

Delta Stewardship Council & U.S. Bureau of Reclamation

Public Review Draft: Delta Science Proposal Solicitation Notice

October 2020 - Solicitation #21000

This Delta Science Proposal Solicitation Notice is a collaborative effort between the Delta Stewardship Council's Delta Science Program and the US Bureau of Reclamation to achieve the vision of "One Delta, One Science."



**Delta
Science
Program**

DELTA STEWARDSHIP COUNCIL



— BUREAU OF —
RECLAMATION

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1 Foreword and Background

The Delta Stewardship Council (Council) and the U.S. Bureau of Reclamation (USBR) are pleased to announce the 2020 Delta Science Proposal Solicitation (Solicitation). The Solicitation will be administered by the Council's Delta Science Program (DSP) and will further the DSP's legislatively mandated mission to...

... provide the best possible unbiased scientific information to inform water and environmental decision-making in the Delta ... 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).

As required by the Delta Science Plan (<https://deltacouncil.ca.gov/pdf/2019-delta-science-plan.pdf>), **the Science Action Agenda (SAA)** prioritizes and aligns science actions to fill gaps in knowledge and build science capacity to address current and anticipated management needs. The 2017-2021 SAA is the key source used to identify focus areas for scientific studies in this Solicitation. For more information about the SAA, please visit <http://scienceactionagenda.deltacouncil.ca.gov/>. USBR supports the SAA and critical science that advances ongoing efforts to modernize data collection and sharing; develop tools and associated data to evaluate the ecologic and hydrologic effects of existing and alternative water operations in the Sacramento and San Joaquin watershed; improve scientific understanding of measures and opportunities to restore native species; and collaboratively synthesize available information regarding fish, wildlife, and wetland habitat restoration opportunities in the Delta.

Humans are an influential and inextricable component of the Delta environment. The DSP recognizes the importance of social science in the advancement of Delta restoration and Delta science, as demonstrated by the recent engagement of a Social Science Task Force to produce a recommendations report

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(<https://deltacouncil.ca.gov/pdf/science-program/delta-social-science-task-force/2019-12-20-draft-social-science-strategy-for-bay-delta.pdf>). Evaluating the likelihood that management activities (such as environmental restoration) will be successful requires understanding both the ecological and the social aspects of the system. This Solicitation seeks proposals that examine interactions and feedback between social and environmental processes at the local or regional scale and seeks smaller research proposals that address the SAA action areas and the Sacramento River Science Partnership topics. USBR is a participant in the Sacramento River Science Partnership, which seeks to support collaborative and structured decision making between agencies and stakeholders with the intent of reducing uncertainty in the upper Sacramento River through specific scientific studies.

This Solicitation seeks high-quality scientific study projects that advance the SAA and anticipates establishing a list of eligible projects as a result of this solicitation. The list of eligible projects may result in a contract agreement (Agreement) to be negotiated with the Council, as authorized by Water Code Section 85210. Total funding for all eligible projects is anticipated to be up to \$9 million. Funding sources include the California General Fund as well as Federal funding provided to the Council by the USBR for this Solicitation. The Council will work closely with the University of California San Diego, Sea Grant to assist the DSP in its administration of the solicitation notice, external and expert review of submitted proposals, and communication of funded work with key stakeholders during stakeholder engagement workshops. All eligible entities are encouraged to submit proposals for qualified projects.

2 Schedule

Table 1. Schedule

Event	Date(s) and Deadlines
Invitation for Comment on Scope of Delta Science Solicitation	October 19, 2020

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Invitation for Public Comment on Scope of Delta Science Solicitation	October 19 – November 2, 2020 Comments are due by 5:00 PM PST on November 2, 2020. See https://deltacouncil.ca.gov/delta-science-program/research-funding-and-fellowships for more details.
Final Solicitation Notice Published	November 9, 2020
Letter of Intent Deadline	December 15, 2020 by 4:00 PM PST
Application Deadline	February 12, 2021 by 4:00 PM PST
Project Start Dates (acceptable range)	July 1, 2021 – June 30, 2022
Project End Dates	February 1, 2024

Schedule updates will be advertised through email announcements, website postings, and news releases (<https://deltacouncil.ca.gov/news-releases>). Please sign up for email updates from the Council at <https://confirmsubscription.com/h/r/53673BE3C86FE7AF> and from California Sea Grant at <https://caseagrants.ucsd.edu/sign-up-for-announcements>.

