Adapting to Rising Tides
Bay Area

Second Regional Working Group Meeting
November 8, 2017

Metropolitan Transportation Commission

Bay Area Regional Collaborative

ART Bay Area

Working Group Meeting #2 – November 8, 2017

Objectives

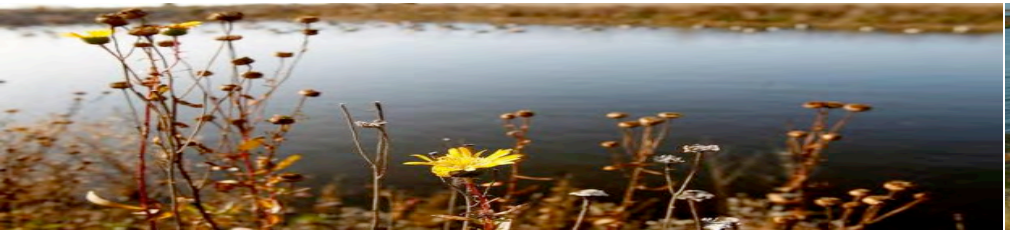
- Confirm project goals, team and scope
- Continue to identify who and what is missing
- Obtain feedback on draft resilience goals
- Introduce ART Maps and mapping process
- Learn more about the assessment approach

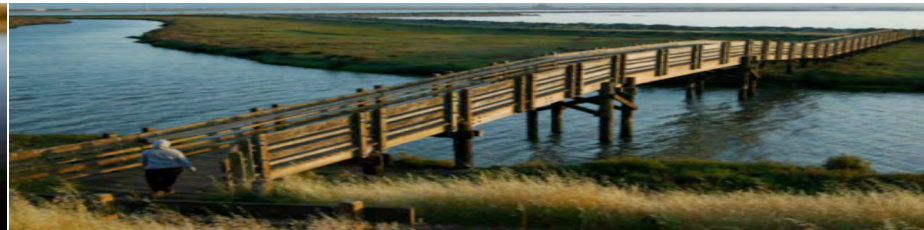
Agenda

1:00	Introduction RWG 2 Objectives and Agenda, RWG 1 Recap
1:10	Announcements about related projects
1:20	Presentation and Discussion: Resilience Goals
1:40	Update on the public participation plan
1:45	Presentation: ART maps and exposure analysis
2:10	Break
2:25	Presentation: Vulnerability Assessment Approach
2:50	Exercise: Vulnerabilities and Dependencies
3:45	Wrap-up and Next Steps

RWG Meeting #1 Recap

- ✓ We described and discussed the project goals, team and scope
- ✓ We described and hopefully confirmed regional working group roles and responsibilities
- ✓ We asked RWG members at both meetings who is missing and to help us fill any gaps in issues or assets and in the analysis and approach
- ✓ We had a poster session intended to provide information on assets to be evaluated and approach and we heard it was not long enough
- ✓ Engaged in an exercise to help us draft resilience goals





ART Bay Area Project Timeline

ART Bay Area

Project Initiation – Fall 2017

Project Scoping – Fall/Winter 2017

Conduct Assessment – Fall/Spring 2017-18

Determine Assessment Outcomes – Summer/Fall 2018

Transition to Adaptation – Fall 2018

Develop Adaptation Responses – Fall/Winter 2018-19

Finalize Indicators and Framework – Winter/Spring 2019

Evaluate and Prioritize Adaptation Responses and Identify Opportunities for Implementation – Spring/Summer 2019

Working Group Meeting

Individual or small group meetings

Public meetings

Revised ART Bay Area Purpose

ART Bay Area

Purpose of the ART Bay Area project includes:

- Increase the resilience of the Bay Area's transportation system
- Preserve and restore healthy and vibrant ecological systems which are necessary for the health and safety of the region's natural and human communities
- Improve the safety and sustainability of our communities, particularly our most vulnerable and disadvantaged communities
- Develop an adaptation planning framework for future efforts
- Increase public outreach, participation and engagement

Resilient by Design

A year-long **collaborative design challenge** bringing together local residents, public officials and local, national and international experts to develop **10 innovative community-based solutions** that will strengthen our region's **resilience to sea level rise, severe storms, flooding and earthquakes**.

Collaborative Research Phase: September–December 2017

Collaborative Design Phase: Begins in December 2017

Next Event: November 15th, Design Opportunities Open House from 5pm to 7pm at the Contemporary Jewish Museum in San Francisco

RESILIENT BY DESIGN
BAY AREA CHALLENGE

Related Efforts and Projects

ART Bay Area

Plan Bay Area

A state-mandated, integrated long-range transportation, land-use and housing plan that is designed to:

- support a growing economy
- provide more housing and transportation choices
- reduce transportation-related pollution in the nine-county San Francisco Bay Area.
- develop an efficient transportation network and grow in a financially and environmentally responsible way

- Finalizing the Raising the Bar Report and a presentation to the Bay Area Regional Collaborative Governing Board on November 17th
- Beginning to meet to discuss resilience approach for the next Plan Bay Area

SF Bay Watershed Coastal Resilience Assessment

An assessment to map resilience hubs that identify restoration projects to increase the resilience of both human communities and wildlife habitat to the effects of coastal and inland storms

Pre-workshop Info Webinar: November 29th, 1-2 pm

- Registration and agenda coming soon

Two identical stakeholder workshops to choose from:

- December 13th OR 14th
- Oakland OR San Francisco (venue TBD)

NFWF

NatureServe

Point Blue Conservation Science

Other announcements, questions

ART Bay Area

Purpose of Project Resilience Goals

ART Bay Area

Project resilience goals help guide the project

- Goals based on project scope, flooding impacts and scenarios, assets, project area
- Opportunity for working group to help define the project scope
- Should include all four frames of sustainability
- Evaluate midway and change if appropriate
- Use to develop evaluation criteria to evaluate and prioritize action

English Goal Setter

Developing Project Resilience Goals

ART Bay Area

Process of developing project resilience goals

1. Functions and Values mapping exercise at RWG Meeting #1
2. ART and PMT reviewed exercise outcomes and relevant regional goals from other planning efforts
3. Draft project resilience goals presented to RWG for review and input (today!)
4. Will be revisited and refined by the RWG at key periods during the project, including the end of the assessment phase, development of evaluation criteria, prioritization of actions

Resilience Goals Recap

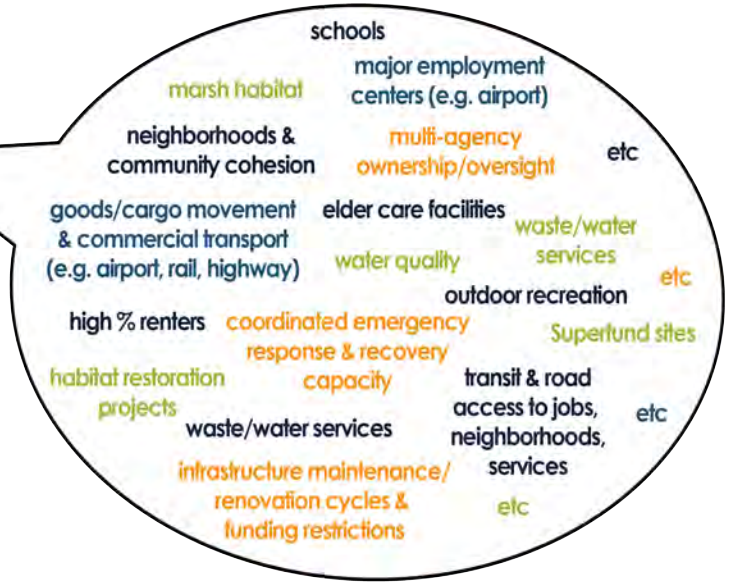
ART Bay Area

Functions and Values Mapping: Engagement Exercise

Goal: Identify the functions and values within the project area that are important to consider when assessing current and future flooding

Participatory mapping exercise with stakeholders

Organized feedback from exercise...



Draft resilience goals for the project

Maintain neighborhood function by preserving access to roads and transit, goods & services, safe & affordable housing, and outdoor recreation opportunities.

Maintain the function of the airport as a regionally significant passenger, cargo and employment hub.

Build resilience in all phases of the disaster lifecycle - from mitigation & preparedness to response & recovery - by protecting critical community facilities, supporting community awareness, ensuring assistance through mutual aid agreements, and building capacity for an effective recovery.

Preserve environmental quality by protecting endangered species, ensuring good water quality,and providing appropriate wildlife habitat.

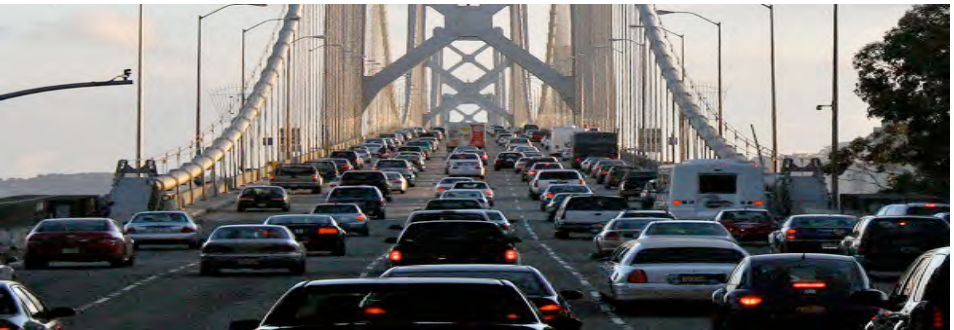
Protect local and regional economy by preserving major employment centers, airport services, regionally significant transportation and local infrastructure investments.

Project Resilience Goals Preamble

ART Bay Area

Draft Preamble

The Adapting to Rising Tides Bay Area project is a regional adaptation planning process focused on regional assets and issues. Although regional in scope and scale, the resilience of the region depends upon the resilience of local communities. Because of the interdependence of the regional and local scales, the following resilience goals reflect issues at both scales and are intended to be used in a way that acknowledges the similarities and differences among the region's local communities and the importance of the scales.



Draft Project Resilience Goals

ART Bay Area

Society and Equity

Protect and improve Bay Area communities' ability to access services, affordable and safe housing, a healthy environment, diverse jobs, transportation, information, and opportunities for advancement.

Focus on identifying and assisting vulnerable communities who endure disproportionate environmental burdens or exhibit socioeconomic characteristics that increase their risk to hazards.

Draft Project Resilience Goals

ART Bay Area

Environment

Preserve and enhance healthy and vibrant ecological systems to provide multiple benefits, including habitat for native and endangered species, biodiversity, clean water, flood protection, and recreation to maintain high quality of life for natural and human communities.

Mitigate environmental risks, such as contaminated lands and poor air quality, and encourage emissions reductions through transitioning to alternative forms of transport and energy to minimize the effects of future climate change.

Promote the long-term vitality of natural areas, including wetlands, tidal marshes, creeks, and transition zones, by ensuring they remain resilient and adaptable in a changing future climate.

