

Chapter 17 Plan Performance and Monitoring

17.0 Introduction

Department of Water Resources (DWR) Guidelines for Integrated Regional Water Management Plans includes the standard that IRWMPs “shall include performance measures and monitoring to document progress toward meeting Plan objectives.”

Performance measures are necessary for the RWMG and regional stakeholders to understand and measure the success of ongoing Plan implementation, following adoption by the RWMG and individual entities and organizations. Plan performance and monitoring falls into two primary categories: 1) Rural Water Management Group (RWMG) evaluation and measurement of the Plan’s performance (progress toward accomplishing goals and objectives), and 2) monitoring and evaluation of individual projects against their respective performance measures and outcomes, conducted by project sponsors and reported to the RWMG.



17.1 Plan-level Performance Measures

The Yuba County IRWMP has developed objectives that include both quantitative or qualitative measures (see Chapter 12 *Goals, Objectives, Issues, and Conflicts*) as required by the DWR Guidelines. A series of performance indicators and a specific format for displaying the evaluation results will be developed in the context of the first year’s performance evaluations. At this point in the RWMG process, the group has determined that development of performance metrics will be a part of the first annual meeting in 2018 that seeks to assess overall Plan performance.

The RWMG has identified preliminary measures of success which will be revisited during the initial formal Plan performance evaluation:

- how robust the IRWMP process has been post-Plan development (e.g., the number of meetings the RWMG has, number of attendees at those meetings, relevance of meeting agendas and outcomes to identified goals and objectives, recruitment of new attendees and/or retention of existing participants, timeliness of reporting, success of database management/number of new documents uploaded);
- adoption of the Plan by additional entities;
- the amount of additional funding developed to support essential RWMG activities;
- the number of new projects developed, projects funded and/or projects integrated;
- the specific outcomes of implemented projects when compared to the Plan sections and tables; and
- reduction of conflicts identified in the Plan, as measured by implementing systems for greater collaboration, and by qualitative perceptions of stakeholder participants.

17.1.1 Evaluation of Implementation Performance under 2008 IRWMP

The 2008 IRWM considered Plan performance measures in Chapter 8, section 8.3. While the section suggests an adaptive management approach, few specific Plan performance measures were indicated. Instead, the Plan identified regular reviews as the mechanism for measuring Plan progress in response to changing conditions. The Plan identified collection and evaluation of data as the primary evaluation tool.

Chapter 7, section 7.2.2 of the 2008 Plan describes specific data to be collected and evaluated (e.g., monitoring surface and groundwater conditions) both for periodic refinements to project descriptions, as well as IRWMP processes (e.g., reevaluating objectives and water management strategies, and periodically reevaluating the Plan). The Plan indicates that these periodic reviews/updates would be presented following completion of urban water management plans (in years ending in 0 and 5). Finally, the Plan states that the RWMG would meet twice a year to review and update the project list and prioritization.

Following the economic decline in 2008, many of the participating entities experienced reduced budgets, staff reductions, and administrative constraints that prevented RWMG participation and tracking of emerging issues or data as outlined in the performance measures/processes listed above. Therefore, limited evaluation of Plan performance took place.

Based on extensive conversations with RWMG members by the project team as part of the project-related circuit-riding effort and other stakeholder outreach, it appears the following factors contributed to the limited implementation:

- process fatigue by area stakeholders that resulted in substantially reduced participation in the RWMG;
- inability of the group to pursue and secure project funding;
- need for a communications hub, such as a Yuba County IRWM website;
- need for funding dedicated to Plan review and evaluation and administrative coordination support; and
- lack of capacity to track DWR guideline and funding updates.

Lessons learned from the above analysis have generated an approach for the 2018 Yuba County IRWM Plan Update to address these problems. A key focus of the Finance chapter is to create durable funding mechanisms; the Governance chapter provides administrative processes that, along with the newly created Yuba County IRWM website, will enhance communication and coordination among area stakeholders and the RWMG; and the Plan and Project Performance chapter contains specific performance measures tied to an implementation schedule. Administrative processes are designed to support streamlined and meaningful participation by stakeholders.

