Executive Summary

Integrated Regional Water Management in the Upper Santa Ana River Watershed Region

The Upper Santa Ana River Watershed (USARW) has a long-standing history of collaboration by water resource management agencies to manage the watershed's unique water supply, water quality, flood, and habitat challenges. In 2005, this collaboration allowed the agencies to successfully form the USARW Integrated Regional Water Management Region (IRWM Region or Region) and develop an integrated plan for managing water resources in the Region. The USARW Integrated Regional Water Management Plan (IRWM Plan) is the result of this effort. The 2014 IRWM Plan serves as an update to the IRWM Plan developed in 2007, and incorporates new information describing the Region, updates goals and objectives, re-evaluates strategies, and develops a process for future implementation of the IRWM Plan.

Stemming from this effort, the agencies in the Region created the Basin Technical Advisory Committee (BTAC) to facilitate implementation of the IRWM Plan. Development of the BTAC has strengthened dialogue and cooperation between agencies and has improved regional planning. The BTAC, which serves as the Regional Water Management Group, is open to all agencies and stakeholders who desire to participate in the IRWM Region's planning and management efforts.

Agencies Developing the IRWM Plan Update

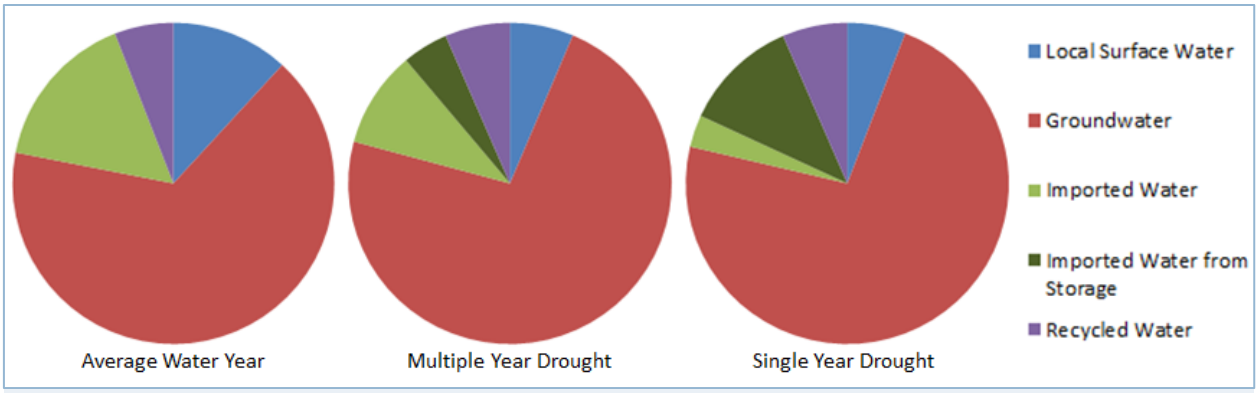
1. Big Bear Lake Department of Water and Power
2. Big Bear City Community Services District
3. City of Loma Linda
4. City of Redlands Municipal Utilities and Engineering Department
5. City of Rialto
6. City of Riverside Public Utilities Department
7. East Valley Water District
8. Fontana Union Water Company
9. San Bernardino County Flood Control District
10. San Bernardino Municipal Water Department
11. San Bernardino Valley Municipal Water District
12. San Bernardino Valley Water Conservation District
13. San Gorgonio Pass Water Agency
14. West Valley Water District

Water Resources Management Challenges

The USARW IRWM Region, which begins just upstream of Prado Dam and extends into the San Bernardino Mountains, covers over 850 square miles of urban area, agricultural land, and open space that provide a multitude of water resource-related benefits and challenges.

Water supply management in the Region dates back to the 1800s when predecessors of today's water agencies were constructing ditches to deliver water. Management now consists of dozens of water supply agencies that deliver water to this rapidly growing Region. These water suppliers also face institutional complexities (particularly those related to groundwater management) and must account for the hydrological variation that occurs in both local and imported water supplies. The IRWM Region's water suppliers plan to meet demand through a combination of imported water, groundwater, local surface water, recycled water, and water use efficiency programs. By 2035, demand in the Region is projected to increase by over 100,000 AFY, and will require the continued development of a diverse water supply portfolio to overcome various challenges and uncertainties.

As shown below, the IRWM Region is highly dependent on its local water supplies, particularly precipitation stored as groundwater, which provides approximately 67% of supplies during average years and over 70% of supplies during drought years. The Region plans to store as much water as possible in groundwater basins during wet years and then to pump this water from groundwater storage during drought years (i.e. conjunctive use).



