

EXHIBIT A

SCOPE OF WORK

Contractor agrees to provide to Delta Stewardship Council (DSC), consulting service as described herein.

Background

California's Sacramento-San Joaquin Delta (Delta) is the largest estuary on the West Coast and is the hub of the state's major water supply systems. It is inextricably linked to statewide issues that affect its ability to function in a healthy, sustainable way. In November 2009, the California Legislature enacted SBX7 1 (Delta Reform Act), one of several bills passed at this time related to water supply reliability, ecosystem health, and the Delta. The Act, effective on February 3, 2010, created the Delta Stewardship Council (DSC). The DSC is an independent agency of the State charged with furthering the achievement of the coequal goals for the Delta: Improve statewide water supply reliability, and protect and restore a vibrant and healthy Delta ecosystem, all in a manner that preserves, protects and enhances the unique agricultural, cultural, and recreational characteristics of the Delta.

The Delta Reform Act (Water Code section 85306) requires the DSC, in consultation with the Central Valley Flood Protection Board, to recommend in the Delta Plan priorities for state investments in levee operation, maintenance, and improvements in the Delta, including levees that are part of the State Plan of Flood Control and non-project levees. The Delta Plan adopted on May 16, 2013 by the DSC contains a recommendation that directs the DSC, in consultation with the Department of Water Resources, the Central Valley Flood Protection Board, the Delta Protection Commission, local agencies, and the California Water Commission to implement Water Code section 85306 by developing funding priorities for State investments in Delta levees (Delta Plan recommendation RR R4 *Actions for the Prioritization of State Investments in Delta Levees*). This recommendation provides guidance on the actions, analysis, and methodologies to be conducted to develop priorities and a list of required deliverables to be prepared. Currently, no comprehensive method exists to prioritize State investments in Delta levees operations, maintenance, and improvement projects. Without a prioritization methodology, investment of appropriate public resources into Delta levees may not occur in a manner that reflects a broader, long-term approach.

The consultant service shall be consistent with tasks and deliverables below but DSC may consider substitute approaches that would provide equivalent outcomes.

This project must be based on the best available data. The recommended data sources include, but are not limited to, the results from the Department of Water Resources Delta Risk Management Strategy Program, the Delta Stewardship Council's Delta Plan Programmatic Environmental Impact Report, the Draft Bay Delta Conservation Plan (BDCP), the BDCP's Associated Draft Environmental Impact Report/Environmental Impact Statement, and the United States Geological Survey and California Geographical Society's most recently generated geospatial data.

1. Tasks and Deliverables

TASK 1 Method(s) to prioritize State investment in Delta levees

(a) Asset and Impact Exposure

For each leveed island and tract in the Delta, using the compiled comprehensive set of islands and assets to identify all those who benefit from the flood control provided by the levees (the Beneficiaries). Assist DSC to coordinate with Department of Water Resources (DWR), Delta Protection Commission (DPC), other agencies, and the Central Valley Flood Protection Board (Board) for comments on completeness of the set used for the identification. Also, develop a list of actions that negatively impact the levees.

- (1) Identify all leveed Delta islands and tracts.
- (2) Identify all major asset categories.
- (3) Identify all assets.
- (4) Construct an asset exposure spreadsheet using a separate page for each leveed island and tract.
- (5) Qualitatively describe actions that impair Delta levees, such as subsidence, boat wakes, or other activities, and the entities who undertake these actions, when known.
- (6) Document all data sources.
- (7) Identify information gaps.
- (8) Determine method for acquiring any remaining information needs.
- (9) Identify all Beneficiaries of Delta levees by classification (e.g. water users, land owners, individuals, transportation, oil/gas/pipelines, electric and telecommunication utilities, water conveyance, fish and wildlife habitat, water quality, etc.) and their association with assets protected by the levees.

Deliverables:

- i. Report on Delta assets and their impact exposure, including the sources of the data, asset exposure spreadsheets with maps and a separate page for each leveed Delta island and tract.
- ii. The spreadsheet shall contain a list of all assets protected by the levees, Beneficiaries of the levees by classifications, description of actions impairing levees, and accompanying text narrative.
- iii. Describe uncertainty in the data and associated data gaps.

(b) Risk/Consequences Analysis Without State Investment

Using the best available data, develop methods and tools necessary to perform an analysis of the risks to each asset and island determined in Task 1(a), above resulting from levee failure and the

consequences of the lost use of those assets. The methods developed shall include critical infrastructure. Complete development of methods to calculate the following:

- (1) Hazard analysis, using existing data.
- (2) Levee vulnerability analysis, using existing data.
- (3) Levee damage/failure and uncertainty analysis, using existing data.
- (4) Determining the consequences for failure events for each Beneficiary and each island identified in Task 1(a), including the public as Beneficiary.
- (5) Determining the total loss for each Beneficiary (using probability curves or equivalent).
- (6) Calculating the expected annual damages for each Beneficiary.
- (7) Create a Risk/Beneficiaries matrix of those consequences that cannot be monetized or are reportable only as qualitative values.

