Flood is Groundwater’s New Gold
Pioneering Integrated Groundwater, Ecosystem, and Flood Percolation Management

FMA Conference
September 7, 2017
Session Overview

• Welcome and Greetings (Lisa Beutler)
• Introduction to FloodPerk (Kamyar Guivetchi)
• Discussion (CA DFM - All)
  – FloodPerk and Flood Management Planners
• Colorado Case Study - (Cat Shrier)
• Getting People On Board -Stakeholder Assessment (Lisa Beutler)
• Discussion (All)
  – Feasibility & Next Steps
California’s Water Management
A Tale of Two Extremes

|----------------------|---------|------|------|------|---------|------|------|------|------|------|---------|------|------|------|------|------|---------|

TOO LITTLE

Folsom Reservoir, 1976

TOO MUCH
Climate Change
Future Hydrology Unlike the Past

- Higher air & water temperature
- Early snowmelt & less snowpack
- Changing runoff pattern
- Rising sea level
A System in Crisis
Reduced Prosperity for Future Generations

- Greater Drought Impacts - Unreliable Water Supplies
- Increasing Flood Risk
- Groundwater Depletion and Subsidence
- Degraded Water Quality
- Declining Environmental Conditions
- Aging Infrastructure
- Climate Change Impacts
Building Shared Intent
A Prerequisite for Sustainability

Resilient, dynamic balance between:

- Public health and safety
- Economic stability
- Ecosystem vitality
- Other enriching experiences
Advancing a Comprehensive Approach for Sustainable Resource Management
SGMA Study
Water Available for Replenishment (WAFR)

Best Estimate
Statewide 1,335 TAF/Year

After 100 years, SGMA is Reconnecting California’s Water Cycle
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Hydrologically & Institutionally
Availability of High Flows for Managed Groundwater Recharge

Additional High Flows Available for Managed Groundwater Recharge

WAFR

Diversion Capacity

Min. Instream Flow

Flow (cfs)

Dec-1  Jan-1  Feb-1  Mar-1  Apr-1  May-1  Jun-1
An Integrated Strategy of Flood, Groundwater & Ecosystem Management

• Using high flows from, or in anticipation of, rainfall or snowmelt, for groundwater recharge on agricultural lands, working landscapes, and open space

• Inherently multi-benefit—flood risk reduction, drought preparedness, ecosystem & aquifer restoration, and climate change adaptation

• Epitomizes Integrated Water Management
Studies & Pilot Projects

• 2002 HEC, Consumptive Use for Flood Protection
• 2006-2015 UCSC Recharge Initiative & Pajaro Valley Pilot
• 2012 CVFPP, GW Recharge Opportunities (Attachment 8L)
• 2015 RMC/CWF, GW Recharge thru Winter Flooding of Ag Lands in San Joaquin Valley
• 2017 Sustainable Conservation GW Recharge Assmt Tool
• PPIC Groundwater Recharge Study
• American Farmland Trust Groundwater Recharge Study
• 400 TAF/year flood storage in Sacramento Valley
  – New Bullards Bar
  – Oroville
  – Folsom

• 343 TAF/year flood storage in San Joaquin Valley
  – Millerton Lake,
  – New Don Pedro
  – Lake McClure
• Recharge Net Metering Program provides rebates to growers

• Goals of Recharge Initiative
  1) Delineate natural/managed recharge areas
  2) Analyze recharge areas
  3) Research/implement projects
  4) Education and outreach

Source: Pajaro Valley Water Management Agency
• Operational changes to existing reservoirs
• Groundwater recharge associated with capturing unappropriated flood flows
• Groundwater projects associated with potential floodplain storage
RMC/CWF – GW Recharge thru Winter Flooding of Agricultural Land in San Joaquin Valley

- Rivers - Merced, Chowchilla, Fresno, Kings
- Assumed existing infrastructure
- Potential average annual recharge - 80 to 130 TAF/year
- Many years no water available
- On-farm recharge cost-effective
Sustainable Conservation/EarthGenome

