The Adapting to Rising Tides Program

Regional Projects Briefing
February 4, 2016

San Francisco Bay Conservation and Development Commission

Overview of ART Briefings

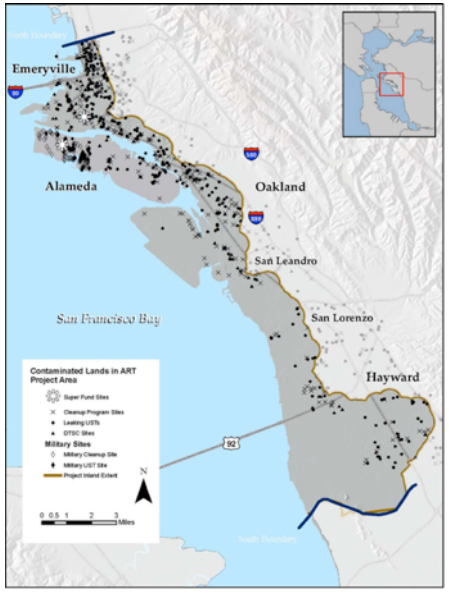
- ART Program Objectives, Approach and Projects
- ART Portfolio Website Tour
- ART Tidal Creeks and Flood Control Channels
- ART Parks and Recreation Project

ART Alameda County

Initiated in 2011, the ART Alameda County Project was the first in the region to evaluate current and future flooding across multiple jurisdictions and sectors

Key factors of the ART approach – collaborative by design, a transparent process, and sustainable from start to finish – were foundational to the project

Multi-jurisdiction

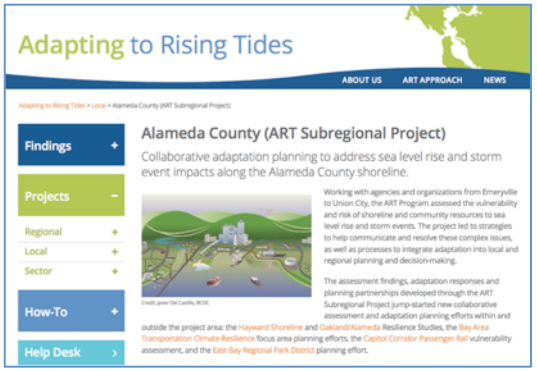


Multi-sector

- Airport
- Community characteristics
- Community services
- Contaminated lands
- Energy, pipelines, telecom
- Flood control
- Hazardous material sites
- Ground transportation
- Parks and recreation
- Natural shorelines
- Residential land uses
- Seaport
- Storm water
- Structural shorelines
- Wastewater

Diverse Working Group

ART emphasizes close collaboration among stakeholders to ensure a shared understanding of the issues, build trust, and achieve buy-in for shared solutions and joint action



The ART Program

Transitioned from leading a single county effort established in Alameda County to a regional program that uses findings, processes, tools and relationships developed in ART Alameda County Project to lead and support:

- Efforts at multiple geographic scales
- Efforts that are multiple or single sector
- Identify critical issues and challenges where more research and analysis is needed

ART Program Objectives

- Provide guidance and support for adaptation at all scales (local, regional, state and federal)
- Develop, leverage and identify the best available data, information and research
- Build ongoing partnerships with agencies and organizations
- Identify challenging issues or regional priorities that need further assessment and information
- Continue to develop and refine approaches and identify regional issues and priorities that lead to action

Share what we learn and make it easier for everyone else!

The ART Approach

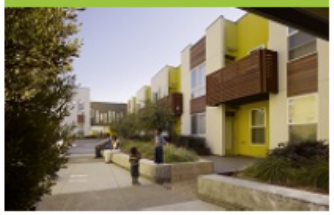
Sustainable from Start to Finish	Considers the relevance and implications of all aspects of sustainability – society & equity, economy, environment and governance - in each step of the planning process
Collaborative by Design	Develops trust among stakeholders, shared understanding of the issues, buy-in for collaborative problem solving, and improved capacity to address issues
A Transparent Process	Maintains transparency throughout and provides tools to ensure clear communication about decisions and outcomes

ART Program Work

Regional

Resilient Shorelines Partnership

Stronger Housing, Safer Communities



Local

Alameda County (ART Subregional Project)

