

# Working the One Water Future



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Director of Water Resources, San Francisco Public Utilities Commission



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Water Resource Expert, San Francisco Public Utilities Commission



**Barbara Keegan**

Director, Santa Clara Valley Water District



**Afshin Rouhani**

Engineering Unit Manager, Santa Clara Valley Water District



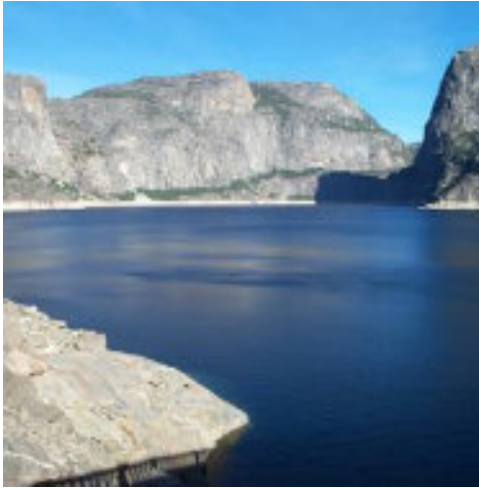
**Moderator: Robert Whitley**

PE, Principal, West Yost Associate

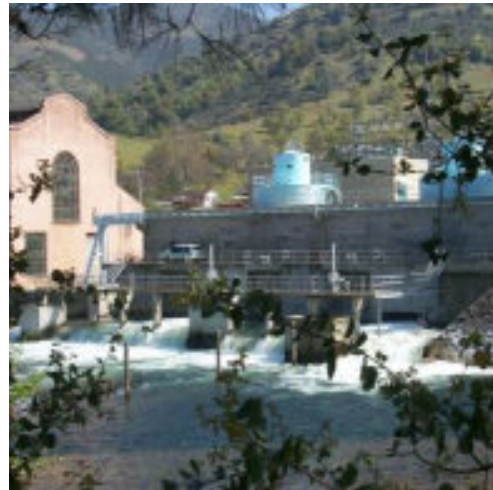
# OneWaterSF

**Paula Kehoe**  
**Director of Water Resources**  
**San Francisco Public Utilities Commission**  
**May 29, 2019**

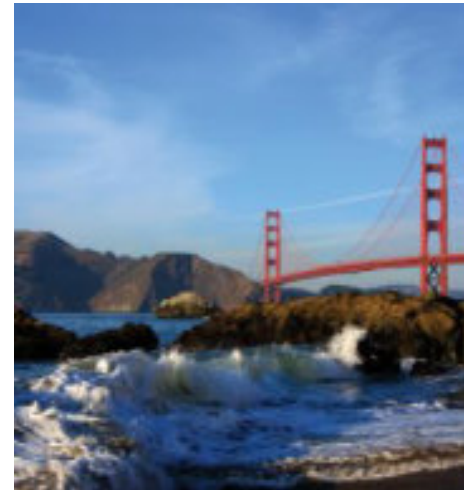




Water: delivering high quality water every day to 2.7 million people

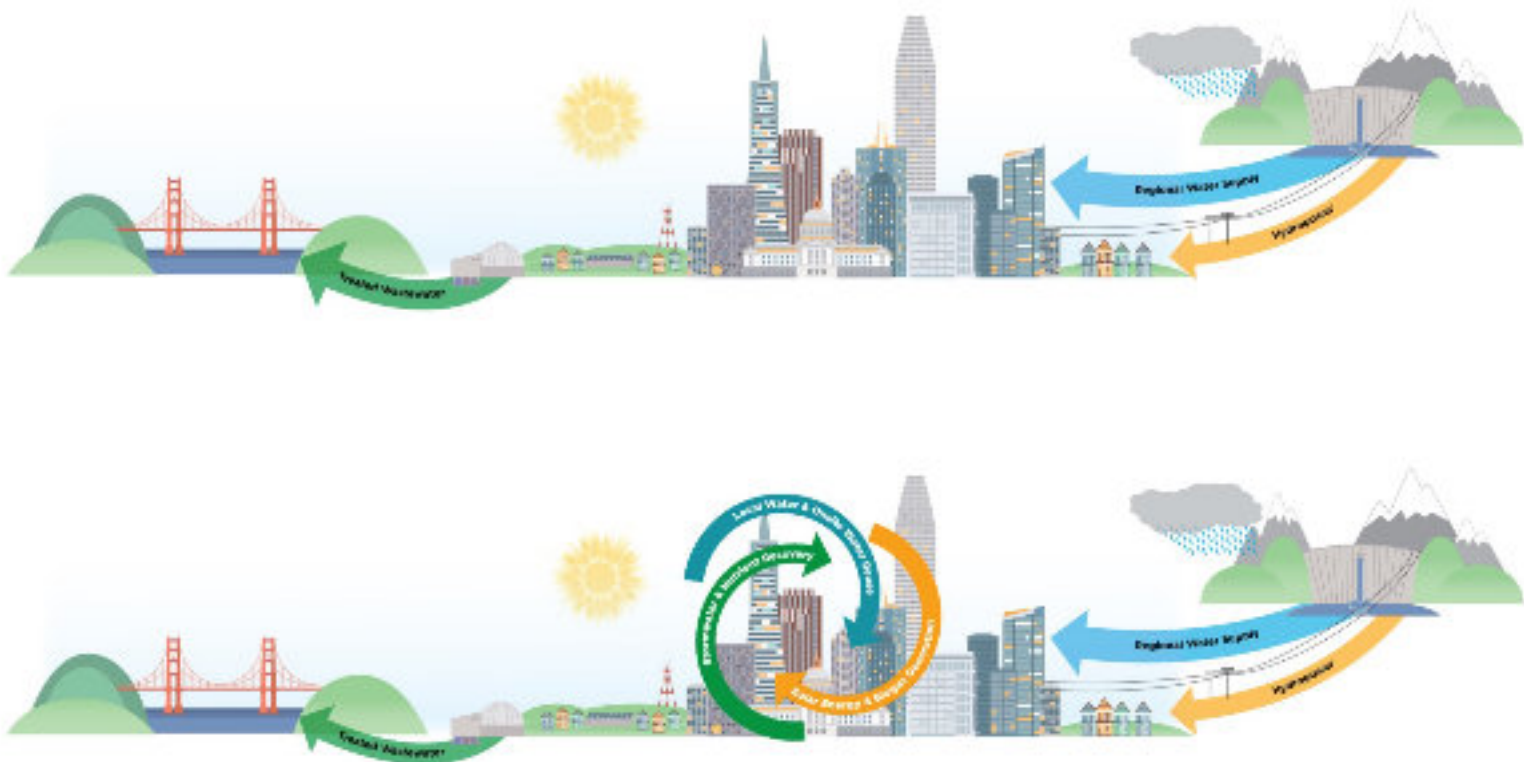


Power: generating hydropower and solar power



Wastewater: protecting public health and the environment

