San Francisco Estuary Project Tracker Tidal Wetland Restoration Map Update Plan

Project Tracker Tidal Wetland Restoration Map 2020

● Intentional tidal restoration

○ Unintentional tidal restoration

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Monitoring
Program

WRMP

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Key Takeaways

- The Project Tracker Tidal Wetland Restoration Map (Restoration Map) is a **high-quality, annually updated static map of tidal wetland restoration projects** in San Francisco Bay. It provides a regionally vetted, citeable dataset with accurately mapped site boundaries and detailed restoration project attributes, including breach dates, tidal regime status, and other implementation details.
- The Restoration Map is a **key dataset for environmental reporting, performance tracking, and regional planning**. It supports reporting requirements for initiatives such as Measure AA and the Estuary Blueprint, informs permitting and regulatory processes, and plays an important role in determining the extent of tidal wetlands for the Tidal Wetland Extent Report.
- While the EcoAtlas Project Tracker is a continuously updated statewide database of aquatic habitat restoration projects, and the Baylands Habitat Map (BHM) is a habitat classification product mapping the distribution of bayland habitat types, the Restoration Map **offers a unique synthesis**: it is a *static annual snapshot* of tidal restoration projects that has been validated through remote sensing and technical review. This allows the Restoration Map to serve as a consistent year-over-year reference for tracking project-level progress, bridging the gap between real-time project reporting (EcoAtlas) and broad habitat classification (BHM).
- Updates will follow a **standardized, transparent procedure that incorporates user feedback, project proponent input, and technical review**. The update plan explains the process and clarifies roles and responsibilities.

Introduction

The Project Tracker Tidal Wetland Restoration Map (Restoration Map[1]) is a geospatial dataset that documents the extent, timing, and characteristics of tidal wetland restoration projects across the San Francisco Bay. The Restoration Map was developed by the San Francisco Estuary Wetlands Regional Monitoring Program (WRMP; wrmp.org) and is maintained by the San Francisco Estuary Institute (SFEI). The Restoration Map is drawn from the EcoAtlas Project Tracker database (ptrack.ecoatlas.org), which is a statewide system used to track aquatic habitat restoration and conservation projects. EcoAtlas Project Tracker is a continuously updated database that accepts updates from users on a rolling basis. The Restoration Map dataset is a static, annually released subset of tidal wetland restoration projects from EcoAtlas that are located within the boundaries of the WRMP[2]. The Restoration Map dataset is validated by remote sensing and mapping conducted for the Baylands Habitat Map (BHM), and feeds user-input data on restoration into BHM. While the two datasets are complementary, they serve fundamentally different purposes: BHM is a habitat classification product that maps the distribution of bayland habitat types based on physical and ecological characteristics, while the Restoration Map is a restoration tracking product that maps project implementation boundaries and records restoration attributes, such as breach date and breach type. The Restoration Map's primary value lies in its ability to track project-level progress and implementation details that go beyond what habitat classification alone can capture. Although it does

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[1] Previously referred to as PTTWRM.

[2] Map Version 1.0/1.1 does not include Winter Island. Restoration Map versions will, thus bringing the dataset into full alignment with the WRMP boundary.

not include habitat condition data within restoration areas, this information is available through associated [California Rapid Assessment Method (CRAM)](#) scores. The annual release cycle allows for regional review, validation, and systematic QA/QC, while maintaining the core functionality of EcoAtlas.

The Restoration Map provides a standardized, regionally-vetted inventory of tidal wetland restoration projects. Its value lies in its accurately mapped site boundaries, detailed restoration project attributes, and annual release cycle, making it a key dataset for environmental reporting, performance tracking, and regional planning. It also plays an important role in determining the extent of tidal wetlands in the region and supports the [Tidal Wetland Extent Report](#).

The Restoration Map will be a useful resource for scientists and managers who need an annually updated, citeable, standardized map and key attributes of restoration projects. Each annual dataset release will include an Excel file, geodatabase, metadata, and change log.

