

Marin County Sea Level Rise Adaptation Workshop:

SLR Mavericks

Mill Valley Community Center
180 Camino Alto, Mill Valley
Thursday, March 21st, 2019
9:30 a.m. to 4:00 p.m.

I.9:30-10:00 Sign in and refreshments

Refreshments generously provided by Good Earth Natural Foods

II.10:00-10:15 Welcome and overview/ Mill Valley Mayor Stephanie Moulton-Peters and Marin County Supervisor Kate Sears

III.10:15-10:20 Sea level rise and adaptation / Chris Choo, Marin County DPW

IV.10:20-11:15 Adaptation projects / Marilyn Latta, State Coastal Conservancy (SCC)

10:20-10:35 Deer Island and Richardson Bay beach projects / Roger Leventhal, Marin County DPW

10:35-10:45 Tiscornia Marsh and Marin Audubon projects / Barbara Salzman, Marin Audubon

10:45-10:55 Corte Madera Climate Adaptation Plan / RJ Suokko, Corte Madera DPW

10:55 – 11:05 McInnis Marsh Restoration / James Raives, Marin County Parks

11:05-11:15 San Francisco Bay Living Shoreline / Marilyn Latta, SCC

V.11:15-11:30 Break

VI.11:30-12:05 Regional and local adaptation tools and funding / Matt Gerhart, SCC

11:30-11:40 Baylands and Subtidal Goals / Matt Gerhart, SCC

11:40-12:00 Marin Adaptation Framework / Julie Beagle and Maya Hayden, SFEI and Point Blue Conservation Science

12:00-12:05 Question and answer

VII.12:05-12:30 Funding Opportunities / Matt Gerhart, SCC

12:05-12:15 MCF/SCC Nature-based, SCC Props 1 and 68, SFBRA Measure AA, SCC Climate Ready and other State Coastal Conservancy climate-related grants / Matt Gerhart, SCC

12:15-12:30 Brainstorming and partnerships for future grants (entire group)

VIII.12:30-1:30 LUNCH generously provided by the Marin Community Foundation and catered by Comforts (vegetarian, vegan options available)

IX.1:30-3:40 Adaptation projects / Chris Choo, Marin County and Kelly Malinowski, SCC

- 1:30-1:40 San Rafael Resilient by Design / Sarah Moos Thompson, Bionic
- 1:40-1:50 Bolinas Lagoon / Kate Bimrose and Wendy Kordesch, Greater Farallones Association
- 1:50-2:00 New Life for Eroding Shorelines / Kathy Boyer, San Francisco State University's Estuary and Ocean Science Center
- 2:00-2:05 Dunphy Park / Terri Thomas, Conservation Corps North Bay
- 2:05-2:10 Highway 37 / Dan Dawson and Robert Stevens, Marin County and CSW/Stuber-Stroeh
- 2:10-2:15 Corte Madera Creek / Sandy Guldman, Friends of Corte Madera Creek Watershed
- 2:15-2:20 Marin Health and Human Services / Matt Willis, Marin County HHS
- 2:20-2:25 Miller Ave, Mill Valley/ John Gibbs, WRT
- 2:25-2:30 Santa Venetia Levee / Gerhard Epke, Marin County DPW
- 2:30-2:35 Tam Valley Adaptation Planning / Chris Choo, Marin County DPW

2:35p-2:40 BREAK

- 2:40-2:50 Bothin Marsh / Veronica Pearson, Claire Mooney, Rob LaPorte, Marin County Parks and Golden Gate National Parks Conservancy
- 2:50-2:55 Coyote Creek / Scott McMorrow, Marin County DPW
- 2:55-3:05 Students and Teachers Restoring A Watershed (STRAW) / Lorette Rogers, Point Blue
- 3:05-3:15 Stinson and Tomales Bay living shorelines / Alex Westhoff, Marin County Community Development Agency
- 3:15-3:20 California State Parks / Cyndy Shafer, CA State Parks
- 3:20-3:25 San Rafael General Plan Update: adaptation elements/ Barry Miller, San Rafael
- 3:25-3:35 Estuary and Ocean Science Center Adaptation / Karina Neilsen, San Francisco State University and ESA
- 3:35-3:45 Belvedere Seawall Repair and Novato Creek Gages / Kyle MacDonald and Carey Parent, Foth CLE Engineering
- 3:45-3:55 Lower Corte Madera Creek / Hugh Davis, Marin County DPW

XIII. 3:55-4:00 Next steps and closing / Chris Choo, Marin County DPW

Break out rooms are available for conversations, follow up discussion, and new project development.

