

# SAN JOAQUIN RIVER RESTORATION PROGRAM

## RESTORATION ADMINISTRATOR

### 2015-16 ANNUAL REPORT

April 2016

## 1 Introduction & Context

This Annual Report on the status of the San Joaquin River Restoration Program (SJRRP or Program) is prepared in accordance with the Stipulation of Settlement filed September 13, 2006 in the case of NRDC, et al., v. Kirk Rodgers, et al. Pursuant to the Stipulation of Settlement (Settlement), the annual report shall include a summary of settlement implementation activities of the previous year, findings of research and data collection, any additional recommended measures to achieve the Restoration Goal, a summary of progress and impediments in meeting targets established pursuant to Settlement Paragraph 11 (Paragraph 11), and a summary of expenditures from the Restoration Administrator (RA) Account.

For a variety of reasons, a 2015 report was not released on schedule. Therefore, Program accomplishments for both 2015 and 2016 are included herein.

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## Appendix A: Challenges and Responses from Previous Years

## 2 Overview of 2015

The winter and spring of 2014-2015 continued to provide challenging conditions for the San Joaquin River and the SJRRP in the form of continuing drought; the winter and spring of 2014 – 2015 was even drier than the prior winter and spring. The unimpaired runoff in water year 2015 was the lowest in the instrumental record (327 thousand acre-feet (TAF)), and 4<sup>th</sup> consecutive very dry water year for the River. 2015 was classified as a Critical Low year, and as a result, no Restoration Flow was allocated or released to the San Joaquin River in 2015. However, there was a release from Friant Dam to meet the demands of the Exchange Contractors; thus irrigation deliveries connected the river between Friant Dam and Mendota Pool during July and August of 2015. The 2015 Exchange Contractor “call” on the San Joaquin River was the second (2014 and 2015) since the execution of the Exchange Contract in 1939 and completion of Friant Dam and the Delta Mendota Canal. Additionally, in 2015 the Friant Division water contractors received a water supply allocation of zero from Millerton Reservoir, also the second (2014 and 2015) such occurrence since the completion of Friant Dam.

Similar to 2014, the drought-related challenges placed a large demand on the time and attention of Program staff. However, while the drought placed many demands on the Program, the Program did manage to continue to move forward on several important milestones as further described in subsequent sections.

## 3 Overview of 2016

The winter of 2015-2016 started dry and became wetter; ultimately the total unimpaired runoff in the 2015-16 Water Year was 1301 TAF, classified in the Settlement as a Normal-Dry Year. Coming off of a fourth year of dry or drought conditions, there was heightened concern that that a fifth year of drought could replicate the conditions of 2014 and 2015, including an Exchange Contractor call on the San Joaquin River and a minimal Restoration Flow Allocation. As a result, the Program provided the RA a “provisional” Allocation on January 29<sup>th</sup>, for the month of February only. On March 18<sup>th</sup>, after a series of storms shifted the perception of runoff from one of continued drought to one of potential flood control releases, the Program finally provided a proper Allocation, designating a Normal-Dry year type. Updated Allocations were provided in April, May, July and September, all retaining a Normal-Dry year type designation. Although there was lingering uncertainty regarding potential deliveries to the Exchange Contractors from Friant Dam (associated with Delta pumping restrictions and San Luis Reservoir low point issues), Restoration Flows attenuated by channel constraints did continue throughout 2016.

About the time of the March 18 Restoration Flow Allocation, the Program was alerted to evidence of the presence of kangaroo rats in Reach 4A. As Fresno and Tipton kangaroo rats are federally and State-listed endangered species (other kangaroo rat species present in the area are not listed under the federal or state Endangered Species Acts (ESAs)), the Program decided to conduct surveys to ensure environmental compliance before releasing flows past Sack Dam and proceeding with other projects in the downstream reaches. The kangaroo rat operational constraint was removed in June, as extensive trapping resulted in the discovery of no listed species of kangaroo rats. However, the Bureau of Reclamation’s (Reclamation) maintenance project near Sand Slough commenced June 1, and required a dry channel until late August.

Acquisition of seepage easements nominally sufficient to relieve the river flow constraint (below Sack Dam) to 300 cfs were delayed repeatedly during the year, but were finally obtained in October of 2016.

In the fall of 2016, the San Joaquin River was hydrologically connected by Restoration Flows from Friant Dam to the Delta, for the first time since 2011. Although the river had been connected with Interim Flows in 2010 and 2011, connected with flood control releases in various wet years, and partially connected (from Friant Dam to Mendota Pool) with Interim Restoration Flows, the full connectivity with Restoration Flows marks a significant milestone in Settlement implementation. Other than unique circumstances or Critical year types, the river should remain hydrologically connected into the future.

Despite the full connectivity, Restoration Flow releases continue to be limited by groundwater levels and related seepage concerns and as of the date of this report, the highest allowed Restoration Flow release below Sack Dam has been 90 cfs. Additional channel improvements and securing of additional seepage easements will allow increased Restoration Flows through time.

## 4 Assessment of SJRRP Progress during 2015-2016

This Section provides an overview of specific milestones and accomplishments, progress towards meeting Paragraph 11, 13 and 14 requirements, and overall program challenges.

### **Specific Milestones and Accomplishments during 2015**

The Program is moving forward on a wide array of projects and activities concurrently. The SJRRP web site (<http://www.restoresjr.net/>) provides a snapshot of the work in progress and products of the Program. Some of the key Program milestones and accomplishments include:

- On April 18, 2015 the Program achieved a release of 54,000 juvenile spring-run Chinook salmon into Reach 5 of the San Joaquin River, downstream of the major physical passage impediments. Some of the San Joaquin fish were recovered in the Delta, verifying the survival of at least some fish moving downstream from the release points. This release represents a substantial milestone for the Program and a large step forward in meeting Settlement Paragraph 14 requirements. Although spring-run Chinook will require a high degree of human intervention for survival for the next few years (continued reliance on trap-and-haul techniques), completion of a connected river within the next few years will allow progressively more natural migration.
- The Program undertook trap-and-haul of juvenile fall-run Chinook salmon during the spring of 2015 with mixed success, with trapping in Reach 1 and release in Reach 5. Several different trapping locations and methodologies were tested, and subsequent juvenile collection efforts for 2016 will hopefully have improved results.
- The Program undertook trap-and-haul of adult fall-run Chinook salmon during the fall of 2015, and translocated 890 fall-run adults into Reach 1 of the San Joaquin River. Various monitoring

activities including tagging, habitat utilization and spawning success were undertaken for the translocated fish.

- The Program promulgated a Final Updated Framework for Implementation (Framework) document, which includes then-current and realistic cost, schedule, and funding assumptions. Multiple internal and external stakeholder meetings were held over the course of 18 months to solicit input and comments on the Updated Framework.
- The Program completed and published the Fiscal Year 2015 Annual Work Plan.
- A 2015 Channel Capacity Report was published by the Channel Capacity Advisory Group (CCAG) to determine and update estimates of then-existing channel capacities in the Restoration Area, to ensure Restoration Flows would be kept below levels that would increase flood risk.
- The National Marine Fisheries Service (NMFS) completed and released the 2015 Technical Memorandum that outlined the spring-run Chinook salmon release and monitoring plans, plus methodology for identification of spring-run Chinook salmon outside of the San Joaquin River.
- CDFW completed and adopted the Final Environmental Impact Report for the Salmon Conservation and Research Facility.
- In 2015 the Program completed a flowage easement for 53.31 acres, the last of the 8 flowage easements (aside from 4 corrections done in 2016) that allowed for flows down the Eastside Bypass. In November of 2014 the Program concluded acquisition of a seepage easement on 4,500 acres and a fee title purchase of 400 acres.

