Feasibility evaluation to develop a long-term aggregate source for
San Joaquin tributary channel restoration projects

(AFRP Annual Work Plan 2000 L-D-10)

Cooperator: California Department of Fish and Game (DFG)
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Scope of the project

Restoration projects for anadromous fishes within the San Joaquin River Basin frequently require gravel or other aggregate material for implementation. The amounts can vary from a few cubic yards to hundreds of thousands of tons. Existing permitted aggregate mining operations are in heavy demand for other construction uses, so that obtaining an appropriate sized batch of spawning gravel often cannot compete with larger scale uses like road building and construction. Commercial aggregate operators are increasingly considering the Merced River Dredger tailings in the vicinity of Snelling as a commercially viable resource and Merced County recently approved such an operation.

This project would evaluate the potential of using dredger tailings from the Merced River near Snelling for use in Chinook salmon and steelhead rainbow trout habitat restoration. Using the Merced River Ranch property recently acquired, with CALFED funding, by the California Department of Fish and Game (DFG) as a pilot project site, we will evaluate how the material could be mined without creating adverse consequences to the river and floodplain, but in fact be mined in such a way that the riparian habitats and flood plain are enhanced by removal of the dredger tailings. The intent is to develop a site plan which easily could be adapted by other dredger tailing parcel owners for a reclamation plan which would have a restoration component built-in. We will assess the total available material on site and correlate that quantity with the coarse sediment models being developed through CALFED by Stillwater Aquatic and Riverine Sciences. This correlation will allow us to create a time line for material removal and restoration based on expected sediment transport rates. An evaluation of potential cost-effective, legal partnership mechanisms for extracting the material from publicly-owned lands will be conducted. The project will also engage the assistance of advanced students at California State University, Fresno to develop restoration/reclamation plan alternatives for consideration.

The California Department of Fish and Game is the cooperator for this agreement. DFG is the landowner of the pilot project site and has served as technical and administrative partner in over two dozen anadromous habitat restoration projects in the past five years in the San Joaquin River Basin. The Merced River Stakeholder Group and Technical Advisory Committee is the developing watershed group on the Merced River and is expected to be involved. This group includes state, federal and local agencies as well as private parties. The Tuolumne River Technical Advisory Committee and the Turlock and Modesto Irrigation Districts are expected to be interested and supportive of this evaluation as they are sponsoring several channel restoration projects on the Tuolumne River which require large quantities of aggregate and fill material; they are seeking cost effective ways to meet the demand. Merced County has permitting authority for aggregate extraction, thus this evaluation will provide them information needed in their permitting processes for the pilot project and potentially other private aggregate mining permits. Some historical interests in the town of Snelling have expressed an interest in the dredger tailings as historical artifacts of the mining era. This evaluation will help to describe these issues so that they may be addressed.

Justification for the Project

In-river and adjacent-to-river aggregate mining operations can impair migration, spawning and rearing habitats of fall-run chinook and steelhead in the San Joaquin River tributaries. Even when mining operations have complied with the conditions of their reclamation plans, the plans were not designed with modern fluvial principles in mind nor with the intent of conserving salmon and steelhead habitats. Consequently, there are deep pits in these tributaries which cause flow rates to drop, requiring young fish to expend more energy to swim through them if they are capable. These deep pits and captured ponds also house non-native predatory fish, including large- and small-mouth bass, which prey upon large numbers of juvenile anadromous fish. Aggregate excavation also has resulted in areas where the river is spread so thin that it is not deep enough for adult fish to swim through to reach spawning areas.

Several programs, including the Anadromous Fish Restoration Program, CALFED, and Four Pumps Direct Loss Mitigation Project, have provided large amounts of funding for habitat projects to restore a more natural, sustainable channel form and function to these disturbed areas for the benefit of anadromous fish. Such channel restoration projects tend to require large amounts of fill and aggregate material. This has created a competitive demand for material with other development activities like road and structure building, resulting in higher project costs. Additionally, the material which is currently permitted for extraction in the proximity of the restoration projects is in adjacent-to-river locations. Rapid extraction of these sites may lead to more channel failures and added future costs to conservation of the fish resources. Reviewers within the funding agencies have suggested that alternative sources of material with a more beneficial reclamation potential should be researched.

All of the remaining salmon and steelhead spawning areas in the San Joaquin River tributaries occur downstream of major dams. The dams effectively capture the natural sediments which would otherwise be carried downstream to replenish the coarse sediments in the spawning areas. Consequently, gravel replenishment projects are also carried out on these rivers to enhance the available spawning area for the fish. As the rivers are continuously carrying this coarse sediment downstream, replenishment of spawning gravels is also an ongoing need for aggregate material. The dredger tailings in the vicinity of Snelling could be an undeveloped source of that material. Because the dredger tailings are usually overburden material on the flood plain, use of

these dredger tailings adjacent to the river could be incorporated into a flood plain restoration program. Habitat restoration projects could also provide a market for a material which may be less desirable for other aggregate markets. However, Santa Fe Aggregates, Inc. recently was granted approval by the Merced County Planning Commission to mine the dredger tailings immediately northwest of the G Street bridge crossing the Merced River to be processed for road base and concrete (D. Johnston - Merced County Planning, Pers. Comm.).