- Tamalpais Room until 12:30 p.m. (upstairs)
- Forest Room from 12:45 p.m. until 3:15 p.m.

Highlights from the
Marin County Sea Level Rise Adaptation Workshop: SLR Mavericks
Mill Valley Community Center (180 Camino Alto, Mill Valley)
March 21, 2019; 9:30am - 4:00pm

Shalini Kannan and Linda Tong, California State Coastal Conservancy

10:00 – 10:20 Introductions

Kate Sears, Marin County Supervisor

- \$450 billion for SLR in Bay Area
- Hwy 37 levee break & flooding, fixed by Caltrans in 2018
- Everything we plan & build today shouldn't close any doors for tomorrow – thinking about adaptation and resilience
- “The Climate is Changing – why aren't we?” “The sea is rising, but so are we” – favorite signs from youth climate march

Chris Choo, Marin County DPW

- According to 2017 SLR assessments, Marin is very vulnerable!
- Current flooding in areas that were historically in the Bay – so much development out into the water
- “SLR Mavericks” → this is a new frontier we are working on to do better in building resilience
- Need for collaboration; no one agency/ jurisdiction in charge of solving this problem

10:20 – 11:15 Adaptation Projects

Roger Leventhal, Marin County DPW

“The Whirlwind Whiplash Tour of 6 Marin SLR Innovative Projects”

- Deer Island Tidal Wetlands Restoration Project, Novato Baylands
 - Tidal amplification – harnessing ability of increased tidal flow to move sediment and widen/deepen creek channel
- Dredge sediment beneficial reuse to sustain marsh & for construction of ecotone levees
 - First project in the Bay to use thin-lift dredge
 - Feasibility study done for Coyote Creek to Bothin Marsh
- MCF Bay Breach “Living Shorelines” Design grant
 - We need more living shorelines projects in the Bay, much more common on East Coast
 - Blackie's Pasture Beach, Paradise Beach & Seminary Road sites – different wave energy & material profiles, will require different design elements
 - Intention to create “Bay Beach Design Manual” by installing sensors and modeling waves; using data to create proof of concept from these pilot designs for wider adoption
- Marin hydrology – there are/ will be specific regional effects of climate change, and there is a need to better quantify/ plan for them.
 - Currently using Contra Costa County formula to predict flooding, but it's more conservative than the realities exhibited in Marin

Barbara Salzman, Marin Audubon

Wetland Restoration Design for Sea Level Rise

- Tiscornia marsh project with ESA, applied for AA funds
 - Located in largest multicultural community in the county

- Corte Madera – grade and fill, ecotone levees. Site for endangered birds
- Bahia – ecotone levees with dredge reuse

RJ Suokko, Corte Madera DPW

Corte Madera Climate Adaptation Plan

- Corte Madera used to be a lot of marsh, 1/3 of town in FEMA flood zone
- Project goal: 30-50 year road map to become a resilient and 'climate ready' town
- Should complete plan by 2020 and update every 5 years
- Need to consider physical consequences as well as emotional/ social implications
- CAP Cost Estimates – opportunities for collaboration for funding

James Raives, Marin County Parks

McInnis Marsh Restoration Project

- Diked tidelands on East side of McInnis Park, along Bay Trail; plan to breach dikes to reconnect to two channels and restore estuary ecosystem.
 - Might improve steelhead productivity
- Feasibility study complete, now on design & comments phase

Marilyn Latta, State Coastal Conservancy (SCC)

