

SECTION I

Technical Analysis and Plan Performance

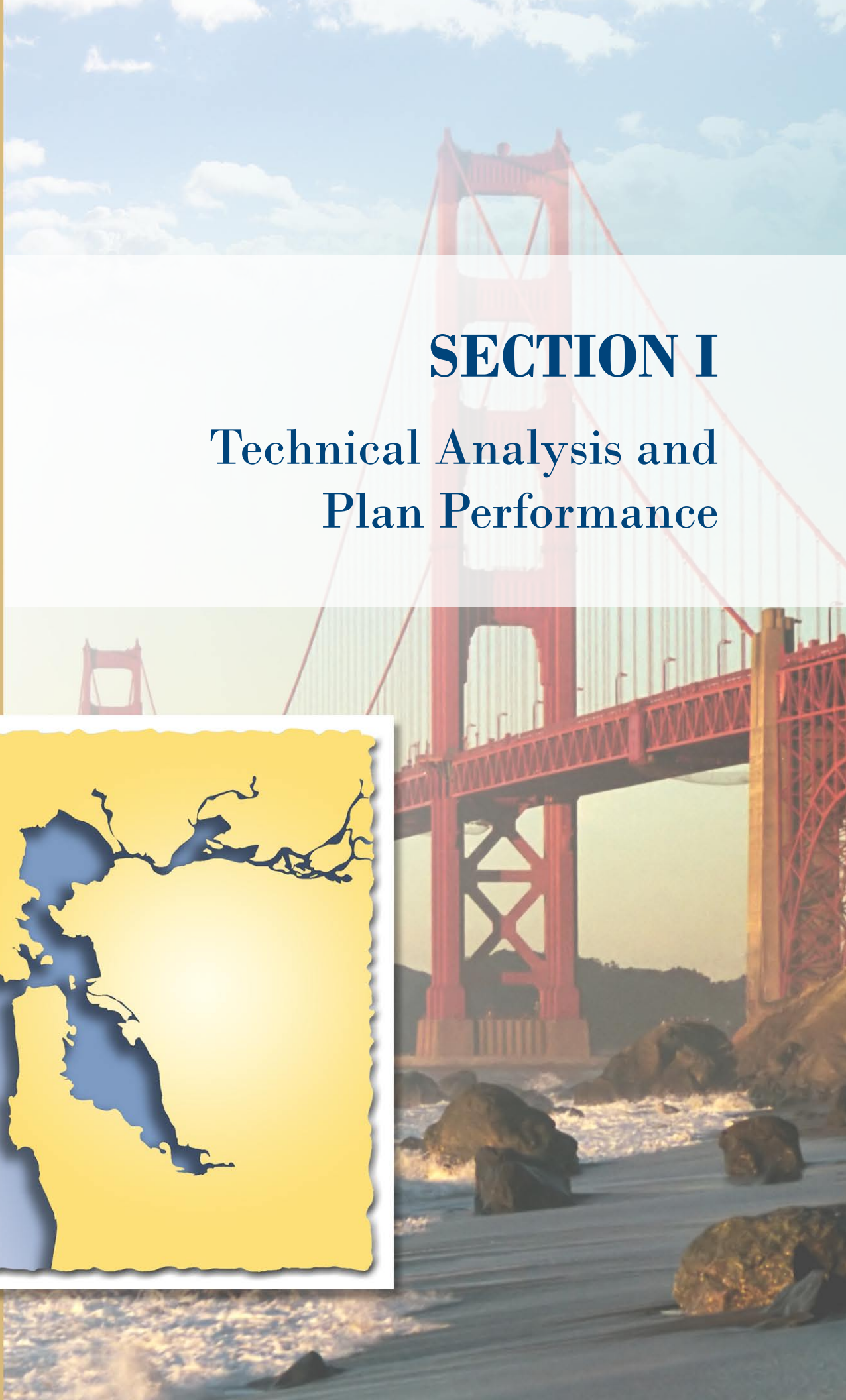




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Acronyms Appearing in this Section

ACREEC	Alhambra Creek Restoration and Environmental Education Collaborative
ACWD	Alameda County Water District
ADLL	Arroyo de la Laguna
AF	acre feet
AFY	acre feet per year
ASR	aquifer storage and recovery
BARWRP	Bay Area Regional Water Recycling Program
BASMAA	Bay Area Stormwater Management Agencies Association



Bay	San Francisco Bay
BMPs	best management practices
C/CAG	City and County Association of Governments
CCC FC&WCD	Contra Costa County Flood Control and Water Conservation District
CCCS	Central Contra Costa Sanitary District
CCWD	Contra Costa Water District
Corps	U.S. Army Corps of Engineers
DDSD	Delta Diablo Sanitation District
DFG	California Department of Fish and Game
DSRSD	Dublin San Ramon Services District
EBMUD	East Bay Municipal Utility District
EDCs	endocrine disrupting compounds
FAD	functional area document
FADs	functional area documents
FAHCE	Fisheries and Aquatic Habitat Collaborative Effort
FEMA	Federal Emergency Management Agency
FP-SM	Flood Protection and Stormwater Management
GIS	geographical information system
gpd	gallons per day
HCP	Habitat Conservation Plan
HCP/NCCP	Habitat Conservation Plan/Natural Communities Conservation Plan
IRWM	Integrated Regional Water Management
IWRPs	Integrated Water Resources Plans
IRWMP	Integrated Regional Water Management Plan
JPA	Joint Powers Authority
lf	linear feet
LOMU	Letter of Mutual Understandings
mgd	million gallons per day
MMWD	Marin Municipal Water District
MSRs	Municipal Service Reviews
MWSD	Montara Water and Sanitary District
NBA	North Bay Aqueduct
NBWRP	North Bay Water Reuse Program
NBWA	North Bay Watershed Association
NCCP	Natural Communities Conservation Plan
NDMA	n-nitrosodimethylamine
NGOs	non-governmental organizations
NPDES	National Pollutant Discharge Elimination System
NPS	Non-point source
PCBs	polychlorinated biphenyls
PPCPs	pharmaceuticals and personal care products
RARE	Richmond Advanced Recycled Expansion
RWQCB	Regional Water Quality Control Board
SCC	State Coastal Conservancy
SCVWD	Santa Clara Valley Water District
SFPUC	San Francisco Public Utilities Commission
Solano CWA	Solano County Water Agency
Solano Project	North Bay Aqueduct and the Putah South Canal
Sonoma CWA	Sonoma County Water Agency
TCC	Technical Coordinating Committee



TDS	total dissolved solids
TMDL	total maximum daily load
TMDLs	total maximum daily loads
USBR	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
UWMP	Urban Water Management Plan
UWMPs	Urban Water Management Plans
WM-HP&R	Watershed Management, Habitat Protection and Restoration
WPDC	Watershed Plan Development Committee
WS-WQ	Water Supply and Water Quality
WW-RW	Wastewater and Recycled Water
Zone 7	Zone 7 Water Agency



Section I Technical Analysis and Plan Performance

IRWMP Appendix A Guidelines

Section I: Technical Analysis and Plan Performance

- *Discuss data, technical methods and analysis used in development of the Plan*
- *Discuss performance measures and monitoring systems that will be used to gather performance data*
- *Discuss mechanisms to adapt project operations based on performance data*

A living document, the IRWMP will undergo periodic review and future work will be performed. As part of this process, the effectiveness of IRWMP implementation will be assessed, and Plan implementation will be adjusted accordingly. This section describes the process for assessing IRWMP effectiveness and adapting implementation in response to this assessment.

I.1 Overview of Bay Area IRWMP Implementation Approach

As described in Section G: *Implementation*, a variety of steps will be required for IRWMP implementation, including adoption by LOMU signatories, implementation of priority projects, and implementation of an adaptive management framework.

The water management issues facing the Bay Area will change over time as regulations become more stringent and new regional interests and goals emerge. As these issues evolve over time, the type of projects considered as priorities for implementation to meet the region's needs will change. Further, as projects are implemented and additional studies are completed, the readiness to proceed of the projects and programs included in the Plan will change. The approach to assessing IRWMP implementation in the is described below.

Recognizing that goals, objectives, and regional priorities evolve over time, the San Francisco Bay Area IRWMP CC will review this IRWMP periodically, depending on changing conditions and availability of funds to perform future work, and make adjustments as necessary to respond to changes throughout the region. This review will include assessment at three levels: the project level, the functional area level, and the overall IRWMP level. Table I-1 identifies the types of activities that will be undertaken as part of IRWMP implementation. The level of effort for each activity may vary depending on its need and upon the amount of funding and resources available. In addition, the type, level, and frequency of assessment activities, and the parties responsible for implementing those activities, may change as the IRWMP CC conducts its periodic review of the effectiveness of the on-going institutional structure..

Table I-1: IRWMP Assessment Responsibilities^a

Responsible Party	Assessment Task	Frequency
Project Proponents	<ul style="list-style-type: none"> ▪ <i>If funded</i>, project proponents will be required to monitor and report on project status and progress towards achieving stated goals ▪ <i>If not funded</i>, project proponents would be encouraged to monitor and report on project progress 	<ul style="list-style-type: none"> ▪ Quarterly Basis



Responsible Party	Assessment Task	Frequency
WS-WQ Functional Area TCC	<ul style="list-style-type: none"> ▪ Collect project performance information collected by proponents of WS-WQ projects ▪ Collect regional water use and population information ▪ Assess functional area performance in meeting goals and objectives ▪ Adjust functional area priorities as needed 	<ul style="list-style-type: none"> ▪ Annual Basis
WW-RW Functional Area TCC	<ul style="list-style-type: none"> ▪ Collect project performance information collected by proponents of WW-RW projects ▪ Collect information on recycled water use throughout the region ▪ Assess functional area performance in meeting goals and objectives ▪ Adjust functional area priorities as needed 	<ul style="list-style-type: none"> ▪ Annual Basis
FP-SM Functional Area TCC	<ul style="list-style-type: none"> ▪ Collect project performance information collected by proponents of FP-SM projects ▪ Collect information on number of acres within FEMA flood zone and number of floods and reported damages throughout region ▪ Assess functional area performance in meeting goals and objectives ▪ Adjust functional area priorities as needed 	<ul style="list-style-type: none"> ▪ Annual Basis
HP-WM&R Functional Area TCC	<ul style="list-style-type: none"> ▪ Collect and compile project performance information collected by proponents of HP-WM&R projects ▪ Assess functional area performance in meeting goals and objectives ▪ Adjust functional area priorities as needed 	<ul style="list-style-type: none"> ▪ Annual Basis
IRWMP CC	<ul style="list-style-type: none"> ▪ Collect information gathered by Functional Areas ▪ Assess IRWMP performance in contributing to regional goals, objectives, and IRWMP vision ▪ Adjust IRWMP as needed 	<ul style="list-style-type: none"> ▪ Periodically, pending availability of funding

a. Tasks, frequency, and responsible parties assume adequate funding and resources are available.

It is important to note that this assessment is not intended to supercede project assessment and tracking efforts being conducted at the individual agency level. Several LOMU signatories have already established individual goals for various aspects of water resources management within their organization.

By collecting and assessing this information at a regional scale, the IRWMP seeks to determine the contribution of IRWMP project implementation toward achievement of the overall goals of the IRWMP, as well as the regional vision of working together to enhance sustainable water resources management to support a high quality of life in the Bay Area.

It is envisioned that this IRWMP will establish a planning baseline for assessing the Bay Area's regional water resource management efforts, and that overall performance towards meeting the goals and objectives outlined in this IRWMP will be evaluated against this baseline as future work is completed, pending availability of funding and resources. Quantifiable information on project and plan performance, to the extent it exists, will be used in the evaluation.



I.2 Technical Analysis and Methods for Plan Development

Development of the Bay Area IRWMP is founded upon the analysis of data provided in the four Functional Area Documents. Figure I-1 presents the relationship between the IRWMP, the Functional Area Documents, and the foundational local and subregional planning documents and information.

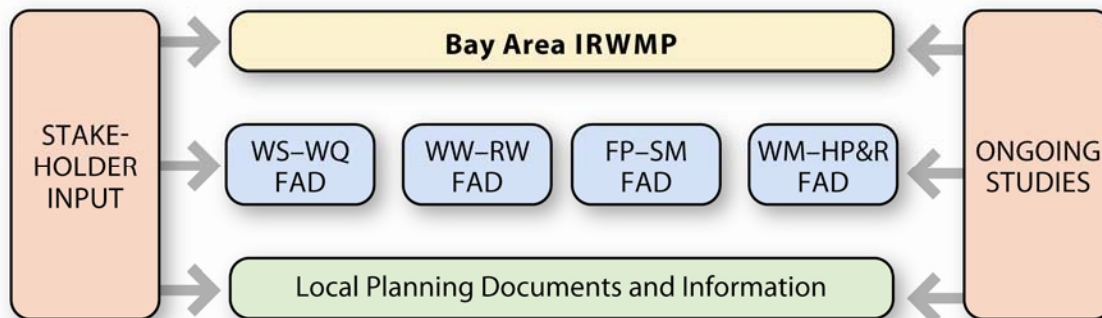


Figure I-1: Relationship between IRWMP and Local Planning Documents and Information

In general, within each functional area, the Functional Area Documents relied on water resources planning and analysis that has occurred at two levels: the local level and the subregional level. The planning and analysis conducted at the local and subregional levels has been used as the basis for analysis performed at the IRWMP Plan Level. Each of these geographic planning levels is described below.