The anadromous fish most likely to benefit from this project are fall run chinook salmon and steelhead. Expected benefits to natural production from this project are to reduce the cost of implementing direct habitat restoration actions such as gravel replenishment or channel and flood plain restoration. Extraction of dredger tailings as part of a flood plain restoration plan, such as on the Merced River Ranch property being acquired by the California Department of Fish and Game, will provide material for habitat improvements for fish as well as improving flood plain function and restoration of riparian communities. McBain and Trush in a memo report to Scott Spaulding, USFWS (12/25/99), recently evaluated tailings volumes on publicly owned lands in that area and estimated approximately 1,885,000 cubic yards of material were available from lands owned by the California Department of Fish and Game. This project will identify additional sources of material critical to restore natural channel and riparian habitat values for both long and short term projects.

The Merced River Ranch project is phased. Phase 1 involves acquisition of the property. This will be completed in August 2000 and was funded by CALFED. Phase 2 is the development of baseline information and a restoration concept plan (this request and in-kind assistance from CALTRANS). Phase 3 involves development of an implementable plan from the concept and obtaining necessary permits (CALFED 2001 PSP request). Phase 4 involves implementing the plan and Phase 5 is evaluation and education.

As identified in the Revised Draft Restoration Plan for the AFRP (1997) this project supports Merced River Action 3, Evaluation 2, a high priority action and a medium priority evaluation in a high priority watershed.

Monitoring and Data Evaluation

This project is an evaluation, and as such, the deliverables (reports) will consist compilation of available topical information, professional assessment and analysis. Draft reports will be circulated within AFRP staff, DFG staff, and among knowledgeable consultants, including Stillwater Aquatic and Riverine Sciences and McBain & Trush Associates, and interested Merced River stakeholders for comment.

Objectives:

1 Evaluate economic, social, and environmental benefits or costs of permitting and extracting alternative materials at pilot project site, Merced River Ranch.

2 Develop restoration/reclamation strategy for pilot site which would improve river and habitat function and could be applied to other dredger tailing aggregate operations.

Work to be performed and deliverables

Task 1. Evaluate economic, social, and environmental benefits or costs of permitting and extracting alternative materials at pilot project site, Merced River Ranch.

Task 1.1. Assemble and analyze existing information on economic feasibility of extracting alternative materials for habitat restoration projects.
Deliverable: RFP or interagency agreement for Tasks 1.1-1.3.

Task 1.2. Identify issues regarding historical and community value of alternative resources to be considered if alternative materials are used.

Task 1.3. Evaluate legality, practicality, and cost/benefit of partnership with commercial gravel miners for extracting and sorting aggregate material from state owned lands for habitat restoration projects.

Task 1.4. Prepare and produce a report describing results of evaluations.
Deliverable: 1) Draft report 3/01
2) Final report 6/01

Task 2. Develop restoration/reclamation strategy for pilot site which would improve river and habitat function and could be applied to other dredger tailing aggregate operations.

Task 2.1. Engage university resources and technical experts to describe and evaluate at least 3 likely reclamation/restoration alternatives for pilot site; includes assessment of alternative reclamation strategies not likely to affect river morphology and function.
Deliverable: 1) Interagency agreement with California State University Fresno Foundation. 11/00

Task 2.2. Assess site specific feasibility for preferred alternative. 1-5/01.

Task 2.3. Prepare GIS compatible map layer of pilot site concept design based on preferred alternative. 1-5/01.

Task 2.4. Prepare a report of concept design and recommended actions.
Deliverables: 1) Draft report 5/1/01
2) Final report 6/1/01

Budget

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Table 1 - Cost breakdown by Task

Project Phase and Task	Direct Labor Hours and Salary	Benefits	Overhead Labor (General, Admin. and fee @20.9%)	Service Contracts	Misc. Costs	Totals
Task 1			2,508	12,000		14,508
Task 2			6,134	29,350		35,484
Total			8,642	41,350		49,992

Table 2 - Quarterly budget

Task	Quarterly Budget Oct-Dec 00	Quarterly Budget Jan-Mar 01	Quarterly Budget Apr-Jun 01	Quarterly Budget Jul-Sep 01	Quarterly Budget Oct-Dec 01	Total Budget
Task 1	3,627	3,627	3,627	3,627		14,508
Task 2		17,742	17,742			35,484

Preparation and management of service contracts and production of quarterly reports to summarize the status of the Tasks and expenditures will be compiled by DFG staff as an in-kind cost share of approximately $5,000.