Chapter 5
NED Plan

Based on the preceding evaluation and comparison of the Project alternative plans, Alternative Plan 1 is identified as the NED Plan in accordance with the P&G. This chapter further analyzes and develops the NED Plan and Locally Preferred Plan.

Features and Accomplishments

The NED plan (Plan 1) would include a new Delta diversion on Victoria Canal and a conveyance pipeline that ties into the existing Old River conveyance system. The new diversion would be equipped with a screened intake and pumping station with a capacity of 250 cfs. Implementation of the NED plan would require adding a new point of diversion to the existing water rights held by Reclamation and CCWD. However, this action would not result in increased water rights, CVP contract amounts, or permitted Los Vaqueros Reservoir filling rates.

Physical Features

The primary physical features of Plan 1 would be a new, screened water intake and a 250 cfs pumping station located along the lower third of Victoria Canal on Victoria Island, and a pipeline that would extend from the new intake directly across Victoria Island and Old River, and tie into CCWD's existing Old River conveyance system on Byron Tract (see Figure 4-1). In addition to the diversion and conveyance facilities, Plan 1 would also require levee improvements on Victoria Island to accommodate the new intake structure and associated facilities. Chapter 3 and Appendix C detail the preliminary designs and layouts of the elements associated with Plan 1.

Proposed Operations

The new Victoria Canal intake would be operated jointly with the existing Old River intake, which has a capacity of 250 cfs. The combined permitted capacity of the Old River and Victoria Canal intakes would be increased to 320 cfs to accommodate future (2020) demand conditions (CCWD, 1998). Under Plan 1, the Rock Slough intake would be used less frequently because the new Victoria Canal provides access to better water quality. The Mallard Slough intake would continue to operate in a manner similar to its current operations. Figure 5-1 compares the overall future diversion pattern for CCWD under Plan 1 and the No-Action Plan. It shows that, because of the higher water quality at Victoria Canal, CCWD would be able to shift some of its diversions from spring and early summer months (February through June) to late summer and fall months (August

through October). In addition to the timing shift of diversions under Plan 1, some diversions are also shifted from the Rock Slough and Old River intakes to the new Victoria Canal intake (see Figure 5-1).

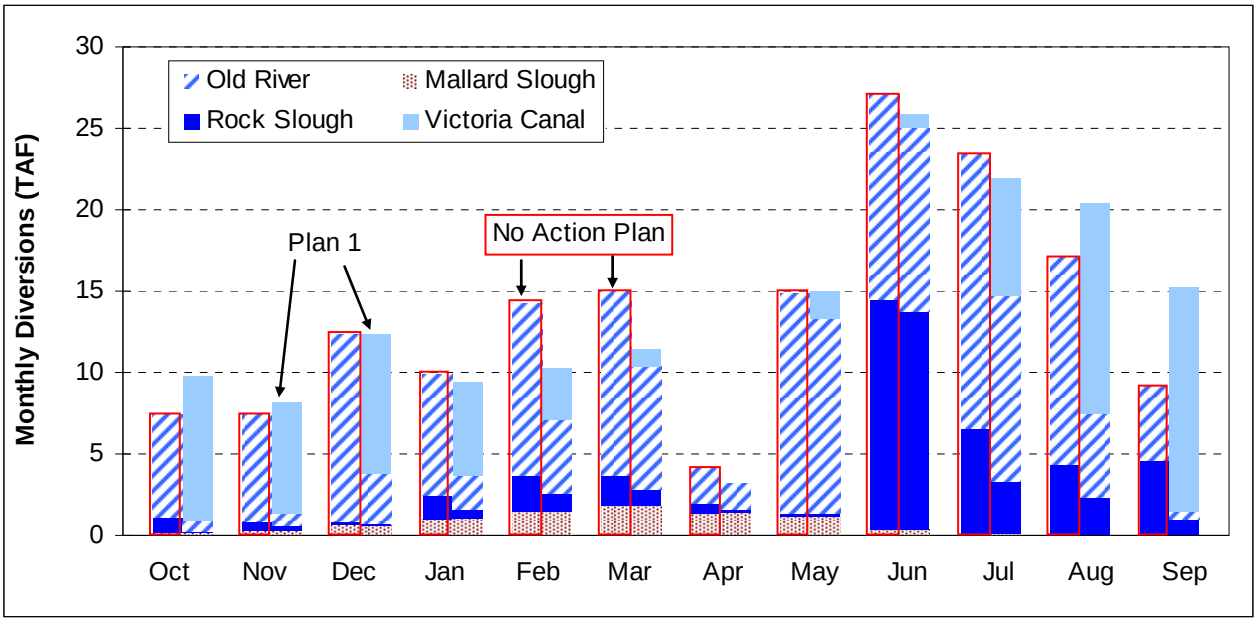

Figure 5-1. Change in CCWD Diversion Pattern Under Plan 1 Compared to the No-Action Plan Under Future Conditions

Accomplishment

Implementation of the NED plan would provide CCWD with increased operational flexibility to optimally manage its diversions and blend releases from Los Vaqueros Reservoir to provide higher quality delivered supplies. Figure 5-2 shows considerable improvement in average delivered water quality during most periods of the year. This reduction in salinity is also paralleled by a similar reduction in bromide, which is a constituent of concern in water treatment because it becomes a carcinogenic element (bromate) in the presence of ozone. Ozone is the preferred disinfection agent in the presence of high TOC because chlorination can induce the formation of carcinogenic DBPs in the presence of organic carbon.

