a duly appointed successor, or an authorized representative acting pursuant to any authority of the Secretary and through any agency of the Department of the Interior;

(y) "Tiered Pricing Component" shall be the incremental amount to be paid for each acre-foot of Water Delivered as described in subdivision (j) of Article 7 of this Contract;

(z) "Water Delivered" or "Delivered Water" shall mean Project Water diverted for use by the Contractor at the point(s) of delivery approved by the Contracting Officer;

(aa) "Water Made Available" shall mean the estimated amount of Project Water that can be delivered to the Contractor for the upcoming Year as declared by the Contracting Officer, pursuant to subdivision (a) of Article 4 of this Contract;

(bb) "Water Scheduled" shall mean Project Water made available to the Contractor for which times and quantities for delivery have been established by the Contractor and Contracting Officer, pursuant to subdivision (b) of Article 4 of this Contract; and

(cc) "Year" shall mean the period from and including March 1 of each Calendar Year through the last day of February of the following Calendar Year.

TERM OF CONTRACT

2. (a) This Contract shall be effective March 1, 20___, through February 28, 20___, and supercedes the Existing Contract. In the event the Contractor wishes to renew this Contract beyond February 28, 20___, the Contractor shall submit a request for renewal in writing to the Contracting Officer no later than two years prior to the date this Contract expires. The renewal of this Contract insofar as it pertains to the furnishing of Irrigation Water to the Contractor shall be governed by subdivision (b) of this Article, and the renewal of this Contract insofar as it pertains to the furnishing of M&I Water to the Contractor shall be governed by subdivision (c) of this Article.

(b) (1) Under terms and conditions of a renewal contract that are mutually agreeable to the parties hereto, and upon a determination by the Contracting Officer that at the time of contract renewal the conditions set forth in subdivision (b)(2) of this Article are met, and subject to Federal and State law, this Contract, insofar as it pertains to the furnishing of Irrigation Water to the Contractor, shall be renewed for a period of 25 years.

(2) The conditions which must be met for this Contract to be renewed are: (i) the Contractor has prepared a water conservation plan that has been determined by the Contracting Officer in accordance with Article 26 of this Contract to meet the conservation and efficiency criteria for evaluating such plans established under Federal law; (ii) the Contractor is implementing an effective water conservation and efficiency program based on the Contractor's water conservation plan as required by Article 26 of this Contract; (iii) the Contractor is maintaining all water measuring devices and implementing all water measurement methods as

approved by the Contracting Officer pursuant to Article 6 of this Contract; (iv) the Contractor has reasonably and beneficially used the Project Water supplies made available to it and, based on projected demands, is reasonably anticipated and expects to fully utilize for reasonable and beneficial use the quantity of Project Water to be made available to it pursuant to such renewal; (v) the Contractor is complying with all terms and conditions of this Contract; and (vi) the Contractor has the physical and legal ability to deliver Project Water.

(3) The terms and conditions of the renewal contract described in subdivision (b)(1) of this Article and any subsequent renewal contracts shall be developed consistent with the parties' respective legal rights and obligations, and in consideration of all relevant facts and circumstances, as those circumstances exist at the time of renewal, including, without limitation, the Contractor's need for continued delivery of Project Water; environmental conditions affected by implementation of the Contract to be renewed, and specifically changes in those conditions that occurred during the life of the Contract to be renewed; the Secretary's progress toward achieving the purposes of the CVPIA as set out in Section 3402 and in implementing the specific provisions of the CVPIA; and current and anticipated economic circumstances of the region served by the Contractor.

(c) This Contract, insofar as it pertains to the furnishing of M&I Water to the Contractor, shall be renewed for successive periods of up to 40 years each, which periods shall be consistent with then-existing Reclamation-wide policy, under terms and conditions mutually agreeable to the parties and consistent with Federal and State law. The Contractor shall be afforded the opportunity to comment to the Contracting Officer on the proposed adoption and application of any revised policy applicable to the delivery of M&I Water that would limit the

term of any subsequent renewal contract with the Contractor for the furnishing of M&I Water to less than 40 years.

(d) The Contracting Officer shall make a determination ten years after the date of execution of this Contract, and every five years thereafter during the term of this Contract, of whether a conversion of the relevant portion of this Contract to a contract under said subsection 9(d) of the Reclamation Project Act of 1939 can be accomplished pursuant to the Act of July 2, 1956 (70 Stat. 483). The Contracting Officer shall also make a determination ten years after the date of execution of this Contract and every five years thereafter during the term of this Contract of whether a conversion of the relevant portion of this Contract to a contract under subsection 9(c)(1) of the Reclamation Project Act of 1939 can be accomplished. Notwithstanding any provision of this Contract, the Contractor reserves and shall have all rights and benefits under the Act of July 2, 1956 (70 Stat. 483). The Contracting Officer anticipates that during the term of this Contract, all authorized Project construction expected to occur will have occurred, and on that basis the Contracting Officer agrees upon such completion to allocate all costs that are properly assignable to the Contractor, and agrees further that, at any time after such allocation is made, and subject to satisfaction of the condition set out in this subdivision, this Contract shall, at the request of the Contractor, be converted to a contract under subsection 9(d) or 9(c)(1), whichever is applicable, of the Reclamation Project Act of 1939, subject to applicable Federal law and under stated terms and conditions mutually agreeable to the Contractor and the Contracting Officer. A condition for such conversion to occur shall be a determination by the Contracting Officer that, account being taken of the amount credited to return by the Contractor as provided for under Federal Reclamation law, the remaining amount of construction costs assignable for ultimate return by the Contractor can probably be repaid to

the United States within the term of a contract under said subsection 9(d) or 9(c)(1), whichever is applicable. If the remaining amount of costs that are properly assignable to the Contractor cannot be determined during the term of this Contract, the Contracting Officer shall notify the Contractor, and provide the reason(s) why such a determination could not be made. Further, the Contracting Officer shall make such a determination as soon thereafter as possible so as to permit, upon request of the Contractor and satisfaction of the condition set out above, conversion to a contract under subsection 9(d) or 9(c)(1), whichever is applicable. In the event such determination of costs has not been made at a time which allows conversion of this Contract during the term of this Contract or the Contractor has not requested conversion of this Contract within such term, the parties shall incorporate in any subsequent renewal contract as described in subdivision (b) of this Article a provision that carries forth in substantially identical terms the provisions of this subdivision.

WATER TO BE MADE AVAILABLE AND DELIVERED TO THE CONTRACTOR

3. (a) During each Year, consistent with all applicable State water rights, permits, and licenses, Federal law, and subject to the provisions set forth in Articles 11 and 12 of this Contract, the Contracting Officer shall make available for delivery to the Contractor 23,000 acre-feet of Project Water for irrigation and M&I purposes. Water Delivered to the Contractor in accordance with this subdivision shall be scheduled and paid for pursuant to the provisions of Articles 4 and 7 of this Contract.

(b) Because the capacity of the Project to deliver Project Water has been constrained in recent years and may be constrained in the future due to many factors including hydrologic conditions and implementation of Federal and State laws, the likelihood of the Contractor actually receiving the amount of Project Water set out in subdivision (a) of this

Article in any given Year is uncertain. The Contracting Officer's modeling referenced in the PEIS projected that the Contract Total set forth in this Contract will not be available to the Contractor in many years. During the most recent five years, the Recent Historic Average of water made available to the Contractor was 21,160 acre-feet. Nothing in subdivision (b) of this Article shall affect the rights and obligations of the parties under any provision of this Contract.

(c) The Contractor shall utilize the Project Water in accordance with all applicable legal requirements.

(d) The Contractor shall make reasonable and beneficial use of all water furnished pursuant to this Contract. Ground-water recharge programs (direct, indirect, or in lieu), ground-water banking programs, surface water storage programs, and other similar programs utilizing Project Water or other water furnished pursuant to this Contract conducted within the Contractor's Boundaries which are consistent with applicable State law and result in use consistent with Federal Reclamation law will be allowed; Provided, That any direct recharge program(s) is (are) described in the Contractor's water conservation plan submitted pursuant to Article 26 of this Contract; Provided, further, That such water conservation plan demonstrates sufficient lawful uses exist in the Contractor's Boundaries so that using a long-term average, the quantity of Delivered Water is demonstrated to be reasonable for such uses and in compliance with Federal Reclamation law. Ground-water recharge programs, ground-water banking programs, surface water storage programs, and other similar programs utilizing Project Water or other water furnished pursuant to this Contract conducted outside the Contractor's Boundaries may be permitted upon written approval of the Contracting Officer, which approval will be based upon environmental documentation, Project Water rights, and Project operational concerns. The Contracting Officer will address such concerns in regulations, policies, or guidelines.

