

# San Joaquin River Restoration Program

## Restoration Administrator’s 2018-2019 Report to Settling Parties

Revised May 2020

### 1. Introduction & Context

This Restoration Administrator’s Report on the status of the San Joaquin River Restoration Program (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.

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## 2. Highlights of Progress and Key Findings, 2018 – 2019

The Program achieved a number of important milestones in 2018 and 2019, a few of the most important of which are highlighted here:

- As of February 28, 2020, the Program had maintained continuous flows throughout the entirety of the Restoration Area (a length of over 149 river miles between Friant Dam and the confluence of the Merced River) for 865 days. This continuum of river connectivity has not been experienced in the San Joaquin River (SJR) for 75 years.
- In 2019, for the first time in over 65 years, threatened Central Valley spring-run Chinook adult salmon completed their life cycle and adults returned to the Restoration Area. While spring-run had been placed as adults in the river previously, this is the first time Program fish that migrated out of the system as juveniles returned as adults years later. A total of 23 returning adult spring-run Chinook were trapped in fyke nets in the lower Restoration Area. As juveniles, the fish were able to outmaneuver predators and avoid the perils of modern water infrastructure while making their way nearly 370 miles out to the Pacific Ocean to mature for 2 or 3 years before returning to the San Joaquin River. At least some of these fish were confirmed as releases from the Program that had successfully returned to the Restoration Area.
- Even more remarkable in 2019, in the weeks after the trapped spring-run fish were relocated to the upper reaches of the Restoration Area, flood control releases were required from the river outlets of Friant Dam. Unlike Restoration Flows, the flood control releases are not constrained by seepage limitations or flow routing paths (e.g., flows occurred through flood bypass system). In 2019, flood control releases occurred from March 15 through April 5<sup>th</sup>, and from May 14 through July 14. Flood control releases peaked at over 6,400 cfs. By the end of the spring-run spawning season, 209 total redds in the Restoration Area provided proof that at least a few hundred adult spring-run Chinook salmon, in addition to iSCARF-produced fish and transported fish, had made their way volitionally back to the Restoration Area from the Pacific Ocean.
- Juvenile and adult spring run Chinook salmon from the Interim Salmon Conservation and Research Facility (iSCARF) were released in the Restoration Area in 2018 and 2019 (See Section 4 and 5 for additional details). Many of the juvenile fish successfully migrated out to and through the San Joaquin Delta, as evidenced by capture of some of the released fish at various monitoring locations in the Delta. Many of the adults successfully spawned in the river, as evidenced by viable redds (salmon egg nests) in the river and juvenile salmon production measured by the rotary screw traps (RSTs).
- Funding Constrained Framework - started in 2017, completed in 2018. As described in the 2017 Report, the Implementing Agencies, the Settling Parties and Third Parties undertook work on a Funding Constrained Framework document to evaluate Program priorities and set a realistic budget that reflects fish restoration and water management objectives given available funding. Stage 1 for this vision included actions that provide volitional fish passage in the river to Friant Dam, a key objective to re-establish a self-sustaining population of fall-run and spring-run Chinook

salmon in the San Joaquin River. These actions include construction of Reach 2B and the Mendota Pool Bypass; fish passage and improvements for the Arroyo Canal and Sack Dam; and the Eastside Bypass Improvements Project, which includes levee improvements, improvements to the San Luis Wildlife Refuge water supply, and fish passage at the Eastside Bypass Control Structure.

- Fisheries Framework - started in 2017, completed in 2018. Another guiding Program document started in 2017 and completed in 2018 is the Fisheries Framework: Spring-run and Fall run Chinook Salmon. This framework highlights methods and rationale for Program fish actions and establishes a realistic schedule for implementation of said actions. Specifically, the Fisheries Framework outlines the goals and objectives for establishing spring-run and fall-run Chinook salmon populations in the Restoration Area; defines the habitat and ecosystem conditions that will support naturally reproducing, self-sustaining salmon populations; outlines the scientific foundation for the planned management actions; and describes a proposed Adaptive Management process and implementation plan.
- In 2018 and 2019, The Program continued to make progress on river operations and operational rules. Operations of the San Joaquin River are very complex. Millerton Lake has a relatively small amount of storage given the watershed runoff volume (annual average runoff of about 1.75 MAF), which means that carryover capacity (the ability to store water across different water year types) is relatively minimal. For comparison, Millerton Lake is 520,500 acre-feet in capacity, whereas New Melones (on the Stanislaus) is 2,400,000 acre-feet with less than 2/3 the runoff and New Don Pedro (on the Tuolumne) is 2,030,000 acre-feet with similar volume of watershed runoff. Additionally, Mendota and Sack dams are major irrigation diversions on the San Joaquin River, Delta water is imported (via the Delta-Mendota Canal) and released down the river, numerous diverters operate on the river, the Chowchilla and East Side Bypass floodway systems operate during flood control years, and high seepage losses pull flows off of the river across most of the Restoration Area. In total, these operational challenges make for a very difficult river to monitor and operate to the benefit of the Restoration Goal.

To address these challenges, the Program has continued to work through operational coordination, and operational and accounting rules development. In 2018 and 2019, hydrologists from the Program and Reclamation's South-Central California Area Office (SCCAO) refined their coordination of hydrologic forecasting and data analysis, resulting in improved coordination between Program water delivery needs and SCCAO water delivery operations. The Program, assisted by contributions from Friant Contractors work group and TAC members, led further refinements in the Restoration Flow Guidelines (RFG's), the rules for allocation, release, operations and accounting for Restoration Flows. The release of RFG 2.1 in the fall of 2019 included several important updates for Restoration Flow releases. The Program managed the sale or exchange of over 350,000 acre-feet of Unreleased Restoration Flows (URF's) in 2018 and 2019, resulting in **several** million in revenue for the benefit of the Program (**Summarized in Appendix A**). In total, these monitoring, operations and release rules improvements will help to ensure stable, consistent Restoration Flow releases pursuant to approved Flow Recommendations.

