Section 5: Goals and Objectives

5.1 Introduction

The goals and objectives presented in this section represent the foundational intent of this IRWM Plan. Formulating meaningful and relevant goals and objectives for the Yosemite-Mariposa Region (Region) required more collaboration and collective interaction than the work documented in any other section of this Plan. The goals and objectives were developed over a 6-month period, with four discussions with participants at the main RWAC meetings and an additional two meetings and two conference calls with the Objectives subcommittee. The draft goals and objectives were circulated for review and comment to the RWAC or subcommittee five times to allow for thorough consideration and refinement of what ultimately will direct the Plan.

IRWM Plan Meeting
Credit: Pat Garcia

5.2 Key Terms

People familiar with the broad discipline of planning recognize that different agencies and organizations may use similar terms in slightly different ways in their processes. The following set of terms were established and used during the IRWM Plan preparation process:

- Goal
- Objectives
- Strategies

The *Goals* establish the foundational guiding principles and benchmarks that the Region has agreed should be completed over the course of Plan implementation. The Goals are often broad and encompass a number of issues in the Region. *Goals* are not always fully completed, but rather present the long-term ambitions of the Region to improve water resources management in an area. The Goals are defined and broken down into specific targets called *Objectives*. An *Objective* is a specific and tangible outcome of a *Goal* that is intended to be achieved by or during a designated time. Each *Goal* may have one or more specific *Objective*. The *Objectives* are the building blocks and "checkpoints" that will be used by the Region to confirm progress towards achieving each *Goal*. Finally, the *Objectives* were designed to accommodate *Strategies* as a means to achieve the *Objectives*. These *Strategies* will help the Region accomplish the Vision over time by implementing specific actions, projects or other means to achieve the plan *Objectives*.

Collectively, *Objectives* were developed using the "SMART" criteria, meaning that each objective should be **S**pecific, **M**easurable, **A**ttainable, **R**elevant, and **T**ime-based. When crafted properly, SMART planning targets help to promote actions that lead to measurable results.

Objectives written using the SMART format are designed to allow people to measure and track progress toward improving integrated water management within the Region over time.

Some of the Objectives are quantitative, while others are qualitative. Quantitative Objectives have specific defined targets, such as a certain volume of water saved per year. Qualitative Objectives are less specific, and might measure progress by tracking the number of meetings held, or attendance. Quantitative Objectives have been developed wherever possible; in some cases, initial qualitative Objectives have been formulated to inform and better define quantitative Objectives that will be developed later during Plan implementation. In this way, some of the Objectives are designed to collect fundamental information that is needed to fully understand and complete the overall plan Goals.

The Plan Goals were intended to focus on key areas of need throughout the Plan horizon, while specific dates for completion were assigned to the Objectives to be achieved during the 20-year planning period. It is expected that the Plan Goals and Objectives will be reviewed and potentially revised over time to reflect the benefits of increased coordination by Plan stakeholders.

5.3 Goals and Objectives Development Process

The Plan Goals and Objectives were developed using an iterative and collaborative approach that included three phases:

- Identify the major water-related needs and challenges within the Region
- Propose draft Plan Goals that address the major water-related needs and challenges, discuss, review and refine
- Propose draft Objectives and associated Strategies that will demonstrate progress towards achieving Plan Goals, discuss, review and refine

The first step in developing Plan Goals was to identify the water-related needs and challenges that people believed to be important in the Region today. This effort was initiated by the RWAC as part of the Region Acceptance Process and discussed in a general way during discussions at RWAC meetings in September and October 2012. A more focused brainstorming of Goals occurred with all attendees in June 2013. Once the Consultant team was engaged, draft Plan Goals, Objectives and Strategies were then developed building on the prior work of the RWAC and discussed for prioritization in July 2013. A sub-committee was formed in September 2013 and worked into January of 2014 to finalize the Goals, Objectives, and Strategies.

Quantification of Objectives and Strategies were developed and refined through discussion with the RWAC and sub-committee during the meetings and conference calls. In total, 23 Objectives and 55 quantifiable Strategies were identified in support of the 9 Plan Goals. Each Goal and Objective is summarized in Section 5.4 and described in Section 5.5 with the associated Strategies for each Objective. It should also be noted that there is potential for some overlap between certain Objectives because of the integrated nature of the needs and challenges; however, they were developed to be as specific and stand-alone as practical.

5.4 Goal and Objective Summary and Prioritization

An Objectives prioritization methodology was initiated by the RWAC and confirmed by the sub-committee. Since all 23 Objectives represent an important aspect of IRWM planning that warrants action, only Medium and High priorities were assigned as it was decided that low priority objectives would garner minimal attention and would not be useful to the IRWM Plan. Priorities were given for both importance and urgency (i.e., time sensitivity). The following Table 5-1 provides a summary of the objectives with the associated prioritization as assigned by stakeholders.

Table 5-1: Plan Objectives Prioritization

Plan Goal and Objective	Importance	Urgency
Goal #1: Provide/Improve Reliable Water Supply within the Region		
A. Provide reliable water supplies to meet all domestic water needs in the Region by 2035	High	High
B. Improve understanding of groundwater usage, quality, and reliability throughout key groundwater use areas the Region by 2020	High	Med
C. Promote Water Use Efficiency (WUE) practices throughout the Region and educate 80% of households and businesses by 2020	Med	Med
D. Identify by 2019 and manage and conserve forest, wetlands, and range lands for enhancement of water supply by 2035	High	High
Goal #2: Ensure Reliable Community Water and Wastewater Infrastructure		
E. Assess and identify the current condition of private and community water systems and their plans, if any, for future improvements by 2018	High	High
F. Assess and identify the current condition of community wastewater systems and their plans, if any, for future improvements by 2020	High	Med
G. Rehabilitate or replace aging and inadequate water and waste water distribution/collection, treatment, and disposal infrastructure by 2035	High	High
Goal #3: Maintain or Improve Water Quality in the Region		
H. Identify and prioritize impacted watersheds by 2020	High	Med
I. Conserve and restore 10,000 acres of watersheds through improved forest and rangeland management practices and appropriate land use by 2020. Conserve and restore 20,000 acres by 2035	High	High
J. Implement water quality improvement activities where pollutants are identified by 2035	High	High
K. Promote sustainable ecosystem and vegetation management on agricultural and production land, primarily near riparian corridors in the first five years of the IRWM Program	Med	Med

Plan Goal and Objective	Importance	Urgency
Goal #4: Protect and Improve Wildlife Habitat		
L. Improve watershed health by preventing the establishment of or , reducing/eliminating aquatic and terrestrial invasive species in at least 2 locations per year starting in 2017	High	Med
M. Protect special status and sensitive species and preserve and restore 10,000 acres by 2025 and 20,000 acres by 2035	High	Med
N. Conserve and ensure the presence of non-fragmented wildlife corridor habitats	High	Med
Goal #5: Assess and Enhance Recreational Opportunities in the Region		
O. Evaluate existing and potential recreational opportunities by 2019	Med	Med
P. Enhance public access for recreation to waterways by 2035	High	Med
Goal #6: Develop Collaborative and Sustainable Partnerships Both Within and in Adjacent Regions		
Q. Identify, review and evaluate the effectiveness of ordinances and county planning related to water management in the Region by 2020	High	Med
R. Develop opportunities/data management system so that current scientific data can be made available to make informed, collaborative choices regarding water resources and land use planning throughout the Planning Period	High	Med
Goal #7: Reduce Risk of Catastrophic Fire		
S. Facilitate and coordinate fuel management policies and strategies in at least two locations per year of high hazard lands in the Region	High	High
Goal #8: Educate Stakeholders and County Residents about Water Issues through the IRWM Process to Inspire Public Action		
T. Use education and outreach annually that maintains or increases watershed stewardship resulting in water quality and ecological improvements	High	Med
Goal #9: Prepare for Impacts of Climate Change		
U. Educate the public regarding the findings of the Climate Change Vulnerability Checklist for the Region by 2015 and periodically update the checklist with updated information	Med	Med
V. Mitigate impacts of climate change by implementing cost-effective renewable energy production in at least one location by 2035 and promoting energy/water use efficiency in the Region	Med	Med
W. Mitigate flood risk associated with climate change by cooperating with Local Hazard Mitigation Planning flood risk updates and educating the public regarding flood prevention and mitigation measures	Med	Med

5.5 Plan Goals and Objectives

5.5.1 Goal #1: Provide/Improve Reliable Water Supply within the Region

Objective A. Provide reliable water supplies to meet all domestic water needs in the Region by 2035.

Priority: Importance = High, Urgency = High

Narrative:
While the Region is the source of a large quantity of water, much of the water leaves the Region for downstream uses. Extended drought and/or climate change has and will restrict local water supply availability, especially the groundwater extracted from the fractured bedrock aquifers. Increased water supply reliability measures, such as enhanced recharge, water use efficiency, additional storage or multiple sources of supply can provide protection against potential water supply shortfalls. The Strategies associated with this Objective focuses on a range of activities to improve water supply reliability through identification and evaluation of both public water system and private water user needs and initiation of a range of implementation measures to meet this IRWM Plan objective.

Strategies:

1. Identify public water systems in the Region that currently do not have reliable water supplies and conduct water rate survey by 2015
2. Improve understanding of the Region's water supply needs for individual water users (not only community systems) and identify which sources and geographies are at greatest risk by 2015
3. Complete evaluation by 2018 and initiate implementation measures (including status reports every 5 years thereafter) to improve water supply reliability (e.g., water use efficiency, rain/stormwater capture, surface water diversion, conjunctive use, recycled water etc.) to increase supply. Also provides potential climate change adaptation strategy.

Objective B. Improve understanding of groundwater usage, quality, and reliability throughout key groundwater use areas the Region by 2020

Priority: Importance = High, Urgency = Medium

Narrative:
Groundwater is the primary source of water supply for most communities and individuals within the Region. However, limited study has occurred regarding the risks of water quality, reliability and use in these small, fractured granitic groundwater aquifers. The measurable strategies below build on information developed in a groundwater study conducted concurrently with the IRWM plan development.

Strategies:

1. Identify key groundwater use areas; quantify groundwater recharge and extraction rates and potential availability; and identify potential groundwater monitoring activities in those areas by 2020.

2. Evaluate and develop groundwater management practices including
    a. Establish sustainable groundwater extraction targets in key groundwater use areas
    b. Improve groundwater recharge to reduce number of dry wells and the need for new well drilling by encouraging/facilitating residential and urban water recharge by slowing seasonal drainages and channeling run-off to settling ponds/swales.
    c. Reduce groundwater extractions by implementing conjunctive use (e.g., surface water storage, alternative supplies, etc.) where feasible.
    d. Utilize existing flood control reservoirs to retain water for groundwater recharge

Objective C. Promote Water Use Efficiency (WUE) practices throughout the Region and educate 80% of households and businesses by 2020.

Priority: Importance = Medium, Urgency = Medium

Narrative:
Water use efficiency is one way to manage water demands including strategies such as public education about efficient water practices and retrofit of high water use devises such as toilets, shower heads, etc. Improvements can be made by municipal (i.e., individuals and businesses), and agricultural water users if appropriate education and incentives are offered. The Strategies focus on using existing educational resources for implementation of WUE programs to meet this IRWM Plan objective.

Strategies:
1. Work with entities such as Master Gardener/ UC Cooperative Extension/NRCS to identify, define and foster implementation of water use efficiency measures and proper water development practices by both residential and agricultural end users throughout the county, as potential climate change adaptation strategies.
2. Educate the public in the WUE best management practices (BMPs) (i.e., demand management measures) for water usage and wastewater management (i.e., reuse, drip irrigation, etc.), as potential climate change adaptation strategies. Examples include:
    a. Encourage & promote use of natural landscaping rather than lawns to reduce water consumption
    b. Encourage metering of individual connections on public water systems
    c. Economical grey water reclamation for garden and dust control
    d. Encourage and facilitate adoption of recommended WUE BMPs

Objective D. Identify by 2019 and manage and conserve forest, wetlands, and range lands for enhancement of water supply by 2035.

Priority: Importance = High, Urgency = High

Narrative:
Many of the Region's lands, including high Sierra meadows/wetlands, forests, and rangelands can provide significant benefits not only to improve ecosystem function, but also increase water supply yield. The impacts of land degradation from eroded banks,

headcuts, depressed water tables, encroaching conifers, non-native vegetation, off-highway vehicle travel and grazing/agricultural uses can be improved so that the natural water retention, habitat, and Native American cultural values of the lands are restored. As there are several organizations in the Region working on forest, wetlands, and rangelands the associated Strategies focuses on inventory and coordination to address this IRWM Plan objective.

Strategies:

1. Annually educate forest and range land owners of BMPs to enhance recharge using resources such as UC Merced studies
2. Work with federal land managers and other agencies to identify key forest and range lands that can be enhanced to maximize water supply by 2019
3. Partner with organizations like NRCS, SFC, and University of California to identify critical forest/range lands by 2019 for conservation and management
4. Use conservation tools, such as land planning, conservation easements, and land acquisition to conserve those lands identified for water supply protection by 2035

5.5.2 Goal #2: Ensure Reliable Community Water and Wastewater Infrastructure

Objective E. Assess and identify the current condition of private and community water systems and their plans, if any, for future improvements by 2018.

Priority: Importance = High, Urgency = High

Narrative:

There are almost 80 California Department of Health regulated small private and community water systems in the Region, many of which likely may have deteriorating infrastructure and that lack the financial resources to make improvements. In addition, fire suppression storage infrastructure has been identified as a concern because of the potential for wildfire in the Region. Because of the large number of water systems, the Strategies focus on inventory and identification of infrastructure improvements to address this IRWM Plan objective. Implementation of improvements is addressed in Objective G.

Strategies:

1. By 2015, conduct a study analyzing community water systems and potential upgrades/expansion
2. By 2025, assist public drinking water systems in meeting both primary and secondary drinking water standards
3. By 2015, review Community Wildfire Protection Plans to identify locations without sufficient water storage within each major watershed area storage
4. By 2020 improve fire suppression resources at those locations without storage

Objective F. Assess and identify the current condition of community wastewater systems and their plans, if any, for future improvements by 2020.

Priority: Importance = High, Urgency = Medium

Narrative:
It is estimated that about half of the Region's residents are served by five community wastewater collection, treatment and disposal systems. This Objective is based on the challenge that these wastewater systems must meet regulatory requirements for treatment and discharge within the financial limitations of its customer base. While some of the wastewater treatment systems have been recently improved, others have aging treatment and collection systems requiring improvement. The associated Strategies focus on the assessment and identification of activities that would address this IRWM Plan objective. Implementation of improvements is addressed in Objective G.

Strategies:

1. Coordinate with LAFCO Municipal Service Reviews to evaluate the current condition of the five non-Federal community wastewater systems by 2020

Objective G. Rehabilitate or replace aging and inadequate water and waste water distribution/collection, treatment, and disposal infrastructure by 2035.

Priority: Importance = High, Urgency = High

Narrative:
Many of the small, disconnected community water and wastewater systems require rehabilitation and/or replacement, which will be better understood following completion of Objectives E and F. Therefore, the associated Strategy was developed to prioritize and implement specific infrastructure improvements that would address this IRWM Plan objective.

Strategies:

1. Bi-annually survey water and wastewater agencies for highest priority infrastructure needs.
2. Develop and implement a regional water/wastewater infrastructure capital improvement program.

5.5.3 Goal #3: Maintain or Improve Water Quality in the Region

Objective H. Identify and prioritize impacted watersheds by 2020.

Priority: Importance = High, Urgency = Medium

Narrative:
The three main watersheds and associated sub watersheds within the Region are under Federal, State, local, and private land management. The IRWM process provides an important venue for coordination of watershed assessment and management activities. The Strategies to meet this Objective are focused on identification and prioritization of watersheds both from a water quality, ecosystem, and tribal perspective. In addition,

since the watersheds provide water both for the Y-M Region, as well as, neighboring Regions these activities are also an important interregional concern.

Strategies:

1. Develop integrated plans with public land agencies to protect and improve upper watershed water quality
2. Improve understanding of lands and cultural practices valuable to the tribes
3. Determine ecosystems that are impaired including those at risk to climate change

Objective I. Conserve and restore 10,000 acres of watersheds through improved forest and rangeland management practices and appropriate land use by 2020. Conserve and restore 20,000 acres by 2035.

Priority: Importance = High, Urgency = High

Narrative:

Improvements to the watershed particularly associated with forest and rangeland management practices (e.g., fuel management for fire risk reduction, forest thinning, erosion reduction etc.) can result in long-term benefits not only to improve water supply yield, but also to ecosystem value. Catastrophic wildfires in poorly managed forests are understood to result in increased erosion and sediment loading from runoff from the burned landscape, with resulting long lasting water quality and ecosystem impacts. The associated Strategies focus on the activities such as fuel load and soil erosion reduction that improve watershed health to address this IRWM Plan objective.

Strategies:

1. Protect important watershed regions using conservation easements and land acquisition.
2. Improve watershed health and function in rangelands by promoting water holding capacity of soil, erosion reduction, and soil carbon sequestration through improved grazing practices
3. Improve the health and ecological function of mountain meadows to increase water storage capacity and long-term water release

Objective J. Implement water quality protection and improvement activities where pollutants are identified by 2035.

Priority: Importance = High, Urgency = High

Narrative:

This Objective recognizes the variety of water quality challenges of historic and current practices such as mining, impervious surfaces, leaking underground storage tanks, septic tanks, and agriculture that may contribute a range of pollutants to be addressed through mitigation activities. This Objective will assist in identifying the means of correcting the existing and preventing future water quality problems.

Strategies:

1. Mitigate pollutants in surface water (e.g., road/impervious area drainage, sanitary sewer overflows, mining contamination, etc.) by implementing policies for future

developments/disturbances and remedial actions in existing development/disturbances
2. Reduce risk of contamination (e.g., nitrates, bacteria, etc.) in groundwater and adjacent streams from failing septic systems by implementing policies for future developments and remedial actions in existing development

Objective K. Promote sustainable ecosystem and vegetation management on agricultural and production land, primarily near riparian corridors in the first five years of the IRWM Program.

Priority: Importance = Medium, Urgency = Medium

Narrative:
This Objective recognizes the challenge raised by stakeholders with regard to sustainable land management, with particular focus on the riparian corridors near agricultural lands. This Objective will assist in identifying lands that could benefit from improved management, and working with existing organizations to promote management improvements.

Strategies:
1. By 2015 identify landowners and land managers and quantify acres under economic production
2. By 2018, work with/support NRCS, UC Extension, Upper Merced River Watershed Council, Sierra Foothill Conservancy and other groups to conduct county-wide workshops to promote environmental stewardship/management of forest, meadow, and foothill ecosystems through use of (best management practices) BMPs such as manure management and erosion/sediment control to control and improve water quality run-off from farm/ranch property from activities such as
    a. Stock Animals
    b. Agriculture
    c. Foresters/ timber harvest operations
3. Conduct projects to improve vegetation quality and quantity, especially in the county's rangelands. Improved vegetation equates to less bare soil, more infiltration of water and nutrients to the soil, and improved water quality in riparian zones

5.5.4 Goal #4: Protect and Improve Wildlife Habitat

Objective L. Improve watershed health by preventing the establishment of or, reducing/eliminating aquatic and terrestrial invasive species in at least 2 locations per year starting in 2017.

Priority: Importance = High, Urgency = Medium

Narrative:
Sensitive wetlands, vernal pools, and native riparian habitats are highly vulnerable to terrestrial and aquatic invasive species. It is estimated that 60 percent of the Region's lands are may have the presence of terrestrial invasive species. The Strategies focus on

both coordination to focus the IRWM energies and implementation to minimize the presence of non-native species.

Strategies:

1. Use available information from federal agencies (e.g., USFS, NPS, BLM, NRCS), Mariposa County Agricultural Commissioner, Upper Merced River Watershed Council, Sierra- San Joaquin Noxious Weed Alliance, California Native Plant Society, and other sources to identify areas to target for invasive species management activities by 2016.
2. Implement at least 2 projects per year which remove and/or prevent the spread of aquatic and terrestrial invasive species within areas targeted in Strategy L-1

Objective M. Protect special status and sensitive species and preserve and restore 10,000 acres by 2025 and 20,000 acres by 2035.

Priority: Importance = High, Urgency = Medium

Narrative:

There are a significant number of special status (threatened, endangered or otherwise imperiled) aquatic or riparian plant, fish, amphibian, reptile, or invertebrate species in the Region. In addition, a portion of the Merced River is designated as a National Wild and Scenic River. Preservation and restoration of special status species populations is of critical importance, as is protection of unique habitat corridors through the national and state designations of the various waterways. As there are several organizations in the Region working on species and habitat issues, the associated Strategies focus on the coordination necessary to address this IRWM Plan objective.

Strategies:

1. Identify targeted species and habitats for protection, preservation, and/or restoration within the Plan Area by 2016.
2. Working with NRCS, SFC, federal and state agencies, conserve and restore at 2 locations per year, habitats for special status or sensitive species such as riparian habitat, meadows, vernal pools and other waterways using management techniques and land conservation strategies.

Objective N. Conserve and ensure the presence of non-fragmented wildlife habitat corridors.