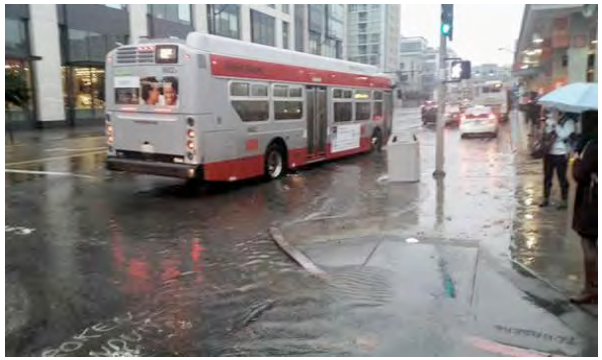
Draft Project Resilience Goals

ART Bay Area

Economy

Create and support vibrant local and regional economies that provide living wage jobs, tax revenues to cities, affordable housing, goods, and services, are adaptable to changing conditions, and are supportive of both local and global businesses. Focus on maintaining the function of regional job centers, recreation and tourism destinations, transportation networks, and infrastructure.

Maintain robust local linkages in a multi-modal transportation network to deliver people, goods, and services throughout the region, nation, and world.



Draft Project Resilience Goals

ART Bay Area

Governance

Build capacity for resilience in local and regional Bay Area communities, agencies, and non-governmental and private organizations by facilitating broad participation at critical points in climate adaptation processes, including scoping, framing, decision making, program development, and project implementation.

Understand and improve upon on current governance challenges by building consensus around appropriate and distinct areas of responsibility for regional entities and local jurisdictions.

Build collaboration within the Bay Area by forming coalitions, collaboratives, and JPAs among agencies, organizations, and communities to address issues of flood protection, environmental restoration, infrastructure maintenance, and affordable housing.

Project Resilience Goals

ART Bay Area

Next Steps:

- Revise based on RWG input received today
- Provide new version for comment to RWG for further revisions from people who were unable to attend today or for those of you who want more time
- Provide final draft version to RWG at RWG Meeting #3 in January
- Present to public at the first public participation meeting and obtain input

Public Participation Approach

ART Bay Area

Public Engagement and Participation

Role of the public in the project

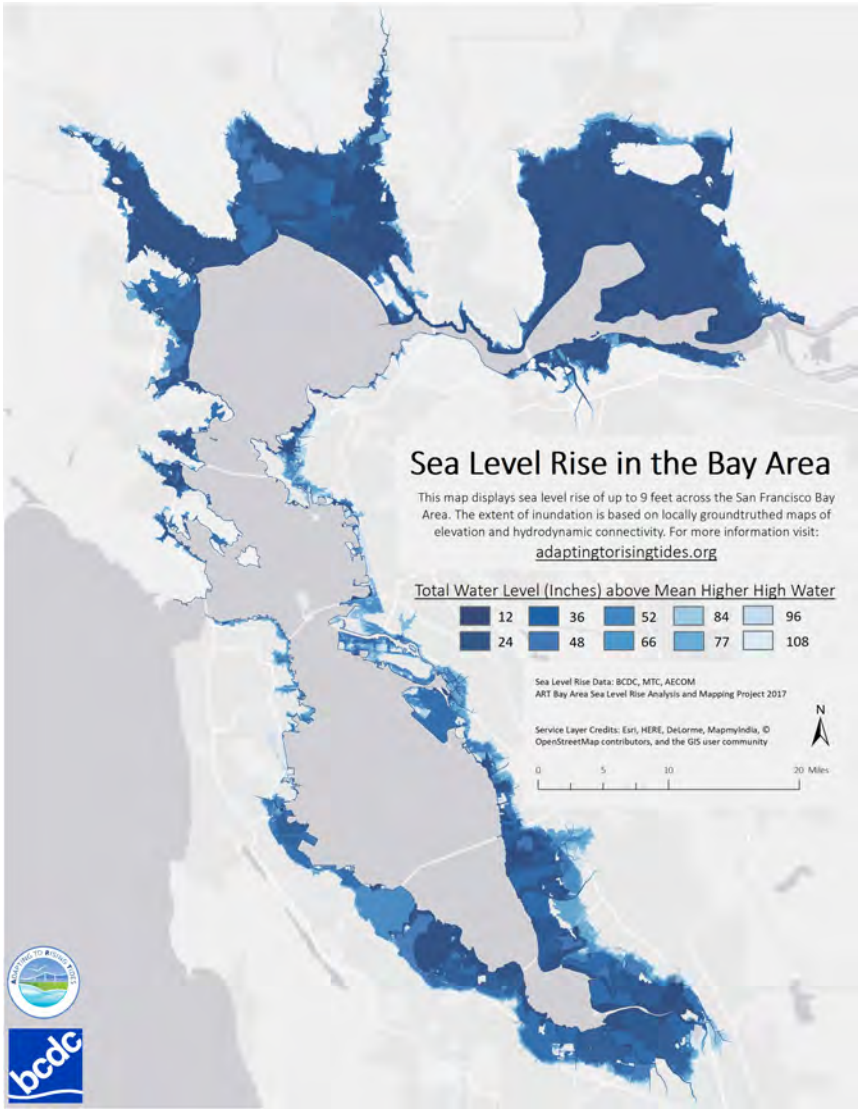
Obtain direction and input from the public at least seven public meetings at key times during the project, provide multiple ways for the public to engage in the project

RWG request: Sign up for a Communication Subcommittee meeting to assist the PMT with refining the public participation plan, communication approach and identifying community groups to engage

Public Participation Approach

- In person project meetings
- Attendance at existing community meetings and events
- Participate in RBD and other meetings where appropriate
- Other ways to engage: on-line or telephone town halls, etc.

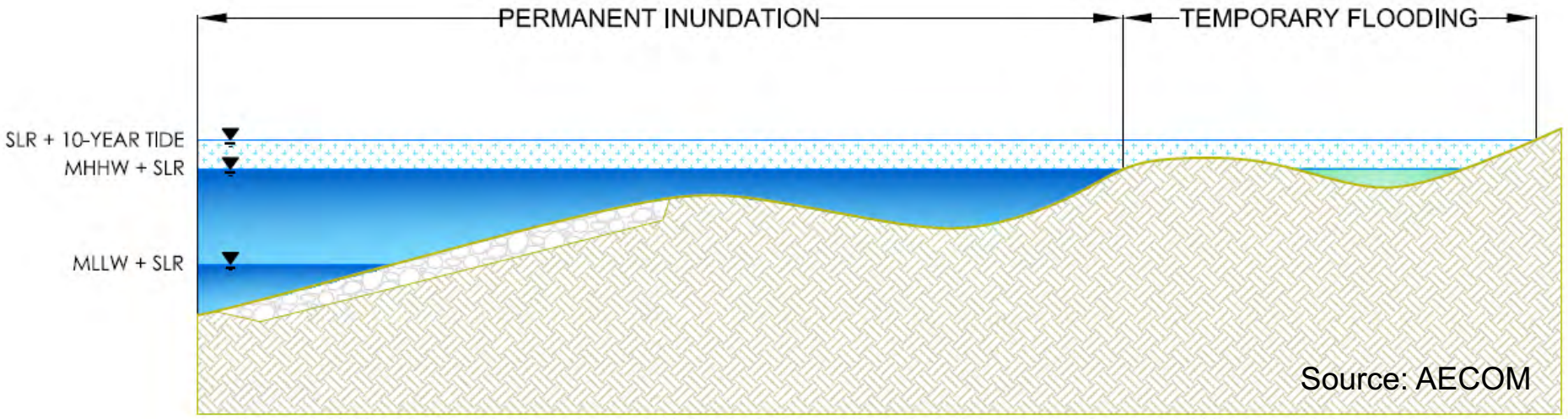
ART Regional Sea Level Rise Maps



- Uniform mapping for all 9 counties including 10 total water level scenarios of current and future flooding
- An effective planning tool to:
  - Communicate temporary and permanent flooding
  - Identify low spots on the shoreline that can lead to inland flooding
- Stakeholder reviewed and validated
- High resolution topographic data (1 meter DEM)

ART's One Map = Many Futures

- Uses an equivalent water level approach to reduce the number of maps needed to understand flooding
- Communicates that areas that may be *permanently inundated* will first be *temporarily flooded*
- Provides information that allows local jurisdictions and agencies to develop thresholds for action

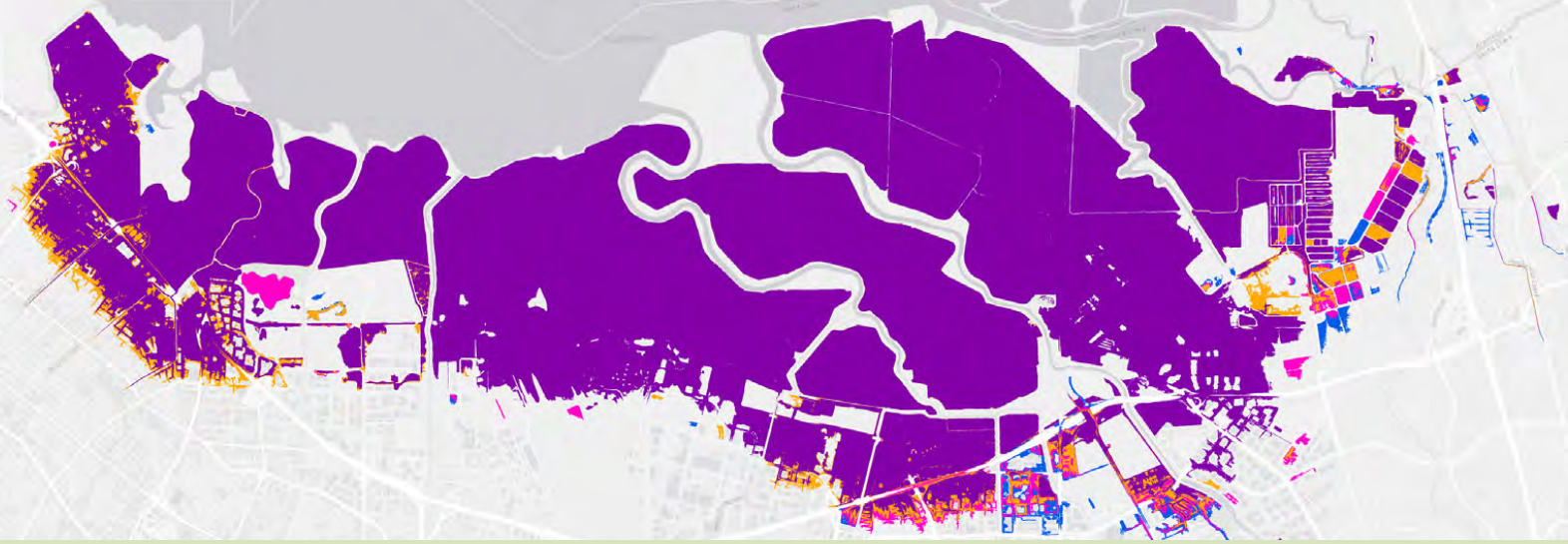


Storm Surge Event Intervals in Santa Clara County

This map displays areas potentially inundated by flooding and Sea Level Rise (SLR) at Mean Higher High Water (MHHW), the higher of the two daily tides. The extent of inundation is based on locally groundtruthed maps of elevation and hydrodynamic connectivity.

