SEDIMENT REMOVAL POSITION PAPER

Great Valley Farm Water Partnership

April 2025

INTRODUCTION

The Great Valley Farm Water Partnership (GVFWP) is a voluntary coalition of growers and water resource interests from the Sacramento and San Joaquin Delta and the San Joaquin Valley regions who collectively are dedicated to fostering mutually beneficial water and environmental solutions through collaboration and expert guidance. By leveraging the best available science and working closely with subject matter experts, GVFWP primary objective is to assist decision makers and policy leaders recognize the system-wide benefits of cooperative strategies. Our actions are focused on reducing controversy, promoting unity, and advocating for practical, achievable outcomes that are viable for both our agricultural communities and our shared ecosystems.

SEDIMENT REMOVAL POSITION PAPER

Great Valley Farm Water Partnership
April 2025

The GVFWP leadership has selected the following seven water supply and quality initiatives as the initial focus:

1) Sediment Removal in the South Delta;
2) Enhanced south of Delta water storage capacity;
3) Delta levee investment improvements;
4) South Delta permanent operable gates;
5) Improved ability to export water;
6) Predation suppression; and
7) Invasive aquatic weed control.

This white paper will focus on sediment removal in the South Delta.

BACKGROUND

Over the last fifty years, the river channels in the Sacramento-San Joaquin Delta (Delta), particularly the south Delta, have become increasingly filled with silt and other sediment transported in the adjacent river/channel systems. It has reached the point where many channels in the south Delta have significantly reduced water depths during low tide periods. In a few channel reaches, there have been instances of no flowing water. Comparison of soundings over time have shown that some south Delta channel reaches in the San Joaquin River are 8 feet shallower than in the 1960's. The Clifton Court Forebay has also become shallower, filled with accumulated sediment over the years.

High flows entering the southern Delta during 2017 and 2023 water years were expected to flush much of the accumulated sediment out of the area and re-establish desired channel capacity. Instead, the high flows increased sediment transportation in places that were already significantly degraded. The high flows carry a larger sediment load, which begins to drop out as soon as the inflows reach the tidal zone and river flows slow down. It appears that the sandbars

and humps already formed further slow the velocity and cause additional sediment to drop out and create further accumulation in the same areas. Thus, sedimentation is getting worse, the adverse effects of the decreased channel capacities are increasing, and future high flow events are unlikely to solve the problem.

This situation has led to the following adverse impacts on Delta and south of Delta water users and the environment.

- Delta diverters are unable to irrigate when the water levels drop below their pump or siphon intakes and the reduced channel capacities impact net flows in the Delta channels. The Central Valley Project and State Water Project have responsibility to protect water levels and water quality in the south Delta and can be required to reduce export pumping if the tidal barriers are unable to trap enough water to protect the local diverters.
- The Delta is a hydrodynamically complex system with interconnecting rivers and sloughs. If the channels that lead most directly to the export pumps fill with sediment, the route the water takes to the export pumps may change, causing reverse flows in new channel reaches, which can result in adverse impacts to fish and the environment, and which could result in new export restrictions and/or changes to operating standards (e.g. X2).
- Ideally, the Delta channels should have a net flow towards the Bay. In other words, the tidal inflows should be less than the total outflows. However, the accumulation of sediment has created areas where the tidal flushing is blocked and there is little to no circulation or mixing with fresh water. In these stagnant “null zones,” the salt levels build up causing problems for local diverters. In addition, the biota consumes the dissolved oxygen, which can’t be replenished in these stagnant conditions, causing levels to drop too low for fish.
- The temperature of the water in the shallow channels becomes increasingly hot during summer months, which favors invasive aquatic plant species (such as hyacinth, primrose and Egeria), produces toxic algae blooms, and further impairs the ecosystem and water

diversions. These channels are too shallow and hot for the desired "shallow water habitat" for native fish species.

- In various locations, in-channel islands have formed, or channels have filled in nearly all the way. Shallow water less than 8 inches in depth is prime foraging habitat for wading birds, whose foraging can include consumption of native fish.
- Shallow habitats dominated by submerged macrophytes (aquatic vegetation) are generally unsuitable for the Delta's native fish and provide ambush areas for predatory fish like largemouth bass.
- The failure to properly manage sediment build-up has resulted in many unintended consequences for Delta communities. Across the region, where subsistence fishing is commonplace, communities continue to see this source of food limited as fish populations are reduced. Harmful algal blooms (HABs) also create health and safety issues.
- Agriculture in the Delta is the largest economic driver, and the negative impacts of sediment accumulation have impacted the ability for many farmers to fully irrigate crops causing reductions in employment for residents of the Delta. Boating and recreation, the second largest contributor to the Delta economy, are negatively impacted by making navigation more hazardous. It also increases turbidity, which reduces visibility for boaters.
- The negative impacts caused by sediment accumulation do not end in the Delta. Farmers and communities south of the Delta have increasingly struggled with inconsistent and unreliable exports of quality water needed for irrigation and safe drinking. Sediment accumulation continues to reduce the capacity of the channels and forebay to move water to the export facilities.