Deliverables:

- i. A report on the risks to Delta assets from levee failure, including lists of risks to each Beneficiary from failure of the levee on each leveed Delta island and tract, and the results of analyses of risks for each island, tract, and asset.
- ii. Listing of available data, methods and tools used to perform the analysis of consequences to each Beneficiary from failure of the levee on each leveed Delta island and tract.
- iii. Available data, methods and tools to calculate Expected Annual Damages for each Beneficiary by leveed island and tract.
- iv. Available data, methods and tools to develop a Risk/Beneficiary Matrix for items that cannot be expressed in monetary values.
- v. Narrative report describing the use of tools and methods developed to calculate the items listed above.
- vi. A spreadsheet with data, and formulas suitable for completing calculations for i-iv, above.

(c) Appropriate Level of Flood Protection

Consult with Beneficiaries of the Delta levee system to recommend flood risk tolerances or criteria for the Federal and State governments, local agencies, and each Beneficiary of the flood protection provided by Delta levees (e.g. the recurrence intervals or other key features for the design floods for different land use). Assist DSC to coordinate with DWR, DPC, and the Board to propose appropriate levels of flood protection to be used to calculate benefits for various assets and land uses in the Delta (e.g. urban, agricultural, habitat, infrastructure protection).

Consideration should also include:

- (1) Standards provided in law (e.g. Central Valley Flood Protection Act, project authorizations, standards required to assure post-disaster assistance for levee reconstruction by United States Army Corps of Engineers, Federal Emergency Management Agency, or United States Department of Agriculture.,

- (2) Standards warranted by the type or value of assets to be protected, considering the risk to which they are exposed,
- (3) Standards appropriate to protect water quality or restore fish and wildlife habitat,
- (4) Complimentary approaches, either in tandem with or in lieu of levees, such as flood proofing, etc., and Disaster recovery and response.

Deliverables:

- i. Narrative report, including maps and a summary providing the rationale for each proposed appropriate level of flood protection.
- ii. Table showing the proposed appropriate level of flood protection for each island, considering the needs of Beneficiaries, assets, land use protected by the Delta levees, and opportunities for closures of cuts and channels where feasible to reduce the cost of levee maintenance and improvement.

(d) Cost Allocation

Develop a method in cooperation with the DPC to be compatible with its Assessment District Feasibility Study for allocating the costs of operating, maintaining and improving Delta levees among the various Beneficiaries identified in Task 1(a). Consider the following:

- (1) For each Beneficiary, determine a method to calculate any marginal costs to provide the benefit received by that Beneficiary due to improved levels of flood protection (i.e. separable cost).
- (2) For each Beneficiary, determine a method for calculating the least-cost for an engineered, financially, and politically feasible alternative method(s) of achieving at least the same level of flood protection benefit for each consequence that applies to that Beneficiary (i.e. alternative cost).
- (3) For each Beneficiary, determine a method for calculating which is the lesser, the benefit or the alternative cost (i.e. justifiable cost).
- (4) Determine a method for calculating the remaining joint cost (total cost – sum of the separable costs).
- (5) Determine a method for calculating the remaining justifiable cost for each Beneficiary (justifiable cost – separable cost).
- (6) Determine a method to allocate the remaining joint cost to each Beneficiary in proportion to their remaining justifiable cost (remaining joint cost share).
- (7) Determine a method to calculate the share of total cost to be allocated to each Beneficiary (separable cost + remaining joint cost share).
- (8) Discuss methods to determine the ability-to-pay by each Beneficiary.

Deliverables:

- i. Narrative report summarizing assumptions, models, methods, and processes used to determine the cost allocation values for (1) - (8) above.
- ii. A model spreadsheet, with maps summarizing (1) - (8) above, used to calculate the allocated capital, operation, and maintenance costs by each Beneficiary and each leveed island and tract for each investment alternative evaluated.
- iii. Discussion of issues that may affect each Beneficiary's ability to pay the allocated costs and proposed methods to resolve those issues.

(e) Coordination and Public Outreach

Assist DSC to coordinate activities with all participating entities, including, but not limited to, DPC, CVFPB, DWR, and other agencies and organizations whose programs and projects overlap with this effort. There shall be public outreach meetings with Delta interests to solicit their input on assumptions, methods, procedures, and models used in this proposed method to determine levee investment prioritization and to answer their questions.