Contra Costa County ART Project

Hayward Shoreline Resilience Study

Oakland/Alameda Resilience Study

Sector

Bay Area Transportation Climate Resilience

Capitol Corridor Passenger Rail

Corte Madera Baylands

East Bay Regional Park District

Tidal Creeks and Flood Control Channels

The ART Portfolio

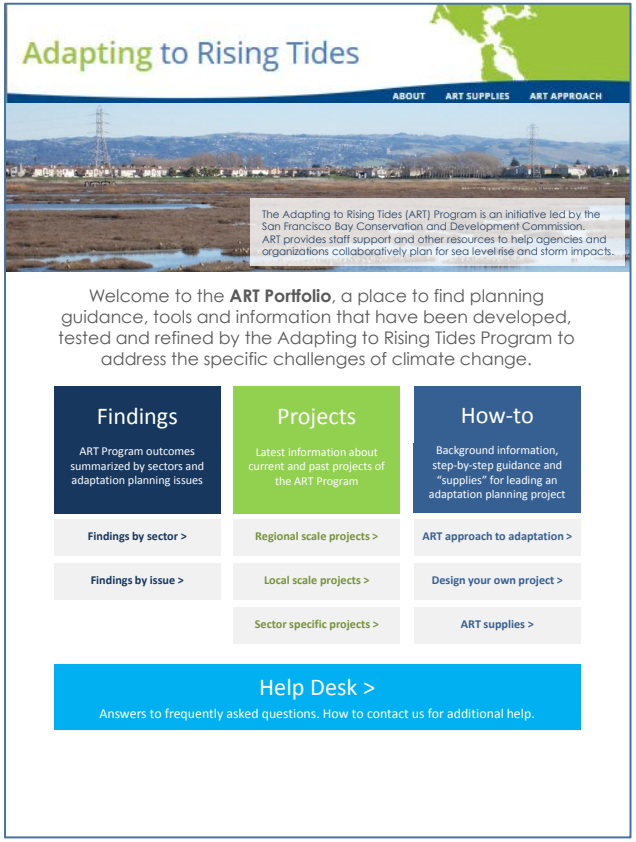
An on-line resource with information to help understand and address the specific challenges of building resilience across different assets, jurisdictions and owners

Findings: ART Program outcomes summarized by sector and planning issue

Projects: Latest information about current and past projects of the ART Program

How-to: Background information and step-by-step guidance and supplies for leading a project

Help-desk: Connect with knowledgeable ART Program staff



The Adapting to Rising Tides Program

ART Portfolio
adaptingtorisingtides.org
Sara Polgar

San Francisco Bay Conservation
and Development Commission

Adapting to Rising Tides

Findings +

Projects +

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ART Approach >

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ART Approach

A road-tested, outcome-oriented adaptation planning process.

The ART approach was built on a traditional planning process framework – from scoping to implementation – that ART Program staff tested and refined to address the specific challenges of building climate resilience across different communities, assets and services, and jurisdictions and owners.

Learn how the Design Your Project steps fit into the ART planning process

Three factors for success

Experience with a variety of adaptation planning efforts that range from broad to focused scales, single to multi-sector, has led the ART Program to emphasize three factors for success in this approach.

1 **Collaborative by design** Climate change, similar to hazard planning, requires planning across jurisdictions, geographies, sectors, and time frames to address complex, cross-cutting issues. ART emphasizes convening and closely collaborating throughout a planning process with a stakeholder working group representing the diverse values, viewpoints and responsibilities relevant to the project, to build relationships that lead to future collaborations.

2 **A transparent process** To build a strong, actionable case for adaptation, the ART approach adheres to transparent decision-making throughout the planning process. ART Design Your Project guidance and supplies help maintain transparency and support clear communication to stakeholders about decisions and project outcomes, including resilience goals developed and agreed upon by the working group, and evaluation criteria that clearly reflect priorities and objectives.

3 **Sustainability from start to finish** A core aspect of ART is consideration of the relevance and implications of all aspects of sustainability in each step of the planning process, from who is included in the initial working group list to what evaluation criteria are selected to evaluate adaptation responses. ART uses four sustainability frames:

society & equity	economy	environment	governance
Effects on communities and services on which they rely,	Economic values that may be affected such as costs of	Environmental values that may be affected, such as	Factors such as organizational structure,

Adapting to Rising Tides

ABOUT US ART APPROACH NEWS

Adapting to Rising Tides > Design Your Project > Getting Started

- Findings +
- Projects +
- How-To −
  - ART Approach >
  - Design Your Project −
    - Getting Started
    - 1. Scope and Organize >
    - 2. Choose an Approach >
    - 3. Do the Assessment >
    - 4. Summarize Findings >
    - 5. Identify Issues >
    - 6. Develop Responses >
    - 7. Evaluate Responses >
    - 8. Advance Options >
  - ART Supplies >

Getting Started

The step-by-step guidance and tools to help you use the ART Approach to adaptation planning for your projects.

Our goal for Design Your Project is to help you lead an efficient, outcome-oriented process that accommodates the interests, political realities, resources, and time available for your project. The ART Program has developed tested and refined each step in Design Your Project with the specific challenges o while integrating good planning practices throughout.