Strategic removal of accumulated sediment will provide the following positive gains:

- Reduction or elimination of null zones and improved water circulation, resulting in better conditions for native fish species of interest and improved water quality.
- Temperature reduction minimizes growth of invasive aquatic plant species, reduces toxic algae blooms, and provides deeper, cooler habitat for native fish species of interest.
- Improvement of water circulation and reduction in water residence times also reduces toxic algae blooms.
- Habitat diversity in previously environmentally degraded water channels can be increased.
- Temperature reduction that creates sustainable shallow water fish habitat.
- Temperature reduction to lower impacts to native fish species from non-native fish species.

The removal of accumulating sediment to maintain channel capacities will improve conditions for all beneficial uses. If channel carrying capacities are not maintained, adverse effects of accumulating sedimentation will continue to increase and further threaten beneficial uses, including the health of the greater Bay-Delta estuary.

EFFORTS TO DATE

There have been two parallel processes underway to address the sediment buildup in the south delta.

1) Starting in about 2017, the Delta Watermaster and South Delta Water Agency met periodically with California Department of Water Resources (DWR), California Department of Fish & Wildlife (CDFW), United States Bureau of Reclamation (USBR), the State Water Contractors (SWC), San Luis & Delta-Mendota Water Authority (SLDMWA), and Westlands Water District (WWD), to discuss obtaining permits to remove sediment from the Delta channels. The participants hired Anchor QEA as the engineering consultant. In 2024, investigations were made as to the possibility of obtaining an emergency permit to remove sediment cumulation from Middle River corridor. The investigations showed that a large

amount of sediment would need to be removed in order to be effective. In discussions with the Army Corps of Engineers, the Army Corps indicated that they lacked authority to carry out the work. Additionally, even under an emergency permit, there could be mitigation requirements with significant funding implications. The current Delta Watermaster is working on producing additional information associated with solutions to this issue.

In November 2021, Anchor QEA produced a "Planning Guide for the Channel Depth Restoration Program for the South Delta" (Planning Guide) for the Delta Channel Maintenance Group and State Water Contractors (SWC). This Planning Guide presents a strategy for implementing a channel depth restoration program (Program) in the Delta channels, with initial emphasis on eight of the South Delta channels (Middle River, Old River (West/South/East/Side Channel), Fabian & Bell, Paradise Cut, and Tom Paine Slough).