Deliverables:

- i. Weekly meetings with DSC staff to discuss progress and to make decisions affecting quality and production of deliverables under this Agreement.
- ii. Monthly meetings with DSC and DWR to discuss the project, its progresses, and to make decisions affecting quality and production of deliverables under this Agreement.
- iii. Interagency meetings with the Delta Protection Commission, the Department of Fish and Wildlife, the Central Valley Flood Protection Board, other State agencies and participating entities, as appropriate, to provide updated information on the deliverables under this Agreement and the overall progress of the project; and to coordinate activities of common interest.
- iv. Not less than four public meetings at a location in the Delta to answer questions and receive input from the members of Delta communities. One meeting shall be conducted at the initiation of the project, and the others upon the availability of deliverables.
- v. Summary report in a format suitable for lay audiences compiling, explaining, and presenting, the results of Task 1 (a) – (d) above, with accompanying PowerPoint presentation.

(f) Report Preparation

Prepare draft and final reports, incorporating all assumptions, models, data, methods, processes, calculations, and activities associated with development and completion of the deliverables in Task 1 of this Scope of Work.

Deliverables:

- i. A Draft report of data, methods, assumptions, models, and processes, along with any findings relevant to this section, suitable for peer review and DSC approval. This

- report shall be prepared by a staff of professional writers that has successfully produced no less than three (3) peer reviewed reports within the previous five (5) years.
- ii. Participation in a transparent, robust, and cooperative peer review of product delivered under Task 1 of this Scope of Work.
 - iii. Once peer review is complete, all peer comments are addressed to the satisfaction of DSC, and approval is received from DSC, prepare a final report formatted for publication, as noted below.
 - iv. Twenty (20) copies of all documents shall be delivered, in hard copy and electronic form (CD), with all photos, text, graphs, and drawings formatted for electronic and paper distribution. Separate files may be used for electronic distribution and for paper printing.

(g) Peer Review

Assist DSC to implement a transparent, robust, cooperative peer review process. This activity involves three distinct individuals or groups, defined below:

- (1) DSC – Representative(s) of the Delta Stewardship Council.
- (2) Preparer(s) – Individual or team of awarded bidder, responsible for development of data-methods-models-and-procedures under Task 1 of this Scope of Work.
- (3) Independent Review Panel (Panel) – Individual or group assembled by DSC's Lead Scientist, to conduct the peer review of the draft report of data-methods-models-and-procedures developed in compliance with Task 1.

The review process will include an initial presentation to the panel by the DSC and the preparer(s), a meeting among preparer(s), panel, and DSC to discuss aspects of the draft report, an oral presentation of initial peer review results by the panel to the DSC and the preparer(s), including a draft peer-review report containing a written set of comments to be addressed. The draft peer-review report must be prepared by the Panel and it must be delivered to DSC up to 30 days after the meeting.

Prior to public release, preparer(s) will coordinate proposed responses to each comment to achieve agreement between DSC and preparer(s). Once the proposed responses are approved by DSC, these responses will be forwarded to the panel for consideration. (This may be an iterative process to achieve agreement between DSC and preparer(s) with the proposed responses).

Not less than two (2) weeks prior to a planned public release of the final peer review report, all comments, findings, and recommendations in the peer review report, shall be made available by the panel to DSC for consideration.

Deliverables:

- i. Preliminary meeting among preparer(s), panel, and DSC for presentation of the Draft Report on data-methods-models-and-procedures developed under Task 1. The meeting may include (a) agency presentations (b) presentations from the Contractor(s) and Q&A with the Panel, (c) public comment, and (d) reporting back by the Review Panel on their preliminary findings.
- ii. Draft responses to each peer-review comment delivered to DSC prior to transmittal to the peer review panel.
- iii. All necessary follow up, with coordination of DSC, to satisfactorily address panel's comments.

TASK 2 Recommended State investment priorities in Delta levees

(a) Tiered Ranking

Using data, methods, assumptions, models, and processes from the peer reviewed report developed in Task 1, prepare a draft tiered ranking of all Delta islands to prioritize and guide State investments in operation, maintenance, improvement and recovery of levees in the Delta.

Deliverable:

- i. Tiered ranking of all Delta islands and tracts into not less than three (3) divisions (very high, high, other, etc.), with a corresponding narrative report and supporting maps. Recommended level of protection for each island. Any additional recommendation, such as flood protection, emergency preparedness, or closures of cuts or channels, should complement the recommended level of flood protection.
- ii. Recommended priorities for State investments in Delta levees to preserve the Delta levee system and the assets protected.

(b) Assessment Evaluation

Using data, methods, assumptions, models, and processes from the peer reviewed report developed in Task 1 calculate a representative assessment for each Beneficiary receiving flood protection from Delta levees and for each island included in Task 1(a). The assessments shall be based on the model prepared under Task 1(d), above.

Deliverable:

- i. A listing of representative assessments for each Beneficiary of the leveed Delta levees, by island or tract.
- ii. A listing of cumulative assessments for benefits received on all leveed Delta islands or tracts, by Beneficiary.