How to use Design Your Project

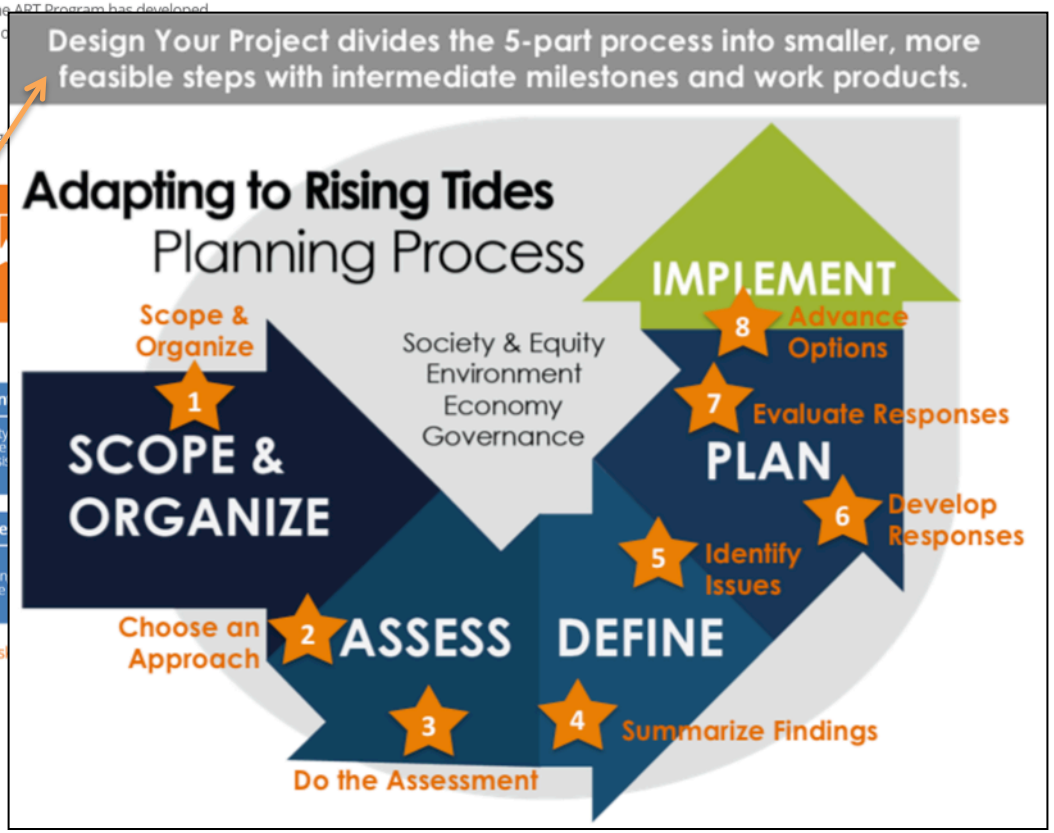
To use this ART Portfolio resource for your project, you will need to do two thing

1. Visit the Design Your Project pages (below) which provide snapshots of the 8 planning steps and links to the ART Supplies downloads needed for each step.
2. Download the Guide (25 pages) which details how to do the Design Your Project steps, including the specific outcomes, roles and tasks for your project team and stakeholders.

While we recommend that you start at the beginning, you should also feel free to use what you need and click around. In other words, jump right in!

1. Scope & Organize	2. Choose an Approach	3. Do the Assessmen
Define what to address in the project. Convene stakeholders. Set project goals.	Plan out the assessment methods. Select climate scenarios.	Conduct the vulnerability assessment and climate impacts exposure analysis
5. Identify Issues	**6. Develop Responses**	**7. Evaluate Response**
Define key planning issues. Refine project resilience goals.	Develop adaptation responses for key planning issues and agency-specific vulnerabilities.	Evaluate adaptation responses for key plannin issues against resilience goals.

How do these 8 steps fit into the 5-part ART planning process? Visit the Help Des



ART Supply: Engagement Exercise

ART SUPPLY: ENGAGEMENT EXERCISE
Design Your Project Step 1: Scope & Organize

Functions & Values Mapping

ADAPTING TO RISING TIDES PROGRAM

Purpose

Early on in your adaptation planning project, learn about what your stakeholder working group members care about and find to be critical for the economy, public health and safety, community and environment in the project area. Within the ART Program, these are called functions and values. The process of identifying these functions and values as a group can help to clarify the purpose and focus of the project for all participants.

The functions and values themselves serve as the basis for the project's resilience goals, which provide a way to obtain agreement on the main objectives of the project, and will be help shape later project decisions about adaptation responses.

Approach

At an initial meeting of a project's working group, participants identify the functions and values within the project area (on a poster-sized map) that are important to consider when assessing current and future sea level rise and storm event impacts.

Outcomes

1. Early engagement of project working group members that helps build a shared understanding of the services, sectors and assets within the project area, and stakeholder's interests and concerns.

2. The confirmation of certain project elements, in particular, the project boundary and types of assets and services to be included, and other stakeholders, agencies, organizations or issue experts that should be represented in the project working group or subcommittees.

ADAPTINGTORISINGTIDES.ORG

3. information that can be used to draft resilience goals for the project that:

- Consider the four sustainability frames used in the ART Program:

Society & Equity	Economy	Environment	Governance
effects on communities and services on which they rely, with specific attention to disproportionate impacts due to inequities	Economic values that may be affected (such as costs of physical and infrastructure damages or lost revenues during periods of recovery)	Environmental values that may be affected, including ecosystem functions and services, and species biodiversity	factors such as organizational structure, ownership, management responsibilities, jurisdiction, mandates, and mechanisms of participation that affect vulnerability to impacts

- Reflect a shared vision for the assets and services within the project area and an overall project approach while acknowledging differences among assets, services, agencies and organizations
- Reflect the goals and objectives, issues and priorities of the agencies, organizations, communities and others participating in the working group
- Inform the evaluation and selection of high priority adaptation responses for implementation and funding.

When to use this exercise…

This exercise is most appropriate during the project kick-off meeting, where the proposed project area, working group members and assets and issues are identified and confirmed by the attendees.

Logistics

This exercise requires at least 45 minutes:

- Allow 30 minutes for the introduction to the exercise and the participatory mapping. Another 15 to 20 minutes is needed for a quick, "lightning-round" debrief.

