

EXECUTIVE SUMMARY**Key IAIR Topics**

- ❖ Definition of the study area
- ❖ Identification of resource problems, needs, and opportunities
- ❖ Development of planning objectives and constraints
- ❖ Screening of measures
- ❖ Additional screening of surface storage measures
- ❖ Formulation of initial alternatives

The North-of-the-Delta Offstream Storage (NODOS) Investigation is a Feasibility Study being performed by the California Department of Water Resources (DWR) and the United States Department of the Interior, Bureau of Reclamation (Reclamation), in partnership with local interests and pursuant to the CALFED Bay-Delta Program (CALFED) Programmatic Environmental Impact Statement/Environmental Impact Report (PEIS/EIR) Record of Decision (CALFED, 2000). The NODOS Investigation is evaluating potential offstream surface water storage projects in the upper Sacramento River Basin that could improve water supply and reliability, enhance anadromous fish survival, and provide high-quality water for agricultural, municipal and industrial (M&I), and environmental uses. The NODOS

Investigation is one of five surface water storage studies recommended in the CALFED PEIS/EIR Record of Decision (CALFED, 2000).

The NODOS Investigation is being performed in phases. This Initial Alternatives Information Report (IAIR) identifies, discusses, and screens measures to address the problems and needs and then introduces the development of potential initial alternatives for further consideration. Potential initial alternatives will be incorporated into and refined in the subsequent Plan Formulation Study, which will culminate in a Plan Formulation Report for the NODOS Investigation. Conclusions and recommendations will evolve to incorporate the results of future technical evaluations as the investigation progresses. The final phase in the process will be a Feasibility Study report/EIS/EIR, with supporting environmental documentation consistent with the federal *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* (P&Gs) (WRC, 1983); Reclamation directives; DWR guidance; and applicable environmental laws. DWR and Reclamation are coordinating the NODOS Investigation with the California Bay-Delta Authority, which provides general oversight and coordination of CALFED activities. DWR and Reclamation also coordinate with the California Bay-Delta Public Advisory Committee, which in turn advises the U.S. Secretary of the Interior regarding implementation of the CALFED program. NODOS planning also will be consistent with the CALFED program solution principles and implementation commitments described in the Record of Decision.

BASIS OF INVESTIGATION

The development and management of additional water supply can alleviate several problems and meet several needs within the Sacramento River Basin and more widely, throughout California. These problems include water supply reliability, increasing water supply needs, limited operational flexibility of the existing water resources system, unfavorable conditions for migrating anadromous fish and other aquatic species, and impaired water quality. In addition, opportunities may exist for hydropower generation, recreation, and flood control storage.

Major existing water resources projects that influence NODOS planning and its potential capabilities include Reclamation's Central Valley Project (CVP), California's State Water Project (SWP), and the United States Army Corps of Engineers' Sacramento River Flood Control Project. In addition, two

ongoing programs in the Central Valley significantly influence the NODOS Investigation: the Central Valley Project Improvement Act and the California Bay-Delta Program, which is responsible for implementing the CALFED Bay-Delta PEIS/EIR and Record of Decision.

In one of the most ambitious integrated water management plans in the nation, the CALFED Bay-Delta Program set forth objectives and actions to provide good water quality, restore habitat and ecological function in the San Francisco Bay/Sacramento-San Joaquin River Delta, and continue to meet the water needs of farms and cities. The program recognized early on that its plan must include the means for fully integrating California’s water supply system to provide more reliable water supplies and to meet competing needs. The program also noted that additional storage is crucial to successfully meeting those needs. Storage is one of 12 program elements designed to meet the following program objectives: water supply reliability, levee system integrity, water quality, and ecosystem restoration. All aspects of the CALFED Program are interrelated and interdependent. More specifically, many of the elements are complementary to, or directly related to, storage.

STUDY AREA EMPHASIS

The primary study area for the NODOS Investigation encompasses the Upper Sacramento River and the Northern Sacramento Valley. Because of the potential influence of the NODOS Investigation on other programs and projects, primarily in the Central Valley, the extended study area includes the Sacramento-San Joaquin River Delta (Delta) and the CVP and SWP service areas (Figure ES-1).

STUDY AUTHORIZATION

As a result of increases in demands for water supplies throughout California, both DWR and Reclamation have maintained active authorizations and funding mechanisms for the NODOS Investigation. Congress provided NODOS Feasibility Study authority to Reclamation in the Consolidated Appropriations Act, 2003 (Public Law 108-7) and reaffirmed this authority in the Water Supply, Reliability, and Environmental Improvement Act, 2004 (Public Law 108-361). DWR currently operates full feasibility and study authority as part of the CALFED Bay-Delta Program. State funding has been derived from both DWR’s general fund and through state bond funds.

PROBLEMS, NEEDS, AND OPPORTUNITIES

Additional water supply in the Upper Sacramento River basin could be used to respond to several water resources problems, needs, and opportunities. These are briefly summarized hereafter.

