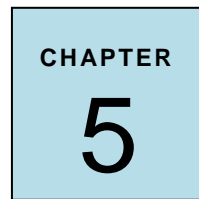


## 5.0 Goals and Objectives

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This chapter outlines the Goals and Objectives developed by the SFAR Watershed Group and it describes how they integrate with relevant mandatory plans. Implementation of these Goals and Objectives is the core of this Plan and is achieved through a series of specific actions described in Chapter 6, Implementation.



The Goals and Objectives were formulated for each of the topics described in Chapter 3 including water quality, water supply, environment and habitat, social and cultural, flooding, fire, and air quality. The Watershed Group focused on these seven watershed issues and identified nine Goals and 26 Objectives described in this chapter. The overlaps and gaps between the Watershed Plan and the mandatory plans are discussed at the end of this chapter.

### 5.1 Regional Priorities

The *Integrated Regional Water Management Plan for the Cosumnes, American, Bear, and Yuba Watersheds, California* (CABY 2006) addresses many important issues which extend beyond the boundaries of the SFAR watershed. The regional priorities outlined in the CABY IRWMP take into the account the collective needs of the four CABY watersheds. CABY regional priorities were identified by the stakeholders following an extensive internal process involving all CABY Planning Committee members. This process resulted in the identification of three regional priorities:

- 1) Water Quality;
- 2) Water Supply; and,
- 3) Environmental Restoration and Habitat Improvement.

Without specific direction, the SFAR Watershed Group identified the three CABY priorities as shared priorities for the SFAR watershed. In addition, however, stakeholders also identified the following issues as important to the SFAR watershed:

- 1) Social and Cultural concerns;
- 2) Flooding;
- 3) Fire; and
- 4) Air Quality.

These seven priorities are co-equal. Stakeholders ensured that each priority was addressed by a Goal and at least one Objective (in most cases, each issue can be met by incarnations of many Objectives). Through this process and the ensuing identification of actions listed in Chapter 6, each of these priorities will be addressed through implementation of the actions.

### 5.2 SFAR Watershed Goals

The Goals and Objectives developed for this Watershed Plan build upon the public involvement and agency coordination experienced in monthly Watershed Group meetings, as well as in mutual collaborative implementation activities. The Goals and Objectives identified in this Watershed Plan are often adequately addressed by the in-

place Mandatory Plans. These particular Goals and Objectives are present to remind stakeholders of the importance of the particular issue being addressed, and are important for overall comprehensive watershed management and planning. Also identified are Goals and Objectives that are not adequately addressed by any current mandatory plans. It is these particular Goals and Objectives that will be targeted as priority for implementation actions in Chapter 6.

*Goal 1: Increase regional awareness of issues facing the SFAR watershed through community and stakeholder education and agency and organizational collaboration.*

As described in Chapter 4, the natural resources found within the SFAR watershed provide important habitat, recreation areas, local economy, and “green” energy which are critical to residents of El Dorado County and the entire State of California. Sustainable natural resource management of the watershed requires collaboration and long-term commitments from land use authorities, tribes, service providers, community groups, land owners, and State and federal agencies. It is the intention of the SFAR Watershed Group to provide a forum and framework to share information, partner on grants, and work cooperatively in order to attain local, regional and statewide goals and objectives for the watershed. Likewise, the inclusion of the “community” identified in Goal 1 emphasizes that watershed management and planning should be a partnership with those who live, work, and play closest to the resources. Education will aid in the perpetuity of the protection and enhancement efforts undertaken as part of this Watershed Plan and indeed as part of each agency’s daily activities.

*Goal 2: Promote recreational opportunities at environmentally sustainable levels.*

The high demand placed on recreation areas within the SFAR watershed presents a challenging issue. As discussed in Chapter 4, the SFAR is the most heavily used commercial whitewater rafting river in California and the ENF is a designated “urban forest” located within one-hour drive from a major metropolitan area (over 1 million people). As urban development continues to expand within the watershed as well as nearby areas, the relationship between urban growth, urban influence, and natural resource systems will become increasingly important. The expansion of the Sacramento area, in particular, will likely have a significant impact on the extent, use, and management of recreation resources, and SFAR watershed stakeholders want to be proactive in looking at possible impacts and defined management activities to control those potentially negative impacts.