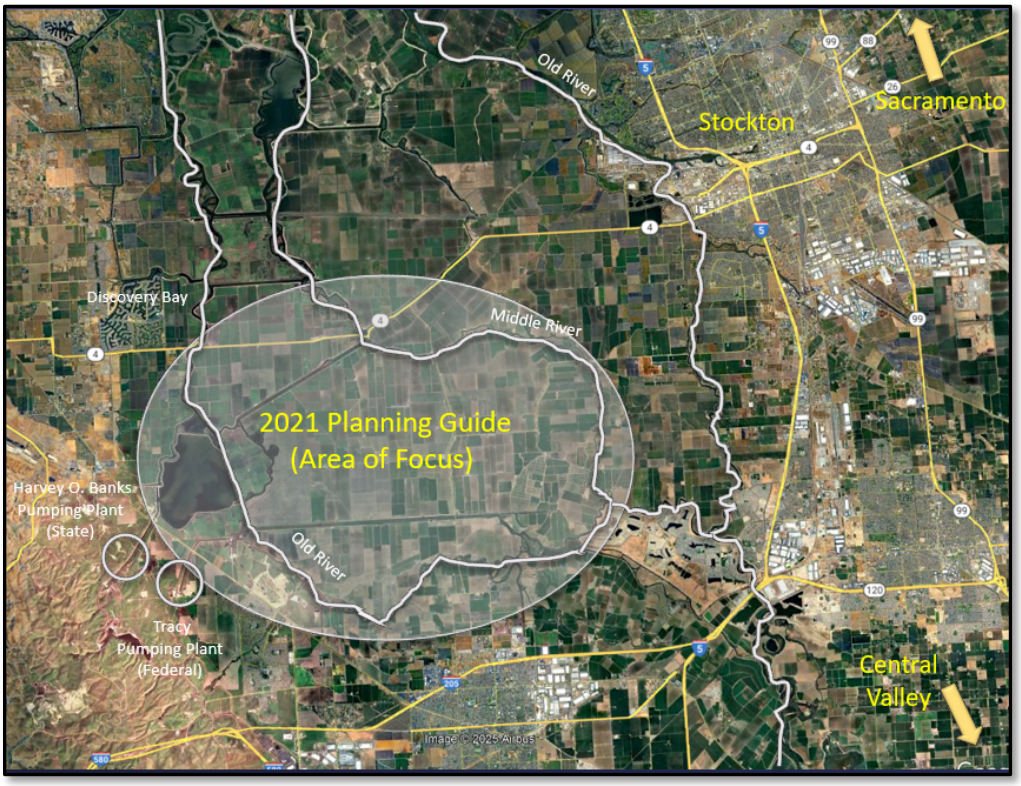

Figure 1.1 – 2021 Planning Guide (Sediment Removal Area of Focus per Anchor QEA)

SEDIMENT REMOVAL POSITION PAPER

Great Valley Farm Water Partnership
April 2025

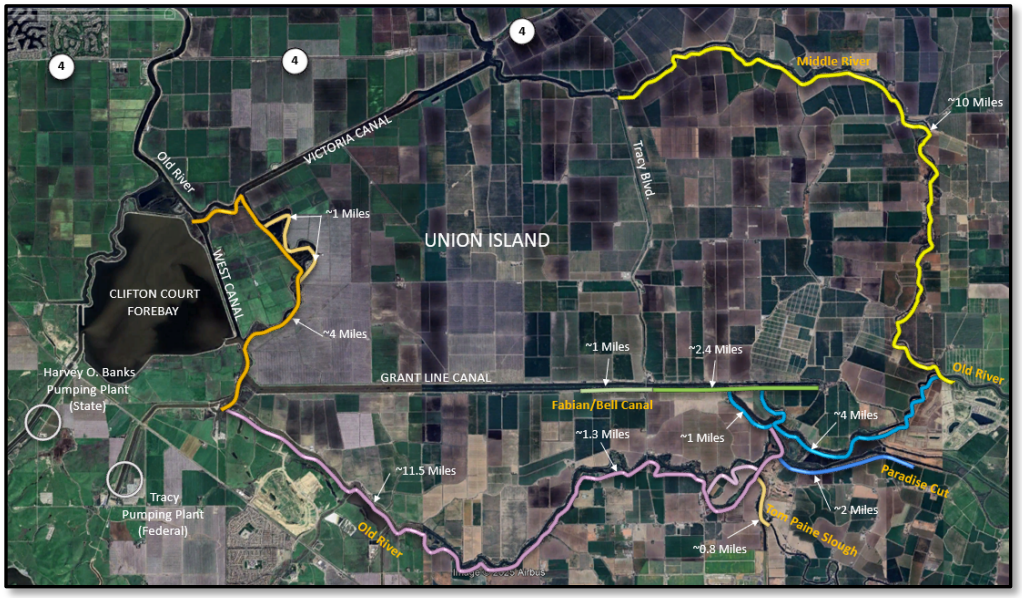

Figure 1.2 – South Delta Channels Depth Restoration Program (Middle River, Old River [West/South/East/Side Channel], Fabian & Bell, Paradise Cut, and Tom Paine Slough)

The Planning Guide outlines the framework for developing and managing dredging projects to address sedimentation that has been impacting channel conveyance and water quality. Development of the Planning Guide was a collaborative effort of the Delta Dredging Work Group (Work Group) and Anchor QEA, LLC. The Work Group provided historical literature and data, including historical and current site condition information. The Planning Guide included discussions that covered dredging methodology, conceptual dredging design, real estate integration for potential dredging sites, environmental compliance and permitting, and conceptual costs. Opportunities were identified to support the use of the dredge material for ongoing maintenance and anticipated improvements of the Delta levee system, and there is a demand for its use to increase turbidity farther west in the Delta estuary within San Pablo Bay to help the native fish species hide from predators.

2) A separate effort involving the study of a possible flood bypass at Paradise Cut identified the need for sediment removal in about 49 miles of channels downstream of the bypass area for safe passage of the increased flows and it was added to the project description.

The San Joaquin Area Flood Control Agency is now acting as the lead agency for the project and is conducting feasibility studies.

Neither of these efforts is attempting to address the long-term problems for the entire Delta. It is hoped that these efforts will pave the way for a broader Delta program for sediment removal and continuous channel maintenance.