Water Supply Reliability – Reliability is one of four primary interrelated objectives of the CALFED program. Reliably delivering water to meet urban, environmental, and agricultural needs requires the availability and timely delivery of water where it is needed.

<p style="text-align: center;">Problems and Needs</p> <ul style="list-style-type: none">❖ Water supply reliability❖ Water supply❖ Water management flexibility❖ Anadromous fish survival❖ Water quality❖ Environmental <p style="text-align: center;">Opportunities</p> <ul style="list-style-type: none">❖ Hydropower generation❖ Recreation❖ Flood control

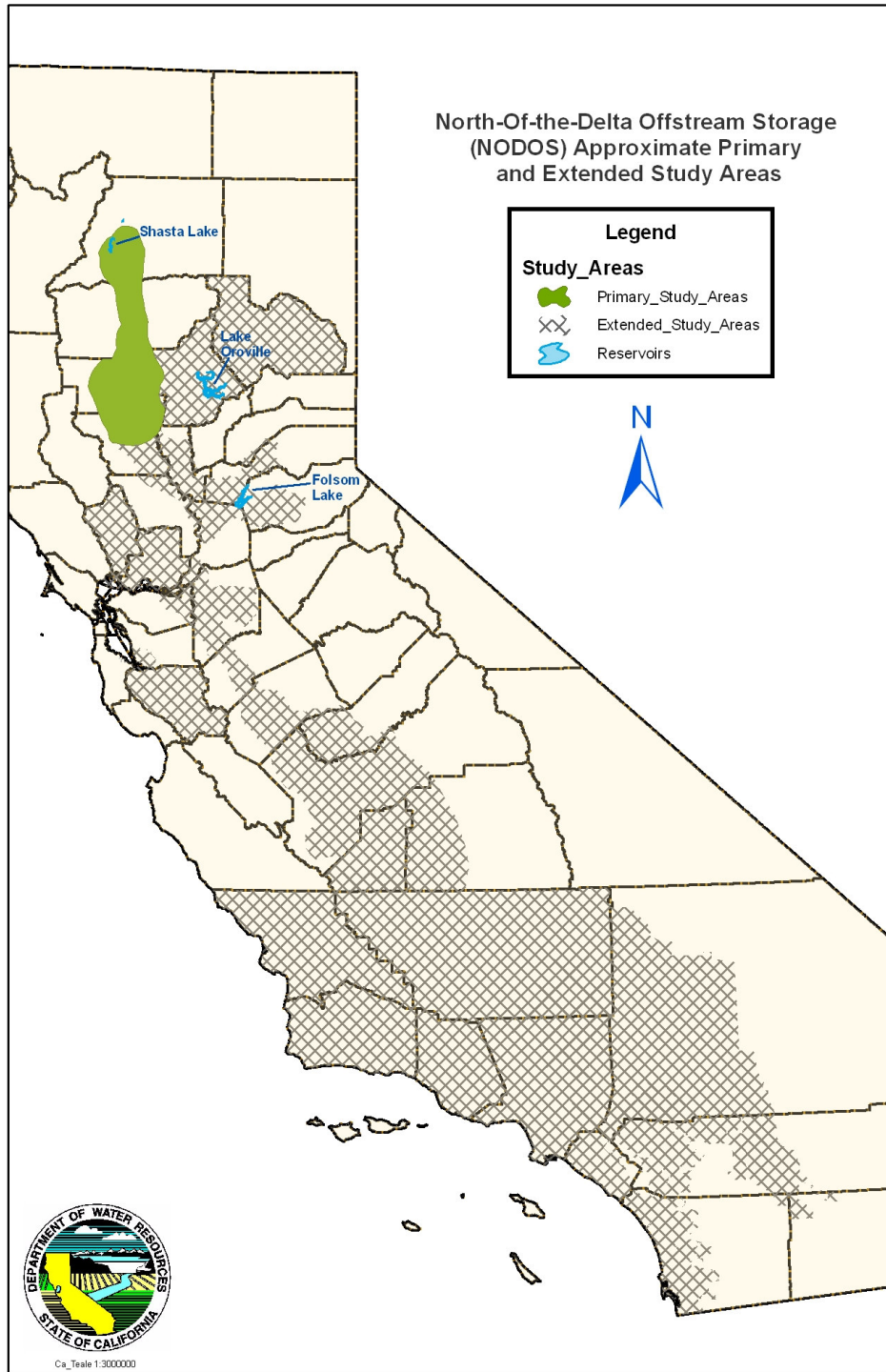


Figure ES-1. Potential NODOS Primary and Extended Study Areas

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Water Supply – The Preferred Program Alternative in the CALFED Record of Decision identified a need for up to 6 million acre-feet of new storage in California, including up to 3 million acre-feet of storage north of the Delta. The California Water Plan Update 2005 presents three plausible demand scenarios for 2030. For the three scenarios, statewide water demand ranges from a reduction of about 0.4 million acre-feet per year to an increase of 4.0 million acre-feet per year. For all three scenarios, 2 million acre-feet per year of water will be needed by 2030 to reduce groundwater overdraft statewide. To meet the need of eliminating statewide groundwater overdraft, the demands for the three scenarios increased from 1.6 to 6.0 million acre-feet.