(e) The Contractor shall comply with requirements applicable to the Contractor in biological opinion(s) prepared as a result of a consultation regarding the execution of this Contract undertaken pursuant to Section 7 of the Endangered Species Act of 1973 (ESA), as amended, that are within the Contractor's legal authority to implement. The Existing Contract, which evidences in excess of 42 years of diversions for irrigation and/or M&I purposes of the quantities of water provided in subdivision (a) of Article 3 of this Contract, will be considered in developing an appropriate baseline for biological assessment(s) prepared pursuant to the ESA, and any other needed environmental review. Nothing herein shall be construed to prevent the Contractor from challenging or seeking judicial relief in a court of competent jurisdiction with respect to any biological opinion or other environmental documentation referred to in this Article.

(f) As soon as possible following each declaration of Water Made Available under Article 4 of this Contract, the Contracting Officer will make a determination whether Project Water, or other water available to the Project, can be made available to the Contractor in addition to the Contract Total under Article 3 of this Contract during the Year without adversely impacting other Project Contractors. At the request of the Contractor, the Contracting Officer will consult with the Contractor prior to making such a determination. If the Contracting Officer determines that Project Water, or other water available to the Project, can be made available to the Contractor, the Contracting Officer will announce the availability of such water and shall so notify the Contractor as soon as practical. The Contracting Officer will thereafter meet with the Contractor and other Project Contractors capable of taking such water to determine the most equitable and efficient allocation of such water. If the Contractor requests the delivery of any

quantity of such water, the Contracting Officer shall make such water available to the Contractor in accordance with applicable statutes, regulations, guidelines, and policies.

(g) The Contractor may request permission to reschedule for use during the subsequent Year some or all of the Water Made Available to the Contractor during the current Year referred to as "carryover." The Contractor may request permission to use during the current Year a quantity of Project Water which may be made available by the United States to the Contractor during the subsequent Year referred to as "preuse." The Contracting Officer's written approval may permit such uses in accordance with applicable statutes, regulations, guidelines, and policies.

(h) The Contractor's right pursuant to Federal Reclamation law and applicable State law to the reasonable and beneficial use of Water Delivered pursuant to this Contract during the term thereof and any subsequent renewal contracts, as described in Article 2 of this Contract, during the terms thereof shall not be disturbed so long as the Contractor shall fulfill all of its obligations under this Contract and any renewals thereof. Nothing in the preceding sentence shall affect the Contracting Officer's ability to impose shortages under Article 11 or subdivision (b) of Article 12 of this Contract or applicable provisions of any subsequent renewal contracts.

(i) Project Water furnished to the Contractor pursuant to this Contract may be delivered for other than irrigation or M&I purposes upon written approval by the Contracting Officer in accordance with the terms and conditions of such approval.

(j) The Contracting Officer shall make reasonable efforts to protect the water rights necessary for the Project and to provide the water available under this Contract. The Contracting Officer shall not object to participation by the Contractor, in the capacity and to the

extent permitted by law, in administrative proceedings related to the Project Water rights; Provided, That the Contracting Officer retains the right to object to the substance of the Contractor's position in such a proceeding; Provided further, That in such proceedings the Contracting Officer shall recognize the Contractor has a legal right under the terms of this Contract to use Project Water.

TIME FOR DELIVERY OF WATER

4. (a) On or about February 20 of each Calendar Year, the Contracting Officer shall announce the Contracting Officer's expected declaration of the Water Made Available. Such declaration will be expressed in terms of both Water Made Available and the Recent Historic Average and will be updated monthly, and more frequently if necessary, based on then-current operational and hydrologic conditions and a new declaration with changes, if any, to the Water Made Available will be made. The Contracting Officer shall provide forecasts of Project operations and the basis of the estimate, with relevant supporting information, upon the written request of the Contractor. Concurrently with the declaration of the Water Made Available, the Contracting Officer shall provide the Contractor with the updated Recent Historic Average.

(b) On or before each March 1 and at such other times as necessary, the Contractor shall submit to the Contracting Officer a written schedule, satisfactory to the Contracting Officer, showing the monthly quantities of Project Water to be delivered by the United States to the Contractor pursuant to this Contract for the Year commencing on such March 1. The Contracting Officer shall use all reasonable means to deliver Project Water according to the approved schedule for the Year commencing on such March 1.

(c) The Contractor shall not schedule Project Water in excess of the quantity of Project Water the Contractor intends to put to reasonable and beneficial use within the

Contractor's Boundaries or to sell, transfer, or exchange pursuant to Article 9 of this Contract during any Year.

(d) Subject to the conditions set forth in subdivision (a) of Article 3 of this Contract, the United States shall deliver Project Water to the Contractor in accordance with the initial schedule submitted by the Contractor pursuant to subdivision (b) of this Article, or any written revision(s), satisfactory to the Contracting Officer, thereto submitted within a reasonable time prior to the date(s) on which the requested change(s) is/are to be implemented.

POINT OF DIVERSION AND RESPONSIBILITY FOR DISTRIBUTION OF WATER

5. (a) Project Water scheduled pursuant to subdivision (b) of Article 4 of this Contract shall be delivered to the Contractor at approved turnouts on the Canal Facilities and any additional point or points of delivery either on Project facilities or another location or locations mutually agreed to in writing by the Contracting Officer and the Contractor. The United States shall furnish such power as may be necessary to pump Project Water at the existing Corning Canal side pumping plants and at existing relift stations at heads and elevations sufficient to irrigate by gravity all areas within the Contractor's Boundaries below elevation 380 (MSL).

(b) The Contracting Officer, either directly or through its written agreement(s) with the Operating Non-Federal Entity/Entities shall make all reasonable efforts to maintain sufficient flows and levels of water in Project facilities to deliver Project Water to the Contractor at specific turnouts established pursuant to subdivision (a) of this Article. The parties acknowledge that it may be necessary from time to time to shut down some or all of Project facilities for maintenance or emergencies. Except in the case of emergency, the Contracting Officer shall consult with the Contractor to schedule the shut down at such times and for such duration as will allow for the work to be accomplished completely and efficiently, and with a

minimum of disruption of water service to the Contractor. In this regard, shut downs will, to the extent reasonably possible, be limited to the months of December and January.

(c) The Contractor shall deliver Irrigation Water in accordance with any applicable land classification provisions of Federal Reclamation law and the associated regulations. The Contractor shall not deliver Project Water to land outside the Contractor's Boundaries unless approved in advance by the Contracting Officer.

(d) All Water Delivered to the Contractor pursuant to this Contract shall be measured and recorded with equipment furnished, installed, operated, and maintained by the United States, or the Operating Non-Federal Entity/Entities at the point or points of delivery established pursuant to subdivision (a) of this Article. Upon the request of either party to this Contract, the Contracting Officer shall investigate, or cause to be investigated by the responsible Operating Non-Federal Entity/Entities, the accuracy of such measurements and shall take any necessary steps to adjust any errors appearing therein. For any period of time when accurate measurements have not been made, the Contracting Officer shall consult with the Contractor and the responsible Operating Non-Federal Entity/Entities prior to making a final determination of the quantity delivered for that period of time.

(e) Neither the Contracting Officer nor any Operating Non-Federal Entity/Entities shall be responsible for the control, carriage, handling, use, disposal, or distribution of Water Delivered to the Contractor pursuant to this Contract beyond the delivery points specified in subdivision (a) of this Article. The Contractor shall indemnify the United States, its officers, employees, agents, and assigns on account of damage or claim of damage of any nature whatsoever for which there is legal responsibility, including property damage, personal injury, or death arising out of or connected with the control, carriage, handling, use,

disposal, or distribution of such Water Delivered beyond such delivery points, except for any damage or claim arising out of (i) acts or omissions of the Contracting Officer or any of its officers, employees, agents, or assigns, including Operating Non-Federal Entity/Entities, with the intent of creating the situation resulting in any damage or claim, (ii) willful misconduct of the Contracting Officer or any of its officers, employees, agents, or assigns, including Operating Non-Federal Entity/Entities, (iii) negligence of the Contracting Officer or any of its officers, employees, agents, or assigns including the Operating Non-Federal Entity/Entities, or (iv) damage or claims resulting from a malfunction of facilities owned and/or operated by the United States or responsible Operating Non-Federal Entity/Entities; Provided, That the Contractor is not the Operating Non-Federal Entity/Entities that owned or operated the malfunctioning facility (ies) from which the damage claim arose.

MEASUREMENT OF WATER WITHIN THE CONTRACTOR'S BOUNDARIES

6. (a) The Contractor has established a measuring program satisfactory to the Contracting Officer. The Contractor shall ensure that all surface water delivered for irrigation purposes within the Contractor's Boundaries is measured at each agricultural turnout and such water delivered for M&I purposes is measured at each M&I service connection. The water measuring devices or water measuring methods of comparable effectiveness must be acceptable to the Contracting Officer. The Contractor shall be responsible for installing, operating, and maintaining and repairing all such measuring devices and implementing all such water measuring methods at no cost to the United States. The Contractor shall use the information obtained from such water measuring devices or water measuring methods to ensure its proper management of the water, to bill water users for water delivered by the Contractor; and, if applicable, to record water delivered for M&I purposes by customer class as defined in the

Contractor's water conservation plan provided for in Article 26 of this Contract. Nothing herein contained, however, shall preclude the Contractor from establishing and collecting any charges, assessments, or other revenues authorized by California law. The Contractor shall include a summary of all its annual surface water deliveries in the annual report described in subdivision (c) of Article 26.