17.1.2 Process for Plan Evaluation

The group responsible for evaluating IRWMP implementation and performance will be the RWMG. The RWMG will convene a meeting to evaluate Plan performance at least once annually, and more often if needed to enhance chances for project funding, to respond to revisions to guidelines or updates to regulations, to take advantage of opportunities to improve the Plan, and to recognize and document circumstances in the watershed that substantively affect the Plan. The schedule for evaluation will be set forth when the RWMG adopts the Plan.

At minimum, the evaluation will consist of measuring Plan progress against the adopted Plan-level performance measures developed during the first evaluation session. As part of its adaptive management strategy to stay current and revise the Plan, the RWMG will compare implemented projects and their outcomes against objective metrics to determine progress toward achieving the Plan's goals and objectives. New scientific data, regional conditions, or natural resource events could substantively alter the understanding of issues or solutions within the watershed. Potential alterations to the Plan goals or objectives will necessarily need to consider and address changes in water demand, water supply, water quality, and effects on Disadvantaged Communities (DACs). For guidance on amendments to the IRWMP, please see Chapter 16 *Governance*.

The RWMG will determine whether objectives and their metrics continue to be relevant and appropriate. For instance, some objectives may be met, either by a change in circumstance, regulation, or implementation of projects. Objective metrics might need to be changed at that point, or a timeframe added to the metric to give it additional timeliness or urgency. New strategies and adaptations or mitigation may also emerge that warrant a change in objective or its metric.

Significant changes that affect aspects of the Plan may require more-frequent-than-annual Plan evaluations and revision. However, formal updates will occur at the discretion of the RWMG, and could be triggered by significant changes in governance structure, catastrophic changes to natural resources, or significant changes in regulations. Re-adoption will occur at least every five years to assure widespread buy-in by area stakeholders.

It is anticipated that additional information and data and, potentially, additional localized effects of climate variability will manifest in coming decades. While new studies and technologies may emerge for this relatively new science, localized climate information will not likely need annual updates as climate is the record of weather phenomena over the *long term*. Therefore, the RWMG may wish to search and review new climate studies annually, but revisit climate projections at longer intervals. Revisions to the Plan will accommodate these updated data and studies accordingly.

The RWMG will write up its Plan evaluations (annually at minimum) and will post evaluations on the Yuba County IRWMP website.

17.2 Project-level Performance Measures

Monitoring project performance is tied directly to project implementation; projects won't be evaluated unless they become either partially or wholly funded and implemented.

The outcomes of project implementation will be assessed with regard to achieving the objective metrics shown in **Table 17-1**, Goals-Objectives-Performance Metrics, at the end of this chapter. For example, if a Plan objective metric is to accomplish five miles of ditch lining while recovering 50 percent water loss, accomplishing three miles of ditch lining and the targeted conservation over a year would be documented against desired Plan outcomes.

Sponsors of existing and future projects will be expected to provide measures and outcomes for their projects which provide specific quantitative measures, based on the general measures listed below. Project sponsors will submit relevant information about projects and project performance to the RWMG's preferred data management system, via its website (see Chapter 19 *Technical Analysis and Data Management*).

17.2.1 Development of Project-level Monitoring Plans

Project sponsors will be responsible for development of monitoring plans for their respective project when applying to a funding source and will specify both who will conduct the monitoring and how it will be funded. Either the RWMG, or a specific committee, such as a Project Review Committee, will evaluate the monitoring plans at a specified interval to inform Plan progress. Monitoring outcomes and plans likely will also be evaluated by the respective funding source. As findings and the resulting lessons learned from monitoring become available, they will be a valuable tool in improving project design in the future, amending resource management strategies, and altering objectives to be more responsive to watershed needs.