Water Management Flexibility – As water use and the recognition of environmental water needs have increased, so have conflicting demands for limited water supplies in a highly constrained and regulated system. Water management (operational) flexibility can create significant benefits for the system including, but not limited to, more rapid response to meeting urban, agricultural, and environmental water quality regulatory standards; rapid response to unexpected and unpredicted incidents (such as potential levee breaks that can shut down the SWP, CVP, and Bay Area export operations); and more options and means to meet aquatic flow standards and provide aquatic restoration benefits in the valley rivers and in the Delta (while maintaining supply reliability to other urban, agricultural, and environmental beneficial water uses).

Anadromous Fish Survival – Over the years, dams, levees, and water operations have changed the landscape of the Sacramento River and have altered natural flow regimes by changing the frequency, magnitude, and timing of flow. Dams have blocked access to over 80% of spawning and rearing habitat historically available to Chinook salmon and steelhead. There are many other issues that affect the survival of anadromous fish, including reduction of organic material and sediment movement; degradation of downstream spawning and rearing habitat; unfavorable water conditions, such as increased turbidity, temperature, dissolved oxygen, bromide, chloride, and nitrogen, caused by inactive and abandoned mine drainage; and discharges from agricultural and M&I areas. These changes affect all fish species in the rivers, Delta, and Bay. Salmon and steelhead are particularly susceptible to poor water conditions. The listing of several fish species in the Sacramento River and Delta, under state and federal species protection laws, has greatly affected systemwide water supply operations. Each listed species has specific water supply requirements that affect local, state, and federal projects, including managed releases to meet species' needs. Timing reservoir releases to meet critical needs is difficult because Lake Shasta and Lake Oroville are many miles away from targeted reaches further downstream in the Sacramento River or in the Delta.

Water Quality – Improving Delta water quality is one of the four CALFED Bay-Delta Program objectives. The Delta is a source of drinking water for over 20 million Californians, and it provides vital habitat for over 750 plant and animal species. The water quality program goal is to improve Delta water quality beyond current regulatory requirements for all beneficial uses, including urban, agricultural, and environmental.

Environmental – Current water supply storage on the Sacramento River limits the amount of water available for environmental purposes. A need exists to ensure water supplies for the environment and provide the flexibility in the system necessary to improve environmental conditions in the Sacramento River and the Delta. Further needs exist to reduce the impacts of water diverted from the Sacramento River and to deliver cooler water for fish spawning habitat. Providing storage north of the Delta would allow water to be diverted from the Sacramento River during periods when outflows and water quality are less problematic for endangered, threatened, or sensitive species.

Hydropower Generation – In addition to offsetting the power needs of offstream storage pumping, the NODOS Investigation will explore the potential ancillary benefits that hydropower generation may offer to the statewide energy grid.

Recreation – Recreational use and opportunity are currently very limited within the study area, and demands for water-oriented recreational opportunities in the Sacramento River basin are high. Some of these demands are served by reservoirs on the western slope of the Sierra Nevada Mountains. However, as population increases in the Sacramento Valley, demands for flat water, river, and land-based recreation are expected to increase.

Flood Control Storage – Water system improvements may generate opportunities to increase flood protection by allowing better coordination of various Sacramento region reservoirs to provide for additional flood storage space at selected onstream reservoirs, including Folsom, Oroville, and Shasta.

PLANNING OBJECTIVES

The identified problems and needs were translated into primary and secondary (opportunity) planning objectives, as described hereafter.

Primary Objectives – The NODOS Investigation will formulate alternatives specifically to address the following primary objectives:

- ❖ Increasing water supplies, water supply reliability, and Sacramento Valley water management flexibility for agricultural, M&I, and environmental purposes, including CALFED programs such as Delta water quality, the Environmental Water Account (EWA), and the Ecosystem Restoration Program (ERP), to help meet California’s current and future water demands, with a focus on offstream storage; and
- ❖ Increasing the survival of anadromous fish populations in the Sacramento River, as well as the health and survivability of other aquatic species.

To the extent possible while meeting the primary planning objectives, the NODOS Investigation will explore features to maximize the following opportunities, which are considered secondary objectives:

- ❖ Providing ancillary hydropower benefits to the statewide power grid;
- ❖ Developing additional recreational opportunities in the study area; and
- ❖ Creating incremental flood control storage opportunities in support of major northern California flood control reservoirs.