*Goal 3: Achieve sustainable surface and groundwater supply.*

To reliably meet the long-term water requirements of the watershed’s residents, industry, agriculture, and natural resources, the issues of water storage, water diversion, water demand, water infrastructure, and groundwater availability need to be addressed. Additional storage capacity in all watersheds will be needed to meet future water needs, whether that be new reservoirs, expansion of existing

ones, development of inter-basin transfers and (ground) water banking, additional storage tanks for localized resource use, or the expansion of on-site household storage in the form of graywater use or stormwater collection. Existing diversions and infrastructure will need to be more efficient and balanced with conservation and recycling. Groundwater, while not a source of water supply for urban areas in the watershed, is increasingly pumped to meet rural, individual household needs; thus, groundwater resources must be managed to ensure sustainability (i.e., extraction and recharge remain in balance).

*Goal 4: Provide multiple benefits from management of water resources, diversions and infrastructure.*

This goal relates to the issues of temperature, water diversion, infrastructure, instream flow, habitat alteration, fisheries, and aquatic biota. The overall health and sustainability of these resources requires substantial investment of time and attention into water resource management. Sustainable water resource management will result in more efficient water delivery systems, and will improve habitat for aquatic and riparian ecosystems.

*Goal 5: Reduce impacts from catastrophic fire.*

Reducing the risk of catastrophic wildfire requires conscious and vigilant forest and vegetation management. This management will involve reductions in fuel loads and working to keep human and property assets out of high-risk fire areas. The impacts of catastrophic wildfire can include loss of human life and property, damage to water and other infrastructure, and ecosystem damage, especially soil erosion and sediment deposition in aquatic habitats. Development can increase the costs (property losses) associated with fires. Forest management actions that reduce fuel loading combined with land uses that incorporate fire management and suppression strategies are critical in preventing catastrophic fires.

*Goal 6: Protect infrastructure, equipment, and property from flooding.*

Flooding is not a concern in all areas SFAR watershed but it can be a localized problem. Issues related to flooding include damage to infrastructure from flash floods, or sustained high water and habitat alteration. Poorly planned development or other land use practices such as clear-cutting and the hardening of watershed lands (including soil impaction), can increase the flood risk. Management of the SFAR watershed is of high consideration to downstream users – even outside of watershed boundaries. Stakeholders hope, through the implementation of this goal, to not only help to plan future infrastructure building to minimize flood risk, but also to manage the SFAR watershed in such a way that flood events themselves are minimized.

*Goal 7: Protect and improve watershed resources through land use practices.*

This goal addresses several issues across the SFAR watershed including sedimentation, contamination, fire and fuels, water supply, temperature, flooding, groundwater, habitat alteration, and fisheries and aquatic biota. This goal seeks to protect and improve watershed resources such as water supplies, stream flow, water quality, habitat, and fish and wildlife through the development and application of good land use practices for the variety of land uses occurring in the SFAR watershed. Improved land use practices, as reflected in the SNFPA 2004 (see Chapter 3, mandatory plan #5), can help maintain healthy forests; healthy riparian systems (that provide stream shading to help control stream temperatures and provide adequate herbaceous undergrowth to buffer streams from contamination runoff); and well-vegetated slopes that reduce sediment and erosion runoff and increase infiltration rates into aquifers. Sound land use and design development that minimizes habitat degradation can also protect fisheries and other aquatic biota and protect habitat for sensitive or threatened and endangered species.

*Goal 8: Manage sediment for water resources, infrastructure and habitat value.*

Sediment can be a challenge to manage, as there are habitat and infrastructure issues associated with too much as well as too little. Excessive sedimentation is a consequence of stream bank or upland erosion overloading a stream's capacity to transport and distribute the material. Excessive sedimentation causes channels to aggrade, becoming more shallow and unable to accommodate high flows, which results in flooding and damage to infrastructure. It can also contribute so much fine material to a stream that fish spawning areas and aquatic biota are buried. On the other hand, streams in balance with natural sediment loads are important and necessary for aquatic biota. Trout and salmon must have clean, renewable gravel as well as some fine material for successful spawning; invertebrate populations require cobble-sized material; and stream banks are continuously rebuilt from material deposited during high flow events.

*Goal 9: Reduce mercury contamination in waterways.*

Mercury contamination resulting from historic mining activity is a serious problem in certain segments of the SFAR Watershed. Mercury (Hg), when methylated, becomes toxic to living forms. Hg deposited and isolated in specific stream locales and in reservoirs can be removed. However, the best management practice is to reduce the input of mercury by addressing the sources such as leaching or runoff from old mines.