Both outputs (what the project consisted of, e.g., tank replaced) and outcomes (what the project accomplished in terms of Plan goals and objectives, e.g., water supply improved for a DAC for the life of the project) should be addressed where possible. In other words, monitoring needs to address not only that the project was achieved, but what it accomplished toward achieving Plan goals and objectives.

Monitoring plans will be prepared to the specifications required by a funding source. The following guidance is given for what DWR would expect in the typical contents of a project-specific monitoring plan:

- 1) Clearly and concisely (in a table format) describe what is being monitored for each project. Examples include monitoring for water quality, water depth, flood frequency, and effects the project may have on habitat or particular species (before and after construction).*
- 2) Measures to remedy or react to problems encountered during monitoring. An example would be to coordinate with the Department of Fish and Game if a species or its habitat is adversely impacted during construction or after implementation of a project.*
- 3) Location of monitoring.*
- 4) Monitoring frequency.*
- 5) Monitoring protocols/methodologies, including who will perform the monitoring.*
- 6) Data Management System or procedures to keep track of what is monitored. Each project's monitoring plan will also need to address how the data collected will be or can be incorporated into statewide databases. Note that standards and guidance related to the integration of data into statewide databases is included in Data Management Standard.*
- 7) Procedures to ensure the monitoring schedule is maintained and that adequate resources (funding) are available to maintain monitoring of the project throughout the scheduled monitoring timeframe.*

As this Plan is implemented over time, the RWMG will need to reflect an update of impacts and benefits from the myriad projects undertaken during Plan implementation. Please see Chapter 18 *Impacts and Benefits*.

Table 17-1.
Yuba County IRWMP Update
Goals-Objectives-Performance Metrics

Goals and Objectives		Performance Metrics
Goal 1: Ensure adequate and reliable water supply that meets the diverse needs of the region		
Objectives		
1.1 Protect, maintain, and enhance surface water and groundwater supplies for the region's multiple uses, including drinking water, agricultural, environmental, and recreational uses		<ul style="list-style-type: none"> ▪ Acre feet per annum of water supply conserved or enhanced ▪ Miles of stream where streamflow improved or protected ▪ Number of projects implemented
1.2 Improve water supply system capacity, flexibility, and efficiency, including, but not limited to, optimizing existing water storage, upgrading and retrofitting aging infrastructure, and developing new infrastructure, where necessary		<ul style="list-style-type: none"> ▪ Acre-feet per annum of water supply conserved or enhanced ▪ Acre-feet per annum water supply conserved per household ▪ Number of projects implemented ▪ Reduction in water system operational costs ▪ Tons of carbon sequestered or emissions avoided
1.3 Promote water conservation and water use efficiency by instituting various techniques including, but not limited to, groundwater recharge, conjunctive management, irrigation efficiencies, municipal water conservation, water recycling and reuse		<ul style="list-style-type: none"> ▪ Acre feet per annum of water supply conserved ▪ Number of projects implemented ▪ Number of collaboratively developed plans and assessments ▪ Reduction in water system operational costs ▪ Tons of carbon sequestered or emissions avoided
1.4 Promote disaster preparedness and conservation planning efforts to ensure sufficient water supplies in the event of drought, fire, earthquake, or other disaster		<ul style="list-style-type: none"> ▪ Number of collaboratively developed plans, studies, and assessments ▪ Number of stakeholders collaborating in the development of interregional drought response ▪ Number of planning efforts resulting in project implementation ▪ Number and diversity of people reached ▪ Number and diversity of outreach materials developed ▪ Measurable changes in knowledge or behavior
1.5 Promote regional education and outreach regarding water conservation, water supply issues, and needs		<ul style="list-style-type: none"> ▪ Number and diversity of people reached ▪ Number and diversity of outreach materials developed ▪ Measurable changes in knowledge or behavior
Goal 2: Protect, restore, and enhance water quality for water users and in support of healthy watersheds		
Objectives		
2.1 Protect and improve water quality by mitigating for urban, agricultural, and wildland (sediment) runoff		<ul style="list-style-type: none"> ▪ Mass pollutant reduced per year ▪ Number of BMPs implemented ▪ Number of projects implemented ▪ Increased water quality monitoring and sampling ▪ Measurable improvement in water quality
2.2 Minimize water quality impacts from flood, effluent discharge, and wastewater spills		<ul style="list-style-type: none"> ▪ Mass pollutant reduced per year ▪ Measurable improvement in water quality ▪ Reduced number of violations for water quality standards ▪ Number of BMPs implemented ▪ Number of water supply facilities protected ▪ Number of wastewater treatment plants designed to revised specifications considering climate change
2.3 Promote recreational activities and programs that		<ul style="list-style-type: none"> ▪ Number and frequency water quality monitoring and

