

Alamo River Wetlands at Holtville, CA Work Plan



Prepared by the Salton Sea Authority
In Partnership with the Citizen's Congressional
Task Force for the New River



Salton Sea Authority
44199 Monroe Street #C
Indio, California 92201

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Alamo River Wetlands at Holtville, CA: Work Plan

The Salton Sea Authority (the Authority) proposes to work in partnership with the Citizen's Congressional Task Force on the New River (Citizen's Task Force) to complete the construction of a wetland along the Alamo River. The Citizen's Task Force was chartered to help improve the quality of water in the New and Alamo Rivers and the Salton Sea. The Authority proposes to complete the construction of a 31-acre complex of sedimentation ponds/wetlands adjacent to the Alamo River on the west side of Holtville, in Imperial County, California. The total water surface area at this site would be 13.4 acres, which would hold 77.6 acre-feet of water and would have a maximum design flow rate of 6 cubic feet per second. The Holtville site is an excellent candidate for this type of project from the hydrologic perspective, and the wetland would provide significant improvement to the visual quality of the area which is in close proximity to the town. The wetland would be an important step in improving the quality of water flowing in the Alamo River, a principal tributary to the Salton Sea, it would have research value, and it would provide new habitat in the Salton Basin.

Objective

The project objective is to (1) Improve the quality of water flowing in the Alamo River, a principal tributary to the Salton Sea, (2) assist in achieving sediment TMDL goals, (3) Create a project that has research value for nutrient reduction and other water quality improvements as well as for developing a better understanding of selenium behavior, and (4) Provide new habitat in the Salton Basin, and (5) Have recreational value in the Holtville area.

Tasks

Budget Category (a): Direct Project Administration Costs

Task 1: Administration

The Salton Sea Authority will be supported by our existing contractor Tetra Tech and will review their work products and schedules along with their invoices and prepare and submit invoices to the State. Copies of draft and final work

Deliverables: Invoices and draft and final technical reports and plans.

Task 2: Labor Compliance Program

The Authority will review the contractor's labor policies to ensure that they adhere to the Labor Compliance Program.

Deliverable: Submission of Labor Compliance Program

Task 3: Reporting

The Authority will require the contractor to prepare quarterly, annual and final reports as specified in the Grant Agreement. The Authority will oversee and review all contractor reports and prepare final submissions to the State.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

Budget Category (b): Land Purchase/Easement

The project will be on property owned or administered by the City of Holtville. No land acquisition is required.

Budget Category (c): Planning/Design/Engineering/Environmental Documentation

Task 4: Assessment and Evaluation

The basic site plan has been completed along with engineering drawings. The drawings are at the 70% design stage. This task will involve review of existing plans and collection and cataloging of any supplemental data and transfer of existing CAD files.

Deliverables: Technical status report

Task 5: Final Design

Preparing the final design will involve:

- Update CAD Plans and Technical Documents
- Prepare Specifications
- Conduct a Site Survey

Deliverables: Completion of project plans and specifications at the 90 percent and final level.

Task 6: Environmental Documentation

The Final Approved Adopted CEQA Initial Study and Mitigated Negative Declaration document has been completed and is submitted with this application. Other permitting documents have been prepared. The Imperial Irrigation District (IID) and Bureau of Reclamation are partners on the project and will assist if with any other environmental compliance is required. The grant application does not include any requests for funding of environmental documents.

Task 7: Permitting

Permitting documents have been prepared. The Imperial Irrigation District (IID) and Bureau of Reclamation are partners on the project and will assist if with any other environmental compliance is required. The grant application does not include any requests for funding of environmental documents. The Nationwide 404 Permit and NPDES permit have been submitted with this application. The Bureau of Reclamation has been keeping permits up-to-date but some additional documentation may be required.

Deliverables: Up-to-date permit documents.

Budget Category (d): Construction/Implementation

Task 8: Construction Contracting

The cost proposal is based on a construction estimates from the Bureau of Reclamation and an independent contractor. For final construction, at least three bids will be solicited and submitted for review. The process will include advertisement for bids, a pre-bid contractors meeting, evaluation of bids, and award contract

Deliverables: Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract

Task 9: Construction

Subtask 9.1 Mobilization and Site Preparation

The site has been cleared and grubbed, but some vegetation has recovered and some additional clearing and site preparation will be required, including soil/geotechnical surveys.

Subtask 9.2 Project Construction

The next major section of this work plan provides a Project Description which outlines key features of the constructed wetland. It will be possible to complete the work in the following three phases:

- Earth Work and Site Grading
- Installation of Flow Control Structures (Inlet, Between Cells and Outlet)
- Planting of Emergent Marsh Plant Beds

Subtask 9.3 Performance Testing and Demobilization

The final phase of the project will be review and testing to ensure that flows are being diverted properly and ultimately that vegetation is stabilizing.