*Goal 10: Reduce contamination of surface and groundwater resources.*

Evidence indicates that certain surface and groundwater sources in the watershed have become contaminated, including, but not limited to, the listing of the lower section of the SFAR on the EPA's 303(d) list. Reducing contaminants throughout the watershed will depend upon improved groundwater protection, through measures such as better waste and stormwater management, land use

and development practices that incorporate best management practices to prevent runoff, septic seepage, and other pollutants from reaching streams and aquifers.

*Goal 11: Protect and improve native fish assemblages and aquatic biota through water resources management.*

A healthy aquatic ecosystem requires balanced sediment inputs and transport dynamics, healthy riparian systems and habitats, adequate instream flows, and land uses that minimize aquatic impacts. As discussed previously, a healthy, self-sustaining fishery and other biota in all tributaries of the SFAR requires balanced sediment inputs, riparian systems that control temperature and provide habitat, minimum flow releases below dams, adequate instream and environmental flows, and land uses that incorporate best management practices. Meeting this goal will also improve water quality and base-flow (dry season) water delivery and improve groundwater recharge.

### **5.3 Objectives**

Objectives describe how goals are attained. This Watershed Plan identifies 31 objectives that, when integrated with the 11 goals, form the foundation for watershed resources management in the watershed. Many objectives address more than one goal. Each objective is described below as a stand-alone concept before Goals and Objectives are integrated in the next section. Some Objectives may seem to contradict each other, but it is important that they be viewed in a balanced manner; each is co-equal.

*Objective 1: Improve storage capacity.*

Improving storage capacity is a significant issue for all water agencies responsible for providing a reliable and clean water supply for urban, agricultural and environmental purposes. Improved capacity will consist of a range of strategies that could include securing additional water supplies, reducing water use through conservation efforts, water recycling, and restoring the natural storage capacity of watershed lands. Additional water supplies could be captured by new storage facilities, raising dam heights, removing accumulated sediments, or utilizing conjunctive use options or inter-basin cooperation. Infrastructure improvements in facilities and storage tanks can provide more efficient delivery while optimizing water supply capacity.

*Objective 2: Implement measures to manage and reduce erosion, sedimentation, slides and mass-wasting.*

Best management practices that protect stream banks and riparian systems can be incorporated into land use and development plans. Reducing erosion and sedimentation can be accomplished by improving or closing Forest and County roads that contribute sediments to streams. Properly managing off-road

recreational vehicles and re-vegetating exposed soils can reduce sediment inputs. Additionally, mass wasting events in the past have been triggered by extreme wildfire events in the SFAR watershed. It is of utmost importance to target areas of high wildfire risk for fuels management and, if needed, immediate re-forestation.

*Objective 3: Meet and/or attain Regional Water Quality Control Board standards.*

Sediment, temperature, and contaminants are the principal water quality concerns in the SFAR Watershed. Each of these water quality parameters must meet State and federal standards for the designated beneficial uses set out in the regional water quality Basin Plans. Improving and maintaining water quality requires intercepting and buffering inputs through best management practices that sustain healthy riparian and upland systems, preserve water quality for human consumption and crop application, and effectively manage wastewater sources and other sources of contaminants.

*Objective 4: Work collaboratively to restore state designated impaired water bodies (303(d)).*

At present, the only 303(d) listed water body in the SFAR watershed is the lower portion of the SFAR, from Slab Creek Reservoir to Folsom. It is listed for mercury. Because of the ubiquitous nature of mercury contamination throughout the regional planning area (CABY), cooperation between county agencies and water districts is necessary to address this water quality issue; this is a key concept not only for restoring the quality of the lower SFAR, but for preserving water quality throughout the SFAR watershed.

*Objective 5: Support forest management practices and mining management that benefits watershed resources.*

The SFAR Watershed includes a high proportion of forested land, making forest management a critical component of water resource planning (e.g., ENF and large amounts of forest lands in private ownership). If the hydrologic climate in California continues to shift as predicted towards warmer temperatures, longer and drier summer seasons, and flashier hydrographs in the wet season, it will become even more critical to manage forest densities and fuel loadings. Forest management is essential to offset the effects of increased drought, pests, diseases, and fires to conifer forests in our region, all of which have an effect on water quality and supply. It is the intention of the SFAR Watershed Group to encourage and support a full range of forest management projects that employ best management practices to manage forest densities, reduce fuel loadings, and control wildfires. At the same time, stakeholders wish to improve watershed conditions associated with grazing, mining, and recreation management and to reduce sediment inputs through road and trail improvements.