Priority: Importance = High, Urgency = Medium

Narrative:

The majority of the Region consists of forested and open space lands managed by State and Federal agencies that serve as prime wildlife habitat; some of the corridors may also transition across private lands. These Strategies will help integrate and coordinate the efforts to retain wildlife corridors protecting them from the various pressures and impacts of human action.

Strategies:

1. Work with state and federal agencies, researchers, and nonprofits such as Audubon Society and SFC, to identify priority wildlife migration corridors and seasonal uses within the Region by 2016.
2. Assist in the conservation, protection, or restoration of 10 acres of corridor habitat per year starting in 2017 by partnering with organizations that conduct restoration, by encouraging appropriate land use planning and by using conservation tools such as conservation easements.

5.5.5 Goal #5: Assess and Enhance Recreational Opportunities in the Region

Objective O. Evaluate existing and potential recreational opportunities by 2019

Priority: Importance = Medium, Urgency = Medium

Narrative:
Recreation and tourism are key industries that have a significant economic impact to the Region. It is estimated that up to 4 million visitors per year come to Yosemite National Park, a portion of which is in the Region, as well as neighboring state and federal facilities. Many of the recreational opportunities are located within the forests and watersheds that also provide important water resources and ecosystem habitat. Therefore, the Strategies are targeted at activities that improve recreation to achieve additional economic and non-economic benefits to the Region.

Strategies:

1. Leverage partnerships with area federal agencies (Forest Service, Park Service, BLM) to promote recreation in and along waterways and lakes
2. Improve pedestrian access to and along waterways and riparian corridors - especially sections of the Wild and Scenic Merced River- for swimming and tubing, fishing, hiking, bird watching, biking, etc.
3. Improve facilities for commercial rafting input and take-out along the Merced River and Bagby Recreational area. Identify new and enhanced aquatic/riparian opportunities with local environmental, conservation, governmental and commercial groups - for example: MID - Merced River Trail, Friends of Bear Creek - Bear Creek Trail, MPUD - Stockton Creek Preserve, Mariposa County Transportation Department

Objective P. Enhance public access for recreation to waterways by 2035

Priority: Importance = High, Urgency = Medium

Narrative:
This Objective and associated Strategies focuses on implementation of the actions identified in Objective O to implement projects by using the resources of existing public and private entities to enhance public access to waterways for recreation in the Region.

Strategies:

1. Leverage partnerships with area federal agencies (Forest Service, Park Service, BLM) to improve access for parking, trails and access to lakes and riverbanks.
2. Leverage partnerships with local conservation, environmental, commercial and governmental groups to identify target locations for better access.
3. Create 10 miles of trails by 2035

5.5.6 Goal #6: Develop Collaborative and Sustainable Partnerships both within and in Adjacent Regions

Objective Q. Identify, review and evaluate the effectiveness of ordinances and county planning related to water management in the Region by 2020

Priority: Importance = High, Urgency = Medium

Narrative:
Improved integration of land use and natural resource planning will help improve watershed protection. The associated Strategies focuses on providing water resource managers with opportunities for increased review and input into land use and natural resources planning and standard development at the local, Tribal, regional, and federal level to meet this IRWM Plan objective.

Strategies:

1. Review zoning and planning rules / regulations and make recommendations to address adequacy of water availability, balancing land development with protection of water supply quality and quantity, wastewater management and potential impacts of climate change (Resource: Mariposa County Planning/LAFCO).
2. Preserve the water quality within each watershed within Mariposa County by proposing/enforcing development standards including erosion control during and after earth disturbing activities, and restoration of natural hydrology in disturbed and impervious areas through infiltration of runoff, restoration of streams /rivers , and conservative water use for new construction projects

Objective R. Develop opportunities/data management system so that current scientific data can be made available to make informed, collaborative choices regarding water resources and land use management throughout the Planning Period.

Priority: Importance = High, Urgency = Medium

Narrative:
There are numerous water resources and scientific data sources with helpful information that could improve management practices, however there is not a single repository for this information and there are likely many data gaps. This Objective and associated Strategies focuses on developing data management systems and the IRWM processes to improve technical understanding to enhance the public's knowledge in order to improve water-related planning and decision-making in the Region.

Strategies:

1. Evaluate data management system for technical information sharing by working with UC Merced's Spatial Laboratory and other organizations
2. Continue to use RWAC meetings as an opportunity to discuss/evaluate current science and promote actions for improved water management including coordination activities to share water supply information to promote optimal use of resources and minimize risks of legal non-compliance – information sharing.

Coordination activities to share water supply information to promote optimal use of resources and minimize risks of legal non-compliance – information sharing

5.5.7 Goal #7: Reduce Risk of Catastrophic Fire

Objective S. Facilitate and coordinate fuel management policies and strategies in at least two locations per year in high hazard lands in the Region.

Priority: Importance = High, Urgency = High

Narrative:
This Objective was included in recognition of the significant risk of wildfire in the Region. Therefore, the Strategies are targeted at activities to improve coordination with other agencies as well as to implement projects to reduce fuel loading in the Region.

Strategies:

1. Leverage partnerships with area federal agencies (Forest Service, Park Service, BLM) to identify, educate the public, and implement effective fuel management strategies with which to collaborate on such as
    a. managing existing roads and maintain access to watershed ecosystems to improve fire suppression access while reducing erosion
    b. conducting selective logging (thinning) to reduce forest die-off and increase underground water storage
2. Working with CAL FIRE, NRCS, and the Forest Service, and State OES through LHMP encourage private landowners to utilize best management practices on their forested property to reduce fuel loads.

5.5.8 Goal #8: Educate Stakeholders and County Residents about Water Issues through the IRWM Process to Inspire Public Action

Objective T. Use education and outreach annually that maintains or increases watershed stewardship resulting in water quality and ecological improvements.

Priority: Importance = High, Urgency = Medium

Narrative:
This Objective was included because of the potential benefits of building widespread stakeholder interest in and acknowledgement of the benefits of the IRWM process and

resulting actions. Therefore, the Strategies are targeted at activities to improve public education and outreach in the Region.

Strategies:

1. Educate water users to increase cooperative stewardship of water resources
2. Educate people on all aspects of water quality Best Management Practices (BMPs)
3. Implement a Continuing Education Program for water supply, water quality, fire protection, environment stewardship, flood control and climate change impacts to water-related natural resources
4. Promote recreation in the Region

5.5.9 Goal #9: Prepare for Impacts of Climate Change

Objective U. Educate the public regarding the findings of the Climate Change Vulnerability Checklist for the Region by 2015 and periodically update the checklist with updated information.

Priority: Importance = Medium, Urgency = Medium

Narrative:
This Objective was included to acknowledge the potential impacts of Climate Change and to make sure the public is educated regarding those impacts and possible adaptation strategies. Therefore, the Strategies are targeted to coordinate with Goal #8 regarding public education in the Region.

Strategies:

1. Align education with strategies in Goal #8 – including discussion of the potential effects of climate change on the range of water management topics including water supply, flood/storm water drainage management, water quality, wildfire risk, and ecosystems

Objective V. Mitigate impacts of climate change by implementing cost-effective renewable energy production in at least one location by 2035 and promoting energy/water use efficiency in the Region.

Priority: Importance = Medium, Urgency = Medium

Narrative:
Significant elevation changes in the various water systems that convey water from the higher elevation mountains towards the lower elevation foothills exists, which provides opportunities for renewable energy generation in the Region. There are three hydroelectric facilities on the Merced River and this Objective seeks to expand those opportunities by harnessing the potential from existing infrastructure systems. The associated Strategies focus on screening and evaluation of opportunities on waterways and residences and implementation of cost-effective projects to meet this IRWM Plan objective.

Strategies:

1. Annually promote PG&E energy-efficiency and renewable energy programs
    a. Home/business energy audits
    b. Improved well pump efficiency for all well owners
    c. In-line and other hydroelectric power opportunities.

Objective W. Mitigate flood risk associated with climate change by cooperating with Local Hazard Mitigation Planning flood risk updates and educating the public.

Priority: Importance = Medium, Urgency = Medium

Narrative:

Localized flooding occurs in some more urbanized areas such as Yosemite Valley and Mariposa, as well as on some rural roads, where flooding could impact buildings and infrastructure. In addition, the flood and water quality benefits of low impact development measures are recognized. The associated Strategies contain a range of activities to better understand and address the challenges to meet this IRWM Plan objective.

Strategies:

1. Potential integrated mitigation measures to be considered include
    a. Reducing impermeable areas to improve water infiltration and flood control and increase groundwater recharge, as potential climate change adaptation strategies.
    b. Repairing road-stream crossings to reduce major flood-related erosion and improve native aquatic organism passage
2. Conserve land in flood plains, and lands that are critical to water storage and filtration.
3. Clearing debris and vegetation from smaller waterways near properties to minimize localized flooding

Section 6: Resource Management Strategies

6.1 Introduction

The Goals, Objectives, and Strategies presented in Section 5 for the Yosemite-Mariposa (Y-M) Integrated Regional Water Management (IRWM) Plan describe a range of areas in which regional stakeholders intend to improve water-related conditions in the Region over the plan horizon. The broad categorical actions required to achieve the goals and objectives mostly align with the Resource Management Strategies (RMS) identified in the draft California Water Plan (CWP) Update 2013 which are to be considered for applicability in an IRWM Plan. A RMS is a project, program, or policy that helps local agencies and governments manage their water and related resources. A diversified portfolio of RMS will help the Y-M Region to better prepare and mitigate for potential future conditions, such as climate change and severe drought. This section introduces the 36 RMS from the draft 2013 CWP and identifies those selected for inclusion in the Y-M IRWM Plan. The projects, programs, and actions described in Section 7 are then derived from the selected RMS.

6.2 Resource Management Strategy (RMS) Summary

The draft CWP Update 2013 groups its RMS into seven management objectives. In addition, the CWP includes "other" resource management strategies that can potentially contribute to various management objectives, but which are largely still under development. These draft 2013 RMS have been somewhat reorganized since the CWP Update 2009 and a new management objective, People and Water, has been added. This section considers all 29 RMS of the 2009 CWP as well as the new strategies: Sediment Management, Outreach and Education, Water and Culture, Waterbag Transport/Storage Technology, Dewvaporation or Atmospheric Pressure Desalination, and Rainfed Agriculture

Table 6-1 that follows provides a summary of the CWP Objectives and associated RMS that were considered by the RWAC at the September 25, 2013 RWAC meeting for inclusion in the plan. RMS that are asterisked and italicized are considered not currently applicable to the Y-M Region.

Table 6-1: Draft 2013 CWP Objectives and RMS Summary

CWP Objectives	Resource Management Strategies
Reduce Water Demand	Agricultural Water Use Efficiency Urban Water Use Efficiency
Improve Flood Management	Flood Management
Improve Operational Efficiency and Transfers	*Conveyance – Delta** Conveyance – Regional/local System Reoperation Water Transfers
Increase Water Supply	Conjunctive Management & Groundwater Storage *Desalination (Brackish and Sea Water)** *Precipitation Enhancement** Municipal Recycled Water *Surface Storage – CALFED/State** Surface Storage – Regional/local
Improve Water Quality	Drinking Water Treatment and Distribution Groundwater/Aquifer Remediation Matching Water Quality to Use Pollution Prevention *Salt and Salinity Management** Urban Stormwater Runoff Management

CWP Objectives	Resource Management Strategies
Practice Resources Stewardship	Agricultural Land Stewardship Ecosystem Restoration Forest Management Land Use Planning and Management Recharge Area Protection Sediment Management Watershed Management
People and Water	Economic Incentives Outreach and Engagement Water and Culture Water-Dependent Recreation
Other Strategies	*Crop Idling for Water Transfers** Irrigated Land Retirement *Waterbag Transport/Storage Technology ** *Dewvaporation or Atmospheric Pressure Desalination** *Fog Collection ** *Rainfed agriculture**

* RMS not applicable to Y-M IRWM Plan.

6.3 RMS Applicable to the Region

RMS that are applicable to implementation of the Y-M IRWM Plan are those which align with the major water related conditions discussed in Section 3 and contribute to achieving the Plan goals, objectives, and strategies discussed in Section 5. For each Plan objective, the RMS that could assist in meeting the objective identified and their applicability to the Region are discussed below:

6.3.1 Reduce Water Demand

This CWP Management Objective aligns directly with the Y-M IRWM Plan Goal 1: Provide/Improve Reliable Water Supply within the Region and its associated objectives.

6.3.1.1 Agricultural Water Use Efficiency

While irrigated agriculture in the Region is limited to some permanent crops such as wine grapes and nuts and a limited amount of forage for cattle, agricultural water use efficiency could be relevant to the Region. Additionally, some of the major water exports from the Region are to the San Joaquin Valley, where water from the Region is used to irrigate approximately 174,000 acres of farmland, therefore interregional coordination is also important to this RMS. The agricultural water use efficiency strategy involves measures that reduce the amount of water used for agricultural irrigation while maintaining agricultural productivity. This strategy includes improvements in irrigation technology and water management practices that result in direct improvements in water use efficiency as well as education and training efforts that lead to improved water management.

This strategy aligns with the IRWM Objectives c and d which are geared toward the decrease of water usage across the Region. This RMS would mainly be applicable for groundwater wells and/or surface diversions that supply the agricultural operations that occur primarily in the western portion of the Region, as well as downstream water users in the San Joaquin Valley.

6.3.1.2 Urban Water Use Efficiency

The urban water use efficiency strategy addresses indoor and outdoor residential, commercial, industrial and institutional water uses in the more densely developed portions of the Region that are primarily served by centralized community water systems. This strategy includes improvements in technology or water management measures that lower water use or increase beneficial uses from existing water quantities. This strategy also includes educational programs and other measures that

result in the adoption of technological improvements or behavioral changes that reduce water demand.

There is interest and acknowledgement of the value of this RMS amongst the stakeholders as identified in Objective C related to water use efficiency. Smaller water suppliers will likely coordinate their efforts to improve water use efficiency, particularly through educational outreach as feasible. Improving water use efficiency in the Region also brings potential benefits to individual groundwater users who often are dependent on fractured rock aquifers which may be an unreliable water supply.

6.3.2 Improve Flood Management

6.3.2.1 Flood Risk Management

The flood risk management strategy involves both structural and non-structural measures to reduce overall flood risk, manage flood flows and programs that improve flood preparedness, response and recovery. Structural approaches to flood management include dams and reservoirs, levees, channel modifications and diversions. Non-structural measures focus on land use management such as floodplain restoration and development policies.

While the Region itself has limited areas of floodplain due to the steep terrain, flooding danger in and downstream of the Region is usually most prevalent during the spring months when snowmelt is typically at its peak. Waterways can become over burdened with especially high periods of snowmelt and threaten communities in the flood plain. Structural flood control measures include US Army Corps of Engineers dams along the western and southern edge of the Y-M Region; these dams mainly benefit areas downstream of the Region. The nonstructural measures for flood management used in the Region include preservation of the natural landscape through forestry and post fire management which could assist in reducing flood risk. Development adjacent to the larger waterways is naturally limited because much of those lands are under public ownership. This RMS links to Objective W related to flood risk mitigation, particularly under climate change conditions discussed in Section 5.

6.3.3 Improve Operational Efficiency and Transfers

*6.3.3.1 Conveyance-Delta**

Delta conveyance refers to the movement of water within the network of streams, sloughs and channels of the Sacramento-San Joaquin Delta and movement of water out of the Delta through constructed water conveyance systems.

This RMS is not applicable to the Y-M Region because entities in the Region do not use Delta conveyance to obtain water supply. There are entities within the Region that divert water from the Merced River (a tributary to the Delta) to meet local beneficial uses but these have no significant influence upon Delta conveyance as discussed in Section 3. The consumptive water demands of the Y-M Region are minor in comparison to the productivity of the watersheds and the amount of water annually exported out of the Delta. Water flowing from the Region is managed to meet water quality standards and stream flow downstream in the Delta. This Region's watersheds are important to the Delta because of the snow-pack storage and resultant benefits to the life-cycle of several species of native fish, for recreation, and other uses.

*6.3.3.2 Conveyance - Regional/Local**

Regional/local conveyance refers to the use of both natural waterways and built infrastructure to move water to areas where it is needed or to move water away from areas to protect existing resources. The regional/local conveyance strategy covers the distribution and conveyance of local

sources of water and imported water for the purposes of improving water supply, water quality, recreation, habitat, and flood management.

This RMS is applicable on an interregional level. For example, a conveyance system to a future Montgomery Dam and reservoir in Merced County may decrease the Rain/Flood space in New Exchequer Dam, increasing water supply conservation volume in New Exchequer. This improvement is particularly important to the Lake Don Pedro Community Services District. Other potential improvements in conveyance could include draining New Exchequer Dam with a water supply benefit and, levee system improvements on the Merced River downstream from New Exchequer Dam. The maximum allowed flow rate in Merced River is 6,000 cubic feet per second (cfs) when the difference in the San Joaquin River capacity upstream versus downstream from Merced River Confluence with the San Joaquin River is 19,000 cfs. Any incremental gain in the flow on the Merced will translate to more water supply behind New Exchequer Dam.

6.3.3.3 System Reoperation

System reoperation involves changes to the existing operation of water systems to address existing problems, to increase water supply reliability or to adapt to future changes. The system reoperation strategy includes reoperation of surface water storage facilities, groundwater sourced water systems and associated conveyance infrastructure. These resources may be related to the Conjunctive Management and Groundwater Storage RMS depending upon location.

In the Y-M Region, the reoperation of existing surface storage reservoirs is currently under consideration as an opportunity for developing sufficient reliable and affordable water supplies now and into the future, particularly for downstream water users outside the Region. Given the nature of the water systems in the Region and their water rights, this may involve altering the amount or timing of water production. Besides two communities and the Merced Irrigation District Parks on the Merced River Development Project, surface water systems mainly affect users outside the Region. Reoperation may create opportunities for conjunctive use (see Section 6.3.4.1) that could benefit local water systems relying on both groundwater and surface by providing an alternative surface water source. This would allow groundwater to remain in storage during periods of abundant surface water saving the groundwater for use during periods of low surface water availability.

In the case of New Exchequer Reservoir, these reoperations may restore only a portion of the water supply depending on the outcome of the State Water Resources Control Board current plan which will not impound 25% to 45% of the unimpaired flows of the Merced River between February and June. Reoperation may also help restore portion of lost hydroelectric power revenue when most generation occurs in the winter and spring months with other impacts such as chronic lower elevations in Lake McClure as a result.

6.3.3.4 Water Transfers

Water transfers are voluntary exchanges of water or water rights among water users. A water transfer can be a change in point of diversion, place of use or type of use. Water transfers typically occur using one of the following: transfer of water from reservoirs that would otherwise have been carried over to the following year, use of groundwater instead of surface water deliveries and transfer of the surface water rights, transfer of previously banked groundwater, reduction of existing consumptive use and transfer of the resulting water savings, and reduction of water losses and transfer of the recovered water.

In the Y-M Region, water movement transactions primarily involve the long-standing export of in-Region water for environmental, agricultural and municipal uses within and outside of the Region. While there are two agencies in the Region with water purchase agreements from a downstream water rights holder, other water transfers, in the sense of exchanges, have not recently been

actively pursued by entities in the Y-M Region. They may become a tool to help achieve the objective of developing water supplies to meet Regional demands but will be subject to water availability and/or reductions in water use elsewhere to meet a local need.

6.3.4 Increase Water Supply

6.3.4.1 Conjunctive Management and Groundwater Storage

Conjunctive management is the coordinated use of surface water and groundwater to maximize the water available to a region. The conjunctive management and groundwater storage strategy involves recharge of groundwater basins when excess surface water is available.

The Y-M Region does not have a defined groundwater basin, except for a small basin in the Yosemite Valley. Limited recharge occurs with treated wastewater in the small alluvial groundwater basin in El Portal, but available storage is constrained by the close proximity of the Merced River. The majority of groundwater supplies are located within small, fractured rock structures of unknown capacity which can result in difficulties quantifying storage and also in quantifying recharge. In addition, there is limited understanding of the usage of groundwater by individual well owners. While an increased usage of seasonally abundant riparian surface water is a possible future option to help relieve pressure on groundwater supplies the water must be used immediately, often during periods of low water demand, and cannot be stored. If surface water is to be stored locally, there are complex water rights and surface water availability issues to overcome. This results in many challenges for conjunctive management of groundwater storage with surface storage.

*6.3.4.2 Desalination (Brackish and Sea Water)**

Desalination refers to treatment processes that remove salts from water to achieve salinity concentrations that are acceptable for municipal and agricultural uses. The desalination strategy covers treatment of seawater, brackish water and wastewater.

Groundwater constitutes a large portion of the potable water supply for the Region because of the limited access and water right allocation of surface water supplies. Some of the groundwater that is currently used in the Region is impacted by nitrate and volatile organic compounds, often associated with leaking underground storage tanks for petroleum products. The groundwater study that is planned concurrent with IRWM Plan preparation will include water sampling to better understand groundwater quality in portions of the Region. It is not yet known the degree to which this RMS could benefit Regional supplies and is not a RMS in the Y-M Region at this time.

*6.3.4.3 Precipitation Enhancement**

Precipitation enhancement, commonly called “cloud seeding,” artificially stimulates clouds to produce more rainfall or snowfall than they would naturally. Cloud seeding injects special substances into the clouds that enable snowflakes and raindrops to form more easily. Precipitation enhancement is the one form of weather modification done in California.