(b) To the extent the information has not otherwise been provided, upon execution of this Contract, the Contractor shall provide to the Contracting Officer a written report describing the measurement devices or water measuring methods being used or to be used to implement subdivision (a) of this Article and identifying the agricultural turnouts and the M&I service connections or alternative measurement programs approved by the Contracting Officer, at which such measurement devices or water measuring methods are being used, and, if applicable, identifying the locations at which such devices and/or methods are not yet being used including a time schedule for implementation at such locations. The Contracting Officer shall advise the Contractor in writing within 60 days as to the adequacy and necessary modifications, if any, of the measuring devices or water measuring methods identified in the Contractor's report and if the Contracting Officer does not respond in such time, they shall be deemed adequate. If the Contracting Officer notifies the Contractor that the measuring devices or methods are inadequate, the parties shall within 60 days following the Contracting Officer's response, negotiate in good faith the earliest practicable date by which the Contractor shall modify said measuring devices and/or measuring methods as required by the Contracting Officer to ensure compliance with subdivision (a) of this Article.

(c) All new surface water delivery systems installed within the Contractor's Boundaries after the effective date of this Contract shall also comply with the measurement provisions described in subdivision (a) of this Article.

(d) The Contractor shall inform the Contracting Officer and the State of California in writing by April 30 of each Year of the monthly volume of surface water delivered within the Contractor's Boundaries during the previous Year.

(e) The Contractor shall inform the Contracting Officer and the Operating Non-Federal Entity on or before the 20th calendar day of each month of the quantity of Irrigation and M&I Water taken during the preceding month.

RATES AND METHOD OF PAYMENT FOR WATER

7. (a) The Contractor shall pay the United States as provided in this Article for all Delivered Water at Rates, Charges, and the Tiered Pricing Component established in accordance with (i) the Secretary's ratesetting policy for Irrigation Water adopted in 1988 and the Secretary's then-existing ratesetting policy for M&I Water. Such ratesetting policies shall be amended, modified, or superceded only through a public notice and comment procedure; (ii) applicable Federal Reclamation law and associated rules and regulations, or policies; and (iii) other applicable provisions of this Contract. Payments shall be made by cash transaction, electronic funds transfer, or any other mechanism as may be agreed to in writing by the Contractor and the Contracting Officer. The Rates, Charges, and Tiered Pricing Component applicable to the Contractor upon execution of this Contract are set forth in Exhibit "B," as may be revised annually.

(b) The Contracting Officer shall notify the Contractor of the Rates, Charges, and Tiered Pricing Component as follows:

(1) Prior to July 1 of each Calendar Year, the Contracting Officer shall provide the Contractor an estimate of the Charges for Project Water that will be applied to the period October 1, of the current Calendar Year, through September 30, of the following Calendar Year, and the basis for such estimate. The Contractor shall be allowed not less than two months to review and comment on such estimates. On or before September 15 of each Calendar Year, the Contracting Officer shall notify the Contractor in writing of the Charges to be in effect during the period October 1 of the current Calendar Year, through September 30, of the following Calendar Year, and such notification shall revise Exhibit "B."

(2) Prior to October 1 of each Calendar Year, the Contracting Officer shall make available to the Contractor an estimate of the Rates and Tiered Pricing Component for Project Water for the following Year and the computations and cost allocations upon which those Rates are based. The Contractor shall be allowed not less than two months to review and comment on such computations and cost allocations. By December 31 of each Calendar Year, the Contracting Officer shall provide the Contractor with the final Rates and Tiered Pricing Component to be in effect for the upcoming Year, and such notification shall revise Exhibit "B."

(c) At the time the Contractor submits the initial schedule for the delivery of Project Water for each Year pursuant to subdivision (b) of Article 4 of this Contract, the Contractor shall make an advance payment to the United States equal to the total amount payable pursuant to the applicable Rate(s) set under subdivision (a) of this Article, for the Project Water scheduled to be delivered pursuant to this Contract during the first two calendar months of the Year. Before the end of the first month and before the end of each calendar month thereafter, the Contractor shall make an advance payment to the United States, at the Rate(s) set under subdivision (a) of this Article, for the Water Scheduled to be delivered pursuant to this Contract

during the second month immediately following. Adjustments between advance payments for Water Scheduled and payments at Rates due for Water Delivered shall be made before the end of the following month; Provided, That any revised schedule submitted by the Contractor pursuant to Article 4 of this Contract which increases the amount of Water Delivered pursuant to this Contract during any month shall be accompanied with appropriate advance payment, at the Rates then in effect, to assure that Project Water is not delivered to the Contractor in advance of such payment. In any month in which the quantity of Water Delivered to the Contractor pursuant to this Contract equals the quantity of Water Scheduled and paid for by the Contractor, no additional Project Water shall be delivered to the Contractor unless and until an advance payment at the Rates then in effect for such additional Project Water is made. Final adjustment between the advance payments for the Water Scheduled and payments for the quantities of Water Delivered during each Year pursuant to this Contract shall be made as soon as practicable but no later than April 30th of the following Year, or 60 days after the delivery of Project Water carried over under subdivision (g) of Article 3 of this Contract if such water is not delivered by the last day of February.

(d) The Contractor shall also make a payment in addition to the Rate(s) in subdivision (c) of this Article to the United States for Water Delivered, at the Charges and the appropriate Tiered Pricing Component then in effect, before the end of the month following the month of delivery; Provided, That the Contractor may be granted an exception from the Tiered Pricing Component pursuant to subdivision (j)(2) of this Article. The payments shall be consistent with the quantities of Irrigation Water and M&I Water Delivered as shown in the water delivery report for the subject month prepared by the Operating Non-Federal Entity/Entities or, if there is no Operating Non-Federal Entity/Entities, by the Contracting

Officer. The water delivery report shall be deemed a bill for the payment of Charges and the applicable Tiered Pricing Component for Water Delivered. Adjustment for overpayment or underpayment of Charges shall be made through the adjustment of payments due to the United States for Charges for the next month. Any amount to be paid for past due payment of Charges and the Tiered Pricing Component shall be computed pursuant to Article 20 of this Contract.

(e) The Contractor shall pay for any Water Delivered under subdivision (a), (f), or (g) of Article 3 of this Contract as determined by the Contracting Officer pursuant to applicable statutes, associated regulations, any applicable provisions of guidelines or ratesetting policies; Provided, That the Rate for Water Delivered under subdivision (f) of Article 3 of this Contract shall be no more than the otherwise applicable Rate for Irrigation Water or M&I Water under subdivision (a) of this Article.

(f) Payments to be made by the Contractor to the United States under this Contract may be paid from any revenues available to the Contractor.

(g) All revenues received by the United States from the Contractor relating to the delivery of Project Water or the delivery of non-Project water through Project facilities shall be allocated and applied in accordance with Federal Reclamation law and the associated rules or regulations, and the then current Project ratesetting policies for M&I Water or Irrigation Water.

(h) The Contracting Officer shall keep its accounts pertaining to the administration of the financial terms and conditions of its long-term contracts, in accordance with applicable Federal standards, so as to reflect the application of Project costs and revenues. The Contracting Officer shall, each Year upon request of the Contractor, provide to the Contractor a detailed accounting of all Project and Contractor expense allocations, the disposition of all Project and Contractor revenues, and a summary of all water delivery

information. The Contracting Officer and the Contractor shall enter into good faith negotiations to resolve any discrepancies or disputes relating to accountings, reports, or information.

(i) The parties acknowledge and agree that the efficient administration of this Contract is their mutual goal. Recognizing that experience has demonstrated that mechanisms, policies, and procedures used for establishing Rates, Charges, and Tiered Pricing Components, and/or for making and allocating payments, other than those set forth in this Article may be in the mutual best interest of the parties, it is expressly agreed that the parties may enter into agreements to modify the mechanisms, policies, and procedures for any of those purposes while this Contract is in effect without amending this Contract.