Table ES-1 summarizes the problems, needs, and opportunities related to the NODOS Investigation objectives.

RESOURCE MANAGEMENT MEASURES SCREENING

Following the development of the planning objectives, constraints, and criteria for the NODOS Investigation, potential resource management measures were identified and evaluated to determine which measures would be considered in formulation of initial alternatives. A resources management measure is a feature or activity, structural or non-structural, that addresses a specific planning objective.

**Table ES-1
Problems, Needs, and Opportunities Relative to Planning Objectives**

Problems and Needs	Planning Objectives
Water Supply Reliability – Reliably delivering water to meet urban, environmental, and agricultural requirements requires both the availability and timely delivery of water to where it is needed.	Increase water supply reliability for agricultural, M&I, and environmental purposes by enhancing water management flexibility for the Sacramento Valley.
Water Supply – Current and future demands for water in California exceed available supplies during many years. The Preferred Program Alternative in the CALFED Record of Decision identified a need for up to 6 million acre-feet of new storage in California, including up to 3 million acre-feet of storage north of the Bay-Delta.	Increase water supplies for agricultural, M&I, and environmental purposes to help meet California’s current and future water demands.
Water Management Flexibility – As water use and recognition of environmental water needs have increased, so have conflicting demands for limited water supplies in a highly constrained and regulated system. Water management (operational) flexibility can create significant benefits for the system including, but not limited to more rapid response to meeting urban, agricultural and environmental water quality regulatory standards; rapid response to unexpected and unpredicted incidents such as Delta levee breaks that can shut down the SWP, CVP, and Bay Area export operations in the Delta; and more options and means to meet aquatic flow standards and provide aquatic restoration benefits in the valley rivers and in the Delta.	Enhance water management flexibility by providing additional diversion, storage, and delivery opportunities.
Anadromous Fish Recovery – Water resources facilities and operations including levees, dams, and diversions have affected the survivability of anadromous and other fish populations associated with the Sacramento River and Delta. Other negative effects are related to land use changes, habitat conversion, and water quality degradation due to introduced impurities. Four anadromous and two resident fish species have received state or federal designations as threatened, endangered, or of special concern.	Increase the survival of anadromous fish populations in the Sacramento River and improve the health and survivability of other aquatic species.
Water Quality – The Delta is a source of drinking water for over 20 million Californians and provides vital habitat for over 750 plant and animal species. The CALFED water quality program goal is to improve Delta water quality beyond current regulatory requirements for all beneficial uses, including urban, agricultural, and environmental uses.	Improve Delta water quality.
Environmental – Water managers need more effective tools to strategically acquire, store, transfer, and release water in response to real-time ecosystem needs. Flexibility in the state’s water delivery system is necessary for providing water at critical times to meet environmental needs.	Provide increased water supplies, water supply reliability, and management flexibility for environmental purposes, including CALFED programs such as Delta water quality, EWA, and ERP.
Opportunities	Planning Objectives
Hydropower Generation – While offsetting the power needs of offstream storage pumping, the NODOS Investigation will explore the ancillary benefits that hydropower generation can offer to the statewide energy grid.	Provide hydropower generation capacity for the Sacramento River basin to offset energy usage and pumping costs, potentially contributing ancillary benefits to the statewide grid.
Recreation – Recreational use and opportunity are currently very limited within the study area, and demands for water-oriented recreational opportunities in the Sacramento River basin are high. Some of these demands are served by reservoirs on the western slope of the Sierra Nevada Mountains. However, as population increases in the Sacramento Valley, demands for flat water, river, and land-based recreation are expected to increase.	Develop additional recreational opportunities in the study area.
Flood Control Storage – Improvements to the water system may provide opportunities to increase flood protection by allowing better coordination of various Sacramento region reservoirs to provide additional flood storage space at selected on-stream reservoirs, including Folsom, Oroville, and Shasta.	Provide incremental flood control storage opportunities.

Potential resource management measures were identified as part of previous studies, programs, and projects to address problems, needs, and opportunities in the study area. In the programmatic Record of Decision, CALFED included a Storage component to investigate surface, conjunctive, and groundwater storage programs. The NODOS study team incorporated CALFED’s surface and groundwater approach to storage by including both as potential measures to address NODOS objectives. The NODOS Investigation will rely significantly upon information from the CALFED groundwater storage investigations under DWR, as potential groundwater storage measures in the study area are conceived and evaluated. Groundwater storage measures will be evaluated in a more comprehensive manner in the PFR, as additional information becomes available from CALFED’s groundwater storage investigations.

DWR and Reclamation are identified as lead implementing agencies for the CALFED surface storage investigation. The 52 surface storage sites first identified by the CALFED Storage Program were revisited as part of the NODOS Investigation to determine whether some should be included as NODOS Investigation measures. These sites were evaluated for their ability to address the planning objectives. This screening activity resulted in the identification of four viable surface storage measures suitable for continued IAIR consideration. These four measures were added to the broader range of measures identified in Section 6 of this IAIR for comparison and screening against the NODOS Investigation objectives.