Total Water Level Equivalent to:

- MHHW+12" = 1 year Storm Surge= 100% chance of occurrence in any given year
- MHHW+24" = 5 year Storm Surge= 20% chance of occurrence in any given year
- MHHW+36" = 25 year Storm Surge= 4% chance of occurrence in any given year
- MHHW+48" = 100 year Storm Surge= 1% chance of occurrence in any given year



100-year storm surge→ 1/100 chance of occurrence in any year→ 1% chance

The smaller the chance of occurrence, the larger the storm, the larger the area flooded.

N

0

2 Miles

ART's One Map = Many Futures

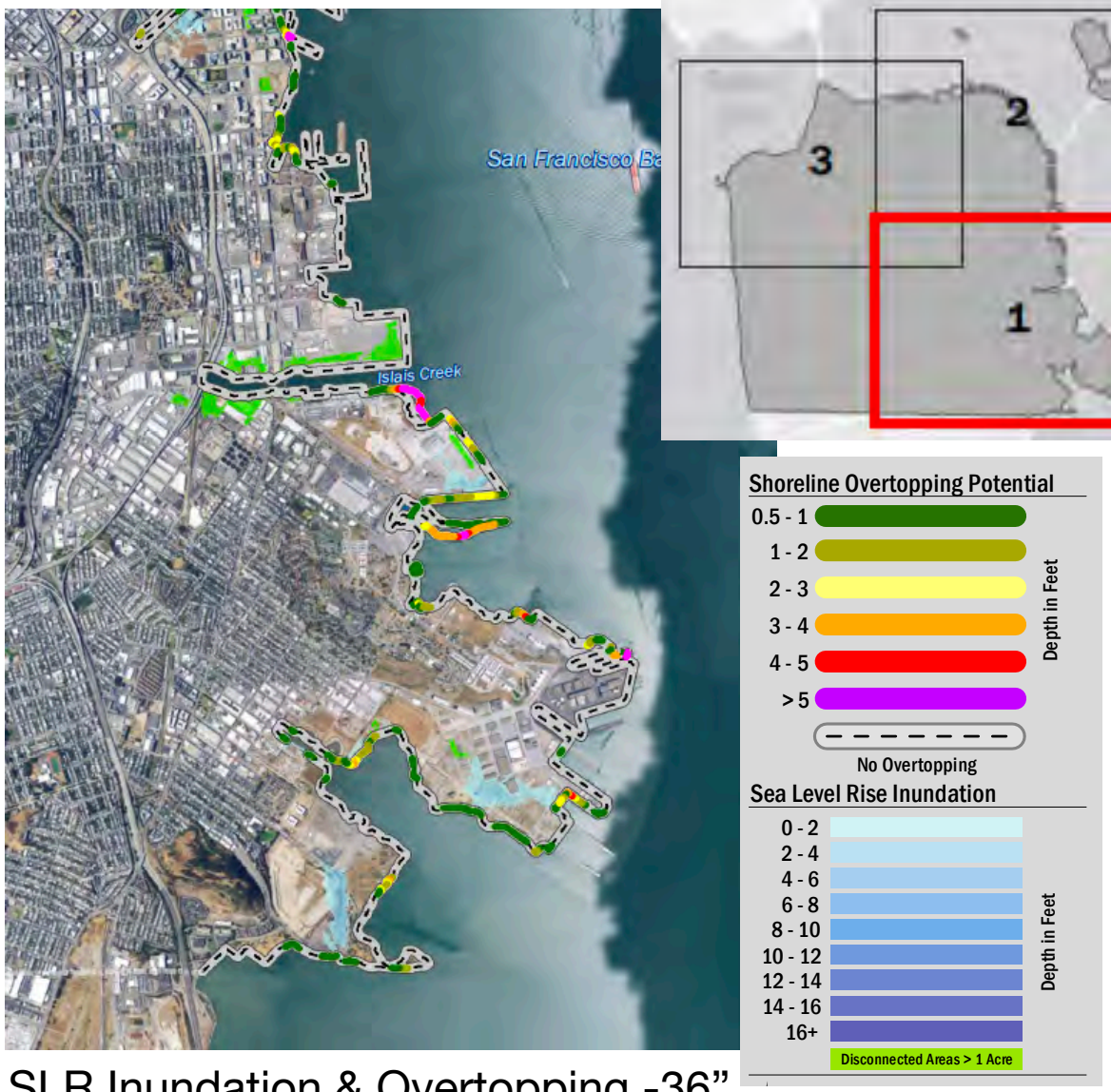
This single map depicts:

High tide permanent inundation from 36" SLR

or

Temporary flooding from:

- 2-year storm surge with 18" SLR
- 5-year storm surge with 12" SLR
- Today's conditions with 50-year storm surge



SLR Inundation & Overtopping -36"

ART's One Map = Many Futures

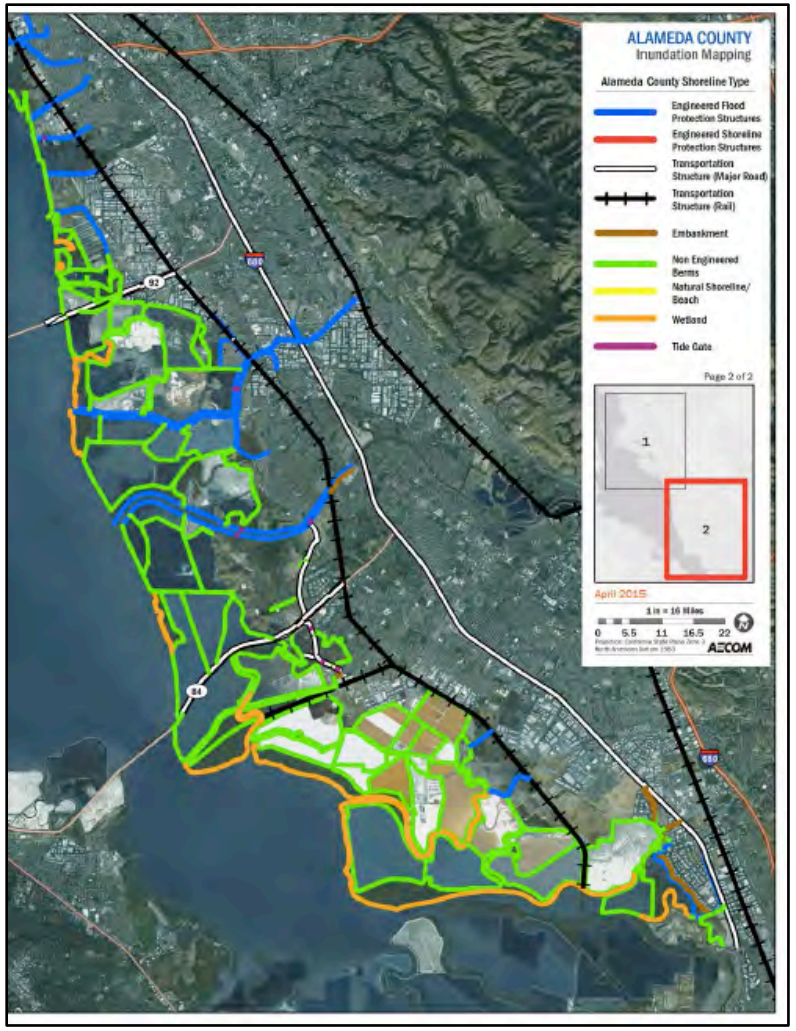
Each map represents a number of projected sea level rise and extreme tides (storm surge) combinations

Sea Level Rise Scenario	Daily Tide	Extreme Tide (Storm Surge)						
	+SLR (in)	1-yr	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
	Water Level above MHHW (in)							
Existing Conditions	0	15	18	28	27	32	36	41
MHHW + 6	6	21	24	29	33	38	42	47
MHHW + 12	12	27	30	35	39	44	48	53
MHHW + 18	18	33	36	41	45	50	54	59
MHHW + 24	24	39	42	47	51	56	60	65
MHHW + 30	30	45	48	53	57	62	66	71
MHHW + 36	36	51	54	59	63	68	72	77
MHHW + 42	42	57	60	65	69	74	78	83
MHHW + 48	48	63	66	71	75	80	84	89
MHHW + 52	52	67	70	75	79	84	88	93
MHHW + 54	54	69	72	77	81	86	90	95
MHHW + 60	60	75	78	83	87	92	96	101
MHHW + 66	66	81	84	89	93	98	102	107