While this RMS is not initiated by entities in the Region and is not a likely project, the Region may benefit from the cloud seeding activities of other agencies such as Southern California Edison who seek to enhance snow pack for hydropower production and/or water supply. Precipitation enhancement has been utilized in nearby Regions. As climate change impacts are better understood cloud seeding may be desirable in the Region.

6.3.4.4 Municipal Recycled Water

Water recycling is the treatment and reuse of wastewater. The recycled municipal water strategy applies specifically to the application of municipal wastewater with the intention of putting the water to a beneficial use that would not occur through discharge of the wastewater.

As described in the Existing and Current Conditions, Section 3, recycled water is currently being produced and used at a few limited locations in the Region primarily for pasture and golf course irrigation. There are a few facilities throughout the Region that could consider treatment expansion to include recycled water production where cost effective.

*6.3.4.5 Surface Storage – CALFED/State**

Surface storage encompasses strategies related to potential CALFED storage reservoir investigations: Shasta Lake Water Resources Investigation, North-of the Delta Offstream Storage, In-Delta Storage Project, Los Vaqueros Reservoir Expansion, and Upper San Joaquin River Basin Storage Investigation.

The Y-M Region may benefit from the construction of Montgomery reservoir on Dry Creek, a CALFED storage project, mainly in Merced County, which has positive impact on New Exchequer Reservoir. However, the Y-M Region has large existing water storage reservoirs and has a very low potential of being involved with these projects for additional storage rendering this RMS not applicable.

6.3.4.6 Surface Storage - Regional/Local

Surface storage consists of the collection and storage of water within on-stream or off-stream reservoirs for later release. This strategy includes the use surface storage for water supply as well as flood management.

The numerous reservoirs existing in the Y-M Region are operated primarily for environmental, flood control, municipal, irrigation, recreation, and hydroelectric production. Except for municipal and recreational uses, the remaining identified uses benefit areas outside of the Region. Storage capacity for local consumptive use is limited to a couple of small private reservoirs and one municipal reservoir on Stockton Creek operated by Mariposa Public Utilities District. The largest water supply reservoirs in the Region, Lake McClure and Lake McSwain are utilized primarily by Merced Irrigation District which supplies municipal water to the Lake Don Pedro Community Services District and Boat Club subdivision both fed directly from Lake McClure. Merced Irrigation District is pursuing increasing the water supply storage of New Exchequer Dam as part of its New Exchequer Dam Spillway Modification project.

6.3.5 Improve Water Quality

6.3.5.1 Drinking Water Treatment and Distribution

The drinking water treatment and distribution strategy is focused on ensuring that water provided by public water systems for human consumption is safe for drinking. Drinking water treatment includes processes that treat, blend or condition water to meet potable standards, and drinking water distribution includes the storage, pumping and delivery of potable water to customers of centralized water systems. This strategy includes measures both within the treatment processes and distribution system that are necessary to produce and maintain safe drinking quality.

Delivering drinking water that meets water quality standards and improving infrastructure in order to do so is a high priority in the Region as noted in Goal 2 to provide reliable water infrastructure and associated Objectives e and g. This may include improvements to the distribution system or the

actual water treatment system. It should be noted that the low population density of the Region means a limited funding base for the various agencies making capital improvements and operations difficult. Managing sources of pollution is also seen as an important means for facilitating compliance with water quality regulations and increasing the reliability and safety for all drinking water users in the Region.

*6.3.5.2 Groundwater and Aquifer Remediation**

Groundwater and aquifer remediation is the improvement of groundwater quality to meet intended beneficial uses. Groundwater impairment may be the result of naturally occurring constituents or anthropogenic contamination. The groundwater and aquifer remediation strategy includes both in-situ techniques (soil vapor removal, application of electrical current) and active treatment (pumping and treating) which remove the contaminants through chemical, biological or physical processes.

This RMS is not being considered by the Region for implementation at this time. The main threat to groundwater quality in the Region includes leaking underground storage tanks (LUST) and various non-point sources, such as cattle grazing as well as historic discharges from industrial/agricultural activities, dispersed septic systems and naturally occurring constituents within the hard rock formations. Few groundwater quality concerns that do not have regulatory oversight have been identified by Stakeholders. Actions currently considered necessary for addressing existing contamination and minimizing future contamination of groundwater focus on identifying, evaluating and monitoring impacts. Mariposa County received a grant in 2011 from California Environmental Protection Agency to develop training and implement inspection and enforcement for LUST cases.

6.3.5.3 Matching Water Quality to Use

The strategy of matching water quality to use aims to optimize water resources by directing higher quality sources of water to end uses that require that higher quality, such as drinking water or certain industrial processes, and using sources of water with lower quality in applications where the lower quality is adequate. This strategy reduces the treatment costs associated with water supply.

Generally, the water users of this rural Region use the water that is readily available to them and do not have a broad portfolio of supply. There are limited locations where more than one supply is available. For example, some agencies may be required to upgrade wastewater treatment processes in order to improve the quality of effluent as a result of stringent discharge requirements of the Central Valley Regional Water Quality Control Board. This may result in a recycled water that may be suitable for beneficial reuse in the Region if the water can be cost-effectively conveyed.

6.3.5.4 Pollution Prevention

The pollution prevention strategy addresses both point sources, such as wastewater treatment plants, and nonpoint sources, such as most storm water discharges from urbanized areas, road erosion especially unpaved roads in steep forest areas, agricultural runoff (e.g. sediments, fertilizers, herbicides, pesticides) and unauthorized land uses. This strategy includes efforts to identify sources of pollutant load, reduce pollution causing activities and capture pollutants before they enter waterways.

Few water quality concerns have been identified that are impacting surface and groundwater resources in the Region. Overall, surface water quality has been generally very high mainly due to the relatively undistributed lands in much of the Region. However, some pollution can stem from major wild fires and erosion. Land management agencies actively study and track water quality impacts, particularly after wildfires and are developing methods for post-fire stabilization to minimize those impacts. The potential effects of pollution, especially to surface water, from historical mining operations are recognized in the Region. Pollution from point sources, such as, septic tanks and

leaking underground storage tanks can be a concern for groundwater wells. This RMS links to Goal 3 related to water quality, and associated Objective J discussed in Section 5.

*6.3.5.5 Salt and Salinity Management**

Salt and salinity management requires an understanding of how salts enter a region, often from irrigated agriculture and large scale wastewater discharge, and how they are diluted and displaced within the region. As such, this strategy necessitates studies to improve the understanding of regional salt loading and the extent and magnitude of a region's salt problems. It also includes steps that reduce salt inputs and sequester or dispose of salts.

Currently, salt and salinity management is not a problem in the Y-M Region because of the limited acreage of irrigated agriculture and the dispersed wastewater discharges and is not expected to become a problem in the future. This will be corroborated with the limited groundwater quality sampling that will occur concurrent with the IRWM Plan preparation.

6.3.5.6 Urban Stormwater Runoff Management

The urban stormwater runoff management strategy involves the capture, conveyance and treatment of stormwater and dry weather runoff for purposes of improving flood management, water quality or water supply.

The Y-M Region has recognized that even limited urban runoff (including unpaved roads in less urbanized areas of the Region) can contribute to water quality concerns and includes targets for improved urban runoff management to reduce contamination. Urban runoff management may include the evaluation of runoff on conveyance and storage, implementation of roadside erosion management and identification of appropriate stormwater BMPs. As in the Pollution Prevention RMS, this RMS also links to Goal 3 related to water quality, and Objective J as discussed in Section 5.

6.3.6 Practice Resources Stewardship

6.3.6.1 Agricultural Lands Stewardship

The agricultural lands stewardship strategy includes measures that promote the continued use of agricultural lands and the protection of natural resources through the maintenance of agricultural lands. Erosion control measures are an example of agricultural land stewardship practices that support the viability of croplands while offering water resource and water quality benefits. Other agricultural land stewardship practices such as wetlands restoration and the use of agricultural lands for nonstructural flood management preserve the open space characteristics of agricultural lands that can offer water resources and environmental benefits.

While agricultural land use makes up a fairly small proportion of land uses in the Region, agricultural lands stewardship can help to improve watershed health, identify, preserve, and promote the regeneration and restoration of wetlands which are the focus of Objectives I, J, and K related to water quality and Objective N related to wildlife corridors.

6.3.6.2 Ecosystem Restoration

Ecosystem restoration addresses natural landscapes and biological communities that have been modified by past activities. The ecosystem restoration strategy aims to increase the diversity of native species and biological communities and the abundance and connectivity of habitats, particularly in aquatic, riparian and floodplain ecosystems. This strategy includes protection and recovery of at-risk species, wetlands restoration and construction, floodplain reconnection and invasive species removal.

This RMS aligns with several objectives developed during the IRWM Plan process especially as they relate to improving forest and rangeland management, improving the health and ecologic function of mountain meadows, and promotion of ecosystem and vegetation near riparian corridors; all of which serve to meet Goal 3 – Maintain or Improve Water Quality in the Region and Goal 4 – Protect and Improve Wildlife Habitat and their associated objectives.

6.3.6.3 Forest Management

The forest management strategy focuses on forest management activities that are designed to improve the availability and quality of water for downstream users, on both publicly and privately owned forest lands as part of a broader effort to maintain a sustainable, resilient forest ecosystem.

This RMS is particularly relevant to the Region as forest lands, in private and federal ownership, comprise the majority of its land base. Identified forest management needs include reduction in fuel loads, identification of fire hazards, post fire restoration/management, proper management of hydrologically-connected road segments, and sediment loads. Balanced forest management could also increase generated run-off; UC Merced is completing studies in the Merced River watershed for this purpose. Fire is an integral part of maintaining a resilient forest. As discussed in Section 3, a natural, low intensity fire regime helps to reduce fuels and destructive fire potential, which protects local communities and landscapes, recycles nutrients into the soil, and creates fertile seed beds for plants and tree seedlings (USDA-NRCS, 2013). The consequences of high intensity, destructive fires are extensive from a water quality, water quantity, and ecosystem perspective. This topic is of such importance to the Region that Goal 7 specifically addresses fuel management in forests to reduce fire risk.

6.3.6.4 Land Use Planning and Management

The land use planning and management strategy incorporates the availability of water supplies, water quality requirements and flooding and drainage considerations into land use decisions. Improved coordination of land use and water planning has been identified as a need in the State.

Coordination between the various land use planning and management entities is an important RMS for the Region particularly at jurisdictional boundaries. In addition, limited staff and financial resources as a result of small population relative to land area can make coordinating, prioritizing and enforcing codes, ordinances, and regulation difficult. This RMS is addressed in Goal 6 related to collaboration and Objective Q specifically addressing county ordinances and planning.

6.3.6.5 Recharge Areas Protection

The recharge areas protection strategy includes the protection and enhancement of groundwater recharge areas. The strategy includes methods such as low impact development and land conservation to ensure areas suitable for recharge remain accessible. It also includes measures to protect groundwater recharge areas from contamination.

Although only a few prime recharge areas are known, this strategy is relevant in terms of both water quality and quantity. This strategy is closely related to IRWM Plan goals including Goal 3 – Water Quality, Goal 4 – Wildlife Habitat, and Goal 7 Fire Risk Reduction. Additional insight into important groundwater recharge areas is likely to come to light after the completion of the groundwater study.

6.3.6.6 Sediment Management

The sediment management strategy acknowledges both the benefits and impacts of sediments. Sediments are beneficial when of appropriate size and in the correct location such as for spawning gravels as well as flood plain and beach replenishment. The negative attributes of sediment occur

when it accumulates in reservoirs and flood channels and/or causes clouding in water with associated impacts to fish and invertebrate life.

One of the most significant sediment impacts in the Region occurs after a wildfire event as discussed in Section 3. The IRWM goals and objectives encompass sediment management as a RMS from both a forest and range land conservation element as in Objectives D and I, water quality in Goal 3, wildlife habitat in Goal 4, regional partnerships as in Goal 6, and catastrophic fire risk reduction as in Goal 7.

6.3.6.7 Watershed Management

The watershed management strategy uses watershed boundaries as the basis for managing natural resources. Watershed management is the process of creating and implementing plans, programs, projects, and activities to restore, sustain, and enhance watershed functions.

The IRWM Planning process has helped to enhance relationships that contribute to improving management of the Y-M Region's three watersheds. Goals 3 – Water Quality, 4 - Wildlife Habitat, and 8 - Education and their associated objectives target effective management of water resources and improvement to water quality, ecosystems and habitats in the Region, all of which relate to this RMS.

6.3.7 People and Water

6.3.7.1 Economic Incentives

Economic incentives is the use of financial tools such as grants, loans, rebates and water pricing to influence water management. Financial assistance incentives in the form of grants, loans and rebates can be used to promote implementation of projects that improve water management and protect water resources. Water rate incentives can be used to promote more efficient use of water.

Meeting the Y-M IRWM Plan objectives to implement the IRWM Plan will require resources beyond those that are locally available. Therefore, identifying funding sources and developing grant applications will be an important element to IRWM Plan implementation. The Y-M Region contains a small and dispersed population with a small tax base. These conditions make the utilization of economic tools essential for the successful execution of most IRWM Plan projects.

6.3.7.2 Outreach and Engagement

The outreach and engagement strategy describes the shifts in early water management decision-making from strictly technically-based decisions that over time have resulted in unintended consequences such as degraded ecosystems and/or social injustices. The strategy acknowledges the need for improved outreach and engagement so that citizens can be more knowledgeable and participate more effectively in debates regarding water which can, in turn, gain valuable support for a range of water management programs.

The targeted outreach to the citizenry of the Region for the preparation of the Y-M IRWM Plan has included a brochure that has been mailed to all residents within the Region, attendance at local meetings throughout the Region (including meetings targeted at the tribal communities) to inform the public regarding the Y-M IRWM Plan goals and communication process, and hosting and updating of the IRWM website. These outreach and engagement activities will continue throughout the IRWM Plan preparation process meeting with Goal 8 - Education and associated Objective T which speaks directly to education of stakeholders and County residents regarding water issues.

6.3.7.3 Water and Culture

The water and culture strategy recognizes the inherent role and value of water in many cultures whether they are Native American, agriculture and ranching, fishing or environmental cultures. The cultural considerations in water management can include subsistence activities such as traditional hunting, fishing and plant collecting; recreation activities such as swimming, boating, wildlife viewing or hiking; spiritual activities that acknowledge the cleansing and renewing properties of water; and historic preservation of artifacts, buildings, flumes, mills, and other significant sites.

Native American Bedrock Mortar
Credit: Kristen Boysen, Sierra Foothill Conservancy

From a tribal perspective, the Y-M Region is part of the historic range of the Southern Sierra Miwok tribe as described in Section 2. The American Indian Council of Mariposa County, Inc. is a focal point for tribal activities in the Region and targeted outreach through this organization is occurring through the IRWM Plan preparation process. In addition, contact with other tribes whose cultures may include the Y-M Region was also made. Other cultures of significance in the Region are the recreation culture represented by the extensive public lands as well as agricultural and ranching culture, particularly in the western part of the Region, and the active, long-term participation of the environmental community in the IRWM process. Goal 3 regarding water quality, Goal 4 regarding wildlife habitat, and Goal 5 regarding recreation and their associated objectives all speak to the various cultural values of the Region's stakeholders.

6.3.7.4 Water-Dependent Recreation

The water-dependent recreation strategy includes recreational activities that are dependent on water, including fishing, swimming, waterfowl hunting and birding, boating, canoeing, and kayaking, as well as activities that do not require water but are enhanced by water, including wildlife viewing, picnicking, camping, and hiking, biking, and riding on trails.

Recreational access to the Merced River and its tributaries within Yosemite National Park and BLM lands along with Lake McClure and Lake McSwain provide abundant opportunities for water-dependent recreation in the Region, which also contributes significantly to the local economies. All efforts employed to improve watershed health, improve water quality and protect and restore aquatic ecosystems contribute to enhancing these opportunities. Improvement of recreational opportunities is a focus in the Region as represented by Goal 5 – Recreation and associated objectives O and P.

6.3.8 Other Strategies

*6.3.8.1 Crop Idling for Water Transfers**

The crop idling for water transfers strategy is a specific water transfer strategy in which irrigated lands are removed from production or dry farmed in order to make water available for transfer.

This RMS is not applicable to the Y-M Region. At present, agricultural water demand is limited in the Y-M Region and agricultural water demand and use is managed at the farm-level. While no

formal programs for crop idling exist, individual farmers, particularly those who received surface water, make choices on plantings and/or crop idling depending on the available water supply.

6.3.8.2 Irrigated Land Retirement

The irrigated land retirement strategy permanently removes farmland from irrigated agriculture.

This strategy is not being considered at this time because of the limited acreage of irrigated lands. It is used in other parts of the State to make water available for transfer or to solve drainage-related problems. Similar to crop-idling, individual farmers may seasonally or annually retire land from irrigation based on available water supply which could reduce water demand and improve water supply reliability. However, this strategy would need to be implemented in a way to avoid conflict with the goal of respecting cultural values of the Region, which includes preservation of agricultural lands, many of which are managed under the Williamson Act.

*6.3.8.3 Waterbag Transport/Storage Technology**

The waterbag transport/storage technology strategy takes water from coastal areas with unallocated freshwater supplies, stores water in inflatable bladders and delivers the water to another coastal area.

This RMS is not applicable to the Y-M Region. This technology currently has limited capacity for strategically addressing long-term regional water planning needs and may still require further research and development before full-scale implementation in the coastal areas of California. This technology is not applicable due to the fact that the Y-M Region is not located in a coastal location to take advantage of this technology.

*6.3.8.4 Dewvaporation or Atmospheric Pressure Desalination**

Dewvaporation is a specific process of humidification-dehumidification desalination. Brackish water is evaporated by heated air, which deposits fresh water as dew on the opposite side of a heat transfer wall.

This technology is not being considered in the Y-M Region. There is uncertainty as the technology is currently still under development and the fact that brackish water desalination is not currently being considered for augmenting water supplies in the Region.

*6.3.8.5 Fog Collection**

Fog collection is a type of precipitation enhancement, which has not yet been implemented as a management technique in California and may still require further research and development.

This technology is not being considered in the Y-M Region due to the inland location and climatic conditions of the Region that are not conducive to significant fog development and the limited water benefits this technology produces.

*6.3.8.6 Rainfed Agriculture**

Rainfed agriculture relies solely on rainfall to provide all crop consumptive water use. In California where little precipitation occurs during the spring and summer growing seasons, the use of the rainfed agriculture strategy is very limited. Implementation of rainfed agriculture would require matching cropping patterns to precipitation patterns likely resulting in single cropping, most likely of low value products like hay.

Rainfed agriculture (also known as dry farming) is currently a common practice throughout the Y-M Region for thousands of acres of pasture grass used for cattle grazing rangeland. However, that is

more of an ongoing, historic rangeland management action rather than a specific management action anticipated in the Region. Although this practice exists, no specific objectives have been identified that align with this RMS.

6.4 RMS And Y-M Goals and Objectives

In order to evaluate how the Y-M goals and objectives described in Section 5 meet with the draft 2013 CWP RMS, Table 6-2 has been prepared as a cross-reference.

Table 6-2: CWP RMS and Yosemite-Mariposa Goals/Objectives Cross-Reference Table

CWP Objectives	CWP Resource Management Strategies	Y-M Goals/Objectives
Reduce Water Demand	Agricultural Water Use Efficiency	Goal 1: Objectives c and d
	Urban Water Use Efficiency	Objective C
Improve Flood Management	Flood Management	Objective W
Improve Operational Efficiency and Transfers	*Conveyance – Delta**	*Not Applicable*
	Conveyance – Regional/local	Other RMS applicable to the Region
	System Reoperation	Other RMS applicable to the Region
	Water Transfers	Other RMS applicable to the Region
Increase Water Supply	Conjunctive Management & Groundwater Storage	Other RMS applicable to the Region
	*Desalination (Brackish and Sea Water)**	*Not Applicable*
	*Precipitation Enhancement**	*Not Applicable*
	Municipal Recycled Water	Other RMS applicable to the Region
	*Surface Storage – CALFED/State**	*Not Applicable*
	Surface Storage – Regional/local	Other RMS applicable to the Region
Improve Water Quality	Drinking Water Treatment and Distribution	Goal 2: Objectives e and g
	Groundwater/Aquifer Remediation	Other RMS applicable to the Region
	Matching Water Quality to Use	Other RMS applicable to the Region
	Pollution Prevention	Goal 3: Objective j
	*Salt and Salinity Management**	*Not Applicable*
	Urban Stormwater Runoff Management	Goal 3: Objective j
Practice Resources Stewardship	Agricultural Land Stewardship	Objectives I, j, k, and n
	Ecosystem Restoration	Goals 3 and 4
	Forest Management	Goal 7
	Land Use Planning and Management	Goal 6: Objective q
	Recharge Area Protection	Goals 3, 4 and 7
	Sediment Management	Goals 3, 4 and 6, and 7: Objectives d and i
	Watershed Management	Goals 3, 4 and 8
People and Water	Economic Incentives	Other RMS applicable to the Region
	Outreach and Engagement	Goal 8: Objective t
	Water and Culture	Goals 3, 4 and 5
	Water-Dependent Recreation	Goal 5: Objectives o and p
Other Strategies	*Crop Idling for Water Transfers**	*Not Applicable*
	Irrigated Land Retirement	Other RMS applicable to the Region
	*Waterbag Transport/Storage Technology **	*Not Applicable*
	*Dewvaporation or Atmospheric Pressure Desalination**	*Not Applicable*
	*Fog Collection **	*Not Applicable*
	*Rainfed agriculture**	Other RMS applicable to the Region

* RMS not applicable to Y-M IRWM Plan.