This document outlines a comprehensive plan to maintain and update the Restoration Map on an annual schedule. It defines procedures for coordination among SFEI, the WRMP, and EcoAtlas Administrators; engagement with project proponents; integration of external feedback; data review and validation; public release; and data-driven alignment with the production of the BHM dataset.

Background

Since the 1850s, over 80% of the Estuary's tidal wetlands have been lost (Goals Project 1999). Substantial investments over the past three decades have aimed to reverse this trend. As the region works toward the long-term goal of conserving and restoring a combined total of 100,000 acres of tidal marsh (as identified by the [Baylands Habitat Goals Project](#)), robust tools are needed to quantify progress, guide implementation, and meet reporting requirements. These tools can also support reporting for Measure AA and the Estuary Blueprint, and help align restoration tracking with regional permitting and regulatory processes.

The Restoration Map was created to address previous inconsistencies in reporting and mapping of tidal wetland restoration projects in the Bay by applying standardized inclusion criteria, spatial review, and technical validation of data. The Restoration Map specifically includes:

- Tidal wetland (estuarine marsh) sites where full tidal action had been restored, including both planned and unplanned restoration events.
- Sites where restoration groundwork is underway or completed.

The Restoration Map currently excludes:

- Enhancement-only efforts that improve habitat quality but do not increase the extent of wetland area.
- Sites with any tidal regime other than fully tidal, including managed wetlands and sites with muted or restricted tidal exchange.
- Projects still in the planning or permitting phase, where physical groundwork has not yet begun.

For more details on how the Restoration Map was created, see Appendix 2 of the WRMP report [Tracking Tidal Wetland Extent in San Francisco Bay: A 2020 mapping update](#), and the metadata document included with the Restoration Map release data (available at: www.sfei.org/PTTWRM).

Update Cycle and Annual Timeline

While the EcoAtlas Project Tracker accepts updates on a rolling basis, the Restoration Map is a static dataset that will undergo a single formal update and release each year (Figure 1). This cycle provides a repeatable reference point for tracking tidal wetland progress while ensuring alignment with related WRMP products, such as the BHM.

Update Types and Roles

There are three types of updates for the Restoration Map:

1. Ongoing updates to EcoAtlas Project Tracker (year-round)
2. Annual updates (set annual cycle)
3. Alignment with Baylands Habitat Map updates (every 4-5 years)

There are different actions assigned to specific roles in the phases of this update cycle (Figure 2).

Role Glossary

EcoAtlas Administrators are the organizations responsible for coordinating and overseeing the Project Tracker annual update. These include the San Francisco Estuary Institute (SFEI), San Francisco Bay Joint Venture (SFBJV), San Francisco Estuary Partnership (SFEP), San Francisco Bay Conservation and Development Commission (BCDC), San Francisco Bay Restoration Authority (SFBRA), and Shoreline Adaptation Project Map (SAPMap).

Feedback Providers are individuals or entities that report issues or suggest changes to the Restoration Map during the annual update cycle.

Project Proponents are individuals or entities responsible for providing updated information for the specific projects they manage in Project Tracker.

San Francisco Estuary Institute (SFEI) is responsible for implementing the annual update cycle through calls to action, meeting coordination, and communication between Feedback Providers, Project Proponents, and EcoAtlas Administrators. SFEI develops and releases the final Restoration Map dataset.

WRMP Technical Advisory Committee (TAC) will conduct a review of annual updates and provide guidance on the accuracy of restoration boundary delineations, tidal regime status, and breach records.

Restoration Map Annual Update Timeline

EVERY 4-5 YEARS — **Alignment with Baylands Habitat Map 'BHM'**

The Restotation Map integrates directly with the BHM to provide consistent spatial data across restoration tracking and habitat classification. The BHM will be produced every 4-5 years, incorporating breach records and updated restoration boundaries from the corresponding year's Restoration Map layer. In turn, restorations identified during the BHM data production process are incorporated into the Restoration Map and then fed back into BHM. Annual updates maintain the BHM's currency with the latest restoration progress.
Responsible Parties: **WRMP TAC, SFEI**