# Moving Away from a Linear Approach to Integrated Planning and Implementation



- Provides greater resilience and reliability
- Opportunities to optimize water and wastewater infrastructure
- Addresses climate change, water shortages, water quality protection, and aging infrastructure challenges
- Encourages programs and projects that provide multiple benefits





# San Francisco's Local Water Program

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**HETCH HETCHY**  
**+ LOCAL WATER**  
**Better together.**

Conservation  
Groundwater  
Recycled Water  
Onsite Water Reuse  
Innovations Program

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San Francisco knows the importance of diversifying our water portfolio...  
To ensure reliability—particularly in the age of climate change—we need  
to use every water resource available.

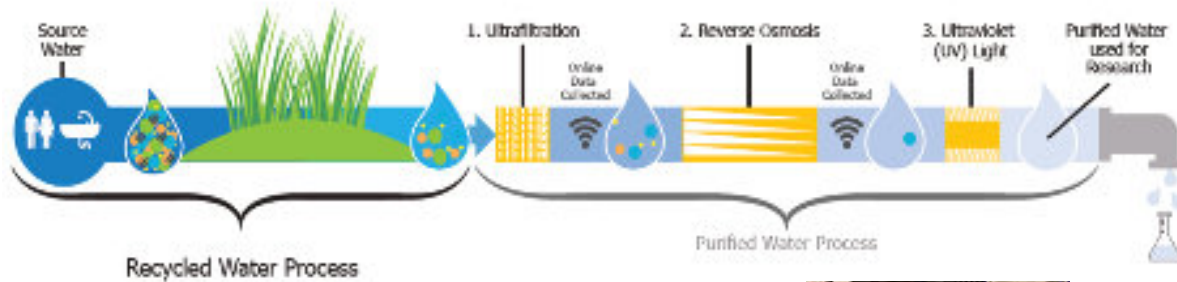
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*Harlan L. Kelly, Jr., SFPUC General Manager*