3 Submittal Requirements

3.1 Letter of Intent

Those who wish to apply must submit a Letter of Intent to sgproposal@ucsd.edu by the deadline in Section 3 (Schedule). For additional information regarding the Letter of Intent see Section 8 (Letter of Intent Requirements).

3.2 Proposal

Proposals are required to be submitted by the deadline in Section 3 (Schedule) using eSeaGrant: <http://eseagrants2.ucsd.edu/>.

Applicants will receive access via email to the eSeaGrant’s request for applications a few days after the Letter of Intent submission deadline. Only applicants who have

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submitted a letter of intent may submit a proposal.

3.3 Application Informational Workshops

Two optional application informational workshops will be held in coordination with the Council and California Sea Grant to provide technical assistance with the application. The workshops will be conducted as virtual webinars. Please see the Council's events calendar web page for workshop details:

<https://deltacouncil.ca.gov/events>. Workshops may be recorded and made available online. Questions and answers regarding this Solicitation will be posted on the DSP Funding & Fellowships web page (<https://deltacouncil.ca.gov/delta-science-program/research-funding-and-fellowships>) in a Frequently Asked Questions document on the website.

4 Eligibility Requirements

4.1 Eligible Entities

Eligible entities for Council Agreements are...

- A California State agency, state college, or state university;
- A State agency, state college, or state university from another state;
- A local governmental entity, including those created as a Joint Powers Authority and local government entities from other states;
- An auxiliary organization of the CSU or of a California community college;
- The Federal government;
- A foundation organized to support the Board of Governors of the California Community Colleges;
- An auxiliary organization of the Student Aid Commission established under Education Code;
- A corporation (both domestic and foreign), limited partnership, or limited liability company;
- A private independent individual, including sole proprietors with a valid, active business tax certificate and/or active business license.

All corporations (both domestic and foreign), limited partnership, or limited liability

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companies must provide a valid, active business tax certificate and/or active business license and be registered with good standing and an “active” status with the California Secretary of State. The Council determines whether a corporation is in good standing by accessing the Office of the Secretary of State’s web site at www.sos.ca.gov.

For proposals involving multiple entities, a single entity must be identified as the primary lead entity (i.e., account for more than 50% of the budget), and a single proposal describing the entire project must be submitted by that entity. The total subcontract* budget should not exceed \$50,000 or 25% of the total Agreement, whichever is less. If the subcontract budget does exceed these amounts...

1. one or more of the organizations identified in the Proposal may enter into a stand-alone Agreement directly with the Council; or
2. the Applicant must provide justification for why subcontracting is necessary to the extent proposed and why the subcontracts should not be stand-alone Agreements.

* Any subcontractor identified in the Proposal must be solicited by a competitive bid process unless the subcontractor is an exempt government entity/auxiliary. Any subcontractor whose identity is known at the time of Proposal submission must be identified in the Proposal. If a subcontractor is unknown at the time of Proposal submission, they may be added to the Agreement budget as TBD (to be determined), but an amendment is required before any subcontractor can begin work. Any private independent individuals acting as subcontractors, including sole proprietors, are required to provide a valid, active business tax certificate and/or active business license.

Eligible activities in a scientific study may include, but are not limited to...

- Data collection, analysis, synthesis, management, and delivery;
- Development of resource management tools and technologies;
- Development of conceptual or quantitative models;

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- Stakeholder involvement and engagement (this is a required deliverable for all projects);
- Peer-reviewed journal articles, conference presentations, and communications for the scientific/management community;
- Science communication for broader audiences or community outreach;
- Management/coordination of a multidisciplinary team and project management;
- Document/report preparation, including compliance with the Americans with Disabilities Act (ADA) and California's document accessibility standards (<https://webstandards.ca.gov/accessibility/>).

4.2 Qualifications

Applicants must demonstrate that the project team has the experience, facilities/equipment, and the capacity to successfully perform the proposed tasks by describing prior projects completed by the applicant, prior publication and productivity, and other qualifications. The project team includes all key personnel and other entities (including subcontractors) who will be performing the work described in the Proposal. Proposal narratives should discuss the project team's experience with collaborative efforts, management engagement, and broader outreach history. Project teams partnered with collaborative workgroups or science initiatives (e.g., Interagency Ecological Program [IEP], Collaborative Adaptive Management Team [CAMT], Delta Regional Monitoring Program [Delta RMP]) are encouraged to apply.