The identified measures were evaluated for their ability to address the primary and secondary planning objectives. The resource management measures were screened for their ability to address at least one planning objective without adverse impact on other planning objectives. Measures were analyzed for the degree to which they would fulfill a specific planning objective, and they were rated on a scale from low to high.

Measures deleted from this investigation will not be precluded from reconsideration in future study activities. Measures that do not directly address the planning objectives may be reconsidered for inclusion in future alternative plans as possible mitigation elements or ancillary plan features.

Tables ES-2 and ES-3 summarize the measures that best address the primary and secondary planning objectives, respectively. A comprehensive description of all the measures considered is located in Section 6 of this IAIR.

**Table ES-2
Retained Measures that Address the Primary Objectives**

Primary Objective	Resource Management Measure
Water Supply and Reliability	Construct new conservation offstream surface storage at the Sites Reservoir site
	Construct new conservation offstream surface storage at the Newville Reservoir site
	Construct new conservation offstream surface storage at the Colusa Reservoir site
	Develop groundwater storage near the Sacramento River, downstream from Shasta Dam
Anadromous Fish Survival	Restore abandoned gravel mines along the Sacramento River
	Construct in-stream aquatic habitat downstream from Keswick Dam
	Replenish spawning gravel in the Sacramento River
	Construct new conservation offstream surface storage at the Newville Reservoir site
	Construct new conservation offstream surface storage at the Colusa Reservoir site

**Table ES-2
(Continued)**

Primary Objective	Resource Management Measure
Anadromous Fish Survival (Continued)	Construct new conservation offstream surface storage at the Sites Reservoir site
	Improve fish passage at Red Bluff Diversion Dam
	Develop groundwater storage near the Sacramento River, downstream from Shasta Dam

**Table ES-3
Retained Measures that Address the Secondary Objectives**

Secondary Objective	Resource Management Measure
Hydropower Generation	Construct new hydropower generation facilities on Sites Reservoir
	Construct new hydropower generation facilities on Colusa Reservoir
	Construct new hydropower generation facilities on Newville Reservoir
Recreational Opportunities	Construct new conservation storage on tributaries to the Sacramento River downstream from Shasta Dam
	Construct new conservation offstream surface storage at the Newville Reservoir site
	Construct new conservation offstream surface storage at the Colusa Reservoir site
	Construct new conservation offstream surface storage at the Sites Reservoir site
Incremental Flood Control Storage Opportunities	Provide incremental flood control storage at Newville Reservoir through re-operation of other major northern California reservoir(s).
	Provide incremental flood control storage at Colusa Reservoir through re-operation of other major northern California reservoir(s).
	Provide incremental flood control storage at Sites Reservoir through re-operation of other major northern California reservoir(s).

The three offstream storage measures, groundwater storage measure, and other measures, generally dealing with spawning area or habitat improvement, were retained as potential measures that might address anadromous fish survival. The measures that involve spawning area and habitat improvements, however, do not address the primary objective for increased water supply and reliability.

All of the storage measures could support multiple objectives. New yield developed by increasing storage for the Sacramento River system could be used for any or all of the primary objectives. Measures were evaluated based on their ability in developing and managing water supplies to contribute to increasing water supply reliability; improve Delta water quality; provide a reliable source of water supply for the EWA; enhance anadromous fish passage and aquatic restoration; provide storage and operational benefits for other CALFED programs; and increase water flow-related benefits for the ERP. The storage measures can address both planning objectives, but could also be combined with other measures to increase the benefits of an alternative plan.

All retained measures will be evaluated and possibly packaged to develop alternative plans that best address the primary planning objectives and, to the extent possible, the secondary planning objectives.

The study of potential storage measures is part of a larger CALFED program to address four objectives for managing water resources in California: water supply reliability, levee system integrity, water quality, and ecosystem restoration. As stated previously, storage is one of 12 program elements designed to achieve these four CALFED objectives. The program elements are also conceived to be interrelated and interdependent so that elements can be implemented in a complementary and non-competitive fashion. Other program elements are assumed to be implemented consistent with program implementation guidelines. CALFED complementary actions (Water Use Efficiency [WUE] and Transfers) are described in Section 3 of this IAIR and will be implemented concurrently; therefore, they will be included in all NODOS alternatives, including the No-Action alternative and the initial alternatives described later. Because these complementary actions are already included in all the alternatives, CALFED complementary actions are not included in the list of measures to achieve NODOS objectives. More specifically, the concurrent CALFED Common Assumptions effort will assume implementation of both WUE and Transfers so that, ultimately, the NODOS investigation will assume WUE and Transfers in the No-Action Alternative and all NODOS alternatives.