# New Technologies to Detect Leaks





Recycled Water Process

Purified Water Process





# Brewery Process Water Reuse



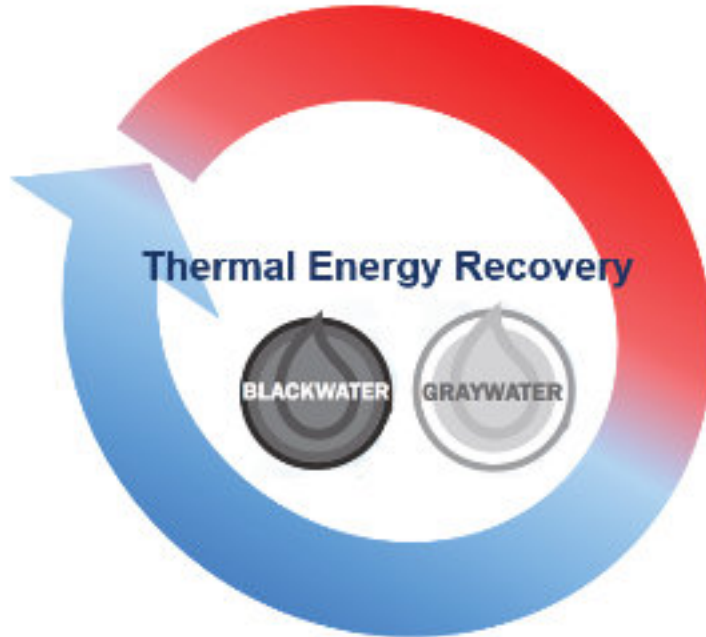
Source: Water & Wastes Digest, 2018

# Atmospheric Water Generation Technologies



Source: Zero Mass Water and FogQuest

# Heat Exchangers in Onsite Reuse



In buildings, significant energy is used to heat water that is then discharged to sewer or reused for toilet flushing

Recovering heat from building wastewater can:

- ✓ Reduce building energy footprint
- ✓ Reduce building operating costs
- ✓ Reduce greenhouse gas emissions

# Thank You

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[\*\*sfgov.org\*\*](http://sfgov.org)  
[\*\*sfgov.org/onewatersf\*\*](http://sfgov.org/onewatersf)



# National Partnership for Onsite Water Reuse

Rains to Bay  
Taylor Chang  
San Francisco Public Utilities Commission  
May 29, 2019



# Collaborating on a National Level



# Utilities Incorporating Onsite Water Systems

## DENVER WATER

Blackwater system at new  
admin building

## AUSTIN WATER

10 mgd from decentralized  
systems by 2040

## NEW YORK CITY

Battery Park operating decentralized  
system since 2003;  
Grant program for onsite systems

## SANTA MONICA

Downtown stormwater, groundwater,  
wastewater reuse by 2020

## ANAHEIM

Operating blackwater system for  
irrigation around City Hall and toilet  
flushing in Anaheim West Tower

# Risk-based Water Quality Approach

Developed a risk-based water quality approach for onsite non-potable water systems

**Pathogen Log Reduction Targets (LRTs)**

**Continuous online monitoring**

**Treated water quality standards**







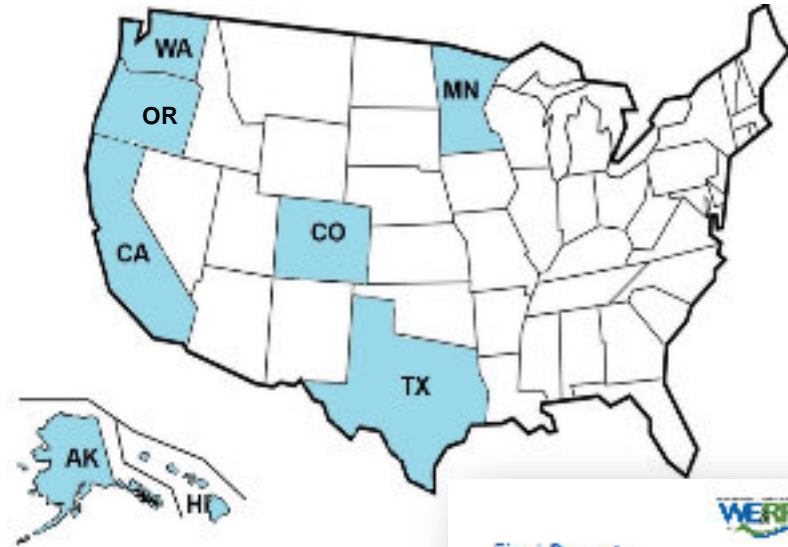
# Creating Model for Onsite Reuse Programs

