

Appendix 6

Land Use Planning and Management

Contents

Land Use Planning and Management	page 1
Theme Subcommittee Members	page 1
Engagement Process	page 2
Available Research, Data, and Tools	page 3
Research Gaps and Needs	page 4
Prioritization Process	page 10
Top Three Research, Data, and Tools Actions	page 10

Engagement Process

The theme co-chairs identified professionals with expertise in California land use planning and management and requested their participation with this theme. Two conference calls were scheduled a few weeks apart in early 2019. The first conference call introduced the objectives of the Flood-MAR Research Advisory Committee (RAC) and initiated the brainstorming for both existing and needed Research, Data, and Tools that would facilitate the expansion and implementation of Statewide Flood-MAR opportunities.

Notes from the first meeting were distributed by the co-chairs to the subcommittee via email requesting each of the subcommittee members to prioritize the identified gaps and identify the relationship of those gaps to other Flood-MAR themes. A straw-man proposal of the gap prioritization was developed first by the co-chairs, and with input from the subcommittee members on the second conference call the gap priorities were re-ranked.

Following the second RAC meeting where all thirteen themes discussed their priorities, a follow-up conference call was held with this subcommittee to discuss the second RAC meeting and gaps identified by other themes. The co-chairs then sought input on whether the prioritized gaps needed to be re-prioritized.

Available Research, Data, and Tools

The subcommittee identified the following potential sources for existing information:

1. Identify the policies and programs in existing general plans that address recharge areas and/or groundwater management.
2. Consult the California Water Plan for information on technical data resources, 2013 Resource Management Strategies, appendices and references [incorporated into the 2018 Water Plan Update].
<<https://water.ca.gov/Programs/California-Water-Plan>>
3. Identify what already works -- examples of regional planning efforts that integrate land use planning and groundwater include Los Angeles, Santa Clara, and the Santa Ana Watershed Project Authority
4. Interview planners to identify strategies and approaches for collaboration with water managers.
5. Identify GIS programs that integrate resource mapping and land use planning. What mapping data & tools are available at the sub-regional or watershed level? Like Resource Conservation Districts, land trusts, open space districts, groundwater management plans (pre-SGMA), etc. What are other research organizations doing, like Stanford's Water in the West, or the CA Water Foundation?

Research Gaps and Needs

The tables below summarize needs and gaps in research, data, and tools related to Land Use Planning and Management theme. These needs and gaps were determined by the subcommittee members.

Table 1 Document Coordination and Communication Between GSAs and Land Use Planning Agencies

Category: Research
Scale: State
Availability: Gap

Other Themes That Will Benefit:

10. People and Water
12. Local, State, Federal Policies, and Other Legal Considerations

Public Benefits Informed By:

Flood risk reduction, drought preparedness, aquifer replenishment, ecosystem enhancement, subsidence mitigation, water quality improvement, working landscape preservation and stewardship, climate change adaption, recreation and aesthetics.

Implementation Factors:

Funding and Incentives, Governance and Coordination

Description, including Connection to Flood-MAR:

Use surveys to understand how coordination & communication is occurring between GSAs and land use planning agencies. Consider a full range of land use-related issues, including infrastructure, existing and planned land uses, water demand, etc., with emphasis on groundwater recharge and flood water management:

- Identify transferable/scalable models for collaboration, including DWR-supported facilitation for GSAs
- Identify lessons learned from participants in the One Water One Watershed Program (Santa Ana Watershed Program) and seek input on how similar processes could be implemented elsewhere. Participating planners indicate that integrated planning helps all planning efforts by showing water agencies how they are a part of the bigger picture and helping land use planners see the relationship of water management to their work.
- How are GSAs handling their mandated "consideration" of local general plans in their GSP process, especially in relation to flood management and groundwater recharge? What are the land use planning and management actions coming out

of the groundwater sustainability plans and how is that being coordinated with planning agencies?

- Determine to what extent there is a need for the State to provide guidance on communication best practices and how to coordinate between different planning communities, including land use planners, water managers (water and irrigation districts) and public works agencies.
-

Table 2 Funding For Planning Efforts For Groundwater Management

Category: Tool

Scale: State

Availability: Gap

Other Themes That Will Benefit:

3. Infrastructure Conveyance and Hydraulics

12. Local, State, Federal Policies and Other Legal Considerations

Public Benefits Informed By:

Aquifer replenishment, climate change adaptation, working landscape preservation and stewardship.

