

Annual Implementation Report (AIR)

Prepared by the National Marine Fisheries Service

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Table of Contents

Annual Implementation Report (AIR)	1
Summary Report for the Shasta River Template Safe Harbor Agreement Implementation in 2021	3
1. Montague Water Conservation District	4
2. Seldom Seen Ranch	10
3. Hidden Valley Ranch	13
4. Hole in the Ground Ranch	18
5. Shasta Big Spring Wildlife Area	23
6. Cardoza Ranch	27
7. Grenada Irrigation District	29
8. Belcampo-North Annex	31
9. Grenada Novy Ranches	33
10. Rice Livestock Company, Inc.	38
11. NB Ranches, Inc.	43
12. Edson Foulke Ditch Company	46
13. Parks Creek Ranch	49
14. Shasta Springs Ranch	52
Implementation Photos	60
Monitoring Data	76

Summary Report for the Shasta River Template Safe Harbor Agreement Implementation in 2021

Per Section 6.6.4 of the Shasta River Template Safe Harbor Agreement (SHA), each year the National Marine Fisheries Service (NMFS) will review reports provided by Permittees and the Shasta Watershed Conservation Group (SWCG) and prepare a public Annual Implementation Report (AIR), documenting implementation of the Site Plan Agreements and actions taken toward achievement of Net Conservation Benefit. A summary of the Beneficial Management Activities that were accomplished during, or before, the 2021 reporting period include:

- MWCD lining 1.3 miles of canal and working toward a finalized 1707 to dedicate conserved water for the benefits of Fish and Wildlife.

- MWCD and Hidden Valley Ranch finalized an agreement to execute the cold water exchange

- MWCD completed the construction of a dedicated cold water habitat at the base of Dwinnell Dam to accept 5.5 cfs of cold groundwater. Maintaining water temperatures leaving MWCD property close to or below 18 degrees C.

- MWCD enlarged the cross canal to enable the District to deliver larger volumes of water to be released to the Shasta

- The fish barrier at Seldom Seen diversion was eliminated by constructing a roughened channel

- Habitat improvement work was completed on Seldom Seen and Hidden Valley Ranch that included installation of Large Woody Debris (LWD), roughened channel construction, adding spawning gravels and planting +700 riparian trees.

- Hidden Valley Ranch's fish screen was relocated onto the Shasta River and efficiency improvements were made to keep more water instream. The project included real-time monitoring station equipment to record prior right use, spring water use and release to the river.

- Hidden Valley Ranch installed a pipeline connecting an upgradient spring to the Shasta River to enable cold water to be released to the river when available.

- The Hole in the Ground Ranch diversion combination project on the Shasta River is 75% designed.

- The fish barrier on lower parks on the Hole in the Ground Ranch was removed in 2021 and replaced with a fish friendly culvert.

- The Cardoza point of diversion was moved 3 miles downstream to the Shasta River, enhancing flows in lower Parks Creek and eliminating the fish passage barrier. A new pump station and more than 3 miles of efficiency pipeline was installed to effectively conserve 435 acre-feet during the 2021 irrigation season.

-Park Creek Ranch constructed over 20,000 feet of riparian exclusion fencing, completing Reach 2, 3, 4, and 5 of the upper Parks Creek. Over 17,000 feet of water line was installed to supply stock water to 6 different troughs in pastures now excluded from parks creek.

- Many of the effectiveness stations have been installed and are operational, naming UPC, MPD and PCE. The monitoring contract to rate and maintain stations was not in place during 2021.

-Eyasco worked to create a reporting dashboard to house all the monitoring station data, as well as annual reports and supplemental information provided to the agencies by the permittees.

The following sections contain summaries, by permittee, of the accomplishments reported on the 2021 Annual Reports received by NMFS in April 2022.

1. Montague Water Conservation District

Montague Water Conservation District (MWCD/District) is a public irrigation district that owns and operates Dwinell Reservoir located in the southern portion of Shasta Valley and provides irrigation water to users within the district boundary, located in the northern portion of Shasta Valley with diversions on both the Shasta River and Parks Creek. MWCD owns Dwinell Reservoir, the property under the high water mark of Dwinell Reservoir and the property along the Shasta River immediately below Dwinell Reservoir where much of the water operations for the irrigation district occurs. The Site Plan Agreement (SPA) incorporates and extends MWCD's Conservation Habitat Enhancement and Restoration Project (CHERP) as well as additional measures proposed in the Safe Harbor Agreement. CHERP is a package of restoration projects MWCD has committed to and is currently implementing and will also be reported annually as SHA actions.