- **Local Level.** The “Local Level” refers to water resources planning that is conducted over a relatively limited geographic extent, such as an individual municipality, flood zone, or small/partial watershed. Planning and analysis occurring at the local level frequently serves as the basis for planning and analysis conducted at larger geographic scales.
- **Subregional Level.** The “Subregional Level” refers to water resources planning and analysis that is conducted across a larger geographic scale than the local level, while not encompassing the entire region. Subregional-level planning includes planning across multiple municipalities, large flood zones, or large watersheds. For example, planning conducted by water, wastewater, or flood protection agencies that serve multiple municipalities, or planning conducted by a watershed group addressing an entire large watershed or multiple watersheds would be considered subregional planning. This type of analysis and planning frequently builds upon analyses and plans developed at the local level.
- **IRWMP Plan Level.** The “IRWMP Plan Level” refers to the water resources planning and analysis being conducted across the entire Bay Area region, such as that being conducted through IRWMP development. This type of planning frequently incorporates and builds upon planning conducted at both the local level and the subregional level.

A wide variety of technical studies have been developed at the local level and the subregional level, and have been used in development and support of the Bay Area IRWMP. Similarly, many studies are being conducted in parallel with IRWMP development. The Bay Area IRWMP builds upon these existing documents, plans and programs, coalescing them into a comprehensive plan for water resources management throughout the region.

The following sections describe the relationship between the data and technical analysis included in the IRWMP and that developed at the local and subregional level for each of the four functional areas. In

addition, performance measures and monitoring systems are identified that will be used to gather performance data at the project- and plan-level. Mechanisms to adapt project operations based on performance data are presented.

I.2.1 Water Supply & Water Quality Data and Analysis

The water supply, demand, and quality information presented in this document reflects the culmination of three distinct levels of analysis, increasing in depth and breadth beginning at the local level and progressing through the subregional level up to the IRWMP level. Figure I-2 presents the relationship between the data and technical analysis included in local plans, subregional plans, and the IRWMP.

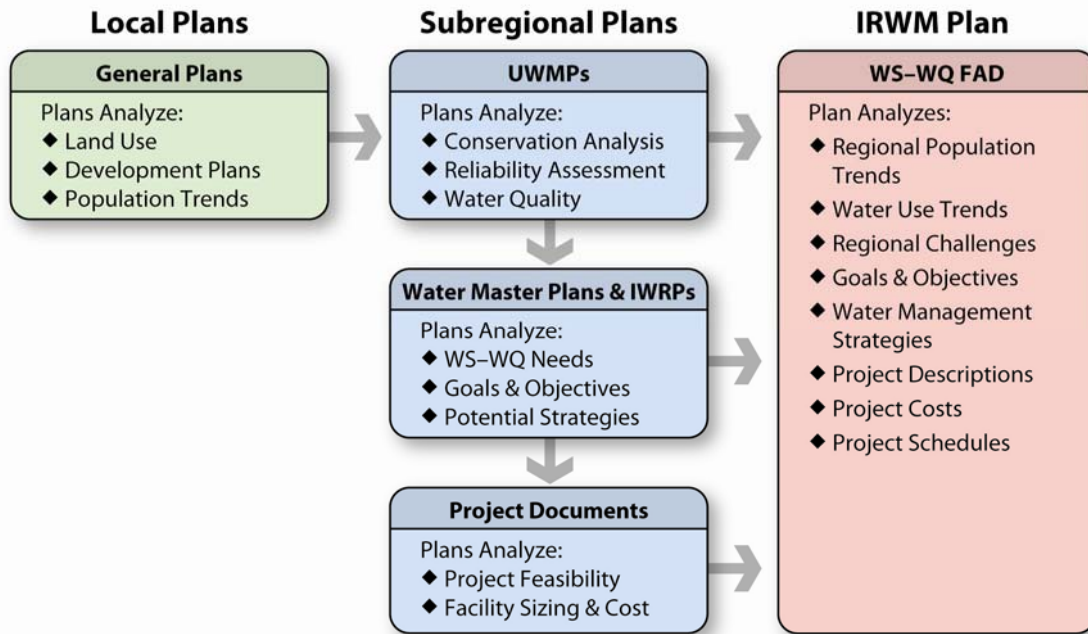


Figure I-2: Relationship between Water Supply and Water Quality Data and Analysis in Local, Agency, and IRWM Plans

Analysis Performed at the Local Planning Level

At the local level, General Plans and Municipal Service Reviews (MSRs) conducted throughout the region present analysis of land use, development plans, and population trends. These data and analyses are limited in geographic scope, focusing on municipalities. Still, these planning documents provide the basis for planning at a larger geographic scope.

Analysis Performed at the Subregional Planning Level

The information and analysis presented in General Plans and MSRs is developed by water suppliers at the subregional level into Urban Water Management Plans (UWMPs). These UWMPs, which must be adopted by the preparing agency or municipality and submitted to the State for acceptance, build upon the information and analysis presented in local planning documents to summarize the existing and projected water supply, demand, and quality outlook for each supplier’s service area. In addition, the UWMPs analyze conservation practices, water supply reliability, and water quality at the agency level.

In addition to developing UWMPs, many water suppliers continually develop and update Water Master Plans and Integrated Water Resources Plans (IWRPs). These plans further build upon the information



and analysis presented in the UWMPs to identify issues, goals and objectives, as well as water supply and water quality needs, at the agency level. Further, many of these plans present potential strategies for achieving the goals and meeting the identified water supply and water quality needs of the region.

Many of these plans go beyond identifying goals and objectives and water resources needs to identify specific strategies for achieving the goals and objectives. A select group of the strategies identified in the Water Master Plans and IWRPs are identified as best addressing the subregional-level goals and objectives. These strategies are then further developed into projects through preparation of project-specific plans, where project feasibility is established, specific project facilities are identified, and costs are developed.

Analysis Performed at the IRWM Planning Level

The IRWMP builds upon the information and technical analysis developed at the local and subregional levels through development of the Water Supply and Water Quality Functional Area Document. The WS-WQ FAD compiles information from UWMPs to develop regional population and water use trends. Water Master Plans and IWRPs throughout the region are similarly combined in the WS-WQ FAD to develop regional issues, goals and objectives. The strategies presented in these documents, together, provide the basis for development of IRWMP water management strategies. Finally, the information developed in the project-specific plans serve as the foundation for development of IRWMP projects and programs.

I.2.2 Wastewater & Recycled Water Data and Analysis

The Wastewater & Recycled Water Functional Area Document similarly builds upon data and analyses developed at the local level. Figure I-3 presents the relationship between the data and technical analysis included in local plans, regional plans, and the IRWMP.

Analysis Performed at the Local Planning Level

As with water supply and water quality planning, wastewater and recycled water planning at the local is based primarily on General Plans. These plans analyze land use, development plans, and population trends. While limited in geographic scope, these planning documents provide the basis for planning at a larger geographic scope.

Analysis Performed at the Subregional Planning Level

At the subregional level, wastewater agencies develop Wastewater Master Plans which present data and analyses including flow projections and facility requirements for wastewater treatment at the service area level. These projections serve as the basis for development of Recycled Water Master Plans, which provide information related to available supply and demand, as well as facility requirements for recycled water at the service area planning level.

Also at the subregional level, but on a greater scale, the 1999 BARWRP Master Plan was developed to determine the potential for using high quality recycled water to augment water supplies, to support the restoration of the Bay/Delta system and to reduce the mass loading of harmful pollutants to the San Francisco Bay.¹ The BARWRP Master Plan built upon the flow projections presented in the subregional Wastewater Master Plans and Recycled Water Master Plans to develop regional issues, goals and objectives, regional flow projections, and potential recycled water markets and associated costs.

¹ The BARWRP Master Plan is categorized as subregional because it did not include the North Bay.

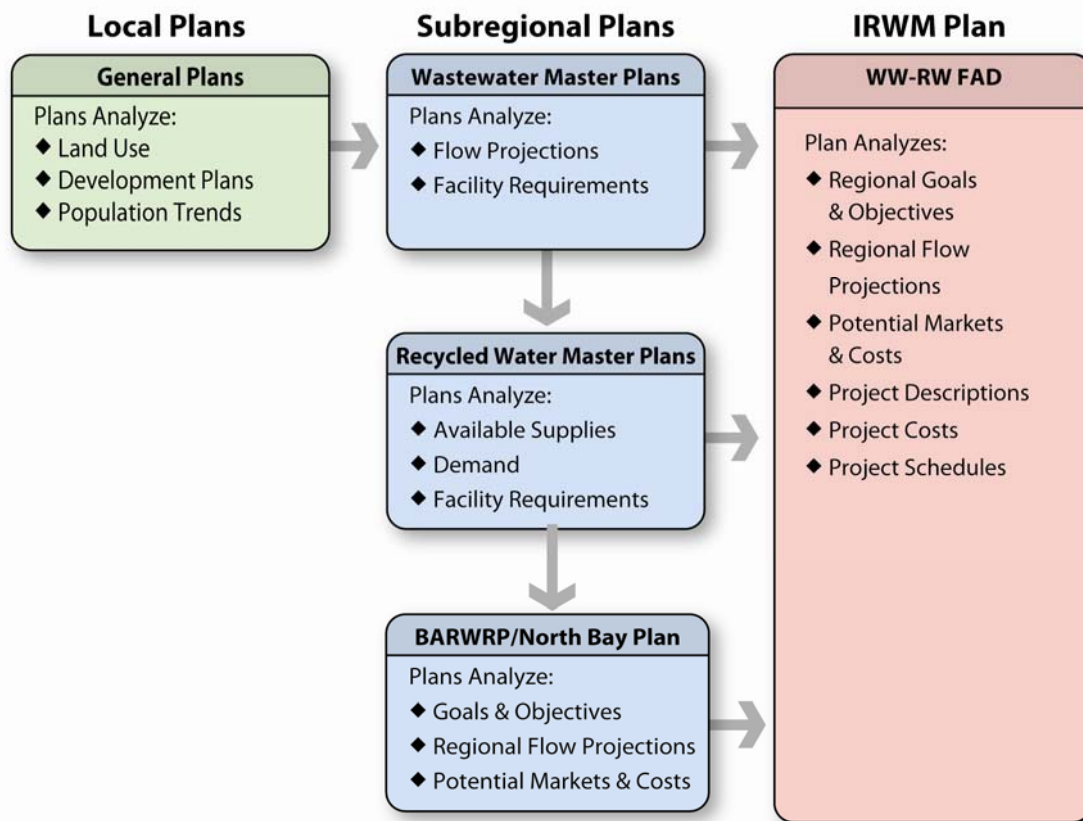


Figure I-3: Relationship between Wastewater and Recycled Water Data and Analysis in Local, Regional, and IRWM Plans

Like the BARWRP Master Plan, the North Bay Water Reuse Program (NBWRP) is a subregional program with investigations underway to identify a regional recycled water program that will increase water supply, reduce discharges to the North Bay and provide ecosystem enhancements. The NBWRP report identified current and future available supplies from each wastewater treatment facility and formulated alternatives.

The BARWRP Master Plan and NBWRP provided the basis for identification of specific recycled water projects. These projects were further developed in project-specific documents that identify detailed projections of recycled water quality requirements, potential markets, costs, and specific facilities needed to fully realize the market potential.

Analysis Performed at the IRWM Planning Level

With the development of the IRWMP, the two major subregional wastewater and recycled water planning efforts were joined and further developed. The BARWRP and the NBWRP are consistent with the goals and objectives of Proposition 50, both individually and as part of this IRWMP. These subregional studies examined the value of water recycling as a regional approach to protection of water resources, development of reliable water supplies, and ecosystem restoration and enhancement. These approaches leveraged regional water and wastewater utility partnerships and focused on the highest priority projects for the region.

The WW-RW FAD updated and expanded upon these two subregional studies through a careful review of recycled water feasibility studies, plans and programs throughout the region, and identified a suite of regional, multi-benefit projects for implementation that will best address the goals and objectives of the WW-RW Functional Area.

I.2.3 Flood Protection & Stormwater Management Data and Analysis

The Flood Protection & Stormwater Management (FP-SM) FAD was prepared through consultation with the six major agencies with subregional flood protection responsibilities. In addition, several Bay Area municipalities with stormwater jurisdiction and BASMAA assisted where possible. The agencies met frequently to direct the development of the FP-SM FAD, which builds upon the local work being conducted by the participating flood protection and stormwater management agencies and municipalities to characterize flood protection and stormwater management conditions throughout the region. Figure I-4 presents the relationship between the data and technical analysis included in local plans, regional plans, and the IRWMP.