San Francisco Bay Living Shoreline

- Oyster & eelgrass beds on San Rafael's coast
- Hard infrastructure & nature-based infrastructure both have their purposes, but they wanted to test nature-based systems in this context
- Key fish & wildlife in submerged areas to preserve (both subtidal & intertidal)
- Parcel ownership is a challenge for restoration projects – complex patchwork of private & public lands
- Installed patches of Olympia oysters & eelgrass, in combination & separate
 - Tested various oyster settlement substrates – shell bags, shell mounds, "baycrete" structures
- Intensive monitoring to show proof of concept
 - Results show increase in biodiversity, decrease in wave energy
- Living seawalls can also be developed – Seattle as an example

11:30 – 12:05 Regional & Local Adaptation Tools & Funding

Matt Gerhart, SCC

Baylands and Subtidal Goals

- Historic loss of marshes, very developed coastlines
- We have almost as much shoreline in the Bay as the whole CA coast!
- Plan for projects that adapt
 - It's the 'applied research era' – need to fund applied research early on to prepare for big construction funding
 - Vertical integration of coastal restoration accommodates for rising sea levels too – plan for baylands to migrate
 - How can sediment move in our system in a sustainable way?

Julie Beagle & Maya Hayden, SFEI & Point Blue Conservation Science

- Challenge transitioning from vulnerability assessments → adaptation strategies & action

- What nature based strategies are viable? Mapping suitability of nature-based interventions in different physical areas.
 - Need for a more useful scale, because SLR knows no boundaries → introducing, Operational Landscape Units (OLU)
 - Consider them “nature’s jurisdictions”
 - Areas with shared geophysical & land use characteristics suited for a particular suite of nature-based measures. Smaller than county lines.
 - Based on OLU characteristics, create an opportunity map (not a plan!)
- Process:
 - 1. Assess vulnerability
 - 2. Check suitability
 - 3. Goals & objectives – envision desired futures (stakeholder process)
 - 4. Adaptation strategies – need to plan and time strategies to achieve long-term objectives
 - 5. Evaluate & prioritize strategies – visualize & compare tradeoffs
 - Nature-based interventions have additional ecosystem services – can be indicated/ quantified (with more than just \$)

12:05 – 12:30 Funding Opportunities

Matt Gerhart, SCC

MCF/ SCC Nature-based, SCC Props 1 and 68, SFBRA Measure AA, SCC Climate Ready and other State Coastal Conservancy climate-related grants

- MCF & SCC Nature-based – pilot/ test type projects, this round due April 1
- SF Bay Restoration Authority – natural flood protection & shoreline public access folded into water quality & fish/ wildlife restoration projects
- Prop 1 – “water resources bond” many other agencies award funds, but SCC can connect
- Prop 68 – “parks bond” SF Bay Climate Adaptation
- Interested? Encouraged to talk to SCC staff before applying

Brainstorming & partnerships for future grants (group discussion)

- UC Davis Center for SLR/ Climate Adaptation to work in the Bay – reach out for interest in collaboration
- How to implement OLUs & any funding incentives?
 - SFEI to publish report in next few weeks as starting point
- Question about getting state lands for restoration
 - Usually only for commercial/ consumptive purposes on a pricey 20 year lease. But there are exceptions and it has been done

1:30 – 3:40 Adaptation Projects

Sarah Moos Thompson, Bionic

San Rafael Resilient by Design

- Help lowest laying areas that need it the most first
- Major flood risk due to subsidence
- Instead of “Life vs. Bay” need to think and create in terms of “Life with Bay”
- Community brainstorming/ engagement component – “Flow mobile” for mobile engagement

- “Catalyst projects” to elevate city’s resilience
 - Pickleweed park w/ pump system
 - Floating wetlands in canal
 - These projects can ‘buy more time’

Kate Bimrose, Greater Farallones Association

South End Living Shorelines Project

- Locally preferred plan created in 2008 for Bolinas Lagoon
 - Hybrid green/gray project to build up wetland area & reduce flooding on Calle del Arroyo