4.3 Ineligible Projects

Funds shall not be expended to pay the costs of the design, construction, operation, mitigation, or maintenance of covered actions in the Delta (<https://coveredactions.deltacouncil.ca.gov/?page=1>).

5 Award Information and Proposal Categories

Only one award will be made to a lead principal investigator (PI). PIs may be listed as co-PIs on other awarded projects if the total combined effort is less than or

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equal to 100%.

For event dates and deadlines see Section 3 (Schedule).

Availability of funding is estimated below but dependent upon State and Federal budget appropriations for the specified fiscal year and is subject to change. The anticipated total amount is up to \$9,000,000:

- Council - up to \$5,500,000
- USBR - up to \$3,500,000

Proposal categories: each proposal **must** contribute toward one or more action area identified in the 2017-2021 SAA (*see* Section 7.1 of this Solicitation).

- **Research Awards:** Maximum award of \$700,000 per proposal, 12-31 months projects. Five to six awards expected.
- **Integrated Socio-Ecological Systems Awards:** Maximum award of \$1,500,000 per proposal; 12-31 months projects; must be collaborative and multidisciplinary projects that meaningfully integrate one or more of the social sciences with one or more of the biophysical sciences. Two to three awards expected.

Proposals for Research projects, which may include social science and/or biophysical disciplines, are not expected to compete with proposals for Integrated Socio-Ecological Systems projects. Integrated Socio-Ecological Systems and Research projects will be evaluated separately. Note that both Integrated Socio-Ecological Systems and Research projects must be directly related to the SAA. The estimated funding levels per category may be adjusted based on funding availability and the quality, relevance, and suitability of the proposals received.

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6 Solicitation Focus

The focus of this Solicitation is scientific projects in the Delta¹ that further the vision of *One Delta, One Science* (<https://deltacouncil.ca.gov/delta-science-program/one-delta-one-science>) – an open Delta science community that works collaboratively to build a shared body of scientific knowledge with the capacity to adapt and with the intention to inform natural resource management decisions. This Solicitation prioritizes the funding of projects that will advance the objectives of the SAA, the Delta Science Plan, the Delta Plan, and the Sacramento River Science Partnership. USBR is a participant in the Sacramento River Science Partnership, which seeks to support collaborative and structured decision making between agencies and stakeholders with the intent of reducing uncertainty in the upper Sacramento River through specific scientific studies.

Proposals must address one or more of the SAA action areas described in Section 7.1. There are two categories of project types: 1) Research and 2) Integrated Socio-Ecological Systems. Research project teams may consist of social science and/or biophysical disciplines and may involve up to two co-investigators. Research projects may also have fewer study sites or personnel, may study systems with fewer key processes, are not necessarily (but could be) interdisciplinary, or may require less effort. USBR will provide funding to the Council to manage several near-term Research projects consistent with the SAA and Sacramento River Science Partnership. Integrated Socio-Ecological Systems Projects are larger in scope, may involve a larger number of co-investigators, and should integrate at least **one social science discipline** (e.g., social psychology, anthropology, economics) with at least one biophysical science discipline (e.g., biology, hydrology, ecology) to address

¹ Projects under this Program are not required to be physically located within the Delta; however, project activities must provide a demonstrable benefit(s) to the Delta. The ‘Delta’ means the Sacramento-San Joaquin Delta as defined in Water Code Section 12220 and the Suisun Marsh as defined in Public Resources Code Section 29101 (Water Code Section 79702[e]).

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cross-disciplinary research needs identified in the SAA. For collaborative projects, a single proposal should be submitted, with multiple PIs and all key personnel identified in the proposal.

Proposals should present novel, clear, and non-trivial hypotheses (and/or pose cogent research questions) that can be tested using a scientifically-sound research design that employs established or innovative methods, or a clear integration of several methods. Projects likely to improve capabilities for predicting the responses of socio-ecological systems to endogenous and exogenous changes, including appropriate estimates of uncertainty in model predictions, are encouraged. Proposals are strongly encouraged to openly share methods (e.g., script-based analyses in R), data, and journal publications, as demonstrated in a Data Management Plan (*see* 9.1.6 Data Management/Sharing Plan).