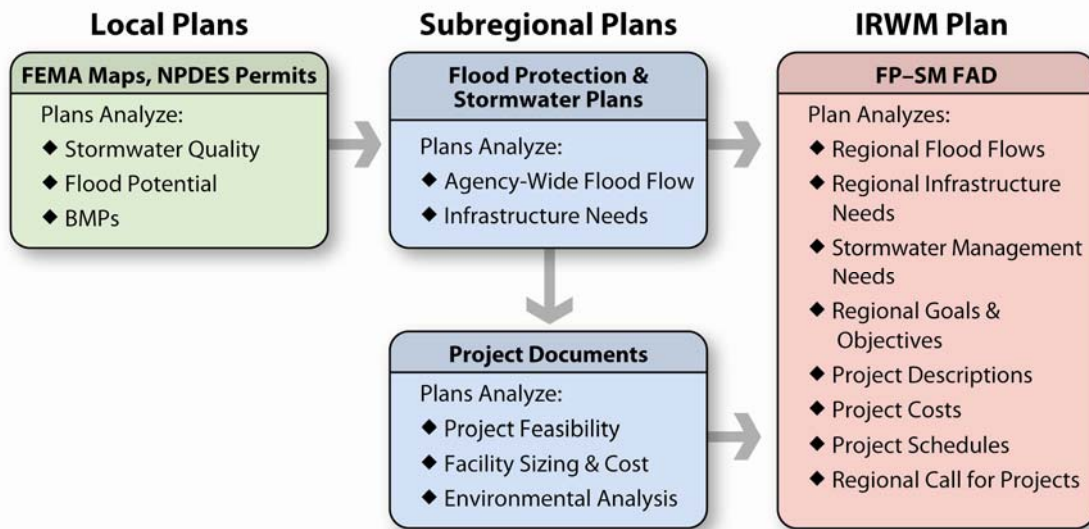


Figure I-4: Relationship between Flood Protection and Stormwater Management Data and Analysis in Local, Regional, and IRWM Plans

Local Planning Level

At the local level, Flood Insurance Rate Maps are developed by FEMA to identify 100-year floodplains for use in determining flood insurance rates. Stormwater NPDES permits require implementation of BMPs and effectiveness monitoring for pollution prevention.

Analysis Performed at the Subregional Planning Level

At the subregional level, flood protection and stormwater plans build upon the local planning documents to address flood flow and capacity, as well as identifying infrastructure needs. Similarly, storm drain master plans and other stormwater management plans identify infrastructure necessary for effective stormwater management and BMP implementation.

Project-specific data and analyses are also developed at the subregional level. These planning documents include detailed feasibility, design, and cost information for development of flood protection and stormwater management infrastructure.

Analysis Performed at the IRWM Planning Level

At the IRWMP level, the local and subregional level data, analyses, and plans were used to develop an understanding of regional flooding characteristics, and regional stormwater management issues. From this analysis, regional issues, goals and objectives were developed.

In addition, local- and subregional-level projects being considered to enhance flood protection and stormwater management throughout the region were considered in the context of the greater regional challenges and FP-SM goals and objectives to identify selected projects for integration into the IRWMP. An open call for flood protection and stormwater management projects was distributed to a varied group of agencies and municipalities throughout the region to expand the base of projects being considered for regional implementation. In addition, the FP-SM TCC held biweekly meetings through which additional projects were identified to most effectively address the regional goals and objectives developed for the region.

I.2.4 Watershed Management & Habitat Restoration and Protection Data and Analysis

Watershed Management & Habitat Protection and Restoration data and analysis begins at the local watershed level, and is further developed at the subregional and IRWMP level. Figure I-5 presents the relationship between the data and technical analysis included in local plans, subregional plans, and the IRWMP.

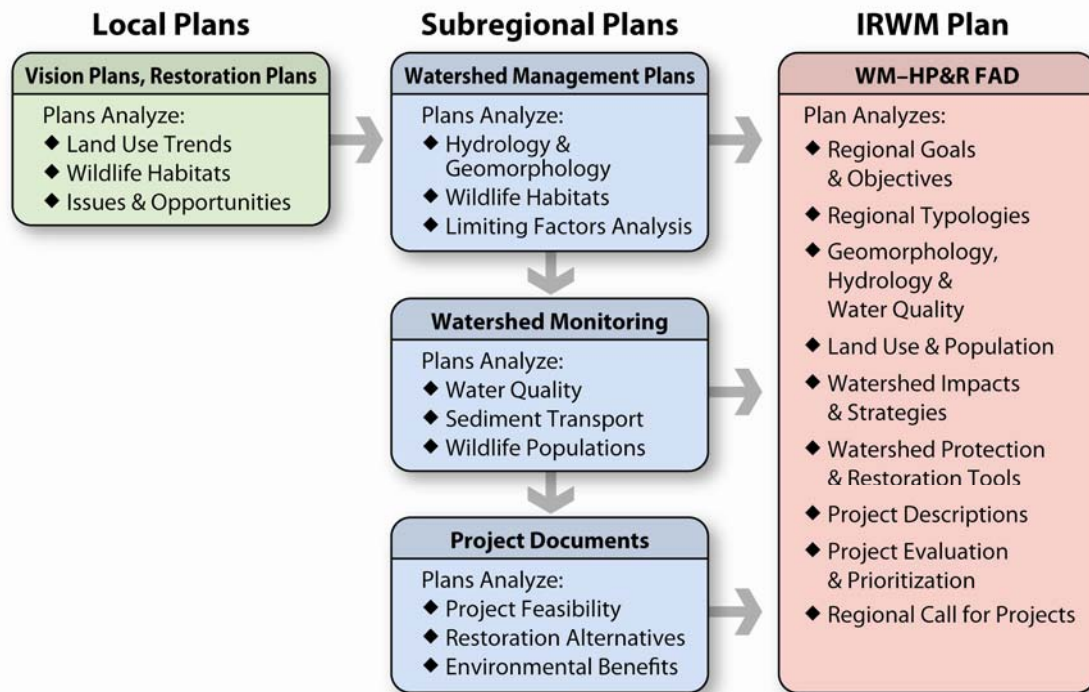


Figure I-5: Relationship between Watershed Management and Habitat protection and Restoration Data and Analysis in Local, Regional, and IRWM Plans



Analysis Performed at the Local Planning Level

At the local level, visioning exercises, restoration plans, watershed assessments, and monitoring efforts evaluate the conditions of local watersheds. These plans are generally limited in geographic scope, but serve as the basis for subregional and regional planning.

Analysis Performed at the Subregional Planning Level

Watershed management plans—and to a lesser degree general plans, habitat conservation plans (HCPs), and natural community conservation plans (NCCPs)—are developed at the subregional level. These plans review land use planning information, biological assessments, and limiting factors analysis to identify mitigation measures, restoration activities, and habitat protection actions that can be taken to offset potential impacts associated with development. Broader watershed monitoring projects and programs are also initiated to collect data watershed-wide, often extending into multiple watersheds. Data collected and analyzed may include water quality, wildlife populations, sediment sources and transport, and in-stream flow conditions. Finally, restoration policies and action plans are also developed at the subregional level to guide strategic decision-making about resource allocation and project planning.

Project-specific data and analyses are also compiled at the subregional level. Project planning documents include detailed feasibility, design, and cost information for development of watershed, habitat, and ecosystem protection and restoration projects. Analysis of restoration alternatives and description of environmental benefits accrued from project implementation are also prepared at the subregional level.

Analysis Performed at the IRWM Planning Level

The WM-HP&R FAD was based on existing watershed and habitat planning documents. Nearly 40 planning documents were reviewed and cataloged from around the San Francisco Bay Area. Review of these planning documents provided an overview of the management goals and objectives used by Bay Area resource managers to protect sensitive habitats. This regional plan review helped the WPDC to understand the key watershed management issues facing the Bay Area, and served as a basis for development of goals and objectives in the Bay Area Watershed Plan. Additionally, the FAD was based in a review of academic literature related to watershed management, habitat protection, and restoration concerns.

The WM-HP&R FAD presented a characterization of the Bay Area's largest watersheds within the Region 2 boundaries. GIS maps created for each watershed characterization include: physical setting (topography, physiology, hydrology), landslide hazard, biological resources (vegetation cover), land use setting (land use, roads), and water resources setting (flood hazard zones, groundwater basins). Basic descriptions of the physical, biological, hydrologic, geomorphic, and land use settings for each watershed are compiled into characteristics tables. A list of key watershed issues and opportunities was developed for each watershed, based upon outreach and communication with watershed representatives. In addition to outreach, the GIS and planning document reviews were used to identify additional issues and opportunities. The FAD contains a description of the major impacts and strategies used in watershed protection and restoration across the Bay Area, as well as discussion of the tools available to support project development.

The WM-HP&R FAD was developed through a regional collaborative input process. An open call for watershed projects was distributed to a broad array of agencies, districts, coalitions, NGOs, and community groups to expand upon the project information identified in existing and ongoing planning document.



I.3 Plan Performance Assessment

Bay Area IRWM Plan performance will be assessed at three levels: the project level, the Functional Area level, and the IRWM Plan level. The Bay Area IRWMP is framed around regional goals and objectives that all contribute to the overall vision of sustainable water resources management within the Bay Area (see Section C: *Objectives*). Assessment of plan performance is necessary to evaluate how effectively the Plan is achieving these regional goals and objectives. Progress toward achieving these objectives or the need to modify priorities in response to regional changes will be assessed periodically, pending availability of funding. The methods to be used in assessing plan performance at each of the three levels are described below.

I.3.1 Project-Level Assessment

As part of the IRWMP performance assessment, the projects identified for regional implementation will be assessed to evaluate their performance with respect to stated performance measures. Assuming adequate funding and resources are available, the agencies identified as proponents of priority projects will be responsible for implementing the project as well as project-specific monitoring strategies. As shown in Table I-1, project proponents will be responsible for collecting project information, including project implementation status, throughout implementation. In addition, the project proponents will assess project performance with respect to the stated performance metrics for the project on a quarterly basis, or as dictated by the reporting requirements associated with the funding source. Projects that are included in the IRWMP Plan, but are not funded will be encouraged to follow a similar monitoring and reporting plan. If adequate funding and resources are available, these individual project monitoring reports will be submitted to the appropriate Functional Area TCC to facilitate the annual functional area performance assessment outlined in Table I-1.

The metrics to be used in measuring implementation performance for each identified project are presented in Table I-2. These metrics are intended to serve as measurable benchmarks for establishing success of projects following implementation. As projects become further developed, these metrics may evolve to better capture the performance of projects with respect to meeting project objectives.

I.3.2 Functional Area-Level Assessment

As described above, the responsibility for assessing project performance with respect to performance measures lies with project proponents. This information will be provided to the appropriate Functional Area TCCs. In addition to serving as a clearinghouse for project-specific information generated throughout project implementation, and assuming adequate funding and resources are available, the Functional Area TCCs will each collect regional data to be used in assessing progress toward achievement of the Functional Area's goals and objectives. As shown in Table I-1, the Functional Area TCCs will collect the following data on an annual basis:

- WS-WQ Functional Area TCC: regional water use and population information
- WW-RW Functional Area TCC: recycled water use throughout the region
- FP-SM Functional Area TCC: number of acres within FEMA flood zone and number of floods and reported damages throughout region
- HP-WM&R Functional Area TCC: To be determined

This information will be used in conjunction with the project-specific performance data to recommend adjustments to functional area priorities as needed. The information collected through these efforts will be provided to the overall IRWMP CC to be used in assessing Plan performance.