minimize or have no impacts to water quality	<ul style="list-style-type: none"> sampling Number and diversity of people reached Number and diversity of outreach materials developed Measurable changes in knowledge or behavior
2.4 Promote healthy, forested watersheds to protect and improve water quality	<ul style="list-style-type: none"> Number of fire and fuels management and watershed restoration projects implemented Linear feet of streambank protected or restored Mass pollutant reduced per year Acres of land treated, improved, or restored Number and frequency of water quality monitoring and sampling Number of BMPs implemented Measurable improvement in water quality
2.5 Maintain and improve water quality required to protect and restore freshwater ecosystems and fisheries	<ul style="list-style-type: none"> Miles of stream protected or restored Number and frequency of water quality monitoring and sampling Number of BMPs implemented Measurable improvement in water quality Acres of riparian habitat and/or floodplain protected, restored or created Number of collaboratively developed plans, studies, and assessments Mass pollutant reduced per year
2.6 Support regulatory compliance with state and federal water quality standards	<ul style="list-style-type: none"> Number of projects implemented to comply with state and federal water quality standards Number of collaboratively developed plans and assessments Number and frequency of monitoring and assessment Decrease in water quality violations Mass pollutant reduced per year Plant certification achieved
2.7 Protect public and ecosystem health from the physical and chemical hazards of Abandoned Mine Lands (AMLs)	<ul style="list-style-type: none"> Number and acres of Abandoned Mine Lands (AMLs) sites improved or restored Mass pollutant reduced per year Measurable improvement in water quality
Goal 3: Preserve and restore watershed health and promote environmental stewardship	
Objectives	
3.1 Steward healthy forests through fire and fuels management, erosion control measures, wetland and groundwater-dependent ecosystems restoration to reduce the threat of wildfire and improve watershed health	<ul style="list-style-type: none"> Acres of land treated, improved, or restored Miles of stream protected or restored Acres of riparian habitat and/or floodplain protected, restored, or created Tons of carbon sequestered Number of projects developed or implemented Number of BMPs implemented Increased monitoring, sampling, and data analysis Measureable groundwater recharge
3.2 Identify and manage for aquatic and terrestrial invasive species and their impact on water supply infrastructure and watershed health	<ul style="list-style-type: none"> Monitoring, sampling, and data analysis Number of collaborative plans, studies, and assessments developed Number of acres treated, improved, or restored Acres of riparian habitat and/or floodplain protected,