Proposals that include substantial roles for undergraduate, graduate, and postdoctoral fellows are encouraged. Proposals are also strongly encouraged to demonstrate mentoring opportunities for underrepresented undergraduate, graduate, and postdoctoral researchers, as part of the project's broader impacts.

6.1 Priority Action Areas

Applicants **must** address one or more of the following Science Action Areas by implementing an Example Priority Science Action (right-hand column) or responding to a Priority Management Need (left-hand column). Sacramento River Science Partnership topics are identified by an asterisk (*). Please note: each of the Priority Action Areas are of equal priority and are not in order of importance.

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Table 2. Action Area 1: Assess the human dimensions of natural resource management decisions

Priority Management Needs	Example Priority Science Actions
Consider human behaviors and stakeholder concerns when developing policy alternatives and potential incentives for improving species habitat conditions.	Investigate economic, recreational, or aesthetic benefits of habitat enhancements on public or private lands.
Obtain data that can quantify the effects of climate change and extreme events on agriculture and economy to inform adaptation strategies (e.g., potential for flood risk; how will increasing temperatures affect regional crop mixes, water pricing, and employment?)	Implement studies to understand socio-economic adaptations to climate change (e.g., human behavioral response in the agricultural sector to changes in water prices).
Evaluate success of restored areas on a landscape scale.	Assess long-term costs and benefits of managed wetlands.
Understand human responses to policy and management actions regarding common pool resources in the Delta.	Integrate natural sciences with the social sciences for research on the Delta as an evolving place.
Determine how to coordinate and assist adaptive management in the Delta.	Develop tools to assist adaptive management in the Delta.

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Table 3. Action Area 2: Capitalize on existing data through increasing science synthesis

Priority Management Needs	Example Priority Science Actions
Obtain population abundance estimates and trends for Green and White Sturgeon.	Develop improved sturgeon abundance estimates through modeling and synthesizing data from cohort abundance studies, surveys, and report cards.
Enhance knowledge of predator-prey relationships and how changes in flow, climate, and habitat may affect these relationships.	Analyze existing telemetry results to understand system-wide fish movement and predation.
Improve data and information exchange.	Identify, prioritize, and integrate key data sources that promote collaboration among disciplines, and provide the technology necessary to easily access this information.

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Table 4. Action Area 3: Develop tools and methods to support and evaluate habitat restoration

Priority Management Needs	Example Priority Science Actions
Understand how species use restored areas.	Review efforts to examine effectiveness and evaluate the long-term benefits of habitat restoration.
Effectively plan restoration, enhancement, and mitigation projects to meet project and/or system-wide goals and objectives.	Estimate effects of tidal marsh restoration under climate change and sea-level rise scenarios.
Evaluate performance of restored areas on a landscape scale.	Develop methods for evaluating long-term benefits of habitat restoration based on current understanding of how species use restored areas and how use changes over time as habitats evolve.
Evaluate success of restored areas on water quality on a landscape scale.	Develop a database of baseline habitat conditions at the landscape scale (e.g., native species, water quality, predators, hydrologic conditions, and socio-economic values).

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Table 5. Action Area 4: Improve understanding of interactions between stressors, managed species, and their communities

Priority Management Needs	Example Priority Science Actions
Develop conceptual and numeric models to enhance current understanding and inform nutrient management questions.	Implement studies to better understand the ecosystem response before, during, and after major changes in the amount and type of effluent from large point sources in the Delta including water treatment facilities.
Quantify the effects of climate change on species, Delta ecology, and potential impacts on water and natural resource management.	Identify climate change refugia for species of concern during extreme conditions (e.g., drought and flood), to inform management decisions and priorities during extreme climate events.
Determine how water operations and restoration actions will affect native fishes to adaptively guide management decisions and restoration design.	Understand mechanisms for observed relationships between flows and aquatic species.
Identify and forecast which water quality contaminant sources and processes are most important to understand and quantify.	Evaluate the effects of contaminant mixtures, mercury, pharmaceutical products, and harmful algal blooms and disease on aquatic species health and survival.

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Predict how environmental stressors will affect the health condition of salmonids in the Bay-Delta, migratory corridors and natal tributaries.	Better understand salmonid temperature tolerances in streams and rivers. *Improve our understanding regarding sources of mortality of early life stages of salmon.
Improve ability to prevent, conduct early detection, rapid response, eradication, and control of non-native and potential invasive species.	Identify effective mechanical and biological control strategies for established non-native clams and potential invasive mussels, including developing effective prevention measures for potential invaders.