Table I-2: Project Performance Measures and Monitoring Strategies

ID#	Project Name	Performance Metrics	Monitoring Strategy	Anticipated Outcome
1	Adobe Bridge Culvert Removal Project (City of Pacifica)	<ul style="list-style-type: none"> Number of fish successfully migrating Extent of flooding 	<ul style="list-style-type: none"> Conduct fish surveys at removed barriers Monitor high-water indicators after storm events 	<ul style="list-style-type: none"> Increase in number of fish successfully migrating Reduction in flooding extent
2	Adobe Creek Upper Reach 5 Restoration (SCVWD)	<ul style="list-style-type: none"> Linear feet of channel bottom and bank erosion repair Extent of flooding 	<ul style="list-style-type: none"> Monitor slope stability, accumulation of sediment, and vegetation mortality Monitor high-water indicators after storm events 	<ul style="list-style-type: none"> 400 feet of channel bottom and bank erosion repair Reduction in flooding extent
3	Alameda County Partnership for Land Conservation and Stewardship (Alameda County RCD)	<ul style="list-style-type: none"> Voluntary land conservation Acres of land assisted with protection 	<ul style="list-style-type: none"> Monitor facilitation services for accelerating voluntary land conservation Monitor acres of land assisted with protection 	<ul style="list-style-type: none"> Accelerated voluntary land conservation Continual increase in acres of land assisted with protection
4	Alameda Creek Fishery Enhancement Project (SFPUC)	<ul style="list-style-type: none"> Under development 	<ul style="list-style-type: none"> Under development 	<ul style="list-style-type: none"> Under development
5	Alhambra Creek Restoration and Environmental Education Collaborative (ACREEC): John Swett Campus (Muir Heritage Land Trust)	<ul style="list-style-type: none"> Linear feet of vegetated swale created Quality of on-site stormwater runoff Number of individuals educated 	<ul style="list-style-type: none"> Measure linear feet of vegetated swale created Monitor performance of swale re: water quality parameters Monitor outreach conducted (number of students or volunteers participating; presentations made) 	<ul style="list-style-type: none"> 400 linear feet of vegetated swale created Improved quality of on-site stormwater runoff Increasing number of individuals educated
6	Alhambra Valley Creek Coalition Restoration Project (Urban Creeks Council)	<ul style="list-style-type: none"> Miles of riparian corridor restored Stabilization of severe bank erosion Extent of flooding 	<ul style="list-style-type: none"> Monitor slope stability, accumulation of sediment, and vegetation mortality Monitor migration of bank erosion on adjacent properties Monitor high-water indicators after storm events 	<ul style="list-style-type: none"> 1 mile of riparian corridor restored 50% reduction in erosion Reduction in flooding extent
7	Annadel State Park Erosion Control: Geary Ranch Road to Trail Conversion (California State Parks)	<ul style="list-style-type: none"> Linear feet of fire road stabilized Sediment delivery to adjacent creek channels Quality of water in adjacent creeks 	<ul style="list-style-type: none"> Measure linear feet of fire road stabilized Monitor sediment source, transport, and delivery areas Monitor adjacent creeks re: water quality parameters 	<ul style="list-style-type: none"> Increase in linear feet of fire road stabilized Reduction in sediment delivery to adjacent creek channels Improved quality of water in adjacent creeks
8	Antioch Recycled Water Implementation (DDSD)	<ul style="list-style-type: none"> Quantity of recycled water produced 	<ul style="list-style-type: none"> Monitor quantity of recycled water produced Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> 531 AFY of recycled water delivered



ID#	Project Name	Performance Metrics	Monitoring Strategy	Anticipated Outcome
9	Bair Island Restoration and Management Plan (Don Edwards San Francisco Bay National Wildlife Refuge)	<ul style="list-style-type: none"> Acres of salt ponds/tidal wetlands restored Number and diversity of waterfowl populations Number of viewing platforms 	<ul style="list-style-type: none"> Monitor acreage of salt ponds/tidal wetlands created Conduct bird counts at wetlands sites Monitor progress of platform construction 	<ul style="list-style-type: none"> 1,400 acres of salt ponds/tidal wetlands restored Increase in number and diversity of waterfowl populations Increase in number of viewing platforms
10	Bay Area Levee Certification (SCVWD)	<ul style="list-style-type: none"> Number of levees inventories and documented to FEMA standards 	<ul style="list-style-type: none"> Monitor progress of levee documentation and certifications 	<ul style="list-style-type: none"> Increase in number of levees inventories and documented to FEMA standards
11	Bay Area Regional Water Conservation Program (SCVWD)	<ul style="list-style-type: none"> Water demand 	<ul style="list-style-type: none"> Monitor water use 	<ul style="list-style-type: none"> Reduction in demand due to increased conservation
12	Bay Water Desalination Plant (MMWD)	<ul style="list-style-type: none"> Capacity to produce desalinated supplies 	<ul style="list-style-type: none"> Monitor desalinated water production 	<ul style="list-style-type: none"> 10 mgd desalinated supply production capacity
13	Beaver Pond Habitat Enhancement Project at the Dow Wetland Preserve (Contra Costa RCD)	<ul style="list-style-type: none"> Number and distribution of native species Number of individuals educated 	<ul style="list-style-type: none"> Monitor distribution and mortality of native species plugs Monitor outreach conducted (number of volunteers/students participating; presentations made) 	<ul style="list-style-type: none"> Increase in number and distribution of native species Increase in number of individuals educated
14	Benicia Water Reuse Project (City of Benicia)	<ul style="list-style-type: none"> Quantity of recycled water produced 	<ul style="list-style-type: none"> Monitor quantity of recycled water produced Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> Up to 2 mgd of recycled water produced
15	Calabazas Creek, Miller Avenue to Wardell Road (SCVWD)	<ul style="list-style-type: none"> Linear feet of riparian corridor restored Extent of flooding 	<ul style="list-style-type: none"> Monitor slope stability, accumulation of sediment, and vegetation mortality Monitor high-water indicators after storm events 	<ul style="list-style-type: none"> Increase in linear feet of riparian corridor restored Protection of up to 2,483 homes, businesses, and schools from the 1% flood, saving potential flood damages in excess of \$30.9 million
16	Canal Encasement Phases II and III (CCWD)	<ul style="list-style-type: none"> Salinity, organic carbon, turbidity, nutrients and pathogens in local or regional discharges and runoff Formation of regulated disinfection by-products (DBPs) 	<ul style="list-style-type: none"> Monitor salinity, organic carbon, turbidity, nutrients and pathogens Monitor regulated DBPs in CCWD's drinking water 	<ul style="list-style-type: none"> Reduction in salinity, organic carbon, turbidity, nutrients and pathogens in local or regional discharges and runoff Reduction in formation of regulated disinfection by-products (DBPs) in the drinking water of CCWD's 500,000 customers
17	Candlestick Point State Recreation Area Yosemite Slough Restoration Project (California State Parks)	<ul style="list-style-type: none"> Acreage of tidal lagoon enhanced Number and diversity of waterfowl populations Linear feet of trail constructed 	<ul style="list-style-type: none"> Monitor acreage of tidal lagoon created Conduct bird counts at wetlands sites Measure linear feet of trail constructed 	<ul style="list-style-type: none"> Over 11 acres of tidal lagoon enhanced Increase in number and diversity of waterfowl populations More than 5,000 linear feet of trail constructed
18	Codornices Creek, Kains to San Pablo (Friends of Five Creeks)	<ul style="list-style-type: none"> Linear feet of riparian corridor restored Number of fish successfully migrating 	<ul style="list-style-type: none"> Monitor slope stability, accumulation of sediment, and vegetation mortality Conduct fish surveys in restored stream channel 	<ul style="list-style-type: none"> 100 linear feet of riparian corridor restored Increase in successful fish migration



ID#	Project Name	Performance Metrics	Monitoring Strategy	Anticipated Outcome
19	Community Safe Drinking Water Project (Literacy for Environmental Justice)	<ul style="list-style-type: none"> Number of certified testers Number of homes sampled 	<ul style="list-style-type: none"> Monitor number of certified testers Monitor number of homes sampled 	<ul style="list-style-type: none"> Increase in number of certified testers Increase in number of homes sampled
20	ConocoPhillips High-Purity Recycled Water Project (EBMUD)	<ul style="list-style-type: none"> Quantity of recycled water produced 	<ul style="list-style-type: none"> Monitor quantity of recycled water produced Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> 2 mgd of recycled water produced
21	Corte Madera Creek Watershed Infiltration and Storage Assessment (Friends of Corte Madera Creek Watershed)	<ul style="list-style-type: none"> Number of impervious surfaces inventoried Analysis of feasibility of on-site temporary storage facilities 	<ul style="list-style-type: none"> Monitor progress toward impervious surfaces inventory Monitor progress toward and report results of feasibility analysis 	<ul style="list-style-type: none"> Increase in number of impervious surfaces inventoried Increase in understanding of on-site temporary storage feasibility
22	Corte Madera Creek Watershed Models (Friends of Corte Madera Creek Watershed)	<ul style="list-style-type: none"> Development of a watershed model (HMS) that relates rainfall to stream flow Development of a steady-flow hydraulic model (HEC-RAS) Development of a water quality model 	<ul style="list-style-type: none"> Monitor progress toward completion of the 3 models 	<ul style="list-style-type: none"> Completion of a watershed model (HMS) that relates rainfall to stream flow development Completion of a steady-flow hydraulic model (HEC-RAS) development Enhancement of the HEC-RAS and completion of water quality model development
23	Corte Madera Creek Watershed Plan (Friends of Corte Madera Creek Watershed)	<ul style="list-style-type: none"> Development of comprehensive Watershed Plan 	<ul style="list-style-type: none"> Monitor progress toward completion of the Watershed Plan 	<ul style="list-style-type: none"> Completed comprehensive Watershed Plan
24	CreekWise Creek Care Education Program (San Mateo STOPPP)	<ul style="list-style-type: none"> Number of professional references Number of individuals educated 	<ul style="list-style-type: none"> Monitor the references in the referral database Monitor outreach conducted (number of leaflets handed out; homeowners contacted; presentations made) 	<ul style="list-style-type: none"> Increase in number of professional references Increase in number of individuals educated
25	Defining Summer Low Flow Channels (SCC)	<ul style="list-style-type: none"> Quantity of sediment delivery and facilitate sediment movement in engineered stream reaches Development of low-flow threshold for thalwegs Number of fish successfully migrating 	<ul style="list-style-type: none"> Monitor sediment transport and accumulation Monitor effectiveness of low-flow threshold in terms of sediment dynamics Conduct fish surveys in engineered streams (during summer flows) 	<ul style="list-style-type: none"> Reduction in sediment delivery and increase in sediment movement in engineered stream reaches Identification of low-flow threshold for thalwegs Increase in successful fish migration
26	Developing and Implementing Options for Mitigating Risks of Public Health Impacts of Eating Fish (Clean Estuary Partnership)	<ul style="list-style-type: none"> Development of methods to distinguish and characterize at-risk populations for the purpose of targeting risk-reduction and impact-mitigation efforts Assessment of a range of actions to evaluate, address and reduce health risks in at-risk populations 	<ul style="list-style-type: none"> Progress toward establishment of characterization methods Progress toward assessment of actions to reduce health risks in at-risk populations 	<ul style="list-style-type: none"> Increase in number and effectiveness of methods to distinguish and characterize at-risk populations for the purpose of targeting risk-reduction and impact-mitigation efforts Identification of preferred actions to evaluate, address and reduce health risks in at-risk populations



ID#	Project Name	Performance Metrics	Monitoring Strategy	Anticipated Outcome
27	Development of Regional GIS for Watershed Planning (San Mateo C/CAG)	<ul style="list-style-type: none"> Number of participants in region-wide technical committees for discussing data collection, management, disbursement, coding, presentation, techniques Development of a pilot DEM model for San Mateo County Extent and quality of new and updated GIS data layers developed 	<ul style="list-style-type: none"> Record and disseminate minutes from technical committee meetings Monitor development and use of DEM model Monitor the metadata and data dictionary created 	<ul style="list-style-type: none"> Increase in number of participants in region-wide technical committees for discussing data collection, management, disbursement, coding, presentation, techniques Completion of a pilot DEM model for San Mateo County Increase in extent and quality of new and updated GIS data layers developed
28	East Bayshore Recycled Water Project – Phase 1B (EBMUD)	<ul style="list-style-type: none"> Quantity of recycled water produced 	<ul style="list-style-type: none"> Monitor quantity of recycled water produced Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> Approximately 1.5 mgd of recycled water produced
29	EBMUD-CCWD Raw Water Intertie (CCWD)	<ul style="list-style-type: none"> Flow rate/capacity of intertie 	<ul style="list-style-type: none"> Monitor flow rate through intertie 	<ul style="list-style-type: none"> 100 mgd maximum intertie capacity
30	EBMUD-SFPUC/Hayward Emergency Intertie (EBMUD)	<ul style="list-style-type: none"> Flow rate through intertie 	<ul style="list-style-type: none"> Monitor intertie capacity 	<ul style="list-style-type: none"> 30 mgd intertie capacity
31	Feasibility Study for Dry-Year Water Supply (City of Napa)	<ul style="list-style-type: none"> Development of feasibility evaluation 	<ul style="list-style-type: none"> Monitor progress toward completion of a feasibility evaluation 	<ul style="list-style-type: none"> Completion of feasibility evaluation
32	Fisheries and Aquatic Habitat Collaborative Effort (SCVWD)	<ul style="list-style-type: none"> Number of reservoirs re-operated to provide temperature-appropriate flows Linear feet of riparian habitat restored Number of fish passage barriers removed Number of fish successfully migrating 	<ul style="list-style-type: none"> Monitor effectiveness of release schedule from reservoirs (temperature, low flow volume) Monitor slope stability, vegetation mortality, and siltation to gravel beds Monitor removal of fish passage barriers (post-construction) Conduct fish surveys at removed barriers 	<ul style="list-style-type: none"> 7 reservoirs re-operated to provide temperature-appropriate flows Over 6,000 linear feet of riparian habitat restored 18 fish passage barriers removed Increase in successful fish migration
33	Groundwater Optimization Project (MWSD)	<ul style="list-style-type: none"> Number of aquifers evaluated for potential potable supply 	<ul style="list-style-type: none"> Monitor number of test wells drilled Monitor progress toward characterization of potable supply potential of various aquifers 	<ul style="list-style-type: none"> Increase in number of aquifers evaluated for potential potable supply
34	Groundwater Recharge Opportunities (Sonoma CWA)	<ul style="list-style-type: none"> Groundwater recharge opportunities 	<ul style="list-style-type: none"> Monitor progress toward identification of groundwater recharge opportunities Monitor percent of region evaluated 	<ul style="list-style-type: none"> Increase in groundwater recharge opportunities identified
35	Guadalupe River Watershed Habitat Enhancement (SCVWD)	<ul style="list-style-type: none"> Distribution of non-native species Acres of instream habitat restored Number of fish successfully migrating 	<ul style="list-style-type: none"> Monitor distribution of non-native species Monitor linear feet of instream habitat created (large woody debris, gravel augmentation) Conduct fish surveys within restored stream channel 	<ul style="list-style-type: none"> Reduction in non-native species distribution 0.65 acres of instream habitat restored Increase in successful fish migration
36	Guadalupe Watershed Modeling Towards Mercury Management to Achieve TMDL Goals (San Francisco Estuary Institute)	<ul style="list-style-type: none"> Development of a watershed TMDL model 	<ul style="list-style-type: none"> Monitor progress toward model completion 	<ul style="list-style-type: none"> Completion of a watershed TMDL model