Plan 1 would generate benefits to fisheries at the Rock Slough intake because of reduced diversions and resultant decrease in fish entrainment at the intake. Additional fisheries benefits would also occur as a result of shifting some diversions away from the Old River intake. However, since overall levels of CCWD diversions would remain the same under Plan 1 for future conditions, reduced diversions at the Rock Slough and Old River intakes would be compensated for by increased diversions at Victoria Canal. Therefore, some impacts to fisheries associated with increased diversions would occur around the

new intake (see Figure 5-3). Overall, Plan 1 would result in net benefits to fisheries because of the large reduction of diversions at the Rock Slough intake.

Plan 1 would provide additional reliability improvement benefits compared to the No-Action Plan through increased operational flexibility because of the additional intake location on the Delta. Increased operational flexibility coupled with better source water quality at Victoria Canal would result in increased carryover storage in Los Vaqueros Reservoir by reducing demand for reservoir releases for blending. Increased carryover storage in Los Vaqueros means that more storage would be available during emergencies. Figure 5-4 shows that Plan 1 would result in increased carryover storage in Los Vaqueros Reservoir during all year types, therefore increasing overall CCWD system reliability.

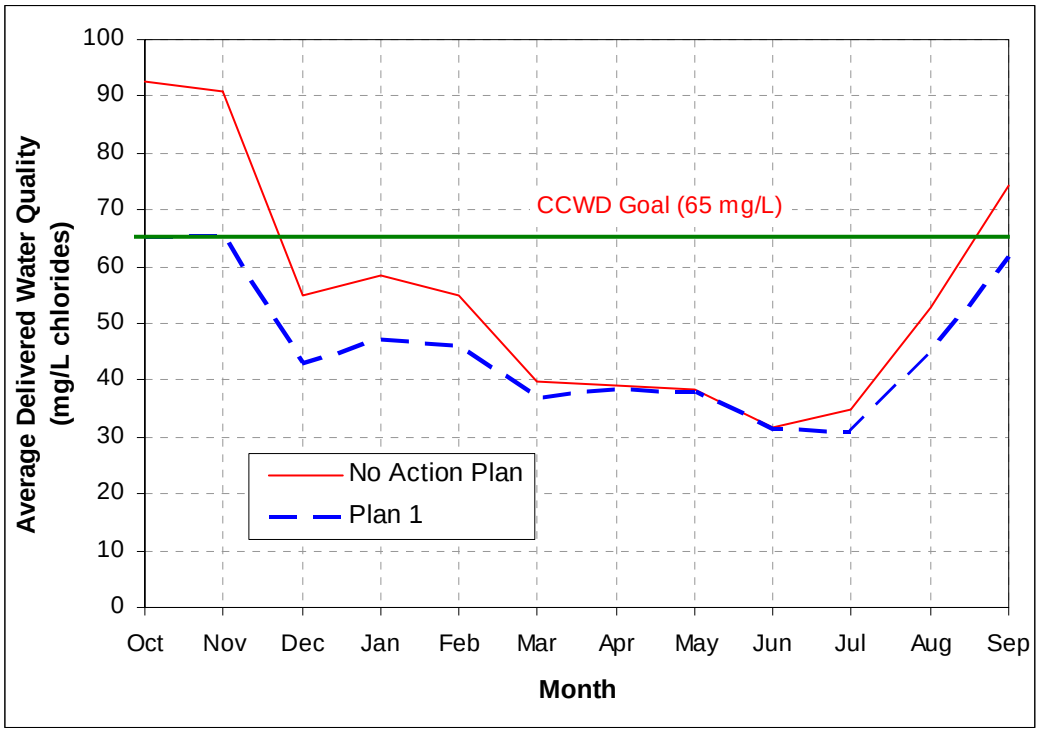

Figure 5-2. Comparison of CCWD Average Monthly Delivered Water Quality Under Plan 1 and the No-Action Plan for Future Conditions

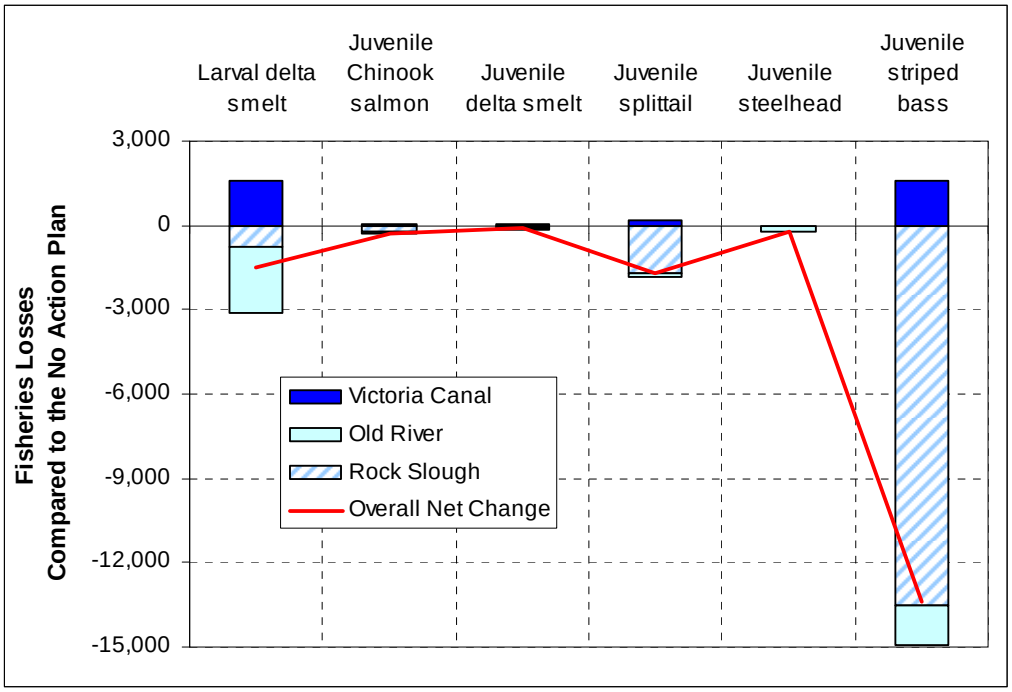

Figure 5-3. Change in Fisheries Losses at CCWD Intake Under Plan 1 Compared to the No-Action Plan for Future Conditions