ART Shoreline Studies

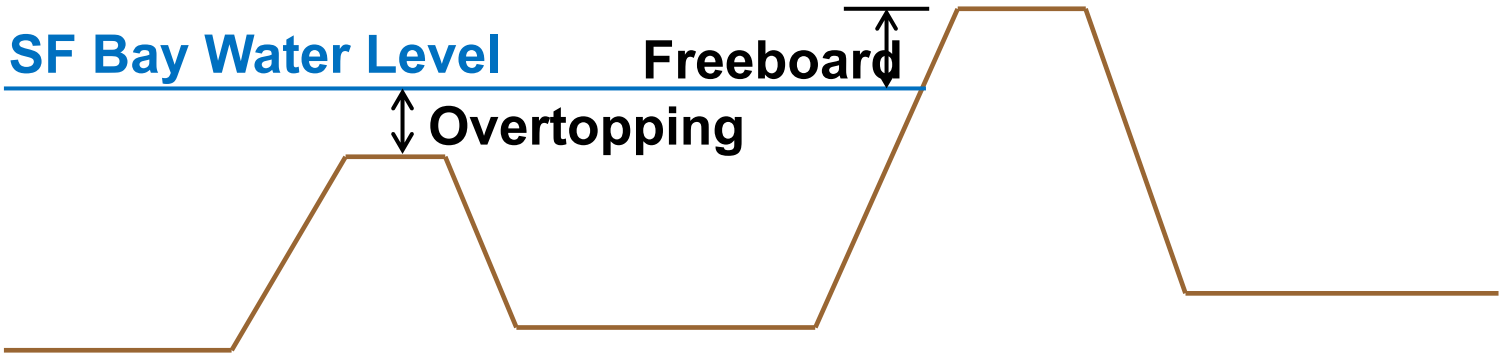
Seven shoreline types identified

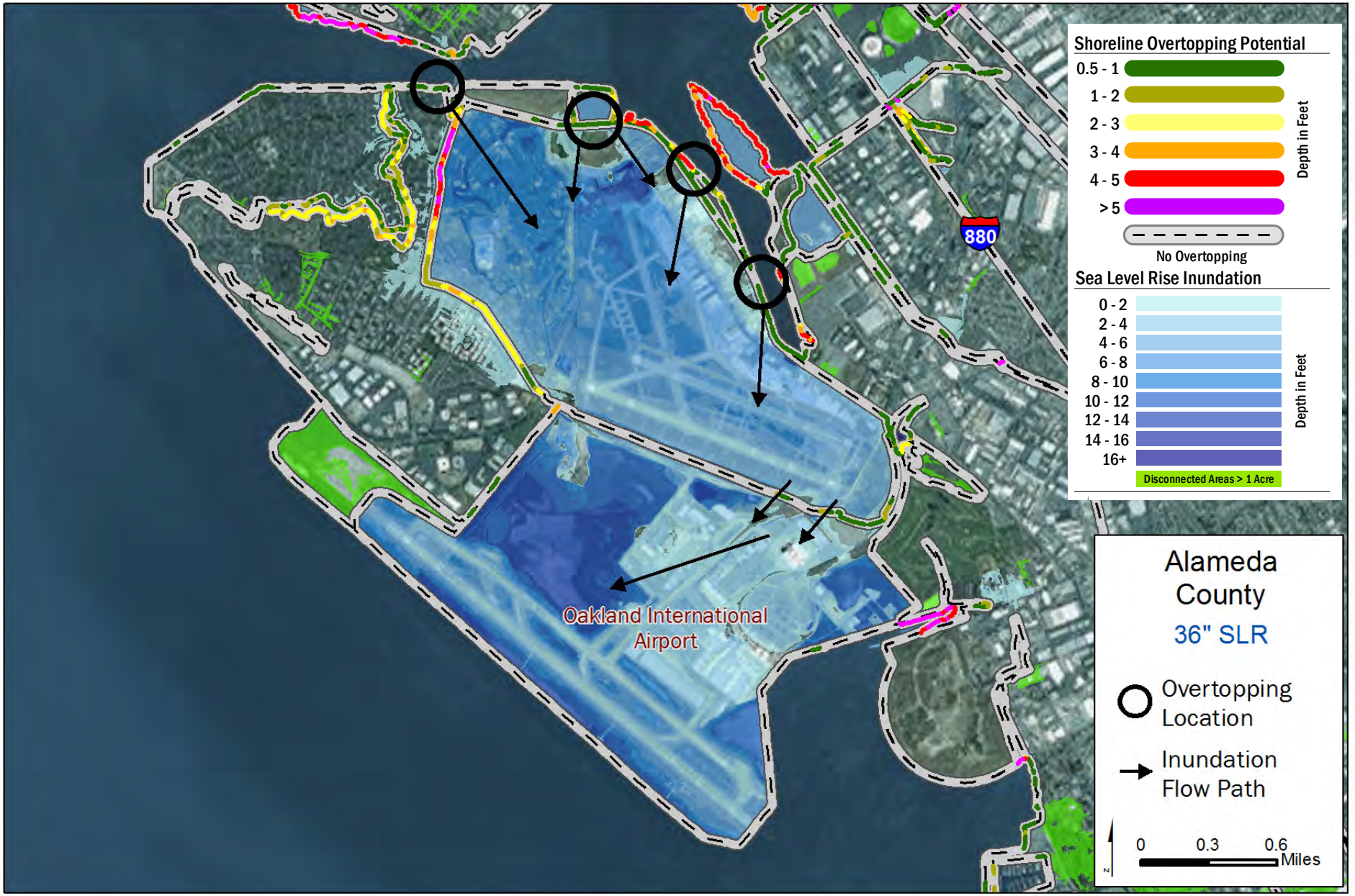
- Engineered Flood Protection
- Engineered Shoreline Protection
- Embankments
- Transportation Structures
- Non Engineered Berms
- Wetlands
- Natural Shoreline/Beach



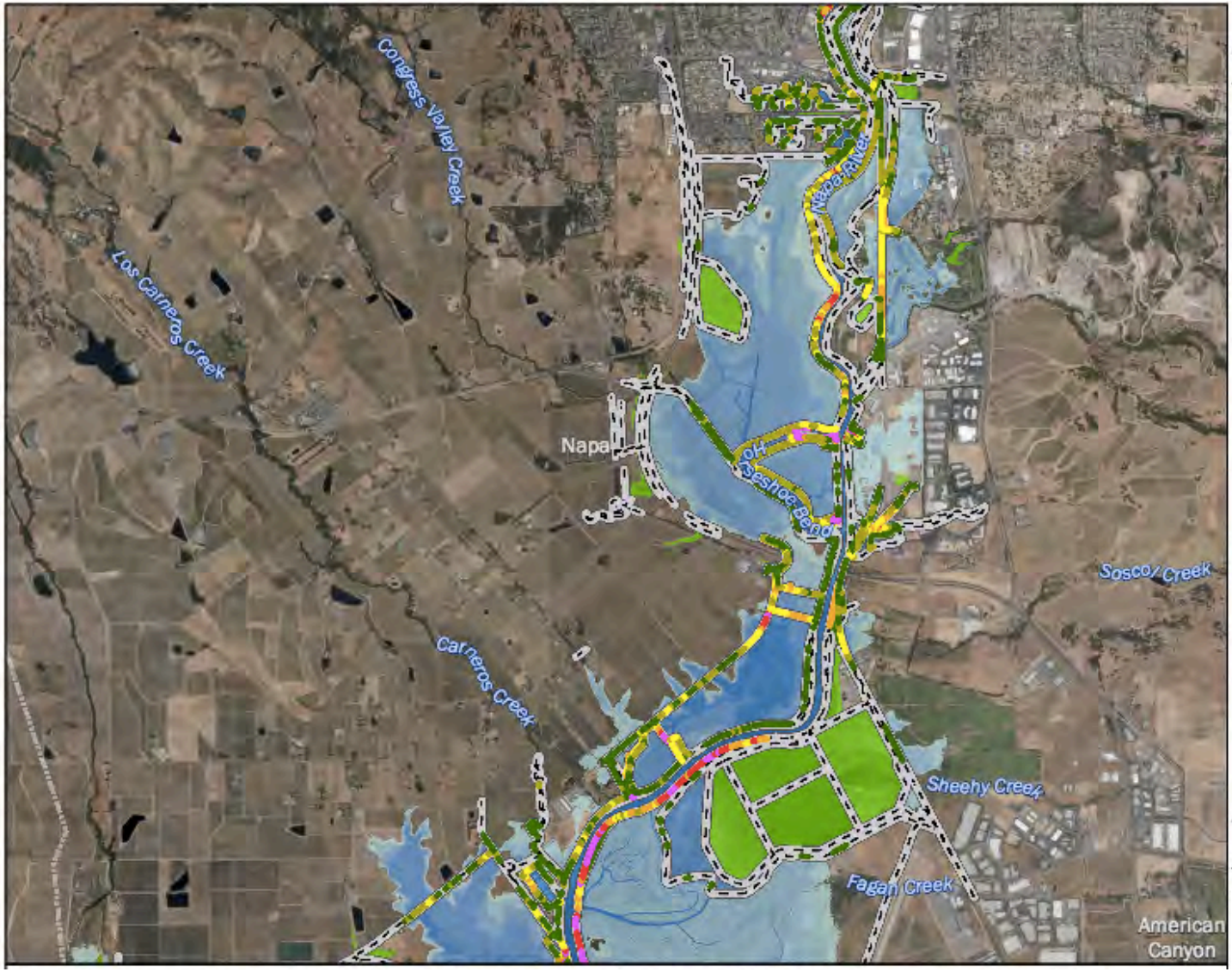
ART Shoreline Overtopping Analysis

Identifies shoreline locations that may be too low, which helps prioritize where further study or immediate actions may be necessary




Shoreline Overtopping Potential
0.5 - 1
1 - 2
2 - 3
3 - 4
4 - 5
> 5
Depth in Feet
No Overtopping
Sea Level Rise Inundation
0 - 2
2 - 4
4 - 6
6 - 8
8 - 10
10 - 12
12 - 14
14 - 16
16+
Depth in Feet
Disconnected Areas > 1 Acre
880
Oakland International Airport
Alameda County
36" SLR
Overtopping Location
Inundation Flow Path
0
0.3
0.6
Miles

ART Maps: Disconnected Areas



Bay Area Sea Level Rise Analysis and Mapping Project

NAPA COUNTY

MHHW + 36" SEA LEVEL RISE

SLR + STORM SURGE SCENARIOS LISTED BELOW COULD BE APPROXIMATED BY THE INUNDATION SHOWN ON THIS MAP.

- 0" SLR + 50-Year Storm Surge
- 6" SLR + 25-Year Storm Surge
- 6" SLR + 10-Year Storm Surge
- 12" SLR + 5-Year Storm Surge
- 18" SLR + 2-Year Storm Surge
- 24" SLR + 1-Year Storm Surge

Shoreline Overtopping Potential

Depth in Feet

- 0.5 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- > 5
- No Overtopping

Sea Level Rise Inundation

Depth in Feet

- 0 - 2
- 2 - 4
- 4 - 6
- 6 - 8
- 8 - 10
- 10 - 12
- 12 - 14
- 14 - 16
- 16+
- Disconnected Areas > 1 Acre

0 0.2 0.4 0.6 0.8 1 Miles

1:45,000

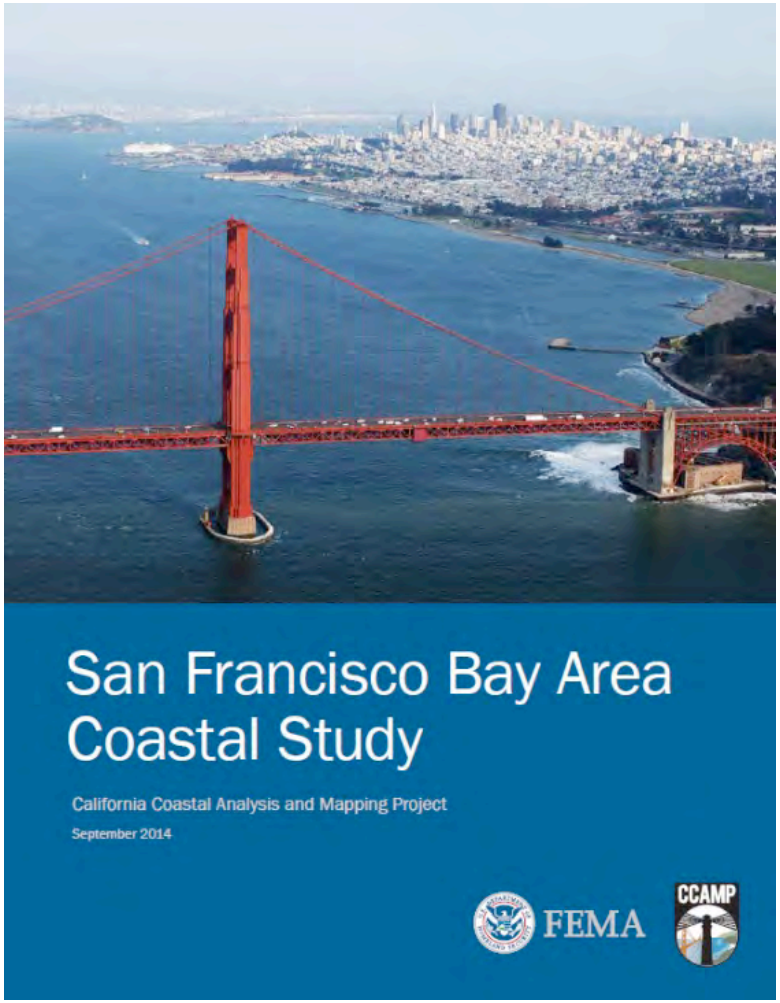
Projection:
Universal Transverse Mercator NAD83 Zone 10N