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37	Infrastructure Reliability Improvements in Santa Clara County (SCVWD)	<ul style="list-style-type: none"> Percent of portfolio 2 improvements implemented Frequency of infrastructure issues/problems 	<ul style="list-style-type: none"> Monitor percent of portfolio 2 improvements implemented Monitor frequency of infrastructure issues/problems 	<ul style="list-style-type: none"> 100% percent of portfolio 2 improvements implemented Reduction in frequency of infrastructure issues/problems
38	Intertie w/ NBA-Solano Project (Solano CWA)	<ul style="list-style-type: none"> Volume through intertie 	<ul style="list-style-type: none"> Monitor volume through intertie 	<ul style="list-style-type: none"> Increased volume through intertie
39	Ironhouse Sanitary District Wastewater Conveyance to San Francisco Region (Ironhouse Sanitary District)	<ul style="list-style-type: none"> Quantity of pond treatment/land application disposal system eliminated Capacity of existing plant 	<ul style="list-style-type: none"> Monitor treatment diverted from pond treatment/land application disposal system Monitor capacity of existing plant 	<ul style="list-style-type: none"> 2.7 mgd reduction in pond treatment/land application disposal system 8.6 mgd increase in capacity of existing plant
40	Jack London Lake Restoration and Sedimentation Reduction (California State Parks)	<ul style="list-style-type: none"> Stabilization of the Jack London Dam Quantity of sediment delivery from dam site 	<ul style="list-style-type: none"> Monitor dam stabilization (post-construction) Monitor sediment delivery to adjacent creeks from dam site 	<ul style="list-style-type: none"> Increased stability of the Jack London Dam Reduction in sediment delivery from dam site
41	Jamieson Treatment Plant Improvements (City of Napa)	<ul style="list-style-type: none"> Capacity of water treatment plant Compliance with all applicable federal and state treated water quality standards 	<ul style="list-style-type: none"> Monitor water treatment capacity Monitor percent of time treated water meets all applicable federal and state treated water quality standards 	<ul style="list-style-type: none"> 8 mgd increase in water treatment plant capacity 100% compliance with all applicable federal and state treated water quality standards
42	Kirker Creek Watershed Greenway Park Plan (Contra Costa RCD)	<ul style="list-style-type: none"> Development of Greenway Park Plan 	<ul style="list-style-type: none"> Monitor progress toward completion of the Greenway Park Plan 	<ul style="list-style-type: none"> Completed Greenway Park Plan
43	Kirker Creek Watershed Nursery (Contra Costa RCD)	<ul style="list-style-type: none"> Number of plants propagated and distributed for restoration Number of volunteers participating in nursery activities 	<ul style="list-style-type: none"> Monitor number of plants propagated and distributed for restoration Monitor number of volunteers participating in nursery activities 	<ul style="list-style-type: none"> Increased in number of plants propagated and distributed for restoration Increase in number of volunteers working at nursery
44	Lake Merritt and Lake Merritt Channel Improvements (City of Oakland)	<ul style="list-style-type: none"> Implementation of hydrologic flow improvements Water quality and salinity within Lake 	<ul style="list-style-type: none"> Monitor progress of culvert removal and by-pass construction Monitor water quality and salinity within Lake 	<ul style="list-style-type: none"> Completion of hydrologic flow improvements Improved water quality and salinity within Lake
45	LEAD at Crockett (EBMUD)	<ul style="list-style-type: none"> Quantity of desalinated water produced Reduction in potable demand from C&S Sugar 	<ul style="list-style-type: none"> Monitor quantity of desalinated water produced Monitor reduction in potable demand from C&S Sugar 	<ul style="list-style-type: none"> 1.5 mgd desalinated water produced 1.5 mgd reduction in potable demand from C&S Sugar
46	Ledson Marsh Restoration: Annadel State Park (California State Parks)	<ul style="list-style-type: none"> Linear feet of Ledson Marsh Dam stabilized 	<ul style="list-style-type: none"> Monitor dam stabilization (post-construction) 	<ul style="list-style-type: none"> 300 linear feet of Ledson Marsh Dam stabilized
47	Livermore-Amador Valley Mocho Groundwater Demineralization Project (Zone 7)	<ul style="list-style-type: none"> Quantity of groundwater demineralized Quality of groundwater demineralized (mg/L hardness) 	<ul style="list-style-type: none"> Monitor quantity of groundwater demineralized Monitor quality of groundwater demineralized (TDS) Monitor groundwater TDS 	<ul style="list-style-type: none"> 6.2 mgd of demineralized groundwater produced <5 mg/L hardness of groundwater demineralized
48	Lomita Canal / Cupid Row Canal Upgrades (San Francisco International Airport)	<ul style="list-style-type: none"> Quantity of sediment deposited 	<ul style="list-style-type: none"> Monitor accumulation of sediment in channel vs. constructed basin 	<ul style="list-style-type: none"> Reduction in sediment deposition



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49	Lower Silver Creek, Reaches 4-6 (SCVWD)	<ul style="list-style-type: none"> Miles of riparian corridor restored Extent of flooding 	<ul style="list-style-type: none"> Monitor slope stability, accumulation of sediment, and vegetation mortality Monitor high-water indicators after storm events 	<ul style="list-style-type: none"> 2.2 miles of riparian corridor restored Reduction in flooding extent
50	Marin County Benthic Macroinvertebrate Sampling Program (Marin County STOPPP)	<ul style="list-style-type: none"> Number BMI population survey events 	<ul style="list-style-type: none"> Track number of BMI population survey events 	<ul style="list-style-type: none"> Increase in number BMI population survey events
51	Martinez Adult Education Campus Creek Project Enhancement (Muir Heritage Land Trust)	<ul style="list-style-type: none"> Linear feet of vegetated swale Stormwater infiltration area Extent of flooding 	<ul style="list-style-type: none"> Measure linear feet of vegetated swale created Monitor volume of stormwater runoff retained on-site Monitor high-water indicators after storm events 	<ul style="list-style-type: none"> Increase in linear feet of vegetated swale Increase in stormwater infiltration area Reduction in flooding extent
52	Milpitas Transit Area Recycled Water Project (City of San Jose)	<ul style="list-style-type: none"> Linear feet of recycled water pipeline 	<ul style="list-style-type: none"> Monitor linear feet of recycled water pipeline 	<ul style="list-style-type: none"> 6,500 linear feet of recycled water pipeline
53	Mirant Cooling Recycled Water Project (DDSD)	<ul style="list-style-type: none"> Quantity of recycled water produced 	<ul style="list-style-type: none"> Monitor quantity of recycled water produced 	<ul style="list-style-type: none"> Up to 12 mgd recycled water produced
54	Monitoring Well Construction and Water Quality Monitoring Program (ACWD)	<ul style="list-style-type: none"> Number of active monitoring wells 	<ul style="list-style-type: none"> Monitor number of active monitoring wells 	<ul style="list-style-type: none"> Increase in number of active monitoring wells
55	Mountain View / Moffett Area Water Recycling Project (City of Palo Alto/City of Mountain View)	<ul style="list-style-type: none"> Linear feet of conveyance pipeline Number of customers connected 	<ul style="list-style-type: none"> Monitor linear feet of conveyance pipeline Monitor number of customers connected 	<ul style="list-style-type: none"> 3,500 linear feet of conveyance pipeline 120 customers connected
56	Mt. Diablo Creek Watershed Coordinated Steelhead Passage Project (Natural Heritage Institute)	<ul style="list-style-type: none"> Miles of steelhead passage restored Number of fish successfully migrating 	<ul style="list-style-type: none"> Monitor removal of fish passage barriers (post-construction) Conduct fish surveys at removed barriers 	<ul style="list-style-type: none"> 15 miles of steelhead passage restored Increase in number of fish successfully migrating
57	Mt. Diablo State Park: Comprehensive Stock Pond Evaluation and Sedimentation Remediation (California State Parks)	<ul style="list-style-type: none"> Number of stock ponds evaluated 	<ul style="list-style-type: none"> Monitor progress toward evaluation of stock ponds 	<ul style="list-style-type: none"> 15 to 20 stock ponds evaluated
58	Mt. Diablo State Park: Mitchell Creek Riparian Restoration (California State Parks)	<ul style="list-style-type: none"> Linear feet of riparian corridor restored Number of fish passage barriers removed Number of fish successfully migrating 	<ul style="list-style-type: none"> Monitor slope stability, accumulation of sediment, and vegetation mortality Monitor removal of fish passage barriers (post-construction) Conduct fish surveys at removed barriers 	<ul style="list-style-type: none"> Increase in linear feet of riparian corridor restored 4 fish passage barriers removed (two cement dams and two culverts) Increase in successful fish migration
59	Napa Plant Site Restoration Project (CDFG)	<ul style="list-style-type: none"> Acres of salt ponds/tidal wetlands restored Number and diversity of waterfowl populations 	<ul style="list-style-type: none"> Monitor acreage of salt ponds/tidal wetlands created Conduct bird counts at wetlands sites 	<ul style="list-style-type: none"> 1,460 acres of salt ponds/tidal wetlands restored Increased number and diversity of waterfowl populations
60	Napa Salt Marsh Restoration Project (State Coastal Conservancy)	<ul style="list-style-type: none"> Quantity of recycled water discharged to bittern ponds Dilution of bittern ponds using recycled water supplies 	<ul style="list-style-type: none"> Monitor quantity of recycled water discharged to bittern ponds Monitor concentration of bittern in ponds following discharges 	<ul style="list-style-type: none"> 2,600 AFY recycled water discharged to bittern ponds 100:1 dilution of bittern ponds using recycled water supplies



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61	Nathanson Creek Preserve Restoration Project (Sonoma Ecology Center)	<ul style="list-style-type: none"> Linear feet of riparian corridor restored Extent of flooding 	<ul style="list-style-type: none"> Monitor slope stability, accumulation of sediment, and vegetation mortality Monitor high-water indicators after storm events 	<ul style="list-style-type: none"> Increase in linear feet of riparian corridor restored Reduction in flooding extent
62	North Solano Groundwater Monitoring (Solano CWA)	<ul style="list-style-type: none"> Number of active monitoring wells 	<ul style="list-style-type: none"> Monitor number of active monitoring wells 	<ul style="list-style-type: none"> Increase in number of active monitoring wells
63	Pacifica Recycled Water Project (North Coast County Water District)	<ul style="list-style-type: none"> Quantity of recycled water produced 	<ul style="list-style-type: none"> Monitor quantity of recycled water produced Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> 171 AFY of recycled water produced 171 AFY reduction in potable demand from recycled water users
64	Palo Alto Recycling Project (City of Palo Alto)	<ul style="list-style-type: none"> Quantity of recycled water delivered 	<ul style="list-style-type: none"> Monitor quantity of recycled water delivered Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> 840 AFY of recycled water produced
65	Palo Alto Regional Water Quality Control Plant Water Recycling Program - Phase 3 Expansion (City of Palo Alto)	<ul style="list-style-type: none"> Capacity to produce recycled water Quantity of recycled water delivered Quality of recycled water produced 	<ul style="list-style-type: none"> Monitor capacity to produce recycled water Monitor quantity of recycled water delivered Monitor quality of recycled water produced 	<ul style="list-style-type: none"> 4 mgd increase in capacity to produce recycled water 1,000 AFY increase in recycled water delivered 400 mg/L TDS recycled water produced
66	PCBs Investigation at the Pulgas Creek Pump Station Watershed, San Carlos, California (San Mateo C/CAG)	<ul style="list-style-type: none"> Development of methods for identifying PCBs sources in urban runoff and sediments Quantity of PCBs introduced to San Francisco Bay via Pulgas Pump Station discharge Number of individuals educated 	<ul style="list-style-type: none"> Track development of methods for identifying PCBs sources in urban runoff and sediments Monitor PCB concentration in Pulgas pump station discharge to San Francisco Bay Monitor number of individuals educated 	<ul style="list-style-type: none"> Identification of preferred methods for identifying PCBs sources in urban runoff and sediments Reduction in PCB concentration in Pulgas pump station discharge to San Francisco Bay Increased number of individuals educated
67	Peacock Gap Recycled Water Extension (MMWD)	<ul style="list-style-type: none"> Quantity of recycled water produced 	<ul style="list-style-type: none"> Monitor quantity of recycled water produced Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> Increased quantity of recycled water produced
68	Peralta Tyson Groundwater Treatment Facility (ACWD)	<ul style="list-style-type: none"> Quantity of water extracted and treated by reverse osmosis 	<ul style="list-style-type: none"> Monitor percentage of water extracted that is treated by reverse osmosis 	<ul style="list-style-type: none"> 5 mgd water extracted and treated by reverse osmosis
69	Permanente Creek Flood Protection (SCVWD)	<ul style="list-style-type: none"> Reduction in flooding extent Number of homes and businesses protected from flooding 	<ul style="list-style-type: none"> Monitor slope stability, accumulation of sediment, and vegetation mortality Monitor high-water indicators after storm events 	<ul style="list-style-type: none"> 1,378 homes, 160 businesses and 4 schools/institutions protected from a 1% flood (saving potential damages in excess of \$47.9 M) Reduce extent of flooding
70	PG&E Contra Costa Power Plant #8 Recycled Cooling Water (DDSD)	<ul style="list-style-type: none"> Quantity of recycled water produced 	<ul style="list-style-type: none"> Monitor quantity of recycled water produced 	<ul style="list-style-type: none"> Increased quantity of recycled water produced