- As described in the 2017-2018 SJRRP Annual Report ([http://www.restoresjr.net/?wpfb\\_dl=2413](http://www.restoresjr.net/?wpfb_dl=2413)), several water management goal projects were completed, including the Madera Canal Low Flow Valve and two groundwater banking projects.

- In June 2018, the Bureau of Reclamation’s Mid-Pacific Region announced the selection of Don Portz as the San Joaquin River Restoration Program Manager. Portz had been involved with the Program since 2010 and served as its lead fish biologist since 2015.
- The Program manages seepage to address any material adverse impacts to third parties from groundwater seepage caused by Restoration Flows. Restoration Flows are limited by thresholds described in the Seepage Management Plan. These thresholds are based on local crop type or historical water levels and are designed to keep the groundwater elevation below levels that may cause harm to third parties. In 2018 and 2019, Reclamation completed several permanent seepage projects on potentially impacted land in the Restoration Area. These projects allow for the release of up to approximately 800 cfs of Restoration Flows past Mendota Dam and approximately 290 cfs past Sack Dam. Reclamation also commenced seepage projects for the next identified priorities.
- 2018 was a Normal Dry year type, with an allocation of 280,252 acre-feet and release of 157,596 acre -feet to the river (measured at Gravelly Ford). URF’s of 124,791 acre-feet were sold back to the Friant Contractors, reflecting the substantial flow constraints that constrain river releases.
- 2019 was a Wet year type, with an allocation of 556,542 acre-feet and release of 190,799 acre -feet to the river (measured at Gravelly Ford). URF’s of 365,760 acre-feet were sold back to the Friant Contractors, again reflecting the substantial flow constraints that constrain river releases.
- Full flow release summaries are included in the Appendix to this Report.

### 3. Challenges and Recommendations-2018-2019

#### 1. Schedule and Budget Concerns & Recommendations

The RA's 2017 Annual Report included this caution regarding the Funding Constrained Framework:

*Implementation of the Funding Constrained Framework within the budget and schedule agreed to by the Settling Parties and stakeholders will require relentless focus on schedule and budget efficiency by the Program, as well as anticipation of challenges, continuous marshalling of support from elected officials as well as other departments within Reclamation, and constant communications with a bevy of stakeholders. The Program should develop an Implementation Plan that includes the basics of: organization and staffing chart(s), schedule, budget (and budget tracking scheme), and an enumeration of key support required from outside of the Program (e.g. support from the Department of the Interior's (Interior) Solicitors Office, land procurement, contracting, construction, etc.). The Implementation Plan should be shared with Reclamation senior management and key stakeholders (e.g. non-federal settling parties), to build support and commitment for the plan.*

As of the end of 2019 the Program had not developed an implementation plan. There has been minimal success in Program-level budgeting for the implementation (beyond the annual federal budgeting cycle), at this time there is no schedule for overall implementation, the Program organizational chart and staffing remains generally as it has been for the past few years, and support from other Reclamation divisions (notably the Technical Service Center, or TSC) remains at very modest levels. In the opinion of the RA, Reclamation has NOT ramped up prosecution of the Program in anticipation of a) the design and construction phase of implementation, and b) in recognition of the fast-approaching 2025 Settlement deadlines. The Program produced a thoughtful plan in the Funding Constrained Framework but has followed few of the recommendations from that document.

As of early 2020, a draft Program-level schedule is in development, and additional resources from the TSC have been identified (although not yet engaged on Program assignments), so there is hope that a more effective implementation plan may be forthcoming.

#### 2. Reclamation is not effectively prioritizing implementation of the Program.

In the opinion of the RA, Reclamation is not prioritizing implementation of the Program in a way that will achieve success by 2025 as described in the Funding Constrained Framework. In mid-2019, considerable time was spent in investigating likely schedule constraints to Program progress. Just a few of the findings included:

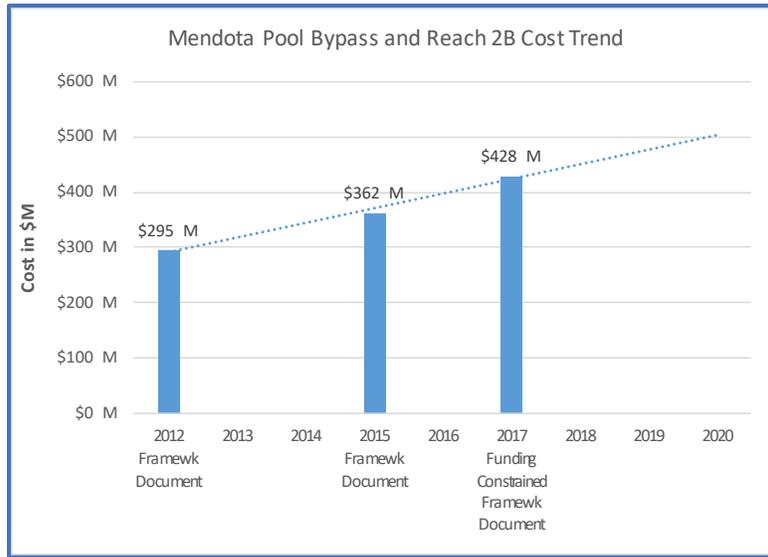
- The high-level schedule in the Funding Constrained Framework assumed no substantial problems would be encountered with construction (e.g. changed site conditions, contracting problems, etc.) and as-needed resource availability. In reality, problems with construction can and do occur. For example, geotechnical and groundwater investigations on the MLT property (Compact Bypass construction site) were delayed for over a year due to unforeseen seepage and access problems. Additionally, TSC staff were re-assigned by Reclamation to other projects, leading to substantial delays in several design efforts.