AECOM bcdc METROPOLITAN TRANSPORTATION COMMISSION

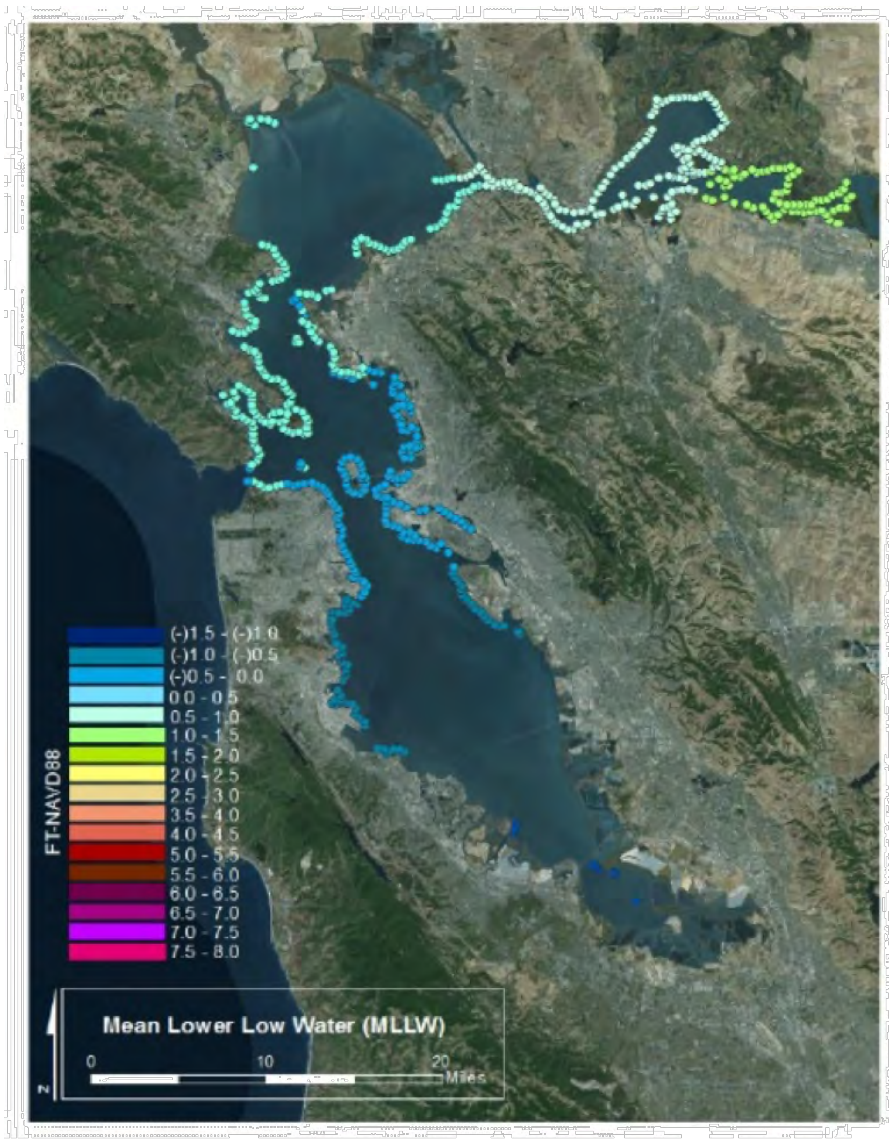
February, 2017

Models and Methods

- MIKE21 Model of San Francisco Bay
  - Tides
  - Ocean-driven swell
  - Wind-wave generation within the Bay
- Continuous modeling
  - 1973 – 2003 (Central & North Bay)
  - 1956 – 2009 (South Bay)
- Calibrated and validated to 11 large storm events



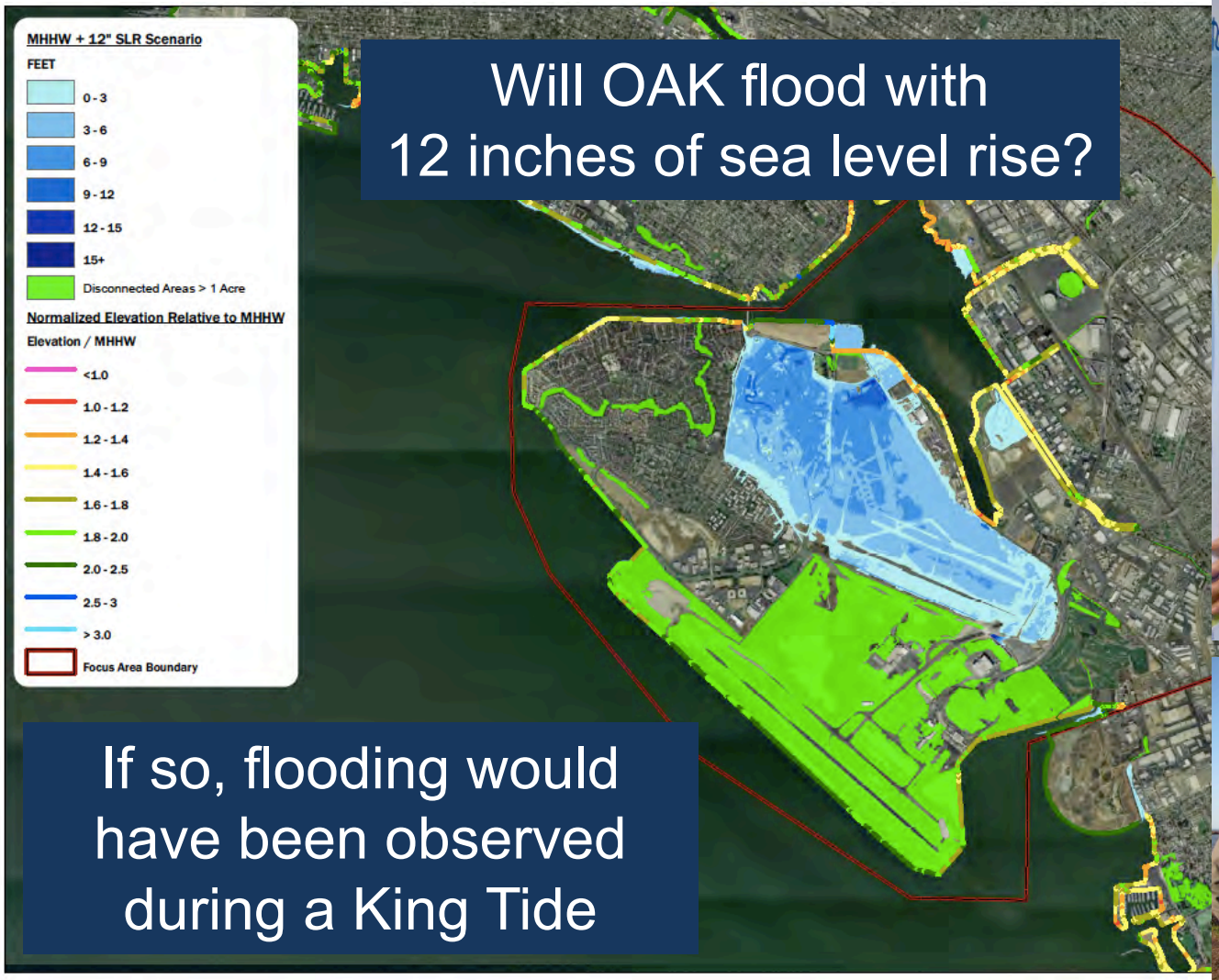
Models and Methods: Tidal Datums



Methods: Terrain

- 2010/2011 LiDAR collected by the USGS and NOAA
- 1-meter bare earth digital elevation model (DEM)
  - Captures most features that provide flood protection features
- Local knowledge from the FEMA Bay Area Coastal Study used to refine DEM to better represent flood protection features
- Stakeholder review and feedback to further refine DEM
  - If an area is displayed as flooded with 12” of SLR, and it has never flooded during a King Tide or storm event, the area is reviewed

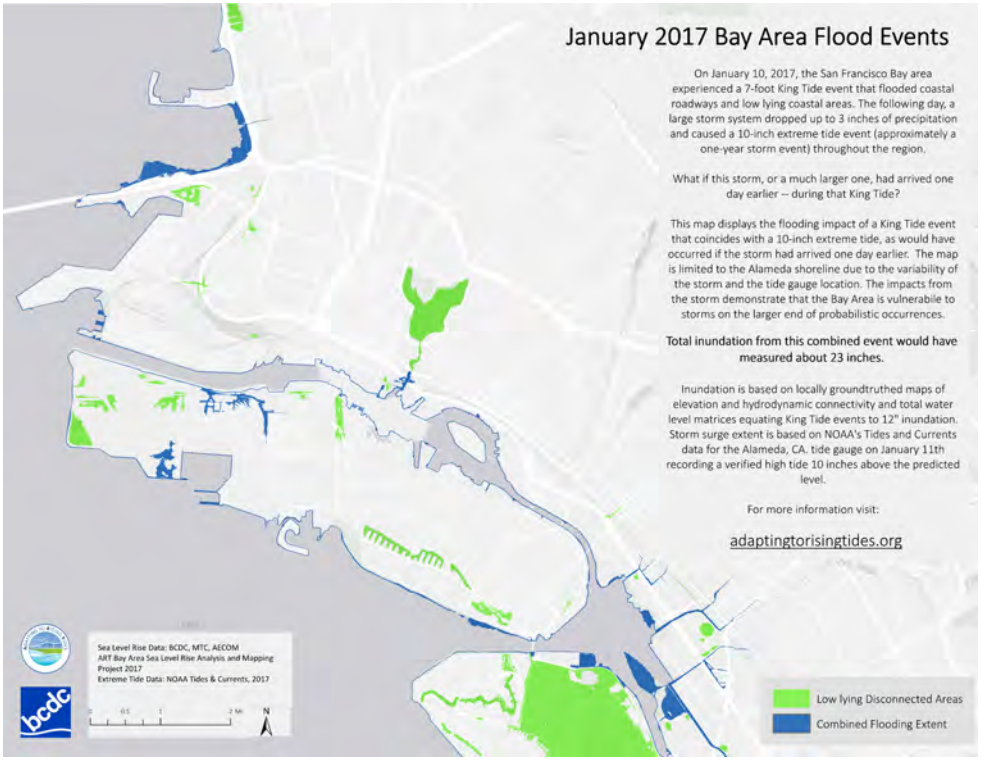
Stakeholder Input is Key!