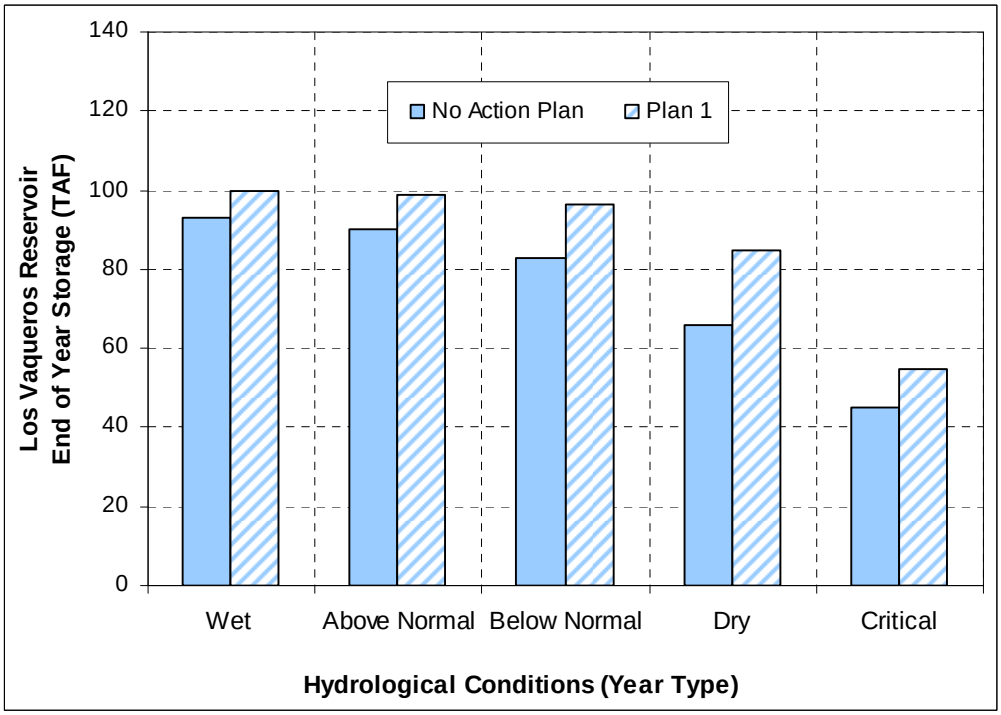

Figure 5-4. Comparison of Los Vaqueros Reservoir End of Year Storage Under Plan 1 and the No-Action Plan for Future Conditions

Design and Construction Considerations

The new intake on Victoria Canal and its associated facilities would be constructed on Victoria Island and Byron Tract. Preliminary designs and layouts of these facilities are described in Chapter 4 and Appendix C. Construction of these facilities is anticipated to take place over six construction phases extending approximately 36 months. These major construction stages include the following:

- Improvement to the existing Victoria Canal levee
- Installation of the new Victoria Canal intake structure, fish screen, and pumping station
- Installation of a new pipeline across Victoria Island
- Construction of a new pipeline crossing of Old River
- Construction of a new pipeline connection to the existing Old River Conveyance System

Overview of Construction Activities

This section provides an overview of construction activities that would take place during each construction stage of the AIP.

Levee Construction

Improvement to the existing Victoria Canal levee would be the first stage in AIP construction. Levee improvements would occur in two phases. First, an earthen setback levee would be constructed on the landward side of the existing levee. The setback levee would be integrated with the existing levee to provide continuity of the land/water barrier. Construction activities for the new intake would be initiated along the existing levee edge after the setback levee is completed. Sheet piles would be installed upstream and downstream from the new intake, and would be integrated into the new setback levee to serve as a seepage barrier. Slope protection in the form of riprap would be placed on the water side of the existing levee. The new fill behind the existing levee would be constructed to maintain continuity of the existing road system along the existing levee crest. The elevation along the top of the new embankment fill would match the existing levee top elevation. Erosion control measures such as hydroseeding would be used on the landward side of the new setback levee.

As part of levee construction, foundation preparations through soil densification may be required. Soil densification beneath the intake and levee would reduce the liquefaction potential of the soil and improve its lateral strength during seismic events. Preloading of the soils beneath the levee may also be required to reduce long-term settlement of the levee.

Intake Construction

The new Victoria Canal intake structure and pumping station would be housed on the existing levee, which would be reinforced and reconfigured to serve as the

engineered soil platform. In addition to construction on the levee, in-water construction would be required to install the intake structure and fish screen. In-water construction activities would be conducted either from a barge or from the top of the levee road. Most of the construction activities would be conducted in a dewatered cofferdam and would be isolated from Victoria Canal. As part of the construction of the new intake structure, a sheet pile cofferdam would be installed in Victoria Canal to isolate the work area from the canal water and provide a means to conduct construction work in a dewatered environment.

Pipeline Construction

The conveyance pipeline would be constructed across Victoria Island using a conventional open trench design. Because the conveyance pipeline would likely be installed below the groundwater table, the trench would be designed to provide enough earthen cover over the pipe to counter any buoyant forces that may occur. The pipeline would be buried in a trench that would be excavated to maintain a minimum cover of 5 feet over the pipeline.