ENGAGEMENT EXERCISE 2 FUNCTIONS & VALUES MAPPING

1. Prepare

This is a visual, hands-on exercise that requires a large format map of the proposed project area that stakeholders will use to identify the functions and values (important assets and services) within the project area by placing stickers or sticky notes on the map. Supplies for this exercise include:

- Simple map of the project area: using GIS or any digital mapping software, create a map that shows the project boundaries, labeling a few orienting features (roads, key assets, etc.). Plot or print a large format map (e.g., 36" wide). Alternatively, the map could be projected onto a wall at a large enough size for all participants to see.
- List of functions and values printed on stickers or written on sticky notes (good to use different colors for each if possible). The project team should think of different resilience building functions and values that address all aspects of sustainability. Other types of functions and values can be added that more specifically reflect the goals, objectives and priorities of the agencies, organizations and communities that participate in the exercise.

Examples of functions based on the four frames used in the ART Program

Society and Equity	Environment	Economy	Governance
• people where they live • public health and safety • people where they work • people where they recreate	• habitat • flood risk reduction • water quality • biodiversity	• goods movement • commuter movement • local jobs • tax revenue	• multi-agency ownership or management • public/ private/ NGO partnerships

- Blank stickers or sticky notes, pens and markers. Blank stickers allow for people to add their own functions and values or to make more of the ones listed above in case they run out.
- Participant guide that explains the purpose and expected outcomes of the exercise, and lists/describes the selected resilience building functions and values.

Prior to the meeting the project team should run through this exercise and make any adjustment or changes to customize it to the project goals, objectives, area or stakeholders.

ENGAGEMENT EXERCISE 3 FUNCTIONS & VALUES MAPPING

2. Do

1st

Hand out participant guide and introduce the exercise

2nd

Explain the proposed functions and values selected by the project team and confirm these with the group. Add additional functions and values if necessary based on working group and stakeholder feedback and hand out stickers, also provide blank stickers for other "write-in" functions and values

3rd

Orient the group to the map and point out some of the key sectors, services, assets, e.g., homes and neighborhoods, schools, hospitals, fire and police stations, transit centers, commuter and goods movement corridors, employment sites, utility corridors, recreation areas, habitat and natural features, etc. Provide a quick example by placing a sticker in a location.

4th

Ask the group to place stickers on the map identifying where the different functions and values are provided. Have staff or a project team member at each station if more than one to provide assistance and answer questions during the exercise.

5th

Conduct a lightning-round debrief. Look at the maps and observe what functions and values are represented, ask for top-of-mind words, phrases or concepts that would be included in goals to either maintain or enhance resilience in the project area.

ENGAGEMENT EXERCISE 4 FUNCTIONS & VALUES MAPPING

3. Follow-up

After the meeting, the project staff, using the mapped functions and values and the list of words, phrases and concepts from the lightning round, develop a set of draft resilience goals for the project area. See an example of draft resilience goals in Example Materials & Outcomes below:

This figure shows an example of the follow-up steps for the project staff.

Organizing the feedback from the mapping exercise according to the four sustainability frames used in the ART Program, Society & Equity, Economy, Environment and Governance, can help with identifying common themes or topics that form the basis for the project resilience goals.

Either by email, a project share site or at the next meeting, share the draft resilience goals with the working group and other stakeholders to get their input and feedback. At this point, remind them of the purpose and importance of resilience goals (see above, under "Outcomes"). Give them time to reflect on their agency's goals or mission in relation to the draft resilience goals. Each working group member should see a reflection of their priorities in the project resilience goals although not all the goals may be relevant to all stakeholders. The resilience goals may be revisited and revised later in the project during the development of adaptation responses.

Share the revised resilience goals with stakeholders to get agreement and confirmation.

ENGAGEMENT EXERCISE 5 FUNCTIONS & VALUES MAPPING

Example Materials & Outcomes

Map

EXAMPLE PROJECT AREA MAP

A simple map of the project area that shows the project boundaries, a few orienting features. The map should be printed in a large format (e.g., 24" wide) or projected onto a wall at a large enough size for all participants to see.

Lightning round

Examples of words, phrases and concepts from the lightning round exercise. These have been categorized within the four frames that were used in the ART assessment.

- Neighborhoods and community cohesion (Society & Equity)
- High percentage of renters (Society & Equity)
- Access to neighborhoods, jobs and services via transit and roads (Society & Equity, Economy)
- Wastewater services (Society & Equity, Environment)
- Coordinated emergency response and recovery capacity (Society & Equity, Governance)
- Multi-agency ownership/oversight (Governance)
- Joint powers authority of shoreline managers (Governance)
- Superfund site (Society & Equity, Environment)
- Coalition of community organizations to improve environmental health (Society & Equity, Governance)
- Water quality (Society & Equity, Environment)
- Outdoor recreation (Society & Equity)
- Schools (Society & Equity)
- Elder care facilities (Society & Equity)
- Major employment centers (e.g., airport) (Economy)
- Goods/cargo movement and commercial transport (e.g., airport, rail, highway) (Economy)

ENGAGEMENT EXERCISE 6 FUNCTIONS & VALUES MAPPING

Adapting to Rising Tides

ABOUT US ART APPROACH NEWS

Findings by Sector

Click on the sectors below for summarized outcomes about vulnerability to current and future flooding and adaptation responses from the ART Program. These findings provide helpful background information and broadly-relevant insights for planning efforts that address the same types of assets.