Implementation Factors:

Governance and Coordination, Funding and Incentives, Groundwater Use

Description, including Connection to Flood-MAR:

Identify sources of funding for integrated planning efforts and determine application for incentivizing incorporation of Flood-MAR into general plans. For example, money for integrated planning efforts is made available through integrated regional water management (IRWM) bond-funded grant programs discussed in Chapter 4 of the California Water Plan. Eighty percent of IRWM funding is contributed from local level. To what extent could IRWM or similar integrated planning efforts be used to improve incorporation of Flood-MAR in land use planning?

Table 3 Protocol Development for Data Consistency

Category: Tool

Scale: State

Availability: Gap

Other Themes That Will Benefit:

7. Water Quality

10. People and Water

12. Local, State, Federal Policies and Other Legal Considerations

13. Tool and Application Development

Public Benefits Informed By:

Flood risk reduction, drought preparedness, aquifer replenishment, ecosystem enhancement, subsidence mitigation, water quality improvement, working landscape preservation and stewardship, climate change adaptation, recreation and aesthetics.

Implementation Factors:

Governance and Coordination, Site Suitability, Feasibility Analysis

Description, including Connection to Flood-MAR:

Develop standard data sets and protocols for all planning documents to ensure that General Plans, GSAs, and other planning efforts use consistent data in relation to Flood-MAR. Land use planning and management cuts across all themes and it is important that as data is collected, standards for data quality assurance/quality control are applied before the data is incorporated into plans. Be sure to employ consistent, verifiable, and reliable data standards. To assist with that effort, determine:

- The agencies that are collecting data correctly and consistently
 - How these agencies are documenting and using data
 - Data includes groundwater levels, water quality metrics, standard recharge parameters, etc.
 - Consider using UWMPs as a common method of reporting standard data.
-

Table 4 Identify and Protect High-Value Recharge Areas

Category: Data

Scale: State

Availability: Gap

Other Themes That Will Benefit:

7. Water Quality

8. Recharge and Extraction Methods

12. Local, State, Federal Policies and Other Legal Considerations

13. Tool and Application Development

Public Benefits Informed By:

Flood risk reduction, drought preparedness, aquifer replenishment, ecosystem enhancement, subsidence mitigation, water quality improvement, working landscape preservation and stewardship, climate change adaptation, recreation and aesthetics.

Implementation Factors:

Governance and Coordination, Site Suitability, Recharge Method

Description, including Connection to Flood-MAR:

Identify, map, and protect high-value recharge areas. Identify jurisdictions with land use control of those areas and understand the land use issues affecting recharge in those high-value recharge areas. Present information using GIS or similar application.

Determine:

- Who are experts and stakeholders at local planning level?
 - Understand what state, local, and federal and non-governmental organizations are already doing to protect high-value recharge areas.
 - Determine if there is a need to provide funding assistance to planning agencies for land use planning efforts needed to implement Flood-MAR and recharge site protections identifies in Groundwater Sustainability Plans (GSPs).
-

Table 5 Effective Practices for Integrating Water Planning and Flood Management in Local Land Use Plans

Category: Research

Scale: Regional

Availability: Gap

Other Themes That Will Benefit:

1. Hydrology Observation and Prediction
 2. Reservoir Operations
 4. Crop Suitability
 8. Recharge and Extraction Methods
 12. Local, State, Federal Policies and other Legal Considerations
-

Public Benefits Informed By:

Flood risk reduction, drought preparedness, aquifer replenishment, ecosystem enhancement, subsidence mitigation, water quality improvement, working landscape preservation and stewardship, climate change adaption, recreation and aesthetics.

Implementation Factors:

Governance and Coordination, Site Suitability

Description, including Connection to Flood-MAR:

Develop best-practices guidance for integrating water planning, broadly, and Flood-MAR, specifically, into local land use plans.