### **Specific Milestones and Accomplishments during 2016**

Some of the key Program milestones and accomplishments for 2016 include:

- The San Joaquin River was fully connected in mid-October, with Restoration Flows from Friant Dam to the Merced River confluence. Although Restoration Flows formally commenced in 2014, because of the dry conditions in 2014 and 2015 no Restoration Flows were allocated or released in either of those years. Restoration Flows were released consistently through 2016 beginning in late March, but downstream operational and seepage constraints prevented hydrologic connection until approximately mid-October of 2016. Because a variety of water users and facility operators utilize the river for water deliveries, drainage, or flood control between Friant Dam and the Merced River, numerous operational and coordination challenges were encountered and resolved to achieve a connected river and somewhat consistent flow levels. Overall, the Program was successful in undertaking that coordination and in obtaining cooperation from other river users.
- The Program undertook the sale and exchange of 150,000 AF of Unreleased Restoration Flows (URF's) in 2016. Although URF's are generated due to the inability of the Program to send full Restoration Flows down the river as directed by the Settlement, the successful disposition of

the URF's to the benefit of the Program required considerable effort in terms of compliance, coordination and contracting by the Program. Sales of URF provided revenue of \$9.687M for supporting the Restoration Goal. URF Exchanges secured approximately 13 TAF of water for use by the Program in the future.

- The Program released 104,202 juvenile spring-run Chinook salmon into Reach 5 of the San Joaquin River, of which 45,000 were produced at the Program's Interim Salmon Conservation and Research Facility (iSCARF) and the balance were sourced from the Feather River Fish Hatchery. This third annual release (and first from the iSCARF) continues continued Program efforts towards meeting Settlement Paragraph 14 requirements. Releases in Reach 5 are downstream of the major physical passage impediments.
- The Program undertook trap-and-haul of juvenile fall-run Chinook salmon during the spring of 2016 with mixed success, with trapping in Reach 1 and release in Reach 5. Several different trapping locations and methodologies were tested with only a modicum of success. In total, just over 2,000 Chinook juveniles were trapped and transported, well short of sufficient numbers to provide meaningful population support. Meanwhile, over 35,000 fish of other species were trapped. High predation of juvenile salmonids, and challenging collection locations and conditions are potentially implicated in the low salmonid trapping success levels. Additional studies will likely be conducted in future years to further refine understanding of juvenile trapping options.
- The Program undertook trap-and-haul of adult fall-run Chinook salmon during the fall of 2016, and translocated more than 613 fall-run adults into Reach 1 of the San Joaquin River. Various monitoring activities including tagging, habitat utilization and spawning success were undertaken for the translocated fish.
- The Program completed and published the Fiscal Year 2016 Annual Work Plan.
- A 2016 Channel Capacity Report was published by the Channel Capacity Advisory Group (CCAG) to determine and update estimates of then-existing channel capacities in the Restoration Area, to ensure Restoration Flows would be kept below levels that would increase flood risk.
- NMFS completed and released the 2016 Technical Memorandum that outlined the spring-run Chinook salmon release and monitoring plans, plus methodology for identification of spring-run Chinook salmon outside of the San Joaquin River.
- The Program completed the Record of Decision (ROD) for the Reach 2B Improvements Project, completed 100% design for the Columbia Canal Intake and Siphon in fall 2016, completed 30% design of the Compact Bypass and moved towards 60%+ design of the Compact Bypass.
- CDFW awarded a construction contract for the SCARF. Construction is slated for 2017.
- In 2016 the Program completed transactions for 675 acres of seepage easements and 4 flowage easement corrections.

## Progress toward Achieving Paragraph 11 Requirements during 2015-2016

Paragraph 11 identifies required channel and structural improvements that must be developed and implemented to fulfill the Settlement. Sub-paragraph 11(a) identifies the highest priority (Phase 1) improvements, and sub-paragraph 11(b) identifies Phase 2 improvements, which are also high priority improvements, but whose implementation is not to delay completion of Phase 1 improvements. It was anticipated that the Paragraph 11(a) improvements could be developed and implemented in accordance with the milestone dates included in Exhibit C of the Settlement.

Paragraph 11(a) identifies ten separate projects/actions (in subsections 11(a) (1) through 11(a)(10)) that were to be completed by December 31, 2013, subject to Paragraphs 21(c), 24, 36, and other provisions of the Settlement. By December 31, 2016, none of the ten projects/actions set forth in Paragraph 11(a) were completed.

Many planning, permitting, design and stakeholder outreach tasks required for implementation of the Paragraph 11(a) projects have been completed, as documented herein, in previous Annual Reports, and on the SJRRP web site. The Updated Framework mentioned above includes a schedule for when the Paragraph 11(a) projects will be completed, given the current status of work, anticipated funding levels in future years, and known challenges to implementation. Key construction actions described in the Framework are included in Table ES-1, below, reproduced from the Updated Framework (see [http://www.restoresjr.net/wp-content/uploads/Revised-Framework\\_Final\\_20150729.pdf](http://www.restoresjr.net/wp-content/uploads/Revised-Framework_Final_20150729.pdf))

**Table ES-1. Schedule of Key Construction Actions**

2015-2019	2020-2024	2025-2029	2030+
Goal: 1,300 cfs Capacity in all Reaches	Goal: Increased Capacity	Goal: Phase 1 Projects Complete	Goal: All Remaining Projects
<ul style="list-style-type: none"> <li>• Friant-Kern Capacity Restoration</li> <li>• Madera Canal Capacity Restoration</li> <li>• Mendota Pool Bypass</li> <li>• Temporary Arroyo Canal Screen and Sack Dam Passage</li> <li>• Conservation Facility</li> <li>• Seepage Projects to 1,300 cfs</li> </ul>	<ul style="list-style-type: none"> <li>• Financial Assistance for Groundwater Banks</li> <li>• Reach 2B</li> <li>• Arroyo Canal and Sack Dam</li> <li>• Reach 4B Land Acquisition</li> <li>• Seepage Projects to 2,500 cfs</li> <li>• Levee Stability to 2,500 cfs</li> </ul>	<ul style="list-style-type: none"> <li>• Reach 4B</li> <li>• Salt and Mud Sloughs</li> <li>• Chowchilla Bifurcation Structure Modifications</li> <li>• Highest Priority Gravel Pits</li> <li>• Seepage Projects to 4,500 cfs</li> <li>• Levee Stability to 4,500 cfs</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing Operations and Maintenance</li> </ul>
<p>Note: cfs = cubic feet per second</p> <p>1. The Revised Framework is primarily focused on activities necessary to plan, permit, design and construct major physical project elements of the SJRRP.</p>			

The 2015 Framework is intended to provide a common vision for implementation of key Program construction elements, including project prioritization, a schedule, and budget based on current (2015)

circumstances. Subsequently, quarterly update meetings and the Program's Annual Work Plan can identify and address deviance from the priorities, schedule, and budget in the Framework.

Program activities in 2015 and 2016 continued to be primarily focused on planning, although some project elements (for example, portions of the 2B project and the SCARF) moved ahead in to design, and the program undertook various land acquisition actions either to secure lands for construction or to secure seepage easements. Construction on both the first major Paragraph 11 project (project 11(a)(1), the Compact Bypass and associated facilities) by the Program, and the SCARF by CDFW, is slated to begin in late 2017.

### **Progress toward Achieving Paragraph 13 Requirements during 2015-2016**

Settlement Paragraph 13 (Paragraph 13) and Exhibit B of the Settlement outline Restoration Flow requirements, and Restoration Flows formally commenced on January 1, 2014. Unfortunately, severe drought conditions in 2014 and 2015 resulted in a zero Restoration Flow allocation for the Restoration Program.