ID#	Project Name	Performance Metrics	Monitoring Strategy	Anticipated Outcome
71	Phase 2 – Niles Cone Groundwater Recharge and Fish Passage Program (ACWD)	<ul style="list-style-type: none"> ▪ Installation of fish ladder, screened diversion and pipeline, removal of barrier, and re-grading of flood control channel ▪ Number of fish successfully migrating ▪ Groundwater recharge rates ▪ Square miles of watershed access 	<ul style="list-style-type: none"> ▪ Monitor percent completion for construction tasks ▪ Perform fish observation, sampling and counting ▪ Monitor groundwater recharge rates ▪ Measure square miles of watershed access 	<ul style="list-style-type: none"> ▪ Completion of fish ladder and screened diversion and pipeline installation, removal of barrier, and re-grading of flood control channel ▪ Improved fish passage ▪ Increased groundwater recharge rates ▪ Increase in square miles of watershed access
72	Pilarcitos Creek Integrated Watershed Management Plan Development and Implementation (SFPUC)	<ul style="list-style-type: none"> ▪ Development of comprehensive Watershed Management Plan 	<ul style="list-style-type: none"> ▪ Monitor progress toward completion of the Watershed Management Plan 	<ul style="list-style-type: none"> ▪ Completion of comprehensive Watershed Management Plan ▪ Implementation of high priority projects
73	Pinole Creek Restoration and Greenway Park (CCC FC&WCD)	<ul style="list-style-type: none"> ▪ Miles of riparian corridor restored ▪ Extent of flooding ▪ Linear feet of trails 	<ul style="list-style-type: none"> ▪ Monitor slope stability, accumulation of sediment, and vegetation mortality ▪ Monitor high-water indicators after storm events ▪ Measure linear feet of trail constructed 	<ul style="list-style-type: none"> ▪ 1.5 miles of riparian corridor restored ▪ Reduction in flooding extent ▪ Increase in linear feet of trails
74	Pittsburg Recycled Water Implementation (DDSD)	<ul style="list-style-type: none"> ▪ Quantity of recycled water produced 	<ul style="list-style-type: none"> ▪ Monitor quantity of recycled water produced ▪ Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> ▪ 615 AFY of recycled water produced
75	Protection from Tidal Flooding (City of Burlingame)	<ul style="list-style-type: none"> ▪ Development of a tidal flooding study 	<ul style="list-style-type: none"> ▪ Monitor progress of the study and implementation of tidal flooding protection strategies 	<ul style="list-style-type: none"> ▪ Completion of a tidal flooding study
76	R10-2 Arroyo de la Laguna (ADLL) Improvement Project 2 (Zone 7)	<ul style="list-style-type: none"> ▪ Severity of stream channel erosion ▪ Linear feet of trails 	<ul style="list-style-type: none"> ▪ Monitor slope stability, in-channel erosion, and vegetation mortality ▪ Measure linear feet of trail constructed 	<ul style="list-style-type: none"> ▪ Reduction in stream channel erosion ▪ Increase in linear feet of trails
77	R10-5 Arroyo de la Laguna Improvement Project 5 (Zone 7)	<ul style="list-style-type: none"> ▪ Number of fish successfully migrating ▪ Extent of flooding ▪ Linear feet of trails 	<ul style="list-style-type: none"> ▪ Conduct fish surveys at removed barriers ▪ Monitor high-water indicators after storm events ▪ Measure linear feet of trail constructed 	<ul style="list-style-type: none"> ▪ Improved fish migration ▪ Reduction in flooding extent ▪ Increase in linear feet of trails
78	Recycled Water Conveyance Pipeline (Novato Sanitary District)	<ul style="list-style-type: none"> ▪ Quantity of recycled water conveyed 	<ul style="list-style-type: none"> ▪ Monitor quantity of recycled water conveyed 	<ul style="list-style-type: none"> ▪ Increase in quantity of recycled water conveyed
79	Recycled Water Program for North Marin WD & Novato Sanitary District – Phase 1 (North Marin Water District)	<ul style="list-style-type: none"> ▪ Quantity of recycled water produced 	<ul style="list-style-type: none"> ▪ Monitor quantity of recycled water produced ▪ Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> ▪ 0.5 mgd of recycled water produced
80	Reducing Women and Children's Exposure to Mercury in the Bay and Delta Region	<ul style="list-style-type: none"> ▪ Number of people educated about the impacts of mercury on the human body 	<ul style="list-style-type: none"> ▪ Track the number of people educated about impacts of mercury on the human body 	<ul style="list-style-type: none"> ▪ Increase in the number of people educated about the impacts of mercury on the human body
81	Redwood City Recycled Water Project (City of Redwood City)	<ul style="list-style-type: none"> ▪ Quantity of recycled water produced 	<ul style="list-style-type: none"> ▪ Monitor quantity of recycled water produced ▪ Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> ▪ 1.0 - 2.85 mgd of recycled water produced (average annual yield)



ID#	Project Name	Performance Metrics	Monitoring Strategy	Anticipated Outcome
82	Regional Biosolids Project (Regional Biosolids JPA)	<ul style="list-style-type: none"> Capacity of regional facility 	<ul style="list-style-type: none"> Measure startup and buildout capacity 	<ul style="list-style-type: none"> 50 dry-tons-per-day regional facility capacity
83	Regional BMPs, Field Manual and Training for Stream Maintenance Activities (Marin County STOPPP)	<ul style="list-style-type: none"> Development of a Regional BMP Field Manual Development of training program for stream maintenance 	<ul style="list-style-type: none"> Number of Regional BMP Field Manuals distributed Monitor agencies implementing the training program for stream maintenance 	<ul style="list-style-type: none"> Completion of Regional BMP Field Manual Completion of training program for stream maintenance
84	Regional Desalination Feasibility Study (EBMUD)	<ul style="list-style-type: none"> Evaluation of feasibility of three potential desalination sites 	<ul style="list-style-type: none"> Monitor progress toward completion of feasibility study 	<ul style="list-style-type: none"> Completion of feasibility evaluation for three potential desalination sites Identification of preferred desalination location and treatment parameters
85	Regional Flood Agencies Forum (SCVWD)	<ul style="list-style-type: none"> Multidisciplinary regional team development Support for flood management projects 	<ul style="list-style-type: none"> Record and disseminate minutes from regional team meetings Monitor support provided on planning, design, and execution of flood management projects 	<ul style="list-style-type: none"> Meetings of multidisciplinary regional team Increased support for flood management projects
86	Removal of NDMA, EDCs, and PPCPs in South Delta Water (CCWD)	<ul style="list-style-type: none"> Evaluation of effectiveness of augmented conventional treatment trains and membrane-based treatment trains in removing contaminants of emerging concern in south Delta waters 	<ul style="list-style-type: none"> Monitor progress toward study completion Identification of preferred treatment processes 	<ul style="list-style-type: none"> Completion of study evaluating effectiveness of augmented conventional treatment trains and membrane-based treatment trains in removing contaminants of emerging concern in south Delta waters
87	Rheem Creek Restoration and Watershed Council Project (Natural Heritage Institute)	<ul style="list-style-type: none"> Linear feet of riparian corridor restored Number of individuals educated Establishment of Rheem Creek Watershed Council 	<ul style="list-style-type: none"> Monitor slope stability, accumulation of sediment, and vegetation mortality Monitor outreach conducted (number of volunteers/students participating; presentations made) Report meeting minutes for Rheem Creek Council meetings 	<ul style="list-style-type: none"> 1,900 linear feet of riparian corridor restored Increased number of individuals educated Meetings of Rheem Creek Watershed Council
88	Richmond Advanced Recycled Expansion (RARE) Water Project (EBMUD)	<ul style="list-style-type: none"> Quantity of recycled water produced 	<ul style="list-style-type: none"> Monitor quantity of recycled water produced Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> 3 - 4 mgd of recycled water produced
89	Richmond Bayshore Stewards (The Watershed Project)	<ul style="list-style-type: none"> Acres of salt ponds/tidal wetlands restored Acres of uplands coastal prairie restored Number and diversity of waterfowl populations Number of individuals educated 	<ul style="list-style-type: none"> Monitor acreage of tidal wetlands restored Monitor acreage of upland coastal prairie restored Conduct bird counts at wetlands sites Monitor outreach conducted (number of volunteers/students participating; presentations made) 	<ul style="list-style-type: none"> 5 acres of salt ponds/tidal wetlands restored 1 acre of uplands coastal prairie restored Increase in number and diversity of waterfowl populations Increase in number of individuals educated



ID#	Project Name	Performance Metrics	Monitoring Strategy	Anticipated Outcome
90	Robert Louis Stevenson State Park Erosion Control: Table Rock Trail Re-route (California State Parks)	<ul style="list-style-type: none"> ▪ Linear feet of trail re-routed ▪ Quantity of sediment delivery to adjacent creek channels ▪ Quality of water in adjacent creeks 	<ul style="list-style-type: none"> ▪ Measure linear feet of trail re-routed ▪ Monitor sediment source, transport, and delivery areas ▪ Monitor adjacent creeks re: water quality parameters 	<ul style="list-style-type: none"> ▪ 1.1 linear feet of trail re-routed (resulting in 2 miles of reconstructed trail) ▪ Reduction in sediment delivery to adjacent creek channels ▪ Improved quality of water in adjacent creeks
91	Rollingwood Neighborhood Creek Restoration Project (Urban Creeks Council)	<ul style="list-style-type: none"> ▪ Linear feet of riparian corridor restored ▪ Number of riparian trees planted ▪ Extent of flooding 	<ul style="list-style-type: none"> ▪ Monitor slope stability, accumulation of sediment, and vegetation mortality ▪ Monitor number of riparian trees planted ▪ Monitor high-water indicators after storm events 	<ul style="list-style-type: none"> ▪ 1,700 linear feet of riparian corridor restored ▪ 150 riparian trees planted ▪ Reduction in flooding extent
92	San Francisquito Creek Flood Damage Reduction and Ecosystem Restoration (San Francisquito Creek JPA)	<ul style="list-style-type: none"> ▪ Determination of a preferred plan ▪ Removal of properties from FEMA flood insurance rates ▪ Linear feet of riparian corridor restored 	<ul style="list-style-type: none"> ▪ Confirm selection of a preferred plan ▪ Track changes in distribution of properties on FEMA flood insurance rates ▪ Monitor slope stability, accumulation of sediment, and vegetation mortality 	<ul style="list-style-type: none"> ▪ Selection of a preferred plan ▪ Decrease in properties on FEMA flood insurance rates ▪ Increase in linear feet of riparian corridor
93	San Leandro Tributaries at South Hills (City of Oakland)	<ul style="list-style-type: none"> ▪ Acres of open space lands permanently protected ▪ Improved slope stability and overall health of existing creek tributaries 	<ul style="list-style-type: none"> ▪ Measure acreage of open space protected ▪ On-site measurement of slope erosion and downstream measurement of sediments 	<ul style="list-style-type: none"> ▪ 250 acres of open space lands permanently protected ▪ Preservation and potential improvement of creek bank stability
94	San Leandro Water Reclamation Facility Expansion Project (EBMUD)	<ul style="list-style-type: none"> ▪ Quantity of recycled water produced 	<ul style="list-style-type: none"> ▪ Monitor quantity of recycled water produced ▪ Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> ▪ 30,000 gpd increase in recycled water produced
95	San Ramon Valley Recycled Water Program - Phase 2 and Future Phases (DSRSD-EBMUD Recycled Water Authority)	<ul style="list-style-type: none"> ▪ Quantity of recycled water produced 	<ul style="list-style-type: none"> ▪ Monitor quantity of recycled water produced ▪ Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> ▪ 5.7 mgd of recycled water produced by buildout, including 0.7 mgd in Phase 2
96	Santa Clara Valley Water District Aquifer Storage and Recovery Project (SCVWD)	<ul style="list-style-type: none"> ▪ Identification of ASR sites to increase SCVWD groundwater recharge and extraction capability 	<ul style="list-style-type: none"> ▪ Monitor total storage capacity of sites identified ▪ Monitor extraction capacity of sites identified 	<ul style="list-style-type: none"> ▪ Identification of ASR sites sufficient to achieve 3,000 AF recharge capacity with extraction capacity of 10 mgd
97	Satellite Recycled Water Treatment Plant Project (EBMUD)	<ul style="list-style-type: none"> ▪ Quantity of recycled water produced 	<ul style="list-style-type: none"> ▪ Monitor quantity of recycled water produced ▪ Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> ▪ Approximately 200,000 gpd or more recycled water produced, depending on water demand of new development
98	SBWR Recycled Water Phase 2 Extensions-- Santa Clara (City of San Jose)	<ul style="list-style-type: none"> ▪ Miles of recycled water conveyance pipeline installed ▪ Quantity of recycled water delivered 	<ul style="list-style-type: none"> ▪ Measure miles of recycled water conveyance pipeline installed ▪ Monitor quantity of recycled water delivered 	<ul style="list-style-type: none"> ▪ 10 miles of recycled water conveyance pipeline installed ▪ 1,000 AFY of recycled water delivered
99	Sears Point Restoration Project (Sonoma Land Trust)	<ul style="list-style-type: none"> ▪ Acres of salt ponds/tidal wetlands restored ▪ Number and diversity of waterfowl populations ▪ Extent of flooding ▪ Linear feet of trails 	<ul style="list-style-type: none"> ▪ Monitor acreage of salt ponds/tidal wetlands created ▪ Conduct bird counts at wetlands sites ▪ Monitor high-water indicators after storm events ▪ Measure linear feet of trail constructed 	<ul style="list-style-type: none"> ▪ 2,327 acres of salt ponds/tidal wetlands restored ▪ Increased number and diversity of waterfowl populations ▪ Reduction in flooding extent ▪ Increase in linear feet of trails