*Sacramento River Science Partnership topic

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Table 6. Action Area 5: Modernize monitoring, data management, and modeling

Priority Management Needs	Example Priority Science Actions
Utilize models of the Delta and visualization tools that are widely accessible and sustained by multiple sources to predict and assess the likely outcomes of management actions and environmental change (preferably in real-time).	Advance integrated modeling through efforts such as an open Data collaboratory (physical or virtual) that promotes the use of models in guiding policy.
Increase capacity to be nimble, prepared, and responsive to new demands, including emerging and opportunistic science needs.	Explore innovative technologies and cost-effective methods for scientific monitoring and analysis of flow, water quality, and ecosystem characteristics (e.g., improved tools for fish monitoring, LiDAR, high-resolution bathymetry technology, new measurements for Delta levee hazards, and citizen scientist monitoring programs).

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<p>Determine how water project operations affect salmon population dynamics and survival within the Delta’s complex channel network to guide water operations timing, provide early warning, and accelerate recovery efforts and habitat restoration design.</p>	<p>Build on existing models to integrate fish and water quality monitoring data to report, simulate, and forecast distribution of salmon runs in time and space (e.g., coupling 3-D hydrodynamic modeling of the Delta with juvenile salmon behavior and survival).</p> <p>*Further develop decision support tools for species recovery including physical and biological modeling and exploring integration with management questions including understanding effects between species.</p>
<p>Identify anadromous fish habitat usage and attributes to guide resource allocations for their protection, conservation, and recovery.</p>	<p>Conduct baseline surveys throughout spawning habitat, map egg collection and larval rearing habitat, and quantify availability using various characteristics identified through egg sampling (water temperature, depth, velocity, substrate, etc.).</p> <p>*Assess the quantity, condition, and habitat needs of emerging juvenile fry and smolts, exploring the management relevance of these findings.</p> <p>*Understand the fishery needs within the Sacramento mainstem with a focus on salmonids and concern for other species of interest as well.</p>

*Sacramento River Science Partnership topic

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7 Letter of Intent Requirements

Only applicants who have submitted a letter of intent may submit a proposal.

Applicants may submit more than one letter of intent.

For deadline see Section 3 (Schedule); for instructions for submittal see Section 4.1.

Letters of intent are nonbinding documents that will allow DSP and California Sea Grant to plan for the number and topical expertise of independent reviewers and panelists.

The page limit for letters of intent is two (2) pages, including header, footer, labeling, and address information. Information in excess of two pages will not be considered for purposes of evaluating compliance with proposal submittal requirements.

In the letter of intent, please provide the following information:

- Name of lead PI, affiliation, and contact information
 - *Note:* Applicants may submit more than one letter of intent and proposal, but a maximum of one award will be made to an individual lead PI. However, lead PIs may be listed as co-PIs on other awarded projects if the total combined effort is less than or equal to 100%.
- List of possible Co-PIs (if applicable) with affiliation(s)
- Title of project
- Brief discussion of the focal topic and approach
- Indication of whether seeking Standard Research Award or Integrated Socio-Ecological Systems Award and which SAA action area(s) will be addressed
- Approximate total budget and budget by each State fiscal year (July 1 – June 30) of the project

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8 Proposal Requirements

Applicants may submit more than one proposal. For award information see Section 6 (Eligibility Requirements).

See deadline in Section 3 (Schedule) and how to submit in Section 4.2.

8.1 Contents of a Complete Proposal

Listed below are the requirements for a complete application package. **Only applicants who have submitted a letter of intent may submit a proposal.** For lead PIs affiliated with academic institutions, final proposals must be submitted by the institution's sponsored research office.

8.1.1 Title Page

A signed title page must be included with the proposal. Please provide all requested information and obtain the required signatures. The completed and signed title page must be converted to a PDF and uploaded.

8.1.2 Project Summary

The project summary is fillable online in eSeaGrant. Applicant will need to prepare separate sections for Objectives, Methodology, and Rationale. The Project Summary presents a concise description of the proposed research in a form useful to a variety of readers and does not require specialized expertise. Instructions available in eSeaGrant should help applicants complete the form. Please follow them carefully – the Project Summary is the most widely-consulted description of the project.