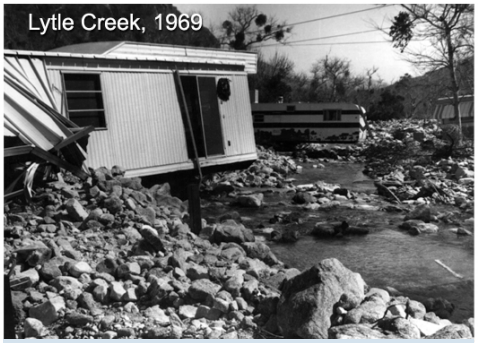
To meet demand during drought years, the IRWM Region relies on local supplies and imported water from storage (based on 2015 supply projections).

Water suppliers must also manage for other uncertainties such as variability in supplies, particularly imported water, caused by drought and other reliability concerns such as catastrophic events (e.g. earthquakes), environmental protection goals and mandates in the Sacramento-San Joaquin Bay Delta (Delta), climate change, water quality, and imported water costs.

The IRWM Region's groundwater managers must balance conjunctive use with other constraints such as the risk of liquefaction. Careful monitoring and ongoing coordination among members of the BTAC is critical to achieve this balance.

Meeting the Region's water demand also requires management of local water quality. While groundwater quality is generally good in the Region, past industrial and military activities have required groundwater remediation of volatile organic compound (VOC) contamination plumes. Water quality treatment is also necessary in some areas to treat for other contaminants caused by agricultural activities and urban pollutants (e.g. nitrate, perchlorate, pesticides and inorganic materials). In addition, as water recycling increases in the future, the Region will need to monitor salt accumulation consistent with the Santa Ana Regional Water Quality Control Board's Basin Plan goals.

Another issue of concern in the Region is stormwater and flood management. Stormwater management has been an ongoing challenge in the USARW Region. In the past, flood events have caused loss of life and damage to property.



The San Bernardino County Flood Control District was created in response to historical flooding that caused loss of life and damage to property.

The San Bernardino National Forest is home to extraordinary natural resources.

Flood control facilities, such as detention basins, have provided much needed control of these flows. The IRWM Region's groundwater managers are working with flood control agencies to optimize the use of these flood control facilities to increase the recharge of stormwater into the groundwater basin. They hope to strike a balance between flood control and recharge that will ensure protection from flooding, while providing additional supplies to meet growing future demands and to supplement these supplies during drought years.

The USARW Region contains extraordinary natural resources, including the San Bernardino National Forest, which serves as the headwaters for the Santa Ana River. Downstream, the Santa Ana River and its tributaries provide habitat to riparian and aquatic species, and provide connectivity to upland habitats. The scrub, woodland, and riparian habitats in the Region support innumerable species, including species of concern such as the San Bernardino kangaroo rat, Santa Ana River wooly star, and Slender-Horned spine flower. The importance of the Region's habitats is underscored by the multiple environmental and ecological management plans currently in place, including the Western Riverside County Multi-Species Habitat Conservation Plan, Upper Santa Ana Wash Land Management and Habitat Conservation Plan, and Upper Santa Ana River Habitat Conservation Plan. In addition to serving as habitat, these areas provide valuable open space and recreational areas for the residents of and visitors to the Region. Though large areas of habitat and open space have been conserved, the IRWM Region recognizes the importance of further restoring or improving habitat that has been lost to urbanization, and preserving habitat that is in danger due to invasive species. Maintaining and improving the Region's habitats also serves to support surface water quality. In particular, ongoing forest thinning projects in the San Bernardino National Forest serve to maintain forest habitat, as well as reduce the danger of wildfires and their associated water quality impacts downstream from sedimentation.

The BTAC evaluated the vulnerability of the IRWM Region's resources to climate change impacts. Within the Region, climate change may exaggerate existing uncertainties by causing decreases in precipitation, less frequent but more intense storms, and higher temperatures. The BTAC identified several vulnerabilities associated with these impacts, including additional imported water supply uncertainty, additional potential challenges to capturing stormwater during more intense storms, water quality impacts due to more frequent and intense wildfires, degraded water quality and aquatic habitat impacts due to higher temperatures, flood system impacts due to more intense storms, and increased irrigation demand due to higher temperatures.

These issues and challenges to water supply, water quality, flood management, and habitat and open space must be carefully managed to maintain the IRWM Region's water resources for future generations.

