

EXHIBIT A

SCOPE OF SERVICES

Project Description

The City of San Leandro maintains shoreline along the San Francisco Bay. A portion of the shoreline known as the Long Beach has experienced erosion over the past 30 years such that what was once a 300-foot-long sandy beach is now gone. The decline of the Long Beach began with the construction of several marshes immediately north of San Lorenzo Creek; one of the levees that originally protected the marsh from the bay has also eroded away. Long Beach is located within the Robert's Landing, north of the San Lorenzo Creek and south of Faro Point.

Description of Work

It is anticipated that the studies will extend between Faro Point and San Lorenzo for a better understanding of the sediment transportation in the core project area.

The scope of work is described in the following tasks.

Task 1: Project Management

The consultant shall attend project meetings throughout the course of the project, including managing the team and tracking schedule and budget. Under this task, consultant shall perform the following:

- Attend web-based (eg. Zoom or similar) bi-weekly project update meetings with City staff. Meetings may be up to one (1) hour long.
- Coordinate work with City and internal team.
- Provide project management related to budget and schedule tracking, invoicing, staffing, etc.

Task 1 Deliverables

- Monthly invoices, including brief progress report.
- Summary emails following each bi-weekly meeting with notes on the main discussion topics and action items.
- Regular project budget and schedule updates.

Task 2 Interface with TAG

Consultant shall conduct meetings and coordinate with the Technical Advisory Group (TAG) at key milestones in the project. Consultant shall do the following:

- Coordinate with the TAG periodically via City Project Manager to provide information for review and to solicit input on proposed activities, including:
 - Topographic and bathymetric data collection plan
 - Wave data collection plan
- Participate in up to 4 2-hour long TAG meetings to accomplish the following:
 - Provide updates on project progress and outlook of upcoming work
 - Solicit input and feedback to project studies and deliverables
 - Provide recommendations to the City and TAG to facilitate decisions for advancing the project development and design
 - Collaboratively develop strategies for public engagement and permitting

Task 2 Deliverables

- Slide decks and agenda to the City and TAG ahead of the meetings
- Summary of the meeting minutes with action items for each TAG meeting

Task 3 Public Outreach Coordination and Meetings

Consultant shall provide draft slide deck to City staff for review at least 7 working days prior to all the meetings, and shall conduct public outreach and coordination, including the following:

- Present at least three (3) community meetings, which is expected to accomplish the following:
 - Meeting 1: Project background information to engage public and present project objectives and desired outcomes
 - Meeting 2: Review conceptual alternatives and seek input for the preferred alternative
 - Meeting 3: Final presentation on preferred project design, including how community input was incorporated into the project

Task 3 Deliverables

- Slide decks in digital format (ie. Microsoft PowerPoint) for three (3) public meetings and one (1) Bay Restoration Regulatory Integration Team (BRRIT) meeting
- Summary of the meeting minutes with action items

Task 4 Project Design Studies

This task includes the primary technical studies that will be completed to inform the development of the conceptual alternative and project design. These studies are described in the following subtasks.

Task 4.1 Background Review and Shoreline Assessment

Consultant shall conduct a review of background information on the project site and shall prepare an initial shoreline assessment. The purpose of this task is to understand how the shoreline has changed and evolved over time, and to provide an initial diagnosis of the problem. Consultant shall do the following:

- Review background information and interpret historic photos and maps and complete an initial “desktop” geomorphic assessment of the project site.
- Consultant shall review and leverage, to the extent practicable, an assortment of existing studies and prior work that has been completed at the site, including the Marsh Manual (ESA 2007) and Long Beach Levee Breach Ecological Evaluation (Wood Biological Consulting 2020), as well as regional planning guidance documents, including the New Life for Eroding Shorelines report (SFEI & Baye 2019), the Baylands Ecosystem Habitat Goals (Goals Project 1999, 2010, and 2015), and the San Francisco Bay Shoreline Adaptation Atlas (SFEI 2019).
- Consultant shall synthesize the existence studies and information in a brief memo to raise additional questions and highlight potential data gaps.
- Consultant shall carefully consider what data gaps exist and propose how to fill those gaps. Consultant shall coordinate with the city to discuss the implications of the identified gaps on the ability to complete the current proposed project and future phases.