The

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Program

Tidal Creeks and Flood Control Channels

Wendy Goodfriend

San Francisco Bay Conservation
and Development Commission

As water levels rise, the Head of Tide will extend farther upstream in the many creeks and channels that drain to the Bay

The Head of Tide, or HoT zone, is broadly defined as the upstream edge of regular tidal inundation where the environment transitions from saltwater to freshwater

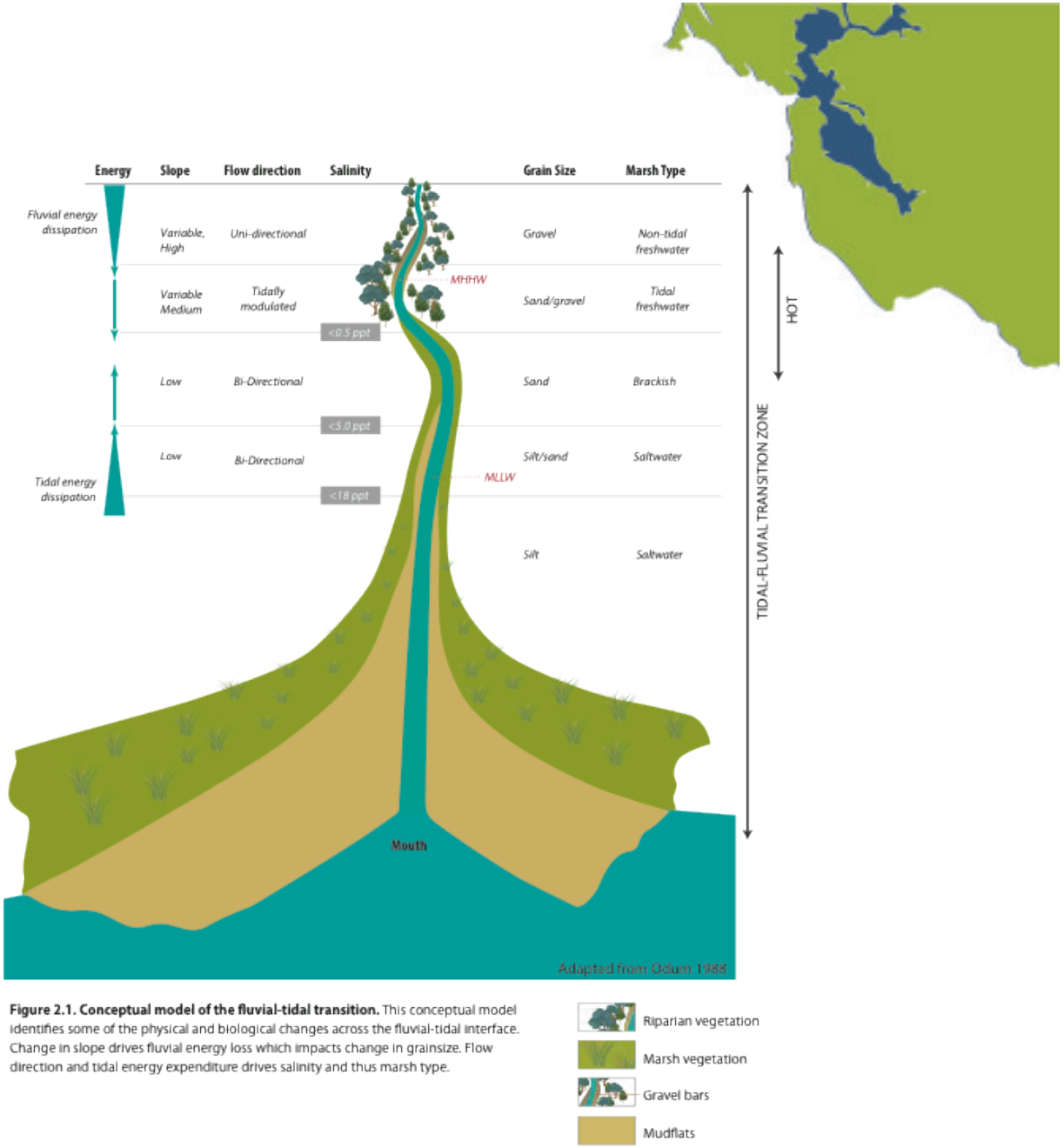


Figure 2.1. Conceptual model of the fluvial-tidal transition. This conceptual model identifies some of the physical and biological changes across the fluvial-tidal interface. Change in slope drives fluvial energy loss which impacts change in grainsize. Flow direction and tidal energy expenditure drives salinity and thus marsh type.