- Based on a review of real estate transactions completed for the Program to date, average time to consummate each transaction is 28 months. The Program has on the order of two dozen such transactions (the actual number could be much higher) to complete during the duration of Stage 1 of the Funding Constrained Framework. Most of these needed acquisitions have not been initiated; several may not start for a few years into the future.
- The schedule from the Funding Constrained Framework showed three major construction efforts underway during calendar 2020, including Mowry Bridge, the Compact Bypass Control Structure and the Compact Bypass. As of late 2019, Mowry Bridge was designed but was still in contracting the Compact Bypass Control Structure is approximately 30% designed and the Compact Bypass has had no detailed design work completed. Much of the delay is associated with the MLT property delays described above; however, it is evident that there is no contingency time in the schedule, and that actual progress will likely be much slower than anticipated.
- **At this juncture-in the absence of a prioritized focus by Reclamation, the implementation of Stage 1 of the Funding Constrained Framework will be delayed for a minimum of two years (past 2025), and the delay could stretch to as much as 5 years.**

Unfortunately, an investigation of budget status indicates similar challenges. The Program has an annual “cost of operations” (including staff and overhead for the Program and Implementing Agencies, required monitoring or activities for NEPA compliance, etc.) of about \$10M per year. Additionally, multi-year schedule slippage will increase the cost of implementation by the inflation of the various construction elements. In total, each year of delay in implementation has a potential cost to the Program of \$15M to \$20M.

In addition to delay-related cost increases, all of the initial design cost estimates (for Sack Dam, the Arroyo Canal fish screen, the Mendota Pool Control Structure and the Mendota Pool Fish Screen) have been at 130% to 200% of the costs estimated in the Funding Constrained Framework. While many of these costs are likely to be reduced via more advanced design, optimization, and value engineering, it is still likely that costs could easily be 20% or more than anticipated. The following graphic provides a visualization of projected cost increases for the 2B Project through time, from the 2012 through 2015 and 2017 Framework documents.

Figure 1. Cost Estimates Through Time, Mendota Bypass and Reach 2B



- The Funding Constrained Framework matched expected available funding with costs. As a result, any cost overages currently have no identified funding source. It is my opinion that at this time the cost of implementation of Stage 1 of the Funding Constrained Framework will be between \$100M and \$250M above current available funding levels.**

Reclamation has extensive history over decades of successfully designing and constructing large scale and complicated water projects. Construction of the facilities required for the Program is well within the experience and bandwidth of Reclamation. Thus, I can only conclude that Reclamation is choosing not to devote time and resources to the implementation of the Program pursuant to the Settlement. This is an issue above the level of the Program office; rather, it should be addressed at the Regional or national management level.

There is no benefit from this lack of attention for the Settling Parties. Reclamation, the State of California and the Friant Water Contractors have already invested huge sums of money to move the Program forward; delay only increases the future costs. A failure of the Settlement opens the Settling Parties to the uncertainties of future litigation, impacts to water supply (for contractors or for the river), and actions by the State Water Resource Control Board or others. From my perspective, it is in the clear interest of the Federal Settling Parties to fulfill the requirements of the Settlement as expeditiously as possible, and for the non-Federal Settling Parties to support that work as vigorously as possible.

In July through October of 2019, the RA met with Program staff, the non-Federal Settling Parties, and Reclamation Regional Management to relay these schedule and budget concerns.

**It is recommended that the Program produce a comprehensive plan for implementation for construction of the Paragraph 11(a) projects that are included in Stage 1 of the Funding Constrained Framework by no later than mid-year 2020. This Implementation Plan should include a detailed schedule for design and construction, and a list of current and required resources necessary to implement the schedule.**

It is also recommended that the Program produce an updated budget, based on the Implementation Plan and schedule and current available design information for the completion of the Paragraph 11(a) projects that are included in Stage 1 of the Funding Constrained Framework, by the end of 2020.

### 3. Key flow-related challenges

The 2017 Annual Report included this caution regarding Restoration Flow Operational Challenges:

*The Program is working through operational challenges to provide smooth and consistent Restoration Flow releases on a daily and monthly basis – as stated elsewhere, full integration and acceptance of the Restoration Flow paradigm by all of the river operations interests and stakeholders is probably a three to five year process. In addition to the as-needed resolution of challenges that the Program currently undertakes, it may be helpful to capture operational issues that will take longer to work through and prioritize them for attention.*

The Program and SCCAO have worked diligently to better coordinate forecasting, flow and operational issues that impact the Restoration Flows. Many concerns and issues have been identified, diagnosed and resolved, and particular credit is due to Program and SCCAO staff who have assisted in making Restoration Flows a consistent reality in the San Joaquin River.

Remaining flow, monitoring and operational issues will likely be more challenging and harder to resolve, as most are less directly under the control of Reclamation and will involve working with landowners, diverters, and other river operators to resolve. Through time, new flow-related issues are arising due to the presence of continuous flows in the river.

One flow management issue that arose again in 2019 and will need resolution as soon as feasible is the protection of Restoration Flows during flood control releases to the river. Flood control releases are required to manage reservoir elevation and storage in periods of high precipitation and runoff to avoid uncontrolled spills from the reservoir. Flood control releases with appropriate timing and volume can also meet the needs of Restoration Flow releases, while minimizing impacts to Friant Contractor water supply); as such the Settlement recognizes in Paragraph 13j (vi) the necessity of “determining the extent to which flood releases meet the Restoration flow hydrographs.....”, and will be addressed in future versions of the RFG. In order for that dual purpose of the flows to occur, however, they must continue down the river through the Restoration area, and cannot be diverted at Mendota Pool, Sack Dam, or from the flood bypass system. Only flows superfluous to the approved Restoration Flow Recommendation would be available for diversion. On more than one occasion in previous years of flood control releases (2011, 2017, and 2019), approved Restoration Flows did not remain in the river and were instead diverted or, if not diverted, then “impacts” were claimed by third parties. Reclamation indicated in 2019 it would be working towards resolution of this issue in 2020.