Task 4.1 Deliverables

- Memo summarizing review of background information and synthesizes prior studies and historical maps and photos, in PDF format.
- Memo summarizing identified data gaps (if required) in PDF format

Task 4.1 Schedule

- Memo report: Six weeks from Notice to Proceed (NTP)

Task 4.2 Topographic and Bathymetric Surveys

Consultant shall prepare a field data collection plan shortly after the review of the background data and initial site reconnaissance. The field data collection plan shall be circulated for review by the City and TAG. Consultant may survey the project area using a combination of the following three methods:

- Bathymetric data from a boat during high tide with an echosounder
- Topographic data using drone during low tide (structure-from-motion, photogrammetry, LiDAR, or similar methods of comparable accuracy and quality)
- Targeted ground survey during low tide to verify and augment both the bathymetric and drone survey.

Task 4.2 Deliverables

- Proposed survey plan in PDF format
- A brief technical memorandum describing the survey data collection methods, dates of data collection, survey control, and graphics showing the spatial extents of the collected data.

Task 4.2 Schedule

- Survey plan and technical memo: Six weeks from NTP

Task 4.3 Local Wave Study

Concurrent with the topographic and bathymetric data collection, consultant shall deploy a network of water level and wave gauges at the site. Consultant may deploy the instruments in late summer or early fall to collect continuous data through winter and spring. This continuous, multi-month instrument deployment will allow for the observation of a range of seasonal variations in coastal conditions and will offer the greatest chance to measure large storm events. A series of topographic profiles and site observations will be collected shortly after instrument deployment. These profiles and observations may be repeated in February or March after winter storms have occurred, and again in May or June prior to the recovery of the wave instruments. The observations and topographic profiles will be interpreted along with the water level and wave data, allowing consultant to characterize the extent and causes of shoreline change during the study period.

Consultant shall deploy a sonic wave sensor in the intertidal zone to measure nearshore wave heights in conjunction with a directional wave buoy at an offshore location, and a pressure sensor installed on the seabed near the buoy that provides coincident water levels.

As part of the analysis and application of the field measurements, consultant shall apply a simple wind-wave hindcasting tool (i.e., based on parametric equations and methods derived from coastal engineering guidance manuals) to estimate wave conditions based on local wind measurements at nearby publicly available wind stations. Consultant shall compare the hindcast wave conditions with observed wave conditions during the monitoring period, then shall produce a synthetic time series of waves and water levels using available longer record of wind data sets for the area. Consultant shall generate wind wave statistics using the longer, synthetic time series of coincident wave and water level data to assess the influence of specific events on the historic changes to the shoreline, and to estimate the frequency and magnitudes of threshold or "tipping point" events. Consultant shall consider other readily available data and reports pertinent to the studies.

Task 4.3 Deliverables

- Wave data in digital and graphical formats.
- Memo summarizing the wave data collection program and an analysis of the wave and water level data, including implications for the project.

Task 4.3 Schedule

- 10 months from NTP

Task 4.4 Sediment Budget and Conceptual Model of Coastal Processes

Consultant shall develop a concept-level sediment budget, accounting for the inputs and outputs of sediment at the project site. The sediment budget will synthesize site observations, engineering analyses, and historic records to estimate the scale of identified sediment sources and sinks and pathways of sediment transport in the vicinity of the project site, and a summary of the uncertainties of this estimate. The sediment budget will be informed by estimates of sediment supply from San Lorenzo Creek from several recent reports such as Changing Channels: Regional Information for Developing Multi-benefit Flood Control Channels at the Bay Interface (SFE1 2017).

As part of this task, consultant shall develop a conceptual model of coastal processes that relate key drivers to the functional physical responses of the system. Consultant shall use the conceptual model to identify the physical processes that have the greatest role in the system response and functional impacts, and to evaluate how possible interventions or actions could affect the processes and result in improved system functions. The conceptual model will be based on the specific categories: drivers or actions, physical processes, physical response, functional response. The conceptual model will support the interpretation and diagnosis of the system in its existing condition, and to identify potential beneficial interventions or restoration actions.

Task 4.4 Deliverables

- Memo on the conceptual model and the sediment budget in PDF format.

Task 4.4 Schedule

- Seven months from start of task

Task 4.5 Field-Based Geomorphic Assessment

Consultant shall conduct a field-based geomorphic assessment, informed by the outcomes of the background document review, field data collection, local wave study, and conceptual model tasks. The geomorphic assessment shall emphasize observations, measurements, and documentation of existing site conditions, with attention to documenting landforms and biological features indicative of historic and ongoing geomorphic processes, such as: surface and shallow-subsurface sediment composition & grain size distributions; dynamic landforms indicating deposition or erosion; and indicators of tidal inundation and wave runup. Consultant shall collect surface and sub-surface data to characterize the sediments at select locations. This will include sediment samples for assessing the composition and grain size, as well as undisturbed sediment cores to assess shear strength and layering of sediments (or alternatively, in-situ measurements of relative shear strength using a shear vane). It is understood that the East Bay shores include mudflats that were formed at different periods in geologic time, which results in non-uniform erosion and evolution, and which could influence the expected performance of potential future placements of coarse sediments.