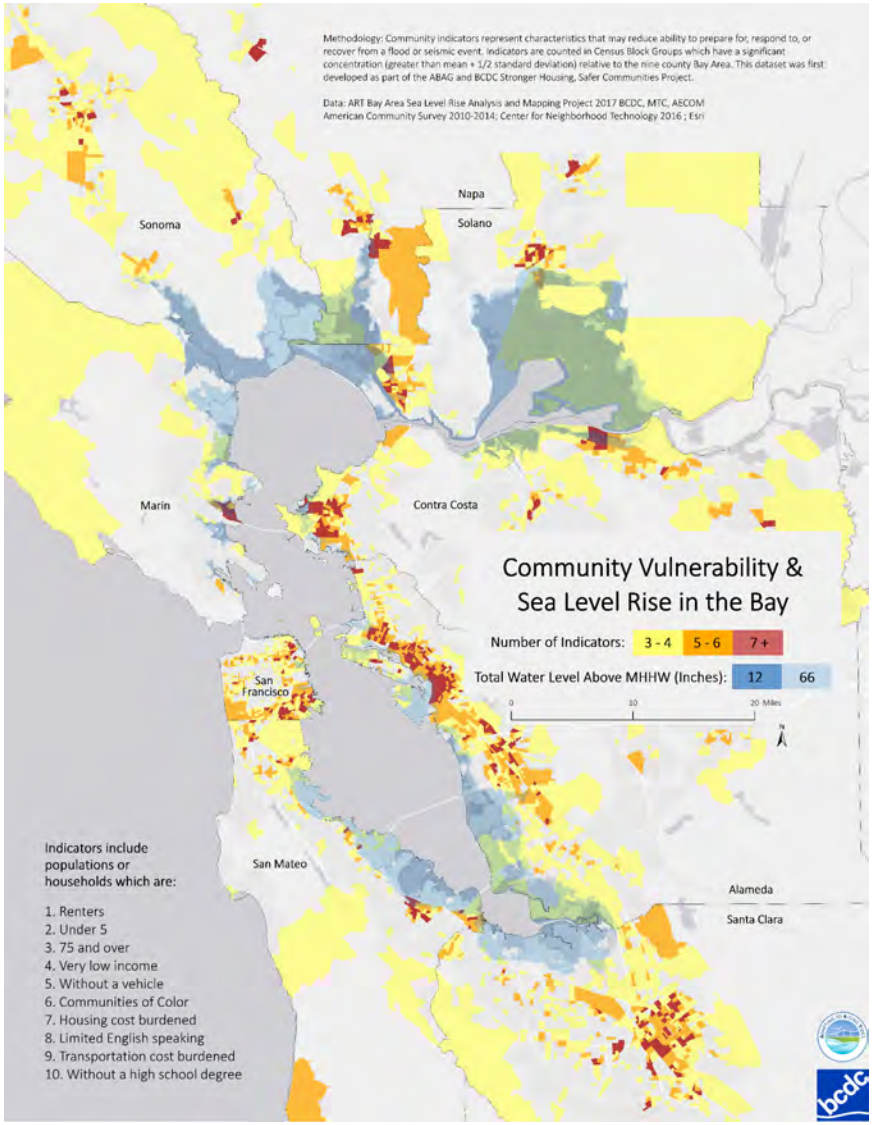


Will OAK flood with
12 inches of sea level rise?

If so, flooding would
have been observed
during a King Tide

When to use the data?





- Support robust, local-scale vulnerability assessments in San Francisco Bay
- Support development of both near-term and long-term adaptation strategies for San Francisco Bay
- Regional scale vulnerability assessments in San Francisco Bay

Where to get the data?

www.adaptingtorisingtides.org

- Geodatabases
- Map books
- Technical documentation
- Example analysis
- Webviewer coming Spring 2018

For more information contact:

eliza.berry@bcdc.ca.gov

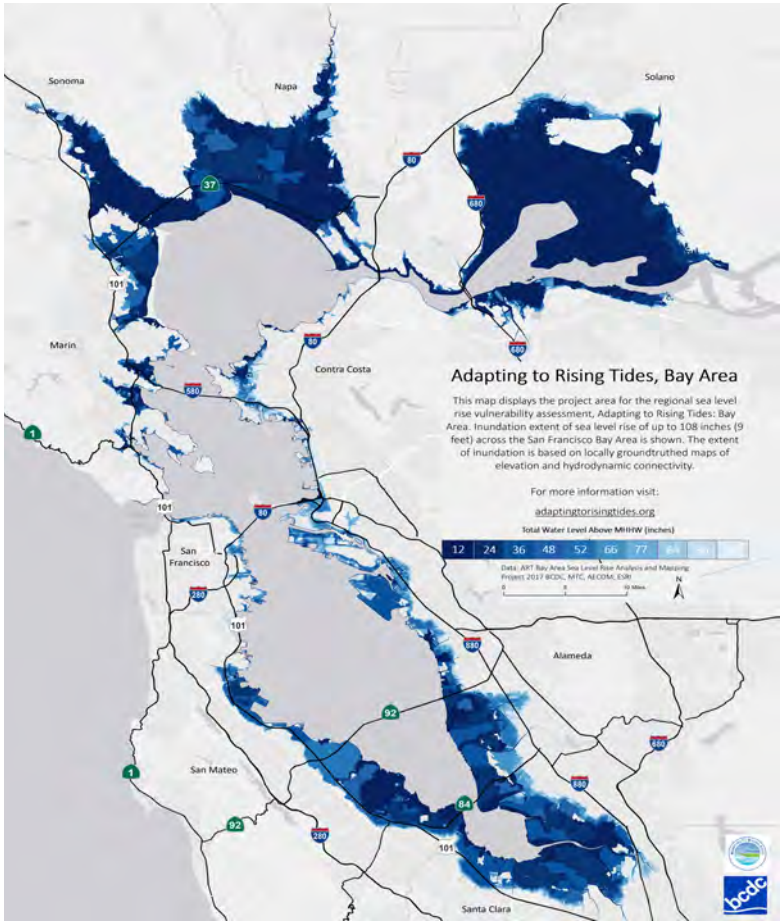
ART Planning Process

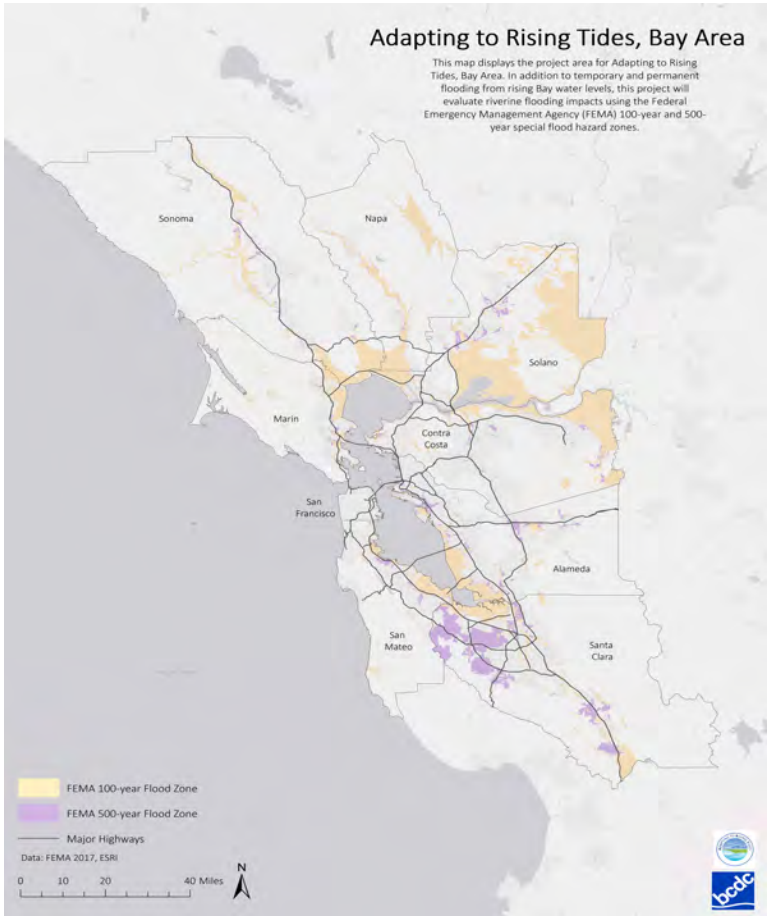
ART Bay Area

Scope and Scale: Project Area

ART Bay Area

At the first RWG meeting, the project area was described as the nine county Bay Area, including both coastal and riverine flooding, with a focus on the bay side





Scope and Scale: Project Team

ART Bay Area

Project Management Team:

Bay Conservation and Development Commission's Adapting to Rising Tides Program team (BCDC ART), Bay Area Regional Collaborative (BARC), Metropolitan Transportation Commission and Caltrans

Consultant Team:

Natural Capital (NatCap), AECOM

Regional Working Group:

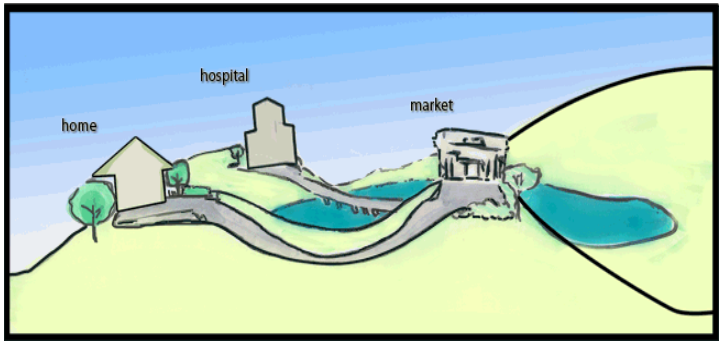
Issue, asset, geographic and community experts and stakeholders who provide guidance, input and contribute to collaborative decision-making throughout the process

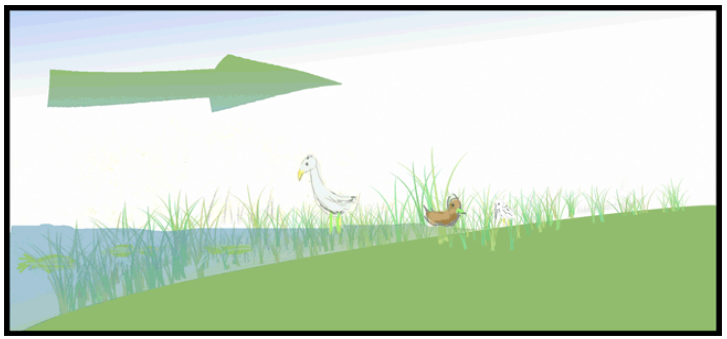
Scope and Organize: Flooding Impacts and Scenarios

ART Bay Area

Impacts from coastal and/or riverine flood events including:

- More frequent flooding of existing flood-prone areas
- Flooding in areas that are not currently at risk
- Elevated groundwater and increased salinity intrusion
- Permanent inundation along the shoreline, in particular tidal wetland systems
- Shoreline erosion and overtopping
- Tidal creek and channel flooding