(j) (1) Beginning at such time as deliveries of Project Water in a Year exceed 80 percent of the Contract Total, then before the end of the month following the month of delivery the Contractor shall make an additional payment to the United States equal to the applicable Tiered Pricing Component. The Tiered Pricing Component for the amount of Water Delivered in excess of 80 percent of the Contract Total, but less than or equal to 90 percent of the Contract total, shall equal one-half of the difference between the Rate established under subdivision (a) of this Article and the Irrigation Full Cost Water Rate or M&I Full Cost Water Rate, whichever is applicable. The Tiered Pricing Component for the amount of Water delivered which exceeds 90 percent of the Contract Total shall equal the difference between (i) the Rate established under subdivision (a) of this Article and (ii) the Irrigation Full Cost Water Rate or M&I Full Cost Water Rate, whichever is applicable. For all Water Delivered pursuant to subdivision (a) of Article 3 of this Contract which is in excess of 80 percent of the Contract Total, this increment shall be deemed to be divided between Irrigation Water and M&I Water in the same proportion as actual deliveries of each bear to the cumulative total Water Delivered.

Solely for the purpose of calculating the Tiered Pricing Component, the Full Cost Rate shall not include the interest component of the Contractor's water distribution system constructed by the United States and covered by Repayment Contract No. 14-06-200-516-A entered into pursuant to 43 USC 485h(d).

(2) Subject to the Contracting Officer's written approval, the Contractor may request and receive an exemption from such Tiered Pricing Components for Project Water delivered to produce a crop which the Contracting Officer determines will provide significant and quantifiable habitat values for waterfowl in fields where the water is used and the crops are produced; Provided, That the exemption from the Tiered Pricing Components for Irrigation Water shall apply only if such habitat values can be assured consistent with the purposes of the CVPIA through binding agreements executed with or approved by the Contracting Officer prior to use of such water.

(3) For purposes of determining the applicability of the Tiered Pricing Component pursuant to this Article, Water Delivered shall include Project Water that the Contractor transfers to others but shall not include Project Water transferred to the Contractor, nor shall it include the additional water provided to the Contractor under the provisions of subdivision (f) of Article 3 of this Contract.

(k) For the term of this Contract, Rates under the respective ratesetting policies will be established to recover only reimbursable O&M (including any deficits) and capital costs of the Project, as those terms are used in then-current Project ratesetting policies, and interest, where appropriate, except in instances where a minimum Rate is applicable in accordance with the relevant Project ratesetting policy. Changes of significance in practices which implement the Contracting Officer's ratesetting policies will not be implemented until the

Contracting Officer has provided the Contractor an opportunity to discuss the nature, need, and impact of the proposed change.

(l) Except as provided in subsections 3405(a)(1)(B) and 3405(f) of the CVPIA, the Rates for Project Water transferred by the Contractor shall be the Contractor's Rates adjusted upward or downward to reflect the changed costs, if any, incurred by the Contracting Officer in the delivery of the transferred Project Water to the transferee's point of delivery in accordance with the then applicable Project ratesetting policy. If the Contractor is receiving lower Rates and Charges because of inability to pay and is transferring Project Water to another entity whose Rates and Charges are not adjusted due to inability to pay, the Rates and Charges for transferred Project Water shall be the Contractor's Rates and Charges and will not be adjusted to reflect the Contractor's inability to pay.

(m) Pursuant to the Act of October 27, 1986 (100 Stat. 3050), the Contracting Officer is authorized to adjust determinations of ability to pay every five years.

(n) With respect to the Rates for M&I Water, the Contractor asserts that it is not legally obligated to repay any Project deficits claimed by the United States to have accrued as of the date of this Contract or deficit-related interest charges thereon. By entering into this Contract, the Contractor does not waive any legal rights or remedies that it may have with respect to such disputed issues. Notwithstanding the execution of this Contract, and payments made hereunder, the Contractor may challenge in the appropriate administrative or judicial forums: (1) the existence, computation, or imposition of any deficit charges accruing during the term of the Existing Contract and any preceding interim renewal contracts, if applicable; (2) interest accruing on any such deficits; (3) the inclusion of any such deficit charges or interest in the Rates; (4) the application by the United States of payments made by the Contractor under its

Existing Contract and any preceding interim renewal contracts, if applicable; and (5) the application of such payments in the Rates. The Contracting Officer agrees that the Contractor shall be entitled to the benefit of any administrative or judicial ruling in favor of any other Project M&I contractor on any of these issues and credits for payments heretofore made,, Provided That, the basis for such ruling is applicable to the Contractor.

NON-INTEREST BEARING OPERATION AND MAINTENANCE DEFICITS

8. The Contractor and the Contracting Officer concur that, as of the effective date of this Contract, the Contractor has no non-interest bearing O&M deficits and shall have no further liability therefor.

SALES, TRANSFERS, OR EXCHANGES OF WATER

9. (a) The right to receive Project Water provided for in this Contract may be sold, transferred, or exchanged to others for reasonable and beneficial uses within the State of California if such sale, transfer, or exchange is authorized by applicable Federal and State laws, and applicable guidelines or regulations then in effect. No sale, transfer, or exchange of Project Water under this Contract may take place without the prior written approval of the Contracting Officer, except as provided for in subdivision (b) of this Article, and no such sales, transfers, or exchanges shall be approved absent all appropriate environmental documentation, including but not limited to documents prepared pursuant to NEPA and ESA. Such environmental documentation should include, as appropriate, an analysis of ground-water impacts and economic and social effects, including environmental justice, of the proposed water transfers on both the transferor and transferee.

(b) In order to facilitate efficient water management by means of water transfers of the type historically carried out among Project Contractors located within the same

geographical area and to allow the Contractor to participate in an accelerated water transfer program during the term of this Contract, the Contracting Officer shall prepare, as appropriate, all necessary environmental documentation including, but not limited to, documents prepared pursuant to NEPA and ESA, analyzing annual transfers within such geographical areas and the Contracting Officer shall determine whether such transfers comply with applicable law. Following the completion of the environmental documentation, such transfers addressed in such documentation shall be conducted with advance notice to the Contracting Officer, but shall not require prior written approval by the Contracting Officer. Such environmental documentation and the Contracting Officer's compliance determination shall be reviewed every five years and updated, as necessary, prior to the expiration of the then-existing five-year period. All subsequent environmental documentation shall include an alternative to evaluate not less than the quantity of Project Water historically transferred within the same geographical area.

(c) For a water transfer to qualify under subdivision (b) of this Article, such water transfer must: (i) be for irrigation purposes for lands irrigated within the previous three years, for M&I use, ground-water recharge, ground-water banking, similar ground-water activities, surface water storage, or fish and wildlife resources; not lead to land conversion; and be delivered to established cropland, wildlife refuges, ground-water basins or M&I use; (ii) occur within a single Year; (iii) occur between a willing seller and a willing buyer; (iv) convey water through existing facilities with no new construction or modifications to facilities and be between existing Project Contractors and/or the Contractor and the United States, Department of the Interior; and (v) comply with all applicable Federal, State, and local or tribal laws and requirements imposed for protection of the environment and Indian Trust Assets, as defined under Federal law.

(d) For the purpose of determining whether Section 3405(a)(1)(M) of the CVPIA applies to the Contractor as a transferor or transferee of Project Water, the Contracting Officer acknowledges that the Contractor is within a county, watershed, or other area of origin, as those terms are utilized under California law, of water that constitutes the natural flow of the Sacramento River and its tributaries above the confluence of the American and Sacramento Rivers.

APPLICATION OF PAYMENTS AND ADJUSTMENTS

10. (a) The amount of any overpayment by the Contractor of the Contractor's O&M, capital, and deficit (if any) obligations for the Year shall be applied first to any current liabilities of the Contractor arising out of this Contract then due and payable. Overpayments of more than $1,000 shall be refunded at the Contractor's request. In lieu of a refund, any amount of such overpayment, at the option of the Contractor, may be credited against amounts to become due to the United States by the Contractor. With respect to overpayment, such refund or adjustment shall constitute the sole remedy of the Contractor or anyone having or claiming to have the right to the use of any of the Project Water supply provided for herein. All credits and refunds of overpayments shall be made within 30 days of the Contracting Officer obtaining direction as to how to credit or refund such overpayment in response to the notice to the Contractor that it has finalized the accounts for the Year in which the overpayment was made.

(b) All advances for miscellaneous costs incurred for work requested by the Contractor pursuant to Article 25 of this Contract shall be adjusted to reflect the actual costs when the work has been completed. If the advances exceed the actual costs incurred, the difference will be refunded to the Contractor. If the actual costs exceed the Contractor's advances, the Contractor will be billed for the additional costs pursuant to Article 25.

TEMPORARY REDUCTIONS--RETURN FLOWS

11. (a) Subject to: (i) the authorized purposes and priorities of the Project and the requirements of Federal law; and (ii) the obligations of the United States under existing contracts, or renewals thereof, providing for water deliveries from the Project, the Contracting Officer shall make all reasonable efforts to optimize Project Water deliveries to the Contractor as provided in this Contract.