*Objective 6: Protect, restore, and enhance beneficial sediment transport processes.*

As described in the goal for managing sediments, it is the balance between beneficial sediment inputs and detrimental sediment loading that is important. Dams typically block the downstream recruitment of new gravels necessary for trout spawning; while poor land use practices increase stream bank erosion and the loading of fine sediments. Water resource management must therefore consider both beneficial and detrimental sedimentation. A mix of sediments, from fine silts to boulders, in proportions appropriate to the natural stream transport capacity is necessary for aquatic health and channel stability. Land uses can increase fine sediment loads, and dams and diversions can diminish beneficial recruitment of gravels and cobbles.

*Objective 7: Manage recreation and permitted activities to minimize impacts to watershed resources.*

At this time, OHV use and roads in disrepair have the greatest recreational impacts on water resources. The principal impact is contribution of sediments from degraded areas near streams. Designated OHV areas and closure or repair of roads, in addition to community education, can potentially reduce the existing sediment sources and prevent new sources from developing. Additionally, water-related recreation is on the rise as nearby population centers grow. Rafting, kayaking, swimming, boating, camping, and recreational mining are all activities that affect water quality. It is likely recreation demand will increase in this area making targeted programs and activities even more critical.

*Objective 8: Reduce levels of methylated mercury.*

Mercury is a principal water quality issue in the SFAR Watershed and its presence affects different regions of the watershed to varying degrees. Methylation can be caused by sediment mixing, rising temperatures, and is spread through the food chain by bio-accumulation. Reducing the levels of methylated mercury will require on-going research, and must address all stages of the Hg cycle. It is the intention of the SFAR stakeholders to take action to better characterize the nature of the mercury contamination problem and develop and implement strategies to remediate priority areas throughout the region.

*Objective 9: Implement measures to manage and reduce contamination of waterways.*

BMPs can help to reduce contaminants contributed from septic tanks, urban storm water runoff, and other land uses. Riparian vegetation can create important buffer zones that remove sediments and contaminants carried by runoff. Agricultural runoff can be controlled in a variety of ways with sediment basins as well as riparian buffer strips. Stakeholders within the SFAR will take action to remediate abandoned mines to reduce contaminant loading to rivers. Both practiced and new, innovative ways of managing our resources best will be applied to this universal challenge.

*Objective 10: Protect and restore wetland, riparian, and seasonally flooded habitats.*

Wetlands and riparian habitats are effective filters and buffers for water quality improvement; indeed the implementation of constructed wetlands is a BMP as referenced in Objective 9. Runoff is effectively filtered by riparian systems, and wetlands filter stream flow removing many pollutants. Wetlands and riparian habitats can improve water quality and provide important habitat for aquatic and terrestrial species. The SFAR Watershed Group will implement actions to restore and protect and, in some cases, construct these habitats throughout the watershed.

*Objective 11: Manage water infrastructure to optimize in-stream temperatures.*

Aquatic biota are dependent upon relatively narrow ranges of water temperature. The regional water quality basin plan designates SFAR streams as coldwater biota, and water infrastructure in the region can dramatically influence instream temperatures by changing the timing and magnitude of flows. Affected stakeholders within the SFAR watershed will collaborate within the FERC relicensing framework to manage water and power infrastructure to improve water temperatures while protecting the core function of the facilities.

*Objective 12: Investigate effects of drought and climate change and need for water management strategies.*

Climate change is being accelerated by increasing levels of carbon dioxide and other greenhouse gasses in the atmosphere, leading to warmer global temperatures. Climate studies indicate that, internationally, droughts are becoming more frequent and severe (longer duration) and precipitation may also become more intense and localized leading to higher risk due to spikes in the hydrograph, a continually rising snowline (and therefore a smaller snowpack), and a greater likelihood of rain-on-snow events; all of which have obvious effects on managing water resources to meet future demand. A drought policy or flood response program based on modeled predictions of climate change effects as well as changing land and water use patterns will provide options for managers to define the best strategies such as: increasing storage capacity at existing facilities, improving infrastructure, increasing water conservation and recycling, and developing additional storage systems. This management plan must be adaptable in a dynamic environmental system, and the SFAR Watershed Group will investigate the implications of these changes for water management and develop strategies to adapt to climatic fluctuations.