The pipeline would be installed under Old River using standard tunneling techniques. A large pit would be excavated on Byron Tract, west of the existing levee. A similar pit would be excavated on Victoria Island. One pit would operate as a launching pit while the other would act as a receiving pit, functioning as a drop shaft for the completed pipeline. Once the new pipe is in place, concrete access vaults would be constructed within both the launching and receiving pits, prior to backfilling of the pits.

Tie-in to Existing Old River Conveyance system

The conveyance pipeline from the new Victoria Canal intake would connect into the existing Old River conveyance system. A potential tie-in approach is to connect to Old River pumping station wet well/ forebay through a direct sidewall connection. The existing Old River pumping station has two 72-inch-diameter pipe “stub-outs” in the sidewall of its wet well. This proposed connection should conform to Hydraulic Institute (HI) standards, which require reduced turbulence, eddies, and vortices that could compromise pump operations. Small scale model testing may be required to identify and correct any potential adverse flow patterns resulting from the proposed sidewall connection. Another potential tie-in approach is to connect to the exiting Old River pipeline.

Access and Construction Staging

Access to the site of proposed facilities on Victoria Island in the Central Delta would be via the existing levee roads or an existing north-south dirt road located off SR-4. The levee access roads may be surfaced with aggregate base rock to improve access during all weather conditions, but otherwise would not be modified. The north-south dirt road may be improved to accommodate two-way traffic and to meet anticipated vehicular traffic loadings.

Construction staging areas would be located on both Victoria Island and Byron Tract. Potential staging areas on Victoria Island and Byron Tract are shown in

Figure 5-5. Staging areas for construction parking and the temporary stockpiling of excavated soils and storage of construction equipment and materials are expected to occupy approximately 10 acres on Victoria Island. Pipeline materials (e.g., piping, backfill material, geogrids) would be stored along the pipeline route within the temporary easement. A smaller staging area would be located on Byron Tract.

Borrow areas for native materials required for levee and pipeline backfill would be available on site in Victoria Canal. According to preliminary field inspections, soils from shallow excavations at the proposed facilities sites would likely be suitable for backfill. However, if on-site borrow areas would not meet construction needs, potential borrow areas within 20 miles of the project site are available.

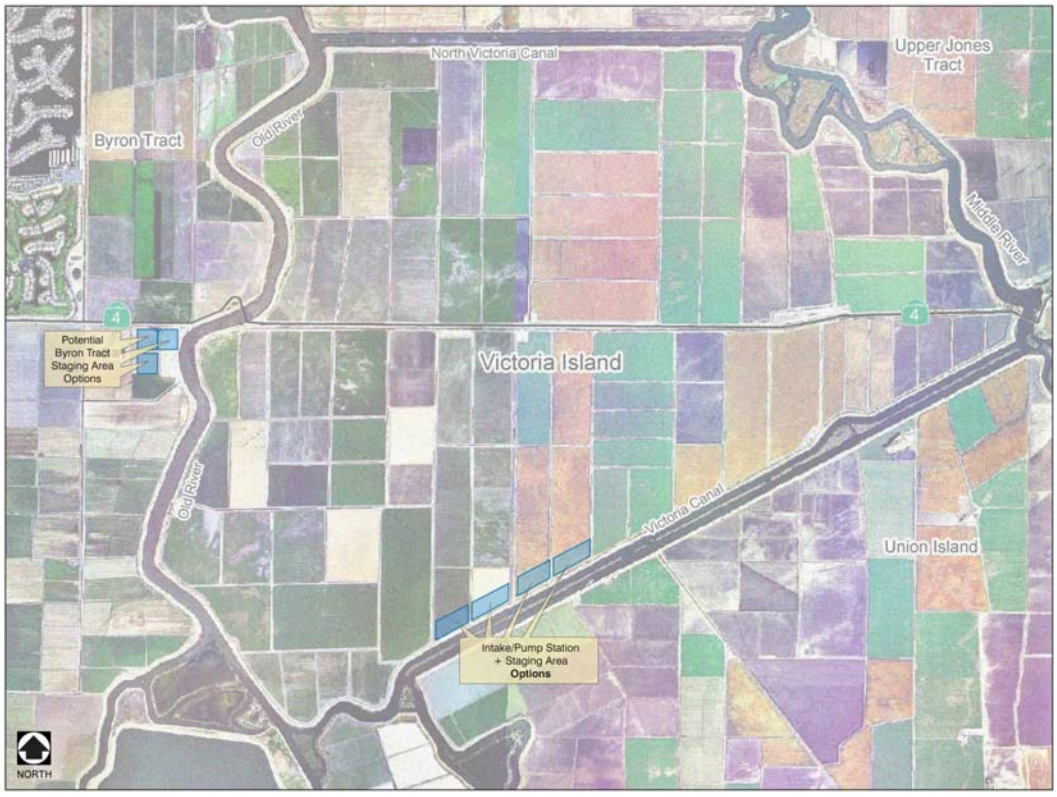

Figure 5-5. Potential Staging Areas for the NED Plan

Utilities at Construction Site

Currently, no utilities are present at the proposed intake site. Electricity, nonpotable water, a sanitary holding tank, and a telecommunications system would be required during construction. A new power substation would be constructed on site. Power transmission lines would be installed from the Western Area Power Administration distribution system to the substation. Power to the facility would be transmitted through the distribution system from a

combination of available sources, which may include PG&E and/or Reclamation's CVP. Potential corridors for power lines are the same as for the pipeline, although the pipeline and power lines may not be on the same alignment.