For the purposes of this report, activities on MWCD Property have the potential to influence all sub-reaches identified in the Template Safe Harbor Agreement. See Table below for MWCD reported progress on SHA commitments.

Project Name	Project Description	Current Status	Description of Progress
Parks Creek Bypass Flows	Maintain bypass flows and additional bypass : 10/1-2/28 6.0 cfs 3/1 -9/31 16.00 cfs	In progress	Sought grant funding for new flow commitments. Reporting is available.
Flow Releases	Continue to release flows for enviro purposes per CHERP BiOp	In progress	Interim Commitments to Shasta River were conducted. Reporting is available. The Rubicon gate that releases Environmental water has malfunctioned and been in operable at times. The Rubicon gates cannot function properly at the low flow volumes they were reportedly able to function at- 3.0 cfs seems to be the base flow so MWCD has been combining flow purposes of water released through one gate.

Project Name	Project Description	Current Status	Description of Progress
Gage operations	<p>Operate, maintain and keep the following gage locations: MPD, PME, DRE, SRX, SRD, DSW, DFB</p> <p>Maintain and Operate flow and temperature gauges to measure and verify prior rights, environmental water, Flying L pumps and seeps</p>	In progress	<p>Reporting is available. A low flow rating curve was reconstructed. Data for Parks Creek will be available as dashboard comes on line. Data for MWCD at Dwinnell Reservoir is also available. It is important to note that the the gauging and monitoring efforts are a work in progress and there have been malfunctions and mistakes. Gages such as the Flying L pipeline gage were not reading accurately. The Rubicon Slip gates don't actually function through the range of flows they were reportedly capable of handling. MWCD has and will have to continue to refine and adjust. We expect better function in 2022.</p>
Flying L	<p>Connecting the Flying L pumps to the Shasta River to release up to 5.5 cfs of water with temperatures under 13.2 C when water released from Dwinnell exceed 18 C during the summer months</p>	Completed and Maintained	<p>Reporting available- flow meter to be changed in 2022</p>
Petition	<p>Change petition for municipal and environmental water</p>	In progress	<p>Waiting for SWRCB process to continue. MWCD is part of Batch 1707.</p>

Project Name	Project Description	Current Status	Description of Progress
Cross Canal Enlargement	Enlarge the cross canal to allow for larger volumes of water to be released to the Upper Shasta for flushing flows	Completed	Work completed-Channel is functioning well. Highest release was 30 cfs
Riparian source	Develop a Riparian cutting and seed source for over story riparian species on MWCD property below Dwinnell Reservoir. Maintain and enhance riparian habitat along Cross Canal, coldwater habitat and Shasta River within MWCD ownership	In progress	Riparian establishment is occurring along cross canal, Shasta River and Cold Water habitat
Cold Water Habitat	Permittee will construct a lateral cold water habitat near the base of Dwinnell Reservoir at the confluence of MWCDs Cross Canal and the Shasta River to ensure cold water refugia.	Completed and Maintained	Structure complete and functioning- need technical input to maximize habitat quality
Cold Water Habitat	Plant and maintain riparian habitat enhancement associated with cold water habitat on the MWCD owned reach of Shasta River	In progress	This work was completed but more planting could occur based on positive results. Riparian establishment is occurring along cross canal, Shasta River and Cold Water habitat
Seldom Seen	Provide access and continue to work with partners to ensure completion of Seldom Seen legacy diversion structure to provide fish passage on Shasta River on MWCD property	Completed	