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Section 7: Project Selection and Prioritization

This section describes the project solicitation, development, and review process that was used to select and prioritize projects for inclusion in the Yosemite-Mariposa (Y-M) Integrated Regional Water Management (IRWM) Plan. The project review and prioritization process was designed to identify those projects, programs, and actions that contribute towards achievement of the Y-M IRWM Plan Goals and Objectives as described in Section 5. It is envisioned that a similar process to that described in the following sections will be used for including additional projects in the Plan in the future.

7.1 Project Solicitation and Integration Process

The project solicitation process began with a discussion of how potential project submittals would be evaluated and considered for inclusion into the IRWM Plan. The Regional Water Advisory Council (RWAC) decided that all potential projects, programs, or actions would be submitted using a Project Information Form. A draft list of project scoring criteria was discussed and made available for comment as part of the draft Project Information Form. The potential project scoring criteria were chosen to facilitate project comparison, review, selection, and prioritization. The next step of the process was to receive, evaluate, and review all project submittals. The RWAC proposed designation of a Project Evaluation Committee (PEC) which was responsible for recommending a score for each project chosen for inclusion. The final step of the process was to discuss the recommendations made by the PEC with participants at a RWAC Meeting to formally accept the projects into the Plan.

Following agreement on the process, the RWAC distributed a Project Information Form template (see Appendix 7-A for a blank form example) to all stakeholders at the January 22, 2014 meeting with a formal “Call for Projects” announcement at the February 26, 2014 Stakeholder Meeting. The Call for Projects and Project Information Form was also posted to the IRWM Plan website and e-mailed to the stakeholder distribution list. The project forms were due on March 31, 2014. Stakeholders were provided approximately one month to identify projects for potential inclusion in the IRWM Plan and complete and submit forms to the Y-M RWAC. Project information form webinars were held on March 12 and 20, 2014 to provide assistance to project proponents. In addition, additional assistance was provided to tribal representatives in the identification and development of several project information forms that specifically addressed tribal concerns. General IRWM information and initial project identification occurred during a meeting on February 21, 2014 and a follow-up project development meeting was held on March 25, 2014.

Project forms were submitted via e-mail. Stakeholders were invited to submit any projects, programs, and action ideas they thought could help contribute to fulfilling the Plan Objectives irrespective of the project’s current funding, level of development, or readiness to proceed. The RWAC wanted to identify both projects and programs that were implementable and “ready to proceed”, and also identify other ideas that have not yet been developed into mature project proposals. This approach was intended to provide a mechanism for stakeholders to share information and identify opportunities to integrate projects and more effectively fulfill the objectives of the IRWM Plan.

The PEC received 51 project submittals during the Call for Projects which are summarized in Tables 7-1 and 7-2 in Section 7.3. During the March 26, 2014 stakeholder meeting, project proponents were given the opportunity to present their project to the PEC and meeting attendees. The purpose of the project presentations was to provide a better understanding of the projects to improve scoring, identify projects which have potential for integration and determine if there are gaps in meeting the Plan Objectives.

7.2 Project Scoring, Selection and Prioritization Process

As introduced above, the process to decide which projects to include in the Plan and how to prioritize them relied on evaluation of the project scoring criteria, technical judgment about the relevancy of the submitted projects, and project presentations. The projects, programs and management actions submitted by the stakeholders were compiled, reviewed, and scored by the PEC based on the information provided by the project proponents. No efforts were made to verify the information submitted by each project proponent. The PEC consisted of 9 individual stakeholders from 6 agencies throughout the Region; representing a broad spectrum of water management interests as listed below. Agencies with multiple representatives submitted a single scoresheet for the range of projects for a total of 6 scores for each project. PEC agencies did not score their own projects.

- Disadvantaged Community
- Environmental
- Forest Service
- Land Use
- Water District
- Sewer District
- RCD

7.2.1 Project Scoring

As described above, the information submitted on the Project Information Form for each project was scored, and the sum of all factors yielded a total criteria score. This score was a useful tool to help the team understand and compare the attributes of the broad range of projects under consideration. The total criteria scores are not intended to be the basis for final decisions about inclusion or prioritization, but rather, are one indicator of how projects compare with each other.

Twenty unique criteria are used to prioritize projects as grouped into the following categories:

- Readiness to proceed,
- Regional support and integration,
- Implementation feasibility, and
- Impacts and benefits.

Scores do not consider whether a potential project may be eligible to receive Proposition 84 or 1E grant funds or any specific funding.

The maximum possible score for a project was 22 as distributed between the criteria that are described in the following narrative.

Readiness to Proceed (total points possible: 9)

- **Has a strong project proponent** – It is important for the success of a project to have a strong proponent committed to the project who has authority, capability, and funding (or qualify for match waiver as involving a disadvantaged community [DAC] for a critical water supply/quality project). Projects that indicate they had a strong project proponent receive 1 point.

- **Has early implementation start date** – Stakeholders are encouraged to submit any water management project that is important to the Region, independent of readiness to proceed; however, for the purposes of scoring, projects planned to be implemented within 36 months without CEQA/NEPA or 48 months with CEQA/NEPA required receive 1 point.

- **Cost estimates prepared (with some detail)** – Stakeholders were encouraged to submit project concepts, and thus cost estimates were not always well developed. If a detailed cost estimate is available, the project receives 1 point.

- **Source of funding identified** – Projects that identify sources of funding for implementation receive 1 point.

- **Planning completed** – If the initial planning process for the project has been completed, it receives 1 point.

- **California Environmental Quality Act/National Environmental Policy Act (CEQA/NEPA) requirements completed or not relevant** – Activities funded under Proposition 84 must be in compliance with CEQA, while federal projects such as for NPS, USFS, or BLM require compliance with NEPA. Projects that have completed CEQA/NEPA analyses or do not require them receive 1 point.

- **Permitting completed or not needed** – Permitting is an important element of most implementable projects and can be a critical path item in project implementation. Projects that have completed the required permitting or do not require permitting receive 1 point.

- **Design partly completed or not needed** – Design is an important milestone in most implementable projects. Projects that have completed the design portion of the project or do not require design received 1 point.

- **Construction/implementation commenced** – Projects that have begun construction or implementation demonstrate their readiness to proceed with subsequent work phases. Such projects receive 1 point.

Regional Support and Integration (total points possible: 2)

- **Encourages or supports regional cooperation and collaboration** – Projects that encourage regional support receive 1 point.

- **Integrates easily with other projects** – A key criterion for developing and implementing integrated projects is the ability of a project to work well with and maximize linkages

between projects. Projects that can be integrated easily with other projects receive 1 point.

Implementation Feasibility (total points possible: 3)

- **Consistent with general plans** – It is important that the Region's projects are consistent with the goals and objectives of the applicable county and city general plans. Such projects receive 1 point.

- **Technically and economically feasible** – If a project is indicated to be both technically and economically feasible, it receives 2 points. If the project is one or the other, it receives 1 point.

Impacts and Benefits (total points possible: 8)

- **Addresses more IRWM Plan objectives** – The IRWM Plan objectives, which were described in Section 5, were used to evaluate projects. Integrated water management calls for projects that provide multiple benefits and meet more than one IRWM Plan objective. Therefore, if a project meets more than 5 objectives, it receives 2 points. If the project meets between 2-5 objectives, it receives 1 point. If the project meets 0-1 objectives, it receives 0 points.

- **Has potential negative impacts** – It is important to understand whether projects are creating negative impacts such as short-term construction impacts or longer-term environmental impacts. Projects that may cause a negative impact receive -1 (minus 1) point; if no potential negative impact are identified, the project receives 0 points.

- **Addresses more Statewide Program Preferences** – Statewide IRWM Program preferences and priorities are identified in the Public Resources Code Section 75026. (b) and California Water Code Section 10544. (See Section 12 – Glossary) Projects that address one or more Statewide Program Preference receive 1 point.

- **Serves a DAC or tribal community or responds to environmental justice concerns** – Projects that serve a DAC or tribal community or answer an environmental justice concern receive 1 point.

- **Contributes to climate change adaptation** – Projects that contribute to climate change adaptation receive 1 point.

- **Helps reduce greenhouses gas (GHG) emissions** – Projects that contribute to a reduction in greenhouse gas emission receive 1 point.

- **Addresses more resource management strategies (RMSs)** – Section 6 describes the RMSs selected for the Plan and how they compare with those included in the California Water Plan. Projects that include more than 5 RMSs receive 2 points, those with 2-5 RMSs receive 1 point, and those with 0-1 RMSs receive 0 points.

As part of the current plan, the PEC reviewed the project summary sheets developed that included detailed information for each proposed project. They adjusted initial scoring recommendations made by the consultant team and then met as a group on April 17, 2014 to

discuss any changes to their scoring recommendations. As a group, the PEC decided that any projects that were submitted by their own agency would not be scored by that PEC member. In place of that PEC member's score, the Consultant score was included. The scores for each project were averaged and included as a final score for each project and was included in the Plan.

7.2.2 Project Selection Process

The PEC then reviewed all submitted projects to determine if they were consistent with the Plan objectives. The PEC concluded that all of the submitted projects were consistent with the Plan objectives. Based on these considerations, the PEC recommended that all 51 submitted projects be included in the IRWM Plan. Upon discussion at April 23, 2014 Stakeholder Input Meeting, the RWAC and Stakeholder Group supported the PEC recommendation. It should be noted that this current project list is simply a "snapshot" of the projects included in the Plan. It is fully expected that projects will be added, modified, and removed from the Plan in a much more dynamic process going forward. Appendix 7-B includes a brief synopsis of the projects included in the Plan along with the project scoring sorts and other supporting materials. Each Project Information Form can be found on the Y-M website, located at: http://www.mcrcd.net/Pages/IRWMP.aspx.

7.2.3 Future Updates to the Project List

The RWAC plans to provide opportunities for regional stakeholders to propose changes to the project list annually. New projects may be added, scored, and prioritized in accordance with the project submittal process. Projects may also be removed at the request of a project proponent, or once the project has been completed. The RWAC may choose to use the same project submittal, review, and selection process used to develop this Plan, or may modify the process before inviting potential revisions. The RWAC can hold a "Call for Projects" and update the IRWM Plan Project list at any time. Revision of the project list does not require that the entire IRWM Plan be revised and re-adopted; rather the updated project list can be amended to the existing plan.

As this IRWM plan is funded by a Round 2 Planning Grant, it was initially prepared under the DWR July 2010 Guidelines. However, during the course of the IRWM Plan preparation, it was prepared in accordance with the DWR November 2012 Guidelines to meet the drought funding opportunity requirements. In an effort to also comply with CWC §85021 regarding reduced reliance on Delta water supplies, any future project solicitations for the Y-M IRWM Plan will include a specific request to identify the means in which projects will improve its regional self-reliance for water. The measures that could be used include investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects and improved regional coordination of local and regional water supply efforts. Some of these measures are already occurring or are represented in the current project list (e.g., water recycling, water use efficiency and local water supply projects) while others may not be economically feasible given the dispersed nature of the residents of the Region.

Future updates to the project list will be included in Appendix 7-B.

7.3 Summary of Projects Included in the Plan

The projects that were submitted by stakeholders under the Call for Projects demonstrate the breadth of activities needed for Y-M to meet its water management objectives. These 51 projects were submitted by 18 different organizations and cover, to some extent, most of the IRWM Plan objectives. Several projects will help achieve multiple Plan Objectives. Projects ranged from water and wastewater facility improvements to habitat restoration programs, water efficiency initiatives, fuels reduction projects, and water quality enhancement programs. The range of projects presented multiple opportunities for resource and project integration; integration screening should also be considered for future project solicitations. The projects were unanimously accepted by the RWAC for inclusion in the Plan.

There were 32 water and wastewater infrastructure projects, 5 fire risk reduction projects, 9 restoration projects, 1 water quality project, 1 recreation project and 3 projects not in the above categories as summarized in Table 7-1. The projects included in the Plan as of initial adoption are identified in Table 7-1. Figure 7-1 shows a map of the Region with project locations for all of the submitted projects by project proponent and Figure 7-2 shows a map of the Region with the DAC areas and projects.

7.3.1 Prioritized and Sorted Project Lists

The highest score assigned to a submitted project was 19 out of a maximum of 22 points; the average of all project scores was 12. The total criteria score for each of the 51 projects sorted from high score to low is provided as Table 7-3. The same table sorted by project type then by high score to low is provided as Table 2 of Appendix 7-B. One observation that can be made regarding project scoring was that there was a weighting towards readiness to proceed which put some of the infrastructure projects at a disadvantage because of the long lead time necessary to complete design, CEQA/NEPA, permitting which not all projects require.

All projects included in the IRWM Plan are important to meet the objectives of the Region. The RWAC will encourage and support actions that advance all of the projects, regardless of their score. The purpose of sorting the project list in different ways is to allow stakeholders to “drill” down into the project list, and possibly find collaboration opportunities between efforts, or ways to enhance the project in the future. The RWAC and stakeholder group participated in deciding the different ways to sort the project list.

Table 7-1: Summary of Yosemite-Mariposa IRWM Projects Received By Type

Lead Agency Organization	Water Infrastructure	Wastewater Infrastructure	Other	Fire Risk Reduction	Recreation	Restoration	Water Quality	Total Projects Submitted
County of Mariposa	5	6						11
Economic Development Corporation			1					1
Lake Don Pedro Community Services District	6							6
Mariposa Public Utility District	1	2		1				4
Merced Irrigation District					1			1
Point Blue Conservation Science						1		1
Upper Merced River Watershed Council				1			1	2
National Park Service/Yosemite National Park	1	1						2
Sierra Foothill Conservancy						4		4
Ponderosa Basin Mutual Water Company (PBMWC)	1							1
Mariposa Resource Conservation District (MCRCD)			2	1		1		4
Yosemite Area Audubon Society						1		1
Yosemite Alpine Community Services District	2							2
USFS, Sierra National Forest, Bass Lake Ranger District				2				2
To be determined. Anticipate National Park Service, Yosemite National Park		1						1
American Indian Council of Mariposa County	1					2		3
Fish Camp Volunteer Fire Association	1							1
Mariposa Pines Water Company	4							4
Total Number of Projects	**22**	**10**	**3**	**5**	**1**	**9**	**1**	**51**
Total Project Cost by Type	**$37,619,000**	**$43,969,000**	**$5,731,250**	**$5,481,000**	**$332,300**	**$5,802,440**	**$25,000**	**$98,959,990**

Table 7-2: Summary of Organizations, Project Titles, and Costs

Project No.	Agency	Title	Total Project Cost
1	County of Mariposa	Replace Water Distribution Piping in Yosemite West Subdivision	$2,900,000
2	County of Mariposa	Develop Second Water Source for the Coulterville community	$700,000
3	County of Mariposa	Water Treatment for Arsenic Exceedance	$500,000
4	County of Mariposa	Replace Sewage Collection Piping in Yosemite West Subdivision	$2,500,000
5	County of Mariposa	Develop Second Water Source for Yosemite West Subdivision	$1,600,000
6	County of Mariposa	Expansion and Repair of Leachfields in the Yosemite West Subdivision	$1,220,000
7	County of Mariposa	Construct a septage collection and metering tank at the Lake Don Pedro Sewage Treatment Plant	$400,000
8	County of Mariposa	Repairs and upgrades to Lake Don Pedro Wastewater Treatment System	$2,200,000
9	County of Mariposa	Install back-up power at Mariposa Pines Sewage Treatment Plant	$225,000
10	County of Mariposa	Replace Water Distribution Piping in Coulterville	$1,480,000
11	County of Mariposa	Replace Sewage Collection Piping in Coulterville	$2,200,000
12	Economic Development Corporation	Mariposa Biomass / Biochar Facility	$5,000,000
13	Lake Don Pedro Community Services District	Lake McClure Deep Water Intake Feasibility Study	$30,000
14	Mariposa Public Utility District	Stockton Creek Watershed Fuel Modification Project	$240,000
15	Mariposa Public Utility District	Mariposa PUD Waste Water Treatment Facility Improvements	$7,300,000
16	Mariposa Public Utility District	Saxon Creek Pump Station Access and Ventilation System Improvements	$150,000
17	Merced Irrigation District	Lake McClure Area Recreation Enhancements	$332,300
18	Point Blue Conservation Science	Rangeland Watershed Initiative Partner Biologist	$180,000
19	Lake Don Pedro Community Services District	Dead End Main Replacement Project	$6,500,000
20	Lake Don Pedro Community Services District	Lake McClure Intake Improvement Project Phase III	$700,000
21	Lake Don Pedro Community Services District	Water Service Replacement Project	$3,750,000
22	Lake Don Pedro Community Services District	Treatment Plant Pump Replacement Project	$100,000

Project No.	Agency	Title	Total Project Cost
23	Lake Don Pedro Community Services District	New potable water well	$125,000
24	Upper Merced River Watershed Council (UMRWC)	Water Quality Monitoring Bioassessment in Upper Merced River Watershed	$25,000
25	Upper Merced River Watershed Council	Merced River Watershed Wildfire Fuel Reduction Project	$750,000
26	National Park Service/Yosemite National Park	Supplement Wawona Water System with Biledo Spring	$17,000,000
27	National Park Service/Yosemite National Park	Rehabilitate The Wawona Wastewater Treatment Plant	$24,000,000
28	Sierra Foothill Conservancy	Bean Creek Meadow Restoration	$372,000
29	Sierra Foothill Conservancy	Conservation Easement	$2,000,000
30	Sierra Foothill Conservancy	Conservation Planning, Phase 2	$50,000
31	Sierra Foothill Conservancy	Stockton Creek Preserve Expansion	$1,500,000
32	Ponderosa Basin Mutual Water Company (PBMWC)	Rural Water Company Infrastructure Rehabilitation	$600,000
33	Mariposa Resource Conservation District (MCRCD)	Invasive Plant Species education and eradication	$600,000
34	Mariposa Resource Conservation District	Drought Preparedness for Landowners and Residents	$86,250
35	Mariposa County Resource Conservation District	Water & Energy Efficiency Incentives Assistance Program	$645,000
36	Yosemite Area Audubon Society	Mariposa Creek Parkway Extensions	$932,000
37	Yosemite Alpine Community Services District	Water Meter Replacement	$50,000
38	Yosemite Alpine Community Services District	Drill well on Yosemite Mtn. Ranch TPZ and pipe water to NEW TANKS.	$500,000
39	USFS, Sierra National Forest, Bass Lake Ranger District	Sierra National Forest Bass Lake Ranger District Fuels Reduction Project - Rush Timber Sale, near Wawona	$1,733,000
40	USFS, Sierra National Forest, Bass Lake Ranger District	Sierra National Forest Bass Lake Ranger District Fuels Reduction Project - Hites-Feleciana Fuels Project , N of Mariposa Pines	$2,533,000
41	To be determined. Anticipate National Park Service, Yosemite National Park	Wawona Water Supply and Wastewater Treatment Projects	-

Project No.	Agency	Title	Total Project Cost
42	American Indian Council of Mariposa County	Bear Creek Tribal Water Storage Project	$90,500
43	American Indian Council of Mariposa County	Mariposa Creek Native Plants Restoration and Education Project	$87,240
44	American Indian Council of Mariposa County	Invasive Plant Eradication/Native Plant Enhancement, Wawona, Yosemite NP	$81,200
45	Fish Camp Volunteer Fire Association	Drought/Fire Storage with additional wells with distribution pipelines and hydrants	$591,000
46	Mariposa Pines Water Company	Sounding Tube Installation	$2,500
47	Mariposa Pines Water Company	Tank 1 Replacement	$40,000
48	Mariposa Pines Water Company	Hazardous Tree and Brush Removal from Right-of-ways and Improvements	$160,000
49	Mariposa Pines Water Company	Install Power and Telephone Lines (for internet) to Water Tanks	$50,000
50	Mariposa County Resource Conservation District	Private Land Water Storage Improvement Assistance Project	$225,000
51	Mariposa Public Utility District (MPUD)	Waste Water Collection System Improvements	$3,924,000

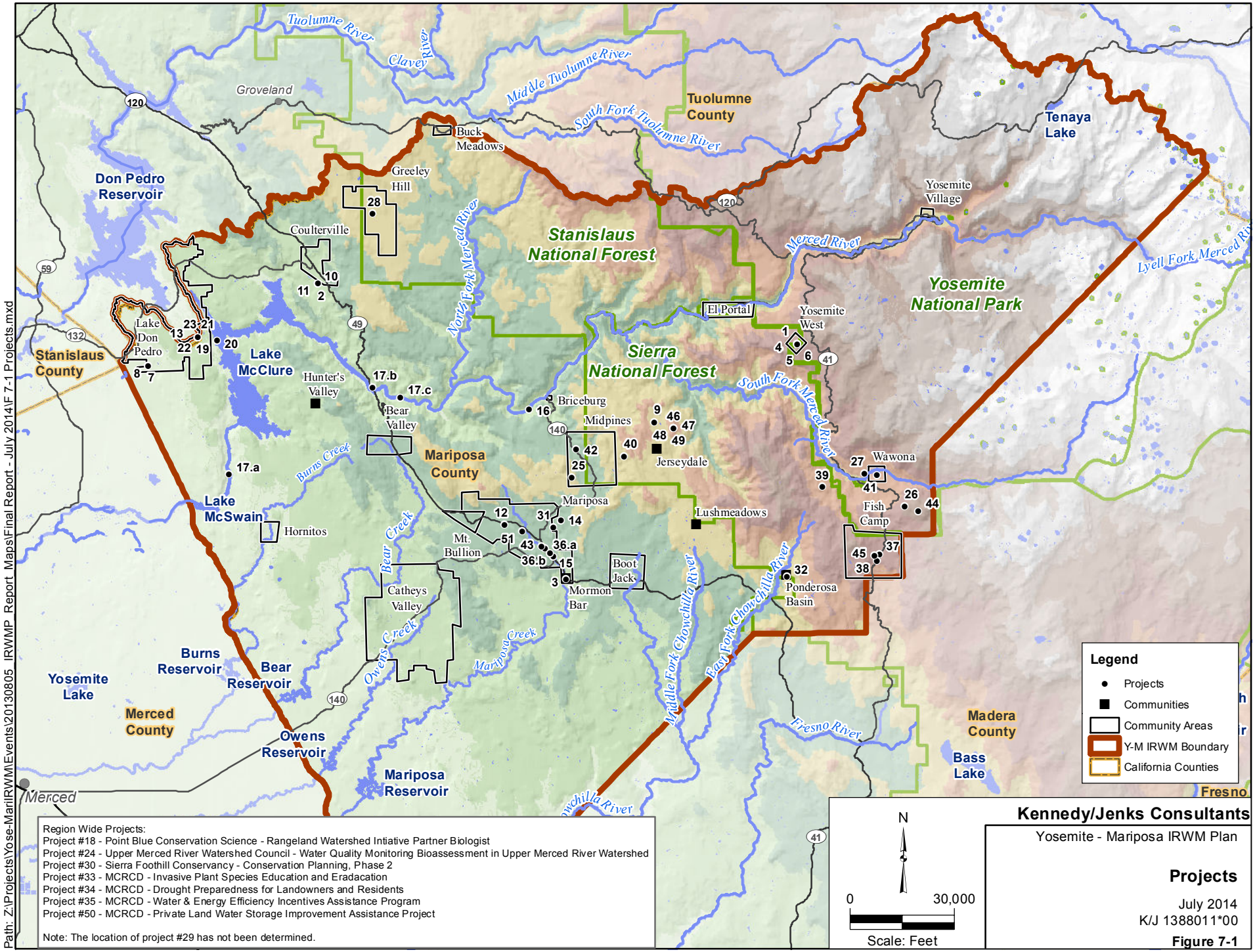
Note: More detailed project descriptions for each project are found in Table 1 of Appendix 7-B.