Water from Victoria Canal would be pumped through a screening filter to provide non-potable service water for the pump seals and washrooms. Sanitary services for personnel on site for maintenance activities would be provided through the use of an underground holding tank that would be regularly maintained. Antennas would be installed at the site to allow the station's programmable logic controller and security system to communicate with CCWD's supervisory control and data acquisition system. Telephone cable would also be installed to allow for voice and data communication.

Real Estate Requirements

Real estate requirements for Plan 1 include easements and land acquisitions for siting facilities, as well as for short-term construction activities and long-term access to project sites. For facilities siting, CCWD would acquire land on Victoria Island approximately 1,000 to 1,200 feet longitudinally and 250 to 300 feet laterally on the land side of the existing Victoria Canal levee. This is approximately 6 to 8 acres, which would accommodate the relocated levee because the existing levee would house the new screened intake and pumping station (refer to Figure 4-2).

In addition to land acquisition for the intake and levee enhancement site, required long-term easements, or potentially land purchases, would include the following:

- A strip up to 70 feet wide along the pipeline alignment on Victoria Island for O&M access
- Easements for long-term access to the project sites
- Required temporary easements for the duration of project construction which would include the following:
  - Construction easement approximately 200 feet wide along the pipeline alignment on Victoria Canal
  - Construction easements of approximately 10 acres for construction staging areas
  - Construction easements of approximately 25 to 40 acres for site access on Victoria Island (would include on-island road access and potential levee road access)

Operations and Maintenance Considerations

The pumping station for the new intake on Victoria Canal would be operated similarly to the existing Old River pump station. The Old River pump station is normally operated remotely from the Bollman WTP but can be locally operated at the pump station itself. CCWD personnel sequentially start the pumps at the Old River pump station to initiate diversion from Old River. The number of pumps operating at any given time depends on CCWD's flow requirements and diversion strategy. When the pump station is taken off-line, the pumps are turned off and the wet well remains flooded.

Maintenance activities at the proposed new intake and pump station would be similar to maintenance activities currently conducted at the Old River pump station, including pump and equipment inspections and maintenance, water quality monitoring, and fish monitoring activities. Periodic maintenance dredging may also be required at the new intake facility. The existing Old River facility has not required any maintenance dredging to date, but an intake on Victoria Canal could experience different sedimentation conditions. Because the proposed new pumping station would be unattended, CCWD personnel would monitor the station via telemetry as well as through regular inspections.

Economic Summary

Economic evaluation of the NED plan was developed in Chapter 4, which evaluated its likely economic benefits and associated implementation costs. That analysis established that the NED plan would have a benefit-cost ratio greater than one, and would maximize net benefits compared to other considered alternative plans.

This section describes the Federal economic principles and methods used to equitably allocate project financial costs to beneficiaries. Reclamation guidance for the economic evaluation and cost allocation of water resources project plans is provided by the Federal P&G.

Detailed Cost Estimate

The appraisal-level cost estimate for the NED plan (refer to Table 4-6) is based on design cost estimates developed by CCWD for the AIP (CCWD, 2006). The cost estimates developed by CCWD were adjusted to reflect cost factors (e.g., contingency, unlisted items) according to Reclamation guidance for appraisal-level cost estimates. This adjustment was necessary to allow a consistent basis of comparison between appraisal-level costs for Plans 1, 2, and 3.

To develop a feasibility-level or better cost estimate for use in cost allocation, the predesign cost estimates developed by CCWD for the AIP (CCWD, 2006) is used. Cost factors employed by CCWD in the predesign cost estimate report are not adjusted because they reflect more detailed analysis of the NED Plan costs.

Feasibility-level or better cost estimates of the NED plan are summarized in Table 5-1. Note that the base construction cost (total field costs) in Table 5-1 matches the total field cost in Table 4-6 (the appraisal-level cost estimate). This is because both the appraisal- and feasibility-level cost estimates use the same information developed by the predesign report for the AIP (CCWD, 2006).

Table 5-1. Feasibility-Level or Better Cost Estimate for the NED Plan

Component	Cost ($millions)[1]
Base Construction/ Total Field Cost [2]	**$47.68**
Construction Contingency @20%	$9.54
Project Construction Cost	**$57.22**
General Conditions @10% [3]	$5.72
Subtotal	*$62.94*
General Contractor Overhead and Profit @10%	$6.29
Subtotal	*$69.23*
Escalation to Mid-point of Construction [4]	$10.87
Subtotal	*$80.10*
Engineering, Legal, and Administrative [5]	$18.80
Sales Tax (8.25% on 50% of Project Construction Cost)	$2.36
Land Acquisition Fee	$2.00
Total Implementation Cost	**$103.26**
	Annual Cost ($millions/year)
Equivalent Annual Implementation Cost over 40 Years	**$5.91**
Annual O&M [6]	$0.39
Annual Additional Energy Cost [7]	$0.0
Annualized Replacement Cost [8]	$0.0
Equivalent Annual Project Cost over 40 Years	**$6.31**

Notes:

[1] Feasibility-level or better cost estimates are in 2006 dollars.

[2] Costs are from the predesign cost estimates developed by CCWD for the AIP.

[3] General conditions include mobilization/demobilization, bonds and insurance, and other project startup and temporary facilities.

[4] Projected escalation of construction material based on recent historical trends. It assumes 8 percent annual escalation in costs calculated to midconstruction period.

[5] Reflects actual planning costs, contracted design work, and project construction management expenses. Estimates also include CCWD labor and administrative cost.