8.1.3 Project Narrative

The Project Narrative format and contents may vary; however, proposals must include the following information:

The project narrative **must not** exceed 12 pages, Arial font size 12, single

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spacing, and normal margins (including introduction, objectives, approach, illustrations, charts, tables, and figures). Proposals exceeding this size limit will not be reviewed.

8.1.3.1 Introduction and Background

Provide the rationale for the project (i.e., a well-defined problem or important opportunity). Show a clear relationship between the problem statement and the project objectives. Relevance to the Solicitation Focus, importance, merit, and broader impacts for the proposed research are the criteria by which proposals are evaluated. Thus, a clear, concise statement of the “real world” need for the applicant’s research (rationale) and a description of who might use the results and how they might use them (utilization) should be addressed.

8.1.3.2 Objectives

In number or “bullet” format, list the objectives or goals of the research.

8.1.3.3 Work Plan

Present the scientific/technical approach, experiments, procedures, and methods. Identify and discuss any new approaches (innovativeness) to solving problems and exploiting opportunities in resource management or development, including public outreach. Please make clear what other sources of support (fiscal, personnel, equipment, or logistical), if any, will be used to help support the work proposed.

8.1.3.4 Outcomes and Deliverables

Project outcomes should be clearly related to the project objectives and should be briefly described. Any planned interactions with relevant management personnel should be described.

Required deliverables include at least one stakeholder engagement workshop and presentation(s) at relevant science conferences (e.g., Bay Delta Science Conference), quarterly reports and invoices, annual report, final report, revised Data

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Management Plan, a stakeholder engagement plan, the addition of the project to the Delta Science Tracker, communication products developed with the Science Program and/or California Sea Grant to communicate outcomes of the project, lay person/visual abstracts, and any draft manuscripts expected from the project. Any deliverables or products submitted to the Council must meet ADA requirements (<https://webstandards.ca.gov/accessibility/>). We strongly recommend that publications be open access and relevant methods and data be published.

8.1.3.5 References

List all included references alphabetically. The list of references **does not** count toward the 12-page limit of the narrative but must be included in the narrative PDF file.

8.1.4 Science Action Agenda Relevance

Describe how the proposed work will address one or more of the SAA Action Areas (and specify the specific management need[s] and/or science action[s]), how the project would address key scientific uncertainties and fill important information gaps, and how the information produced from the project could contribute to more effective and equitable management of the Delta. This section and subsequent sections **do not** count toward the 12-page limit of the narrative and should be provided in separate PDF files.

8.1.5 Broader Impacts

This section should describe how the project will achieve other broader impacts (i.e., stakeholder engagement, mentorship opportunities for undergraduate, graduate, and postdoctoral researchers, science communication, community/citizen science, and coordination/collaboration efforts). Applicants are expected to describe their stakeholder engagement plan and (at a minimum) participate in one stakeholder engagement workshop co-led by California Sea Grant and the DSP. Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are complementary to the project. Societally-relevant outcomes that the DSP

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values include, but are not limited to the following: increased diversity in scientific research; curriculum enhancement and educator training at any level; increased public scientific literacy and public engagement with science; enhanced equitability of public access to information and resources; increased partnerships between academia, industry, and others; and enhanced infrastructure for research and education.

8.1.6 Vulnerable Communities

Applicants are required to evaluate and describe whether and how the project will benefit a vulnerable community by demonstrating community need or the potential utility of the project's results. For example, research may investigate or evaluate potential management actions to address one or more of the factors that contributes to higher social vulnerability in a specific community. Applicants are directed to use the Delta Adapts Map Tool (https://deltacouncil.shinyapps.io/sovi_map/), which shows the location of vulnerable communities in the Delta, to demonstrate how their project will affect specific vulnerable communities.

EO-B-30-15 requires that, "State agencies' planning and investments shall...protect the state's most vulnerable populations." Vulnerable communities, in the context of climate change are here defined as those which "experience heightened risk and increased sensitivity to climate change and have less capacity and fewer resources to cope with, adapt to, or recover from climate impacts. These disproportionate effects are caused by physical (built and environmental), social, political, and/or economic factor(s), which are exacerbated by climate impacts. These factors include, but are not limited to, race, class, sexual orientation and identification, national origin, and income inequality," (OPR ICARP).