FURTHER MEASURES SCREENING

For the development of initial alternatives, the measures retained were further evaluated for their ability to address the planning objectives while maximizing project benefits and minimizing any adverse effects to the study area.

The retained groundwater storage measure, development of groundwater storage downstream from Shasta Dam, would likely address the primary objectives but none of the secondary objectives. Groundwater measures downstream from Shasta Dam will be evaluated in more detail during the Plan Formulation process.

The three north-of-the-Delta offstream surface storage alternatives offer a range of potential water supply reliability benefits, but would serve similar project purposes. Because all of the projects are upstream from the Delta and adjacent to the Sacramento River, the kinds of benefits, such as supplemental yield for various uses and reduced diversions from the Sacramento River during peak local delivery periods, will vary primarily in scale. All of these project alternatives have been investigated in the past. Current studies updated and augmented past studies as needed, to allow comparative evaluation. Figure ES-2 shows the locations of the initial offstream storage alternative sites evaluated in the IAIR.

The offstream surface storage measures were compared with respect to their total capital construction cost, their yield, and their unit cost per deliverable volume. This comparison helped identify, on an annualized basis, the relative cost-effectiveness of each measure. Comparative costs for Sites, Colusa, and Newville Reservoirs were prepared to show the difference in total reservoir dam cost for each of the three reservoirs. The total dam cost (in 2004 dollars) for Sites Reservoir was calculated at \$320,250,000 with Colusa Reservoir at \$1,411,520,000 and Newville Reservoir at \$235,134,000. These costs do not include land acquisitions, easements, rights-of-way, relocations, appurtenant structures, conveyances, road relocations, or recreation facilities.