**Reclamation should strive to resolve the “flood flows vs Restoration Flows” issue as soon as feasible, but certainly prior to the next wet year type.**

**The RA and TAC, with assistance from the Program Office and SCCAO, will focus on improving monitoring and protection of Restoration Flows down the river and resolution of operational issues during 2020 and 2021 (see RA and TAC Priorities section in this Report).**

#### 4. Construction Project Challenges

As the Program moves towards construction of the major facilities required for full volitional fish passage and flow capacity for Restoration Flows, several challenges related to the design and construction of various projects have arisen. In general, many of these challenges can be traced to third party stakeholders with various interests on the river. The Program is working through these challenges; however, the process and outcomes will likely reflect either a delay in design and construction, additional cost, or both.

- The design of improvements at Sack Dam and the Arroyo Canal intake have been stalled since mid-2018. Henry Miller Reclamation District No. 2131 (HMRD), the owner of the Sack Dam and Arroyo Canal facilities, took the lead on design work in 2017 pursuant to a financial assistance agreement with the Program. The design that HRMD's engineers produced did not meet Program operational or cost share criteria and was rejected. After extensive disagreement, discussion and delay, Reclamation has taken over design responsibility for the projects and is considering various design options. As of the end of 2019, no preferred design has been identified. This project is easily 2+ years behind schedule.
- As described previously in this Report, various issues at the MLT property (site of the Compact Bypass facilities) delayed acquisition of key geotechnical data for more than a year. The Compact Bypass Control Structure is more than a year behind schedule.
- The Program has not yet completed an overall performance and operational specification for the Reach 2B projects, including the Compact Bypass and associated facilities. These facilities are the primary intersection of river and diversion operations on the river, and robust coordinated operations across all possible operating conditions will be vital to ensure accurate, timely and appropriate water deliveries to meet both Restoration goals and water supply obligations. An overall vision and concept for how these key facilities will work in concert should be a vital component of a design effort; however, Reclamation has not completed such a performance specification. It is highly recommended that Reclamation make this a priority in the near term.

**It is recommended that the Program produce a performance and operational specification for the Reach 2B Projects (from the Chowchilla Bypass Control Structure past Sack Dam), that identifies Program and water delivery operational criteria, overview of responsibilities and obligations for all operating parties, performance metrics for successful operations, and highlights any policy or contractual issues for resolution prior to construction. This specification should be completed by Q3 2020.**

#### 5. Restoration Program Manager and Staffing.

I have tremendous respect and admiration for the past and current Program Mangers, and for key Program staff who move the Program forward. I believe the talented, dedicated and hardworking staff

are responsible for tremendous accomplishments despite sometimes limited resources, challenging stakeholders and often burdensome Reclamation process and bureaucracy.

In 2017, the previous Program Manager stepped down, leading to a succession of interim Program managers over the next several months while recruitment of a new Program Manager was undertaken. Dr. Don Portz was named Program Manager in June 2018. As may be expected, although the new Program Manager had knowledge of the Program, it still took several months for him to come up to speed on all aspects of the Program. As a result, there was an overall loss of Program efficiency and progress, with a subjective assessment of a 40% reduction in progress efficiency for 8 months.

A major challenge for the Program is a lack of staff resources and difficulty in filling open positions. Open positions can take a year or more to fill and are frequently not adaptable to meet changing conditions. For example, the Program's Chief Engineer position has been vacant for several years, and several other vacant positions have been slow to be filled. Additionally, as I wrote in the 2017 Annual Report:

*"...the focus of the Program is shifting, and with it staffing needs. The Program is well structured for the types of planning, permitting, and stakeholder engagement that has been the primary focus of the early years of Program operations. However, the Program is not well structured for the types of project management, schedule and budget control, engineering and construction oversight that will be the primary focus of the next few years... There seems to be a clear need to revisit the Program organizational structure to address this pending refocus.*

**The Program Manager should have the flexibility, and the support of Regional management, to flexibly adapt program staffing to meet changing conditions and needs. In particular, when positions are vacated, there should be an ability to backfill with staff that meet current and foreseeable needs, rather than just refilling with a similar capability and level.**

**Staff turnover is inevitable, as life and career opportunities and challenges impact key Program staff. There are several key positions in the Program, with current personnel who are vital to the progress of the Program, and who would be difficult to replace. It is recommended that each key Program staff person should be tasked with recruiting and training a strong lieutenant who could replace them in their temporary absence or permanent departure from the Program.**

## 6. Conveyance Capacity status

Conveyance capacity for Restoration Flows remains largely constrained by groundwater levels and the need to avoid impacts to adjacent landowners due to perceived seepage associated with Restoration Flows. Although the Program has undertaken extensive efforts to model and monitor groundwater levels to assess seepage impacts, the shallow (within 20 feet of surface) groundwater interactions are complex and influenced by multiple factors. Low quality or inconsistent data from monitoring wells, variation in well response to river flow changes versus other influences, and different irrigation or other operating conditions are all challenges in assessing river-derived versus other factor groundwater impacts.

In mid-2018, several groundwater wells in Reaches 3 and 4A appeared to show more sensitivity to river flow changes than previous data had indicated, and resulted in constraints on the release of Restoration Flows. The Program and RA continue to coordinate on seepage status on a regular basis to assess

maximum possible Restoration Flow releases. Some of the parcels impacted were not previously high priority for seepage easement acquisition or other treatment by the Program, and thus will not be resolved expeditiously.

As of late 2019, channel capacities in Reach 3 are limited to about 800 cfs (subject to flow bench evaluation), inclusive of both Restoration Flows and deliveries to Arroyo Canal. Channel capacities in Reach 4A are limited to about 290 cfs.

Resolution of these constraints is not anticipated prior to the 2023 Restoration year.