During storm events, higher Bay water levels will diminish the ability of these creeks and channels to carry rainwater away from developed areas, resulting in new or prolonged flooding

On January 1, 1997 torrential rains and a high tide occurred at the same time. High water levels in the Bay caused Alhambra Creek to back up, flooding downtown Martinez

Understanding how rising tides will impact tidal creeks and channels is critical to determine what actions to take to protect human and natural communities

Project Goals

Developed guidance to help planners and flood managers work together to understand the vulnerability of tidal creeks and channels

Test and refine the guidance "on the ground" in the Contra Costa ART project

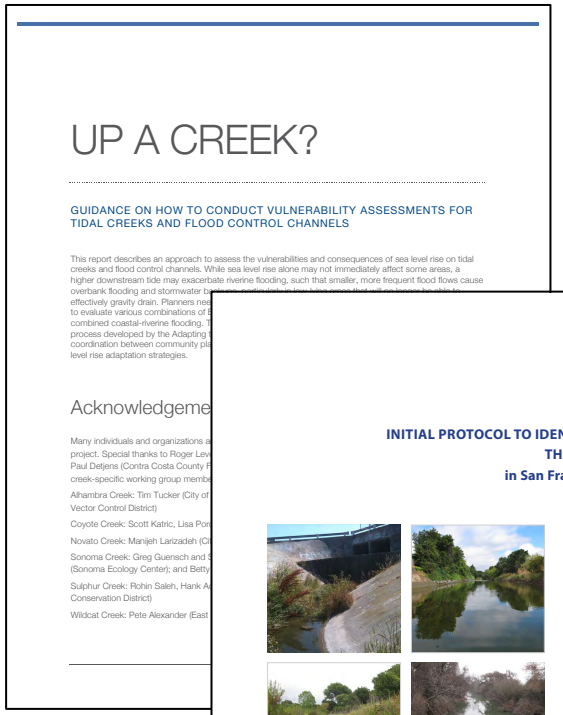
Finalize, disseminate and support use of the guidance

Alhambra Creek (BCDC)

Sulphur Creek (SFEI)

ART Program Guidance: Vulnerability assessments for tidal creeks and flood control channels

- "Up a Creek?" – a step-by-step guide to assessing the vulnerability of tidal creeks and flood control channels using the ART Approach
- A science-based protocol for identifying current and future HOT through desktop mapping and field investigation (SFEI + BCDCI)
- Strategies for improving coordination between community planning and engineering disciplines grounded in the ART Planning Process



Many partners helped develop the guidance

Creek-specific Working Groups:

- Alameda County Flood Control & Water Conservation District
- Contra Costa County Flood Control & Water Conservation District
- Marin County Flood Control & Water Conservation District
- Santa Clara Valley Water District
- Sonoma County Water Agency
- City of Martinez
- City of Novato
- Contra Costa Mosquito & Vector Control District
- East Bay Regional Park District
- Sonoma Ecology Center

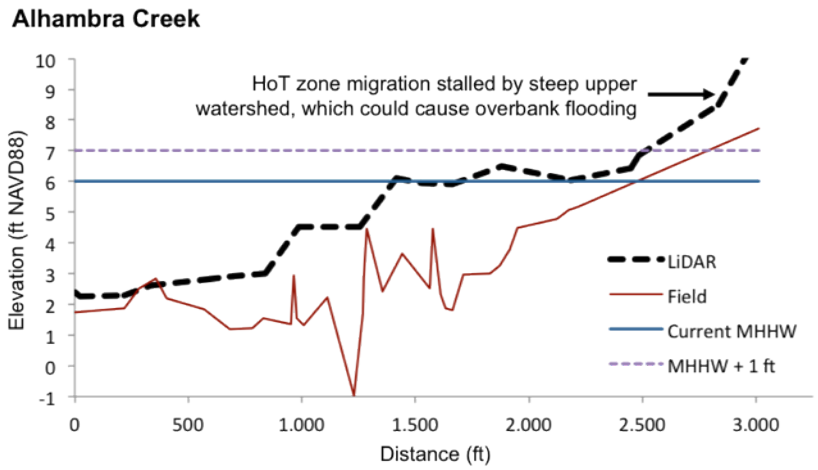
SFEI Technical Advisors:

- Donna Ball, Save The Bay
  Kristen Cayce, SFEI
- Roger Leventhal, MCFC&WCD
- Jeremy Lowe, ESA PWA
- Ray Torres, University of South Carolina

Testing the field protocol in Wildcat Creek (SFEI). The five other creeks in the project were Alhambra, Coyote, Novato, Sonoma and Sulphur

The guidance has been tested and refined in the Contra Costa ART project

Seven creeks and channels were assessed with working group input, existing studies, best professional judgment based on current mapping



Example ART project finding: Rodeo Creek

- Rodeo Creek conveys only the 15 to 20-year riverine flow, and the 2005 New Year's Eve storm almost caused overbank flooding
- The county receives 5% of the funds necessary to maintain the channel due to Prop 13 and 218 restrictions
- Sediment removal is both expensive and difficult to permit, and the desilting effort was in the mid-1990s

Photos: Contra Costa Resource Conservation District, http://www.ccrcd.org

<u>Recommended Action:</u>
Conduct watershed-specific hydraulic modeling to understand how higher Bay water levels will exacerbate flooding within and beyond the existing 100-year floodplain

Next Steps

- Continue working with regional partners and local stakeholders to advance our understanding of how a rising Bay will impact tidal creeks and channels
- Provide ART Help Desk support to those assessing tidal creeks and channels to ensure a robust, transparent and collaborative process
- Identify the regional actions that are needed to help advance local flood risk management planning and implementation to address rising sea levels

The

Adapting to Rising Tides

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Shoreline Parks Assessment

Maggie Wenger

San Francisco Bay Conservation
and Development Commission

Why Regional Parks?