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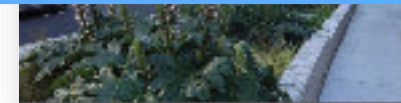
- Risk-based water quality standards established by Independent Expert Panel
- San Francisco incorporates risk-based approach
- Model regulations developed
- Guidance and Training Manual for engineers, operators, and regulators completed soon
- Sets stage for states and locals to implement programs

# Jurisdictions Moving Forward with Risk-Based Approach

- San Francisco
- California, SB 966
- Colorado, Regulation #84
- Minnesota and Washington D.C. Guidelines
- Washington State, Oregon, and Hawaii Legislation
- Texas and Alaska



**Pathogen Log  
Reduction  
Targets (LRTs)**



- Incorporating onsite reuse is a component of our utility water management strategy
- SF's program will increase market demand and we envision technologies becoming more cost-effective, energy efficient, and a reduced footprint
- Sharing our lessons learned nationally and globally
- Connecting people to water where they live and work



# Working the One Water Future

**Barbara Keegan, P.E.**  
Board Director

**Sustainable Silicon Valley  
Rains to Bay  
May 29, 2019**

**AfshinRouhani, P.E.**  
Water Resources Policy & Planning Manager



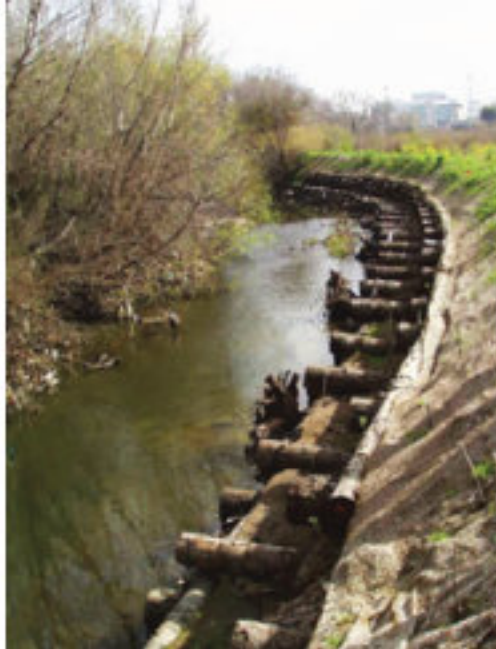
**Valley Water**

Clean Water • Healthy Environment • Flood Protection

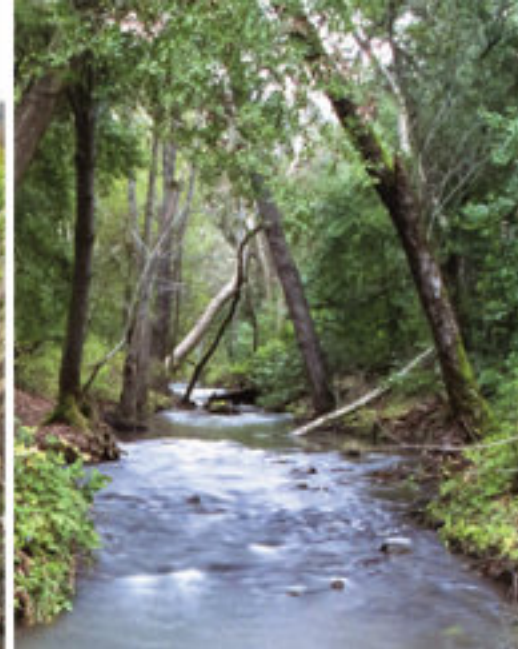
# Valley Water: Who we are...