## 4. Program Milestones and Accomplishments during 2018

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 2018

Some of the key Program milestones and accomplishments for 2018 include:

- Dr. Don Portz was selected as the San Joaquin River Restoration Program manager in June 2018. Dr. Portz has been involved with the Program since 2010 and has served as its lead fish biologist since 2015.
- Restoration Year 2017 was one of the wettest years on record; conversely Restoration Year 2018 started out very dry (with a “Critical-High” year type allocation) before a wet spring transitioned to the upper range of a Normal Dry Year.
- On August 22<sup>nd</sup> and August 23<sup>rd</sup>, the Program held its 2018 Science Meeting. The goal of this annual effort is to connect those conducting scientific research and monitoring in support of the Program, learn about preliminary findings from research, monitoring and analysis efforts, and inform Program management of scientific results.
- The Program issued the Finding of No Significant Impact (FONSI) for the Eastside Bypass Improvements Project (EB Project). The EB Project includes efforts to improve levee stability and thereby increase the flow capacity in the Eastside Bypass, as well as actions to facilitate fish passage for special status salmonids and other native fish. These actions include modifications to the Eastside Bypass Control Structure, replacement of the existing culvert at the Dan McNamara Road crossing, and the removal of two weirs.
- The National Marine Fisheries Service (NMFS) completed and released the 2018 Technical Memorandum that outlined the spring-run Chinook salmon release and monitoring plans, plus methods for identification of spring-run Chinook salmon outside of the San Joaquin River. [https://www.westcoast.fisheries.noaa.gov/publications/Central\\_Valley/San%20Joaquin/fy2018s\\_jr\\_spring-run\\_tech\\_memo\\_final.pdf](https://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/San%20Joaquin/fy2018s_jr_spring-run_tech_memo_final.pdf)
- The Program undertook the sale and exchange of just over 106,500 AF (net) of URF’s in 2018. 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's provided revenue of over \$6.6 M for supporting the Restoration Goal.

- The Record of Decision for the San Joaquin River Restoration Program requires an Annual Workplan be developed outlining expected annual Program activities for the next twelve month period, and is to include projected activities for the subsequent two years and a reporting on the activities accomplished in the prior year. Development of the Annual Work Plan is also a requirement under the State Water Resources Control Board (SWRCB) order approving the change in Reclamation's water rights for the purposes of preserving or enhancing wetland habitat, fish and wildlife resources, or recreation in, or on, the water. Deferment of preparation of the 2018 Annual Work Plan was approved by the SWRCB because the Program was preparing the Funding Constrained Framework and that Framework would include specifics on the type of work anticipated for the next several years.
- A 2018 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.
- On November 1, 2018 the Program announced the release of the Fisheries Framework for Spring-run and Fall-run Chinook Salmon. As noted in the 2017 Annual Report, the Fisheries Framework establishes a realistic schedule for implementation of the fisheries management actions in the Program based upon the best available science and information. 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.
- Construction of the permanent Salmon Conservation and Research Facility (SCARF) underwent a series of delays and setbacks; eventually the construction contractor was terminated. The State Department of General Services (DGS) has tried various approaches to restart the construction to adhere to the original budget, but to date been unsuccessful. The State is working on additional funding sources for SCARF construction. In the interim, the iSCARF (Interim Salmon Conservation and Research Facility) continues to operate and produce juvenile and adult fish to support experimentation and reintroduction work for the Program.

### **Progress toward Achieving Paragraph 14 Requirements during 2018**

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 affect a long-term reintroduction; 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 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 management actions. Specifically, in 2018:

- The Program continued to develop brood stock at the iSCARF, utilizing selected foundation stock from the Feather River Fish Hatchery.
- The Program completed several Young-of-Year and Yearling Juvenile Spring-run Chinook releases, as well as the release of mature fish. The details of those releases are best documented in the NMFS *“2018 Technical Memorandum Regarding the Accounting of San Joaquin River Spring-run Chinook Salmon at the Central Valley Project and State Water Project Sacramento-San Joaquin Delta Fish Collection Facilities”*, at [https://archive.fisheries.noaa.gov/wcr/publications/Central\\_Valley/San%20Joaquin/fy2018sjr\\_spring-run\\_tech\\_memo\\_final.pdf](https://archive.fisheries.noaa.gov/wcr/publications/Central_Valley/San%20Joaquin/fy2018sjr_spring-run_tech_memo_final.pdf)
- Adult Spring-run Chinook Releases
  - No fall-run Chinook were transported to Reach 1 of the Restoration area in 2018. The 2018 adult broodstock acoustic tracking study aimed to continue studying where spring-run hold and spawn.
  - In 2018, river temperatures during the holding and spawning period were lower than 2017. Fish were observed to be holding lower in the system than in 2017 and the redds have been observed to be more spread out than previous years. All of the redds were within areas that were expected to be suitable spawning habitat (all upstream of Highway 41).
  - A total of 179 adult ancillary spring-run broodstock from the iSCARF were released by CDFW at Owl Hollow (30 females and 59 males from June 11-15, 2018) and Ball Ranch (29 females and 61 males from July 31- August 2, 2018) in Reach 1A of the San Joaquin River, upstream of Highway 41. All fish received external color-coded FLOY tags with individual identification numbers, and all females, and a subset of male fish, were fitted with acoustic tags to track fine-scale movement. Genetic tissue samples of all broodstock adults were taken for use in later parentage analysis of wild-spawned offspring. As of November 9, 2018, the signals of all but one fish have been recorded within Reach 1A at least once. As of November 19, 2018 (end of spring-run Chinook spawning season), 42 spring-run redds had been detected in Reach 1 of the San Joaquin River, with 23 carcasses recovered.
  - For the first time since Program inception, natural spring-run Chinook migration and spawning occurred in the San Joaquin River. During the RST monitoring efforts, a total of 888 unmarked NEP spring-run Chinook salmon juveniles were captured from the 42 redds. These juveniles were

offspring resulting from in-river spawning of iSCARF broodstock adults released into Reach 1 in the summer/fall of 2017.

- Because of previous juvenile release/reintroduction efforts from 2016-2017, 2018 was the third year that adult spring-run Chinook salmon had the potential to return to the San Joaquin River. However, due to relatively high flows during the spring period, the placement of counting stations was limited and only some adult monitoring occurred during the anticipated adult migration period. During the time that the VAKI camera system was monitoring at LOCATION, it did not detect any returning adults. Only adults released into Reach 1 as ancillary broodstock were observed during weekly monitoring after flood releases subsided, and as of September 2018, no unmarked spring-run Chinook (indicating wild origin) were seen in the lower reaches of the river (Sack Dam and middle Eastside Bypass).