- Guidance in IRWMPs on integrating water management and flood management
 - Develop general plan guidelines with best practices for protecting groundwater recharge and Flood-MAR sites
 - Examine if CEQA Guidelines should be amended to better protect groundwater recharge areas, especially managed aquifer recharge sites
 - Consult with the Legislative Analyst's Office to study how GSAs address integrated planning efforts, including coordination, with land use planning agencies.
-

Table 6 identify Regions using Watershed-based Approach to Protect Recharge Areas

Research: Data

Scale: State

Availability: Gap

Other Themes That Will Benefit:

1. Hydrology Observation and Prediction
 2. Reservoir Operations
 4. Crop Suitability
 5. Soils, Geology, and Aquifer Characterization
 8. Recharge and Extraction Methods
 9. Environment
-

Public Benefits Informed By:

Aquifer Replenishment, climate change adaptation, ecosystem enhancement.

Implementation Factors:

Groundwater Use, Site Suitability, Recharge Method, Governance and Coordination

Description, including Connection to Flood-MAR:

Identify regions and plans where a watershed-based approach is used to protect high-value recharge areas relative to other land uses within the watershed. Collaborate with these regions to develop guidance for other regions needing guidance while being cognizant of differences in land use planning approaches.

Prioritization Process

The objective of this research and development plan is to develop priorities by theme to maximize the implementation of Flood-MAR projects statewide. The members of this theme independently prioritized the identified gaps. The co-chairs prioritized the gaps in research, data, and tools and considered that the top three actions would also be identified as one of the top three priorities in other themes. The co-chairs and subcommittee then identified the second grouping of three priorities as the most important for maximizing Flood-MAR implementation.

Top Three Research, Data, and Tools Actions

Priority 1

Action: Document coordination and communication between GSAs and land use planning agencies.

Description: Use surveys to understand how coordination & communication is occurring between GSAs and land use planning agencies. Consider a full range of land use-related issues, including infrastructure, existing and planned land uses, water demand, etc., with emphasis on groundwater recharge and flood water management:

- Identify transferable/scalable models for collaboration, including DWR-supported facilitation for GSAs.
- Identify lessons learned from participants in the One Water One Watershed Program and seek input on how similar processes could be implemented elsewhere. Participating planners indicate that integrated planning helps all planning efforts by showing water agencies how they are a part of the bigger picture and helping land use planners see the relationship of water management to their work.
- How are GSAs handling their mandated "consideration" of local general plans in their GSP process, especially in relation to flood management and groundwater recharge? What are the land use planning and management actions coming out of the groundwater sustainability plans and how is that being coordinated with planning agencies?

Implementation Strategy:

Product: Survey results documenting how coordination and communication is occurring between GSAs and land use planning agencies.

Implementation Lead: DWR SGMA team and/or DWR SGMA facilitation contractors.

Implementation Partners: GSAs, County Planning Directors, GSA facilitators, OPR, IRWMP coordinators.

Other Resources: GSP consultants, online information from GSAs.

Estimated Timeline: 3 to 6 months.

Estimated Cost: 30 hours for project management (DWR staff); 80 to 150 hours for professional services (facilitator or DWR staff); 40-80 hours for support staff.

Priority 2

Action: Funding for planning efforts for groundwater management.

Description: Identify sources of funding for integrated planning efforts and determine application for incentivizing incorporation of Flood-MAR into general plans. For example, money for integrated planning efforts is made available through integrated regional water management (IRWM) bond-funded grant programs discussed in Chapter 4 of the California Water Plan. Eighty percent of IRWM funding is contributed from local level. To what extent could IRWM or similar integrated planning efforts be used to improve incorporation of Flood-MAR in land use planning?

Implementation Strategy:

Product: List of available funding sources for integrated Flood-MAR planning efforts.

Implementation Lead: DWR staff, OPR.

Implementation Partners: Water Districts (municipal & rural), County Planning Agencies, state legislative staff, IRWM staff, Strategic Growth Council, academia, private growers who subscribe to remote sensing for water management.

Other Resources: Unknown.

Estimated Timeline: Identifying existing funding sources should take 60 to 120 days; identifying and securing new funding will have uncertain timeline.

Estimated Cost: 10-30 hours for project management; 100 hours for professional staff services.

Priority 3

Action: Protocol development for data consistency.