(c) Value Added by State Investments in Delta Levees

Using data, methods, assumptions, models, and processes from the peer reviewed report developed in Task 1 determine the added value of State investments in Delta levees by comparing analyses of the risks of levee failure and the consequences of the lost use of Delta assets, with and without State investment. Complete the following:

- (1) Assuming State investments consistent with the recommended levels of protection and typical levee cross sections shown in the Delta Plan:
 - a. Perform levee vulnerability analysis.
 - b. Perform levee damage/failure and uncertainty analysis.
 - c. Determine the total loss probability curves for each Beneficiary.
- (2) Compare the difference in expected annual damages for each leveed island and tract, asset and Beneficiary, with and without, State investments in levees:
 - a. Determine the change in expected annual damages compared to the without State investment scenario for each Beneficiary.
 - b. For each Beneficiary, identify any reduction in the monetized expected annual damages with the State investment (benefit).
 - c. Adjust the benefits as appropriate (e.g., account for any changes in levee maintenance costs and potential for changes in land use induced by increased levels of flood protection).
- (3) Create a Risk/Beneficiaries matrix of those changes in risk that cannot be monetized or are only reportable as qualitative values.

Deliverables:

- i. Listing of risks for each State investment alternative evaluated.
- ii. Listing of consequences for each State investment alternative evaluated.
- iii. Spreadsheet to calculate Expected Annual Damages and Benefits for each Beneficiary by island for each State investment alternative evaluated.
- iv. Risk/Beneficiary and Benefits/Costs Matrix for items that cannot be expressed in monetary values for each DSC investment alternative evaluated.
- v. Narrative report with maps summarizing i - iv above.

(d) Report Preparation

Prepare draft and final reports incorporating all calculations, findings and recommendations developed from applying the peer reviewed methods and processes established in Task 1.

Deliverables:

- i. A draft report of data, findings and recommendations relevant to all sub-tasks under Task 2, suitable for DSC review and approval. This report shall be prepared by the same staff of professional writers responsible for the Task 1 report.

- ii. Presentation of results for recommendations and other products delivered to fulfill requirements contained in Task 2 of this Scope of Work.
- iii. Once DSC's review is complete and all comments are addressed to the satisfaction of the DSC, prepare a final report formatted for publication, as noted below.
- iv. Twenty (20) copies of all documents relevant to Task 2 shall be delivered, in hard copy and electronic form (CD), with all photos, text, graphs, and drawings formatted for electronic and paper distribution. Separate files may be used for electronic distribution and for paper printing.

TASK 3 Associated Programmatic Environmental Impact Report (PEIR)

The result of this study, if adopted by the State, will become a legally enforceable policy. It is crucial to conduct an environmental impact assessment to inform DSC, which is in charge of this study, and DWR, which may consider utilizing its results, of the potential program-level environmental effects related to the components of this study. A PEIR, a document to address the requirements related to the California Environment Quality Act, shall be produced to summarize the proposed action and its consequences so that the State will be able to rely on this report as a reference for future planning and implementation activities.

Deliverables:

- i. Follow all steps necessary to conduct an environmental impact assessment to address the requirements related to CEQA and produce a draft Programmatic Environmental Impact Report for DSC's review.
- ii. A final Programmatic Environmental Impact Report t, approved by DSC.
- iii. Twenty (20) copies of the final Programmatic Environmental Impact Report shall be delivered, in hard copy and electronic form (CD), with all photos, text, graphs, and drawings formatted for electronic and paper distribution. Separate files may be used for electronic distribution and for paper printing.

TASK 4 Project Quality Control

The awarded bidder shall prepare and implement a Quality Control Plan for all deliverables included in Task 1 and Task 2 of this Scope of Work. The Quality Control Plan shall include coordination among participating entities to verify all data, methods, assumptions, models, and processes used for all products and deliverables. The Quality Control Plan will be used to ensure that the data collected and analyzed are accurate and adequate for the tasks described herein. The successful bidder shall appoint a Lead Project Manager for all work provided under this Agreement. Lead Project Manager will work directly with DSC staff to provide specified deliverables on time and within budget.

Deliverables:

- i. Quality Control Plan for products delivered under this Agreement for DSC approval.

- ii. Implementation of all aspects of the approved Quality Control Plan.

Deliverables, including spreadsheets and reports, must be developed using Microsoft Office suites software product.

2. Deliverables and Timeline

Contractor shall provide deliverables for each task at a date to be determined and specified by the DSC Contract Manager at the time the task is undertaken.

3. Location of Work

The place of performance will within, but not limited to, the county of Sacramento and San Joaquin. It will vary depending on task and activity. Contractor will provide all necessary working space, equipment, and logistical support.

- 4. The project representatives during the term of this agreement will be:

	<u>Delta Stewardship Council</u>	<u>ARCADIS U.S.</u>
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