Continuous — **Ongoing Updates**

Feedback will be provided on a voluntary basis, allowing users of theRestoration Map to report issues as needed. If necessary, SFEI will follow up with the feedback provider to request additional clarification, details, or documentation to validate needed corrections required in Project Tracker. The Feedback Provider will be contacted in a timely manner and will be kept informed of the ultimate status and conclusion of their inquiry.
Responsible Parties: **Feedback Providers, SFEI**

AUGUST — **Begin Annual Update Process**

The formal annual update cycle begins in August. The WRMP will coordinate with the EcoAtlas Administrators Workgroup, including SFBJV, SFEP, BCDC, SFBRA, and SAPMAP, to request project-level updates from Project Proponents and ensure coordination across datasets. This step provides consistency in regional data reporting and tracking.
Responsible Parties: **Project Proponents, SFEI, EcoAtlas Administrators**

OCTOBER — **Finalize spatial and attribute edits in draft Restoration Map**

Following the annual Project Proponent update, SFEI will prepare a draft change log the Restoration Map dataset by incorporating imagery review, documentation, and proponent feedback.
Responsible Parties: **SFEI**

NOVEMBER — **Draft Restoration Map review**

The WRMP Technical Advisory Committee (TAC) will review the draft Restoration Map dataset to evaluate data integrity, identify remaining questions, and validate inclusion criteria. This step is essential for maintaining regional consensus and scientific rigor.
Responsible Parties: **WRMP TAC, SFEI**

JANUARY — **Restoration Map finalization**

Following WRMP TAC review, final edits will be made, and the change log completed. Supporting materials such as metadata, version notes, and unresolved issues will be prepared for publication.
Responsible Parties: **WRMP TAC, SFEI**

FEBRUARY — **Restoration Map Public Release**

The updated Restoration Map dataset will be publicly released in early February. Data are published on EcoAtlas (ecoatlas.org) and the WRMP websites, with a versioned change log and full metadata, supporting its use in regional planning, restoration reporting, and scientific analysis. With each release, materials will be made available at https://www.sfei.org/pttwrm and accessible through EcoAtlas.
Responsible Parties: **SFEI**

Figure 1: Detailed timeline of the Project Tracker Tidal Wetland Restoration Map ('Restoration Map') annual update process

Alignment with Baylands Habitat Map (BHM) (every 4-5 years)

The Restoration Map integrates directly with the BHM to provide consistent spatial data across restoration tracking and habitat classification. The BHM will be produced every 4-5 years, incorporating breach records and updated restoration boundaries from the corresponding year's Restoration Map layer. In turn, restorations identified during the BHM data production process are incorporated into the Restoration Map and then fed back into BHM. Annual Restoration Map updates maintain the BHM's currency with the latest restoration progress. The next BHM release (2026) will draw on Restoration Map data reflecting mid-2025 conditions.

SFEI Role

- Deliver Restoration Map breach records (date and location), tidal regime changes, and boundary revisions to the BHM production team, prior to development of the updated BHM.
- Integrate restorations flagged by the BHM process into the Restoration Map dataset.
- Execute annual Restoration Map updates and support the integration of restoration status and changes into the updated BHM.
- Use Restoration Map sites to highlight habitat evolution in the BHM change detection analysis and report.

WRMP TAC Role

- Advise on the accuracy of restoration boundary delineations, tidal regime status, and breach records.

Ongoing Updates

SFEI maintains an email address (ptwetlands@sfei.org) to solicit feedback throughout the year on the most recently released version of the Restoration Map. This dedicated email address is advertised on the Restoration Map data download page (www.sfei.org/pttwrm), has been included in communications with stakeholders and the public, and is also contained within the Restoration Map metadata. This email address is integrated with a project management system (JIRA) at SFEI, which automatically generates a ticket \for each new inquiry and alerts designated staff for follow-up. This method allows inquiries to be systematically logged, reviewed, and processed in a timely manner. If SFEI validates an error and determines that it warrants an update to Project Tracker, the necessary changes will be made. This process is primarily intended to address errors or omissions identified by regular users of the Restoration Map. Other inquiries will be addressed during the annual review cycle.