Despite initially dry conditions and several operational challenges, the Program did release Restoration Flows in 2016, and achieved a fully connected river with Restoration Flows between Friant Dam and the Merced River. As described previously, various operational constraints (including seepage limitations, the potential for endangered kangaroo rats in the river channel, and various maintenance projects in the river channel) necessitated the recapture of Restoration Flows at Mendota Pool for a significant portion of the year. A "fully connected" river (with Restoration Flows from Friant Dam to the Merced River confluence) did occur by mid-October of 2016.

A variety of water users and facility operators utilize the river for water deliveries, drainage, or flood control between Friant Dam and the Merced River; many conduct operations year-round. Numerous operational and coordination challenges were encountered and resolved in order to effect a connected river and somewhat consistent flow levels; however the Program was successful in coordinating and obtaining cooperation from other river users.

### **Progress toward Achieving Paragraph 14 Requirements during 2015-2016**

Settlement Paragraph 14 and the enabling Federal legislation require completion of several actions by the NMFS and the U.S. Fish and Wildlife Service (USFWS) relating to reintroduction of fall-run and spring-run Chinook salmon.

The Program has completed several tasks and activities that are necessary to effect a long-term reintroduction (including progress towards construction of a conservation hatchery, permits for capture and relocation of spring-run Chinook salmon brood stock for the conservation hatchery, and designation of a nonessential experimental population under Section 10(j) of the Endangered Species Act). However, the success of the long-term reintroduction hinges to a large degree on the successful completion of the physical channel modifications pursuant to Paragraph 11 (as described above). As envisioned in the

Settlement, initial runs of spring-run and fall-run Chinook would be established while Interim and Restoration Flow releases occurred, and as improvements to channel and other infrastructure were completed. The Restoration Goal is based on the premise of achieving volitional fish movement in a connected flowing river.

Pending completion of the Paragraph 11 modifications, the Program is undertaking interim measures to continue the process of reintroduction, build fish stocks, and to continue to glean valuable monitoring data to further inform future adaptive management actions. Specifically, in 2015 -2016:

- The Program continued to develop brood stock at the interim Salmon Conservation and Research Facility, utilizing selected foundation stock from the Feather River Fish Hatchery. An initial cohort of fish born at the interim facility was released in 2016.
- The Program selected, transported and released 54,000 young-of-the-year spring-run Chinook from the Feather River Fish Hatchery to the San Joaquin River in 2015, and 104,202 in 2016 of which 45,000 were born and raised at the Interim SCARF and the balance were from the Feather River Fish Hatchery. These initial releases of juvenile spring-run to the San Joaquin River capped several years of study, permit and preparatory work. All of the released fish were marked with coded wire tags, and recapture of a few juveniles well downstream from the release point indicates that at least some of the fish successfully emigrated from the San Joaquin River. Depending on downstream and ocean conditions, it is estimated that spring-run from each release batch could return to the San Joaquin River in two to three years' time.
- The Program made progress in the important step of increasing the genetic diversity of the Program spring-run Chinook broodstock by coordinating with regional fisheries managers and further investigating permitting requirements necessary to supplement Program broodstock with sources other than Feather River Fish Hatchery.
- The Program continued to evaluate a temporary (a few years) trap-and-haul program to move adult and juvenile salmonids up and down the river until sufficient river connectivity is established to allow consistent volitional movement. The 2015 and 2016 trap-and-haul effort had mixed success. Although the adult trap-and-haul effort had good success (moving over 890 adult fall-run fish with very low mortality were translocated in 2015, and over 613 in 2016), the juvenile trap-and-haul effort was confounded by drought year flows and relatively low capture rates. The juvenile effort will be revisited in 2017 and beyond, and may experiment with revised trap locations and techniques to refine and test improved techniques.
- The Program undertook a Fisheries Framework process to complement the Framework for Implementation. This Fisheries Framework establishes a realistic schedule for implementation of the fisheries management actions in the SJRRP based upon the best available science and information. Specifically, this Fisheries Framework provides guidance to the SJRRP Implementing Agencies USFWS, NMFS, Reclamation, California Department of Fish and Wildlife (CDFW), and California Department of Water Resources (CDWR), to implement



the fisheries components of the Settlement. The Framework contains a description of: (1) goals and objectives for establishing spring-run and fall-run Chinook salmon populations in the Restoration Area; (2) habitat and ecosystem conditions that will support naturally reproducing, self-sustaining salmon populations; (3) the scientific foundation for the planned management actions; and (4) a proposed Adaptive Management process and implementation plan. The Fisheries Framework is scheduled for completion in early 2017.

## 5 Findings of Research and Data Collection

In the past few years, the SJRRP Implementing Agencies typically performed 40 to 60 technical studies per year, with many of those studies being multi-year, multi-disciplinary or multi-agency efforts.

In 2015 and 2016, considerable effort was invested in biological monitoring of Chinook salmon. Adult and juvenile trap and haul efforts were conducted to both test the efficacy of trap and haul techniques, and to provide fish for in-river studies. Associated studies and monitoring included redd surveys and escapement surveys (adults), redd capping and monitoring to evaluate egg to emergence success, and rotary screw trapping in addition to juvenile collection efforts to gauge movement timing, survival and capture efficiency. In addition, a VAKI riverwatcher system was deployed in Reach 5 in 2016 to monitor for returning spring-run Chinook. In addition, 25 adult spring-run acoustic tagged Chinook (15 males and 10 females) from the interim Salmon Conservation and Research Facility (SCARF) were released into Reach 1 in August of 2016, and redds from those fish were monitored until high runoff made continued monitoring impossible.

Detailed reports for most of the biological monitoring and study efforts can be found in California Department of Fish and Wildlife (CDFW) or Program annual reports, Program updates, and under the “Monitoring Data” section of the Program website (<http://www.restoresjr.net/monitoring-data/>).

In the past, the SJRRP has compiled Mid-Year and/or Annual Technical Reports to document and present the results of technical studies; the reports are posted to the SJRRP web site (at <http://restoresjr.net/flows/index.html>). The 2016 Monitoring and Analysis Plan (2016 MAP, planning for which was completed in 2015) summary is posted at (<http://www.restoresjr.net/monitoring-data/monitoring-and-analysis-plan/>).

In addition to online materials, in 2015 the Program hosted the first of what will likely be periodic Science Meetings. Over the course of two days (June 11-12), Program researchers and scientists presented 35 talks on a variety of subjects and disciplines. The meeting was attended by over 100 Program staff and Program stakeholders, and was a very successful data sharing and knowledge transfer program. Summaries of presentations are available at <http://www.restoresjr.net/monitoring-data/science-meeting/>.

The second Science Meeting was held over the course of three days during August 17-19, 2016. Again, a diverse selection of researchers and subjects spanned the diversity of science and data that the program is collecting. Additionally in 2016, scientists working on related portions of the greater San Joaquin watershed (adjacent river basins, or the San Joaquin Delta) presented on topics that were related to

Restoration Program efforts. Abstracts can be found at <http://www.restoresjr.net/monitoring-data/science-meeting/>.

The Program has amassed a tremendous body of data, research, analysis, results and reports – and, is struggling with management of the material. Most Principal Investigators (PI's) have a firm grasp on the data and work products from their studies and freely furnish data and work products within the program, but those products are not necessarily broadly known within or outside of the program and not necessarily immediately available to a more casual user (e.g., materials are not necessarily searchable or available on the web, only by direct contact with the PI). The Program is considering data management systems and techniques, but has not yet committed to the needed wholesale restructuring of data warehousing.