## 5. Program Milestones and Accomplishments during 2019

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 2019

Some of the key Program milestones and accomplishments for 2019 include:

- NMFS completed and released the 2019 Technical Memorandum that outlined the spring-run Chinook salmon release and monitoring plans, plus methods for identification of spring-run Chinook salmon outside of the San Joaquin River. [https://archive.fisheries.noaa.gov/wcr/publications/Central\\_Valley/San%20Joaquin/fy2019\\_sjr\\_spring-run\\_technical\\_memo\\_-\\_final.pdf](https://archive.fisheries.noaa.gov/wcr/publications/Central_Valley/San%20Joaquin/fy2019_sjr_spring-run_technical_memo_-_final.pdf)
- Because of the channel conveyance constraints to releasing full Restoration Flows, the Program undertook the sale and exchange of just over 324.1 thousand acre-feet (TAF) of Unreleased Restoration Flows (URF) in 2019, which included approximately 13.5 TAF of Exchange URF. 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's in 2019 provided revenue of approximately \$6.4 M; ~~to the Program for supporting the Restoration Goal.~~ All funds from URF sales are added to the Restoration Fund and can be used for ~~any Program purpose costs associated with the Restoration Goal.~~
- The Record of Decision for the San Joaquin River Restoration Program requires an Annual Workplan be developed outlining expected annual Program activities for the next twelve month period, and is to include projected activities for the subsequent two years and a reporting on the activities accomplished in the prior year. Development of the Annual Work Plan is also a requirement under the State Water Resources Control Board (SWRCB) order approving the change in Reclamation's water rights for the purposes of preserving or enhancing wetlands habitat, fish and wildlife resources, or recreation in, or on, the water. Deferment of preparation of the 2019 Annual Work Plan has not been received.
- A 2019 Channel Capacity Report (CCR) 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 2019 CCR determined the then-existing channel capacity will be the same as the 2018 CCR, which recommended then-existing channel capacities based on geotechnical data in portions of Reach 2A, Reach 4A, and the Middle Eastside Bypass and considers subsidence in Reach 2A, Reach 2B, Reach 4A and the Middle Eastside Bypass. The 2019 CCR included two new studies related to subsidence and capacity. The CCR also included a summary of studies and monitoring that will be completed in 2020.

- Work on the SCARF was not resumed in 2019, as the state continues to work on the process to restart the project and secure adequate funding. There is no certain date when construction will be completed. The interim facility (iSCARF) continues to produce required fish.
- In 2019 the Program installed a groundwater well on the Merced National Wildlife Refuge as part of the Eastside Bypass Improvement Project. The well will provide the refuge with an additional water supply and will be drilled as a shallow well above the Corcoran clay layer.
- In September 2019, the lowermost of the two weirs on the Merced National Wildlife Refuge was removed as part of the Program's Eastside Bypass Improvements Project. The weirs, which were constructed to create seasonal pools for migratory birds on the Refuge, were a partial barrier to adult Chinook salmon and many other native fish. The upper weir will be removed in 2020 and, together, the removals will improve fish passage in the Eastside Bypass.

### **Progress toward Achieving Paragraph 14 Requirements during 2019**

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 2019:

- The Program continued to develop brood stock at the iSCARF, utilizing selected foundation stock from the Feather River Fish Hatchery.
- The Program completed several Young-of-Year and Yearling Juvenile Spring-run Chinook releases, as well as the release of mature fish. The details of those releases are best documented in the NMFS *"2018 Technical Memorandum Regarding the Accounting of San Joaquin River Spring-run Chinook Salmon at the Central Valley Project and State Water Project Sacramento-San Joaquin Delta Fish Collection Facilities"*, at [https://archive.fisheries.noaa.gov/wcr/publications/Central\\_Valley/San%20Joaquin/fy2019\\_sjr\\_spring-run\\_technical\\_memo\\_-\\_final.pdf](https://archive.fisheries.noaa.gov/wcr/publications/Central_Valley/San%20Joaquin/fy2019_sjr_spring-run_technical_memo_-_final.pdf)
- Adult Releases
  - A total of 114 adult spring-run Chinook salmon broodstock cultivated at the iSCARF were released by CDFW into Reach 1A of the San Joaquin River. Two separate releases occurred, the first at Owl Hollow (30 females and 48 males from May 21-23, 2019) and the second at Ball Ranch at RM XX (7 females and 29 males from August 6-8, 2019). All fish received external color-coded FLOY tags with individual identification numbers, and all females and a subset of male fish were fitted with acoustic tags to track fine-scale movement. Genetic tissue samples of all broodstock adults were taken at the iSCARF for use in later parentage analysis.
- Juvenile production from 2018 Adult Release
  - During the RST monitoring efforts by Program scientists, a total of 448 unmarked NEP spring-run Chinook salmon juveniles were captured in the RSTs in Reaches 1 and 2. These juveniles resulted from in-river spawning of iSCARF broodstock adults released in the spring/summer of 2018. All unmarked naturally spawned offspring captured in the RSTs were

measured at capture, and a genetic tissue sample was taken from most fish for parentage analyses before release. The first unmarked fry was captured on November 21, 2018, at the Owl Hollow location with a fork length of 33 mm, and the last smolt was detected on May 18, 2019, at the RST near Highway 99, with a fork length of 134 mm. RST sampling ended early due to flood flows from Friant Dam because they could no longer fish safely and effectively.

- Ocean Fishery Detections

- In 2018, a total of 30 Program spring-run Chinook salmon were caught in the ocean fishery. One adult fish, which was released as a juvenile in March 2016 in Reach 5, was caught in the California ocean sport fishery offshore of the San Francisco Bay. The other 29 adult fish that were caught, were released as juveniles in March 2017 in the San Joaquin River near Harmon Road in the Eastside Bypass. Of those 29 adult fish, two were caught off the coast of Oregon as part of the sport fishery there. The remaining 27 adult fish were caught in the California ocean sport fishery or ocean commercial troll fishery, either offshore of the San Francisco Bay or Mendocino County coast.