Goals, Objectives and Strategies

The BTAC developed a series of goals to help the USARW IRWM Region overcome the variety of issues and challenges. In addition, BTAC established measureable objectives, or targets, they hope to achieve over the next 5-year planning cycle. These goals and objectives are listed below.

USARW IRWM Region Water Management Goals and Objectives

Goal #1: Improve Water Supply Reliability	1a: Reduce demand 20% by 2020
	1b: Increase utilization of local supplies by 23,000 AFY • Stormwater: 20,000 AFY • Recycled Water: 3,000 AFY
	1c: Increase storage by 10,000 AF
	1d: Prepare for disasters by implementing 2 new interties between water agencies
	1e: Monitor and adaptively manage climate change impacts by implementing 3 projects that reduce energy demands
	1f: Ensure equivalent water supply services for DACs
Goal #2: Balance Flood Management and Increase Stormwater Recharge	2a: Utilize 500 acres of flood control retention/detention basins that are not currently used for recharge
	2b: Reduce FEMA reported flood area
	2c: Ensure equivalent implementation of flood projects in DAC areas and implement at least 1 flood control project in a DAC area
Goal #3: Improve Water Quality	3a: Ensure no violations of drinking water quality standards
	3b: Improve surface and groundwater quality by treating 3,000 AFY of water supply
	3c: Manage total dissolved solids and nitrogen in groundwater
	3d: Ensure equivalent water quality services for DACs
Goal #4: Improve Habitat and Open Space	4a: Improve habitat and open space by 1,200 acres
	4b: Identify "multi-use" opportunities to increase recreation and public access and identify at least 1 multi-use project

Keeping the Region's unique issues and challenges in mind, the BTAC developed a number of water management strategies to help them reach their goals and objectives. These strategies, listed below, intentionally align with the resource management strategies (RMS) listed in the *California Water Plan* and reflect the unique aspects of the Region's water resources.

Water Resource Management Strategies

1. Continue Basin Management in the San Bernardino Basin Area
2. Continue Forest Management
3. Continue Hazardous Fuels Reduction in the Forest
4. Coordinate Land Use Planning and Management with Water Resources Management
5. Develop Basin Management in Yucaipa Basin
6. Develop Desalination
7. Develop Watershed Management Projects and Programs
8. Improve Drinking Water Treatment and Distribution
9. Identify Corridors for Species
10. Identify Projects that Increase Recharge
11. Identify Projects that Increase Surface Water and Groundwater Storage Inside and Outside the Region
12. Identify Water Transfer Opportunities
13. Implement Agricultural Lands Stewardship
14. Implement Agricultural Water Use Efficiency
15. Implement Pollution Prevention Measures
16. Implement System Reoperation
17. Implement Urban Water Use Efficiency
18. Improve Supply Conveyance – Delta
19. Improve Supply Conveyance – Regional/ Local
20. Incorporate Environmental Opportunities and Constraints into the Design Process for Facilities
21. Incorporate Opportunities to Improve Habitat and Increase Recreation and Public Access During the Facilities Design Process
22. Increase Recycled Water Use
23. Increase Stormwater Capture
24. Maintain and Improve Water-Dependent Recreation
25. Manage High Groundwater Potential
26. Manage Urban Runoff
27. Match Water Quality to Use
28. Monitor Consumer Confidence Reports
29. Operate Existing Facilities to Increase Recharge
30. Optimize Wet Year Storage and Dry Year Pumping (Conjunctive Management & Groundwater)
31. Participate in the SAWPA Basin Management Task Force
32. Protect Recharge Areas
33. Provide Economic Incentives
34. Remediate Groundwater Contamination Plumes
35. Restore Ecosystems
36. Review DACs Every 5 Years
37. Support the Bay Delta Conservation Plan

Implementation of the IRWM Plan

To date, the agencies located within the USARW IRWM Region have successfully implemented numerous water management strategies and projects, and continuously monitor progress toward achieving their goals and objectives. The responsibility for implementation of the IRWM Plan will continue to be guided by the BTAC agencies, all of whom participated in the planning process and prepared the 2007 IRWM Plan and this 2014 IRWM Plan. The success of the IRWM Plan's implementation will be ensured through ongoing plan performance and monitoring, data management, and the Region's funding and financing plan. These ongoing activities in combination with the integrated goals, objectives, and strategies developed through this IRWM Plan will ensure that the Region's water resources are sustainably managed into the future.