## 6 Challenges for 2017 and Beyond

### **Mandate to Mitigate**

The SJRRP is ambitious and extensive (as evidenced by the suite of Paragraph 11 (a) projects to be undertaken by the Program). However, the Program is also charged with mitigating the impacts of the Program, including not only the Paragraph 11 (a) improvements, but also the Paragraph 13 flows and Paragraph 14 Restoration Actions. The San Joaquin River Restoration Settlement Act (Act) specifies, at Sec 10004 (d):

*Prior to the implementation of decisions or agreements to construct, improve, operate, or maintain facilities that the Secretary determines are needed to implement the Settlement, the Secretary shall identify: (1) the impacts associated with such actions; and (2) the measures which shall be implemented to mitigate impacts on adjacent and downstream water users and landowners.*

Additionally, at Sec 10004 (h)(3):

*The Secretary shall reduce Interim Flows to the extent necessary to address any material adverse impacts to third parties from groundwater seepage caused by such flows that the Secretary identifies based on the monitoring program of the Secretary.*

Reclamation has interpreted these provisions to require avoiding impacts from Program implementation on current irrigation, agriculture, and flood control needs rather than the irrigation, agriculture and flood control users accommodating river restoration. This has led to cost consequences that may not have been fully envisioned at the crafting of the Settlement and Act, such as:

- While the suite of required construction projects and flows necessary for the success of a restoration program were studied prior to the crafting of the Settlement, the full suite of potential impacts, the extent of seepage, and the required mitigation were not fully understood nor budgeted for, and
- Assessing the *potential for* impacts is often highly subjective and includes both tangible and intangible elements, and is very costly in time and financial resources.

In many instances, the best way to assess impacts would be to implement the SJRRP action, then monitor the specific actual effects of the SJRRP to identify appropriate mitigation. However, the Program is generally taking the approach of mitigation impact avoidance, which has almost universally required a much more conservative (and costly) implementation. For example, Reclamation estimates that the Program may require mitigation of seepage impacts on as much as 23,000 acres of agricultural land, even though Section 10004(h)(3) only applies to Interim Flows and Restoration Flows that result in lower flows than would have occurred prior to the construction of Friant Dam or during flood control releases. On the current cost trajectory, mitigation of seepage impacts through purchase of easement or construction of projects (e.g. interceptor lines) may cost between \$200M and \$400M over the life of the Program. In addition, monitoring during the implementation of the program (operation of 125+ monitoring wells) and potential for long-term monitoring for the duration of the Program will add millions more in costs. Of note, updates to the Seepage Management Plan currently in progress will make assessment of seepage impacts somewhat less conservative and may allow more flexible water release operations, but will still require permanent mitigation for the full potentially impacted acreage.

In addition to mitigating impacts to water users and landowners, the Program is accruing many construction-related and permanent operations and monitoring mitigation commitments through numerous extensive environmental review and permitting processes.

The environmental review process generally "...includes activities necessary to demonstrate that all potential project-related impacts to the human, natural, and cultural environment are identified; effects of those impacts are taken into consideration (among other factors such as economic or community benefits) before a final decision is made; the public is included in that decision-making process; and all state, tribal, or federal compliance requirements applicable as a result of the project's environmental impacts are, or will be, met."<sup>1</sup>

In addition to environmental review, all of the major Paragraph 11 projects and facilities will include extensive permitting and coordination with a variety of jurisdictional entities, including:

- US Army Corps of Engineers (Section 404, 408 Permits)
- National Marine Fisheries Service (ESA Sec. 7 Consultation, NEPA Compliance)
- US Fish and Wildlife Service (ESA Sec. 7, NEPA Compliance, FWCA Compliance)
- State Historic Preservation Office (NHPA Sec 106 Consultation)
- US Coast Guard (Bridge Permit)
- Central Valley RWQCB (CWA Sec 401 Certification)
- SWRCB (Water Rights, Sec 402 Permit)
- CDFW (CESA Sec 2081 Determination, 1602 Streambed Permit)
- CVFPB (CCR Title 23 Encroachment Permit)
- State Lands Commission (State Lands Lease)
- San Joaquin Valley APCD (Clean Air Act consistency)
- Various County building and encroachment permits

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<sup>1</sup> Luther, L. April 2012. The Role of the Environmental Review Process in Federally Funded Highway Projects: Background and Issues for Congress. Congressional Research Service, Washington, D.C.

The following is a list of long-term and permanent (i.e. not just planning or construction construction-related) commitments by the Program included in the Record of Decision for the Program:

- Monitor erosion and perform maintenance and/or reduce Interim and Restoration flows as necessary to avoid erosion-related impacts. On-going monitoring of levee conditions, including observations for erosion, seepage, boils, impaired emergency levee access, or other indications of flood risk. Field surveys of potential erosion sites would be conducted annually. This is a permanent obligation.
- Flow monitoring at seven permanent gauges plus flow event monitoring in perpetuity.
- Implement seepage management plan; current operations include operation of over 125 groundwater monitoring wells, and construction of projects and/or purchase of easements to protect between 18,000 and 23,000 acres of farm land. This will occur only during implementation of Program.
- Implement the channel capacity group, including monitoring and assessment actions. This will occur only during implementation of Program.
- Long-term vegetation monitoring and management actions, during implementation of Program.
- Long-term spawning gravel monitoring and enhancement actions, during implementation of Program.
- The project proponent would mitigate trout fishing opportunities lost as a result of the Program “...by enhancing public fishing access and trout populations on the Kings River below Pine Flat Dam” during implementation of Program.
- The project proponent would mitigate warm-water fishing opportunities that may be lost as a result of the Program “...by enhancing remaining warm-water fishing opportunities or creating new opportunities in the vicinity” during implementation of Program.
- The Program committed to preserve agricultural productivity; to do so, Reclamation will, as necessary, either (1) acquire agricultural conservation easements at a 1:1 ratio, or (2) provide provision of funds to a land trust or government program that conserves agricultural land sufficient to obtain easements on comparable land at a 1:1 ratio.
- Implement a Recreation Outreach Program.
- Biological monitoring (e.g. steelhead monitoring, monitoring for returning adult spring-run, etc.)
- Implement a monitoring and maintenance plan for 10 years after completion of the final phase of the Program.

Construction-related mitigation and monitoring is extensive. Potentially substantially costly measures will likely include:

- Securing 1,270 acres of giant garter snake mitigation habitat
- Address impacts to Swainson’s hawk where projects include a state partner, or under the Migratory Bird Treaty Act.
- Implement project-specific mitigation and monitoring – for example, the “Environmental Commitment Plan and Tracking Program” for the Reach 2B improvements (pursuant to Paragraph 11(a)) runs 55 pages.

Overall, mitigation of the “impacts” of the Restoration Program will total hundreds of millions of dollars, take decades to implement, and will result in further monitoring and potential additional mitigation measures in the future.

The “mandate to mitigate” included in the Act is probably the primary driver of the schedule, time and cost challenges described below.

### **Schedule**

A slipping schedule continues to be a challenge for the Program; in fact several near-term (next five years) milestones from the July 2015 Framework schedule have already slipped. Factors that contribute to this challenge include the expansive mitigation obligation, design challenges and complexities, and the cautious and conservative approach utilized by the implementing agencies – all described previously.

While the Program and Implementing Agencies may experience various direct (e.g. congressional criticism) or indirect repercussions (e.g. negative press) repercussions for missing schedule milestones, there are certainly no penalties for missing milestones for stakeholders who are neither Settling Parties nor Implementing Agencies. It is difficult to accurately gauge the gauge or balance the need for a schedule adjustment versus the “cost” (in terms of direct or indirect repercussions) of the schedule adjustment; as a result, schedule slippage tends to be the default within the Program.

### **Costs**

The costs of the Program continue to escalate, both as a result of delays, mitigation complexities, design complications, increases in land acquisition costs, and the compounding commitments described previously.