Groundwater Recharge Assessment Tool (GRAT)

• Decision-support for growers & GSAs to test scenarios

• Assigns available source water to best recharge sites
  – Dedicated basins
  – Fallow fields
  – On-farm recharge

• Estimates capital and O&M costs

• Pilot projects
  – Madera ID
  – Tulare ID
Potential Benefits Using High Flows for Managed Groundwater Recharge

- Flood risk reduction
- Drought preparedness
- Groundwater replenishment
- Ecosystem restoration (e.g., reconnecting floodplains)
- Aquifer restoration / remediation
- Working landscape preservation and stewardship
- Climate change adaptation
Potential Barriers to Using High Flows for Managed Groundwater Recharge

- **Legal** – water rights, regulations, permits
- **Policy** – public benefits, landowner benefits
- **Implementation** – land uses, recharge methods, conveyance, reservoir operations
- **Economics** – costs, benefits, compensation
- **Governance** – land owners, GSAs, IRWM, water agencies, flood managers, operators
- **Funding** – planning, R&D & implementation
Events

- FMA Conference – Sept. 5-8, 2017
- Water Plan Update 2018 Plenary Meeting – Sept. 27, 2017
- GRA Conference – Oct. 3-4, 2017
- CA Economic Summit – Nov. 2-3, 2017
- UC Davis Summit – Nov. 5, 2017
- CDFA Public Forum – Nov. 8, 2017
- CA RCD Conference – Nov. 15-18, 2017
- ACWA Conference – Nov. 28-Dec. 1, 2017
- Smart Growth Conference – Feb. 1-3, 2018
- Biennial Groundwater Symposium – Mar. 5-7, 2018
Next Steps to Scale-Up FloodPerk

• **Multi-Sector Engagement** (flood, groundwater, ecosystem)
• **White Paper** (multi-sector planning)
  – Document past work
  – Frame benefits & barriers
  – Identify information gaps
• **Plan of Study** (multi-sector R&D)
  – Interdisciplinary (agencies, academia, organizations)
  – Studies & pilot projects
• **Study Implementation** (multi-sector initiative)
  – Funding
  – Project management
  – Inform plans, regulations/permitting & investment decisions (GSPs, IRWMPs, Regional/State/Federal flood plans, Conservation plans, public & foundation funding, etc.)
Questions & Comments

Kamyar Guivetchi, PE
Statewide Integrated Water Mgmt
CA Department Water Resources

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The Flood Management Planner’s View

What is the Current Thinking?
What is Being Done Now?
Where are the Opportunities?
What are the Biggest Barriers?
An Experience from Colorado

CASE STUDY
Is FloodPerk an Option?

Situation Assessment Basics
What an Assessment Is

• A process to evaluate the needs and conditions of your project /initiative as they relate to the stakeholder community and larger publics, in order to minimize risk and design an effective stakeholder process.

• Consists of conducting an internal and external environmental scan that gathers information to:
  – Evaluate the risks
  – Determine the outreach and engagement techniques most feasible and appropriate for the circumstances
Objective

The objective of a Situation Assessment is to gather key information regarding:

- Opinion leaders
- Potential partners (funding and infrastructure)
- Regulatory and political context
- Advocates and detractors
- Attitudes and knowledge
- Other elements that would be useful to the crafting of decisions.
Situation Assessments

- Information-gathering process
- Informs outreach, engagement and collaboration
- First communications and engagement effort
- An intervention
- Non-binding, initial introduction to the project
- Allows the team to test ideas before they are broadly deployed
What is involved?

Five W’s and One H

An assessment is the evaluation of a series of project questions.

• **Where** will it happen?
• **What** is being proposed?
• **Who** are the stakeholders?
• **When** will it occur?
• **Why** will it matter?
• **How** (what methods) will be used?

