ACTION ITEM

Consideration and Possible Approval of the Delta Science Program Reearch Awards Pursuant to the 2021 Joint Delta Science Proposal Soliciation

Summary: Staff recommends that the Council approve a package including 34 contract agreements, for a total amount up to $9,611,012.75, for 16 research projects from the Delta Science Program's 2021 Delta Science Proposal Solicitation. The Delta Lead Scientist selected these exceptional research projects after a robust and independent review process. Funds for the proposed agreements are from the Council and the U.S. Bureau of Reclamation (Reclamation), with the State Water Contractors providing additional support for one of the 16 projects.

REQUESTED ACTION

Staff recommends that the Council grant authority to the Executive Officer to enter into contractual agreements for Delta Science Program research projects as part of the 2021 Delta Science Proposal Solicitation. Sixteen projects (34 contracts; see Attachment 1), for a total amount up to $9,611,012.75, are recommended for funding. Funding sources include the General Fund and Federal funds from Reclamation approved by the Council in August 2020. The Council's anticipated total award amount for this solicitation was up to $9,000,000, however, available funding will allow an award of up to $9,611,012.75.

The Executive Officer has delegated authority up to $500,000 to enter into contracts and interagency agreements on the Council's behalf. Because some of the individual contracts and the total of these agreements would exceed the delegated amount, Council staff is presenting all of the proposed awards for Council authorization.

BACKGROUND

On November 9, 2020, the Delta Science Program released a Delta Science Proposal Solicitation Notice (PSN) to specifically seek integrated socio-ecological systems proposals that examine interactions and feedbacks between social and environmental processes, as well as smaller research proposals. Continuing their support for collaborative Delta science, Reclamation contributed $3.5 million to support research and DSP staff time. The Delta Science Program worked with California SeaGrant through an existing agreement to provide a robust, thorough, and transparent review process.

The Delta Science PSN attracted 99 proposals totaling approximately $63.9 million. This demonstrates a significant surge in interest from the Delta science community;

in 2019 the Delta Science Program received 62 proposals for the previous solicitation, totaling approximately $43 million. The 16 proposals that the Delta Lead Scientist is recommending for funding by the Council received very high marks from the independent reviewers. These projects, listed in Attachment 1, will inform management decisions and can transform scientific understanding in the Delta. In 2-3 years when these projects complete, the insights gained will allow managers and decision-makers in the Delta to better see the potential effect and tradeoffs of their actions. Topic areas include salmon, harmful algal blooms, wetlands, food webs, and social science. Many strong proposals with potential for significant added value could not be funded because demand for funding was far greater than available funds. Following the proposal review, selection process, and coordination with the Council, the State Water Contractors will provide funding support for one of the recommended projects (Dr. Peter Hernes, UC Davis, "How Delta food webs have changed: integrating detrital material into the Delta food web puzzle," see Attachment 1).

Why Fund Science Research?

The Delta Reform Act of 2009 states that the mission of the Delta Science Program "shall be to provide the best possible unbiased scientific information to inform water and environmental decision-making in the Delta. That mission shall be carried out through funding research, synthesizing and communicating scientific information to policy-makers and decision-makers, promoting independent scientific peer review, and coordinating with Delta agencies to promote science-based adaptive management," (Delta Reform Act 2009, Water Code section 85280(b)(4); emphasis added).

The same legislation created the Council and the Delta Science Program, directing and authorizing the Council to "serve two primary governance roles: (1) set a comprehensive, legally enforceable direction for how the State manages important water and environmental resources in the Delta through the adoption of a Delta Plan, and (2) ensure coherent and integrated implementation of that direction through coordination and oversight of State and local agencies proposing to fund, carry out, and approve Delta-related activities," (Delta Reform Act 2009, Water Code section 85280(b)(4)).

The Delta Plan established many funding principles to support the coequal goals, mostly focusing on water infrastructure and ecosystem restoration. Successful implementation of the Delta Plan relies on a strong Science Program, which is needed to support a credible science foundation for Delta Plan implementation and the coequal goals (2013 Delta Plan p. 291). Funding science in the Delta directly supports the coequal goals and the implementation of the Delta Plan by advancing

management tools and the state of knowledge and by providing the best available science to inform decision-makers.