Scope and Scale: List of Included Assets

ART Bay Area

The ART Bay Area project is a regional scale adaptation planning effort that includes the following assets:

- Transportation assets (bridges, highways, Bay Trail, transit, airports)
- Priority Development Areas and residential areas
- Priority Conservation Areas and natural areas
- Disadvantaged and vulnerable community members

Scope and Scale: Asset List

ART Bay Area

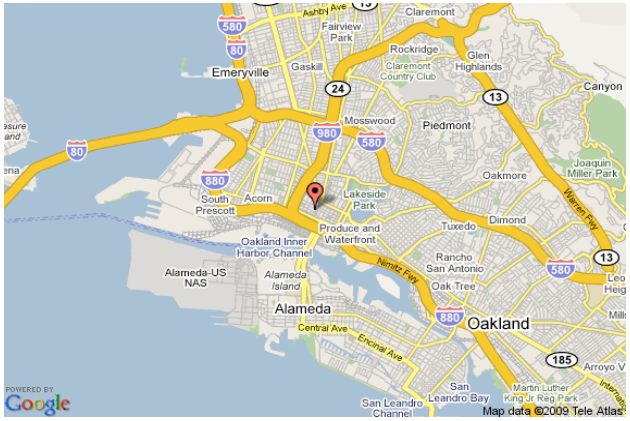
The challenge of the regional scale: Transportation Example

Numerous assets, networked systems and/or limited information

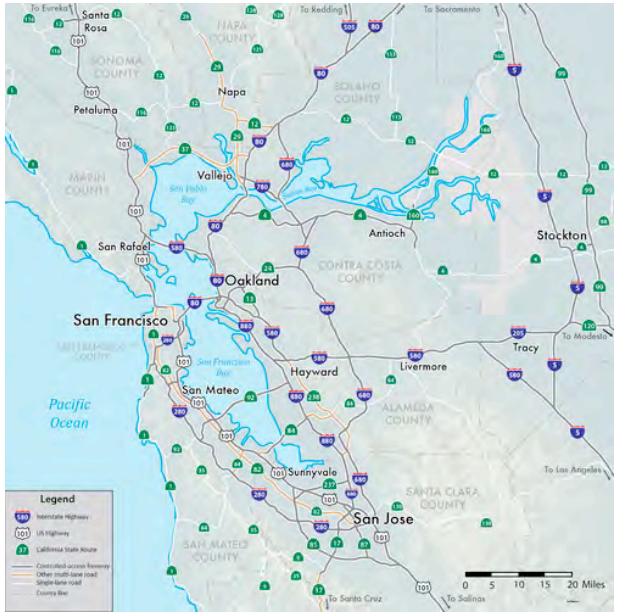
- Major highways (US 101, I-80, I-880, I-580, SR-37, SR-237)
- Airports and Ports
- Toll plazas and bridge approaches
- Rail service (heavy and commuter)
- Transit Services
- Bay Area Rapid Transit
- San Francisco Bay Trail.
- Local Roads

How do we focus on the vulnerable assets that we care most about?

Each city has a lot of assets!



The region is large



ART Planning Process

ART Bay Area

The assessment step helps

What is the Assess Step?

ART Bay Area

The assessment has three parts:

- A step-wise exposure analysis that saves time and resources by pinpointing the most pressing issues and areas to explore further
- Assessment questions that help efficiently gather information needed for action identification
- Review and validation of assessment outcomes by stakeholders, asset managers, local and topical experts

The assess step builds upon the decisions made in scope and organize and is a critical part of the filtering process of what gets carried through to the adaptation responses and prioritizing action phases of the project

ART Assessment Questions

ART Bay Area

Assessment **questions are a tool to efficiently** gather information about vulnerability and risk

- Preliminary answers are gathered using readily available data, reports and studies
- Findings are validated by working group members, topical experts, and those with local knowledge
  - ✓ Written surveys
  - ✓ Individual meetings
  - ✓ Phone interviews
  - ✓ Field visits

ART Assessment Questions: Stormwater/Flood Control Infrastructure
Asset name: Walnut Creek

GOVERNANCE VULNERABILITIES describe challenges with management, regulatory authority, or funding.	
Questions	**Answers (include data sources)**
1. Is the asset managed to achieve multiple goals or objectives e.g., habitat, water quality, flood control, recreation, shoreline access, etc.? If yes, are their conflicts among them?	Yes, flood protection and habitat goals conflict – leaving the habitat in place was not an acceptable maintenance practice in the eyes of USACE, so CCCFC&WCD had to decide whether to a) remove all the vegetation and habitat in the channel to restore it to its 1960s configuration, or b) allow the sediment, vegetation and habitat to remain but be out of conformance with the USACE.
2. If the asset owner and manager are different, what is the relationship between them, e.g., a legal agreement such as a lease, right-of-way, access easement, JPA, MOU or MOA?	NA
3. Describe any plans that are relevant to asset management or improvement, e.g., Master Plan, Capital Improvement Plan, and if/how they consider sea level rise.	CCCFC&WCD has developed a restoration vision to reduce flood risk, accommodate sea level rise, work with nature (to handle sediment loads), improve habitat for all species, and provide more recreational opportunities, and hired ESA PWA to complete the following scope of work to support the project: 1. Data Review/Stakeholder Assessment 2. Feasibility Study (evaluation/selection of Project alternatives based on hydraulic modeling, geomorphic assessment, geotechnical evaluation, biological resources and wetlands review, public access plan, estimated project costs, and more stakeholder engagement 3. Conceptual Design and Project Study (suitable for environmental review under CEQA and NEPA)
4. If the asset is protected from flooding by land or assets owned or managed by others (e.g., natural areas, structural protection, roadways), what is the relationship between the asset owner/manager and these entities? Do they coordinate information, funding or decision-making?	NA
5. What types of permits (and from which agencies) are necessary to maintain, repair or improve the asset? Are there special processes for emergency repairs?	Permits from local, state, and federal agencies are required, e.g., BCDC, RWQCB, CDFW, NMFS, USFWS and USACE, both to complete maintenance dredging and capital projects.

ART Assessment Questions

ART Bay Area

Existing conditions questions describe the asset or asset category and highlight any current conditions or stressors that could affect its vulnerability

Examples

- Where is the asset located?
- Who owns and manages it?
- What are the underlying conditions (seismic vulnerability, lack of funding, displacement, contaminated lands, etc) that are important to consider?

EXISTING CONDITIONS: PDAs

ART Bay Area

- Presence of affordable housing in surrounding area
- Presence of housing and transportation cost burden in surrounding area
- Type of PDA (City center, mixed use corridor, regional center, suburban center, transit neighborhood, transit town center, urban neighborhood) and primary goal (housing, jobs, transit center)
- Surrounding land uses and community facilities

ART Assessment Questions

ART Bay Area

Information questions determine if data or information is lacking, incomplete, poorly coordinated, or difficult to access

Examples

- What types of information sources are publicly available?
- What is the quality of available information?
- What types of mechanisms exist to share information between owners of connected infrastructure?

INFORMATION: State/Interstate Roads

ART Bay Area

- Most Caltrans planning-grade data (e.g., the location of storm drain and bridge crossings) is readily available and can easily be shared
- Caltrans design and survey-grade data (e.g., as-built plans with elevation information) can be challenging to access because they are created and stored on a project-by-project basis
- Caltrans has a searchable repository of records (e.g., as-built and layout plan sheets), however these are shared as PDFs that are not geo-referenced

ART Assessment Questions

ART Bay Area

Governance questions identify challenges with management, regulatory authority, or funding options for adapting to impacts

Examples

- What systems are in place to manage the assets?
- What funding sources exist that can be used for adaptation?
- What types of permits are needed to make changes?

GOVERNANCE: Communities

ART Bay Area

- What capacity do the non-profits, faith-based and community based organizations in the project area have to actively participate in adaptation planning? What processes are in place for the local jurisdiction and these groups to engage in existing planning and decision making?

- If the community is protected from flooding by land or assets owned or managed by others (e.g., structural protection, roadways, rail embankments), what is the relationship between the asset owner/manager and these entities? Do they coordinate information, funding or decision-making?

- Local plans (General Plans, Hazard Mitigation Plans, etc.) that are in process, or soon to be in process, of updating?

ART Assessment Questions

ART Bay Area

Functional questions consider the function of the assets and their relationship to or dependence on other assets

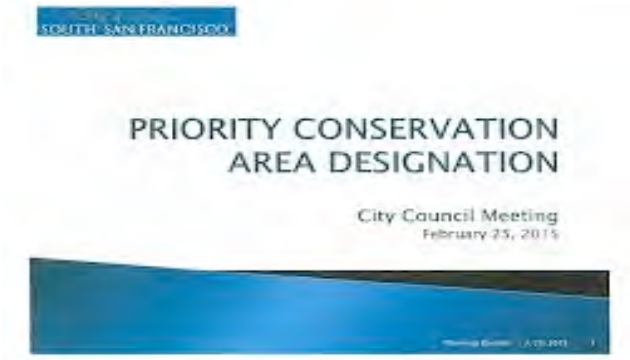
Examples

- Does the asset provide functions or services that are limited?
- What services does the asset rely on?
- Is it physically connected to other assets such that failure in one part of the system disrupts the entire system?

FUNCTIONAL: PCAs

ART Bay Area

- Does the PCA provide or protect habitat for threatened or endangered species?
- Would disruption from flooding potentially impact the open space/wildlife/habitat network's ability to function?
- Does the PCA provide recreational opportunities that are unique or limited in the area and/or region, e.g., access for persons with limited mobility, interpretive programs, access to the Bay, etc.? Could functions be easily replaced in other areas?



ART Assessment Questions

ART Bay Area

Physical questions identify conditions or design aspects that make an asset particular vulnerable

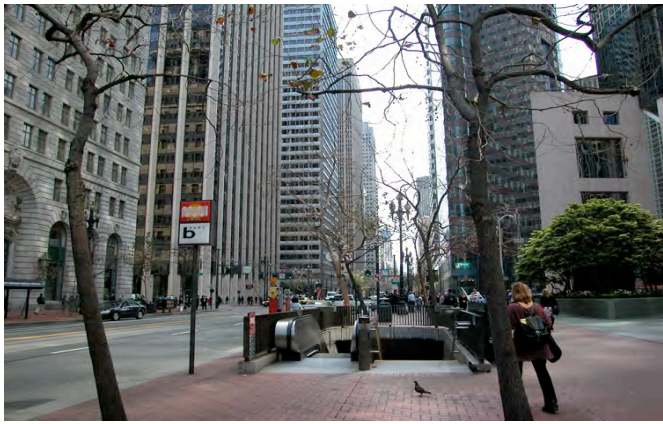
Examples

- To what extent is the asset exposed to tidal, wind or wave erosion or scour?
- Does the asset have openings are at-grade or below-grade that are entry points for flooding? Are there pumps or other systems in place to remove floodwaters?
- What water- or salt-sensitive components of the asset are located at- or below-grade?