CHALLENGES

Current hydrodynamic modelling has been limited in reflecting current Delta flow/bathymetry (channel cross section) conditions. For various reasons, the modelling may show there is as much as twelve times the channel depth that actual measurements show, as demonstrated by recent soundings in Middle River. There must be a committed effort to update actual soundings considering current conditions to serve as the basis of these models.

Broader participation in California State Water Resources Control Board (Office of the Delta Watermaster) meetings throughout the export community would be helpful to increase the understanding of the problems and gain support for actions to address them.

Ultimately, obtaining the permits and funding will probably require enactment of federal and state legislation authorizing and directing agencies to act. Sponsors for the bills must be identified and as many elected officials as possible must be educated about the importance and need for action and support. Ongoing engagement with representatives and their staff members will be necessary.

NEXT STEPS

The following summarizes the next steps for planning and implementation of a dredging project within the initial Program area, including recommendations for consideration. A possible pilot project could be undertaken to reduce the worst constrictions in the areas of Middle River, Paradise Cut, and Tom Paine Slough, and in the four corners area where Paradise Cut, Old River, Sugar Cut and Doughty Cut come together.

1. Seek state and federal legislative support.
2. Conduct focused site specific Hydrographic (and possibly topographic) surveys.
3. Develop program area modeling to capture potential impacts from dredging in adjacent channels.
4. Prepare preliminary design and engage in regulatory discussion/land use outreach.
5. Initiate the CEQA process and permitting process.
6. Initiate Sediment Characterization and CVRWQCB coordination.
7. Prepare Final Design and bid documents.

Chapter 8 (pages 80-81) of the Anchor QEA report expands on these next steps and recommendations for the development of a channel maintenance program.

SUMMARY

Common sense dictates that a channel depth restoration and maintenance program in the Delta will improve conditions for the ecosystem, for local diverters, and thereby lessen or remove constraints on operations of the CVP and SWP. Further studies and modelling will provide more information and quantification on the benefits, as well as the adverse impacts going forward of taking no action.

DELTA SEDIMENT REMOVAL SUPPORT

The following entities have expressed support for a channel maintenance program and are interested in exploring this topic further. Through a transparent, inclusive, and collaborative process, they want to develop and implement a comprehensive program to remove existing and future sedimentation from target channels in the Delta. Key components of the program would include identification of the scope of the problem, criteria for on-going sedimentation removal operations, and mitigation measures. The objective would be to ensure the ability to obtain necessary permits and allow for dredging without adverse effect on beneficial uses, including by fish and wildlife.

- California Department of Water Resources
- United States Bureau of Reclamation
- California State Water Resources Control Board (SWRCB)
- SWRCB, Office of the Delta Watermaster
- San Luis & Delta-Mendota Water Authority
- Westlands Water District
- Central Delta Water Agency
- South Delta Water Agency
- Great Valley Farm Water Partnership
    - Tom Barcellos, Barcellos Farms
    - Edwin Camp, DM Camp and Sons
    - Mitch Coit, Marv Coit Farms
    - Jim Erickson, Erickson Farms
    - Dennis Gardemeyer, Zuckerman Family Farms and Zuckerman Heritage Land Company
    - Richard Hamilton, Hamilton Brothers Farm
    - Mary Hildebrand, Hildebrand Farms
    - Bob Kelley, East Side Canal and Irrigation Co.
    - Cliff Loeffler, Loeffler Farm
    - Tom Merwin, Merwin Vineyards
    - Cannon Michael, Bowles Farming Company
    - Russ Ryan, Metropolitan Water District
    - Russell van Loben Sels, Amistad Ranches
    - Sarah Woolf, Woolf Farming
- Fiorini Ranch
- Fiorini Consulting
- Farmco
- Sacramento County Farm Bureau
- Grand Island Ranches LLC
- Jack Klein Partnership LLC
- Klein Family Ranches LLC
- California Farm Water Coalition
- Water Blueprint for the San Joaquin Valley

- Arvin Edison Water Storage District
- San Luis Water District
- Panoche Water District
- Kern-Tulare Water District
- San Joaquin Farm Bureau Federation

GVFWP SUPPORT STATEMENT

The GVFWP supports programs and projects that remove excess sedimentation that negatively impact the current ecosystem, drinking water quality and water supply operations by obtaining necessary permits and funding to fully restore channel functions in the South Delta.

REFERENCE DOCUMENTS

Delta Plan Performance Measures Guidebook [1]

Anchor QEA (November 2021) South Delta Channels Planning Guide

[1] https://deltacouncil.ca.gov/pdf/delta-plan/2023-08-31-delta-council-performance-measures-guidebook.pdf