Kathy Boyer, San Francisco State University’s Estuary and Ocean Science Center

New Life for Eroding Shorelines

- Sediment deficit
- Muzzi marsh – sediment erosion on shoreline
 - Coarse sediment placement – like beach sand, dissipates wave energy
 - Traditional in Bay shoreline construction -sand, gravel, crushed shells
 - High tide refuge
 - Like islands, marsh mounds
 - Some vegetation doesn’t do well in drought years, but pickleweed does and it climbs
 - Seablite also climbs; extinct but native to SF Bay

Terri Thomas, Conservation Corps North Bay

Dunphy Park Nature-based Wave Attenuator

- Looking underwater to see how to build natural infrastructure
- Eelgrass and oyster beds proposed, sheet pile breakwater

Dan Dawson & Robert Stevens, Marin County and CSW/Stuber-Stroeh

Highway 37

- Elevation issues & flooding. Currently looking over data, this phase should be done early 2020
- Focus has been on raising Hwy but not looking at other possible synergies

Sandy Goldman, Friends of Corte Madera Creek Watershed

- Responding to SLR in Corte Madera creek
 - Removing concrete channel
 - Success of invasive spartina grass removal project

Kathy Koblick, Marin County Health and Human Services (HHS)

Marin Health and Human Services

- Upstream prevention for health
- Monitor health status of this community so they can mitigate when needed
- Many health impacts related to a warming planet – food insecurity, air quality, fires, extreme weather (especially for homeless who need shelter)

John Gibbs, WRT

Miller Ave, Mill Valley

- Complete street project incorporating SLR adaptation

Gerhard Epke, Marin County DPW

Santa Venetia Levee

- Flood Control zone #7
- Timber reinforced berm – in view of houses, no ugly wall

Veronica Pearson, Claire Mooney, Rob LaPorte, Marin County Parks & Golden Gate National Parks Conservancy

Bothin Marsh

- Motivation: need to replace bridges. Complete inundation of marshes – loss of high tide marsh
- Importance & high use of spot – need for community involvement
 - 2 day workshop with stakeholders
 - Scavenger hunt for kids and parents
 - Museum exhibit
 - One Tam Van
 - Kayak tours (where bikers on flooding path are at level w kayakers in the water)

Scott McMorrow, Marin County DPW

Coyote Creek – SLR Adaptation Green vs Gray

- We'll need a mix – green + gray = “sage”

Laurette Rogers, Point Blue

Students & Teachers Restoring a Watershed (STRAW)

- Climate smart ecological restoration
- Focus on marsh/ upland transition zone (T zone)
 - Restoring for habitat at first, but added benefits of resiliency with SLR
- Diversifying plant palette – based on salt tolerance, range of flowering season, rhizomatous characteristics

Alex Westhoff, Marin County Community Development Agency

Stinson & Tomales Bay living shorelines

- Stinson beach dune restoration & Tomales bay living shorelines feasibility studies underway currently

Cyndy Shafer, CA State Parks

CA State Parks - Sea level Rise in Marin Parks

- Tomales bay – beach flooding during King tides
- China Camp State Park – during Kind tides, water comes up to historic fishing village
- Angel Island – historic sea walls failing
- State Parks manages ¼ of CA coastlines
- New coastal program in Sacramento

Barry Miller, San Rafael

San Rafael General Plan Update: Adaptation Elements

- Most cities in CA & Bay know that SLR is an issue but aren't dealing with it, some don' have local coastal plans.

Karina Nielson, SFSU & ESA

Estuary and Ocean Science Center Adaptation

- Nature-based adaptations for Tiburon campus on the coast
- Using a nearby rocky beach to study what restoration could look like
- Education component with undergrad and grad students

Kyle MacDonald & Jimmy Kulpa, Foth CLE Engineering

Belvedere Seawall Repair & Novato Creek Gauges

- Pumps for flood control installed. Adaptable to sea level rise as vault height can be increased
- Rain gauges measured big storms this year
 - Bathymetric mapping
 - Sub-bottom profiling to track change

Hugh Davis, Marin County DPW

Lower Corte Madera Creek

- Ross Valley Flood Protection & Watershed program
- Geomorphic dredging