Feedback Provider Role

Feedback will be provided on a voluntary basis, allowing users of the Restoration Map to report issues as needed. If an update to Project Tracker is warranted, SFEI will follow up with the Feedback Provider to verify the information and obtain any supporting documentation needed to complete the update. The Feedback Provider will be contacted in a timely manner and will be informed of the outcome of their inquiry.

SFEI Role

SFEI will review feedback from users on a rolling basis.

1. **Feedback Submission**
   - Users submit feedback or report issues by emailing ptwetlands@sfei.org.
   - Each inquiry generates a ticket in the project management system (JIRA) for tracking.

2. **Feedback Review**
   - SFEI reviews each inquiry to determine if it represents an error or omission that warrants an update to Project Tracker.
   - The review process will be tracked within the JIRA ticket.

3. **Request for additional information**
   - If further information is needed to validate the inquiry, SFEI will follow up with the Feedback Provider to request additional details or documentation.

4. **Validation of Inquiries**
   - If an inquiry is validated, SFEI will determine if an update is needed and make the necessary change(s) to the Project Tracker. A summary of the rationale for the update will be logged in the Administrative Notes field within Project Tracker and included in the Change Log for the next Restoration Map release.
   - EcoAtlas Administrators will be notified of project updates within their administrative regions, as needed.
   - Unresolved inquiries will be addressed during the annual review cycle.

5. **Conclusion of Inquiry**
   - SFEI will keep the Feedback Provider informed of the outcome of their inquiry.
   - Updated information will be accessible in EcoAtlas Project Tracker.

Annual Updates

1. Annual Project Tracker Proponent Updates (August)

The formal annual update cycle begins in August. The WRMP will coordinate with the EcoAtlas Administrators Workgroup, including the San Francisco Estuary Institute (SFEI), San Francisco Bay Joint Venture (SFBJV), San Francisco Estuary Partnership (SFEP), SF Bay Conservation and Development Commission (BCDC), San Francisco Bay Restoration Authority (SFBRA), and Shoreline Adaptation Project Map (SAPMap) to request project-level updates from Project Proponents and ensure coordination across datasets. This step provides consistency in regional data reporting and tracking.

The following updates are particularly important for maintaining consistency in the Restoration Map:

- Updated spatial data

- Construction/groundwork start and end dates

- Date of restoration of tidal influence (planned or unplanned) and whether this date is known with certainty or is estimated

- Water regime classification

- Confirmation of habitat and subhabitat types

- Monitoring or implementation documents, when available. Note: Monitoring results relevant to the WRMP should be uploaded to the Geospatial Data Catalog; https://data.wrmp.org.

- Updated Project Proponent contact(s)

- Updated project abstract

SFEI Role

SFEI will organize a meeting with the EcoAtlas Administrators Workgroup in early August to coordinate the data request message and guidelines. As part of this process, SFEI will:

- Inform EcoAtlas Administrators about any data fields in the Project Tracker that are leading to inconsistency issues across the region.

- Provide a list of unresolved inquiries from the rolling review process to be passed to Project Proponents for further action.

- Generate documentation to inform Project Proponents whether their project is included in the Restoration Map, was previously included but removed based on updated information, or requires additional information for inclusion.

- Follow up with EcoAtlas Administrators to confirm the resolution of any outstanding issues.

EcoAtlas Administrators Role

- Coordinate and lead the annual review process

- Circulate update requests to Project Proponents by August 31st, including a checklist and instructions for updating project information.

- Directly engage with Project Proponents as needed to facilitate project progress and address any issues.

Project Proponents Role

Project Proponents can expect to receive an email by August 31st of each calendar year requesting an update of active project information. As part of the annual update cycle to include sites restored in that given year, Project Proponents will:

- Review and update their existing active project information in EcoAtlas Project Tracker.

2. Finalize Spatial and Attribute Edits in Draft Restoration Map (October)

Following the annual Project Proponent update, SFEI will prepare a draft Restoration Map dataset by incorporating imagery review, documentation, and proponent feedback.