Shoreline parks provide access and connection to the Bay and improve the Region's quality of life

Why Regional Parks?

Parks provide de facto shoreline protection for many parts of the Bay and are therefore at the frontline for sea level rise impacts

Why Regional Parks?

Parks can be both laboratories and classrooms for adaptation

EBRPD Shoreline Parks

Project Goals

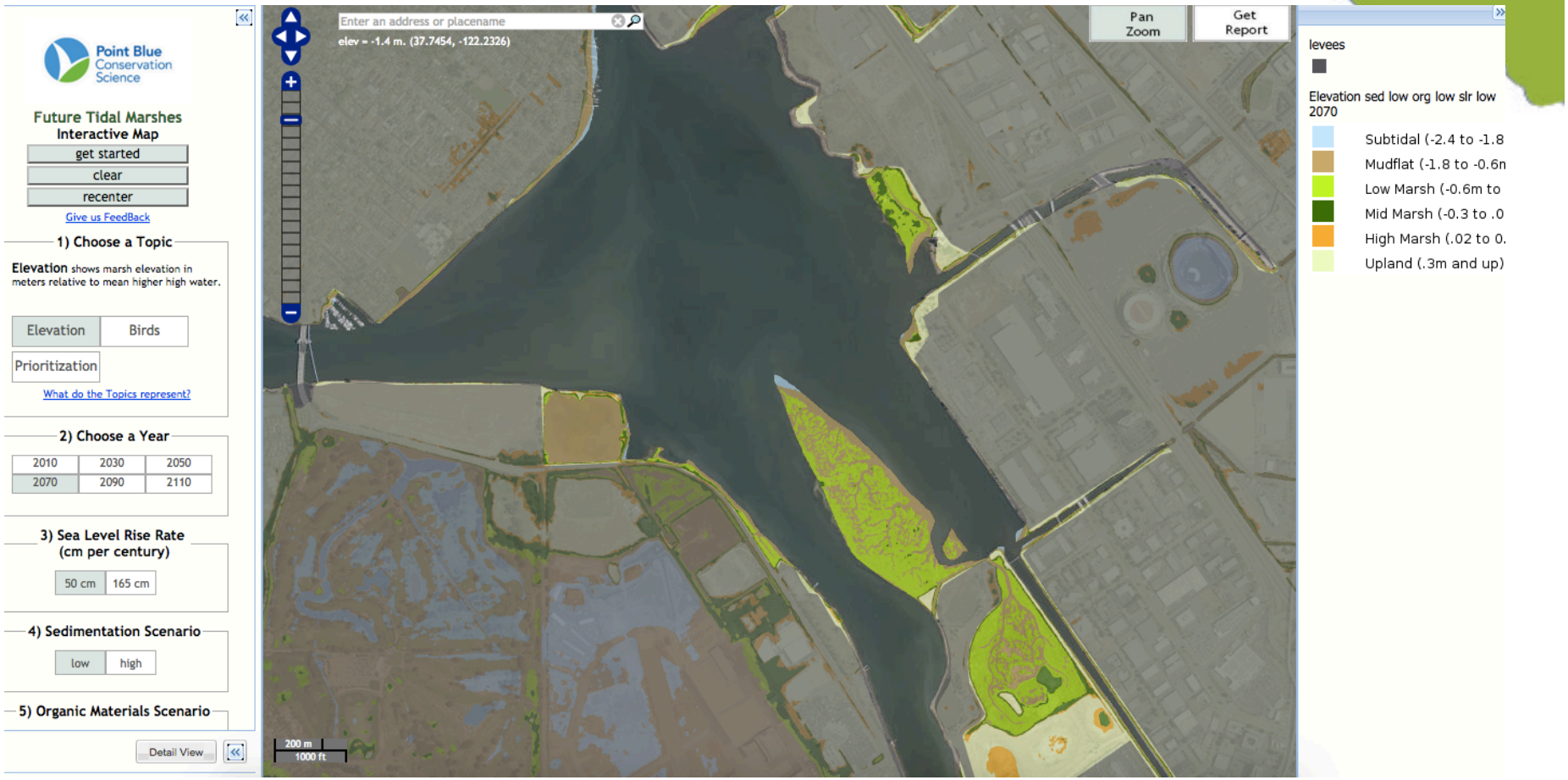
- Work with park managers to assess sea level rise vulnerability and risk across East Bay Regional Park District
- Develop potential adaptation strategies that apply to a wide range of shoreline parks
- Evaluate potential adaptation strategies with EBRPD staff
- Develop resources that clearly communicate the tools, materials, and methods used in this project
- Use parks to communicate with members of the public

Vulnerability Assessment

- Park-by-park assessment using ART Program tools
- Field visits with park managers to ground truth findings
- Working meetings with park district staff to review findings and develop key vulnerabilities