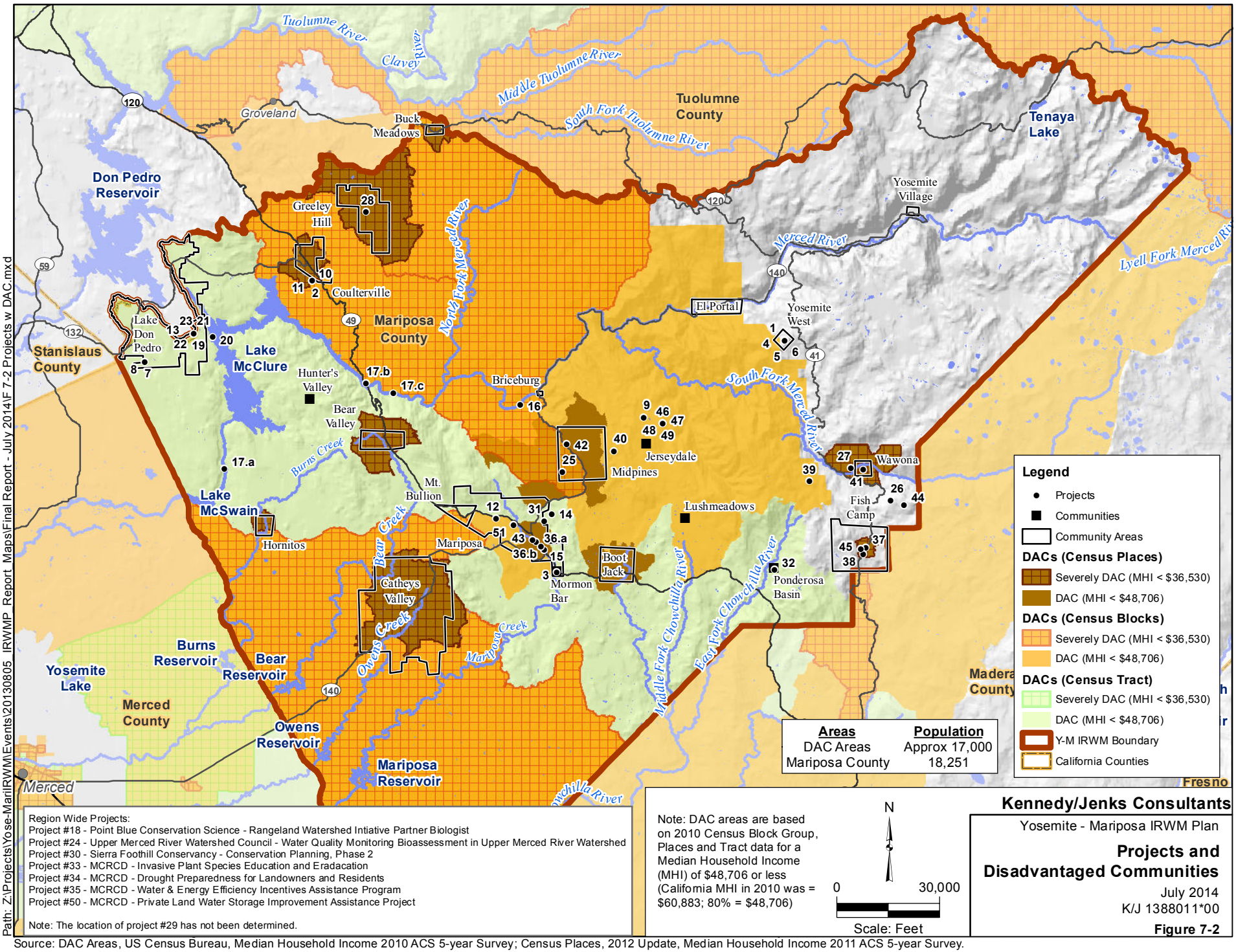
Table 7-3: Project Summary Sorted by Average Score

Project #	Project Title	Agency	Project Type	Average (out of 22 pts)	Total Project Cost
18	Rangeland Watershed Initiative Partner Biologist	Point Blue Conservation Science	Restoration	**19**	$ 180,000
31	Stockton Creek Preserve Expansion	Sierra Foothill Conservancy	Restoration	**18**	$ 1,500,000
39	Sierra National Forest Bass Lake Ranger District Fuels Reduction Project - Rush Timber Sale, near Wawona	USFS, Sierra National Forest, Bass Lake Ranger District	Fire Risk Reduction	**18**	$ 1,733,000
28	Bean Creek Meadow Restoration	Sierra Foothill Conservancy	Restoration	**16**	$ 372,000
40	Sierra National Forest Bass Lake Ranger District Fuels Reduction Project - Hites-Feleciana Fuels Project , N of Mariposa Pines	USFS, Sierra National Forest, Bass Lake Ranger District	Fire Risk Reduction	**16**	$ 2,533,000
14	Stockton Creek Watershed Fuel Modification Project	MARIPOSA PUBLIC UTILITY DISTRICT	Fire Risk Reduction	**16**	$ 240,000
44	Invasive Plant Eradication/Native Plant Enhancement, Wawona, Yosemite NP	American Indian Council of Mariposa County	Restoration	**15**	$ 81,200
33	Invasive Plant Species education and eradication	Mariposa Resource Conservation District (MCRCD)	Restoration	**15**	$ 600,000
50	Private Land Water Storage Improvement Assistance Project	Mariposa County Resource Conservation District	Fire Risk Reduction	**15**	$ 225,000
29	Conservation Easement	Sierra Foothill Conservancy	Restoration	**15**	$ 2,000,000
34	Drought Preparedness for Landowners and Residents	Mariposa Resource Conservation District	Other	**15**	$ 86,250
30	Conservation Planning, Phase 2	Sierra Foothill Conservancy	Restoration	**15**	$ 50,000
24	Water Quality Monitoring Bioassessment in Upper Merced River Watershed	Upper Merced River Watershed Council (UMRWC)	Water Quality	**15**	$ 25,000
35	Water & Energy Efficiency Incentives Assistance Program	Mariposa County Resource Conservation District	Other	**14**	$ 645,000
45	Drought/Fire Storage with additional wells with distribution pipelines and hydrants	Fish Camp Volunteer Fire Association	Water Infrastructure	**14**	$ 591,000
36	Mariposa Creek Parkway Extensions	Yosemite Area Audubon Society	Restoration	**14**	$ 932,000
25	Merced River Watershed Wildfire Fuel Reduction Project	Upper Merced River Watershed Council	Fire Risk Reduction	**14**	$ 750,000
43	Mariposa Creek Native Plants Restoration and Education Project	American Indian Council of Mariposa County	Restoration	**13**	$ 87,240

Project #	Project Title	Agency	Project Type	Average (out of 22 pts)	Total Project Cost
15	Mariposa PUD Waste Water Treatment Facility Improvements	Mariposa Public Utility District	Wastewater Infrastructure	**13**	$ 7,300,000
51	Waste Water Collection System Improvements	Mariposa Public Utility District (MPUD)	Wastewater Infrastructure	**12**	$ 3,924,000
1	Replace Water Distribution Piping in Yosemite West Subdivision	County of Mariposa	Water Infrastructure	**12**	$ 2,900,000
22	Treatment Plant Pump Replacement Project	Lake Don Pedro Community Services District	Water Infrastructure	**12**	$ 100,000
12	Mariposa Biomass / Biochar Facility	Economic Development Corporation	Other	**12**	$ 5,000,000
38	DRILL WELL on Yosemite Mtn. Ranch TPZ and pipe water to NEW TANKS.	Yosemite Alpine Community Services District	Water Infrastructure	**12**	$ 500,000
8	Repairs and upgrades to Lake Don Pedro Wastewater Treatment System	County of Mariposa	Wastewater Infrastructure	**12**	$ 2,200,000
6	Expansion and Repair of Leachfields in the Yosemite West Subdivision	County of Mariposa	Wastewater Infrastructure	**11**	$ 1,220,000
10	Replace Water Distribution Piping in Coulterville	County of Mariposa	Water Infrastructure	**11**	$ 1,480,000
21	Water Service Replacement Project	Lake Don Pedro Community Services District	Water Infrastructure	**11**	$ 3,750,000
27	Rehabilitate The Wawona Wastewater Treatment Plant	National Park Service/Yosemite National Park	Wastewater Infrastructure	**11**	$ 24,000,000
19	Dead End Main Replacement Project	Lake Don Pedro Community Services District	Water Infrastructure	**11**	$ 6,500,000
7	Construct a septage collection and metering tank at the Lake Don Pedro Sewage Treatment Plant	County of Mariposa	Wastewater Infrastructure	**11**	$ 400,000
11	Replace Sewage Collection Piping in Coulterville	County of Mariposa	Wastewater Infrastructure	**11**	$ 2,200,000
17	Lake McClure Area Recreation Enhancements	Merced Irrigation District	Recreation	**11**	$ 332,300
26	Supplement Wawona Water System with Biledo Spring	National Park Service/Yosemite National Park	Water Infrastructure	**11**	$ 17,000,000
16	Saxon Creek Pump Station Access and Ventilation System Improvements	Mariposa Public Utility District	Water Infrastructure	**10**	$ 150,000
23	New potable water well	Lake Don Pedro Community Services District	Water Infrastructure	**10**	$ 125,000

Project #	Project Title	Agency	Project Type	Average (out of 22 pts)	Total Project Cost
32	Rural Water Company Infrastructure Rehabilitation	Ponderosa Basin Mutual Water Company (PBMWC)	Water Infrastructure	**10**	$ 600,000
37	Water Meter Replacement	Yosemite Alpine Community Services District	Water Infrastructure	**10**	$ 50,000
4	Replace Sewage Collection Piping in Yosemite West Subdivision	County of Mariposa	Wastewater Infrastructure	**10**	$ 2,500,000
9	Install back-up power at Mariposa Pines Sewage Treatment Plant	County of Mariposa	Wastewater Infrastructure	**10**	$ 225,000
20	Lake McClure Intake Improvement Project Phase III	Lake Don Pedro Community Services District	Water Infrastructure	**10**	$ 700,000
5	Develop Second Water Source for Yosemite West Subdivision	County of Mariposa	Water Infrastructure	**10**	$ 1,600,000
13	Lake McClure Deep Water Intake Feasibility Study	Lake Don Pedro Community Services District	Water Infrastructure	**10**	$ 30,000
42	Bear Creek Tribal Water Storage Project	American Indian Council of Mariposa County	Water Infrastructure	**10**	$ 90,500
2	Develop Second Water Source for the Coulterville community	County of Mariposa	Water Infrastructure	**9**	$ 700,000
3	Water Treatment for Arsenic Exceedance	County of Mariposa	Water Infrastructure	**9**	$ 500,000
47	Tank 1 Replacement	Mariposa Pines Water Company	Water Infrastructure	**9**	$ 40,000
41	Wawona Water Supply and Wastewater Treatment Projects	To be determined. Anticipate National Park Service, Yosemite National Park	Wastewater Infrastructure	**8**	$ -
46	Sounding Tube Installation	Mariposa Pines Water Company	Water Infrastructure	**8**	$ 2,500
48	Hazardous Tree and Brush Removal from Right-of-ways and Improvements	Mariposa Pines Water Company	Water Infrastructure	**7**	$ 160,000
49	Install Power and Telephone Lines (for internet) to Water Tanks	Mariposa Pines Water Company	Water Infrastructure	**5**	$ 50,000
			Average	**12**	$ 98,959,990


Tuolumne River
Clavey River
Middle Tuolumne River
South Fork Tuolumne River
Groveland
Buck Meadows
Tuolumne County
Tenaya Lake
Don Pedro Reservoir
Greeley Hill
Coulterville
Stanislaus National Forest
North Fork Merced River
Yosemite Village
Merced River
Lyell Fork Merced River
Yosemite National Park
El Portal
Yosemite West
Sierra National Forest
South Fork Merced River
Stanislaus County
Lake Don Pedro
Lake McClure
Hunter's Valley
Bear Valley
Briceburg
Midpines
Jerseydale
Wawona
Fish Camp
Lushmeadows
Mariposa County
Burns Creek
Lake McSwain
Hornitos
Mariposa
Mt. Bullion
Bear Creek
Boot Jack
Mormon Bar
Ponderosa Basin
Catheys Valley
Owens Creek
Mariposa Creek
Middle Fork Chowchilla River
East Fork Chowchilla River
Yosemite Lake
Burns Reservoir
Bear Reservoir
Merced County
Owens Reservoir
Mariposa Reservoir
Fresno River
Madera County
Bass Lake
Merced
Fresno
Legend
Projects
Communities
Community Areas
Y-M IRWM Boundary
California Counties
Region Wide Projects:
Project #18 - Point Blue Conservation Science - Rangeland Watershed Intiative Partner Biologist
Project #24 - Upper Merced River Watershed Council - Water Quality Monitoring Bioassessment in Upper Merced River Watershed
Project #30 - Sierra Foothill Conservancy - Conservation Planning, Phase 2
Project #33 - MCRCD - Invasive Plant Species Education and Eradacation
Project #34 - MCRCD - Drought Preparedness for Landowners and Residents
Project #35 - MCRCD - Water & Energy Efficiency Incentives Assistance Program
Project #50 - MCRCD - Private Land Water Storage Improvement Assistance Project
Note: The location of project #29 has not been determined.
N
0
30,000
Scale: Feet
Kennedy/Jenks Consultants
Yosemite - Mariposa IRWM Plan
Projects
July 2014
K/J 1388011*00
Figure 7-1
Path: Z:\Projects\Yose-Mari\RWM\Events\20130805_IRWMP_Report_Maps\Final Report - July 2014\F 7-1 Projects.mxd



Source: DAC Areas, US Census Bureau, Median Household Income 2010 ACS 5-year Survey; Census Places, 2012 Update, Median Household Income 2011 ACS 5-year Survey.

7.3.2 Development of Future Projects to Achieve Plan Objectives

In addition to the projects or programs submitted, additional projects are likely to be needed to fully satisfy all Plan objectives and the strategies. The existing list of 51 projects, fulfill the 23 Objectives to varying degrees. However, several Objectives do not have any linked primary projects. Future projects will be necessary for the Plan to address objectives that were not covered by projects submitted during this initial Call for Projects. Project proponents have not yet been identified for all of these projects, and the details of the projects or programs will need to be developed further in the future. In the future, the IRWM Plan will have other actions/projects associated with meeting IRWM Plan objectives.

Section 8: Impacts and Benefits

This section provides an overview of the potential impacts and benefits associated with implementation of the Yosemite-Mariposa (Y-M) Region (Region) Integrated Region Water Management Plan (IRWM Plan). Because of the nature of the IRWM planning process, the impacts and benefits discussed here are preliminary and not intended to be a complete list; more extensive and project-specific evaluations of impacts and benefits usually occur through project implementation. This overview may be used as a guide for deeper consideration of, and response to, impacts and benefits encountered during Plan implementation. Later, as plan performance is evaluated, the Y-M Regional Water Management Group (RWMG) may utilize this preliminary assessment to better understand the benefits that have been realized and whether unanticipated impacts have occurred.

8.1 Benefits of Plan Implementation

8.1.1 Plan Benefits

The Y-M IRWM Plan documents a shared vision for integrated water management and outlines a cooperative approach to achieve that vision. It provides regional water resources benefits largely by fostering improved coordination, collaboration, and communication among entities in the Region. Such collaboration is supported both by the Plan development process and the resulting, newly formed Plan Implementation Framework.

Development of the Plan has created strengthened partnerships between local, State, Tribal and Federal entities that may not have happened otherwise. The Y-M IRWM planning process fosters coordination, collaboration and communication among the many entities in the Region that previously had no formal forum for regional collaboration on similar topics. The IRWM planning process is intended to result in greater efficiencies (e.g., efforts are not duplicated, information is shared), enhance public and environmental benefits, and encourage greater public support for projects that are important to sustainable water management. As part of preparing this IRWM Plan, stakeholders have provided input as to their ongoing water management activities, priorities, and projects. Knowledge of these activities and projects assists other agencies from duplicating efforts, and helps to identify common synergies between efforts. For example, an outgrowth of this IRWM Plan is the regional effort currently underway to study groundwater use and quality throughout the County. The groundwater study is the first step in what is hopefully a long standing and beneficial effort to better manage and protect groundwater supplies, which are a critical supply source to many individuals and communities. During IRWM Plan preparation, many of the agencies and non-profit groups shared the experience gained in implementing past projects – passing their knowledge and lessons-learned to others.

This collaborative approach to regional planning helps ensure that multiple elements of watershed planning are considered together rather than allowing one particular geographic area or project type to dominate. In this way, development of an open and collaborative forum for discussion and response to water issues helps distribute the benefits and impacts of the Plan instead of allowing one group or geographic area to reap benefits while another withstands impacts. Also, regional planning helps ensure that projects designed to achieve one particular objective (e.g., water supply enhancement) will be supportive of (or at least compatible with) other objectives (e.g., forest management, water quality protection, or habitat preservation).

The 51 projects identified by this Plan meet, at some level, all nine goals and 23 plan objectives described in Section 5. While periodic updates and addition of projects will be needed over the 20-year horizon, implementation of the planned projects will produce multiple benefits. Below is an overview of some of the benefits, as it is expected that many more benefits will be realized through project development implementation.

- **Improve and Protect Water Quality** – Y-M IRWM Plan projects include actions to reduce contaminants in water sources by addressing causes such as nonpoint source pollution control and renewal or replacement of aging sewer infrastructure. Nonpoint source pollution control including improved cattle grazing practices will help reduce coliform, nitrates and other contaminants that could find their way into streams, and even shallow groundwater sources. Similarly, several upgrades involve wastewater treatment plant upgrades to bring the facilities up to current regulatory standards that are designed to be protective of the environment. The primary benefit from these water quality projects is the reduced potential for human and ecological exposure to potentially harmful contaminants. Likewise, by ensuring a protected water source these efforts will benefit other types of water users, such as agricultural users and water-dependent wildlife.

- **Improve Resource Stewardship** – The Plan projects include invasive species removal programs and land restoration and acquisition projects. Proposed projects will attempt to develop a regional plan to map and manage to prevent of the spread of non-native plants such as Arundo donax and yellow starthistle. Other projects will procure land and restore at-risk areas such as Bean Creek Meadow. These projects will improve overall habitat quality by restoring and rehabilitating native vegetation in riparian and aquatic corridors and improving fish habitat. Benefits of the Plan include broader-scale, regionally coordinated efforts to approach these complex challenges.