8.1.7 Data Management/Sharing Plan

A data management plan (DMP) is a written document that describes the data that applicants expect to acquire or generate during the course of a research project, how applicants will manage, describe, analyze, and store those data, and what

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mechanisms will be used at the end of the project to share and preserve the data. Data management should be consistent with the recommendations of the Environmental Data Summit white paper (<http://deltacouncil.ca.gov/enhancing-the-vision-for-managing-californias-environmental-information>), complementary to the Open and Transparent Water Data Act (AB 1755) (https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB1755), and in compliance with the following principles:

- Data are interoperable (machine readable).
- Standard data and metadata formats are used for similar data types.
- Quality Assurance/Quality Control (QA/QC) procedures are documented and followed.
- Open and transparent data and metadata are accessible to the public in a reasonable time frame.

Data must be documented, accessible, and understandable to general users, except where limited by law, regulation, and policy or security requirements. All data generated through awarded projects are required to meet QA/QC procedures documented in the Data Management Plan (DMP) described below. All data generated through awarded projects are required to be made publicly accessible no later than two years after the end date of the project.

Applicants must demonstrate that project data will be collected using peer-approved methods, will undergo a quality control and accuracy assessment process, will include metadata that meet the California Department of Fish and Wildlife's Minimum Data Standards (<https://www.wildlife.ca.gov/Data/BIOS/Metadata>), and will be properly stored and protected until the project has been completed and data have been delivered. Data delivery can include publishing data to relevant open data portals, including but not limited to...

- Surface water data reported to California Environmental Data Exchange Network (CEDEN) (<http://www.ceden.org/>),
- Environmental Data Initiative (EDI) (<https://environmentaldatainitiative.org/>),

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- California Natural Resources Agency Open Data Platform (<https://data.cnra.ca.gov/>),
- California Open Data Portal (<https://data.ca.gov/>),
- Groundwater data reported to GeoTracker GAMA (https://www.waterboards.ca.gov/water_issues/programs/gama/geotracker_gama.shtml),
- Species observation data of tracked species (<https://www.wildlife.ca.gov/Data/CNDDDB/Plants-and-Animals>) reported to the California Natural Diversity Database (CNDDDB) (<http://wildlife.ca.gov/Data/CNDDDB>) using the online field survey form (<https://www.wildlife.ca.gov/Data/CNDDDB/Plants-and-Animals>) or other digital method, and
- Fish passage assessment data reported to the California Fish Passage Assessment Database (PAD) (<https://nrm.dfg.ca.gov/PAD/>).

Proposals must include a Data Management Plan (DMP). The DMPs are short (2-3 page) documents that capture essential information from researchers about their datasets, including:

- Description of the data to be acquired or generated during the project;
- Quality control/quality assurance procedures;
- The process to manage, describe, analyze, store, curate, and publish datasets;
- The process for efficient and effective data flow;
- The process to address data sharing;
- How the DMP is aligned with applicant's established data management approach (if applicable);
- The mechanisms to share and ensure long-term archival of the dataset;
- Proposed data publishing organizations;

Proposals are strongly encouraged to share methods (e.g., script-based analyses in R), data, and journal publications using open-access services.

For more information about DMPs, see the California Water Quality Monitoring Council's DMP Fact Sheet

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(http://www.mywaterquality.ca.gov/monitoring_council/meetings/2016dec/data_management_plans.pdf). DMPs are meant to be living documents. Therefore, successful applicants must revise the DMP as requested prior to project initiation. If awarded, the DMP will be part of the Agreement file and may be made available to the public on the Council's website. In addition, successful applicants must provide a revised DMP after 12 months, if the course of research changes, and/or before the end of the Agreement (shall be Agreement deliverables). If funding is required for data curation and archiving, please make sure that funds are budgeted in the project proposal for data management.

8.1.8 Environmental Compliance Questionnaire and IRB Certification

Projects must comply with all applicable State, tribal, and Federal environmental laws and regulations, including the Delta Reform Act (Water Code Section 85000 et seq.). Applicants are responsible for obtaining all permits necessary to complete project work. Scientific studies that involve the collection of fish, wildlife, or endangered or rare plants must have a valid Scientific Collecting Permit or plant Voucher Collection Permit.