Importantly, none of these questions can be answered with a simple "yes" or "no".
Determine what is required for community acceptance and support.
Defining Scope - What

- Tailored to the project or policy being considered
- Scope may be larger than the eventual project
- May narrow what is eventually considered OR the full magnitude may not be known
- Generally better to take a broad view of what should be included
Defining Scope – Where

Project Footprint
Who - Stakeholder Typology

- Place-based (Landowners, neighbors, jurisdictions)
- Governments
- Regulator, Grantor
- Elected Officials
- Partner, Rights Holders
- Service Provider, Suppliers, Vendors
- Internal, Organizational
- Industry

- Investors, Lenders, Shareholders
- Environmental Community
- Business, Commerce
- Community-based Organizations and Individuals
- Media Based
- Voters
What - Decision Space

- Size
- Technology
- Time of Use
- Conflicting Use
- Environmental Impacts

- Transportation
- Economic Impacts
- Waste
- Noise
- Site Preparation
- Customers/ Market
- Pricing
- Etc., Etc., Etc.
Who, What, When, How - Stakeholders

- Who are they? (Citizen, Partner, Provider, Regulator)
- What do they care about?
- Who are their trusted messengers?
- What are the best ways (how) to connect with them?
- When should we talk to them // sensitivity?
- What do we need to know from them?
Understanding the Why - Issues to be Assessed

- Items of project design and features (project goals and objectives)
- Separate Outcome from Implementation
- Test for Both
Issues (continued)

- **Joint Fact Finding** - *In many cases parties may have a different understanding of the facts. SA determines what expectations are for jointly evaluating facts and/or decision criteria.*

- **External and internal scan** - *Describes the external and internal context in which the project will occur. A typical question is, “What outside or internal events will drive or impact the project?”*
Engagement Preferences - Timing

- Parties likely to be impacted and that need to be informed or consulted and WHEN and HOW - There is typically a group of primary parties but some elements of a project may require others to be involved at a different time and in different ways.

- Communications, outreach and engagement - Describes expectations regarding keeping others informed about the effort and progress
Negotiation Space

- Likely areas of advocacy - *The parties often have ideas about the kinds of features and benefits that might be possible.*

- Likely sticking points - *The parties are usually very articulate about what they think will be a problem.*
## Risk Management

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<thead>
<tr>
<th>RISK CATEGORY</th>
<th>Outreach RISK FACTORS</th>
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<tbody>
<tr>
<td>Technical, quality, or performance</td>
<td>• Realistic performance goals, scope and objectives</td>
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<tr>
<td>Project management</td>
<td>• Quality of outreach design</td>
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<td></td>
<td>• Outreach deployment and change management</td>
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<td></td>
<td>• Appropriate allocation of time and resources</td>
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<td>• Adequate support for Outreach in project management plans</td>
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<td>Organizational / Internal</td>
<td>• Executive Sponsorship</td>
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<td>• Proper prioritization of efforts</td>
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<td>• Conflicts with other functions</td>
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<td>• Distribution of workload between organizational and consultant teams</td>
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<td>External</td>
<td>• Legal and regulatory environment</td>
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<td>• Changing priorities</td>
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<td>• Risks related to political dynamics</td>
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<td>Historical</td>
<td>• Past experiences with similar projects</td>
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<td>• Organizational relations with stakeholders</td>
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<td>• Policy and data adequacy</td>
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<td>• Media and stakeholder fatigue</td>
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What You Get

- Low risk approach to education and signaling a future relationship

- Facilitates the community’s appraisal of its needs, wants and values.
Discussion

• Feasibility
  – Alignment of Agencies’ Initiatives and Governance
  – Regulatory Framework
  – Knowledge, Skills, and Tools Needed for Data-Driven Decision-making
  – Water Resources Management Systems
  – Infrastructure
  – Sufficient and Sustainable Funding