Project Name	Project Description	Current Status	Description of Progress
Shasta River Flow Strategy	Implement additional summer flow release of 2 cfs in Very dry year when prior rights is not released	Maintained	Not done because prior rights lasted until September
Habitat Improvements	Install LWD and spawning gravel on MWCD property below the Dam	Completed	This work was completed in 2020. MWCD will accept more tree planting. The work conducted in 2020 is overgrown by vegetation (tullies and difficult to see)
MWCD- Canal Lining	Main Canal Lining: Line and maintain up to 8.4 miles of MWCD's Main Canal where delivery loss is highest. Provide 515 (value determined through loss investigations) af per mile of canal lined for instream benefit for life of Agreement. As interim measure, continue Interim Settlement Model averaging to determine instream flow contribution to Shasta River until Main Canal Lining is complete, then implement MWCD increased flow commitments based on water year type for the life of this agreement	In progress	1.3 miles were installed
MWCD- Secondary POD	Build a secondary POD in Lower Shasta to deliver more water instream through agreement area to irrigate lower portion of the District- Only when temp is under 18 degrees and all rights are being met- estimated to occur a max 60 days between April 1- June 1 on good to average WY, include 1707	In progress	MWCD has a 1707 petition in to SWB for approval- project on hold until SWB approval

Project Name	Project Description	Current Status	Description of Progress
MWCD- Secondary POD	Add new Point of Diversion: Assess and if feasible, construct, operate, and maintain new Point of Diversion (POD) in lower Shasta River to allow up to 10 cfs to remain instream to seasonally enhance flows in Upper Parks Creek.	In progress	This project is on hold until MWCD's point of diversion is retrofitted and a determination is made about the validity of WC 1701-1707 in this scenario.
Exchange Agreements	Exchange water for HVR and HIG for spring water	In progress	Petition process ongoing. Worked with HVR to implement exchange agreement- infrastructure is installed on HVR
1707	Continue to work with SWRCB to obtain approval of submitted Change Petition to add Fish and Wildlife and Municipal uses as additional beneficial uses of water and protect	In progress	Petition approval continues but progress is slow.
Fish Passage	Continue to use existing infrastructure to provide fish passage on Parks Creek. E.1.b1 Continue to seek funding for Parks Creek screening and passage project. E.1.b2 Implement, operate, and maintain fish passage and fish screening facility at the Parks Creek diversion. Provide by- pass flows to PCE as MWCD agreed upon in Upper Parks Creek Flow Plan when constructed.	In progress	Grant was written and submitted, but not funded.

Project Name	Project Description	Current Status	Description of Progress
Flow Strategy	Participate in Shasta River reach-wide diversion management strategy	In progress	Worked with HVR to implement exchange methodology and reporting. HVR infrastructure is ready for exchange if SWRCB approval is gained. Strategy is developed and implementation projects are getting installed that support the flow strategy. Monitoring is improving.
Flow Strategy	Re-do Parks POD to limit flows and ensure bypass is meeting PCE minimum flow requirements	In progress	Strategy is developed and assessment and design work has been accomplished. MWCD submitted and implementation grant for MWCD's Parks Creek diversion

2. Seldom Seen Ranch

The Seldom Seen Ranch is located north of Lake Shastina and west of Big Springs Road. The Property shares an eastern and northeastern boundary with the Shadow Hills subdivision. To the north lie the Hidden Valley Ranch and Hole in the Ground Ranch and to the west, the Shasta Springs Ranch.

The Property is used primarily for beef cattle production and is currently managed as an integrated unit with three other ranches owned and managed by the Permittee. The three contiguous properties, Hole in the Ground Ranch, Shasta Springs Ranch and Seldom Seen Property, are managed for pasture for beef cattle, while the Hay Ranch is mainly hay production for winter feed to support the three cattle ranches. Using hay from the Hay Ranch during the winter minimizes the amount of grazing necessary to maintain the cattle at the other sites, which allows the pasture grasses to be maintained at very high levels of ground cover. The high level of ground cover minimizes surface erosion and fine sediment contribution to the sensitive aquatic systems on the Enrolled Property, and inhibits the establishment of noxious weeds.

The Shasta River flows through the Property. The Seldom Seen Spring is a hydrologically unique feature of the landscape of the Enrolled Property. It is not accessible to fish. It is an unreliable spring that emerges in some years in the vicinity of 122.389W, 41.544N, under wet hydrologic conditions. The spring drains north to the Shasta River, flowing in a channel for approximately 500-feet, across a gentle slope before dropping into the river, 10± vertical feet in

75± feet linear distance, through heavy riparian vegetation. In years when it flows, it appears as a small seep in February through April, but relatively quickly can increase to more than two cfs, sometimes to as much as nine cfs. Usually in June, if not sooner, the flow just as quickly diminishes to zero. This water is not used for irrigation on the Property.