	<ul style="list-style-type: none"> restored, or created Number of projects implemented Number of BMPs implemented
3.3 Recover endangered and threatened fish species through habitat restoration and by providing access to historic habitat, wherever feasible	<ul style="list-style-type: none"> Miles of stream protected or restored Acres of riparian habitat and/or floodplain protected, restored, or created Number of projects developed or implemented Acre-feet per annum streamflow improved Number of collaborative plans, assessments, studies developed Increased monitoring, sampling, and data analysis
3.4 Enhance floodplain function and wildlife habitat while achieving multiple flood management benefits and maintaining public safety	<ul style="list-style-type: none"> Tons of carbon sequestered Miles of stream protected or restored Acres of riparian habitat and/or floodplain protected, restored, or created Number of projects developed or implemented Number of collaborative plans, assessments, studies developed Measurable groundwater recharge Lowering flood insurance rates/flood danger/risk
3.5 Promote watershed-level remediation of legacy mining toxins	<ul style="list-style-type: none"> Number of projects implemented Number of collaborative plans, assessments, studies developed Mass pollutant reduced per year
3.6 Support environmental protections to ensure the sustainability of economically, ecologically, and culturally significant species, ecosystems, and communities	<ul style="list-style-type: none"> Number of projects implemented Number of collaboratively developed plans, assessments, and studies Number and frequency of monitoring and assessment
3.7 Steward the region's biodiversity and ecological resources that directly provide opportunities for public access, recreation, and education	<ul style="list-style-type: none"> Number and diversity of people reached Number and diversity of outreach materials developed Number of projects implemented Measurable changes in knowledge or behavior
Goal 4: Enhance regional economic development	
Objectives	
4.1 Promote regional collaboration to support a strong, diversified Yuba County economy and improve the well-being of Yuba County residents	<ul style="list-style-type: none"> Number of collaboratively developed plans and assessments Percent of planning efforts resulting in project implementation Number of businesses supporting projects
4.2 Promote comprehensive recreation planning and implementation with a focus on regional economic development	<ul style="list-style-type: none"> Number of collaboratively developed plans and assessments Percent of planning efforts resulting in project implementation Number of jobs created Number of businesses supporting project recreational features
4.3 Enhance river access points to encourage recreational use while managing for human impacts to watershed health	<ul style="list-style-type: none"> Number of collaboratively developed plans and assessments Number of projects implemented Number of recreational amenities/opportunities

	<ul style="list-style-type: none"> developed Number of visitors to project recreational facilities
4.4 Create recreational river corridor linkages while enhancing migration corridors for plants and animals	<ul style="list-style-type: none"> Number of collaboratively developed plans and assessments Number of projects implemented Miles of river enhanced
4.5 Explore opportunities to increase water-dependent tourism throughout the region while building local communities' capacity to manage their recreational amenities	<ul style="list-style-type: none"> Number of collaboratively developed plans, assessments, and studies Number of projects implemented Number of recreational amenities/opportunities developed Number of businesses supporting project recreational features Number of jobs created Number of visitors to project recreational features
4.6 Protect and restore working landscapes, particularly ranch/ag lands, and the watershed benefits they provide	<ul style="list-style-type: none"> Number of collaborative plans, assessments, and studies developed Number of acres treated or improved Number of acres of land preserved Number of projects implemented Number of BMPs implemented
4.7 Promote regulations that support local and regional economic resiliency by working with and among regulatory agencies to: 1) reduce regulatory conflicts, 2) ensure consistent enforcement of regulations, and 3) reduce costs and difficulty of meeting regulatory compliance	<ul style="list-style-type: none"> Number of projects implemented that comply with state and federal regulations Number of collaboratively developed plans, assessments, and studies
Goal 5: Support efforts to improve public safety	
Objectives	
5.1 Promote regional and interregional collaboration and planning to improve emergency preparedness and emergency response for drought, wildfire, flood, and other disaster events	<ul style="list-style-type: none"> Number of collaboratively developed plans, studies, and assessments Number of stakeholders collaborating in interregional emergency response Number of planning efforts resulting in project implementation Decrease in flood insurance rates and risks Increased level of drought, wildfire, and/or flood protection provided Miles of levees constructed or improved Number of projects implemented
5.2 Support integrated flood management to protect public safety and provide other benefits, such as improved floodplain functionality, habitat protection, recreation, and economic development	<ul style="list-style-type: none"> Number of collaboratively developed plans, studies, and assessments Number of stakeholders collaborating in interregional emergency response Decrease in flood insurance rates and risks Increased level of flood protection provided Miles of levees constructed or improved Number of projects implemented
5.3 Support efforts to improve Yuba County levees to achieve the state's Urban Level of Flood Protection (ULOP) requirement to provide 200-year levees to	<ul style="list-style-type: none"> Miles of levees improved Number of projects implemented