ID#	Project Name	Performance Metrics	Monitoring Strategy	Anticipated Outcome
100	SFPUC Groundwater Projects (SFPUC)	<ul style="list-style-type: none"> Quantity of groundwater pumping capacity 	<ul style="list-style-type: none"> Monitor quantity of groundwater pumping capacity 	<ul style="list-style-type: none"> 11 mgd of groundwater pumping capacity
101	Sky Valley-Sulphur Springs Watershed Management Plan (City of Benicia)	<ul style="list-style-type: none"> Development of comprehensive Watershed Management Plan 	<ul style="list-style-type: none"> Monitor progress toward completion of the Watershed Management Plan 	<ul style="list-style-type: none"> Completion of comprehensive Watershed Management Plan
102	Solano CWA Groundwater Banking/Conjunctive Use Program (Solano CWA)	<ul style="list-style-type: none"> Development of injection/extraction well Feasibility study for larger conjunctive use project 	<ul style="list-style-type: none"> Monitor injection/extraction well capacity Monitor progress toward completion of feasibility assessment for larger conjunctive use project 	<ul style="list-style-type: none"> Completion of injection/extraction well Completion of feasibility study for larger conjunctive use project
103	Sonoma Valley Invasive Weed Control (Sonoma Land Trust)	<ul style="list-style-type: none"> Acres restored Non-native species distribution Number of individuals educated 	<ul style="list-style-type: none"> Monitor acres restored Monitor distribution of non-native species Monitor outreach conducted (number of leaflets handed out; homeowners contacted; presentations made) 	<ul style="list-style-type: none"> 540 acres restored Reduction in non-native species distribution Increase in number of individuals educated
104	South Bay Advanced Recycled Water Treatment Facility Project (SCVWD)	<ul style="list-style-type: none"> Quantity of recycled water produced 	<ul style="list-style-type: none"> Monitor quantity of recycled water produced Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> 5.0 mgd of recycled water produced
105	South Bay Salt Pond Restoration Project & South San Francisco Bay Shoreline Study: Early Implementation Activities (SCC)	<ul style="list-style-type: none"> Acres of salt ponds/tidal wetlands restored Number and diversity of waterfowl populations Extent of flooding 	<ul style="list-style-type: none"> Monitor acreage of salt ponds/tidal wetlands created Conduct bird counts at wetlands sites Monitor high-water indicators after storm events 	<ul style="list-style-type: none"> 15,100 acres of salt ponds/tidal wetlands restored Increased number and diversity of waterfowl populations Reduction in flooding extent
106	Stanford Central Energy Facility Cooling Tower Recycled Water System (Stanford University)	<ul style="list-style-type: none"> Quantity of recycled water produced 	<ul style="list-style-type: none"> Monitor quantity of recycled water produced Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> 0.05 mgd of recycled water produced
107	Stevens Creek Restoration at Blackberry Farm, Cupertino (SCVWD)	<ul style="list-style-type: none"> Linear feet of riparian corridor restored Number of fish passage barriers Number of fish successfully migrating 	<ul style="list-style-type: none"> Monitor slope stability, accumulation of sediment, and vegetation mortality Monitor removal of fish passage barriers (post-construction) Conduct fish surveys at removed barriers 	<ul style="list-style-type: none"> Increased linear feet of riparian corridor restored Reduction in number of fish passage barriers Increase in successful fish migration
108	Sugarloaf Ridge State Park Erosion Control: Goodspeed Trail Rehabilitation (California State Parks)	<ul style="list-style-type: none"> Miles of trail re-routed Quantity of sediment delivery to adjacent creek channels Quality of water in adjacent creeks 	<ul style="list-style-type: none"> Measure linear feet of trail re-routed Monitor sediment source, transport, and delivery areas Monitor adjacent creeks re: water quality parameters 	<ul style="list-style-type: none"> 2 miles of trail re-routed Reduction in sediment delivery to adjacent creek channels Improved quality of water in adjacent creeks
109	Sustainable Streets for Improved Stormwater Quality and Water Reuse (San Mateo C/CAG)	<ul style="list-style-type: none"> Development of a Sustainable Streets Guidebook Stormwater infiltration area Stormwater runoff quality 	<ul style="list-style-type: none"> Number of Sustainable Streets Guidebooks distributed Monitor volume of stormwater runoff retained on-site Monitor water quality indicators after storm events 	<ul style="list-style-type: none"> Completion of Sustainable Streets Guidebook Increased area for stormwater infiltration (demonstration projects) Improved stormwater runoff quality (demonstration projects)



ID#	Project Name	Performance Metrics	Monitoring Strategy	Anticipated Outcome
110	Thompson Creek Stream Stabilization (SCVWD)	<ul style="list-style-type: none"> Miles of riparian corridor restored Extent of flooding 	<ul style="list-style-type: none"> Monitor slope stability, accumulation of sediment, and vegetation mortality Monitor high-water indicators after storm events 	<ul style="list-style-type: none"> 1.2 miles of riparian corridor restored Reduction in flooding extent
111	Upper Guadalupe River Project (Reaches 6 and 12) (SCVWD)	<ul style="list-style-type: none"> Linear feet of riparian corridor Extent of flooding 	<ul style="list-style-type: none"> Monitor slope stability, accumulation of sediment, and vegetation mortality Monitor high-water indicators after storm events 	<ul style="list-style-type: none"> Increase in linear feet of riparian corridor Reduction in flooding extent
112	Urban Creek Trash Reduction Program (SCVWD)	<ul style="list-style-type: none"> Quantity of trash in urban creek channels Number of individuals educated 	<ul style="list-style-type: none"> Conduct urban rapid trash assessment surveys Monitor outreach conducted (number of leaflets handed out; homeowners contacted; presentations made) 	<ul style="list-style-type: none"> Reduction of trash in urban creek channels Increase in number of individuals educated
113	Watershed Habitat and Project Mapping Program (San Francisco Estuary Institute)	<ul style="list-style-type: none"> Development of watershed habitat maps for the region 	<ul style="list-style-type: none"> Track development of watershed habitat maps (geography, data type, scale) 	<ul style="list-style-type: none"> Completion of watershed habitat maps for the region
114	Westside Baseline and Harding Park/Lake Merced Projects (SFPUC)	<ul style="list-style-type: none"> Quantity of recycled water produced 	<ul style="list-style-type: none"> Monitor quantity of recycled water produced Monitor reduction in potable demand from recycled water users 	<ul style="list-style-type: none"> 4 mgd of recycled water produced
115	Wetland and Creek Restoration at Big Lagoon, Muir Beach (National Parks Service-GGNRA)	<ul style="list-style-type: none"> Acres of tidal lagoon enhanced Linear feet of riparian corridor restored Extent of flooding 	<ul style="list-style-type: none"> Monitor acreage of tidal lagoon created Monitor slope stability, accumulation of sediment, and vegetation mortality Monitor high-water indicators after storm events 	<ul style="list-style-type: none"> 35 acres of tidal lagoon enhanced 3,500 linear feet of riparian corridor restored Reduction in flooding extent
116	Wildcat Creek Restoration (CCC FC&WCD)	<ul style="list-style-type: none"> Linear feet of riparian corridor Extent of flooding 	<ul style="list-style-type: none"> Monitor slope stability, accumulation of sediment, and vegetation mortality Monitor high-water indicators after storm events 	<ul style="list-style-type: none"> Increase in linear feet of riparian corridor Reduction in flooding extent



I.3.3 Plan-Level Assessment

As described in previous sections, and assuming sufficient funding and resources are available, future work will be completed with guidance from the IRWMP CC. As part of this process, the IRWMP CC will collect the information gathered by the Functional Area TCCs to assess IRWMP performance in contributing to regional goals, objectives, and IRWMP vision. Based on the results of this assessment, the IRWMP will be adjusted as needed.

In addition to using the data collected through the efforts described above, there are a variety of ongoing monitoring programs currently in place in the Bay Area that the IRWMP CC may leverage to support the assessment. Table I-3 lists several of the existing Bay Area monitoring programs that the IRWMP CC may elect to use in support of its assessment of progress toward the IRWMP regional goals as future work is completed.

Table I-3 does not represent a comprehensive listing of water resources monitoring programs throughout the region. Recognizing that the status of IRWMP project implementation will evolve with Plan implementation and the type of monitoring best suited for assessing Plan performance will change accordingly, and understanding that monitoring programs themselves tend to change with time, the IRWMP CC has not committed to using any specific monitoring programs for assessing Plan performance. Rather, the IRWMP CC will evaluate the utility of various ongoing monitoring efforts for assessing Plan performance over time. It is anticipated that the IRWMP CC will use a subset of the programs presented in Table I-3 in conjunction with other monitoring programs not included in this table to assess the region's progress toward achieving its goals and objectives as appropriate.

Table I-3: Existing Bay Area Monitoring Efforts

Program Title	Implementing Agency	Program Content	Responsible Agency	Update / Sampling Frequency
Water Supply and Water Quality				
Urban Water Management Plans	DWR	Mandated for urban water suppliers according to the Urban Water Management Planning Act of 1983. Applies to water suppliers of over 3,000 consumers or over 3,000 acre-feet annually. Plans must calculate projected 25-year water demand based on population growth, current number of gallons of water consumed, and historic flow and hydrology statistics.	Water supply agencies	Updated every 5 years
Water Supply Master Plans, Integrated Resource Plans, Capital Improvement Plans	Water supply agencies	Agency specific planning documents (not uniform across agencies) that address water supply and demand, infrastructure needs, etc.	Water supply agencies	Varies
Watershed Sanitary Surveys	Department of Health Services (DHS)	Agency specific documents which assess existing water quality within a watershed and identify specific water treatment processes for the source waters for the purposes of human consumption.	Water supply agencies	Updated every 5 years
Drinking Water Source Assessment and Protection Program (DWSAP)	DHS	Monitors and assesses the quality of surface and groundwater sources according to federal and state standards for drinking water. Identifies potential contaminating activities within the source watershed.	Water supply agencies	Updated when deemed necessary by DHS
GAMA	SWRCB	Statewide groundwater quality monitoring and assessment program mandated by the Groundwater Quality Monitoring Act of 2001. Participation by private drinking well operators is encouraged through the Voluntary Domestic Well Assessment Project. The San Francisco Bay Region is assessed in two hydrogeologic provinces.	SWRCB, USGS, voluntary local participation	Regional Assessments every 10 years, trend monitoring every 3 years
Groundwater Management Plans	DWR	Agency specific groundwater planning documents (not uniform across agencies). Plans may include measures to address saline intrusion, well maintenance, source water protection, pollution remediation, supply conservation, and inter-agency communication. Development of plans according to California Groundwater Management Act (AB 3030) is voluntary.	Water supply agencies	Varies
California Data Exchange Center (CDEC)	DWR	Statewide data on current hydrologic conditions, snow pack, precipitation, surface water supplies, etc. in order to assess the "status" of water supply and flood conditions. Real-time data is publicly available online.	DWR-Division of Flood Management	Ongoing
Water Data Library	DWR	Statewide hydrologic and water quality data collected by DWR and cooperating agencies. Data are available for downloading online.	DWR-Division of Planning and Local Assistance	Ongoing