Description: Develop standard data sets and protocols for all planning documents to ensure that General Plans, GSAs, and other planning efforts use consistent data in relation to Flood-MAR. Land use planning and management cuts across all themes and it is important that as data is collected, standards for data quality assurance/quality control are applied before the data is incorporated into plans. Be sure to employ consistent, verifiable, and reliable data standards. To assist with that effort, determine:

- The agencies that are collecting data correctly and consistently.
- How these agencies are documenting and using data.
- Data includes groundwater levels, water quality metrics, standard recharge parameters, etc.
- Consider using UWMPs as a common method of reporting standard data.

Implementation Strategy:

Product: Accessible standard data sets and protocols for all planning documents to ensure that General Plans, GSAs, and other planning efforts use consistent data in relation to Flood-MAR.

Implementation Lead: OPR, SWRCB, DWR SGMA team, and academia.

Implementation Partners: GSP consultants, GSA staff, County Planning Directors, IRWM staff, OPR.

Other Resources: Existing GSP Technical Guidance from DWR.

Estimated Timeline: 3 to 8 months.

Estimated Cost: 12 hours for project management; 80-150 hours for professional staff services.

Priority 4

Action: Identify and Protect High-Value Recharge areas.

Description: Identify, map, and protect high-value recharge areas. Identify jurisdictions with land use control of those areas and understand the land use issues affecting recharge in those high-value recharge areas. Present information using GIS or similar application.

Determine:

- Who are experts and stakeholders at local planning level?

Flood-MAR Research and Data Development Plan

- Understand what state, local, and federal and non-governmental organizations are already doing to protect high-value recharge areas.

Determine if there is a need to provide funding assistance to planning agencies for land use planning efforts needed to implement Flood-MAR and recharge site protections identifies in Groundwater Sustainability Plans (GSPs).

Implementation Strategy:

Products: Mapping tool that identifies:

1. High-value recharge areas.
2. Agencies with jurisdiction and local experts.
3. Potential basin-specific recharge issues.
4. Current recharge protection efforts (governmental and NGO).
5. Funding needed for coordinated planning efforts.

Implementation Lead: OPR, DWR (IRWM).

Implementation Partners: USGS, GSAs, City and County Planning Agencies, Water Districts, APA, academia, regional water boards.

Other Resources: Existing groundwater models and academic studies.

Estimated Timeline: Unknown.

Estimated Cost: Unknown (complex project; cost and timeline will depend on need for additional research, mapping and/or modeling).

Priority 5

Action: Effective practices for integrating water planning and flood management in local land use plans.

Description: Develop best-practices guidance for integrating water planning, broadly, and Flood-MAR, specifically, into local land use plans.

- Guidance in IRWMPs on integrating water management and flood management.
- Develop general plan guidelines with best practices for protecting groundwater recharge and Flood-MAR sites.
- Examine if CEQA Guidelines should be amended to better protect groundwater recharge areas, especially managed aquifer recharge sites.

Consult with the Legislative Analyst's Office to study how GSAs address integrated planning efforts, including coordination, with land use planning agencies.

Implementation Strategy:

Product: Best-practices guidance for integrated water planning, and Flood-MAR, into local land use plans.

Implementation Lead: OPR.

Implementation Partners: DWR, IRWM, City and County Planning Agencies, GSAs, flood control agencies, water and irrigation districts, growers, CEQA practitioners.

Other Resources: Adopted general plan water elements, Urban Water Management Plans (amended to link to GP and SGMA) General Plan statute and guidelines (including 2003 guidelines for water element), academia (e.g. Stanford Water in the West).

Estimated Timeline: 8 months.

Estimated Cost: 20-40 hours for project management; 160-300 hours for professional staff; 100 hours for support staff.

Priority 6

Action: Identify regions using a watershed-based approach to protect recharge areas.

Description: Identify regions and plans where a watershed-based approach is used to protect high-value recharge areas relative to other land uses within the watershed. Collaborate with these regions to develop guidance for other regions needing guidance while being cognizant of differences in land use planning approaches.

Implementation Strategy:

Product: Annotated list of regions and plans where a watershed-based approach is used to protect high-value recharge areas relative to other land uses within the watershed.

Implementation Lead: DWR, OPR.

Implementation Partners: County Planning Agencies, IRWM entities, conservation organizations (including special districts), Water agencies & irrigation districts.

Flood-MAR Research and Data Development Plan

Estimated Timeline: 8 months.

Estimated Cost: 30 hours for project management; 80-150 hours for professional staff; 50 hours support staff.