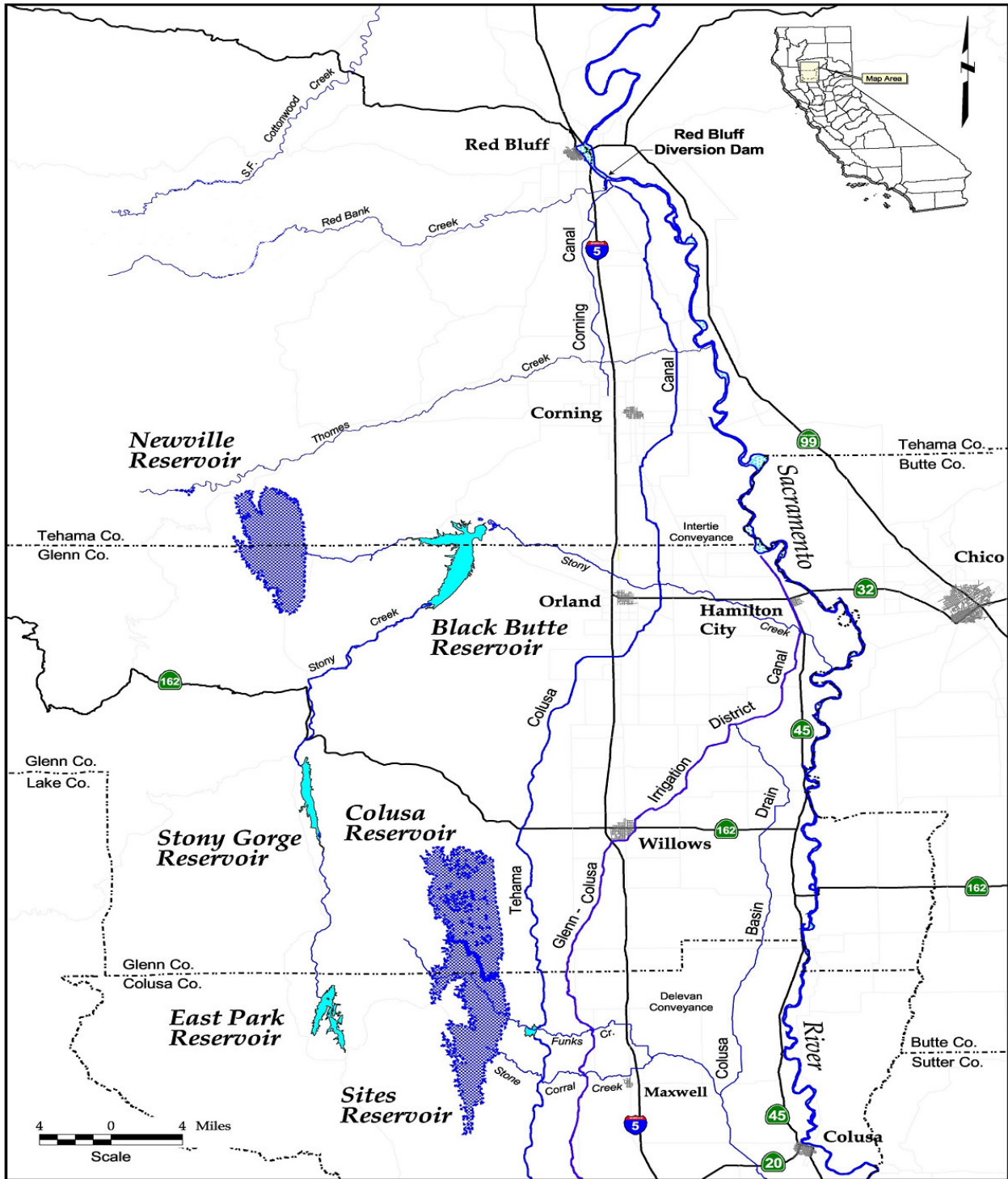


Figure ES-2. NODOS Initial Offstream Storage Alternatives

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A preliminary economic assessment compared the average annual cost per yield for the three surface storage measures. The estimated average annual cost per yield was similar in magnitude for Sites and Newville Reservoirs, but was comparatively excessive for Colusa Reservoir. Sites Reservoir average annual cost per unit yield is approximately 36% greater than Newville Reservoir. By contrast, Colusa Reservoir’s average annual cost per unit yield is about 367% greater than Sites Reservoir and about 500% greater than Newville Reservoir. In addition, the capital cost of Colusa Reservoir is approximately 4.4 times that of Sites Reservoir, and 6 times that of Newville Reservoir, while the increase in yield is only around 19%.

Therefore, with respect to the federal planning criterion on “efficiency,” Colusa Reservoir is being dismissed from further consideration as a potential, viable measure for this IAIR.

Sites and Newville were next compared to each other with respect to their potential impact on environmental/ecological attributes. Table ES-4 summarizes the potential environmental impacts associated with Sites Reservoir and Newville Reservoir. (Bold text is used to highlight the larger value of the two for each attribute considered.)

**Table ES-4
Relative Environmental Impacts Comparison**

Preliminary Site Survey Results (Biological/Ecological Attribute)	Sites Reservoir	Newville Reservoir
Wetland (acres)	249	525
Riparian (acres)	75	476
Blue oak woodland (acres)	924	2,532
Valley oak woodland (acres)	4	104
Valley elderberry longhorn beetle		
# of Elderberry stems > 1 inch diameter	684	1,204
# of Elderberry stems with emergence holes	18	222
Total # of bird species	160	146
# of state and federal bird species of concern	25	19
Prehistoric cultural resource components	45	240+
Historic cultural resource components	27	65+

The initial review and comparison of potential environmental impacts between Sites and Newville Reservoirs indicates a significantly greater impact potential for Newville. With the exception of potential impacts on the number of state and federal bird species of concern, possible project-related impacts for all the other biological/ecological attributes are higher for Newville Reservoir. Therefore, at this time, the Newville Reservoir measure is being dismissed from further consideration as a potential, viable measure for this IAIR.

After preliminary assessment of these three offstream surface storage alternatives, the most promising offstream surface storage alternative is Sites Reservoir. The Colusa and Newville Reservoirs were deleted from further consideration due to their greater environmental and economic considerations, as described above.

The Sites Reservoir alternative would be located in north-central Colusa County and south-central Glenn County, west of the community of Maxwell. The proposed reservoir would have a storage capacity of up

to 1.8 million acre-feet. Excess flows from the Sacramento River and its tributaries are potential water supply sources for Sites Reservoir.

Based on the initial screening of the offstream surface storage measures, the Sites Reservoir project was carried forward as a surface storage measure that addressed the primary objective of water supply and reliability. The measures that involve spawning area and habitat improvements, however, will likely be packaged with Sites Reservoir to develop alternatives that maximize benefits to anadromous fish survival during development of the initial alternatives. Groundwater storage downstream of Shasta Dam may also satisfy the NODOS primary objectives, but has not undergone the same level of analysis as the surface storage measures. The groundwater measure will be further developed and evaluated as part of plan formulation.

STRATEGY FOR THE DEVELOPMENT OF INITIAL ALTERNATIVES

Initial alternatives will be formulated using retained resource management measures. During the development of the initial alternatives, different strategies to address the primary planning objectives, constraints, and criteria will be explored. To develop initial alternatives, Sites Reservoir and groundwater storage measures will be combined with other measures retained in the initial screening process and will be evaluated with varying project features, such as conveyance, groundwater storage, and operational scenarios.

Conveyance types or methods for Sites Reservoir will involve (1) using existing canals and associated infrastructure, (2) building a new pipeline and intake from the Sacramento River, and (3) combining the two. Existing versus new facilities, as well as sizing (capacity), will be investigated with respect to meeting the primary objectives of NODOS in the Plan Formulation phase. For the IAIR, it was assumed that conveyance elements were economically justifiable, constructible, and operable and that any environmental impacts associated with improvements could be avoided or mitigated.