For the purposes of this report, activities on the Seldom Seen have the potential to influence the Upper Shasta River sub-reach identified in the Template Safe Harbor Agreement. See Table below for Seldom Seen reported progress on SHA commitments.

Project Name	Description	Current Status	Description of Progress
Prior Rights Management	Continue to irrigate with groundwater, utilizing the stored “Prior Rights” downstream, per current Upper Shasta River Flow Management Strategy	Maintained	Monitoring was not completed in 2021 to verify usage at PODs- will be reported in 2022
HVR project	-Agree to continue cooperation in project to upgrade HVR diversion system adjusting stocking to reflect loss of pasture productivity	Completed	Refer to Hidden Valley Annual report for photo log
Soil Moisture Sensors	-Agree to include Enrolled Property pastures in Project Area for testing effectiveness of soil moisture sensor technology, or other appropriate technology, to increase irrigation efficiency, implement routine use where appropriate, and adjust water management accordingly	In progress	Consultation with practitioners in Siskiyou and neighboring county
Fish Passage	-Agree to eliminate Covered Species passage barrier at Diversion 156 (Seldom Seen)	Completed	Completed prior to reporting period

Project Name	Description	Current Status	Description of Progress
Beaver Management	Agree to develop and implement beaver management plan to alter or provide access around potential migration barriers at dams	In progress	Plan outline and first draft developed
LWD and Spawning Gravel	Install 23 LWD structures	In progress	Project that added 5 LWD structures was completed in 2020.
Riparian Fencing	-Agree to maintain riparian exclusion fencing or, if modified, riparian pasture fencing with associated grazing plan	Completed	With assistance from UCCE and in consultation with NCRWQCB, developed riparian grazing plan specific to Enrolled Property for riparian pasture outside of exclusion fencing
Riparian Fencing	-Will replace up to 20% of riparian fencing if needed due to high flow damage; will request funding assistance for balance of repairs	In progress	No fencing was damaged by high flow
Riparian Habitat Enhancement	Permittee agrees to work collaboratively with NMFS and CDFW to seek funding and implement riparian planting projects where existing riparian habitat is less than site- potential; at various locations in sub-reach from Riverside Road to property line	In progress	Project that planted 460+/- trees of riparian species; completed in 2020;
Wet Crossings	-Two vehicle/livestock crossings/ watering access lanes will be maintained as rocked fords.	In progress	No maintenance activities needed in 2021

Project Name	Description	Current Status	Description of Progress
CMP Crossing	One vehicle crossing will be maintained in appropriately-sized CMP	In progress	No maintenance activities needed 2021
Spawning Gravel Enhancement	Agree to provide access to implement spawning gravel enhancement, up to 11 sites	In progress	Project that added two riffle habitats (67' total length), corresponding gravel beds (49' total length), and a stockpile of 60 yd ³ of spawning gravels was completed in 2020.

3. Hidden Valley Ranch

Hidden Valley Ranch (HVR) is owned and operated by Hidden Valley Ranch LLC. The HVR is located within the Covered Area along Big Springs Road in central Siskiyou County (41°34'57" N latitude, 122°26'18" W longitude). The HVR includes a total of 431± acres, with 150 ± acres under irrigation at the time of this agreement. The HVR is generally a cow/calf operation with a small segment of the operation producing sheep. Approximately 1.5 miles of the Shasta River is adjacent to the HVR, for the purposes of this report, activities on HVR have the potential to influence the Upper Shasta River sub-reach identified in the Template Safe Harbor Agreement. See Table below for HVR reported progress on SHA commitments.