[6] Annual O&M factors are 0.5 percent for pipelines, 1.0 percent for intake facilities and pumping station, 1.0 percent for desalination plant, and 0.8 percent for power supply facilities.

[7] Net additional energy costs are the incremental energy costs above the project costs for the No-Action Plan (i.e., future without-project condition).

[8] Annualized replacement costs are calculated for components with assumed life cycles of less than 40 years. Only the reverse osmosis desalination treatment components have a life cycle of less than 40 years (7-year life cycle is assumed in this analysis).

Key:
= not applicable
AIP = Alternate Intake Project
CCWD = Contra Costa Water District
O&M = operations and maintenance

Although cost estimates in Table 5-1 represent the best available information at the time this study was prepared, final construction costs will depend on actual labor and materials costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, and other variable factors. Accordingly, project feasibility, benefit/cost analysis, risk, and funding must be reviewed prior to making specific funding decisions and establishing the project budget.

Table 5-2 presents breakdown of total project costs for the AIP among capital, IDC, and O&M. These identified cost components are used to define cost allocation between project purposes and cost apportionment among project beneficiaries.

Table 5-2. Cost Summary for the NED Plan

Cost Component	Annualized Cost ($millions/year)	Present Value ($millions) [1]
Capital Cost	$5.29	$92.39
IDC [2]	$0.62	$10.87
Subtotal	*$5.91*	*$103.26*
O&M [3]	$0.40	$6.98
Total	**$6.31**	**$110.24**

Notes:
[1] Costs are in 2006 dollars.
[2] IDC assumes 3-year construction period.
[3] O&M costs are incremental O&M costs incurred because of the NED plan.

Key:
IDC = interest during construction
O&M = operation and maintenance

Preliminary Cost Allocation

Cost allocation is the process by which the financial costs of a project are distributed among authorized project purposes, or those purposes proposed for authorization, in accordance with existing law. Cost allocation is followed by defining cost sharing arrangement between project beneficiaries.

Methodology

Distribution of project cost needs to consider the elements of the project that are directly tied to a project purpose, as well as the distribution of benefits among project purposes. A widely used method for cost allocation in Federal water resources projects is the Separable Costs-Remaining Benefits (SCRB) method, which distributes costs among the project purposes by identifying separable costs and allocating joint costs in proportion to each purpose's remaining benefits. Project costs (i.e., construction cost, IDC, O&M costs, and indirect costs) can be grouped, with respect to project purposes, into separable and joint costs.

Separable costs are the incremental costs of adding a purpose to a multipurpose project. Separable costs for a project purpose are estimated as the reduction in project costs that would result if that purpose is excluded. Joint costs are the remaining project costs after all separable costs are subtracted.

The SCRB method starts by identifying the separable costs for each project purpose. Separable costs are subtracted from the lesser of benefits or single-purpose alternative project costs to derive remaining benefits. Next, joint costs are allocated in proportion to the distribution of remaining benefits. Joint project costs are then assigned to a project purpose based on the proportion of their remaining benefits (i.e., total benefits less the separable costs of each project purpose). Total cost allocated to a project purpose is the sum of its separable and apportioned joint costs.

Another method for allocating project costs is the alternative justifiable expenditure (AJE) method. The AJE method is a modified SCRB method used in situations when derivation of the separable costs is not feasible. Cost allocation under the AJE method is the same as under the SCRB method, except that specific costs (i.e., costs for project components that contribute to a single purpose and exclude the costs of a change in project design due to inclusion) replace separable costs. The remaining (joint) costs are apportioned among project purposes based on their total benefits. However, if no specific or separable costs can be identified, cost allocation can be directly carried out based on the distribution of benefits between project purposes.

Cost Allocation for the AIP

The cost allocation process starts by identifying project specific, separable, and joint costs, as they relate to project purposes. Based on the presence of one or more of these cost categories, a cost allocation method is then selected and applied.

The AIP has three purposes: a primary purpose, which is water quality improvement, and two secondary purposes, which are fisheries protection and increased water supply reliability. For each project purpose, separable costs are the marginal costs incurred because of adding a specific purpose to the project. Under this definition, no separable costs can be established for fisheries and water supply reliability purposes of the AIP. If fisheries and water reliability purposes are removed from the AIP, no change would occur in facilities configuration or operations of the project. Following the same reasoning, no specific costs could be identified for fisheries and supply reliability benefits.

Because no specific or separable costs can be identified for the two secondary AIP purposes, all project costs can be considered a separable cost for the water quality improvement purpose. Using the SCRB method, all project costs would be allocated to the water quality improvement purpose.

Cost Apportionment

Following allocation of project costs to project purposes, these costs are apportioned to the Federal Government and non-Federal sponsor(s) based on specific project authorization and/or established Federal cost-sharing laws and regulations. Detailed cost apportionment analysis is developed as part of the financial analysis for implementation of the NED plan.

Environmental Consequences and Requirements

This section summarizes the environmental effects of the NED plan on the significant resources in the study area. Discussion of impacts on significant resources was presented in Chapter 4, but was limited to Delta water resources, including local hydrology and water quality, Delta fisheries and aquatic resources, and wildlife and other terrestrial resources. The analysis presented in this section expands on that discussion to highlight impacts to all relevant resources evaluated in the AIP EIR/EIS. This analysis is largely based on the final AIP EIR/EIS document adopted in October 2006 (CCWD and Reclamation, 2006).

A summary of the primary environmental effects of the NED plan on different resource areas is presented in Table 5-3. These environmental effects are discussed below.