**CLEAN, RELIABLE  
WATER**

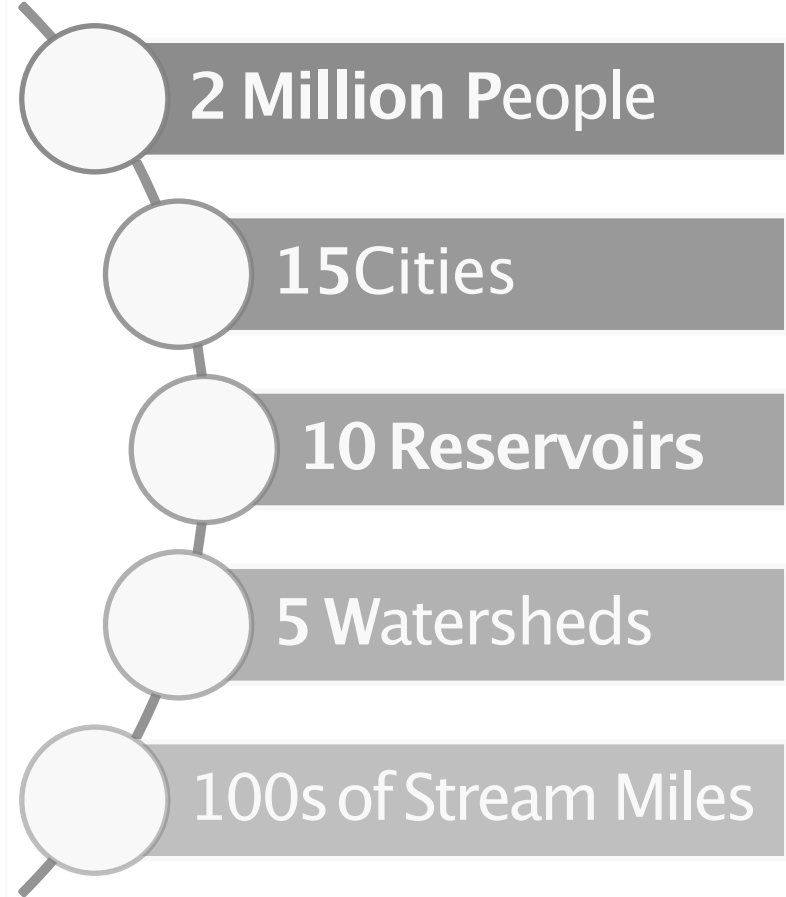


**FLOOD PROTECTION**

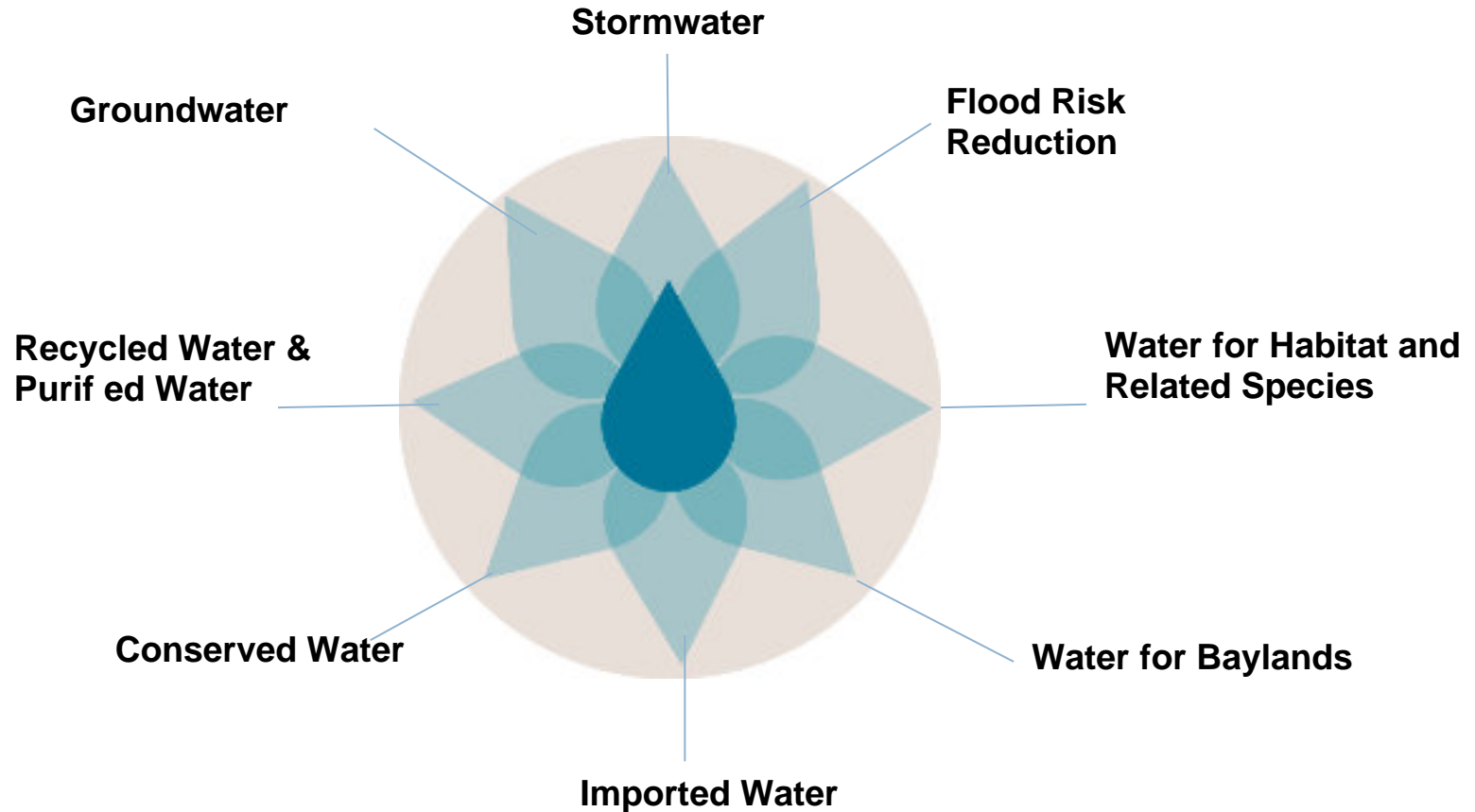


**HEALTHY CREEKS &  
ECOSYSTEMS**

# Valley Water: Who we are...



# Many “One Waters” ...Valley Water’s Version