Program Title	Implementing Agency	Program Content	Responsible Agency	Update / Sampling Frequency
CIMIS	DWR	Collection of climate data via weather stations to assist irrigators in managing their water resources efficiently. Approximately 20 stations within the San Francisco Bay Region.	DWR	Ongoing
SWP	DWR	Water supply availability and estimated future reliability of water supplies for consumers in the North and South Bay.	DWR	Ongoing
CVP	USBR	Water supply availability and estimated future reliability of water supplies for consumers in Contra Costa and Santa Clara counties.	USBR, local water agencies	Ongoing
Source water quality monitoring	Water supply agencies	Monitoring for contaminants such as radionuclides, organic chemicals, inorganics, and microbes in source and treated supplies	Water supply agencies	Varies/ongoing
Treated water quality monitoring	Water supply agencies	Monitoring for contaminants such as radionuclides, organic chemicals, inorganics, microbes, disinfectants, and disinfection byproducts in treated supplies	Water supply agencies	Varies/ongoing
Waste Water and Recycled Water				
NPDES, Waste Discharge Requirements (WDRs)	RWQCB	Wastewater Treatment Plants (POTWs) are required to monitor for the following: Carbonaceous Biochemical Oxygen Demand (CBOD), total suspended solids, oil and grease, chlorine residue, pH, fecal coliform, and toxicity in effluent discharged.	Publicly Owned Treatment Works (POTWs)	Ongoing
Wastewater Master Plans, Recycling Plans, Strategic Plans, Capital Improvement Plans	Wastewater agencies	Agency specific planning documents (not uniform across agencies) that address wastewater demand and capacity, infrastructure needs, etc.	Waste water agencies	Varies
Annual Reports	Wastewater/recycled water agencies	Monitoring the quantity of recycled water reused and provide this data in their annual reports.		
Flood Protection and Stormwater Management				
NPDES, Municipal Stormwater Permits	SWRCB	Issued to countywide collaboratives for management plan-based approach to implementing stormwater pollution prevention BMPs. The permit conditions require monitoring of BMPs.	Local municipalities and agencies	Permits are renewed every 5 years
Flood Control and Storm Drainage Master Plans, Capital Improvement Plans	Flood control agencies	Agency-specific planning documents (not uniform across agencies) that address flood flow demand and capacity, infrastructure needs, etc.	Flood control agencies	Varies
NPS Control Program-Tracking and Monitoring Council	SWRCB	Monitors NPS pollutant trends and impairments in the Bay Area. Evaluates effectiveness and success of projects and programs funded by the NPS program that are designed to protect and restore water quality. Coordinates with the SWAMP program.	SWRCB, RWQCBs, SCC, U.S. Environmental Protection Agency (USEPA), NOAA	Ongoing

Program Title	Implementing Agency	Program Content	Responsible Agency	Update / Sampling Frequency
Flood Information	NOAA, National Weather Service	Flash flood warnings and flood watch information.	NOAA, National Weather Service	Ongoing
Flood Alert System	DWR	River and stream peak and flood flow conditions, levee stability, and snow melt and rainfall conditions.	DWR	Ongoing
Flood Insurance Rate Maps (FIRMs)	FEMA	Mapping of 100-year floodplain for use in determining flood insurance rates.	FEMA	Ongoing
Flood Control Facilities	Flood control agencies	Monitoring of catch basins and storm drains near the urban/wildland interface during storms; Debris monitoring and monitoring activities, erosion repair activities, removal of excessive vegetation and reshaping of stream banks for improved flow in rivers and streams.	Flood control agencies	Ongoing
Dam Inspections	DWR Resources Agency	The Department of Water Resources' Division of Dam Safety conducts regular inspections and investigations of dams in order to ensure they are being maintained and operated properly	DWR Resources Agency	Ongoing
Watershed Management, Habitat Protection and Restoration				
Watershed Management Plans	Various agencies and organizations	Agency specific planning documents (not uniform across agencies) that address watershed issues and opportunities, protection and restoration activities, etc.	Various agencies and organizations	Varies
Regional Monitoring Program for Trace Substances for San Francisco Bay	SWRCB	Monitoring of contaminant concentrations and toxicity levels in water and aquatic species of the San Francisco Bay.	SFEI, RWQCB	Ongoing
Surface Water Ambient Monitoring Program (SWAMP)	SWRCB	Statewide monitoring effort designed to assess the conditions of surface waters in streams, rivers, lakes, and estuaries throughout the state. Monitoring efforts vary by RWQCB. However, sampling methods are standardized across the State.	RWQCB	As funding allows
Regional Wetlands Monitoring Program	SCC	Utilize GIS mapping of wetland projects, the California Rapid Assessment Method of wetland conditions, and other tools to monitor wetlands on a regional scale.	USEPA, SCC, SFEI	As funding allows
Habitat Conservation Plans	Various agencies and organizations	Conservation planning for special-status species in a defined geographic area; Contains mitigation to offset development and monitoring requirements to measure success of restored and protected areas.	Various agencies and organizations	Varies
Songbird Populations	Point Reyes Bird Observatory	Long-term monitoring of songbird populations for the past 30 years.	Point Reyes Bird Observatory	Ongoing
California Partners In Flight (CalPIF) Study Area Database	California Partners in Flight	Standard bird monitoring sites and provides a repository for species breeding status information for the entire state.	California Partners in Flight, Point Reyes Bird Observatory	Ongoing



Program Title	Implementing Agency	Program Content	Responsible Agency	Update / Sampling Frequency
Bird Counts	National Audubon Society	Christmas Bird Count, Great Backyard Bird Count, and the Feederwatch Bird Count.	National Audubon Society	Ongoing
Bird Breeding Survey	USGS Patuxent Wildlife Center	Population data and population trend analyses on more than 400 bird species.	USGS Patuxent Wildlife Center	Ongoing
Monitoring Avian Productivity and Survivorship (MAPS) Program	Institute for Bird Populations	Assesses and monitors the vital rates and population dynamics of over 120 species of North American land birds.	Institute for Bird Populations	Ongoing
Bay Area Macroinvertebrate Bioassessment Information Network (BAMBI)	SWRCB	Currently being developed to utilize rapid bioassessment techniques in order to determine the distribution and population counts for macroinvertebrates in the Bay Area.	SWRCB, Municipalities	Under development
California Natural Diversity Database (CNDDDB)	DFG	Data repository for endangered/native species sightings and population locations, but no comprehensive monitoring program.	DFG	Ongoing
CalFish.org	DFG	DFG maintains a database with fish range and habitat information, but no comprehensive monitoring program.	DFG	Ongoing
Local Policy Survey	ABAG	Availability of vacant land, timing of future development, type of future development, density of development, transportation, land use policy and other land use related factors that could affect development.	ABAG, Local governments	Ongoing
Bay Area Protected Lands Database	Bay Area Open Space Council	Maps of protected public and private open space lands throughout the Bay Area.	Bay Area Open Space Council	Ongoing
San Francisco Estuary Invasive Spartina Project	CALFED, USFWS Coastal Program, National Fish and Wildlife Foundation, SCC	Conducts monitoring and regional mapping of spartina in order to perform eradication activities.	CALFED, USFWS Coastal Program, National Fish and Wildlife Foundation, SCC	Ongoing
Air Quality Monitoring	Bay Area Air Quality Management District (BAAQMD), California Air Resources Board (ARB)	Regional monitoring for a variety of weather elements: Wind, Rainfall, Air Quality, Air Temperature, etc.	Bay Area Air Quality Management District, ARB	Ongoing
Land Use Distribution	ABAG	Mapping of existing and projected land use distribution based on city and county General Plans	ABAG	Every 5-years
Demographics	ABAG	Data on population in the nine-county Bay Area and projections for future population figures.	ABAG	Ongoing

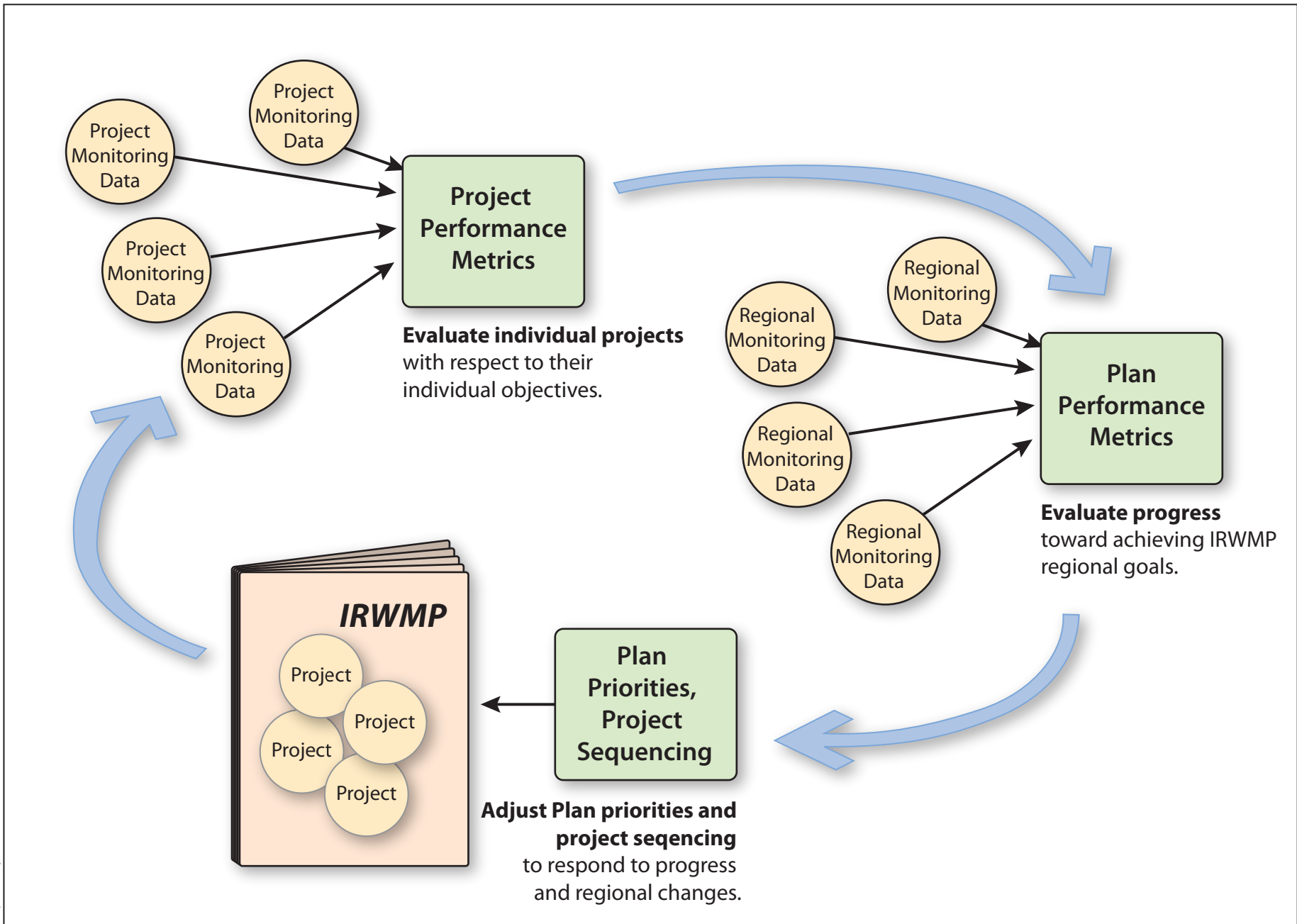


I.4 Mechanism for Adapting Project Operations

Water resources management issues facing the Bay Area evolve over time in response to continually changing regulations and other emerging issues. Projects were identified as top priorities for regional implementation based on their ability to address goals and objectives. As the region's goals and objectives evolve over time, the ability of projects to address these goals and objectives will similarly change. In addition, project performance will be periodically assessed with respect to established performance measures. Maintaining flexible project operations will allow projects to adapt to the changing needs of the region while performing well with respect to performance measures.

Each project identified in this IRWMP has a project proponent that has agreed to oversee project implementation. The project proponent will be responsible for ensuring that project operations are adjusted as appropriate based on the changing needs of the region. As future work is completed, the IRWMP CC will recommend whether changes to the region's goals, objectives, and needs should be considered. In response to the IRWMP CC assessment, and considering the project's performance with respect to performance measures described above, project proponents will be responsible for identifying and adjusting project operations as appropriate. The relationships between project performance, Plan performance, and adjustments to the regional goals are illustrated in Figure I-6.

Additionally, as future work is completed, the IRWMP CC may recommend revisions to project priorities and sequencing based on past performance. For example, should certain San Francisco Bay TMDLs be achieved and water quality improved in certain watersheds, the IRWMP CC may recommend that projects addressing those TMDLs no longer be considered the highest priority projects for regional implementation. Regional implementation priorities will evolve as regional goals and objectives change over time, and as the region progresses toward attainment of those goals and objectives.



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