Less-than-Significant Environmental Impacts

The NED plan would have less-than-significant or no impact to Delta water resources, land use, growth-inducing conditions, recreation, visual resources, paleontological resources, socioeconomic conditions, and environmental justice. With adequate mitigation, some identified impacts to other resource areas would be reduced to less-than-significant levels. These impacts are primarily temporary construction-related impacts of the NED Plan. These impacts and proposed mitigation measures are described below:

- Construction activities could temporarily degrade surface water quality. This impact would be reduced to a less-than-significant level with the preparation and implementation of a Stormwater Pollution Prevention Plan.

- Construction activities could also contribute to temporary water quality degradation if constructed simultaneously with some SDIP construction activities. Coordination with SDIP construction activities to minimize cumulative water quality effects would reduce this cumulative impact to a less-than-significant level.

- Construction of the intake and pumping station could weaken the local levee on Victoria Canal and increase the risk of flooding to Victoria Island. However, the levee construction method and planned

improvements to the levee at the location of the intake site would actually increase stability of that levee over preproject conditions.

- Construction of proposed facilities could increase geologic hazards from seismically induced or soil-related structural failure of these facilities. Completion of a design-level geotechnical study would reduce these impacts to a less-than-significant level.

- Construction activities could adversely affect fisheries and aquatic resources during construction through underwater sound pressure impacts, potential chemical spills, and fish and macroinvertebrate stranding. All of these potential construction-related effects are expected to be reduced to a less-than-significant level through the use of appropriate measures to reduce and/or avoid underwater sound pressure, prevent/avoid hazardous materials, and implement a fish rescue program during construction to prevent stranding in the cofferdam.

- Construction activities could result in significant direct and cumulative impacts to jurisdictional waters of the United States, sensitive habitat, and special-status wildlife and plant species. These potential impacts would be reduced to less-than-significant levels with measures to minimize potential fill of jurisdictional waters of the United States. These measures would also include surveys and protective measures for special-status species and sensitive habitat, as well as compensation and mitigation for unavoidable impacts.

- Construction activities could result in significant temporary increases in traffic hazards on local roadways. This impact would be reduced to less-than-significant levels with the implementation of a traffic control and safety assurance plan.

- Construction activities could generate significant short-term construction noise. This impact would be reduced to a less-than-significant level with use of feasible noise-control devices on construction equipment and adherence to a construction schedule that minimizes construction noise during noise-sensitive times of the day.

- Construction activities could temporarily disrupt utility services. This impact would be reduced to a less-than-significant level by coordinating with utilities to ensure that existing utilities are not damaged and service disruptions do not occur.

- Construction workers and CCWD personnel could be potentially exposed to hazardous materials, namely, pesticides. This impact would be reduced to a less-than-significant level through coordination with landowners and land managers to prevent exposure to harmful levels of pesticides from adjacent agricultural practices.

- Construction activities could result in damage to or destruction of undiscovered cultural resources and discovery of human remains during construction. These impacts would be reduced to less-than-significant levels by following procedures to notify appropriate agencies when such finds are made.

Table 5-3. Summary of Environmental Effects of the NED Plan

Environmental Effect	Level of Impact				
	No Impact	Less than Significant	Less than Significant w/ Mitigation	Significant/ Unavoidable	Beneficial
Delta Water Resources					
– Long-term changes in Delta water supplies		X			
– Long-term changes in Delta water quality that cause violations of Delta water quality standards		X			
– Long-term changes that substantially degrade water quality, adversely affecting beneficial uses or substantially changing Delta user's operations		X			
– Long-term changes in Delta water levels		X			
Local Hydrology and Water Quality					
– Temporary degradation of surface water quality			X		
– Potential contribution of new facilities to flooding		X			
– Change in local flooding potential as a result of levee modifications		X			
Delta Fisheries and Aquatic Resources					
– Construction induced sedimentation, turbidity, and contaminants		X			
– Underwater sound pressure impact from cofferdam			X		
– Potential chemical spill during construction			X		
– Potential fish and macroinvertebrate stranding during dewatering of cofferdam			X		
– Aquatic habitat loss at intake structure site along Victoria Canal shoreline		X			
– Hydraulic modifications to habitat in Victoria Canal and adjacent to the intake		X			
– Fish losses through entrainment and impingement at CCWD intakes					X
– Effects on Delta fisheries and aquatic habitat, as indicated by hydrologic indicators		X			
– Effects of periodic maintenance and dredging on fish		X			
Terrestrial Biological Resources					
– Potential fill of jurisdictional waters of the United States and loss of sensitive habitat		X			
– Potential loss of special-status plants		X			
– Effects on giant garter snake		X			
– Effects on greater sandhill crane	X				
– Effects on Swainson's hawk, white-tailed kite, northern harrier, and other raptors		X			
– Effects on burrowing owl		X			
– Effects on western pond turtle		X			
– Effects on California horned lark and loggerhead shrike	X				
– Effects on tricolored blackbird		X			
– Potential effects to Natural Community Conservation Planning (NCCP) terrestrial habitat types		X			
– Potential cumulative effects on terrestrial special-status species and habitats		X			
– Disturbance/removal of habitat for California clapper rail, California black rail, and salt marsh harvest mouse	X				
– Effects on northern harrier, white-tailed kite, and other raptors	X				
– Effects on habitat for common yellowthroat, Suisun song sparrow, and loggerhead shrike	X				

Table 5-3. Summary of Environmental Effects of the NED Plan (Continued)