### **Land Impact and Procurement Issues**

The Program will need to procure, mitigate, or secure thousands of acres of land in fee, via easement, or as some sort of mitigation. Mitigation for seepage impacts (up to 20,000 + acres assessed, easement procured and/or otherwise mitigated), land for construction (10,000 acres plus, depending on alignments, in fee or for construction access), and land for mitigation (potentially several thousand acres for agricultural lands preservation and giant garter snake habitat mitigation). In total, land payments to secure fee title, easements, or to address mitigation obligations will total hundreds of millions of dollars. The federal process for valuing and securing land or easements is exacting and slow; the vast area to be addressed in some way by the Program will make this a formidable challenge for the duration of the Program.

### **Funding Challenges**

The Program potentially faces future funding challenges, depending of course on the final cost and timing of Program implementation. Under current cost and revenue estimates (as included in the 2015 Framework), costs exceed funding levels for the full implementation of the Program. Additionally, mounting commitments (as described above), and the potential for reduced annual appropriations for the Program could further exacerbate cost/funding disparities. This is potentially a challenge for the next several years of the Program.

## **Notice of Dispute**

On December 21, 2016 the Friant Water Authority (FWA) filed a notice of dispute and request to pursue informal resolution with the Reclamation and the other settling parties related to implementation of the Settlement. The Federal and non-federal settling parties will work through the issues in dispute; depending on the outcome of those discussions there may or may not be additional challenge(s) for the Program.

## **Data Management**

The Program struggles to manage the large volume of data that is collected annually across the breadth of the Program, and to integrate newly collected data with all the data collected since the Program was initiated. Some data (flows, groundwater monitoring) is well-organized, accessible (via the program website), and current (monthly to real-time updates). Other data, particularly biological monitoring and study data, is often difficult to access and not available for long periods after collection (e.g. study reports may lag field data collection by many months). Successful integration of all Program data will become increasingly valuable as the Program moves from planning into design and implementation. In addition, improved public access to and understanding of Program data will be essential to help “tell the story” of the major projects being implemented and changes in operations so that stakeholders on the river are better able to become stewards of the restored system. Several data management initiatives have been discussed with Program staff, and various pilot efforts with subsets of data have been attempted to better organize and make data accessible, but a comprehensive solution would require a dedicated effort that engages experienced water and ecosystem data management and integration expertise to develop an interoperable Program database following open data principles wherever possible.

## 7 Recommendations (for Addressing Impediments)

In addition to carrying through on the balance of recommendations from prior years, the following are offered as recommendations that may address to some degree specific challenges faced by the Program described above:

### ***Mandate to Mitigate***

There is no single solution to this particular challenge; however, several tactics may help to reduce cost and time:

- The Program can elect to adopt a less conservative approach to mitigation. As mentioned earlier, addressing actual impacts as and after they occur (rather than attempting to model, then mitigate, for any potential impacts) should provide for a more focused mitigation effort. Using less conservative thresholds for potential impacts would also likely reduce the costs and delays associated with mitigation measures, such as less conservative seepage thresholds. The Act does not specifically command mitigation in advance of any impacts, only that the Secretary identify impacts and measures which shall be implemented to mitigate. While this tactic may have

additional risks to the Program (mostly from protests or the threat of legal action before mitigation can be effected), the overall benefits to the schedule and cost could be considerable.

- Congress mandated comprehensive mitigation for the Program. Congress should be constantly reminded of the nexus between mitigation, cost and schedule, particularly with regards to the need for additional funds for the Program.
- Additional clarity in communications to stakeholders. The Program holds great interest and promise for a diversity of stakeholders; in particular, the interest in seeing actual accomplishment of Settlement Paragraph 11, 13 and 14 projects and actions is of great interest. However, regular reminders of the need for and timeline of required mitigation will serve to help to explain the schedule and cost aspects of the Program.

### ***Schedule***

- Having firm and transparent schedules in place and available to the entire project team is an absolute requirement for schedule discipline. Dedicated staff should be empowered to track and maintain schedules for key projects. The Annual Work Plan and regular quarterly update meetings will assist in maintaining transparency and accountability. To the extent possible, identify and assign specific consequences of schedule slippage to better weigh the need to avoid schedule slippage.

### ***Costs***

Cost control will be a relentless challenge for the Program. Tactics for cost management should include:

- Strict prioritization. The Program should be in a constant mode of prioritization, and focus limited budget dollars on only the most essential projects. Projects or facilities to implement Settlement Paragraph 11, 13 or 14 obligations should take priority over expenditures to mitigate for impacts that have not yet accrued.
- Build to budget. To the extent that projects and facilities are designed by the Program or by contract to the Program, a specific budget target for every project component or facility should be imposed. The Program does not have the luxury of building the “best” project; it must settle for a functional project, stripped of any and all “bells and whistles”, to accomplish the most basic objectives of the Program. Similarly, mitigation expenditures must be “just enough” to mitigate for impacts using the most Program-favorable perspective as to what constitutes an impact.
- Need creative solutions to address mitigation demands. The Program should consider a “strategic review” of approaches to expensive mitigation obligations (e.g. seepage impacts), to ensure the most cost-favorable mitigation approach is utilized.

### ***Data Management***

The lack of “interoperable” data across data collection efforts (fish, flows, sediment, water quality, etc.) significantly limits the overall value of the technical studies to the long-term success of restoration efforts. SJRRP staff have tried very hard to move towards more open data, including pursuing outside funding (like FRGP, Prop 1, etc.) to catalyze a data integration effort – so far additional funds have not been secured. A

major challenge is wrangling the data from partner agency studies. At minimum, committing financial resources to a staffer or contractor to serve as a near fulltime “data wrangler” is needed to make this happen. The longer the Program waits, the harder this gets as technical staff across the partner agencies leave their positions or move on to the latest study and lose track of older data. It may be possible to invest a modest sum relative to cost of tech studies to date (maybe \$250k – a tiny fraction of the cost to collect all the data) on a contractor who “does data” and giving them some level of authority to help partner agencies deliver data could unlock huge value in all the data collected to date that could be integrated in open source dashboards that can be customized for use from executive level decision making to analyst level scientific experimentation.



## 8 Priority Tasks for 2017

The following are the primary tasks for the RA, supported by the Technical Advisory Committee (TAC), for 2017.

1. Provide flow prescriptions in a timely fashion, in consultation with TAC, to the Implementing Agencies and water interests, pursuant to and in conformance with the Settlement.
2. Identify a preferred 4B routing alternative. Complete RA analysis of this decision, and continue to work with the Program to effect a timely decision.
3. Push Program to revisit Framework; at a minimum revisit the schedule and revenue/cost tool to re-confirm the priority of projects in light of any cost or schedule changes.
4. Push Program to revisit the Seepage Management Strategy. It appears that the cost of purchasing seepage easements, combined with potential losses from the river via seepage and the cost to replace that water as required by the Settlement may suggest a different strategy with greater use of interceptors and flow return to the river.
5. Work with the Program and flood Interests to identify common interests and refine priorities, to ensure smooth coordination between Restoration Flows and flood control releases. Coordinate with these interests so that the anticipated spring and early summer flood releases due to the near record runoff can be released in a manner that advances Restoration goals while fulfilling flood management mandates.
6. Work with the TAC to suggest a 4B pilot program, to investigate sinuosity & vegetation in the 4B channel prior to construction of a permanent 4B routing solution. Design and implementation of a pilot program will help inform a 4B design.
7. Support implementation of organizational, scheduling, budgeting and other administrative improvements for the Program
8. Continue to provide timely comments on key Program documents, such as the Reach 4B environmental documents.
9. Promote the scoping and, if possible, initiation of a Program wide data integration effort
10. Promote and participate in a reconnaissance-level evaluation of summer and fall ecological flow thresholds in Reach 4 and 5 to inform RA flow targets in these downstream reaches to support the Restoration Goal

## 9 Specific RA and TAC Activities Completed During 2015 and 2016

The RA and TAC completed a variety of tasks during 2015-16 to support and contribute to SJRRP Implementing Agency efforts as required by the Settlement.