Project Name	Project Description	Current Status	Description of Progress
Bunk house and West 40 Pipeline Maintenance	-Maintain existing pipeline infrastructure as described in E.1. and continue irrigation practices to reduce tailwater temperature impacts	Maintained	Performed as required, tailwater reduced to near zero due to drought conditions and constant monitoring of available irrigation water to west 40 and bunk house pastures
Cold Water Exchange with HVR, including spring connection	Efficiency projects on HVR to allow for exchange of MWCD water and keep cold spring water instream-exchange of water no net increase of instream flow= Provide a maximum of 3 cfs spring water for instream contribution from June 1 –September 15	1707 Petition submitted -Completed	Can do when springs are flowing at or above this amount. Currently dry since May 2020.
Fall Spring Contribution	Continue to release spring water into the river at the end of the irrigation season (November1-March 1)	Maintained	The lower spring was released to river and continuous monitoring of flow was initiated in 2022- will report next year
Additional Spring Water Contributions	Additional spring water will be released to Shasta when spring source produces over 2.25 cfs-tracked via real-time meter	Maintained	Routine practice when springs deliver. Currently, springs dry since may, 2020.
Tailwater Re-use	Collect tailwater in open ditches and reuse on HVR	Maintained	Ongoing practice
Diversion Management	Participate in a reach-wide diversion management strategy	Maintained	participating in Flow Management Strategy and Forbearance Agreement as indicated in THSA.
Tailwater Berms	Build berms along a 2 key pastures to reduce the chances of tailwater from re-entering the river and allowing for percolation and subsurface return	Completed/ maintained	completed and used as intended.

Prior Rights Pipeline	Pipe Prior Rights ditch in exchange for 0.5 cfs spring water released to the river	Completed/ Maintained	Project completed and performed as required with available resources.
Fish Passage	Maintain unimpeded fish passage conditions at the HVR diversion and agrees to yearly inspection	Completed/ Maintained	No impediment observed during 2021. Sight was monitored during fish screen improvement project with no impact to diversion or fish passage. NOAA note- New fish screen changed channel - no annual inspection necessary, as not a passage issues
Fish Screen	Relocate the fish screen to channel, construct a pipeline from new fish screen location to existing pipeline	Completed/ Maintained	Completed December 2021
Beaver BMP		Maintained	2 beaver dams exist in riparian zone 2 and pose no impact to normal ranch activities or infrastructure
Leave woody debris	Leave wood debris from existing trees	Maintained	complied, no effort to remove down woody debris or other habitat infrastructure from stream bed or riparian zones.
Habitat Improvements	Implement large woody debris (upto 24 sites) projects on the ranch and build spring alcove	Partially completed	Complied as part of spawning beds improvement project of 2020.
Riparian maintenance	Perform yearly maintenance on existing riparian fencing	Maintained	Performed continuously during routine fence condition checks, usually weekly. Work typically limited to reconnecting one or two wire strands to a fence post in a pasture.
Crossings	Maintain crossings and stock water	Maintained	Wet crossings (2) required no work. Water access to cattle was through available open ditches, ponds, or water troughs.

Fencing	Replace up to 50% of riparian fencing if needed due to flood damage as stipulated	Maintained	No action required
Habitat Improvements	Enhance existing alcoves where spring water will re-enter channel	Completed	Alcove enhancement was completed in 2021
Spawning Gravel Enhancement	Place gravels within the reach at 5 locations	Partially completed	Reported as completed in 2020- but only 3 of the 5 are complete
Riparian Planting	Plant riparian trees	Maintained	Previous planting in riparian zone 1 is showing strong success
Riparian Grazing Plan	Implement the riparian grazing plan as described in Section E.3.d and outlined in Appendix X.	Maintained	Riparian zone 3 grazed per plan July 13 through August 4, 2021 in accordance with plan
Pasture management	Will cross fence to better manage stubble height	Maintained	Limited capability in 2021 to meet this criteria of 6" stubble height due to drought and lack of water to the west 40 pasture (no growth) consequently causing a reduction in herd size to allow capability to feed on remaining pastures
Assessment/Studies	Allow access for studies	Maintained	Access agreements in place for PIT array for CDFW and other reviews required by Agency personnel with notification
Effectiveness Monitoring Program and Reporting Dashboard	Maintain existing network, Install three needed real-time stage/flow/temperature stations, further develop dashboard to house all EM stations and POD stations, as well as annual reporting and do data analysis for performance measures- HVR US and HVR DS	In progress	HVR US was installed as part of the efficiency pipeline project and is reported on Eyasco for agency review- along with POD monitoring stations

1707 Completions	Work with SWB to finish existing 1707 petitions to get real water instream and develop others for Parks	In progress	Petitions submitted to SWB
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4. Hole in the Ground Ranch

The Hole in the Ground Ranch is located north of Lake Shastina, and west of Big Springs Road. The Property shares a western and southwestern boundary with the Shasta Springs and Seldom Seen ranches, also owners by the Permittee. The south fence line is also common with the Hidden Valley Ranch (HVR). To the north lie the Cardoza Ranch and the Big Springs Ranch Wildlife Area. On the northeast and east are other small private landowners.