*Objective 13: Reduce degradation and optimize benefits resulting from inter-basin water transfers.*

Inter-basin water transfers occur in the SFAR Watershed from the Project 184 El Dorado Canal to the Sly Park Reservoir (to Cosumnes Watershed), Echo Lake (from Truckee River in the Tahoe Basin) and the Loon Lake Reservoir (from Middle Fork American River watershed). Moving water from one river basin to another was initially done to meet agricultural and mining demands. Today, water transfers in the SFAR primarily meet consumptive, agricultural and hydroelectric generation needs, and provide high value to EID and SMUD customer-owners. Inter-basin transfers, however, have the potential to degrade water quality and reduce habitat in the exporting and/or receiving basins. The SFAR Watershed Group will consider effective measures to reduce the adverse impacts of inter-basin transfers, also recognizing the concerns associated with transfers, especially by tribal interests. This objective will improve both habitat and water quality by reducing degradation caused by certain inter-basin transfers, while at the same time identifying situations where transfers will actually improve water quality, and/or instream flows, riparian habitat, and dry season base flows.

*Objective 14: Optimize efficient use, conservation and recycling of water resources.*

As described in other objectives, conservation, recycling, and improved infrastructure efficiencies are important tools to meet increasing water demands throughout the region. The largest water purveyors in the SFAR watershed (EID and City of Placerville) place considerable emphasis on conservation and recycling.

*Objective 15: Identify and promote strategies for hydroelectric facilities to provide multiple benefits.*

Hydroelectric projects offer unique opportunities to create multiple instream benefits such as: controlling flow releases for recreation purposes; flood control; managing for optimum temperatures and oxygen levels in streams to enhance conditions for fisheries; providing out-of-channel water for germination of riparian vegetation; and providing pulse flows to increase the natural process of changing hydrogeomorphology. Water agencies also have the opportunity to negotiate joint use of existing storage facilities within the hydroelectric projects, in lieu of building new storage reservoirs. Efficiency improvements for existing hydropower facilities may allow greater production, reduced operating cost, and sometimes greater consideration of multi-objective implementation projects. Small hydroelectric systems could be developed along these pipelines, flumes, and canals to assist the State in meeting its future energy requirements by providing energy from non-polluting, renewable resources. Incremental increases in hydroelectric production can be realized by adding small turbines at the base of existing dams to take advantage of higher minimum releases required of new FERC licenses. The SFAR Watershed Group will explore opportunities to enhance the overall value of hydropower infrastructure (potential and realized) while protecting its fundamental purpose.

*Objective 16: Maintain and promote recreational and environmental values associated with water infrastructure.*

The SFAR watershed contains much historic and modern water infrastructure, including reservoirs, canals and ditches, and historic sites. Many of these areas are used for hiking, biking, and fishing. Localized values based on canals and ditches include aesthetic features such as shaded paths meandering through old-growth forest patches. The public is in favor of retaining many of these infrastructures for the recreational and environmental values they provide, which often conflicts with organizationally-determined efficiency improvements. The SFAR Watershed Group will explore and design ways to promote recreational and environmental values associated with these important water infrastructure features, while maintaining and improving efficiencies, as referenced below.

*Objective 17: Evaluate and modify water infrastructure to improve efficiency.*

While many canals and ditches provide aesthetic landscape features, many are inefficient due to leakage and/or high maintenance costs and are responsible for the loss of thousands of acre-feet of water each year. In addition, some of the water infrastructure was originally located and configured to meet agricultural demand, but now the demand has shifted to urban area needs and it may be difficult and inefficient to supply water to some growth areas through the existing systems. Piping and/or lining sections of these canals and reducing the losses inherent in an open conveyance system will increase current water supplies and could reduce the amount of additional water that will be needed from surface water sources in the future. As with any infrastructure improvement, the SFAR will discuss options with all affected stakeholders, attempting a balance between interests.

*Objective 18: Minimize impervious surface cover and improve infiltration.*

Land use is changing rapidly throughout the SFAR watershed with an increase in residential development. Housing developments and expanded urban boundaries generally increases the acreage of impervious surfaces with paved roads, parking lots, commercial development, and houses. This conversion of land from pervious to impervious conditions reduces the amount of precipitation that can infiltrate or percolate into the soil and into groundwater aquifers, and increases the rate and volume of runoff. This adversely affects channel stability and aquatic habitat. In addition, fires and highly-used, degraded recreational areas can create a hydrophobic surface, having a similar effect as developmental components. These will all be considered and addressed through implementation.