Budget Category (e): Environmental Compliance/Mitigation/Enhancement

Task 10: Environmental Compliance/Mitigation/Enhancement

The Holtville site will be included in the quarterly and annual monitoring program already being performed for the Brawley and Imperial Wetlands on the New River, and the recently constructed Shank Road Wetlands on the Alamo River.

Budget Category (f): Construction Administration

Task 11: Construction Administration

Or engineering contractor Tetra Tech will perform construction administration.

Project Description

The wetland will be constructed on the southwest overbank of the Alamo River adjacent to Alamo River Drop Structure 12. To date the majority of the site has been cleared and grubbed, but earthwork has not begun. The site extends westward from Drop 12 for approximately half a

mile. Drop 12 is a grade control “drop structure”, which is a weir that is used to restrict water flow and cause a pooling of water upstream of the weir and a rapid drop in the surface gradient for water flowing over the structure. Drop structures are used to reduce water velocities for erosion control. A secondary benefit of these structures is improvement of habitat conditions for aquatic life and to increase the oxygen content of water. The riverbank heights in this area range from 8 to 10 feet, but wetlands will be constructed in the floodplain where the river drops off downstream.

Containment Berms and Roads

Perimeter containment berms and sediment basin berms will serve as maintenance roads and as trails for park users. These roads will be 24 feet wide to accommodate large maintenance equipment and will have a six-inch aggregate road base. Burrowing muskrats have caused erosion, short circuiting, and other damage at wetland sites in the area. The proposed project utilizes wider berms to limit the ability of these animals to burrow from one section of the wetland to another. However, as a precaution against the possibility of a breach in an outer containment berm due to burrowing, the Authority will either bury a galvanized wire mesh fence along and below the toe of the outer berm slopes, or place a concrete slurry wall within the berm. A 30-foot-wide corridor of vegetation between the river bank and the perimeter of the wetlands will be left undisturbed to provide bank erosion control and to help maintain the original river channel during high flows.

Sediment Basins

The State Water Quality Control Board considers sedimentation/siltation, selenium, and pesticides to be the pollutants of concern in the Alamo River. Sediment basins have been enlarged to comprise approximately a third of the total water volume and designed to reduce the potential for bioaccumulation of selenium. To reduce surface evaporation and to reduce the potential for attracting wildlife the basins are designed to be narrow and deep. Additionally, no dense planting of any trees (willows and cottonwoods) is proposed. The lack of such trees is believed to decrease the attractiveness of the site to wildlife. The 10-foot depth will decrease the available oxygen at the bottom to reduce available selenium in the aquatic uptake cycle. Flow will be trained to stay near the bottom by the use of remixing pipes. Selenium attached to sediment particles will settle to the bottom and ultimately be removed during cleanout. Two large pipes will be used at each remixing crossover to keep flow velocities and turbulence to a minimum. The long aspect ratio of the basins will provide for a maximum siltation fallout time.

Sediment basins will be a maximum of 100 feet wide between the inside edges of the maintenance roads. This will allow for sediment to be excavated from both sides of the basins, which is the most common and economical method in the region. Existing practices reported by IID show that maintenance crews should be able to remove sediment in this size of earthen canals at an average rate of approximately a quarter mile per day.

During sediment cleanout which is expected to be on the order of every ten years, the wetland flow will be shut off at the inlet diversion structure, and the sediment basin outlet will be closed to keep the disturbed sediments from flowing into the emergent marsh cells. After the sediment

is removed and the sediment basins have stilled, the water flow will resume. It is not anticipated that the wetlands will be adversely affected if the emergent marsh cells are without a flow for several days during these operations. The sediment basins and the emergent marsh cells will have a freeboard (distance between normal water surface and the top of the bank) of two feet at normal water surface elevations.

Sediment Disposal Areas

On-site disposal areas for sediment will be provided to increase the longevity of the wetlands sites and economize removal operations. Excavation will occur after the results from the wetland monitoring have been obtained. Sediments will be analyzed for selenium and other constituents of concern prior to excavation. It is not anticipated that hazardous levels of selenium or other constituents will occur. If it was thought otherwise, the wetland would not be constructed. If hazardous levels of constituents are encountered a decision will be made at that time as to the proper disposal of the sediments or operation for the wetland system. To reduce the possibility of sediments being washed back into the river by surface run-off, no sediment disposal areas will be located between the wetlands and river banks. The disposal areas will be 24 feet wide and two feet deep and will be adjacent to the sediment basins on the upland side so that the sediment can be excavated and dropped in one movement of the equipment.