- **Catastrophic Wildfire Risk Reduction Projects** – Plan projects of this type primarily focus on removing vegetative fuel loading across several hundred acres. Proposed projects will aim to remove potential fuel loads by means such as burning, slashing, and thinning. Implementation of these projects will reduce the risk of large wildfires that could damage homes or native species habitat within the Region. Large wildfires also reduce air and water quality. Plan projects implementation also reduces the risk of water quality degradation to downstream regions such as the Merced Region.

- **Improve Water Supply Reliability** – Projects related to water supply management include improving the reliability of municipal supplies on a sub-regional scale, rehabilitating or replacing aging infrastructure such as wells, storage tanks, and pipelines, studying new sources of water supply, and improving drought preparedness on an individual and community scale. These projects are beneficial in maintaining the long-term sustainability of water supplies in the Region as well as accommodate future risk measures such as drought preparedness.

- **Improve Water Use Efficiency** – Projects related to water use efficiency focus on increasing public awareness, improving monitoring efforts through water meters, and making water efficient appliances more accessible to disadvantaged communities (DACs)[1] through incentive programs that alleviate the large capital costs to individuals and families alike. Projects aimed at more efficient water use will result in lower unit

[1] As described in Section 2, a DAC is defined as having an annual median household income that is less than 80 percent of the statewide annual median household income.

demands, less energy use for treatment and delivery of water, and, potentially, a reduced need for expansion of water supply infrastructure.

Table 8-1 summarizes the benefits and impacts of Plan implementation. The benefits and impacts are summarized on a regional scale, and also consider interregional benefits of projects and actions that will span beyond the borders of the Y-M Region. Regions that are hydrologically connected, such as the lower Merced River watershed of the Merced Region, are of particular focus in assessing potential interregional benefits.

Table 8-1: Potential Benefits and Impacts from Plan Implementation

	Within IRWM Region		**Interregional**	
	Potential Benefits	*Potential Impacts*	*Potential Benefits*	*Potential Impacts*
Projects to Improve and Protect Water Quality	• Reduced human and ecological exposure to pollutants • Improved drinking water supply and wastewater treatment regulatory compliance • Protection of aquatic habitat • Improvement of water-based recreation • Benefits extend to broad Region, including DACs	• Projects to improve water quality that involve construction could result in temporary impacts to aesthetics, air quality, biological resources, noise, soils, and transportation systems. • No environmental justice or DAC impacts are anticipated.	• Improved water quality in the Region would also benefit the downstream regions in the lower watersheds, such as the Merced and Madera IRWM Regions, and associated groundwater basins.	• No interregional impacts are anticipated.
Projects to Promote Resource Stewardship	• Improved habitat quality and quantity • Reduced risk to native species from invasive species • Improved water supply • Improved water quality • Enhanced public awareness • Benefits extend to broad Region, including DACs	• Projects to remove invasive species could have temporary negative impacts to aesthetics, biological resources, and soils. • No environmental justice or negative impacts to DACs are anticipated.	• Prevention and removal of invasive species in the Region may reduce the transport and deposition of invasive species to the Sacramento-San Joaquin Delta and adjacent regions.	• No interregional impacts are anticipated.
Water Supply and Demand Management Projects	• Enhanced supply reliability • Improved groundwater management • Reduced water demands • Less energy usage for treatment and delivery of water • Reduced need to expand water supply infrastructure • Benefits extend to broad Region, including DACs	• Development of water supply projects could result in ground disturbance and have temporary impacts to aesthetics, air quality, biological resources, noise, soils, and transportation systems. • No environmental justice or negative impacts to DACs are anticipated.	• Improved water supply reliability and reduced water demands within the Region could improve regional and statewide water supply reliability.	• No interregional impacts are anticipated.

	Within IRWM Region		Interregional	
	Potential Benefits	*Potential Impacts*	*Potential Benefits*	*Potential Impacts*
Efficiency-Related Projects	• Reduced greenhouse gases • Climate change adaptation • Potentially improve air quality • Improved efficiency of existing infrastructure and home appliances • Lower energy usage • Reduce the need for new infrastructure • Maximize beneficial use of resources • Benefits extend to broad Region, including DACs	• Development of efficiency-related projects could result in ground disturbance and have temporary impacts to aesthetics, air quality, biological resources, noise, soils, and transportation systems. • No environmental justice or negative impacts to DACs anticipated.	• Lowered energy and water demands may serve as a model for other nearby regions with DAC and Tribal communities. Improved air quality, lowered energy and water demands could improve regional and statewide energy and water supply reliability.	• No interregional impacts are anticipated.
Catastrophic Wildfire Risk Reduction Projects	• Reduce wildfire risk • Protection of critical habitat and communities • Reduce risk to nearby agriculture • Potentially improve water quality • Potentially improve air quality • Potential source of biomass • Benefits extend to broad Region, including DACs	• Development of fuel reduction projects could result in temporary impacts to aesthetics, air quality, biological resources, cultural resources, soils, and transportation systems. • No environmental justice or DACs impacts anticipated.	• Reduced fuel loads will reduce the risk of large wildfires which can spread to adjacent regions and potentially lower water and air quality. Reduce wildfire risk to endangered and protected species.	• No interregional impacts are anticipated.
Actions to Adapt to Climate Change	Actions to respond to climate change will occur in conjunction with the projects described above, as appropriate.			
Actions to Reduce Greenhouse Gas Emissions	Actions to help reduce greenhouse gas emissions will occur in conjunction with the projects described above, as appropriate.			

8.1.2 Plan Beneficiaries

Accomplishment of the IRWM objectives and projects will benefit the Region as a whole, and in many cases stakeholders in neighboring regions, not just areas in the vicinity of individual projects. The potential beneficiaries of the IRWM Plan are residents of the Region, water agencies, local, state, and federal agencies, businesses, wildlife and associated habitats, neighboring regions, Native American tribes, and others within the jurisdictions served by Plan projects. These beneficiaries are represented by members of the RWAC and the larger IRWM stakeholder group.

As most of the communities in the Region qualify as DACs (the larger exceptions are Yosemite West and Yosemite Village), IRWM Plan implementation will primarily benefit DACs. DACs are expected to play a role in projects by sponsoring or cosponsoring projects throughout Plan implementation.

Native American tribes have also participated actively in Plan development, including providing input on the development of goals and objectives, and have submitted projects (primarily for water storage, invasive species management and restoration of native vegetation) for implementation. Tribes are encouraged to continue their participation and to submit additional projects for inclusion in the Plan that can further benefit the Tribes.

8.1.3 Interregional Benefits

The Y-M Region is located at the foothills of the Sierra Nevada and extends westward into the Central Valley. Hydrologically, the Region is upstream of the Merced Region. A large portion of Merced River water users are located outside of the Region itself. Because of this, water quality protection and supply availability are closely integrated with the needs adjacent Merced Region. Habitat and large scale watershed and forest management projects implemented within the Region are likely to directly impact IRWM Plan efforts in the neighboring Regions. Projects to enhance and protect the watershed, and reduce consumptive water usage, will likely have downstream benefits.

Wildfires are a continual risk to this Region and adjacent regions, as evidenced by the catastrophic 2013 Rim Fire. Projects reducing fuel loading over several hundred acres lower the risk of large wildfires that can spread to nearby communities outside of the Region. They also reduce the risk of air and water quality degradation for downstream users. The large amount of unmanaged overgrowth in the Region requires a large amount of water and transpires the water before it can fully infiltrate to deeper groundwater aquifers, recharging groundwater supplies and raising the groundwater table.

8.2 Impacts of Plan Implementation

Negative impacts that may be associated with the Plan projects include (1) short-term, site-specific impacts related to site grading and construction, and (2) long-term impacts associated with project operation. For the purposes of this Plan, impacts are discussed at a screening level below.

During project planning, project-specific and/or programmatic environmental compliance processes (consistent with California Environmental Quality Act [CEQA] and, if applicable, the National Environmental Policy Act [NEPA]) will be used to evaluate the significance of project impacts. Under CEQA, impacts determined to be significant must be mitigated to a level of non-significance (unless the lead agency makes findings of overriding consideration). The IRWM Plan itself does not lead directly to the implementation of any specific project; as a result, the IRWM Plan is exempt from CEQA. The following provisions of the State CEQA Guidelines apply:

- Statutory Exemption (15262 for Feasibility and Planning Studies)
- Categorical Exemption (15306-Information Collection)

CEQA review associated with specific projects by relevant agencies will evaluate impacts in much greater detail than is given in the discussion below.

- **Aesthetics** – Projects that include construction activities and new infrastructure could affect aesthetics. However, projects will likely be constructed in areas that are already disturbed or include mitigation measures to return disturbed areas to their pre-construction conditions.

- **Air Quality** – Short-term air quality impacts could result from construction of Plan projects. However, through the CEQA process, potential air emissions would be minimized through application of best management practices (BMPs) identified by the air quality management district or other mitigation measures.

- **Biological Resources** – Short-term biological impacts could result from construction activities as well as non-native plant removal. Most of these negative effects would be avoided or minimized through mitigation efforts related to CEQA. Additionally, several of the IRWM Plan objectives focus on preservation and improvement of ecosystem health and would thus result in a net increase of benefits to biological resources.

- **Cultural Resources** – Impacts to cultural resources (historical, archeological, and paleontological resources) could result from construction of Plan projects. As part of the CEQA process, it will be necessary to develop mitigation measures to avoid or minimize any such impacts. In addition, participation of Tribes in the IRWM process could include informal consultation on projects that could impact cultural resources.

- **Geology and Soils** – Plan projects with the potential to impact geologic resources would be required to undergo geological feasibility studies, which would specify the appropriate engineering standards the contractor would have to comply with during construction to mitigate project site geological and soil impacts.

- **Hydrology and Water Quality** – Impacts to hydrology and water quality are anticipated to be generally beneficial because Plan projects are intended to improve water supply reliability and water quality in the long term. For short-term erosion or sedimentation, project-specific BMPs would be identified as part of the National Pollutant Discharge Elimination System (NPDES) or local permitting process.

- **Land Use and Planning** – The Plan projects were screened for their compatibility with other planning documents for the Region, including local and regional general plans. No significant land use changes or inconsistencies with policies are anticipated. In fact, collaboration between land use and water management agencies could reduce incompatibilities in the future.

- **Noise** – Noise impacts could result from construction activities from some of the proposed projects. However, through the CEQA process, most of these impacts would be minimized by mitigation efforts. No long-term noise impacts are expected.

- **Population and Housing** – No adverse impacts to population and housing are anticipated. Plan implementation would help to meet the water demands of the existing and anticipated future population.

- **Public Services and Utilities** – Many of the Plan projects are intended to enhance water supply and water quality and improve storm water and flood management. Such projects would benefit the utilities and service systems in the Region.

- **Recreation** – One of the Plan objectives is to preserve and enhance water-dependent recreation; recreation impacts are likely to be beneficial.

- **Transportation and Circulation** – Transportation and circulation could be temporarily impacted during construction of some of the Plan projects. Construction can temporarily increase traffic congestion because of transportation of equipment and trips by workers. Construction near roadways can result in temporary lane closures and detours. However, through the CEQA process, most of these activities would be avoided or minimized. No long-term transportation and circulation impacts are expected.

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Section 9: Implementation Framework

9.1 Introduction

This section documents the relationships and decision-making structure recommended for use during the continued development and implementation of the Yosemite-Mariposa Integrated Regional Water Management Plan (IRWM Plan or Plan) over the next 20 years. It also sets forward a proposed framework for Plan implementation and guidelines for performance monitoring to track progress, and it offers suggested initial Plan implementation activities. This section is intended to define the entity (or entities) that will implement the Plan, the responsibilities for Plan implementation and therefore serve as the cornerstone of actions the Region must take to continue the IRWM program into the future.

The governance structure recommendations included in this section are intended to be consistent with the Integrated Regional Water Management Guidelines for Proposition 84 and Proposition 1E (Guidelines) published by the California Department of Water Resources (DWR) in November 2012. The Guidelines require that the governance structure address the following:

- Public outreach and involvement processes*
- Effective decision making
- Balanced access and opportunity for participation in the IRWM process*
- Effective communication – both internal and external to the IRWM Region*
- Long-term implementation of the IRWM Plan*
- Coordination with neighboring IRWM efforts and state and federal agencies*
- The collaborative process(es) used to establish plan objectives (discussed in Section 5)
- How interim changes and formal changes to the IRWM Plan will be performed
- Updating or amending the IRWM Plan*

* The individual IRWM governance topics bulleted above are discussed in the sections that follow with items that are asterisked (*) the focus of the activities discussed in Section 9.2.

The Guidelines also describe that the IRWM Plan must also include:

> "The name of the Regional Water Management Group (RWMG) responsible for development and implementation of the Plan." A RWMG must meet the definition of the California Water Code (CWC) §10539, which states:
>
> > "RWMG means a group in which three or more local agencies, at least two of which have statutory authority over water supply or water management, as well as those persons who may be necessary for the development and implementation of a plan that

meets the requirements of CWC §10540 and §10541, participates by means of a joint powers agreement, Memorandum of Understanding (MOU), or other written agreement, as appropriate, that is approved by the governing bodies of those local agencies"

9.2 Existing Governance Structure

The existing Yosemite-Mariposa Region governance structure used for development of the IRWM Plan as described in Section 1.3 relies on a Memorandum of Understanding to form the RWMG, which is the primary governance entity. As described in the 2012 MOU found in Appendix 1-A, the Yosemite-Mariposa IRWM defines the RWMG as follows:

> "RWMG – Overall direction, funding and approval for the IRWM planning process and work products are provided by five bodies –Mariposa County Resource Conservation District (fiscal lead agency), Mariposa County (water purveyor), Mariposa Public Utility District (water purveyor) and two other organizational representatives* selected by the Regional Water Advisory Council (RWAC)."

* As of May 2014, the two other representatives are the Lake Don Pedro Community Services District and the Upper Merced River Watershed Council.

The MOU also created an advisory group known as the Regional Water Advisory Committee. Beyond the RWMG, the RWAC provides the Yosemite-Mariposa IRWM a broader base of community support which came together as:

> "community representatives [who] will identify regional water-management issues and needs; establish goals and objectives, plans and projects, and future funding and governance."

Many of the current RWAC members have been working together since 2009 to further the mission of IRWM under the leadership of several of the RWMG members which resulted in the selection for a Proposition 84, Round 2 Planning grant.

9.3 Recommended Governance Structure

Once the Yosemite-Mariposa IRWM Plan has been adopted the focus of the RWAC, who are the signatories to the MOU, and stakeholders will change significantly. Some of the activities conducted prior to and during Plan development will continue, but the emphasis will shift from planning toward implementation of projects and tracking of progress towards achievement of IRWM Plan objectives. Implementation of the Yosemite-Mariposa IRWM Plan will rely on actions taken by existing agencies and organizations within the Region, with the support of the IRWM governance structure.

In order to implement the Plan in an open and definitive way, each Region is required to develop a governance structure consistent with the Propositions 84 and 1E IRWM Guidelines. The guidelines state:

> "The IRWM Plan must document a governance structure that ensures the IRWM Plan will be updated and implemented beyond existing State grant programs."

The proposed governance structure was developed to reflect the discussions of the RWAC and stakeholders to provide a means for the Region to maintain functionality, encourage open participation in the Plan, and help assure the region's longevity and stability.

9.3.1 Organizational Structure and Function

The following provides the proposed governance model for consideration by the RWMG and RWAC. After consideration of potential alternative governance structures, it is proposed that the Region consider implementing a modified version of the current governance structure, utilizing an updated Memorandum of Understanding or similar document. The RWMG will be responsible for the bulk of decision leadership, management and administrative functions, while seeking input and guidance from the RWAC and other subcommittees as described in the following section. The recommendations in this section are not binding but are intended to provide guidance to the RWAC and other Plan participants.

9.3.2 Roles and Responsibilities

The stakeholders and the RWAC will need to work together to ensure successful Plan implementation. For this reason, each of the following groups will have varying roles and responsibilities, which must be clearly defined in the final adopted governance structure:

- Yosemite-Mariposa RWAC who are also MOU Signatories
- Yosemite-Mariposa RWMG, a sub-group of the RWAC
- Agency Partners who are non-voting members of the RWAC but whose missions are important to water management in the Region
- Interested Parties or IRWM Participants (non MOU signatories)
- Project Proponents must adopt the IRWM Plan to be included in a grant application and participate in RWAC. Project Proponents are strongly encouraged, but not required to sign the MOU and become RWAC members.
- As-needed sub-committees, committee(s), or working groups

It should be noted that individuals may participate in more than one group fulfilling different roles as needed.

While individual agencies within the Yosemite-Mariposa Region are responsible for implementing the projects that accomplish the objectives of the IRWM Plan, individuals within the RWAC will provide leadership for fostering cooperation, continuing coordination, tracking of Plan performance, and updating of the IRWM Plan through the participation of the RWMG, who are leaders in the IRWM program. This is similar to how the RWAC has been functioning since its inception. Stakeholders can also support the activities of the RWMG members through participation in Committees as well as attending and providing input at scheduled RWAC meetings.

Committees may be formed on an as-needed basis to help focus collaboration and progress on specific topics or objectives such as preparation of a collaborative grant application, integration of projects, or coordination of related activities. Some of the Committees may be "ad hoc" and only exist for a few meetings to accomplish a specific task, while others may be long lasting with regular reporting responsibilities to the broader RWAC. Section 1 describes the 9 committees that have come together during the life of the Y-M IRWM program.

The narrative that follows describes some of the specific roles and responsibilities of various participants involved in Plan implementation. Table 9-1 that follows summarizes the overall activities of IRWM Plan implementation with the identification of the RWMG/RWAC member that would lead the activity. IRWM Plan implementation is not intended to interfere with or supersede actions taken by local agencies to fulfill the local agencies' authorized duties.

Table 9-1: Activities, Participants, and Roles for Implementing the Yosemite-Mariposa IRWM Plan

IRWM Activities	RWMG Role	RWAC Role	Committee Role	Project Proponents Role	Other/ Notes
1. Public outreach and involvement processes -					
a. Establish Point of Contact for IRWM Program		Support	Lead		
b. Maintain e-mail list		Support	Lead		both internal and external to the Region
c. Schedule and Announce meetings		Support	Lead		both internal and external to the Region
d. Prepare agendas and content		Support	Lead		
e. Facilitate meetings		Support	Lead		
f. Prepare meeting summaries		Support	Lead		
g. Administer website, and update content with meeting materials, and other relevant information		Support	Lead		both internal and external to the Region
2. Balanced access and opportunity for participation in the IRWM process					
a. Monitor and maintain DAC and Tribal Contacts list through Notification Prior to RWAC Meetings		Support	Lead		
3. Effective Communications External to The Region					
a. Communication External to the Region –		Support	Lead		See also 1
b. Coordination with neighboring IRWM efforts - Sierra Water Work Group and Madera, Tuolumne-Stanislaus, Merced, Inyo-Mono Region IRWMs		Support	Lead		See also 1
c. Coordination with state and federal agencies (e.g. RWQCB)			Lead and Report to RWMG/RWAC		

IRWM Activities		RWMG Role	RWAC Role	Committee Role	Project Proponents Role	Other/ Notes
4.	**Long-term implementation of the IRWM Plan**					
a.	Evaluate Plan Performance and Monitoring for Meeting Objectives		Support	Lead		
b.	Review and act on objectives/targets not accounted for in projects		Support	Lead		
c.	Gather and synthesize data related to Plan projects and report to stakeholders		Support	Lead		
d.	Manage and share related data and information (also could be Data Management System)		Support	Lead		
5.	**Update Yosemite-Mariposa IRWM Plan**					
a.	Review and update objectives		Support	Lead		
b.	Solicit new or revised/integrated projects, provide project evaluation/scoring and regularly revise project and update project priorities, as needed or at a minimum of every 2 years		Support	Lead	Support	
c.	Review/Revise Plan content at least every 5 years	Support	Support	Lead	Support	RWMG to determine if Committee should be convened
6.	**Financing Plan Implementation**					
a.	Evaluate IRWM Plan Implementation Administration (e.g. Local Staff in-kind contributions, and/or grants, or other financial sources)	Lead	Support			
b.	Communicate information on upcoming funding		Support	Lead		See also 1
c.	Improve project integration and select projects for inclusion in grant applications		Support	Lead	Support	
d.	Prepare and submit grant applications		Support	Support	Lead	

9.3.2.1 RWMG (Regional Water Management Group)

As described earlier, the RWMG is a group of three or more local agencies, at least two of which have statutory authority over water supply or water management. Within the Yosemite-Mariposa RWAC, Mariposa Public Utility District, Mariposa County Water Agency, Yosemite Alpine CSD and Lake Don Pedro CSD, all have statutory authority over water supply or water management. At least two of these agencies will formally join the RWMG thereby fulfilling this requirement. The primary function of the RWMG will be to provide core leadership necessary for IRWM Plan implementation and decision making for instances when the RWAC cannot resolve a certain topic.

9.3.2.2 RWAC (Regional Water Advisory Council)

The RWAC is a broader group of stakeholders where the majority of the activities necessary for IRWM Plan implementation will occur. RWAC membership requires signing the MOU and represents a spectrum of public agencies, special districts, non-profit organizations and

education institutions throughout the Region. All project proponents who apply for grants through the IRWM process are required to adopt the IRWM Plan.