- Adult Chinook Salmon Returns

- On April 9, 2019, the Program caught its first adult spring-run Chinook salmon in Reach 5 of the Restoration Area, with a fyke trap below the Eastside Bypass Control Structure. That fish was successfully transported into Reach 1. On April 19, 2019, two more adult fish were caught at the same location. One died in transport to Reach 1, and Program scientists subsequently extracted the CWT. This was the first confirmed returning adult spring-run Chinook salmon in the Program's history. 20 additional adults were later captured: 19 at the Eastside Bypass Control Structure fyke trap, and one at a fyke net below Sack Dam. All translocated fish were acoustically and externally tagged with Floy tags. Unfortunately, two more fish died in transit and a fourth carcass washed downstream shortly after being released in poor condition. A total of 19 returning adult spring-run Chinook salmon were successfully captured and transported from Reach 5 into Reach 1 in good condition. A full report of the effort is available on the Program website. <http://www.restoresjr.net/a-big-first-spring-run-chinook-return-to-the-san-joaquin-river/>

FishBio also collected a total of 10 adult SJR spring-run Chinook salmon in fyke traps in the mainstem San Joaquin River below the confluence with Stanislaus River. The first fish was caught on May 1, 2019, and the last on June 19, 2019. These adults were not confirmed as the Program's NEP spring-run Chinook salmon, nor could FishBio transport these fish, so their potential origin as San Joaquin River fish could not be confirmed.

In addition to the fish captured or transported into Reach 1, as many as 400 to 500 adult spring-run Chinook salmon made their way volitionally and without assistance into Reach 1 of the Restoration Area. It is postulated that these fish were able to move upstream via either the San Joaquin River main channel or the Eastside Bypass flood channel during flood control releases. Flood control releases in excess of river channel capacity were present in the Bypass system from mid-March through early April, and again from mid-May through mid-July 2019. The presence of these volitional fish is demonstrated by the detection of 209 spring-run

Chinook salmon redds in Reach 1. In addition, USFWS and CDFW crews recovered 168 carcasses, during routine redd and carcass surveys. 16 broodstock carcasses and 3 carcasses from adults that were translocated by the Program were recovered and confirmed by the presence of external or internal tags. A large majority of carcasses recovered, 149, had no external Floy tags and no acoustic tags, meaning they were not released broodstock or translocated adults.

- The Program continued to develop brood stock at the iSCARF, utilizing selected foundation stock from the Feather River Fish Hatchery.

## 6. Specific RA and TAC Activities Completed During 2018 & 2019

The RA and TAC completed a variety of tasks during 2018 & 2019 to support and contribute to Program Implementing Agency efforts as required by the Settlement.

- The RA provided Restoration Flow Recommendations throughout 2018 and 2019, to respond to changing conditions and updated Restoration Flow Allocations.
- The RA and the TAC were involved in numerous meetings and discussions regarding various Program initiatives, including:
  - Funding Constrained Framework;
  - Draft Fisheries Framework;
  - 2B Stakeholder process, including review and comment on various 2B project components (Compact Bypass Control Structure, Mendota Pool Control Structure, and Mendota Pool Fish Screens)
  - Arroyo Canal/Sack Dam improvements process, including review and comment on various iterations of the Arroyo Canal Fish Screen and Sack Dam improvement facilities.
  - Monitoring seepage well status with regards to permissible Restoration Flows;
  - Input on fisheries monitoring activities in response to flow and flood control release operations;
  - RFG meetings and RFG section drafting;
  - Water supply, hydrology and flood control planning including flow coordination calls with Friant Dam operators, SCCAO, and Friant managers;
  - Weekly flow management conference calls;
  - Improvements in runoff and water supply forecasting including the Airborne Snow Observatory (ASO) Program
  - Development of improved flow and temperature tracking web applications (see <https://flowwest.shinyapps.io/flowtool/> and <https://flowwest.shinyapps.io/SJRRPMonitoring/>)
  - 2018 Science Meeting

### 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 usually occurred twice per month throughout 2018 and 2019.

### RA Weekly Telephone Conferences with the Program Manager and key staff

The RA met via telephone on Monday mornings for an hour or more with the interim and permanent Program Manager throughout 2018 and 2019 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 Program 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 Program participants on a range of flow scheduling and monitoring needs and activities.

### RA Participation in Regular Settling Party Consultation Meetings

The RA attended Settling Party Consultation Meetings convened throughout 2018 and 2019. 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 Program participants.

### Participation in other Program Technical and Stakeholder Meetings

In 2018 and 2019 the RA and/or members of the TAC participated in numerous technical work group and technical feedback meetings:

- Water Management Goal Technical Feedback meeting (approximately quarterly throughout 2018 and 2019)
- Seepage Management Technical Feedback Working Group
- 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.
- Monthly Board Meetings convened by the San Joaquin River Resource Management Coalition (as available)

## 7. Priority RA/TAC Tasks for 2020

In addition to routine or administrative tasks as required by the Settlement (e.g. budget management and Annual Report), RA and TAC projects for 2020 fall into two broad groups: “Science and Projects Analysis” and “Water & Water Rules.”