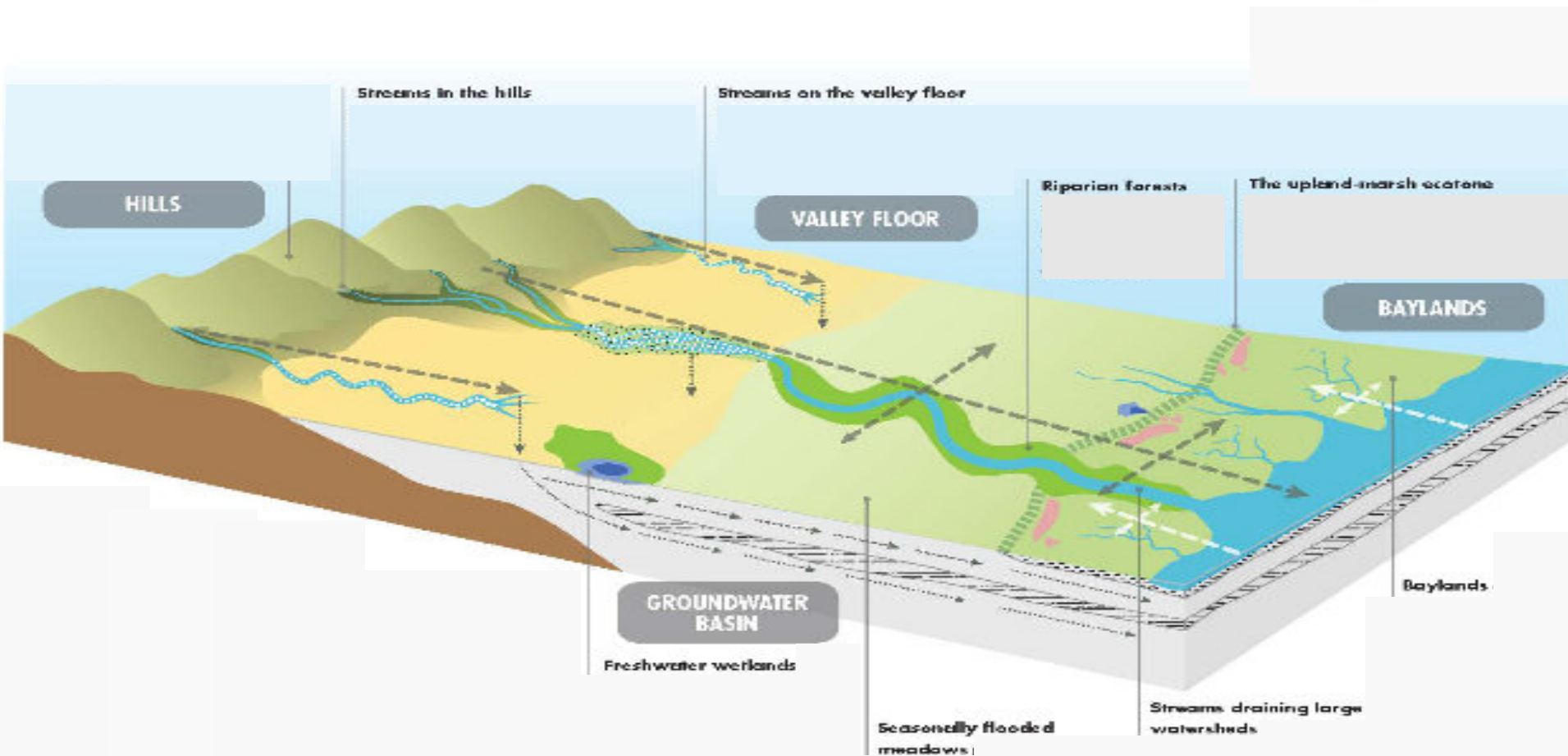


# Path to One Water

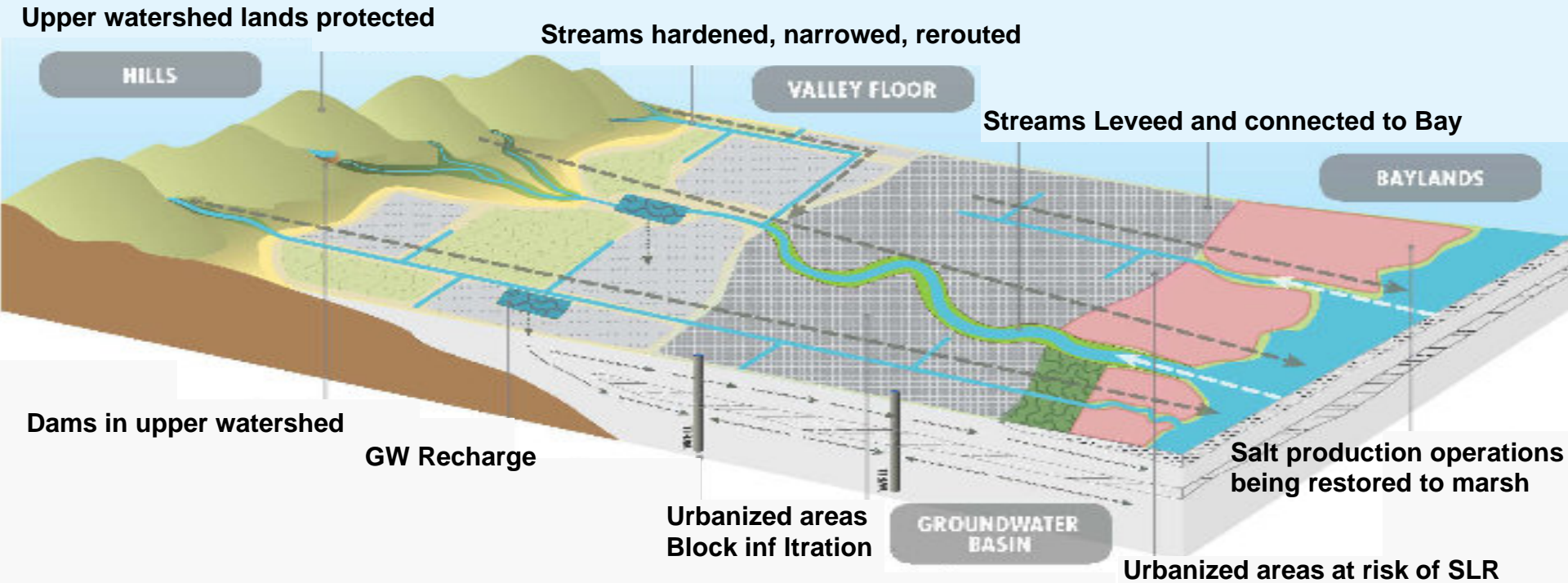




# Historical Water Resources Landscape and Features



# Current Water Resources Landscape and Features



# Objective-based Planning

**A Reliable