PHYSICAL: Transportation

ART Bay Area

- Does the asset have openings are at-grade or below-grade that are entry points for flooding, e.g., entryways, tubes, tunnels, ventilation grates?
- Has the asset been impacted by flooding from storm surge or large rain events? What components were impacted? How? (e.g. flooding of components, groundwater intrusion)
- Was the asset designed to be exposed to salt water? For what period of time?



ART Assessment Questions

ART Bay Area

Consequences questions informs how climate change may impact society and equity, the economy and environment.

Examples

- How would the community, particularly at-risk members, be affected by damage, disruption, or loss of asset function?
- What critical emergency services would be affected if the asset was damaged, disrupted or failed?
- If the asset was damaged, disrupted or failed would there be a loss of public access, recreational, educational or interpretation?

CONSEQUENCES: PCAs

ART Bay Area

- Are any of the vulnerable habitats scarce in the region? Could the habitat be established in other areas?
- What would consequences to ecological services be if the PCA habitat is damaged or lost (e.g. habitat or species benefits, public access to the shoreline, or water quality)? What would the effect of this loss be locally? Regionally?
- Are the surrounding communities/users of the PCA underserved in terms of open space/green/recreational areas? How would the potential disruption or loss affect the PCA users and stakeholders?

HEALTHY PARKS HEALTHY PEOPLE BAY AREA

Preliminary Assessment Answers

ART Bay Area

ART staff has begun to compile preliminary assessment information

- Using readily available data, maps, studies
- By contacting working group members for additional information

Examples Information Sources

Integrated Regional Water Management Plan
CA Department of Transportation
California Energy Commission
California Public Utilities Commission
County and city plans (General Plans, Capitol Plans, Emergency Operations Plans, Zoning Code, Climate Action, Vulnerability Assessments)
County and city special studies
County Tax Assessor Parcel Data
Local Agency Formation Commission
MTC TeleAtlas
National Pipeline Mapping System
PG&E
Plan Bay Area's Sustainable Community Strategy
Regional Housing Needs Assessment
State Employment Statistics
State Water Resources Control Board Geotracker
U.S. Census / American Community Survey
Urban Water Management Plans
US EPA Envirofacts

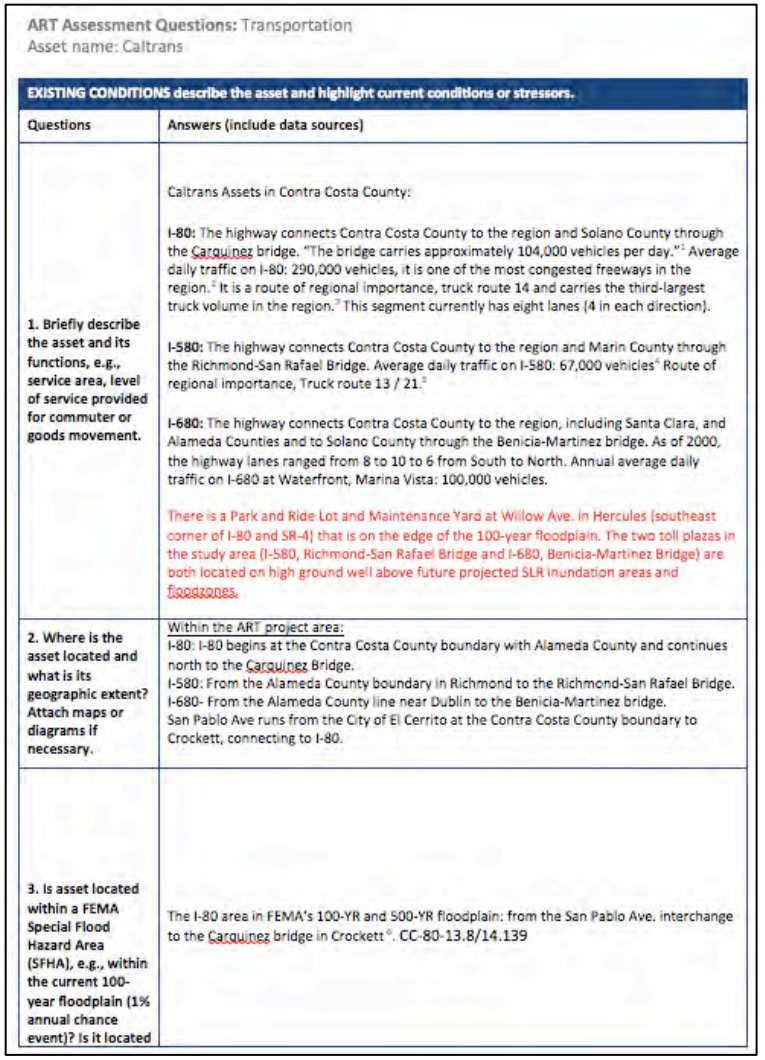
Working Group Review and Input

ART Bay Area

Answers to the assessment questions will be ready for working group review and input

Draft profile sheets that summarize the assessment findings will be ready for working group feedback at the next RWG meeting

All materials communicating the assessment outcomes will be available for working group review before they are finalized



ART Assessment Questions: Transportation
Asset name: Caltrans

EXISTING CONDITIONS describe the asset and highlight current conditions or stressors.	
Questions	**Answers (include data sources)**
1. Briefly describe the asset and its functions, e.g., service area, level of service provided for commuter or goods movement.	Caltrans Assets in Contra Costa County: **I-80:** The highway connects Contra Costa County to the region and Solano County through the Carquinez bridge. "The bridge carries approximately 104,000 vehicles per day."[1] Average daily traffic on I-80: 290,000 vehicles, it is one of the most congested freeways in the region.[2] It is a route of regional importance, truck route 14 and carries the third-largest truck volume in the region.[3] This segment currently has eight lanes (4 in each direction). **I-580:** The highway connects Contra Costa County to the region and Marin County through the Richmond-San Rafael Bridge. Average daily traffic on I-580: 67,000 vehicles[4] Route of regional importance, Truck route 13 / 21.[5] **I-680:** The highway connects Contra Costa County to the region, including Santa Clara, and Alameda Counties and to Solano County through the Benicia-Martinez bridge. As of 2000, the highway lanes ranged from 8 to 10 to 6 from South to North. Annual average daily traffic on I-680 at Waterfront, Marina Vista: 100,000 vehicles. There is a Park and Ride Lot and Maintenance Yard at Willow Ave. in Hercules (southeast corner of I-80 and SR-4) that is on the edge of the 100-year floodplain. The two toll plazas in the study area (I-580, Richmond-San Rafael Bridge and I-680, Benicia-Martinez Bridge) are both located on high ground well above future projected SLR inundation areas and floodzones.
2. Where is the asset located and what is its geographic extent? Attach maps or diagrams if necessary.	Within the ART project area: I-80: I-80 begins at the Contra Costa County boundary with Alameda County and continues north to the Carquinez Bridge. I-580: From the Alameda County boundary in Richmond to the Richmond-San Rafael Bridge. I-680- From the Alameda County line near Dublin to the Benicia-Martinez bridge. San Pablo Ave runs from the City of El Cerrito at the Contra Costa County boundary to Crockett, connecting to I-80.
3. Is asset located within a FEMA Special Flood Hazard Area (SFHA), e.g., within the current 100-year floodplain (1% annual chance event)? Is it located	The I-80 area in FEMA's 100-YR and 500-YR floodplain: from the San Pablo Ave. interchange to the Carquinez bridge in Crockett[6]. CC-80-13.8/14.139

Asset List Revisited

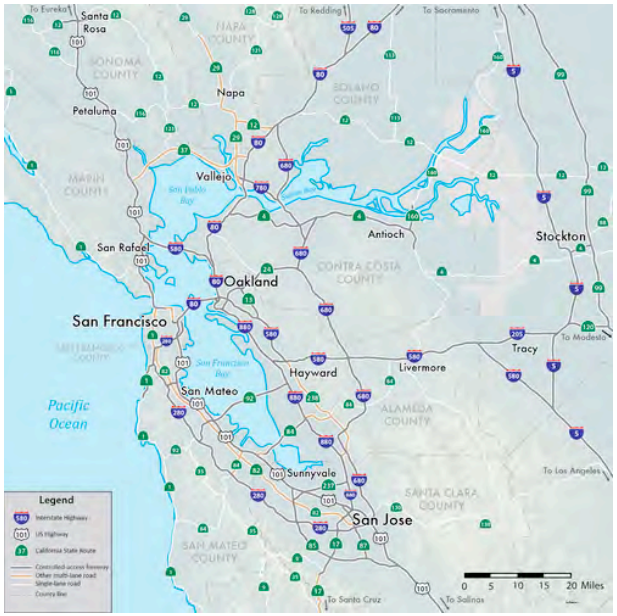
ART Bay Area

While the assessment step will help us identify the vulnerable assets, we return to the initial problem: the region is big and the assets and assessment questions are numerous.

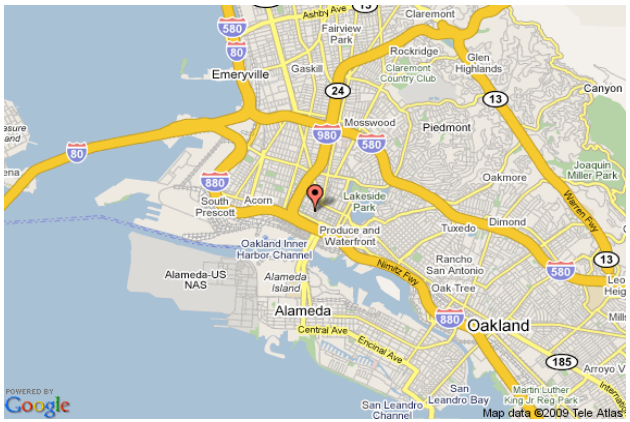
Proposal:

- Evaluate and use completed assessments
- Short list of assessment questions that will build toward indicators
- RWG participation in assisting in the development of indicators

The region is large



Each city has a lot of assets!



- Use indicators to assess at regional scale
- Deeper assessment conducted with selected assets

Understanding Vulnerabilities and Dependencies

- Identify the relationships and connections among assets
- Explore the vulnerabilities of assets, particularly those related to asset function and connections
- Discuss the consequences of the vulnerabilities and how they affect different assets, sectors, and scales
- Provide input on most important characteristics (indicators) to consider during the assessment

Engagement Exercise Report Back

- Did your table uncover any surprising relationships or dependencies?
- Were the dependencies and relationships among the assets included in the project identified and highlighted at all? Where there critical assets that are not part of the project that people feel need to be considered?
- Which three to five characteristics were identified by your table that the ART team and the PMT should consider highlighting in the short list of assessment questions? As indicators?

Next Steps

ART Bay Area

ART Bay Area Regional Working Group Meeting #3

- Sign up to assist with Communications Advisory Committee
- Your input on project resilience goals
- Asset owner, manager or topical expert meetings, interviews to gain input and review of assessments and potential indicators
- Visit the project webpage!
- Next meeting: Middle of January