Exposure Mapping

Point Blue Future Marshes Tool

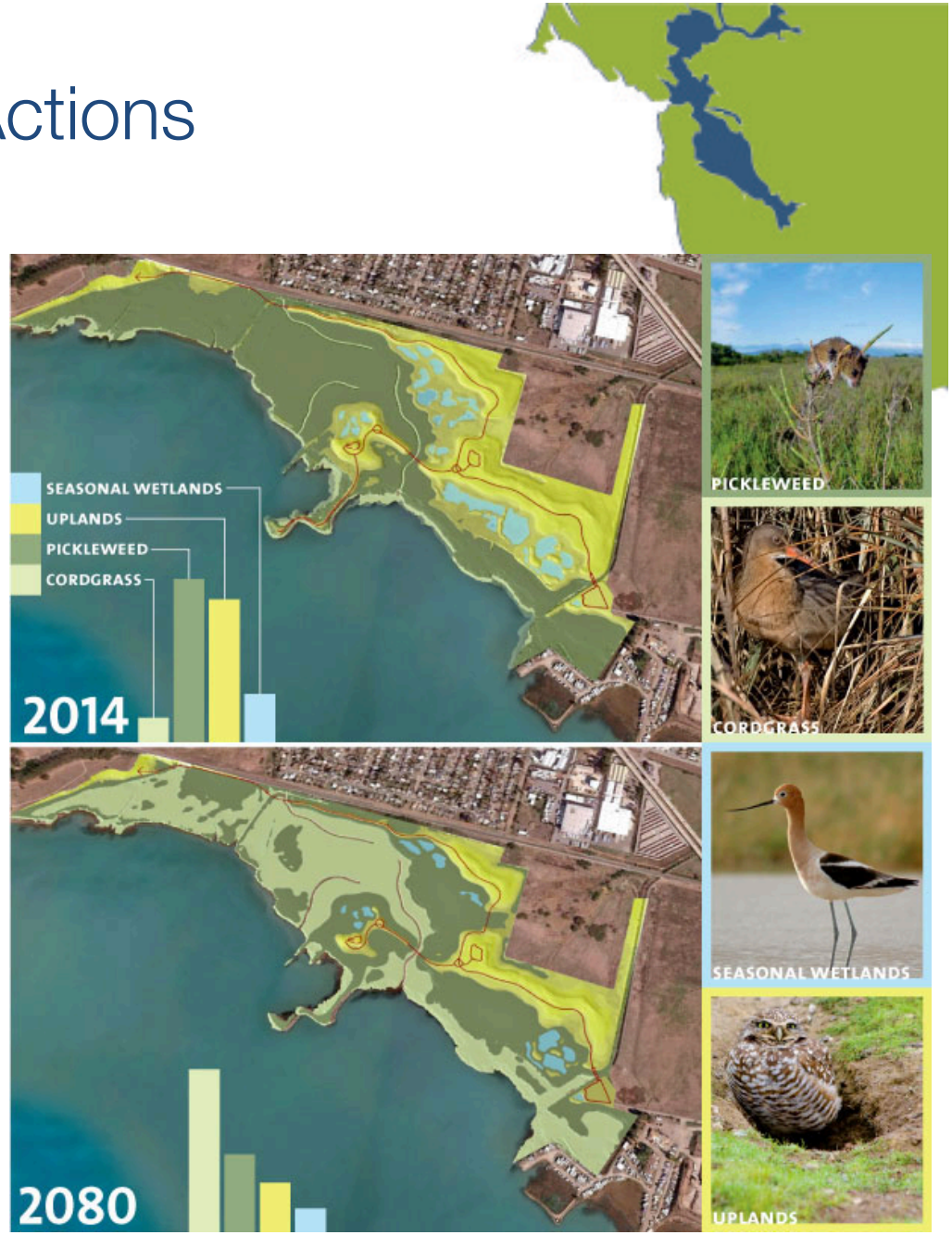


Parks and Recreation Key Vulnerabilities

- Parks are often owned and managed by separate agencies or have neighbors that complicate planning and management
- Bay Trail is vulnerable because of its shoreline location and connectivity
- Marsh habitat is downshifting and disappearing
- Structural shorelines are eroding and difficult to permit and repair

Proposed Adaptation Actions

- Add sea level rise and flooding impacts to current management plans and partnership agreements
- Acquire easements to allow for landward migration of marshes and trails
- Use resilient materials for structures and trails
- Create high tide refugia and transition space for shoreline habitat



Adaptation in Action

- Climate adaptation prioritized in EBRPD master plan
- EBRPD has hired a climate coordinator
- HASPA updated JPA to prioritize sea level rise adaptation
- Breuner Marsh construction with fallback public access
- Crown Memorial State Beach sand nourishment

Next Steps for ART and Parks

- Continued partnership with EBRPD in Contra Costa
- Sector-specific work around the region
- Integrating shoreline public access and recreation into regional adaptation planning

ART Program Objectives

The projects presented today demonstrate the ART Program's leadership in building regional resilience

- All three projects provide guidance and support for adaptation at all scales (local, regional, state and federal)
- The Tidal Creeks and Channels project provides new data and information regarding Head of Tide and upstream flood risk, a need identified in the ART Alameda County Project
- ART Parks and Recreation has resulted in a strong and ongoing partnership with East Bay Regional Park District
- The ART Program continues to develop and refine data and tools for the ART Portfolio that lead to action and support a consistent approach to adaptation planning in the region

Questions?