- 2015 was a Critical Low water year; accordingly the RA provided no Restoration Flow Recommendations for 2015.
- The RA provided Restoration Flow Recommendations throughout 2016, to respond to changing conditions and updated Restoration Flow Allocations.
- Monty Schmidt (NRDC) left the TAC, Peter Vorster (TBI) joined the TAC.
- RA transmittal of the RA 2014 Annual Report to the Settling Parties on April 1, 2015;
- The RA and the TAC were involved in numerous meetings and discussions regarding various Program initiatives, including:
  - Framework, Annual Work Plan, Quarterly Updates, Budget & Schedule standardization;
  - Draft Fisheries Framework;
  - MAP Panel and MAP studies review;
  - 2B Stakeholder process;
  - 4B Stakeholder process;
  - Drought planning;
  - Input on fisheries monitoring activities in response to drought operations;
  - Potential modifications to studies in response to drought conditions;
  - Input on policy issues surrounding drought operations;
  - Input on fisheries actions and fisheries management decisions related to drought operations;
  - Monitoring of releases to meet obligations to the Exchange Contractors;
  - Input on purpose and need for adult and juvenile trap and haul;
  - Participated in the 2015 and 2016 Science Symposiums
  - RFG meetings
  - Weekly flow management conference calls
  - Improvements in water year runoff forecasting

### Meetings Held or Attended by the RA and/or TAC and TAC Meetings Convened by the RA

The RA convened several TAC meetings and conference calls throughout 2015 and 2016:

- January 16, 2015;
- March 4, 2015;
- May 20, 2015
- July 15, 2015

- Sept 8, 2015
- Nov 4, 2015
- March 22, 2016
- May 24, 2016
- December 8, 2016

#### Bi-Monthly TAC Convened by the RA

Bi-Monthly coordination calls involving TAC members were convened to address restoration issues, updates on meetings recently attended by TAC members, and general program updates. These meetings (conference calls) were useful in improving coordination among TAC members, and occurred most weeks throughout 2015 and 2016.

#### RA Weekly Telephone Conferences with Alicia Forsythe (SJRRP Program Manager)

The RA met via telephone on Monday mornings for between 30 minutes and one hour with Alicia Forsythe (SJRRP Program Manager) throughout the year to discuss upcoming events, program schedule, emerging issues, coordination of efforts and other matters.

#### RA and TAC Member Participation in Regular Water Quality, Monitoring and Flow Scheduling Conference Calls

The SJRRP initiated regular conference calls involving the Implementing Agencies, Settling Parties and RA/TAC to address water quality, flow monitoring and flow scheduling issues. These meetings contributed to improving communication between the various SJRRP participants on a range of flow scheduling and monitoring needs and activities.

#### RA Participation in Bi-Monthly Specific Project Team Meetings

Either the RA or designated TAC representative(s) attended bi-monthly Reach 2B and Reach 4B Team meetings either in person or by phone to stay current on progress and issues relating to these major program construction projects.

#### RA Participation in Monthly Settling Party Consultation Meetings

The RA attended Settling Party Consultation Meetings convened through 2015 and 2016. These meetings included the Program Manager and representatives of the Settling Parties and Implementing Agencies. These meetings focused on significant policy issues that needed the attention of SJRRP participants.

#### SJRRP Technical Work Group Meetings Attended by the RA

In 2015 and 2016 the RA and/or members of the TAC participated in numerous technical work group and technical feedback meetings:

- the Seepage Management Technical Work Group (quarterly throughout 2015 and 2016)
- the Restoration Goal Technical Feedback Work Group (quarterly throughout 2015 and 2016)

- Water Management Goal Technical Feedback meeting (approximately quarterly throughout 2015 and 2016)
- The RA participated as available in Fisheries Management Workgroup monthly meetings
- The RA and TAC participated in numerous Restoration Flow Guidelines revision meetings and workshops.

In an effort to broaden the RA's understanding of the interests groups/organizations and their priorities and concerns, the RA participated in meetings convened either by the following groups or initiated by the RA:

- Monthly Board Meetings convened by the SJR Resource Management Coalition (as available)
- Reach 2B Stakeholder meetings

## 10 2015 and 2016 RA and TAC Expenditures

The following summary of expenditures was provided by National Fish and Wildlife Foundation (NFWF), the administrator of the grant that funds operations of the RA and TAC.

### Attachment: RA – TAC Expenditures 2015 - 2016

<b>RA &amp; TAC Invoices</b>		
<b>Organization</b>	<b>2015 Totals</b>	<b>2016 Totals</b>
Tom Johnson	\$141,683.62	\$148,930.66
Bill Luce (Friant Contractors Representative)	\$15,091.82	\$11,682.33
C Hanson	\$20,564.70	\$19,550.46
S. McBain	\$29,184.49	\$31,196.75
M Tompkins	\$26,628.93	\$23,191.05
M Schmidt/P Vorster (Plaintiff Representative)	\$17,929.32	\$22,242.86
R Henery	\$14,861.88	\$10,578.00
NFWF (Contract Administration)	\$12,000.00	\$12,000.00
<b>Total</b>	<b>\$277,944.76</b>	<b>\$279,372.11</b>
<b>Task Order Invoices</b>		
<b>Organization</b>	<b>2015 Totals</b>	<b>2016 Totals</b>
S McBain	\$26,536.09	\$14,537.00
R Henery	\$0.00	\$4,455.80
M Tompkins	\$37,546.00	\$20,379.00
CDM Smith	\$0.00	\$9,197.00
<b>Total</b>	<b>\$64,082.09</b>	<b>\$48,568.80</b>
<b>TAC Hours</b>		
<b>Organization</b>	<b>2015 Totals</b>	<b>2016 Totals</b>
Tom Johnson	824.5	836.5
Bill Luce (Friant Contractors Representative)	89.7	70.1
C Hanson	122	104.5
S. McBain	209	163.25
M Tompkins	169.5	150.00
M Schmidt/P Vorster (Plaintiff Representative)	127.5	153.25
Rene Henery	115.04	99.5
<b>Total</b>	<b>1,657.2</b>	<b>1,577.1</b>
<b>Task Order Hours</b>		
<b>Organization</b>	<b>2015 Totals</b>	<b>2016 Totals</b>
McBain Associates	210.5	108.5
Trout Unlimited, Inc. 1	0	14
M Tompkins	328.5	146.5
CDM Smith	0	46
<b>Total</b>	<b>539.0</b>	<b>315.0</b>
<b>Total Funds</b>	<b>342,026.9</b>	<b>327,940.9</b>
<b>Total Houss</b>	<b>2,196.2</b>	<b>1,892.1</b>

## APPENDIX A

### Challenges Identified in Previous Reports, and Progress Forward

#### 2014 Recommendations and Program Responses

#### Challenges Identified in Previous Reports, and Progress Forward

The Restoration and Water Management Goals as laid out in the Settlement represent one of the most ambitious and comprehensive restoration projects in California history. This Program has encountered and overcome to various degrees a series of challenges in implementation, most of which have been documented in previous RA Annual Reports. The overall Program challenges identified in previous Annual Reports are summarized briefly here, along with progress towards relieving the challenges.

##### **Schedule**

At this juncture, few of the original major Paragraph 11 or Paragraph 14 schedule goals set in the Settlement have been met; going forward, many of the major Paragraph 11 river improvements may take substantially longer to accomplish, possibly even under best-case scenarios, than was originally envisioned in the Settlement.