For any research involving human research subjects, the applicant must ensure that subjects are protected from research risks in conformance with the relevant Federal policy known as the Common Rule (Federal Policy for the Protection of Human Subjects, 45 CFR 690). All projects involving human subjects must provide documentation that they (1) have approval from an Institutional Review Board (IRB) before issuance of an Agreement or (2) affirm that the IRB has declared the research exempt from IRB review. Proposals will be reviewed without IRB certification; however, any research recommended for funding must document IRB certification prior to the finalization of any Agreement for research. IRB review should be initiated as soon as possible to avoid delays in contracting.

An Abbreviated Environmental Questionnaire

(https://seagrant.noaa.gov/Portals/1/Forms/NSGO%20Abbreviated%20Environmental%20Compliance%20Questionnaire_updated_11_18.docx) is required with each application. Only one questionnaire is to be submitted per project/proposal, even if

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there are to be sub-awards/awards issued to multiple institutions. For questions not applicable to the proposed research, please note N/A on the form. Leave blank the question about Grant/Project Number.

8.1.9 Budget and Budget Justification

Budget worksheets will need to be created in eSeaGrant. Be prepared to enter any salaries, wages, and fringe benefits for all personnel associated with the project. Also, if applicable, indicate expected costs for expendable supplies, equipment, publication costs, and travel. Matching funds will also be itemized on this budget worksheet.

All budget sections will require justification. Review the online help section to see what is expected as justification for each section.

A budget workbook (to be provided) may help in planning the applicant's budget. However, please remember that the budget submission and justification must be completed using the online form in eSeaGrant. Do not submit the Excel file as the final budget.

Applicants should budget for all costs associated with project delivery, including presentations to the Council including travel, publication fees, permit fees, subcontractor costs, project reporting, document accessibility costs (<https://webstandards.ca.gov/accessibility/>), science communication, and coordination. Applicants should also budget for project "co-production" costs associated with stakeholder meetings, engagement, and broader outreach. (*see* <https://mavensnotebook.com/portfolio/panel-4-legitimacy-co-production-and-communication/>).

8.1.10 Resumes

A complete resume (**maximum 2 pages for each person**) of all key personnel must be included in the submission. Resumes should include key personnel's educational and employment history, a list of relevant publications and other outcomes (e.g., online or media resources, data releases, software), and

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participation in synergistic activities.

8.1.11 Current and Pending Support

Using the section online in eSeaGrant, please list other current and pending projects associated with all key personnel. Applicants may also upload the form provided (download).

8.1.12 Support Letters (optional)

Support letters are optional. However, if they are to be included in the application, please consolidate all letters into one PDF for uploading to eSeaGrant.

9 Proposal Review Procedure

9.1 Administrative Review

Administrative review determines if the Proposal is complete (Table 7). Proposals that receive a “No” for one or more of the Administrative Review Evaluation Criteria will be considered incomplete and may not be considered eligible under this Solicitation.

Table 7. Administrative Review Evaluation Criteria

CRITERIA	SCORE
Application is complete	Yes/No
Applicant is an eligible entity	Yes/No
Proposed project is applicable to Solicitation Priorities	Yes/No
Proposed project is not required mitigation	Yes/No

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9.2 Technical Review

All proposals that advance past administrative review will go through independent scientific review by at least three external technical experts. Individuals selected to serve as technical reviewers will be professionals in fields relevant to the proposed project and evaluated for any potential conflict of interest. Technical reviewers will evaluate each proposal in accordance with the standard Technical Review Criteria (Table 8) and may submit narrative comments that support their scores.

Table 8. Technical Review Criteria

	CRITERIA	MAXIMUM SCORE
1	IMPORTANCE/RELEVANCE	25
2	SCIENTIFIC MERIT	20
3	APPROACH AND FEASIBILITY	15
4	SCHEDULE AND DELIVERABLES	5
5	TEAM QUALIFICATIONS	10
6	BROADER IMPACTS	5
7	VULNERABLE COMMUNITIES	5
8	DATA MANAGEMENT PLAN	5
9	BUDGET	10
	TOTAL POSSIBLE POINTS	100

9.3 Review Panel

Following completion of the technical review, the DSP will convene a Selection Panel facilitated by California Sea Grant. The Delta Lead Scientist (or their designee) will serve as the non-voting chairperson of the Review Panel with primary responsibility of insuring that the discussion is balanced, fair, and comprehensive.

Representatives from other agencies and entities may be invited to participate on the Review Panel. The Review Panel will prepare recommendations to the DSP's Lead Scientist of qualified projects to be considered for a potential Agreement to be

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negotiated with the Council.