The combination of measures, conveyance, groundwater storage, and system operations determines the total benefit available from a NODOS project. Depending on how the system is operated, any combination of measures and conveyance will yield different benefits (i.e., water quality, environmental, and/or water supply benefits). The Plan Formulation phase will analyze operating the system as an integral part of the alternatives analysis.

The following initial alternative operational scenarios will be carried forward into the Plan Formulation Report for further development into detailed initial alternatives:

- ❖ Initial Alternative A – Environmental Focus;
- ❖ Initial Alternative B – Water Quality Focus;
- ❖ Initial Alternative C – Water Supply Focus; and
- ❖ No-Action Alternative (as required, in the federal P&Gs).

As indicated in Chapters 3 and 6 of this IAIR, all alternatives will include the CALFED complementary actions WUE and Transfers. These CALFED program commitments are reflected in the Common Assumptions process so that the CALFED complementary actions are included implicitly in each alternative, including the No-Action and initial alternatives introduced above.

STUDY MANAGEMENT AND PUBLIC INVOLVEMENT

A study management structure has been developed for the NODOS Investigation that consists of the Project Management Team (PMT) (a subset of the Memorandum of Understanding Partnership) and the Study Team, as described below:

- ❖ Project Management Team – DWR, Reclamation, California Department of Fish and Game, U.S. Fish and Wildlife Service, Glenn-Colusa Irrigation District, and Tehama-Colusa Canal Authority, all signatories of the Sites Memorandum of Understanding, serve as members of the PMT. The PMT provides overall guidance to the Study Team for the NODOS Investigation. In addition, the PMT periodically consults with and reports to the Memorandum of Understanding Partners about planning activities.
- ❖ Study Team – The Study Team consists of the Project Managers of DWR and Reclamation and technical experts from various disciplines. The Study Team manages the investigation and directs work performed; coordinates study results into the overall NODOS Investigation; and directs and coordinates public, agency, and stakeholder involvement.

The Project Managers participate in the Project Management Team and the Study Team to provide a communication link between the two teams. Technical work groups are established as needed and focus on specific study areas, such as environmental studies, engineering studies, benefit analysis, impact analysis, and hydraulic and hydrologic modeling.

A federal feasibility study requires acquisition of primary data and the participation of public agencies and entities and the general public in order to develop a preferred plan from a range of alternative courses of action, that meets recognized needs, problems, and opportunities associated with the planning area of concern. Public involvement has been an integral part of the NODOS investigation. To encourage general public and stakeholder participation and satisfy the public involvement requirements of National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA), the NODOS Investigation includes public outreach activities and information dissemination. The Study Management and Public Involvement section of this IAIR describes past public involvement in the NODOS Investigation and discusses plans for future public and stakeholder involvement.

DWR has briefed local entities and held public workshops throughout the course of the NODOS Investigation. Following adoption of the CALFED ROD, scoping was initiated for the NODOS EIS/EIR. The scoping process was used to help identify the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in the environmental documentation.

FUTURE ACTIONS

The next major step in the Feasibility Study process is to refine the retained management measures and further develop the initial alternatives into a set of detailed alternative plans. The emphasis of upcoming studies will be on hydraulic and hydrologic system modeling, designs and cost estimates, economic analysis, and environmental impact evaluations and documentation. Major emphasis also will be placed on the continued communication of study findings to other agencies, identified stakeholder groups, and involved groups and individuals.

The next product of the investigation is the Plan Formulation Report, scheduled for completion in fall 2007, followed by the Feasibility Study Report. Based on completing a draft Feasibility Study Report, which will consist of an integrated federal decision document and draft EIS and EIR in spring 2008, it is

estimated that the final Feasibility Study will be completed in winter 2008. Assuming Congressional authorization to construct, detailed project design could be initiated in 2008 or 2009, followed by initiation of construction, acquisition of necessary permits, and minor relocations. It is likely that the construction period would range from four to six years, depending on the plan selected and the available funding.

FEDERAL INTEREST IN CONTINUING WITH A PLAN FORMULATION STUDY

This IAIR concludes there is a potential federal interest in continuing the NODOS Investigation for a potential project to meet objectives associated with municipal and industrial, agricultural, and environmental water supply reliability; anadromous fish survival; power; incremental flood control storage; and recreation. Because there is federal participation in the EWA, a federal interest may exist in having storage north of the Delta to accomplish these goals. The type, degree and magnitude of the federal interest in a NODOS project will be confirmed and quantified in future planning phases, including the Plan Formulation Study and the Feasibility Study.

The Plan Formulation Study will develop the initial alternatives in greater detail and will refine costs, estimate benefits, provide a preliminary evaluation of environmental impacts, and identify a tentatively preferred alternative and final array of alternatives to consider in the Feasibility Study. Consideration by Reclamation, DWR, CALFED, and other appropriate stakeholders will continue to further define the issues and solicit support in future planning study activities.