*Progress* – in 2015 the Program revised its Framework, which included updated funding and revenue assumptions, as well as an updated schedule based on the then-most recent information with regard to project status. However, the Program will continue to face schedule challenges and schedule slippage on a number of fronts, and this will remain a primary Program challenge.

##### **Scope and Vision**

The overall size and complexity of the Program, coupled with an operating structure that is spread over five Implementing Agencies, present substantial challenges to efficient implementation, particularly with respect to consistency of vision, creativity, and support for the Program. Additionally, the non-Federal Settling Parties and/or other third parties that may be impacted by the Program have distinctly different interpretations of the Settlement. Effectively managing Program funds and resources across multiple Implementing Agencies, with what is essentially a voluntary management and accountability structure among some of the Implementing Agencies, has been and will remain a challenge.

*Progress* – The Framework update process allowed all stakeholders to weigh in as to their vision for Program implementation, and provided the Program with a venue to clearly articulate the legal requirements of the Program (including Settlement Act, water rights and other requirements and policies). Although not everyone necessarily agreed with the Program interpretations, the clarity of the discussion was helpful and helped identify areas of focused discussions in the coming year.

The Fisheries Framework process currently underway was designed specifically to integrate fish related actions to achieve the Restoration Goal with physical projects in the Framework for Implementation. In the process, it provided a forum for key issues about how implementation should progress to be resolved.

The Fisheries Framework will provide the basis for agencies and third parties to have a more robust and cohesive plan for how the Program will successfully achieve the Restoration Goal.

Additionally, the resumption of Restoration Flows in 2016 after no allocation in 2014 and 2015 due to dry conditions was a direct statement that the Program is operational. Additional time and work will be necessary for the Restoration Program to be fully integrated into routine river operations; however the Programs' consistent presence will help to shape perceptions and integration with all stakeholders and water users.

Although the challenge of the scope and breadth of the Program will remain with the Program for some years into the future, for the time being this can be considered a secondary challenge.

### **Design Challenges**

The Program has encountered numerous real-world design challenges during implementation, including:

- Channel capacity limitations for existing flow pathways, levees and channels were found to be a major impediment to the release of Restoration Flows, and in many cases current capacity is substantially below the design capacity of the system.
- The extent of seepage concerns was not foreseen in the Settlement, and seepage improvements will have consequences for the overall project schedule and budget. Seepage and levee stability combined are estimated to be 1/3 of the total SJRRP budget, and neither were anticipated in the Settlement or Legislation.
- The Program determined that flowage easements were needed to allow Restoration Flows to flow through the Eastside and Mariposa bypasses, which were designed as flood conveyance channels and not to convey flows year-round.
- Subsidence is a tremendous concern both within and outside of the SJRRP project area. Since 2011, subsidence in and along Reaches 3 through 5 of the River has been several feet, continues at nearly a foot per year in some areas, and is expected to continue into the future. Although the subsidence issues are not a result of the SJRRP, subsidence vastly complicates the design and planning for necessary SJRRP projects. For example, the Arroyo Canal and Sack Dam improvements were put on hold in 2014 due to subsidence concerns; these improvements remains on hold pending a decision by the irrigation district as to how to address subsidence and reduced capacity at the Arroyo Canal.

*Progress* - The Program is actively pursuing investigations to better understand channel capacity limitations and the development of site-specific remedies for seepage and flowage constraints. Seepage issues are being addressed in accordance with the Program's updated Seepage Management Plan (September 2014, update in progress). Subsidence is being actively monitored by several entities (Reclamation, DWR, USGS, and others); however, this is a long-term, regional issue that will ultimately require a solution across numerous jurisdictional lines. High groundwater and other site-specific construction challenges will be addressed on a site-specific basis.

The Program will continue to grapple with site conditions and design challenges; however, in the future this challenge will manifest more in terms of cost and schedule. All of the design challenges will have technically feasible and robust solutions; however, tradeoffs in time and cost will dictate the impact of design on Program success. It will be imperative for the Program to drive towards the most cost-effective design solutions that meets objectives using every means possible.

### **Funding Challenges**

Potential funding shortfalls in future years of the Program continues to loom as a concern. The Program has not been significantly limited by a lack of funds to date, so any concern over funding shortfalls pertain to future authorizations from state and federal sources. However, schedule slippage results in projects constructed further into the future, typically with higher associated costs (from escalation if no other cause).

*Progress* – the Program has updated its Framework for Implementation in 2015, which includes an updated schedule and assessment of funding requirements. The updated Framework allows evaluation of prioritization for projects in anticipation of potential funding limitations. However, funding shortfalls are anticipated for FY 2017, and will be felt into the future. FY 2017 federal appropriations was lower than the need identified in the Framework, which may be a circumstance that continues in the coming fiscal years. Concerns over funding will remain a challenge for the Program. The State of California provided additional funds (\$40 M) from Proposition 1 (2014 water bond) for implementation of the settlement in 2016 - 2019, providing funding for construction of SCARF and for levee improvements.

### **Decision Process Challenges**

Several factors contribute to a sometimes challenging and slow decision-making process with and around the Program. Interest from, and scrutiny by, elected officials, news media, and stakeholder groups provide many levels of comments and interests; the continuing specter of litigation or disputes around Program decisions, and multiple levels of permitting compliance leads to a careful, thorough and deliberative decision process by Implementing Agencies and Settling Parties even on relatively minor issues.

*Progress* – The decision-making process for Program activities continues to be careful, thorough, and deliberative; it also continues to be slow. Although some initiatives such as the revised Framework may streamline prioritization and project sequencing, all major decisions require extensive consultation and often extensive mitigation. It is anticipated that the Program's decision-making process will not speed up substantially. While this remains a challenge for the Program it can be addressed to a large degree by anticipating and incorporating longer decision times in all schedules.

### **Time Challenges**

It is vital for the success of the Program to re-instill a sense of urgency for progress on priority implementation items across all Implementing Agencies and Settling Parties. To this end, I believe that rapid completion of key components of the Program outweigh any benefits of additional delay in the name of precision or perfection.



*Progress* - The combative history of the Settlement, diversity of Implementing Agencies, and differing perspectives of all of the Settling Parties and third parties on numerous issues and impacts will continue to be a challenge for a swifter implementation of the Program.

### **Drought Challenges**

It is difficult to overstate the negative impact of the severely dry 2014 and 2015 water years on the Restoration Program. The Allocation for Restoration Flows was a Critical High year type in 2014 and Critical Low in 2015. Moreover, Reclamation was obligated to make substantial water releases from Friant Dam/Millerton Reservoir to meet the obligations of the Exchange Contract. The releases to meet the Exchange Contract in demands 2014 were the first occurrence of such releases in the nearly 70 year history of Friant Dam. In total, Reclamation, the Implementing Agencies, the non-federal Settling Parties, and the RA spent hundreds of hours working through the details of drought contingency planning. Beyond the shortage of water for Restoration Flow releases, a number of technical study initiatives scheduled for spring and summer of 2014 and 2015 had to be canceled or reimagined on short notice because of the dry conditions. Overall, the drought conditions had a tremendously disruptive impact on the entire San Joaquin River Restoration Program for much of 2014 and 2015.

*Progress* – the drought conditions abated somewhat in 2016, allowing release of Restoration Flows. As of late 2016, water year 2017 appears to be wetter still, so this challenge appears to have abated at this time.

### **Staffing Challenges**

The Program is constantly impacted by staff turnover, as personnel move through their respective career trajectories which may or may not include long-term commitment to working on the Program. In 2014, Reclamation in particular lost several key staff, and fell well below target staffing levels (at one point, a deficit of 14 personnel). Staffing shortages exacerbated all of the challenges identified above.