urban areas	
5.4 Reduce flood risk in rural/agricultural areas through a combination of structural and nonstructural actions	<ul style="list-style-type: none"> Increased level of flood protection provided Miles of levees constructed or improved Number of projects implemented Number of acres protected
5.5 Support healthy forest initiatives to reduce the threat of wildfire	<ul style="list-style-type: none"> Number of collaboratively developed plans, studies, and assessments Number of planning efforts resulting in project implementation Increased level of wildfire protection provided Number of projects implemented
5.6 Support collaborative efforts with the Yuba County Watershed Protection & Fire Safe Council and other entities to increase wildfire protection levels and promote watershed health	<ul style="list-style-type: none"> Number of collaboratively developed plans, studies, and assessments Number of planning efforts resulting in project implementation Increased level of wildfire protection provided Number of projects implemented
Goal 6: Address climate vulnerabilities and reduce greenhouse gas emissions	
Objectives	
6.1 Support efforts to reduce greenhouse gas emissions in the region, particularly those related to water management operations	<ul style="list-style-type: none"> Tons of carbon sequestered or emissions avoided Number of collaboratively developed plans and assessments Number of projects implemented
6.2 Improve data, modeling, and technical analyses to better understand the impacts of climate change on regional and interregional water supply and watershed health	<ul style="list-style-type: none"> Data management improved WEAP model developed and expanded throughout the region Technical analytical capacity increased
6.3 Increase system flexibility and resiliency to adapt to climate variability	<ul style="list-style-type: none"> Number of collaboratively developed plans, studies, and assessments Number of projects implemented Number of adaptive strategies implemented in the region and interregionally Number and frequency of monitoring, sampling, and analysis
6.4 Promote alternative energy and energy efficiency throughout the region	<ul style="list-style-type: none"> Kilowatts of renewable energy production capacity created Tons of carbon sequestered or emissions avoided Number of projects developed or implemented
6.5 Promote education about climate change and its impacts on water management and watershed health throughout the region	<ul style="list-style-type: none"> Number and diversity of people reached Number and diversity of outreach materials developed Measurable changes in knowledge or behavior
6.6 Promote regional and interregional collaborations to implement climate change adaptive management strategies	<ul style="list-style-type: none"> Number of adaptive strategies implemented in the region and interregionally Number and diversity of stakeholders participating in regional discussion forums, such as the Sierra Water Work Group
Goal 7: Promote equitable distribution of resources to disadvantaged communities and Tribes across the region	
Objectives	
7.1 Support DAC and Tribal project development/implementation activities by providing ongoing	<ul style="list-style-type: none"> Number of projects developed or implemented Number and diversity of people reached

outreach, proposal, and funding development assistance and training	<ul style="list-style-type: none">▪ Number and diversity of outreach materials developed▪ Number of trainings conducted▪ Number of collaboratively developed plans, studies, and assessments▪ Number of planning efforts resulting in project implementation
7.2 Prioritize ongoing participation of DACs and Tribes in the Regional Water Management Group	<ul style="list-style-type: none">▪ Number and diversity of people reached▪ Number of projects developed or implemented▪ Number of DACs and Tribes actively participating on the RWMG▪ Number and diversity of outreach materials developed
7.3 Promote regional education and outreach in collaboration with DACs and Tribes	<ul style="list-style-type: none">▪ Number and diversity of people reached▪ Number and diversity of outreach materials developed▪ Number of trainings conducted