*Objective 19: Increase knowledge of groundwater systems and establish groundwater management practices.*

Groundwater is a poorly understood resource in the SFAR Watershed. Because of the fractured geological conditions it is difficult to describe the sustainable yield or water quality of aquifers. Consequently, there is insufficient information to determine if aquifers are being sustainably managed. Most of the groundwater use throughout the watershed is for individual household purposes. Identification of suitable groundwater management practices to prevent contamination and assure that groundwater recharge and extraction are balanced, especially in the face of climate change, will require more study and analysis.

*Objective 20: Protect and restore connectivity of floodplains, stream channels and groundwater.*

Rivers and streams in the region are characterized by a mix of steep, confined channel types (with few floodplains and other depositional features) and lower gradient, less confined reaches (with significant floodplain areas and other depositional features). It is important to river health to maintain connectivity with floodplain areas to sustain riparian habitat and recharge groundwater resources. Streams are a function of the connectivity between geomorphic surfaces (such as floodplains) and stream banks that form the channels that convey the water. Groundwater and water tables adjacent to the stream channels play a critical role in water storage during wet months and release water back into the channels during dry months. (As the water level goes down in streams from spring to late summer, stored water moves back into the channels from the adjacent aquifers to maintain dry season base flows.) The connectivity of these aquatic ecosystem components must be protected or restored in order to maintain a functioning stream system. The SFAR Watershed Group will explore areas in need of action to reconnect channels and floodplains and methods to achieve this objective.

*Objective 21: Evaluate and minimize negative flood impacts on water infrastructure and water quality.*

While flooding is a natural phenomenon that drives healthy stream systems, excessive and frequent flooding impacts water quality and results in damage to water supply, delivery systems, and property. Most flooding in the region is localized, but can be severe. In many cases the negative effects of floods can be reduced or controlled with management that addresses the causes of floods and actions that protect infrastructure.

*Objective 22: Manage rivers, tributaries and infrastructure to provide flow regimes that benefit ecosystem function.*

A properly functioning aquatic ecosystem is dependent upon a range of flows. First, streams require an adequate minimum base flow to meet the needs of and protect aquatic life. Second, streams require higher, freshet (spring) flows to scour and move debris, deepen pools, recruit gravel, irrigate riparian systems, and perform a host of other functions. Third, in order for streams to remain healthy and responsive, they require periodic “disturbance flows”; flows that

occur every 10 to 25 years, for example, that re-set geomorphic conditions and processes that nature requires to maintain maximum biodiversity in plant and animal populations. These flows can be managed and arranged by watershed agencies, through collaboration with SFAR stakeholders.

*Objective 23: Conserve and restore native species and diverse habitats.*

Habitat alteration and loss of habitat has occurred as a result of water diversions, dams, mining, agriculture, and urban development. This is a consequence of humans using increasing amounts of watershed resources. Disturbances that create bare soil allow opportunities for non-native species, especially exotic weed plants, to invade and take over altered areas that native animal species may not be able to use, which, in turn creates opportunities for non-native animals to invade. Wherever possible, native habitat should be retained or restored for those native species that co-evolved in the region.

*Objective 24: Promote comprehensive land use planning.*

As new housing areas are developed throughout the watershed, additional pressure is placed on water supplies and delivery systems; habitats can be irreversibly altered; groundwater is at greater risk of being depleted and contaminated; riparian systems removed; and the natural hydrologic functioning of the watershed is diminished. Comprehensive land use planning for new developments will not only ensure that those natural features important to water quality and quantity are protected and maintained, but will be integral to planning future water supply and delivery systems.

*Objective 25: Sustain agricultural viability through effective water management.*

With projected growth in production agriculture lands, meeting future water demands in this sector will require some changes in the existing water supply system, from increasing conservation and use efficiencies to realignment of infrastructure and delivery systems. New and existing agriculture is highly valued throughout the watershed, both as a resource for the rest of the State as well as a major regional tourism industry.

*Objective 26: Restrict and/or eliminate introduced invasive, non-native species per CDFA invasive species list.*

A number of non-native plants from around the world are found within the SFAR watershed. Most of these plants are highly beneficial to our agriculture, economy, and cultivated landscapes. Unfortunately, other non-native plants are not beneficial. Some are actually very harmful and can spread rampantly across the landscape. These noxious and invasive weeds can lower agricultural productivity, crowd out native species, increase fire risk, and add to the costs of maintaining roads, parks and waterways (CDFA 2005). The SFAR watershed will likely be subject to even higher rates of weed introductions as human

population continues to increase, and will implement control measures where practical and efficient.