*Progress* - Reclamation backfilled staffing shortages quite effectively during 2015, and was nearly fully staffed in 2016, and with very competent personnel. Despite extended outages by the Program Manager (maternity) and the Program Engineer (temporary assignment), the staffing situation at the end of 2016 was quite satisfactory although the prospect of an imminent federal hiring freeze at the end of 2016 may pose challenges going forward. The staffing challenge will ebb and flow as staff move on in their career trajectories.

### **Consultation, Coordination and Stakeholder Coordination**

Program staff spend tremendous time and resources interacting with stakeholders, across almost all facets of the Program. The Restoration Program is a public program (implemented by state and federal agencies), that will impact thousands of square miles, hundreds of thousands of people, and will have substantial economic implications for stakeholders affected by Settlement implementation. It is not clear that the original Settlement or Federal legislation envisioned the level of resources that the Program would require to fully integrate a wide diversity of stakeholders into almost every single Program decision. Examples of substantial stakeholder interaction include:

1. The Program is specifically required to consult with the non-federal Settling Parties and the RA on several aspects of the Program.
2. The Third Parties as identified in the federal legislation implementing the Program require extensive interaction.
3. Landowners (both private and public such as Federal State Wildlife Refuges), water users (individual as well as private and public water districts), and local agencies and entities in the 150 river miles of the Restoration Program impact area require extensive interaction.
4. Open stakeholder processes (National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) processes and other permitting actions) are intended to collect input from a variety of stakeholders.
5. Other state and federal initiatives (example: flood control planning) require extensive coordination with the Program.
6. Other economic and physical phenomena (example: subsidence) require extensive coordination to ensure the Program can be successfully completed despite potential challenges presented by these phenomena.
7. Other users of the San Joaquin River including water supply and flood control stakeholders have operations and maintenance needs that need to be addressed or accommodated.
8. Finally, general public interest in the Program from people near and far around California requires a concerted public outreach effort.

It is possible that stakeholder scrutiny, and required stakeholder interaction, could continue to increase as the Program enters into large-scale construction projects.

*Progress* - Stakeholder engagement requirements appear to have plateaued or even diminished slightly, perhaps because the Program is transitioning to more design and implementation rather than pure planning. However, intensive and extensive stakeholder engagement are likely to continue to be major efforts of the Program for the foreseeable future.

## 2014 Recommendations and Program Responses

This section recaps the 2014 recommendations for addressing impediments, and the Program's responses to those recommendations. As discussed below, most of the 2014 recommendations were substantially addressed by the Program in 2015 and/or 2016.

1. **Bring Program staffing levels up to sufficient.** As mentioned previously, Reclamation's Program staffing levels fell to as many years as 14 people short of target during 2014. In addition, the following specific staffing suggestions should be considered:
  - Assignment of a construction specialist or construction manager from the Reclamation Mid-Pacific Region Construction Office. As the Program approaches implementing major construction projects, the dedicated expertise in construction will support final design that comports with Program and local stakeholder requirements, and support scheduling and construction budgeting tracking.
  - Add a dedicated Land specialist, or assign a dedicated lands specialist from Reclamation's lands department. This position could support many of the Program's projects, including land and easement acquisition for Paragraph 11 projects, and more consistent progress on seepage projects.

*Program Response:* Substantial progress was made on completing re-staffing, and the Program was nearly fully staffed by early 2016. Two dedicated land and one construction specialists were added.

2. **Reconsider Program organization.** The current organizational structure of the Program, including roles and assignments for key staff, has largely grown out of the focus of the Program on research and planning. As the Program changes focus towards implementation and construction, the roles of key staff could shift, and new or revised staff roles could be necessary.

Reconsideration of the Program organization should have three objectives:

- Integrate new staff into the Program in an efficient manner.
- Provide an organization structure that allows for more efficient and consistent delegation from senior-level staff downwards.
- Consider ways to better integrate staff between Implementing Agencies.

*Program Response:* The Program has updated staffing and positions to meet current objectives (addition of Program Flow Coordinator, Program Biologist, construction specialist, etc.), and has landed high-quality personnel for the positions filled to date. Delegation and a degree of redundancy appear to be improved. The Program has made progress in updating its organizational structure.

3. **The Program needs a comprehensive Program schedule completed in a timely fashion.** It is difficult to imagine how the Program can be successful in meeting future milestone target

dates without a comprehensive Program schedule to help focus and prioritize the efforts of the Implementing Agencies.

*Program Response:* In 2015, the Program completed the Framework, which included a detailed schedule for major project components. An ongoing challenge will be to keep the schedule updated in the face of unanticipated funding and implementation challenges.

4. **The Program would benefit from operational budget tracking.** At this time, the Program tracks budget and expenditures on an annual cycle with no intermediate tracking of expenditures against budget. Improved tracking of expenditures against budget will provide an additional management tool for the Implementing Agencies.

*Program Response:* The Program is working towards an operational budget tracking system in fits and starts. The Annual Work Plan and Quarterly Update meetings are intended to provide more consistent review of schedule and budget; however, the Program has only managed three quarterly meetings in 18 months.

5. **Implement a quarterly tracking process.** The Implementing Agencies (and potentially other key stakeholders such as RA or non-federal Settling Parties) should meet to review the comprehensive schedule and operational budget tracking on a quarterly basis.

*Program Response:* The Program is working towards an operational budget tracking system in fits and starts. The Annual Work Plan and Quarterly Update meetings are intended to provide more consistent review of schedule and budget; however, the Program has only managed three quarterly meetings in 18 months.

6. **Need a Framework completed to serve as a guiding strategic document for implementation.** The Framework update process has been ongoing since approximately November 2013 (15 months and counting). This process needs to be brought to a definitive conclusion in the near-term, so that the benefits of the process can be realized in Program planning and budgeting.

*Program Response:* The Framework process was completed in July 2015.

7. **Re-purpose the Annual Work Plan.** The annual work plans can be reimagined to serve as near-term tactical implementation guidance. The Work Plan can be an annual tactical update, with the detailed schedule and budget tracking on a quarterly basis serving as operational guidance and tracking tools. The Work Plan as it is currently structured, does not identify critical path work. There would be no way to gauge, for example, whether a shortfall in anticipated budget should trigger a shift of resources to complete the most crucial activities, since the most crucial activities are not identified as such.

The document needs participation by, and agreement of, all of the implementing agencies. In particular, the State implementing agencies who have an independent budget need to provide a similar level of detail in description to the rest of the Work Plan. Additionally, consider ranking or prioritizing the activities in the Work Plan, perhaps in 3 to 5 'bins' of importance, so it is clear as to what activities are highest priority and/or key critical path activities. Finally, the document should include backwards reference to the previous year's

fiscal Work Plan, such as what was accomplished on schedule, what was delayed or deferred, expenditures versus budget, etc.

*Program Response:* Partially implemented. The Annual Work Plan has undergone some revision to better align it with the Framework. However, numerous facets (backwards reference, integration of state implementing agencies, etc.) have not yet been implemented.

8. **Revisit approaches for Stakeholder involvement and decision input.** As described above, stakeholder involvement in decision input demands a huge commitment of time and resources from the Program. The Program is a public process; however, the Program needs to evaluate opportunities for more efficient and streamlined stakeholder involvement. The Program may need to consider options for truncating stakeholder involvement when that involvement ceases to provide positive or beneficial input to the Program, or the Program may need to consider limiting stakeholder input into Program decisions outside of specific formal opportunities for comment (e.g. NEPA processes).

*Program Response:* The Program continues to revisit stakeholder involvement opportunities in process. In many areas (for example the numerous Environmental Assessments promulgated by the Program), the Program has become quite efficient. The more complicated and/or controversial projects and issues will remain a challenge.