(b) The Contracting Officer or Operating Non-Federal Entity/Entities may temporarily discontinue or reduce the quantity of Water Delivered to the Contractor as herein provided for the purposes of investigation, inspection, maintenance, repair, or replacement of any of the Project facilities or any part thereof necessary for the delivery of Project Water to the Contractor, but so far as feasible the Contracting Officer or Operating Non-Federal Entity will give the Contractor due notice in advance of such temporary discontinuance or reduction, except in case of emergency, in which case no notice need be given; Provided, That the United States shall use its best efforts to avoid any discontinuance or reduction in such service. Upon resumption of service after such reduction or discontinuance, and if requested by the Contractor, the United States will, if possible, deliver the quantity of Project Water which would have been delivered hereunder in the absence of such discontinuance or reduction.

(c) The United States reserves the right to all seepage and return flow water derived from Water Delivered to the Contractor hereunder which escapes or is discharged beyond the Contractor's Boundaries; Provided, That this shall not be construed as claiming for the United States any right to seepage or return flow being put to reasonable and beneficial use pursuant to this Contract within the Contractor's Boundaries by the Contractor or those claiming by, through, or under the Contractor.

CONSTRAINTS ON THE AVAILABILITY OF WATER

12. (a) In its operation of the Project, the Contracting Officer will use all reasonable means to guard against a Condition of Shortage in the quantity of water to be made available to the Contractor pursuant to this Contract. In the event the Contracting Officer determines that a Condition of Shortage appears probable, the Contracting Officer will notify the Contractor of said determination as soon as practicable.

(b) If there is a Condition of Shortage because of errors in physical operations of the Project, drought, other physical causes beyond the control of the Contracting Officer or actions taken by the Contracting Officer to meet legal obligations then, except as provided in subdivision (a) of Article 18 of this Contract, no liability shall accrue against the United States or any of its officers, agents, or employees for any damage, direct or indirect, arising therefrom.

(c) In any Year in which there may occur a shortage for any of the reasons specified in subdivision (b) above, the Contracting Officer shall apportion the available Project Water supply among the Contractor and others entitled, under existing contracts and future contracts (to the extent such future contracts are permitted under subsections (a) and (b) of Section 3404 of the CVPIA) and renewals thereof, to receive Project Water consistent with the contractual obligations of the United States.

(d) Project Water furnished under this Contract will be allocated in accordance with the then-existing Project M&I Water Shortage Policy. Such policy shall be amended, modified, or superseded only through a public notice and comment procedure.

UNAVOIDABLE GROUNDWATER PERCOLATION

13. To the extent applicable, the Contractor shall not be deemed to have delivered Irrigation Water to Excess Lands or Ineligible Lands within the meaning of this Contract if such

lands are irrigated with groundwater that reaches the underground strata as an unavoidable result of the delivery of Irrigation Water by the Contractor to Eligible Lands.

RULES AND REGULATIONS

14. The parties agree that the delivery of Irrigation Water or use of Federal facilities pursuant to this Contract is subject to Federal Reclamation law, including but not limited to, the Reclamation Reform Act of 1982 (43 U.S.C.390aa et seq.), as amended and supplemented, and the rules and regulations promulgated by the Secretary of the Interior under Federal Reclamation law.

WATER AND AIR POLLUTION CONTROL

15. The Contractor, in carrying out this Contract, shall comply with all applicable water and air pollution laws and regulations of the United States and the State of California, and shall obtain all required permits or licenses from the appropriate Federal, State, or local authorities.

QUALITY OF WATER

16. (a) Project facilities used to deliver Project Water to the Contractor pursuant to this Contract shall be operated and maintained to enable the United States to deliver Project Water to the Contractor in accordance with the water quality standards specified in subsection 2(b) of the Act of August 26, 1937 (50 Stat. 865), as added by Section 101 of the Act of October 27, 1986 (100 Stat. 3050) or other existing Federal laws. The United States is under no obligation to construct or furnish water treatment facilities to maintain or to improve the quality of Water Delivered to the Contractor pursuant to this Contract. The United States does not warrant the quality of Water Delivered to the Contractor pursuant to this Contract.

(b) The O&M of Project facilities shall be performed in such manner as is practicable to maintain the quality of raw water made available through such facilities at the highest level reasonably attainable as determined by the Contracting Officer. The Contractor shall be responsible for compliance with all State and Federal water quality standards applicable to surface and subsurface agricultural drainage discharges generated through the use of Federal

or Contractor facilities or Project Water provided by the Contractor within the Contractor's Boundaries.

WATER ACQUIRED BY THE CONTRACTOR
OTHER THAN FROM THE UNITED STATES

17. (a) Water or water rights now owned or hereafter acquired by the Contractor other than from the United States and Irrigation Water furnished pursuant to the terms of this Contract may be simultaneously transported through the same distribution facilities of the Contractor subject to the following: (i) if the facilities utilized for commingling Irrigation Water and non-Project water were constructed without funds made available pursuant to Federal Reclamation law, the provisions of Federal Reclamation law will be applicable only to the Landholders of lands which receive Irrigation Water; (ii) the eligibility of land to receive Irrigation Water must be established through the certification requirements as specified in the Acreage Limitation Rules and Regulations (43 CFR Part 426); (iii) the water requirements of Eligible Lands within the Contractor's Boundaries can be established and the quantity of Irrigation Water to be utilized is less than or equal to the quantity necessary to irrigate such Eligible Lands; and (iv) if the facilities utilized for commingling Irrigation Water and non-Project water are/were constructed with funds made available pursuant to Federal Reclamation law, the non-Project water will be subject to the acreage limitation provisions of Federal Reclamation law, unless the Contractor pays to the United States the incremental fee described in 43 CFR 426.15. In determining the incremental fee, the Contracting Officer will calculate annually the cost to the Federal Government, including interest, on storing or delivering non-Project water, which for purposes of this Contract shall be determined as follows: The quotient shall be the unpaid distribution system costs divided by the total irrigable acreage within the Contractor's Boundaries. The incremental fee per acre is the mathematical result of such

quotient times the interest rate determined using Section 202 (3) of the Act of October 12, 1982 (96 Stat. 1263). Such incremental fee will be charged to each acre of excess or full cost land within the Contractor's Boundaries that receives non-Project water through Federally financed or constructed facilities. The incremental fee calculation methodology will continue during the term of this Contract absent the promulgation of a contrary Reclamation-wide rule, regulation, or policy adopted after the Contractor has been afforded the opportunity to review and comment on the proposed rule, regulation, or policy. If such rule, regulation, or policy is adopted it shall supercede this provision.

(b) Water or water rights now owned or hereafter acquired by the Contractor, other than from the United States, may be stored, conveyed, and/or diverted through Project facilities, subject to the completion of appropriate environmental documentation, with the approval of the Contracting Officer and the execution of any contract determined by the Contracting Officer to be necessary, consistent with the following provisions:

(1) The Contractor may introduce non-Project water into Project facilities and deliver said water to lands within the Contractor's Boundaries, including Ineligible Lands, subject to payment to the United States and/or to any applicable Operating Non-Federal Entity of an appropriate rate as determined by the applicable Project ratesetting policy, the RRA, and the Project use power policy, if such Project use power policy is applicable, each as amended, modified, or superceded from time to time.

(2) Delivery of such non-Project water in and through Project facilities shall only be allowed to the extent such deliveries do not: (i) interfere with other Project purposes as determined by the Contracting Officer; (ii) reduce the quantity or quality of water available to other Project Contractors; (iii) interfere with the delivery of contractual water

entitlements to any other Project Contractors; or (iv) interfere with the physical maintenance of the Project facilities.

(3) Neither the United States nor the Operating Non-Federal Entity shall be responsible for control, care, or distribution of the non-Project water before it is introduced into or after it is delivered from the Project facilities. The Contractor hereby releases and agrees to defend and indemnify the United States and the Operating Non-Federal Entity, and their respective officers, agents, and employees, from any claim for damage to persons or property, direct or indirect, resulting from the acts of the Contractor, its officers', employees', agents' or assigns', act(s) in (i) extracting or diverting non-Project water from any source, or (ii) diverting such non-Project water into Project facilities.

(4) Diversion of such non-Project water into Project facilities shall be consistent with all applicable laws, and if involving groundwater, consistent with any applicable ground-water management plan for the area from which it was extracted.

(5) After Project purposes are met, as determined by the Contracting Officer, the United States and the Contractor shall share priority to utilize the remaining capacity of the facilities declared to be available by the Contracting Officer for conveyance and transportation of non-Project water prior to any such remaining capacity being made available to non-Project contractors.

OPINIONS AND DETERMINATIONS

18. (a) Where the terms of this Contract provide for actions to be based upon the opinion or determination of either party to this Contract, said terms shall not be construed as permitting such action to be predicated upon arbitrary, capricious, or unreasonable opinions or determinations. Both parties, notwithstanding any other provisions of this Contract, expressly

reserve the right to seek relief from and appropriate adjustment for any such arbitrary, capricious, or unreasonable opinion or determination. Each opinion or determination by either party shall be provided in a timely manner. Nothing in subdivision (a) of Article 18 of this Contract is intended to or shall affect or alter the standard of judicial review applicable under Federal law to any opinion or determination implementing a specific provision of Federal law embodied in statute or regulation.