9.3.2.3 Agency Partners

Yosemite-Mariposa IRWM Agency Partners include entities such as Federal or State agencies who manage natural resources in the Region, who attend RWAC meetings and who choose to participate in the Yosemite-Mariposa implementation activities but in a non-voting role.

9.3.2.4 Interested Parties

Yosemite-Mariposa IRWM Plan Interested Parties include members of the public, non-RWAC member community organizations and other stakeholders who can attend RWAC meetings and provide input during the public comment period of the meeting.

9.3.2.5 Project Proponents

Agencies or organizations who are implementing projects (including feasibility studies, data collection and analysis, etc.) are project proponents of the Plan. Projects included and tracked by the Yosemite-Mariposa IRWM Plan may include projects funded (in whole or in part) by IRWM grant funds, as well as projects and programs funded independently. Project proponents will be responsible for implementing the projects contained in the Yosemite-Mariposa IRWM Plan, must formally adopt the IRWM Plan if they become IRWM fund applicants and, if funded by IRWM grant funds, will be required to submit project specific monitoring information to inform progress towards achieving Plan objectives.

It is envisioned that the project proponents will have the following roles and responsibilities:

1. Provide project specific information for the regional project list maintained by the RWMG that may aid in advancing the Plan's regional objectives.

2. Seek opportunities to integrate, where possible and practical, and develop Plan projects in the list to most efficiently achieve the regional objectives. This process may be initiated and facilitated at stakeholder meetings, but it is expected that project proponents will further develop these opportunities outside of that forum.

3. Provide updated project specific information for the regional project list as necessary to reflect major project milestones (e.g., CEQA completion, 100% design, construction underway, construction complete, and project completion). This particular role is a critical element of Plan implementation and is in the best interest of the project proponents, since having updated information available will help projects when applying for financial assistance. This can also include adding or removing projects from the list and will occur at least every two years.

4. Identify a point person for each project who will provide, in a timely manner, requested information for projects for inclusion in a grant application.

5. Identify a point person for each project who will provide, in a timely manner, to the potential grantee, requested information for projects selected for funding through a funding agency.

6. Comply with grant requirements, as identified by the funding agency, to qualify for grant funding, including and not limited to formally adopting the IRWM Plan.

9.3.2.6 As-Needed Sub-committees, Committees, or Working Groups

Sub-Committees, Committees, and/or Working Groups, should it be decided one is needed by the RWAC, are comprised of a smaller group of stakeholders/participants or project proponents who provide leadership and focus on a more detailed project/program level toward coordination and cooperation on behalf of the RWAC. Any member of the RWAC is welcome to join a Committee but no subcommittee has the power to bind the RWAC unless agreed to in advance by decision of the RWAC. The various roles of a Committee could include:

- Coordinate preparation of grant funding applications.
- Conduct public outreach meetings to provide opportunities for discussion regarding Plan implementation and future updates or revisions to the Yosemite-Mariposa IRWM Plan.
- Improve collaboration efforts to support development of integrated, regionally focused projects.
- Review projects that have been submitted.
- Foster continued communication among stakeholders within the Region that support implementation of the Yosemite-Mariposa IRWM Plan.
- Assist project proponents in pursuit of grant funds to help implement projects included in the IRWM Plan.
- Promote, track and report on progress toward meeting the Plan objectives.
- Recommend process for updating or amending the Yosemite-Mariposa IRWM Plan.

9.3.3 Access and Opportunity for Participation

One of the most important aspects of Plan implementation is a process to ensure that the public and interested stakeholders continue to be involved. This will be accomplished through multiple avenues of communication and engagement among the RWAC and IRWM participants, including, at minimum, the following:

- The RWAC will conduct outreach, create content and facilitate at quarterly (minimum frequency) RWAC meetings. In addition, the RWAC will support any Committees that may be formed on separate topics. During the meetings, all MOU signatories are invited to participate as equals in the interaction to reach consensus on the implementation of the Plan.
- The RWAC will continue to foster dialog with Tribes and representatives of the Disadvantaged Communities (DAC) and environmental justice communities within the Region as needed to support meeting the objectives of the Plan. Extra contacts will be made prior to meetings to notify Tribal and DAC representatives of topics of interest.

The RWAC will e-mail and will post meeting materials and other relevant information to the program website and invite review and comment from any interested person or organization.

9.3.3.1 Internal and External Communication

As summarized in Table 8-1, multiple avenues of internal and external communication will be facilitated by the RWAC including:

- Prepare communication materials for distribution, posting on the project website, and for use in meetings with governing boards and other interested parties.
- Conduct meetings at least quarterly that are announced and open to any stakeholder.
- Ensure that individuals are assigned to meet and coordinate with neighboring IRWM planning efforts, other local, state, and federal agencies as they relate to accomplishing the objectives in the Yosemite-Mariposa IRWM Plan.
- Ensure that engagement occurs with neighboring IRWM efforts and other state and federal agencies that have interests or could impact meeting the objectives of the Plan. The RWAC will continue to communicate with DWR regional representatives.

9.3.3.2 Public Involvement Processes

All organizations and individuals with an interest in improving water management in the Region are invited to participate in Plan implementation. The RWAC recognizes that a committed public outreach and notification process is a necessary task to ensure the public is aware that there are multiple opportunities to become involved in the program. Disadvantaged Communities and Tribes will continue to be an important aspect of outreach in the Region. The public involvement processes to be completed by the RWAC include:

- Coordinate RWAC Input meetings at least four times per year to discuss relevant topics of progress on implementation of the Yosemite-Mariposa IRWM Plan. The RWAC may convene additional meetings as desired to support fulfilling the objectives of the Plan.
- Maintain and update content to the Yosemite-Mariposa IRWM Plan website.
- Maintain a contact e-mail and phone number for people to send comments or ask questions about the Yosemite-Mariposa IRWM Plan.
- Maintain the Yosemite-Mariposa stakeholder e-mail list and send updates and meeting invitations as appropriate.

9.3.4 Decision Making

Decisions during implementation will continue to be made using consensus based agreement, as during Plan development with matters considered by the entire RWAC. If for some reason broad agreement cannot be reached by 100% of the active members of the RWAC present, within a reasonable amount of time and effort, the matter will be referred to the RWMG for final decision with both majority and minority positions represented. Active participation means that the member has had a representative or alternative in attendance at half or more of the RWAC

meetings held within the last year. Additional details regarding decision-making are found in the current MOU which is found in Appendix 1-A. A revised MOU for IRWM Plan implementation was adopted on June 25, 2014 and is also included in Appendix 1-A.

9.4 Plan Financing

Implementation of an IRWM Plan is an enormous undertaking and requires the financial contributions and attention of local, state, and federal agencies to ensure success. Financing of this Yosemite-Mariposa IRWM Plan involves two distinct tracks: funding of IRWM Plan administration through local in-kind staff time and coordination and funding of project implementation. This section highlights the anticipated funding needs for both tracks, identifies potential funding sources, and documents some of the activities that the RWAC and others could employ to secure additional funding.

9.4.1 Funding Needs

9.4.1.1 Implementation Coordination Funding

Development of the IRWM Plan was funded by the RWAC and an IRWM Planning grant from the DWR. While these funds cannot be spent on implementation projects, IRWM implementation coordination may be supported in the near term, with supplement by local funds, if Planning grant funds remain. Implementation Coordination could include activities undertaken by the RWAC to plan and conduct stakeholder input meetings, track plan implementation (including progress towards completing plan objectives and projects), and conduct ongoing public outreach and engagement as described in the governance sections.

Following the completion and adoption of the IRWM Plan, the Yosemite-Mariposa IRWM anticipates continuing with the RWMG providing the leadership focus for IRWM Plan implementation.

- Members of the RWAC (and potentially other agencies/organizations within the Region) may provide in-kind services to fulfill the roles of the RWMG and administrative support.

- The RWAC may seek additional local and/or other funding to fulfill the activities required for Plan implementation.

9.4.1.2 Project Implementation Funding

As of March 2014, fifty-one projects are included in the IRWM Plan. All of the projects provided funding information, with a total estimated funding need of $ 99 million. Of the fifty-one projects, several are projects currently at the early planning or feasibility study stage, which is an indicator that the overall funding needs may increase as these projects progress and are developed into implementable projects, programs, or actions, and as other projects are added to the IRWM Plan. Table 9-2 summarizes financing needs and the availability of capital and operations and maintenance funding sources based on information provided by project proponents. It is recommended that this table be updated at a minimum every two years or as needed.

Table 9-2: Project Financing Summary

Project Number	Lead Agency Organization	Project Title	Approximate Cost	Funding Source	% of Total Cost of Funding Source	Funding Certainty/ Longevity	Subtotal Cost by Project Type
Fuels Reduction							
14	Mariposa Public Utility District	Stockton Creek Watershed Fuel Modification Project	$240,000	Unknown	4%	Unsecured	
25	Upper Merced River Watershed Council	Merced River Watershed Wildfire Fuel Reduction Project	$750,000	NRCS	47%	Unsecured	
39	USFS, Sierra National Forest, Bass Lake Ranger District	Sierra National Forest Bass Lake Ranger District Fuels Reduction Project - Rush Timber Sale, near Wawona	$1,733,000	Completed (20%); Under Contract (4%); KV/BD (3%)	27%	Secured	
40	USFS, Sierra National Forest, Bass Lake Ranger District	Sierra National Forest Bass Lake Ranger District Fuels Reduction Project -Hites-Feleciana Fuels Project, N of Mariposa Pines	$2,533,000	Federally appropriated funding	25%	Unsecured	
50	Mariposa County Resource Conservation District	Private Land Water Storage Improvement Assistance Project	$225,000	Natural Resources Conservation Service and other partners; sale of soil and other sources	44%	$25,000 secured; $75,000 unsecured	**$5,481,000**
Other							
12	Economic Development Corporation	Mariposa Biomass / Biochar Facility	$5,000,000	None	0%	N/A	
34	Mariposa Resource Conservation District	Drought Preparedness for Landowners and Residents	$86,250	MCRCD/Local government	13%	Unsecured	
35	Mariposa County Resource Conservation District	Water & Energy Efficiency Incentives Assistance Program	$645,000	Unknown	3%	Unsecured	**$5,731,250**
Recreation							
17	Merced Irrigation District	Lake McClure Area Recreation Enhancements	$332,300	None	0%	N/A	**$332,300**

Project Number	Lead Agency Organization	Project Title	Approximate Cost	Funding Source	% of Total Cost of Funding Source	Funding Certainty/ Longevity	Subtotal Cost by Project Type
Restoration							
18	Point Blue Conservation Science	Rangeland Watershed Initiative Partner Biologist	$180,000	NRCS	50%	Secured	
28	Sierra Foothill Conservancy	Bean Creek Meadow Restoration	$372,000	American Rivers (5%); Tuolumne County (35%); Pulvino Foundation (6%)	46%	Secured	
29	Sierra Foothill Conservancy	Conservation Easement	$2,000,000	Landowner and SFC	25%	Unsecured	
30	Sierra Foothill Conservancy	Conservation Planning, Phase 2	$50,000	Unknown	30%	Unsecured	
31	Sierra Foothill Conservancy	Stockton Creek Preserve Expansion	$1,500,000	CalTrans EEMP Grant	20%	Unsecured	
33	Mariposa Resource Conservation District (MCRCD)	Invasive Plant Species education and eradication	$600,000	MCRCD, Co Government	13%	Secured	
36	Yosemite Area Audubon Society	Mariposa Creek Parkway Extensions	$932,000	None	0%	N/A	
43	American Indian Council of Mariposa County	Mariposa Creek Native Plants Restoration and Education Project	$87,240	Volunteer labor	7%	Secured	
44	American Indian Council of Mariposa County	Invasive Plant Eradication/Native Plant Enhancement, Wawona, Yosemite NP	$81,200	NPS	53%	Unsecured	**$5,802,440**

Project Number	Lead Agency Organization	Project Title	Approximate Cost	Funding Source	% of Total Cost of Funding Source	Funding Certainty/ Longevity	Subtotal Cost by Project Type
Wastewater Infrastructure							
4	County of Mariposa	Replace Sewage Collection Piping in Yosemite West Subdivision	$2,500,000	Bonds	23%	Secured	
6	County of Mariposa	Expansion and Repair of Leachfields in the Yosemite West Subdivision	$1,220,000	Existing Sewer Rates	25%	Unsecured	
7	County of Mariposa	Construct a seepage collection and metering tank at the Lake Don Pedro Sewage Treatment Plant	$400,000	None	0%	N/A	
8	County of Mariposa	Repairs and upgrades to Lake Don Pedro Wastewater Treatment System	$2,200,000	Existing Sewer Rates	0%	Unsecured	
9	County of Mariposa	Install back-up power at Mariposa Pines Sewage Treatment Plant	$225,000	Existing Sewer Rates	25%	Unsecured	
11	County of Mariposa	Replace Sewage Collection Piping in Coulterville	$2,200,000	None	0%	N/A	
15	Mariposa Public Utility District	Mariposa PUD Waste Water Treatment Facility Improvements	$7,300,000	State Revolving fund/ Clean Water Grants/USAD Rural Development	0%	Unsecured	
27	National Park Service/Yosemite National Park	Rehabilitate The Wawona Wastewater Treatment Plant	$24,000,000	NPS	0%	Unsecured	
41	To be determined. Anticipate National Park Service, Yosemite National Park	Wawona Water Supply and Wastewater Treatment Projects	$0	None	0%	N/A	
51	Mariposa Public Utility District (MPUD)	Waste Water Collection System Improvements	$3,924,000	None	0%	N/A	**$43,969,000**

Project Number	Lead Agency Organization	Project Title	Approximate Cost	Funding Source	% of Total Cost of Funding Source	Funding Certainty/ Longevity	Subtotal Cost by Project Type
Water Infrastructure							
1	County of Mariposa	Replace Water Distribution Piping in Yosemite West Subdivision	$2,900,000	Bonds	25%	Secured	
2	County of Mariposa	Develop Second Water Source for the Coulterville community	$700,000	None	0%	N/A	
3	County of Mariposa	Water Treatment for Arsenic Exceedance	$500,000	Budgeted funds	20%	Unsecured	
5	County of Mariposa	Develop Second Water Source for Yosemite West Subdivision	$1,600,000	Bonds	25%	Unsecured	
10	County of Mariposa	Replace Water Distribution Piping in Coulterville	$1,480,000	Customer rate increase	0%	Unsecured	
13	Lake Don Pedro Community Services District	Lake McClure Deep Water Intake Feasibility Study	$30,000	Capital reserves	25%	Secured	
16	MARIPOSA PUBLIC UTILITY DISTRICT	Saxon Creek Pump Station Access and Ventilation System Improvements	$150,000	None	0%	N/A	
19	Lake Don Pedro Community Services District	Dead End Main Replacement Project	$6,500,000	Capital reserves	25%	Secured	
20	Lake Don Pedro Community Services District	Lake McClure Intake Improvement Project Phase III	$700,000	Capital reserves	29%	Secured	
21	Lake Don Pedro Community Services District	Water Service Replacement Project	$3,750,000	Capital reserves	25%	Secured	
22	Lake Don Pedro Community Services District	Treatment Plant Pump Replacement Project	$100,000	Capital reserves	25%	Secured	
23	Lake Don Pedro Community Services District	New potable water well	$125,000	Capital reserves	20%	Secured	

Project Number	Lead Agency Organization	Project Title	Approximate Cost	Funding Source	% of Total Cost of Funding Source	Funding Certainty/ Longevity	Subtotal Cost by Project Type
26	National Park Service/Yosemite National Park	Supplement Wawona Water System with Biledo Spring	$17,000,000	NPS	0%	Unsecured	
32	PONDEROSA BASIN MUTUAL WATER COMPANY (PBMWC)	Rural Water Company Infrastructure Rehabilitation	$600,000	Capital reserves	3%	Secured	
37	Yosemite Alpine Community Services District	Water Meter Replacement	$50,000	None	0%	N/A	
38	Yosemite Alpine Community Services District	DRILL WELL on Yosemite Mtn. Ranch TPZ and pipe water to NEW TANKS.	$500,000	Fish Camp Fire Rescue	40%	Secured	
42	American Indian Council of Mariposa County	Bear Creek Tribal Water Storage Project	$90,500	None	0%	N/A	
45	Fish Camp Volunteer Fire Association	Drought/Fire Storage with additional wells with distribution pipelines and hydrants	$591,000	Capital reserves	34%	Secured	
46	Mariposa Pines Water Company	Sounding Tube Installation	$2,500	Capital reserves	10%	Secured	
47	Mariposa Pines Water Company	Tank 1 Replacement	$40,000	None	0%	N/A	
48	Mariposa Pines Water Company	Hazardous Tree and Brush Removal from Right-of-ways and Improvements	$160,000	None	0%	N/A	
49	Mariposa Pines Water Company	Install Power and Telephone Lines (for internet) to Water Tanks	$50,000	None	0%	N/A	**$37,619,000**
24	Upper Merced River Watershed Council (UMRWC)	Water Quality Monitoring Bioassessment in Upper Merced River Watershed	$25,000	In-kind	40%	Unsecured	**$25,000**
						Total	**$ 98,959,990**

9.4.2 Potential Funding Sources

9.4.2.1 Stakeholder Funding

Funding sources are rarely assured far in advance of project implementation. Additionally, many agencies have encountered challenges to securing project funding as grant programs have become more competitive and agency budgets have become significantly constrained during the recent economic downturn. It is understood that funding is required to implement (that is, to construct) projects, as well as operate and maintain the project after initial construction is completed. In most cases, it will be the responsibility of the project proponents to ensure that initial construction and operations and maintenance funding needs are met for specific projects. Despite limited funds, most agencies do have a variety of funding tools available including:

- Ratepayers,
- Operating funds,
- Water enterprise funds,
- Special taxes, assessments, and fees,
- State or federal grants and loans,
- Private loans, and
- Local bonds.

9.4.2.2 Grants and Other Sources

The RWAC will research, identify and pursue grant funds that could help implement the projects and meet the objectives included in the Yosemite-Mariposa IRWM Plan. A list of potential grant opportunities are located on the website and will be updated periodically (http://www.mcrcd.net/Pages/IRWMFunding.aspx). The RWAC will not serve as a fiscal agent for grant funds, but rather will identify a willing agency or organization with the appropriate authority and financial management capacity to serve as a fiscal agent on behalf of the Region, as necessary, for each specific grant opportunity that is pursued. Some grant programs may require a single grantee for a Region while others can be applied for by individual member agencies.

The fiscal agent(s) may distribute grant funds to other project proponents within the Region according to the specific terms of the grant program that provides funds. The project proponents that receive grant funds will be responsible to complete their project(s) as described in the relevant grant application and/or grant agreement. The fiscal agent will not be responsible to fund or complete projects for other project proponents outside of the specific commitments made in a particular grant agreement.

The RWAC will track the amount of grant funds brought into the Region to support implementation of the IRWM Plan and the specific projects being funded (or partially funded) with grant funds. The RWAC will include this information in their annual report of Plan performance.

9.5 Plan Performance and Monitoring

Another important element of successful Plan implementation is a well-developed approach to performance and monitoring. This section describes such an approach, including monitoring, adjustments, and data sharing in order to meet the 2012 IRWM Guidelines. The key elements of plan performance and monitoring involve tracking of project implementation and progress towards achieving goals and the individual objectives. This tracking will be monitored in a Data Management System described in the following section and will provide key information to inform the RWAC and stakeholders as to whether the Plan is being implemented as intended, or whether updates or other changes are needed to keep the Plan on track.

The tracking and monitoring of plan performance does not replace required regulatory reporting by specific agencies within the Region or project monitoring required by a grant agreement. Plan performance tracking is being done to monitor progress on Plan implementation and provide information that can be useful for continuing implementation of, updating or amending the Plan.

9.5.1 Project-Focused Performance Monitoring

Project implementation will be tracked as part of the IRWM Plan Implementation activities included in the Table 9-1 topic area: Update IRWM Plan and Manage and Share Related Data and Information. It is expected that project implementation tracking will include:

- Every two-year (minimum) call for new/revised projects.
- Update of status of the existing project list including project archival following completion of projects every two years.
- Monitoring of in-progress project performance including project status, data results, budget and schedule.
- Consideration of opportunities to integrate or enhance existing projects.

Information about projects can be maintained in an excel spreadsheet or on the Data Management System described further in Section 9.4.3. It is anticipated that the RWAC will have primary responsibility for maintaining information regarding project focused monitoring sufficient for the IRWM Plan and will periodically request current project status information from proponents.