SFEI Role

SFEI will implement the following process to prepare the draft Restoration Map prior to the November review:

- Produce the provisional draft dataset for the annual Restoration Map release, incorporating all new project submissions and mapped restorations.
- Assemble review materials, including:
  - Updated tabular datasets with revised attributes.
  - A spatial geodatabase reflecting modified site boundaries.
  - A draft change log that documents all modifications to the Restoration Map relative to the previous annual release, including a record of added, removed, or revised projects (i.e., updated attributes or changes to spatial boundaries).
  - A webmap tool that allows users to submit mapping and textual feedback.
- Conduct QA/QC through the review of:
  - Spatial boundary updates to confirm accurate site locations and extents.
  - All categorical data revisions for consistency and completeness.
  - All edits in the free-form text fields for clarity and accuracy.

3. Draft Restoration Map Review (November)

The WRMP TAC will review the draft Restoration Map dataset to evaluate data integrity, identify remaining questions, and validate inclusion criteria. This step is essential for maintaining regional consensus and scientific rigor.

SFEI Role
- Present the updated Restoration Map dataset at a regularly scheduled WRMP TAC meeting, and explain the process and deadlines for collecting feedback.
- Schedule a working meeting for SFEI, WRMP TAC, and regional experts to review updates, if needed.
- Distribute all review materials (text and spatial datasets, draft change log, and webmap) to the WRMP TAC and regional experts.
- Request updates on any projects anticipated to be completed or initiated before the end of the year.

Post-TAC Meetings
- Consolidate feedback from the meeting within JIRA.
- Inform EcoAtlas Administrators of any identified changes to projects occurring within their admin region.
- Coordinate limited follow-up with Project Proponents (via EcoAtlas Administrators) to verify submitted data, reduce redundancies, and resolve any outstanding uncertainties.

WRMP TAC Role
- Review materials and provide feedback on restoration project data.
- Attend a working meeting to discuss revisions and offer expert guidance, if needed.

4. Restoration Map Finalization (January)

Following WRMP TAC review, final edits will be made in EcoAtlas Project Tracker and extracted into an interim final version of the Restoration Map dataset for QA/QC. Supporting materials, including metadata, version notes, a change log, and a summary of unresolved issues, will be prepared for publication. The change log will document all modifications compared to the previous annual release, including added, removed, or revised projects, as well as updates to attributes and spatial boundaries.

SFEI Role
- Inform the WRMP TAC of how all feedback that was acquired during the Draft Restoration Map Review was addressed.
- Perform QA/QC review of the interim final Restoration Map dataset.
- After QA/QC, produce and package the final annual release version of Restoration Map, along with supporting materials.

WRMP TAC Role
- Submit any remaining comments on the final draft within the allotted review period.

5. Restoration Map Public Release (February)

The updated Restoration Map dataset will be publicly released in February. Data are published at https://www.sfei.org/pttwrm and linked to on the WRMP websites, with a versioned change log and full metadata, supporting its use in regional planning, restoration reporting, and scientific analysis. Throughout the year, edits and changes to projects will be reflected live on EcoAtlas (ecoatlas.org).

SFEI Role
With each release, the following materials will be made available at https://www.sfei.org/pttwrm:

- Updated Restoration Map geodatabase
- Revised metadata with full change log and field definitions
- Summary of any outstanding data gaps or unresolved questions
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Future Directions for the Restoration Map

Inclusion of Delta Projects

Dependent on funding, future plans for the Restoration Map include expanding to incorporate tidal restoration and breach events from the Sacramento-San Joaquin Delta. This expansion would involve close coordination with Delta-focused agencies, such as the Delta Stewardship Council, California Department of Fish and Wildlife, and others to gather comprehensive project submissions and metadata. The underlying data would be adapted to capture Delta-specific restoration types, land-use contexts, and regulatory frameworks that define the region's projects.

Inclusion of Additional Water Regimes and Project Types

In the future, the scope of the Restoration Map may be broadened to include additional classifications. Specifically, tidal regime classifications beyond fully tidal (e.g., muted and managed marsh) may be included. In addition, "enhancement" projects that improve habitat quality but do not create new habitat may be included. These expansions would require significant effort for standardization and vetting of the project information, but would increase the user base for the Restoration Map.