(b) The Contracting Officer shall have the right to make determinations necessary to administer this Contract that are consistent with the provisions of this Contract, the laws of the United States and of the State of California, and the rules and regulations promulgated by the Secretary of the Interior. Such determinations shall be made in consultation with the Contractor to the extent reasonably practicable.

COORDINATION AND COOPERATION

19. (a) In order to further their mutual goals and objectives, the Contracting Officer and the Contractor shall communicate, coordinate, and cooperate with each other, and with other affected Project Contractors, in order to improve the operation and management of the Project. The communication, coordination, and cooperation regarding operations and management shall include, but not be limited to, any action which will or may materially affect the quantity or quality of Project Water supply, the allocation of Project Water supply, and Project financial matters including, but not limited to, budget issues. The communication, coordination, and cooperation provided for hereunder shall extend to all provisions of this Contract. Each party shall retain exclusive decision making authority for all actions, opinions, and determinations to be made by the respective party.

(b) Within 120 days following the effective date of this Contract, the Contractor, other affected Project Contractors, and the Contracting Officer shall arrange to meet with interested Project Contractors to develop a mutually agreeable, written Project-wide process, which may be amended as necessary separate and apart from this Contract. The goal of this process shall be to provide, to the extent practicable, the means of mutual communication and interaction regarding significant decisions concerning Project operation and management on a real-time basis.

(c) In light of the factors referred to in subdivision (b) of Article 3 of this Contract, it is the intent of the Secretary to improve water supply reliability. To carry out this intent:

(1) The Contracting Officer will, at the request of the Contractor, assist in the development of integrated resource management plans for the Contractor. Further, the Contracting Officer will, as appropriate, seek authorizations for implementation of partnerships to improve water supply, water quality, and reliability.

(2) The Secretary will, as appropriate, pursue program and project implementation and authorization in coordination with Project Contractors to improve the water supply, water quality, and reliability of the Project for all Project purposes.

(3) The Secretary will coordinate with Project Contractors and the State of California to seek improved water resource management.

(4) The Secretary will coordinate actions of agencies within the Department of the Interior that may impact the availability of water for Project purposes.

(5) The Contracting Officer shall periodically, but not less than annually, hold division level meetings to discuss Project operations, division level water management activities, and other issues as appropriate.

(d) Without limiting the contractual obligations of the Contracting Officer under the other Articles of this Contract, nothing in this Article shall be construed to limit or constrain the Contracting Officer's ability to communicate, coordinate, and cooperate with the Contractor or other interested stakeholders or to make decisions in a timely fashion as needed to protect health, safety, or the physical integrity of structures or facilities.

CHARGES FOR DELINQUENT PAYMENTS

20. (a) The Contractor shall be subject to interest, administrative and penalty charges on delinquent installments or payments. When a payment is not received by the due date, the Contractor shall pay an interest charge for each day the payment is delinquent beyond the due date. When a payment becomes sixty (60) days delinquent, the Contractor shall pay an administrative charge to cover additional costs of billing and processing the delinquent payment. When a payment is delinquent ninety (90) days or more, the Contractor shall pay an additional penalty charge of six (6%) percent per year for each day the payment is delinquent beyond the due date. Further, the Contractor shall pay any fees incurred for debt collection services associated with a delinquent payment.

(b) The interest charge rate shall be the greater of the rate prescribed quarterly in the Federal Register by the Department of the Treasury for application to overdue payments, or the interest rate of one-half of one (0.5%) percent per month prescribed by Section 6 of the Reclamation Project Act of 1939 (Public Law 76-260). The interest charge rate shall be determined as of the due date and remain fixed for the duration of the delinquent period.

(c) When a partial payment on a delinquent account is received, the amount received shall be applied, first to the penalty, second to the administrative charges, third to the accrued interest, and finally to the overdue payment.

EQUAL OPPORTUNITY

21. During the performance of this Contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action

shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination, rates of payment or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without discrimination because of race, color, religion, sex, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Contracting Officer, advising the said labor union or workers' representative of the Contractor's commitments under Section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Contractor will furnish all information and reports required by said amended Executive Order and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Contracting Officer and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended, in whole or in part, and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in said amended Executive Order, and such other sanctions may be imposed and remedies invoked as provided in said Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) The Contractor will include the provisions of paragraphs (a) through (g) in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of said amended Executive Order, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

GENERAL OBLIGATION--BENEFITS CONDITIONED UPON PAYMENT

22. (a) The obligation of the Contractor to pay the United States as provided in this Contract is a general obligation of the Contractor notwithstanding the manner in which the obligation may be distributed among the Contractor's water users and notwithstanding the default of individual water users in their obligations to the Contractor.

(b) The payment of charges becoming due hereunder is a condition precedent to receiving benefits under this Contract. The United States shall not make water available to the Contractor through Project facilities during any period in which the Contractor may be in arrears in the advance payment of water rates due the United States. The Contractor shall not furnish water made available pursuant to this Contract for lands or parties which are in arrears in the advance payment of water rates levied or established by the Contractor.

(c) With respect to subdivision (b) of this Article, the Contractor shall have no obligation to require advance payment for water rates which it levies.

COMPLIANCE WITH CIVIL RIGHTS LAWS AND REGULATIONS

23. (a) The Contractor shall comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d), Section 504 of the Rehabilitation Act of 1975 (P.L. 93-112, as amended), the Age Discrimination Act of 1975 (42 U.S.C. 6101, et seq.) and any other applicable civil rights laws, as well as with their respective implementing regulations and guidelines imposed by the U.S. Department of the Interior and/or Bureau of Reclamation.

(b) These statutes require that no person in the United States shall, on the grounds of race, color, national origin, handicap, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving financial assistance from the Bureau of Reclamation. By executing this Contract, the Contractor agrees to immediately take any measures necessary to implement this obligation, including permitting officials of the United States to inspect premises, programs, and documents.

(c) The Contractor makes this agreement in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts, property discounts, or other Federal financial assistance extended after the date hereof to the Contractor by the Bureau of Reclamation, including installment payments after such date on account of arrangements for Federal financial assistance which were approved before such date. The Contractor recognizes and agrees that such Federal assistance will be extended in reliance on the representations and agreements made in this Article, and that the United States reserves the right to seek judicial enforcement thereof.

PRIVACY ACT COMPLIANCE

24. (a) The Contractor shall comply with the Privacy Act of 1974 (5 U.S.C. 552a) (the Act) and the Department of the Interior rules and regulations under the Act (43 CFR 2.45 et seq.) in maintaining Landholder acreage certification and reporting records, required to be

submitted to the Contractor for compliance with Sections 206 and 228 of the Reclamation Reform Act of 1982 (96 Stat. 1266), and pursuant to 43 CFR 426.18.

(b) With respect to the application and administration of the criminal penalty provisions of the Act (5 U.S.C. 552a(i)), the Contractor and the Contractor's employees responsible for maintaining the certification and reporting records referenced in (a) above are considered to be employees of the Department of the Interior. See 5 U.S.C. 552a(m).

(c) The Contracting Officer or a designated representative shall provide the Contractor with current copies of the Interior Department Privacy Act regulations and the Bureau of Reclamation Federal Register Privacy Act System of Records Notice (Acreage Limitation--Interior, Reclamation-31) which govern the maintenance, safeguarding, and disclosure of information contained in the Landholder's certification and reporting records.

(d) The Contracting Officer shall designate a full-time employee of the Bureau of Reclamation to be the System Manager who shall be responsible for making decisions on denials pursuant to 43 CFR 2.61 and 2.64 amendment requests pursuant to 43 CFR 2.72. The Contractor is authorized to grant requests by individuals for access to their own records.

(e) The Contractor shall forward promptly to the System Manager each proposed denial of access under 43 CFR 2.64; and each request for amendment of records filed under 43 CFR 2.71; notify the requester accordingly of such referral; and provide the System Manager with information and records necessary to prepare an appropriate response to the requester. These requirements do not apply to individuals seeking access to their own certification and reporting forms filed with the Contractor pursuant to 43 CFR 426.18, unless the requester elects to cite the Privacy Act as a basis for the request.

CONTRACTOR TO PAY CERTAIN MISCELLANEOUS COSTS

25. In addition to all other payments to be made by the Contractor pursuant to this Contract, the Contractor shall pay to the United States, within 60 days after receipt of a bill and detailed statement submitted by the Contracting Officer to the Contractor for such specific items of direct cost incurred by the United States for work requested by the Contractor associated with this Contract plus indirect costs in accordance with applicable Bureau of Reclamation policies and procedures. All such amounts referred to in this Article shall not exceed the amount agreed to in writing in advance by the Contractor. This Article shall not apply to costs for routine contract administration.