Table 9-3 outlines several considerations for monitoring efforts as articulated in the Proposition 84/1E guidelines (required for Proposition 84/1E grant-funded projects and recommended for all other projects in the Plan) for purposes of this Plan:

Table 9-3: Project Specific Monitoring Plans

Category	Description
Responsibility for developing project specific monitoring plans and monitoring activities	Project proponent responsibilities include development of project specific monitoring plans and monitoring of project performance after implementation. Project proponents shall report this information to the RWAC and to any lead agency responsible for grant or loan funding contributions.
Stage of project development when a project specific monitoring plan will be prepared	Project specific monitoring plans will be developed by the project proponent before the start of project implementation.
Typical project specific monitoring plan requirements	Monitoring plans will include delineation of the following components: ▪ Description of what will be monitored for each project, ▪ Methods for monitoring problems that occur during project implementation and their correction, ▪ Monitoring location(s), ▪ Monitoring frequency, ▪ Monitoring protocols, procedures, and responsibilities, ▪ Reporting of data collected to the data management system (DMS) described in Section 9.4.2 for sharing with project stakeholders as well as to statewide databases, and ▪ Procedures and funding assurances to document that the monitoring will take place as intended during the entire monitoring period.

Lessons learned will be applied to future project implementation by evaluating the extent to which the Plan objectives and targets are accomplished, and reviewing and refining the types of projects or targets themselves based on the various experiences. For example, technical information and data collected will contribute to a greater body of understanding about certain challenges faced by the Region. Likewise, financial performance and reporting experiences will help inform more efficient ways of planning and implementing important projects. These experiences will be shared through the quarterly interactions with the RWAC and stakeholders, and through project reporting mechanisms.

9.5.2 Objectives Focused Performance Monitoring

For the RWAC, the tracking of Plan Goals and Objectives and the associated measurable strategies will require more effort and coordination than tracking of IRWM Plan projects. The Objectives Tracking table found in Appendix 9-A was created in Excel and focuses on individual strategies. The table identifies the projects that can contribute to meeting the strategies and where appropriate, identifies specific activities or projects that may be needed to achieve the strategies and is sorted by goal, objective, strategy. The activities and dates are suggested and can and should be periodically reviewed and updated by the RWAC. The data associated with this table could also be maintained in the Data Management System.

9.5.3 Data Management

Although the RWAC is not intending to develop a Data Management System (DMS) to help retain, organize and process key Plan performance and monitoring data, opportunities to do so may be available in the near future as the Sierra Water Workgroup is endeavoring to provide interregional data management for the IRWMs in the Sierra Nevada. A data management system provides a web-based geographic information system (GIS) platform which can be used to store and track information to support the Region's understanding of water management activities within the IRWM context. A DMS can assist in the success of Plan implementation, and whether adjustments to objectives, projects, or strategies may be needed in the future.

As data are collected, whether linked to implementation grant programs or other funding mechanisms, there are typically reporting requirements. Many water resources linked efforts are also attached to mandatory regulatory reporting requirements to statewide databases. To make data from the Region accessible and compatible with State databases (such as SWAMP, Geotracker, GAMA, CEDEC, the California Water Data Library and many others – links are provided in Appendix 9-B-1), the RWAC can ask implementation projects to document the nature of the data being collected (parameters, units), the timeframe associated with the data, and the location associated with the data. A future Yosemite-Mariposa DMS is not intended to supersede or duplicate the statewide data collection efforts, but instead work together with the databases as resources to draw important information.

9.5.3.1 Data Management System

An on-line DMS relies on a combination of systems such as GIS, spreadsheets, and databases to track important Plan information. The DMS is a hybrid solution and provides a user friendly ESRI-software based GIS front-end interface that is supported by databases and spreadsheets for specific data. A DMS could include the following features which were used in preparing mapping for this IRWM Plan:

- Topographic Base map with layers for water organization boundaries, watershed boundaries with rivers and lakes, DAC areas, Tribal lands (partial), 303d listed streams and water bodies, watersheds, General Plan and DWR Land Use classifications
- Production of custom maps with available information
- Project Locations
- IRWM Projects and project information forms
- Flood hazard areas
- Hydrologic and other types of models
- Document library and document search tool
- Reference documents
- Plan sections when complete

- Project and objective tracking tables

Other DMS Elements that could be included are:

- Water quality data for surface and groundwater to either be hosted directly within or live-linked to other web sources

- Water quantity data through live links with gauging stations, meter data, flow data, and diversion data

- Water rights data

- Project Tracking Database. A future DMS phase could include an on-line database which will require an administrator to manage and add the projects. A sample tracking table is found in Appendix 9-C. The spreadsheet will track information including:
  - Project name
  - Project proponent
  - Project location
  - Short description
  - Estimated cost and funding sources (such as Proposition 84/1E funded)
  - Project schedule and current status
  - Type and location of project specific monitoring information
  - Objectives and MPTs the project will contribute to

- Objectives Tracking database- Similar to the project tracking database, this would be an on-line database specifically for periodic updating (likely biannual with project updates) and evaluation of progress with meeting IRWM Plan objectives. A tracking spreadsheet will be developed as described in Section 9.4.2 and is included in Appendix 9-A to this Plan as a first level tracking effort.

- Maintenance of list of updated links to stakeholders, state and federal agencies and neighboring IRWMs (links are provided in Appendix 9-B-2).

9.5.3.2 Potential Long-Term Data Management Options

As noted earlier, discussions have been initiated with both the Sierra Water Workgroup as well as other Sierra IRWMs that may resolve both long-term maintenance concerns and to have the DMS be potentially more broadly available to other IRWMs. These will be resolved and specific actions documented in an appendix to be added to the IRWM Plan. Potential DMS options and opportunities to further enhance the DMS in the future that should be considered are summarized below.

Options under discussion include:

i. Partnerships with the Sierra Nevada Alliance or neighboring IRWM with DMS Hardware and Software for DMS hosting

ii. Partnerships with Sierra Water Work Group (SWWG) for maintenance

iii. Partnerships with other Sierra IRWM Groups to contribute DMS data for sharing
   a. Upper Feather IRWM
   b. Tuolumne-Stanislaus IRWM
   c. Cosumnes, American, Bear and Yuba IRWM
   d. Southern Sierra IRWM
   e. Inyo-Mono IRWM (potential partner for pilot DMS development)
   f. Tahoe Sierra IRWM (potential partner for pilot DMS development)
   g. Mokelumne/Amador/Calaveras (MAC) IRWM
   h. Upper Pit River Watershed IRWM
   i. Madera IRWM
   j. Yuba County IRWM
   k. Lahontan Basins IRWM

9.6 Suggested Initial Steps for Plan Implementation

In order to bring focus to the specific implementation action recommendations described in Table 9-2, the following near-term activities and schedules are suggested as shown in Table 9-4.

Table 9-4: IRWM Plan Near-Term Implementation Activities and Schedule

Activity/Action	Lead Entity	Planned Schedule
1. Establish an annual operating mechanism (RWMG) for implementation support and manage expenditures of administration support activities.	RWAC	By September 2014
2. Convene Plan Implementation Meetings to develop proposed meeting schedule for 2015 and 2016. It is suggested that at minimum one Plan implementation meeting be held per year.	RWMG	Schedule 2015 and 2016 meetings
3. Explore long-term DMS plan and pilot DMS for transition and maintenance by partner.	RWAC/Partner	By December 2014
4. Issue a Call for Projects to add, delete, or integrate existing projects and project status updates.	RWMG	By February 2015
5. Prepare for applying for 2015 DWR Implementation Grant funds and other grant funding opportunities.	Committee	By Fall 2015
6. Coordinate with neighboring IRWM regions and local, state and federal agencies.	RWAC	On-going - annually

9.7 Plan Updates and Changes

9.7.1 Making Changes to the IRWM Plan

The RWAC will convene a Committee to review the Yosemite-Mariposa IRWM Plan at least once every five years to determine if the content of the Plan needs to be changed in a significant way other than the periodic updates or amendments of the objectives and projects as described below. If significant changes are needed, the RWAC will lead the process for revising the Plan. Once substantial revisions are made, the RWAC will request that RWMG, RWAC members and project proponents adopt the revised Plan.

9.7.2 Updating and Amending the IRWM Plan

Minor updates or amendments to the IRWM Plan will not require a complete re-adoption of the entire IRWM Plan by the RWMG or individual RWAC members. Instead specific changes will be submitted to the RWAC for consideration to adopt as an amendment to the existing Plan. Updates or amendments specifically include changes to the project lists and refinements to the IRWM Plan objectives.

The RWAC will invite stakeholders and project proponents at least once every two years to submit additional projects for consideration to be included in the IRWM Plan or provide updates to projects already included in the IRWM Plan. The RWAC will publicize the opportunity and process to submit new projects (or updates) for consideration. The RWAC will present and discuss the potential additions/revisions to the project list within the Yosemite-Mariposa IRWM Plan in one or more stakeholder input meetings, and recommend the project list and/or objective refinement for inclusion in the Plan as an amendment. Following acceptance of the addition/revisions to the project list by the RWAC, adoption of IRWM Plan amendment may be required on a case by case basis by individual project proponents to meet requirements of the IRWM Guidelines or individual proposal solicitation packages.

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Section 10: Coordination

As described in previous sections of this IRWM Plan, management of water and related resources within the Yosemite-Mariposa Region (Region) is complex and has many interdependencies. Several stakeholder groups both have authorities and responsibilities for managing water and related resources within the Region. This complexity and the distributed network of shared responsibilities create the need for robust and effective coordination. This section describes how the Region intends to continue to coordinate with neighboring IRWM regions and local, state, and federal agencies as well as other stakeholders both within and outside of the Region to improve integrated water management.

Coordination is one of the most essential components of integrated regional water management, and subsequently is described in several sections of this Plan, summarized below.

- Section 1, "Introduction," discusses the stakeholder coordination and public outreach activities that were conducted during the development of the Plan, including outreach to tribal entities and disadvantaged communities (DACs).

- Section 4, "Relation to Local Water and Land Use Planning" describes how water management relates to land use planning and ways that planning agencies currently collaborate.

- Section 5, "Objectives" describes Plan goals and objectives that consider coordination such as:

  Goal #6: Develop Collaborative Sustainable Partnerships Both Within and in Adjacent Regions with associated *Objective: R Develop opportunities/data management system…*

  which targets the use of current scientific data to make informed, collaborative choices regarding water resources and land use planning. The goals/objectives were developed to ensure continuing communication and collaboration within the Region into the future.

- Section 9, "Implementation Framework," describes the specific responsibilities of the Regional Water Management Group (RWMG), Regional Water Advisory Council (RWAC), and other stakeholders for coordination during Plan implementation.

10.1 Intra-Regional Coordination

The primary benefit of this IRWM Plan is the development of a shared vision and objectives for regional water management and planning among the stakeholders both within and outside of the Region and a framework for maintaining that into the future. The process of developing this IRWM Plan has fostered improved coordination, collaboration, and communication among stakeholders, and a greater awareness of concerns throughout the Region.

10.1.1 Coordination by the RWAC

One of the critical ingredients for improving water resources management is to provide multiple opportunities for water managers, community stakeholders, and other organizations with interests related to water resources to be informed about and participate in the IRWM program. A structured approach to coordination helps prevent conflicts and can help provide more effective and efficient management of resources. The Region is committed to fostering improved coordination through the following activities which are detailed in Section 9.2:

- Continue to conduct outreach, create and distribute meeting agendas and content by e-mail and web posting, facilitate stakeholder input meetings, and help track and communicate progress toward Plan implementation. During the RWAC meetings all people who are interested have been and will continue to be invited to participate in a collaborative approach to implement projects that help meet Plan objectives. Success of the Plan is dependent on the contributions of stakeholders throughout the Region.

- Continue to foster an open dialog with representatives of Native American Tribes and DACs within the Region to help meet Plan objectives. Coordination efforts including focused attention during regular RWAC meetings as well as Outreach Committee activities will continue in order to identify issues and continue to find assistance in the development of projects specific to water-related needs of these groups.

- Continue to conduct stakeholder input meetings as needed, which will be announced and open to any interested person or organization. The RWMG and other stakeholders will meet and coordinate with local, state, and federal agencies, in addition to reaching out to those active in neighboring IRWM planning efforts to accomplish the Plan objectives.

- Continue to use the IRWM Plan webpage (http://www.mcrcd.net/Pages/IRWMP.aspx) to provide current information on the IRWM process as well as ongoing opportunities for stakeholder involvement during Plan implementation. This will include posting the status of proposed projects, providing notice of stakeholder meetings, and providing notices for coordination and evaluation of ongoing and future project needs.

10.1.2 Coordination among Local Agencies and Organizations

A collaborative approach to water management is essential to meeting the Region's goals. Several projects included in this Plan, as described in Section 7, involve multiple agencies or organizations, which reinforces the need for collaboration to achieve efficient project execution. Several of the local water management agencies such as Mariposa County, Fish Camp Fire and Rescue, Yosemite Alpine Community Services District within the Region have developed cooperative relationships and processes for coordination with each other and with other local organizations. An example of this cooperation can be seen in their willingness to share sensitive information regarding issues common to many of the water providers such as water metering, leakages, and current drought response.

Some of those relationships have been strengthened during the development of this Plan and through the RWAC activities and meetings, it is anticipated that opportunities for future collaboration and coordination will occur. Some examples of collaboration include coordination of forest fuel management activities between non-profit organizations, local, state, and federal

agencies and coordination between local residents and the National Park Service for expansion of water service in the Wawona area. Additionally, through the IRWM process, land and water management agencies in the Region have taken steps towards improved understanding, which can result in better collaboration regarding regional water management issues. These strong working relationships serve as a basis for local water managers and other organizations to continue to collaborate in the future.

10.1.3 Coordination with State and Federal Agencies

Coordination with state and federal agencies has occurred during the initial formation of the Region and during Plan preparation. In the future, coordination with these agencies will occur on an as-needed basis for planning and implementation of specific projects and during future Plan updates.

Representatives from the following federal and state organizations received emails and notifications related to RWAC meetings, opportunities to submit projects, and opportunities to review and comment on IRWM Plan sections, and/or are cooperating on a Plan project.

Federal

- U.S. Bureau of Land Management
- U.S. Department of Agriculture Natural Resources Conservation Service
- U.S. Forest Service
- U.S. National Park Service

State

- Department of Fish and Wildlife
- Department of Forestry and Fire Protection
- Department of Water Resources (DWR)
- Sierra Nevada Conservancy
- Office of Emergency Services
- University of California, Merced – Sierra Nevada Research Institute

While the majority of Plan projects were submitted by local entities, the National Park Service and US Forest Service, which are federal agencies, submitted several projects as well. Additionally, several of the Plan projects listed at least one cooperating state or federal agency. With the presence of Yosemite National Park and extensive lands within National Forests within the Region, coordination with all of these entities is an important component in the IRWM planning process and may improve the understanding of the interrelationship between groundwater and surface water, forest, land use, water use efficiency, and economic and urban objectives.

Much of the Region's future interaction with state and federal agencies will also occur during project planning and implementation, when consultation will occur during planning stages, environmental document preparation and permitting prior to construction as well as preparation of funding applications.

10.2 Interregional Coordination

Beyond the need for internal coordination, the Region also recognizes the importance of coordination with other nearby IRWM planning regions. Appropriate coordination among regions and agencies can help leverage shared activities, identify opportunities for cooperative projects, and reduce potential conflicts among IRWM projects. The Region is bounded by several neighboring IRWM regions, as discussed in Section 1, and is one of twelve IRWM regions in the San Joaquin funding area. The Sacramento funding area borders the Region to the North, the North/South Lahontan funding area borders the Region to the east, and the Tulare/Kern funding area borders the Region to the South.

Initial outreach efforts have been conducted as part of the IRWM planning process to foster communication and program coordination with the neighboring IRWM regions, described below, through discussions, conversations and direct participation. Representatives of the adjacent IRWM regions or organizations that participate in multiple IRWM groups receive e-mail notifications regarding information about the Region and potential coordination opportunities.

Members of the RWAC, with support from other stakeholders in the Region, will engage with neighboring IRWM regional water management groups, described below, and communicate with DWR on statewide IRWM issues that involve or could impact Plan objectives. The neighboring IRWM regions and associated interregional coordination activities with the Region are summarized in the sections that follow.

10.2.1 Neighboring IRWMs

The Tuolumne-Stanislaus IRWM borders the Region to the North, the Merced IRWM borders the Region to the West, the Madera IRWM borders the Region to the South, East Stanislaus IRWM share a small border to the Northeast, and the Inyo-Mono IRWM in the North/South Lahontan funding area borders the Region to the East. These neighboring IRWMs are shown on Figure 1-2 in Section 1.

Tuolumne-Stanislaus (http://www.tcrcd.org/): The Tuolumne-Stanislaus region borders the northern and eastern borders of the Yosemite-Mariposa Region and lies along the southern tip of the Tahoe-Sierra Region border in Alpine County. The Tuolumne-Stanislaus region is on the western side of the Sierra Nevada and extends from the crest, through the foothills, and down to the Central Valley. Primary sources of water in the Tuolumne-Stanislaus region include large river watersheds fed by snowmelt and rainfall from the Sierra Nevada. The Tuolumne-Stanislaus IRWM Plan was completed in mid-2013 and the Tuolumne-Stanislaus region is now implementing a Round 2 Implementation grant. The Tuolumne-Stanislaus IRWM has been contacted regarding governance options and data management systems and IRWM projects were evaluated for potential coordination.

Merced (http://mercedirwmp.org/): The Merced region is east of the San Joaquin River and borders the Yosemite-Mariposa Region to the southwest. The Merced River flows through the Yosemite-Mariposa Region prior to reaching the Merced region. However, stakeholders within the Merced region have the majority of water rights to the Merced River compared to water rights users in the Yosemite-Mariposa Region. The Merced region is primarily defined by the Merced Groundwater Basin and parts of the Merced River Watershed. The final Merced IRWM Plan was completed in August 2013. Merced River stakeholders from the Merced region are

currently involved in the Yosemite-Mariposa IRWM Plan and the Merced Irrigation District is a RWAC member. Merced IRWM projects were evaluated for potential coordination

Madera (http://www.madera-county.com/index.php/forms-and-documents/category/167-the-integrated-regional-water-management-plan-irwmp): The Madera region shares the southern border with the Yosemite-Mariposa Region, which are the headwaters of the Fresno/Chowchilla River. The Madera region has typically relied on groundwater as their primary source of urban and agricultural water in the past. The Madera region faces challenges related to groundwater overdraft and flooding in the western third of the region (valley floor). The Madera region has a similar composition of terrain to that of the Yosemite-Mariposa Region; part of the region is composed of foothills and mountains of the Sierra Nevada while the other portion is composed of relatively flat terrain, typical of the Central Valley. The Madera region IRWM Plan was completed in 2008 and Madera IRWM representatives attended several RWAC meetings and Madera IRWM projects were evaluated for potential coordination.

East Stanislaus (http://www.eaststanirwm.org/): The East Stanislaus region is west of the Yosemite-Mariposa Region and is a part of the larger San Joaquin River Basin. The southeast corner of the East Stanislaus region and the northwest corner of the Yosemite-Mariposa have shared borders. Of the surrounding regions, the East Stanislaus region shares the smallest length of border with the Yosemite-Mariposa Region relative to the Merced, Madera, and Tuolumne-Stanislaus regions. Similar to other Central Valley regions, East Stanislaus faces challenges regarding agricultural and urban demands. The East Stanislaus region IRWM Plan was completed in December 2013. Involvement with the East Stanislaus IRWM has been limited to contacts regarding plan status and evaluation of IRWM projects for potential coordination.

Inyo-Mono (http://inyo-monowater.org/): While the Inyo-Mono IRWM is in a different funding area than the Yosemite-Mariposa IRWM, they share the crest of the Sierra-Nevada and a portion of Yosemite National Park in the northern portion of the Inyo-Mono IRWM. There are several commonalities between the Regions including the high-sierra terrain, sparse population, and large proportion of federal lands. An Inyo-Mono representative attended a Yosemite-Mariposa RWAC meeting and led a subsequent DAC discussion with Mariposa, Merced and Madera representatives.

10.2.2 Ideal Project Types for Coordination and Integration

Neighboring regions have several similar projects to the Yosemite-Mariposa Region, ranging from riparian restoration to water infrastructure improvements. Project data have been collected from the neighboring regions' IRWM Plans. While many projects have the potential to be integrated and coordinated, some types are considerably more difficult to coordinate. Constraints such as schedules (time), budgets, geographic locations, and applicability can cause complications. Water infrastructure and restoration projects are subject to these constraints.

Other project types that involve programs and plans, studies, and data collection are significantly easier to coordinate. These projects are not as sensitive to constraints mentioned above, and tend to be on-going, making it easier to integrate without greatly disrupting existing implementation practices. Additionally, these projects may span a larger region than can be

practically covered for an infrastructure project. Below is a list of suggested projects that have potential to be integrated with the Yosemite-Mariposa Region's projects.

Madera Region

- Ultra-Low Flush Toilet Replacement Program

Merced Region

- Main Canal Off-stream Regulating Reservoir Study
- Water Meter Conversion Project
- Water Meter Project for Le Grand CSD
- Modify Land use Designations
- Develop Emergency Response Plans
- Increase Public Awareness of Flooding
- Merced Region Water Use Efficiency Program
- Merced IRWM Region Climate Change Modeling
- Merced IRWM Regional GHG Emissions Inventory
- Promote LID Concepts and Professional Training
- Tablet PC's for GIS Data Collection for Water Staff
- Water Education and Public Education
- Merced River Education and Enhancement Project

Tuolumne-Stanislaus Region

- Mi-Wok Complex Thinning, Murphy Ranch Area
- In-Home Water Conservation for the DAC

East Stanislaus Region

- DAC & Native American Outreach and Technical Assistance
- Online Data Management System

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