Task 4.5 Deliverables

- Field-based Geomorphic Assessment Memo in PDF format

Task 4.5 Schedule

- Three months from delivery of draft data gaps.

Task 4.6 Feasibility Criteria for Shoreline Erosion Management

Consultant shall conduct an opportunities and constraints analysis, refine the project objectives, and develop a set of feasibility parameters and criteria that will be used to develop and evaluate the alternatives. Consultants shall identify the range in opportunities at the site relative to the project's goal and objectives. The opportunities will represent high-level concepts that could advance the restoration of the site toward the goal of improved habitat and resilience. The consultant shall identify major constraints of the site to be used to further refine set of potential restoration actions at the site. At this stage, consultant shall revisit and refine the project objectives to provide realistic and practical guidance for identifying meaningful, feasible project alternatives. Finally, consultant shall develop a set of feasibility parameters and criteria to guide evaluation of conceptual alternatives. It is anticipated that the criteria will be based on the refined objectives, and presented as a measurement of the project performance under a range of considerations, including habitat, sea-level rise resilience, flooding, construction cost, permitting feasibility, etc.

Task 4.6 Deliverables

Draft and Final Feasibility Criteria Memo in PDF format

Task 4.6 Schedule

- Seven months from NTP

Task 5 Design Development

Task 5 includes the development and evaluation of alternatives and progression of a preferred alternative through conceptual design, as described in the following subtasks.

Task 5.1 Conceptual Design

Consultant shall develop design alternatives using the feasibility framework from Task 4.6. Under this task the consultant shall:

- Develop up to three (3) alternatives to restore the site using a range of approaches:
 - All-natural "soft" design-with-nature approaches, such as in-kind beach nourishment that matches existing sand grain size
 - Nature-based design that includes, but are not limited to, placement of coarse mixed sand and gravel nourishment
 - Other living shoreline strategies, including but not limited to, log drift-sills or similar groin-like habitat structures, mixed large woody debris/vegetative stabilization structures, offshore and/or nearshore reef structures, etc.
- Alternatives may include approaches that incorporate engineered elements if analyses suggest they may be beneficial, provided that such engineered elements would be compatible with the primary project goal and objectives related to enhancing long-term resilience of important local beach and tidal salt marsh habitats

- Identify alternative feasible regional sources of suitable beach sand/gravel (i.e., compatible grain size distribution and sediment quality) in quantities sufficient for beach nourishment
- For each alternative consultant shall develop a list of benefits, impacts, risks, and concept-level engineering cost estimates to provide a basis for alternatives comparison
- Consultant shall prepare a qualitative discussion of each alternative's anticipated resilience to sea-level rise, based on the SLR projections selected in task 4.6
- Consultant shall collect photographs of similar constructed projects and will prepare figures and renderings suitable for public presentation and to allow the public to visually understand the changes to the existing conditions proposed under each alternative
- Consultant shall work with the City and TAG to apply the evaluation criteria (Task 4.6) to evaluate the alternatives and select a preferred alternative that will be progressed through conceptual design
- Preparation of the conceptual design (approximately 35%-completion level) will begin following selection of the preferred alternative. Although this scope does not include preparation of permit applications, consultant shall meet with the BRRIT to conduct a preliminary review of the project. No follow-up with the BRRIT is assumed.

Consultant shall submit the following 35%-complete design package for review and comment:

- 35% design drawings including: project overview, grading plan, and illustrative cross-sections
- Conceptual order of magnitude probable construction costs
- Conceptual Design Report that packages up all prior memos as appendices, describes selection of the preferred alternative, and summarizes the design process

Task 5.1 Deliverables

- Draft and Final Conceptual Design Report in PDF format
- Design graphics for alternatives, including plan-view illustrations, cross sections, and reference photos or graphical renderings illustrating the main features of each alternative
- Conceptual Design of Selected Alternative:
 - 35% Drawings, including: Grading plan/Project Layout, cross sections, schematic details
 - Conceptual order of magnitude probable construction costs

Task 5.1 Schedule

- 18 months from NTP