The Property is used primarily for beef cattle production and is currently managed as an integrated unit with other ranches owned by the Permittee. Three contiguous properties, including the Hole in the Ground are managed for pasture for beef cattle, while the Hay Ranch is managed for hay for winter feed to support the three cattle ranches. Using hay from the Hay Ranch during the winter minimizes the amount of grazing necessary to maintain the cattle at the other sites, which allows the pasture grasses to be maintained at very high levels of ground cover. The high level of ground cover minimizes surface erosion and fine sediment contribution to the sensitive aquatic systems on the other three ranches, and inhibits the establishment of noxious weeds. Maintaining the cattle locally, year-round, helps control the introduction of non-endemic species, e.g. invasive plants. Streams flowing through the Enrolled Property include the Shasta River, Parks Creek, and Hole in the Ground Creek. The confluences of the creeks with the Shasta River are off the property.

For the purposes of this report, activities on the Property have the potential to influence the Upper Shasta River and Lower Parks Creek sub-reaches as identified in the Template Agreement. See Table below for Hole in the Ground Ranch reported progress on SHA commitments.

Project Name	Project Description	Current Status	Description of Progress
Cattle Access	Cattle access to the channel will be excluded or restricted to crossings, watering access points, and/or limited season/stocking/duration that conserves water quality	Maintained	No Changes-Photopoints for all crossings and watering lanes on the Shasta River and Parks Creek on the Hole in the Ground Ranch will be included in the 2022 Annual Report.
Tailwater berms	Agree to continue maintenance of tailwater berms	Maintained	Maintained includes routine inspection or monitoring for repairs. No tailwater berm repairs were necessary in 2021, therefore there are no photos of tailwater berm repairs for 2021.
Maintain concrete ditches	Agree to maintain concrete ditch lining on Pump Diversion distribution system	Maintained	Maintained includes routine inspection or monitoring for repairs. No repairs of the concrete lining on the pump diversion distribution system crossing repairs were necessary in 2021, therefore there are no photos of repairs for 2021.
Diversion Combine/ Cold Water Exchange	Agree to redesigning and rebuilding Gravity Diversion and pump diversion in order to facilitate Upper Shasta River Diversion Management Plan	75% Designed- No progress reported	
Soil Moisture testing	Agree to include Enrolled Property pastures in testing effectiveness of soil moisture sensor technology to increase diversion efficiency, implement routine use where appropriate, and adjust water management accordingly	In progress	Consultation with practitioners in Siskiyou and neighboring county

Project Name	Project Description	Current Status	Description of Progress
Tailwater Reduction	Hole in the Ground Creek tailwater reduction	In progress	Capture facility constructed on Enrolled Property between 2018 and 2021. At it's nearest point to Hole in the Ground Creek, the captured tailwater facility is approximately 3,100 ft. from the creek channel, with extensive upland habitat in-between. Currently, this has eliminated warm water tailwaters from entering the creek. We are continuing to monitor the effectiveness of the facility to assure the tailwater reduction is sustained during wet years.
Fish Passage	Agree to maintain fish passage through the roughened channel at the POD for the two HIG diversions on the Shasta River	Maintained	No instream work needed during reporting period
Cardoza Diversion	Allow for new crossing at Cardoza diversion	In progress	POD on Enrolled Property was not used in 2021; multi-SSP culvert replaced former structure allowing unrestricted fish passage; access was provided for all construction personnel and equipment and access continues to be provided for personnel and equipment during monitoring phase