*Objective 27: Encourage the use of prescribed fire to reduce fuels and sustain fire-adapted ecosystems.*

Fire has been a natural component of the landscape within the SFAR watershed for thousands of years. During dry seasons fires ignite in grass, dry leaves, and brush at the base of lightning-struck trees. Native Americans also set fires to reduce vegetation, improve wildlife or grazing habitat, and create space for crops. Across much of historic California, these natural and human-caused fires maintained open park-like landscapes. The shorter intervals between fires undoubtedly kept most fires far less intense than those sometimes seen today.

During much of the 20th century, intensified fire suppression and prevention activities decreased the frequency of wildfires and the area they covered. This brought about changes in forest ecosystems. Understory brush and hardwoods became denser and both live and dead vegetation accumulated, increasing the risk of large and damaging wildfires.

Recent studies have prompted a return to using fire, under carefully controlled conditions, to accomplish many of the same benefits that were historically provided by natural fires. Today millions of acres are prescribed burned each year for forest management, agriculture, grazing, and ecological restoration. At the same time, problems associated with smoke in populated areas and on highways have become more prominent. For the continued use of prescribed fire, landowners and the public alike must understand the value of fire for accomplishing various management goals as well as the constraints that limit its use (University of Florida 2008). The SFAR Watershed Group will work collaboratively to implement prescribed fire projects, as well as educate regional inhabitants and stakeholders with regards to its importance.

*Objective 28: Protect prehistoric and historic cultural properties associated with watershed activities and spiritual values.*

The cultural legacy of the SFAR watershed has helped shape both the small towns and the landscape of the watershed. These cultural resources are one of the regional assets attracting people to this area. In addition, the cultural resources found in the watershed have contributed to our knowledge and understanding of California history and prehistory. These resources add to the spirit, ambiance, and charm of the small communities located in the watershed, which helps promote tourism.

Archaeological resources, such as prehistoric and historic artifacts, buildings and other cultural objects, are distinctive and unique features of the landscape. A number of State and federal laws and regulations have been enacted to preserve cultural resources for future generations and to protect them from damage due to

vandalism, theft and looting on public lands. However, many of these laws do not apply to protection of cultural resources on private property. Moreover, significant archaeological sites are oftentimes found in areas that are sensitive for other reasons, such as near wetlands, riparian zones, and areas that provide high quality habitat for biological resources. Because of the lack of legal protection of cultural resources found on individuals' private lands (cultural resources are protected on industrially-owned lands) and because these resources are often near sensitive biological habitats, it makes sense to include the protection of these resources into the planning efforts for the SFAR watershed. In addition, the Native Americans who view the SFAR watershed as a homeland and gathering ground for native materials (for food and crafts), are important stakeholders in the watershed, whose traditional uses of watershed resources must be respected.

*Objective 29: Support vegetation management practices that benefit cultural uses.*

Many plant species found in the SFAR watershed play a significant role in the lives of Native Americans involved in cultural activities utilizing plants. These activities require knowledge of how to tend, judiciously harvest, and use native plants; knowledge which has evolved over thousands of years. These activities provide models of human intervention in nature that demonstrate a common ground between the conservation and utilization of plants (NRCS 2005). The SFAR Watershed Group supports efforts to benefit cultural uses of the landscape.

*Objective 30: Increase community outreach.*

Community outreach programs such as public education, website management, participation in watershed education days and information booths are a critical component of the SFAR Watershed Group. These activities help promote a sense of community and a sense of place among participants. Watershed Group stakeholders pledge to work together to more actively create this sense of place among community members and visitors alike, increasing the social value placed on all watershed services.

*Objective 31: Support hydropower and other renewable energy projects with appropriate mitigation and protection measures.*

Various stakeholders, including EID, GDPUD, EDCWA and El Dorado County Citizens for Water, are considering the feasibility of developing new hydroelectric facilities and new water supply infrastructure within the project region (EDCWA 2007). One example of new hydroelectric power infrastructure is SMUD's proposed Iowa Hill Pumped-storage Development as part of the UARP. The Iowa Hill Pumped-storage Development will improve energy blancing and support intermittent renewable energy projects such as wind turbines (SMUD, 2005). This County-wide hydro-development plan would evaluate different hydroelectric options and the appropriate approach for sequencing various projects. It is the intention of the SFAR

Watershed Group to provide a forum for discussion and to help disseminate information concerning the natural resources of the watershed to assist with the sustainable management of water supply and hydroelectric projects.