The Delta Science Program is the successor to the CALFED Science Program, which brings with it a history of awarding research funds using a PSN process. PSN research awards from 2004, 2006, 2007, 2010, and 2019 resulted in the combined funding of 63 proposals totaling more than $36.6 million. This science has tremendously improved the understanding for managers in the Delta. One example is Dr. Russ Perry of the US Geological Survey, who was awarded 2010 PSN funding to develop new statistical models that improve our understanding of the factors that affect juvenile salmon migration routes and survival. That science (Perry et al. 2018) was used in the California WaterFix biological assessment. Dr. Perry received another award from the 2019 Delta Science solicitation and is being recommended for funding in the 2021 Delta Science Solicitation. This new work uses and improves those original statistical models (linking to other models and using new data) to develop a juvenile production estimate for juvenile salmon leaving the Delta. Another 2019 PSN awardee, Dr. Mariah Meek of Michigan State University, will be using new genomic methods (Meek et al 2020) that allow scientists to identify individual Chinook salmon to life history and location of origin. This information can be used in existing salmon life-cycle models to assess how spring run Chinook salmon populations may respond to future environmental changes and new habitat restoration projects.

Scientists working on important issues in the Delta often need external funds to do their work. Unfortunately, there are not very many opportunities for scientists to competitively apply for science funding in the Delta. One notable exception is the California Department of Fish and Wildlife's Proposition 1 Restoration Grant program. The Delta Science Program is uniquely positioned to fund science that will address the highest-priority science and management needs so that Delta managers and decision-makers can operate on a foundation of science. The Delta Science Program intends to offer a recurring proposal solicitation every two years. To maximize the impact of the Science Program's research funds, staff will continue to pursue collaboration and partnerships with other agencies interested in funding high-quality research that addresses critical scientific uncertainties and management needs.

The Science Action Agenda

All proposals submitted in response to the PSN were required to address one or more Science Action Agenda (SAA) action areas or Sacramento River Science Partnership topics. The SAA is a four-year science agenda for the Delta that prioritizes and aligns science actions across entities to inform management

decisions, fill gaps in knowledge, promote collaborative science, build the science infrastructure, and achieve the objectives of the Delta Science Plan, which in turn supports Delta Plan implementation and the coequal goals. The priority science actions in the 2017-2021 SAA emerged out of a participatory process to ensure integrated, collaborative, and transparent science that enhances policy and management in the Delta. The 2017-2021 SAA includes 12 priority science actions organized into five action areas:

1. Invest in assessing the human dimension of natural resource management decision;
2. Capitalize on existing data through increasing science synthesis;
3. Develop tools and methods to support and evaluate habitat restoration;
4. Improve understanding of interactions between stressors and managed species and their communities; and
5. Modernize and improve monitoring, data management, and modeling.

The Delta Science Proposal Review Process

Each proposal was subjected to several layers of review. These include an administrative review, independent scientific evaluations by external reviewers, and technical review panels. The review panels consisted of 31 subject matter experts from the Delta, but also from across the United States and other countries. Reviewers were asked to evaluate the proposal based on the criteria of scientific merit, relevance to the SAA solicitation focus, technical feasibility, management relevance, adequacy of the data management plan, the reasonableness of the budget, and achievement of meaningful broader impacts and benefits to vulnerable communities—a new criterion that assesses whether the applicants are, for example:

- Creating education and training opportunities for underserved communities;
- Supported by community leaders for research that investigates or evaluates management actions to address the social vulnerability in a specific community;
- Demonstrating the potential use of research for societal benefit;
- Disseminating the results beyond the scientific community; and
- Engaging with local communities in the Delta and inclusion of citizen science or community science.

In an exciting new aspect of the solicitation, applicants were asked to demonstrate how their project will affect specific vulnerable communities. To do this, they were

encouraged to use the Council's online custom social vulnerability index map developed as part of the Delta Adapts initiative (https://deltascience.shinyapps.io/Delta_vulnerability_map) which shows the location of vulnerable communities in the Delta. Beyond simply including the Science Action Agenda #1 that focuses on the human dimension of natural resource management, social science projects were encouraged throughout the PSN by incorporating feedback from social scientists. Social science research can potentially transform our understanding of the Delta, yet this type of research is acutely underfunded. The Delta Science Program is actively trying to change that. Integrated socio-ecological systems proposals were additionally evaluated on the degree to which social and biophysical scientific disciplines were meaningfully integrated, with bi-directional feedback between biophysical and social components of the system fully considered.

FISCAL INFORMATION

Source	Maximum Amount
General Fund	$3,021340.74 Fiscal Year 2021/2022
General Fund	$1,978218.41 Fiscal Year 2022/2023
General Fund	$1,199,410.98 Fiscal Year 2023/2024
Federal Funds (U.S. Bureau of Reclamation)	$1,874,131.10 Fiscal Year 2021/2022
Federal Funds (U.S. Bureau of Reclamation)	$1,323,357.53 Fiscal Year 2022/2023
Federal Funds (U.S. Bureau of Reclamation)	$214,554.00 Fiscal Year 2023/2024
Maximum Total Council Contracts	$9,611,012.75

LIST OF ATTACHMENTS

Attachment 1: 2021 Delta Science Proposal Solicitation Projects and Contracts Overview

Attachment 2: Information Sheet: "2021 Delta Science Proposal Solicitation Awards"

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