Sediment Basin Outlets

Basin outlets will be precast concrete boxes with removable flashboards so the outlet flow will always come from the upper six inches of the basin water column before it flows into the emergent marsh cells.

Emergent Marsh Cells

The emergent marsh cells will have a normal water surface elevation one foot below the sediment basin water surface and will be six feet deep in the open water areas. Two cells similar in surface area and water volume will be constructed. The overall flows required will be calculated using a nominal seven-day hydraulic detention time for half of the flow going through each cell. The hydraulic control boxes will have the ability to handle the total flow through each cell for flushing. The cell outlet pool areas have been enlarged from previous designs and will be protected from floating detritus and other debris by a vegetation filter plant bed six inches in depth.

Emergent Marsh Plant Beds

The planted areas in the emergent marsh cells will consist of emergent vegetation on a series of plant beds one foot below the water surface that extend out into the cells in an alternating pattern. This will create a meandering deep water channel from cell inlet to outlet. This design will better facilitate cell draining and help distribute the flow throughout the cells, reducing areas of stagnant water and possible accumulations of sediment and pollutants. A width of 30 feet for these beds is intended to allow the access of large harvesting equipment, such as thrashers, while not being so expansive as to produce dead flow zones and large areas of detritus build up where dissolved oxygen is diminished. Maintenance equipment will access the beds from seven percent sloped ramps where the beds will meet the containment berm/maintenance roads.

Observations of the high rate of vegetation growth at the Imperial and Brawley constructed wetlands sites have indicated that wetlands in this region can quickly become overgrown and pose a large maintenance problem. For this reason, in addition to efforts to avoid attracting wildlife, the initial planting area sizes and ratio of emergent plants to open water have been reduced from previous designs. An ultimate target ratio of approximately 70 percent open water to 30 percent emergent vegetation is expected to be reached in several years as plants spread into adjacent water depths that they can tolerate.

Wildlife Habitat

It is anticipated that the wetland will be attractive to wildlife as soon as it begins to hold water. Although selenium uptake by wildlife along the Alamo River is not yet considered to be a critical threat, the concentration of sediments and restricted flows in wetlands ponds could cause selenium to become more prevalent in the aquatic cycle. The design of the wetland has addressed this as one of the most important issues for providing a feature that is a benefit to water quality and wildlife. The sediment basins have been designed to be deep so that they will decrease available oxygen and reduce available selenium in their waters. It is believed that some fraction of the dissolved selenium will be microbially reduced to insoluble elemental selenium in the bottom of such sediment cells where oxygen levels are much lower than at the surface. In the proposed wetlands, it is expected that additional selenium will be removed from the water column through settling on the emergent marsh pond bottom. Regular water quality monitoring (including water, sediment, plant, and tissue sampling) will be conducted to quantify the removal processes described above and to identify potential risks to wildlife from selenium as well as other possible contaminants.

Research Opportunities

Along with the recently completed wetland at Shank Road, the Holtville Wetland will provide an excellent opportunity to study the viability of wetlands as a method of water quality treatment in the Alamo River. Two pilot wetlands on the New River, spearheaded by the Citizen's Task Force, have provided valuable water quality data for over ten years. The Holtville and Shank Road wetlands will be a valuable source of similar data on the Alamo River, including information about nutrient removal and selenium behavior.

Schedule

The project schedule is shown below.

Task	Months After Notice to Proceed											
	1	2	3	4	5	6	7	8	9	10	11	12
Budget Category (a): Direct Project Administration Costs												
Task 1: Administration												
Task 2: Labor Compliance Program												
Task 3: Reporting												
Budget Category (b): Land Purchase/Easement												
Budget Category (c): Planning/Design/Engineering/Environmental Documentation												
Task 4: Assessment and Evaluation												
Task 5: Final Design												
Task 6: Environmental Documentation	Not Applicable: Environmental Documentation is Complete											
Task 7: Permitting	Permitting is Complete, Some Updates May Be Be Needed											
Budget Category (d): Construction/Implementation												
Task 8: Construction Contracting												
Task 9: Construction												
Subtask 9.1 Mobilization and Site Preparation												
Subtask 9.2 Project Construction												
Earth Work and Site Grading												
Installation of Flow Control Structures												
Planting of Emergent Marsh Plant Beds												
Subtask 9.3 Performance Testing and Demobilization												
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Task 10: Environmental Compliance/Mitigation/Enhancement												
Budget Category (f): Construction Administration												
Task 11: Construction Administration												

Project Organization

The organization of the project team is shown below.

Alamo River Wetlands at Holtville, CA Project Team Organization