WATER CONSERVATION

26. (a) Prior to the delivery of water provided from or conveyed through Federally constructed or Federally financed facilities pursuant to this Contract, the Contractor

shall be implementing an effective water conservation and efficiency program based on the Contractor's water conservation plan that has been determined by the Contracting Officer to meet the conservation and efficiency criteria for evaluating water conservation plans established under Federal law. The water conservation and efficiency program shall contain definite water conservation objectives, appropriate economically feasible water conservation measures, and time schedules for meeting those objectives. Continued Project Water delivery pursuant to this Contract shall be contingent upon the Contractor's continued implementation of such water conservation program. In the event the Contractor's water conservation plan or any revised water conservation plan completed pursuant to subdivision (d) of Article 26 of this Contract have not yet been determined by the Contracting Officer to meet such criteria, due to circumstances which the Contracting Officer determines are beyond the control of the Contractor, water deliveries shall be made under this Contract so long as the Contractor diligently works with the Contracting Officer to obtain such determination at the earliest practicable date, and thereafter the Contractor immediately begins implementing its water conservation and efficiency program in accordance with the time schedules therein.

(b) Should the amount of M&I Water delivered pursuant to subdivision (a) of Article 3 of this Contract equal or exceed 2,000 acre-feet per Year, the Contractor shall implement the Best Management Practices identified by the time frames issued by the California Urban Water Conservation Council for such M&I Water unless any such practice is determined by the Contracting Officer to be inappropriate for the Contractor.

(c) The Contractor shall submit to the Contracting Officer a report on the status of its implementation of the water conservation plan on the reporting dates specified in the then existing conservation and efficiency criteria established under Federal law.

(d) At five-year intervals, the Contractor shall revise its water conservation plan to reflect the then-current conservation and efficiency criteria for evaluating water conservation plans established under Federal law and submit such revised water management

plan to the Contracting Officer for review and evaluation. The Contracting Officer will then determine if the water conservation plan meets Reclamation's then-current conservation and efficiency criteria for evaluating water conservation plans established under Federal law.

(e) If the Contractor is engaged in direct ground-water recharge, such activity shall be described in the Contractor's water conservation plan.

EXISTING OR ACQUIRED WATER OR WATER RIGHTS

27. Except as specifically provided in Article 17 of this Contract, the provisions of this Contract shall not be applicable to or affect non-Project water or water rights now owned or hereafter acquired by the Contractor or any user of such water within the Contractor's Boundaries. Any such water shall not be considered Project Water under this Contract. In addition, this Contract shall not be construed as limiting or curtailing any rights which the Contractor or any water user within the Contractor's Boundaries acquires or has available under any other contract pursuant to Federal Reclamation law.

OPERATION AND MAINTENANCE BY OPERATING NON-FEDERAL ENTITY

28. (a) The O&M of a portion of the Project facilities which serve the Contractor, and responsibility for funding a portion of the costs of such O&M, have been transferred to the Operating Non-Federal Entity by separate agreement between the United States and the Operating Non-Federal Entity. That separate agreement shall not interfere with or affect the rights or obligations of the Contractor or the United States hereunder.

(b) The Contracting Officer has previously notified the Contractor in writing that the O&M of a portion of the Project facilities which serve the Contractor has been transferred to the Operating Non-Federal Entity, and therefore, the Contractor shall pay directly to the Operating Non-Federal Entity, or to any successor approved by the Contracting Officer under the terms and conditions of the separate agreement between the United States and the Operating Non-Federal Entity described in subdivision (a) of this Article, all rates, charges, or assessments of any kind, including any assessment for reserve funds, which the Operating

Non-Federal Entity or such successor determines, sets, or establishes for the O&M of the portion of the Project facilities operated and maintained by the Operating Non-Federal Entity or such successor. Such direct payments to the Operating Non-Federal Entity or such successor shall not relieve the Contractor of its obligation to pay directly to the United States the Contractor's share of the Project Rates, Charges, and Tiered Pricing Component (s) except to the extent the Operating Non-Federal Entity collects payments on behalf of the United States in accordance with the separate agreement identified in subdivision (a) of this Article.

(c) For so long as the O&M of any portion of the Project facilities serving the Contractor is performed by the Operating Non-Federal Entity, or any successor thereto, the Contracting Officer shall adjust those components of the Rates for Water Delivered under this Contract representing the cost associated with the activity being performed by the Operating Non-Federal Entity or its successor.

(d) In the event the O&M of the Project facilities operated and maintained by the Operating Non-Federal Entity is re-assumed by the United States during the term of this Contract, the Contracting Officer shall so notify the Contractor, in writing, and present to the Contractor a revised Exhibit "B" which shall include the portion of the Rates to be paid by the Contractor for Project Water under this Contract representing the O&M costs of the portion of such Project facilities which have been re-assumed. The Contractor shall, thereafter, in the absence of written notification from the Contracting Officer to the contrary, pay the Rates, Charges, and Tiered Pricing Component(s) specified in the revised Exhibit "B" directly to the United States in compliance with Article 7 of this Contract.

CONTINGENT ON APPROPRIATION OR ALLOTMENT OF FUNDS

29. The expenditure or advance of any money or the performance of any obligation of the United States under this Contract shall be contingent upon appropriation or allotment of funds. Absence of appropriation or allotment of funds shall not relieve the Contractor from any obligations under this Contract. No liability shall accrue to the United States in case funds are not appropriated or allotted.

BOOKS, RECORDS, AND REPORTS

30. (a) The Contractor shall establish and maintain accounts and other books and records pertaining to administration of the terms and conditions of this Contract, including: the Contractor's financial transactions, water supply data, and Project land and right-of-way agreements; the water users' land-use (crop census), land ownership, land-leasing and water use data; and other matters that the Contracting Officer may require. Reports thereon shall be furnished to the Contracting Officer in such form and on such date or dates as the Contracting Officer may require. Subject to applicable Federal laws and regulations, each party to this Contract shall have the right during office hours to examine and make copies of the other party's books and records relating to matters covered by this Contract.

(b) Notwithstanding the provisions of subdivision (a) of this Article, no books, records, or other information shall be requested from the Contractor by the Contracting Officer unless such books, records, or information are reasonably related to the administration or performance of this Contract. Any such request shall allow the Contractor a reasonable period of time within which to provide the requested books, records, or information.

(c) At such time as the Contractor provides information to the Contracting Officer pursuant to subdivision (a) of this Article, a copy of such information shall be provided to the Operating Non-Federal Entity.

ASSIGNMENT LIMITED--SUCCESSORS AND ASSIGNS OBLIGATED

31. (a) The provisions of this Contract shall apply to and bind the successors and assigns of the parties hereto, but no assignment or transfer of this Contract or any right or interest therein shall be valid until approved in writing by the Contracting Officer.

(b) The assignment of any right or interest in this Contract by either party shall not interfere with the rights or obligations of the other party to this Contract absent the written concurrence of said other party.

(c) The Contracting Officer shall not unreasonably condition or withhold his approval of any proposed assignment.

SEVERABILITY

32. In the event that a person or entity who is neither (i) a party to a Project contract, nor (ii) a person or entity that receives Project Water from a party to a Project contract, nor (iii) an association or other form of organization whose primary function is to represent parties to

Project contracts, brings an action in a court of competent jurisdiction challenging the legality or enforceability of a provision included in this Contract and said person, entity, association, or organization obtains a final court decision holding that such provision is legally invalid or unenforceable and the Contractor has not intervened in that lawsuit in support of the plaintiff(s), the parties to this Contract shall use their best efforts to (i) within 30 days of the date of such final court decision identify by mutual agreement the provisions in this Contract which must be revised, and (ii) within three months thereafter promptly agree on the appropriate revision(s). The time periods specified above may be extended by mutual agreement of the parties. Pending the completion of the actions designated above, to the extent it can do so without violating any applicable provisions of law, the United States shall continue to make the quantities of Project Water specified in this Contract available to the Contractor pursuant to the provisions of this Contract which were not found to be legally invalid or unenforceable in the final court decision.

RESOLUTION OF DISPUTES

33. Should any dispute arise concerning any provisions of this Contract, or the parties' rights and obligations thereunder, the parties shall meet and confer in an attempt to resolve the dispute. Prior to the Contractor commencing any legal action, or the Contracting Officer referring any matter to Department of Justice, the party shall provide to the other party 30 days' written notice of the intent to take such action; Provided, That such notice shall not be required where a delay in commencing an action would prejudice the interests of the party that intends to file suit. During the 30-day notice period, the Contractor and the Contracting Officer shall meet and confer in an attempt to resolve the dispute. Except as specifically provided, nothing herein is intended to waive or abridge any right or remedy that the Contractor or the United States may have.