#### **5.4 Integration of Goals and Objectives**

Table 5-2 lists the goals, the water resource issues they address, and then outlines the objectives for each goal.

As mentioned above, the Goals and Objectives identified by the SFAR Watershed Group are designed to integrate with the mandatory plans relevant to the watershed. The degree to which this integration succeeds is important in order to focus the identification, prioritization, and implementation of future projects. This integration of the plans is accomplished by:

- 1) Summarizing each mandatory plan in the region (Chapter 3);
- 2) Identifying the applicable Goals and Objectives from each of the mandatory plans (Chapter 6); and,
- 3) Identifying both the shared Goals and Objectives and the gaps between the mandatory documents and the Watershed Plan.

Table 5-1 is a matrix of the SFAR Watershed Group Goals and Objectives juxtaposed with each mandatory document identified in Chapter 3. This relational matrix illustrates to what degree (partially, fully, or not at all) each plan addresses SFAR Watershed Group Goals and Objectives. Most of the mandatory documents do not have the same comprehensive vision or geographic scope as that of the Watershed Plan; therefore, they do not fully address each SFAR Watershed Group goal and objective. It is important to mention that this does not represent a shortcoming in the documents themselves, but is simply the nature of issue-specific planning.

The matrix table not only displays the extent to which the mandatory documents address the goals and objectives but more importantly illustrates where the Watershed Plan can fill the gaps in order to meet these natural resource and management needs on a more regional basis. Unlike the mandatory plans, the SFAR Watershed Plan is not limited to the geographic area, specific land use, or infrastructure for which these implementing agencies have authority. To this extent, the SFAR Watershed Plan can be more effective in achieving success in improving water resources management in the region, through inter-agency and stakeholder collaboration.

This plan addresses the geographic, thematic and institutional barriers and gaps inherent in the patchwork of existing plans. This Watershed Plan also provides a vehicle that didn't exist before for the various agencies and stakeholders to act in concert or coordination to achieve common goals. Additionally, for those geographic areas currently covered by mandatory plans that do not establish goals for managing water and power infrastructure to improve water resources, the SFAR Watershed Plan fills this strategic gap, prioritizing and implementing water resource projects for the entire region.

The 17 mandatory plans that currently direct water management throughout the CABY region are limited jurisdictionally, geographically, and in purpose. FERC license obligations are quite restrictive in their geographic area above and below dams; water purveyor plans are focused on operation and maintenance issues and meeting water demands; federal land management agencies, while geographically broad, emphasize plans for resource utilization. Interestingly, none of the mandatory plans conflict or contradict one another, and despite the limitations of scope and authority, the mandatory plans have many things in common. However, no individual or combination of existing mandatory plans provide a framework or integrate water resource management across the SFAR watershed. This SFAR Watershed Plan, through the deliberations of the working group, expands the shared objectives from the mandatory documents by integrating the mandatory plans into the SFAR Watershed Plan.

#### **5.4.1 Conclusion**

The two tables 5-1 and 5-2 describe the level of support or the amount of overlap between the SFAR Watershed Group Goals and Objectives and those identified in the mandatory documents.

The SFAR Watershed Group Goals overall have moderate support from the existing mandatory documents. The Goals that could benefit most from specific SFAR Watershed Group actions and projects are Goal #1: *Increase regional awareness of issues facing the SFAR watershed through community and stakeholder education and agency and organizational collaboration*; and Goal #9: *Reduce mercury contamination in waterways*. These two goals have relatively little on-the-ground actions in place or any plans to deal with these specific concerns. Goals #5, 6, and 8 all have moderate support and some existing efforts are in place to address these concerns. These goals could benefit from additional SFAR Watershed Group actions that build on these efforts. Goal #2, 3, 4, 7, 10, and 11 are widely supported throughout the region and represent a core concern in many of the mandatory documents.

Tables 5.1 and 5.2 highlight the value of integrating mandatory documents of great watershed significance with the Watershed Plan Goals and Objectives. By providing a more inclusive framework, the Watershed Plan organizes the individual mandatory documents into a more coordinated region-wide effort.