Environmental Effect	Level of Impact				
	No Impact	Less than Significant	Less than Significant w/ Mitigation	Significant Unavoidable	Beneficial
Earth Resources					
– Risk of geologic hazards			X		
– Project-related erosion hazards		X			
Land Use					
– Conflicts with existing land use goals and policies	X				
Growth-Inducing Effects					
– Direct and indirect growth-inducing effects	X				
Agriculture					
– Permanent conversion of Prime Farmland and Farmland of Statewide Importance				X	
– Conflicts with agricultural zoning or Williamson Act Contracts		X			
Recreation					
– Temporary or long-term recreation effects		X			
Utilities and Service Systems					
– Disruption of utility services during construction			X		
– Increases in energy consumption		X			
– Increases in solid waste generation		X			
Transportation and Circulation					
– Temporary and long-term traffic increase		X			
– Temporary traffic and emergency service delays and access restrictions		X			
– Temporary increase in traffic hazards			X		
– Temporary disruptions to rail operations	X				
– Temporary disruptions to transit service	X				
Hazardous Materials					
– Potential creation of a public health hazard		X			
– Potential hazardous materials exposure			X		
– Potential wildfire hazard		X			
Air Quality					
– Short-term construction criteria air pollutant emissions				X	
– Long-term operational (regional) criteria air pollutant emissions		X			
– Long-term operational (local) mobile-source carbon monoxide emissions		X			
– Exposure of sensitive receptors to toxic air contaminants		X			
– Exposure of sensitive receptors to odorous emissions		X			
Noise					
– Short-term construction noise			X		
– Long-term increases in noise		X			
– Exposure of sensitive receptors to or generation of excessive ground-borne vibration or noise		X			
Visual Resources					
– Temporary visual effects		X			
– Long-term visual effects		X			
– Changes in light or glare		X			

Table 5-3. Summary of Environmental Effects of the NED Plan (Continued)

Environmental Effect	Level of Impact				
	No Impact	Less than Significant	Less than Significant w/ Mitigation	Significant/ unavoidable	Beneficial
Cultural Resources					
– Damage to/destruction of undiscovered cultural resources			X		
– Discovery of human remains			X		
– Damage to/destruction of documented cultural resources	X				
Paleontological Resources					
– Disturbance of paleontological resources	X				
Socioeconomic Effects					
– Potential permanent decrease in local economic activity and fiscal revenues		X			
– Temporary economic and fiscal impacts		X			
Environmental Justice					
– Potential disproportionate effects on minority and low-income populations	X				

Significant and Unavoidable Environmental Impacts

Based on environmental resource evaluations presented in the AIP EIR/EIS, the NED plan would result in adverse environmental effects that cannot be reduced to a less-than-significant level to the resource areas of agriculture and air quality.

Agriculture

The NED plan would permanently convert approximately 6 to 8 acres of Prime Farmland and Farmland of Statewide Importance in San Joaquin County to nonagricultural uses, resulting in a significant and unavoidable direct and cumulative impact. The NED plan would also temporarily disrupt farming operations on approximately 200 to 470 acres of farmland during construction activities.

Air Quality

The NED plan would result in significant direct and cumulative impacts related to the generation of short-term construction criteria air pollutant emissions with implementation of San Joaquin Valley Air Pollution Control District (SJVAPCD) and Bay Area Air Quality Management District (BAAQMD) measures, these impacts would be reduced, but not to a less-than-significant level.

Beneficial Environmental Impacts

Implementation of the NED plan would result in a beneficial impact with respect to net fish losses through entrainment and impingement because pumping would

be relocated from Rock Slough to the new Victoria Canal intake. It would also assist in the long-term productivity of the environment by protecting and improving delivered water quality to CCWD customers. These long-term beneficial effects of the NED plan would outweigh the potentially significant short-term impacts to the environment resulting primarily from project construction (e.g., interference with local traffic and circulation, limited air emissions, increase in ambient noise levels, dust generation, disturbance of wildlife.

Irreversible and Irretrievable Commitments of Resources

The irreversible and irretrievable commitment of resources is the permanent loss of resources for future or alternative purposes. Irreversible and irretrievable resources are those that cannot be recovered or recycled or those that are consumed or reduced to unrecoverable forms. The NED plan would result in the irreversible and irretrievable commitment of energy and material resources during project construction, operation, and maintenance, including the following:

- Construction materials, including resources such as rocks, wood, concrete, glass, roof shingles, and steel
- Land area committed to new/expanded project facilities
- Energy expended in the form of electricity, gasoline, diesel fuel, and oil for equipment and transportation vehicles that would be needed for project construction, operation, and maintenance

The use of these nonrenewable resources is expected to account for a minimal portion of the region's resources and would not affect the availability of these resources for other needs within the region.

Institutional and Other Considerations

Implementation of the NED plan would involve adding a new point of diversion to some of the existing water rights held by Reclamation and by CCWD. This would require Reclamation and CCWD to agree to a change in point of diversion of CVP water under Contract No. I75r-3401A-LTR1, and would require Reclamation and CCWD to petition SWRCB for necessary water right changes regarding point of diversion. Reclamation and CCWD each hold water rights and would both need to petition SWRCB separately for permit modifications. Permits would also be required from USACE. It should be noted that CCWD would not seek to increase its water rights, CVP contract amounts, or permitted Los Vaqueros Reservoir filling rates through this action.

The proposed facilities as part of the NED plan would be owned and operated by CCWD. CCWD would be responsible for compliance with all environmental regulations and permitting conditions for the construction and operation of the new facilities.

As part of the ASIP for the AIP, long-term monitoring would be required for entrainment of fish eggs, larvae, and juveniles at the new intake consistent with the ongoing fishery monitoring being conducted at other CCWD facilities. These monitoring activities and their frequency would be periodically reviewed for modification or discontinuation in coordination with appropriate fisheries agencies.