OFFICIALS NOT TO BENEFIT

34. No Member of or Delegate to Congress, Resident Commissioner, or official of the Contractor shall benefit from this Contract other than as a water user or landowner in the same manner as other water users or landowners.

CHANGES IN CONTRACTOR'S BOUNDARIES

35. (a) While this Contract is in effect, no change may be made in the Contractor's Boundaries, by inclusion or exclusion of lands, dissolution, consolidation, merger, or otherwise, except upon the Contracting Officer's written consent.

(b) Within 30 days of receipt of a request for such a change, the Contracting Officer will notify the Contractor of any additional information required by the Contracting Officer for processing said request, and both parties will meet to establish a mutually agreeable schedule for timely completion of the process. Such process will analyze whether the proposed change is likely to: (i) result in the use of Project Water contrary to the terms of this Contract; (ii) impair the ability of the Contractor to pay for Project Water furnished under this Contract or to pay for any Federally-constructed facilities for which the Contractor is responsible; and (iii) have an impact on any Project Water rights applications, permits, or licenses. In addition, the Contracting Officer shall comply with the NEPA and the ESA. The Contractor will be responsible for all costs incurred by the Contracting Officer in this process, and such costs will be paid in accordance with Article 25 of this Contract.

FEDERAL LAWS

36. By entering into this Contract, the Contractor does not waive its rights to contest the validity or application in connection with the performance of the terms and conditions of this Contract of any Federal law or regulation; Provided, That the Contractor agrees to comply with the terms and conditions of this Contract unless and until relief from application of such Federal law or regulation to the implementing provision of the Contract is granted by a court of competent jurisdiction.

NOTICES

37. Any notice, demand, or request authorized or required by this Contract shall be deemed to have been given, on behalf of the Contractor, when mailed, postage prepaid, or delivered to the Area Manager, Bureau of Reclamation, Northern California Area Office, 16349 Shasta Dam Boulevard, Shasta Lake, California 96019, and on behalf of the United States, when mailed, postage prepaid, or delivered to the Board of Directors of the Corning Water District,

P. O. Box 738, 22240 Gallagher Avenue, Corning, California 96021. The designation of the addressee or the address may be changed by notice given in the same manner as provided in this Article for other notices.

CONFIRMATION OF CONTRACT

38. The Contractor, after the execution of this Contract, shall promptly seek to secure a decree of a court of competent jurisdiction of the State of California, confirming the execution of this Contract. The Contractor shall furnish the United States a certified copy of the final decree, the validation proceedings, and all pertinent supporting records of the court approving and confirming this Contract, and decreeing and adjudging it to be lawful, valid, and binding on the Contractor.

IN WITNESS WHEREOF, the parties hereto have executed this Contract as of the day and year first above written.

THE UNITED STATES OF AMERICA

By: _____
Regional Director, Mid-Pacific Region
Bureau of Reclamation

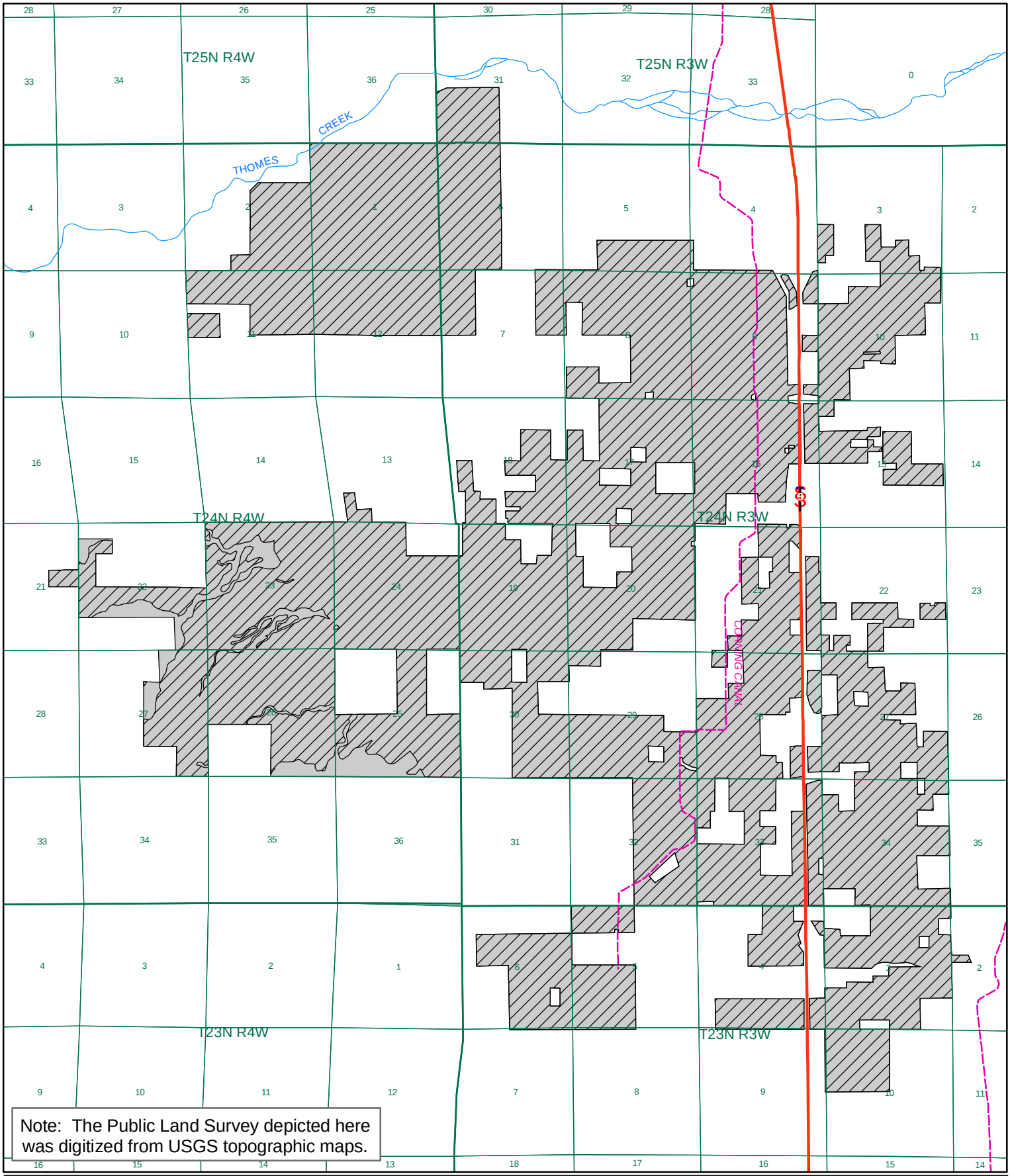
CORNING WATER DISTRICT

By: _____
President of the Board of Directors

Attest:

By: _____
Secretary of the Board of Directors

(I:\LTRC\LTRC Drafts\04-19-2004-01 Corning WD Final LTRC Draft.doc)



Corning Water District

Contract No. 14-06-200-6575-LTR1
Exhibit A

Contractor's Service Area

District Boundary

0 0.5 1 2 3 Miles

Date: October 19, 2004
File Name: N:districts\contracts\corning_wd\corning_ltr.mxd

602-202-1

EXHIBIT B
Rates and Charges
CORNING WATER DISTRICT

	2003 Rates Per Acre-Foot	
	Irrigation	M&I
CONTRACT RATE * (1st Tier - ≤80% of Contract Total)	$16.61	
2ND TIER [>80% ≤90% of Contract Total] (Sec. 202(3) Full Cost Rate + Contract Rate/ 2) **	$33.35	
3RD TIER [> 90% of Contract Total] (Sec. 202(3) Full Cost Rate) **	$50.08	
FULL-COST RATES: ** RRA Section 202(3) rate is applicable to Qualified Recipients or to Limited Recipients receiving irrigation water on or before October 1, 1981.	$64.34	
RRA Section 205(a)(3) rate is applicable to Limited Recipients that did not receive irrigation water on or before October 1, 1981.	$84.44	
SURCHARGES UNDER P.L. 102-575 TO RESTORATION FUND*** Restoration Payments [3407(d)(2)(A)]	$0.00	

* Capital component of cost-of-service rate is not included in Contract Rate due to ability to pay relief for Contractor established pursuant to the results of the Payment Capacity Analysis for the Tehama-Colusa Water Users Association Service Area as announced by letter dated February 10, 1995.

** Contractors with 9(d) distribution systems do not have the 9(d) Full Cost component included for tiered pricing calculations. See Article 1(j).

*** These surcharges are payments in addition to the water rates and are determined pursuant to Title XXXIV of P.L. 102-575. Restoration Fund surcharges under P.L. 102-575 are on a fiscal year basis (10/1 -9/30). Contractors with ability to pay relief do not pay Restoration Fund charges for irrigation water.

Note: Additional detail of rate components is available on the Internet at http:/www.mp.usbr.gov/ cvpwaterrates/.