Water Supply**

**B Sustainable Groundwater**

**C Water Quality**

**D Flood Risk Reduction**

**E Expanded Buffer Lands Adjacent to Water Bodies**

# Objective-based Planning

**F Stream Flows Support Natural Processes**

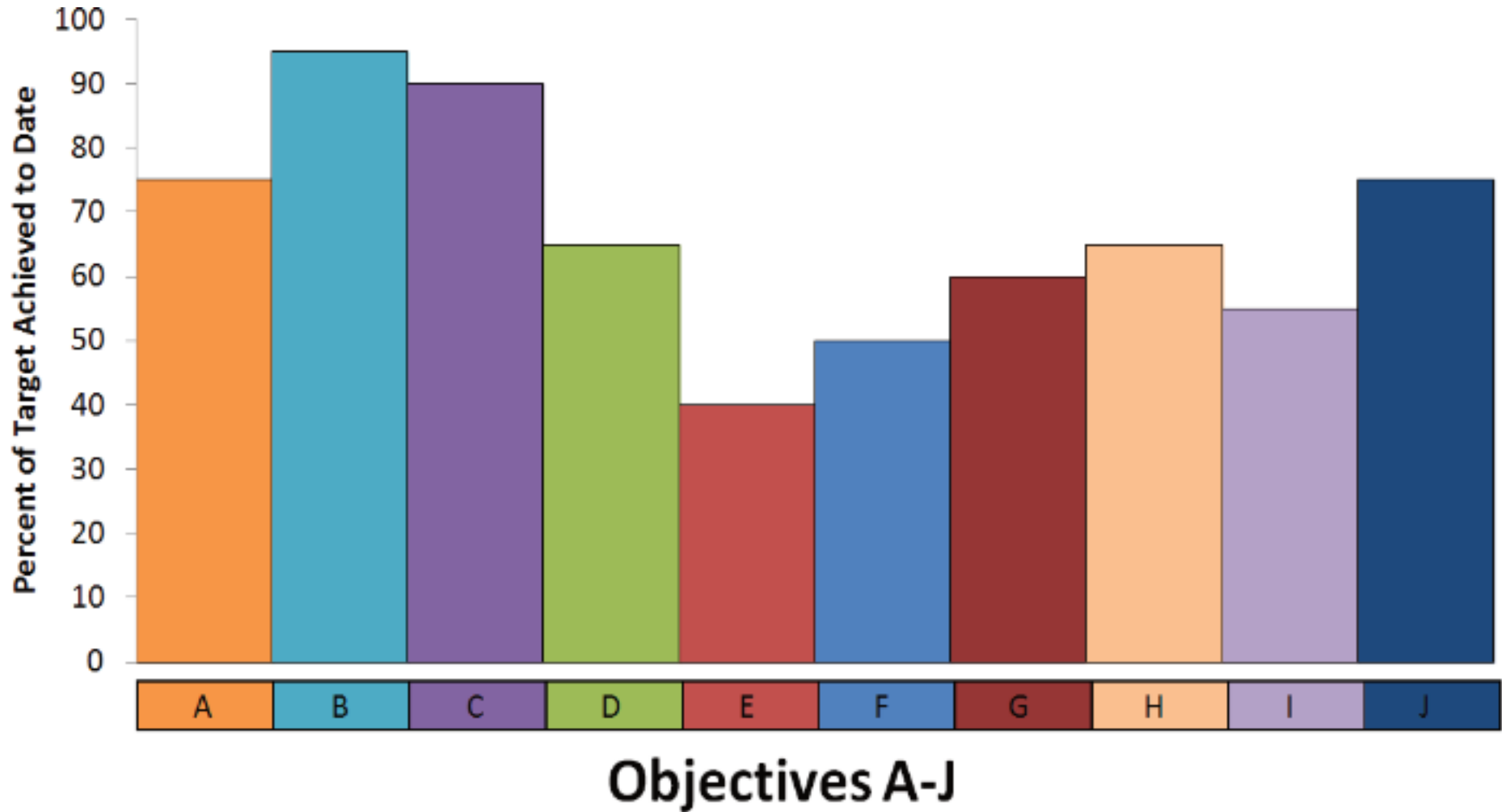
**G Resilient Habitats for Native Species**

**H Climate Change Adaptation**

**I Anticipate and Prepare for Emergencies**

**J Community and Tribal Engagement**

# Prioritization by Objectives



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