Under “Science and Projects Analysis” there are several projects that the RA and/or TAC members have undertaken or committed to support. These will be pursued as budget allows. This list includes (lead in *italics*, other TAC to support as needed):

1. Data management. Enhance and expand Program data management capabilities using TAC and other Reclamation or grant funds. Start with groundwater level data. (*Tompkins*)
2. Fisheries Framework projects/analysis:
  - a. Sturgeon Passage habitat and transit work plan (*Henery*)
  - b. Reach 1 Productivity, data synthesis and analysis (*Hanson*)
  - c. Considerations around fall-run Chinook salmon trap and haul operations for 2020 and beyond (*Henery*)
3. Additional synoptic flow measurements for Reach 4 (*McBain*)
4. Long Term Monitoring Plan participation and comment (*McBain*)
5. Forecast Advisory Group participation (*Vorster*)
6. Water Temperature Analyses (*McBain*)
7. Specific Projects review: (*Johnson*)
  - a. 2B Elements – Compact Bypass, Mendota Control and Screen
  - b. Arroyo/Sack Dam refurbishment
  - c. DWR passage projects
  - d. DWR seepage projects
  - e. BOR Seepage projects

Under “Water & Water Rules,” there are several topics and categories. This area will be a high priority for the RA and TAC for the next two years, for a number of reasons:

- *The RA must ensure that Reclamation develops and maintains a reasonable ability to release restoration flows with some degree of accuracy & precision*
- *The RA, must assist and press the Settling Parties to secure protections for Restoration Flows down the river through Reach 5*
- *Restoration Flows have been continuous for three years now – downstream users should be comfortable with the presence of Restoration Flows by now.*
- *There is a knowledgeable and capable flow team consisting of key personnel from Reclamation, the Settling Parties and the TAC engaged on these issues NOW. Inevitable transitions could see the erosion of this depth of specific knowledge in future years, and the collaborative problem solving that is currently occurring.*

Specific tasks and focus areas for the RA and TAC in “Water & Water Rules” will include:

1. Do a good and thoughtful job on Flow Recommendations.
2. Continue development of Restoration Flow Guidelines to protect Restoration Flows and future RA flexibility.
  - a. Continue to work through RFG 2.2 issues and task list (2020)
  - b. RFG 2.3 to follow, in 2021 and beyond
3. Water Measurement and Operational Consistency – work towards the goal of steady and accurate flows down the river.
  - a. Identify and promote needed improvements in gauging and flow measurement
  - b. Work on techniques for improvement of data analysis and/or timeliness, to more quickly spot flow issues
4. Undertake better estimates or enumeration of losses (or reduction of accretions) in Reaches 1, 2, 3, and 4.
  - a. Utilize historical streamflow gauge and groundwater level data (to extent possible)
  - b. Undertake real time measurements or tracking as possible
  - c. Research and track water rights filings for diverters and/or transfers
5. Support Interior’s and the SWRCB’s obligations to protect Restoration Flows up and down the river
  - a. Promote implementation of effective and timely monitoring, and identification of flow issues and/or transgressions
  - b. Promote development and implementation of a compliance and/or enforcement plan by Reclamation, Settling Parties, and/or RA as appropriate
6. Understand SGMA Groundwater Sustainability Plans (GSPs), issues, and potential impacts to Restoration Flows due to surface water/groundwater interactions from groundwater pumping and surface diversions, and as necessary support Interior’s and the SWRCB’s obligations to protect Restoration Flows
  - a. Review and comment on GSPs including their assessment of groundwater sustainability plans and pumping on San Joaquin River actual and planned Groundwater Depending Ecosystems in the Five Restoration reaches, including assessment of the impact of groundwater pumping on the River’s hydrologic base flow (not Settlement Base Flow)
  - b. Ensure that groundwater plans do not incur additional Restoration Flow losses via surface diversions (during flood flows and non-flood flows) and seepage losses (interceptor drains).
  - c. Develop a system for monitoring and tracking groundwater impacts on the river going forward

## 8. 2018 and 2019 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.

### RA and TAC Expenditures, 2018 - 2019

#### RA & TAC Invoices

Organization	2018 Totals	2019 Totals
Tom Johnson	\$133,617.62	\$138,892.69
Bill Luce Consulting (Friant Water Authority 43275 - CLOSED)	\$13,931.34	\$14,578.12
Hanson Environmental Inc.	\$9,968.00	\$16,104.00
McBain Associates	\$31,191.93	\$63,950.29
The Bay Institute (NRDC 43276 - CLOSED)	\$39,745.75	\$54,711.08
Trout Unlimited, Inc.	\$6,517.38	\$15,188.52
FlowWest, Inc.	\$36,480.10	\$25,722.52
NFWF	\$27,000.00	\$27,000.00
	<b>\$298,452.12</b>	<b>\$312,165.22</b>

#### TAC Hours

Organization	Hours	Hours
Tom Johnson	706.50	717.00
Bill Luce Consulting (Friant Water Authority 43275 - CLOSED)	78.00	79.70
Hanson Environmental Inc.	56.00	88.00
McBain Associates	234.75	547.25
The Bay Institute (NRDC 43276 - CLOSED)	266.75	354.00
Trout Unlimited, Inc.	45.00	98.00
FlowWest, Inc.	230.00	153.00
	<b>1,617.00</b>	<b>2,036.95</b>

## APPENDICIES

Appendix A: URF Revenues

Appendix B: 2018 and 2019 Flow Accounting

Appendix C: History of Millerton Unimpaired Runoff

Appendix D: Final Restoration Allocations

## Appendix A: URF Revenues

2019 URF Revenue Total					
Tier 1	Block/Recipient	Date	Volume	Price	Revenue
Tier 1	Block 1	3/6/2019	37,002	\$ 20.00	\$ 740,040.00
Tier 1	Block 2	3/20/2019	95,000	\$ 20.00	\$ 1,900,000.00
Tier 1	Block 3	4/19/2019	76,000	\$ 20.00	\$ 1,520,000.00
Tier 1	Block 4	5/24/2019	76,006	\$ 20.00	\$ 1,520,120.00
Tier 1	Block 5	6/20/2019	22,799	\$ 20.00	\$ 455,980.00
Tier 2	Block 1	7/11/2019	3,800	\$ 67.67	\$ 257,146.00
Exchange	AEWSD	7/16/2019	4,000	\$ 67.67	\$ 270,680.00
	AEWSD	7/16/2019	532	\$ 67.67	\$ 36,000.44
	AEWSD	7/16/2019	4,000	\$ -	\$ -
	LTRID	7/16/2019	5,000	\$ -	\$ -
		<b>Total URF (net):</b>	<b>324,139</b>	<b>Total:</b>	<b>\$ 6,699,966.44</b>