Project Name	Project Description	Current Status	Description of Progress
Beaver Management Plan	Agree to develop and implement beaver management plan to alter or provide access around potential migration barriers at dams	In progress	Plan and first draft developed during spawning surveys and undergoing internal review. Crew members were instructed to identify and communicate location of beaver dams to CDFW for further evaluation and mitigation, if necessary No mitigation was necessary
Riparian fencing	Fencing along HIG creek	In progress	Used UAV to map vegetation for fence alignment planning
Riparian Exclusion Maintenance	Agree to maintain riparian exclusion fencing or, if modified, riparian pasture fencing with associated grazing plan. Will replace at least 20% of riparian fencing if needed due to high flow damage	Maintained	No Change- no photos
Riparian fencing	Fence 40% of remaining Parks Creek	Maintained	We monitored existing fencing for maintenance needs. No new fencing was installed during 2021.
Riparian Grazing Planning	UCCE riparian grazing planning for Parks Creek and Rattlesnake fields, around Cardoza	Maintained	Photo points of grass heights were submitted with Annual Report
Riparian Grazing Planning	UCCE riparian grazing planning for HIG creek	Maintained	Grazing Plan submitted with Report

Project Name	Project Description	Current Status	Description of Progress
Cattle Management for Parks Overflow	HIG will add, as appropriate, measures for cattle management to safeguard water quality including fencing the Parks Creek overflow channel. Such measures include temporary or permanent fencing depending on the need indicated by water quality in the area.	In progress	We do not have 2021 photos available. We are doing so for the 2022 monitoring and will include those in the 2022 Annual Report.
Livestock crossings	-Seven livestock/vehicle crossings will be maintained as rocked fords	Maintained	Maintained includes routine inspection or monitoring for repairs. No crossing repairs were necessary in 2021, therefore there are no photos of crossing repairs for 2021.
Studies and supplementation	Agree to participate in studies to refine Upper Shasta River Flow Management Strategy, including role of Seldom Seen Spring	Maintained	Note: Diversion monitoring was not initiated in 2021 so data supporting this is not available.

5. Shasta Big Spring Wildlife Area

The California Department of Fish and Wildlife (CDFW) purchased the Big Springs Ranch Wildlife Area (BSRWA) from The Nature Conservancy (TNC) in 2019. CDFW will operate the property as a State Wildlife Area for the purposes of protecting and enhancing natural habitats for fish and wildlife, and providing public use opportunities that are compatible with the long-term conservation needs of fish and wildlife populations and their habitats. Permittee may

consider the use of cattle as a management tool for wildlife habitat benefits based on an adaptive management approach.

BSRWA includes two ranches covering a total of 6,000± acres. Approximately five miles of the Shasta River and 1.5 miles of Big Springs Creek are included within the BSRWA property boundaries. The ranch lies within what has been designated as the **Mid Shasta Reach and the Big Spring Creek Reach** in the Template Agreement. See Table below for BSRWA reported progress on SHA commitments.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
1707 Dedications	Maintain diversions and 1707 dedications	Maintained	
Tailwater Management	Continue to manage tailwater returns	Maintained	
Diversion Management Plan	Continue acceptable diversion management plan	In progress	
Real-time Monitoring Stations	Operate real time monitoring at stations to track improvements on the Enrolled Property	In progress	Flow and temp monitoring stations will be installed during 2022 on all diversions and in various instream locations. Eyasco has any data associated with the current measuring devices.
Big Springs Lake outfall culvert	Clear Big Springs Lake outfall culvert and add a monitoring device to outfall	In progress	Flow and temp monitoring stations will be installed during 2022 on all diversions and in various instream locations.
Cardoza Easement	Provide easement for the proposed Cardoza pump station	Completed	Project completed in early 2021- see Cardoza reporting

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Stockwater	Continue to maintain off-channel stock water troughs	Maintained	Damaged plumbing was repaired. A back up submersible pump was purchased; replacements for stolen water tanks were purchased. These will be installed upon receipt of tanks.
Nelson Fish Screen	Nelson Fish Screen Evaluation and replacement	Maintained	This system wasn't operated during this reporting cycle but the screen was pulled and repairs and modifications were made to bring the screen up to NOAA criteria.
Little Springs Culverts	Until culverts are removed Permittee agrees to clean clogged culverts along Little Springs Creek	Maintained	The remaining culvert is cleaned as needed. A skimmer has also been installed to prevent large items from becoming lodged in the culvert.
Little Springs Passage	Remove the two culverts and provided unimpeded fish passage at the third upstream of the County road on Little Springs Creek for fish passage and water quality	In progress	Two of the three culverts have been removed. The Fisheries Technical team will explore fish passage solutions for the remaining culvert.
Beaver Management	Implement beaver management	Maintained	Debris was removed daily from the remaining Little Springs culvert. Beaver dam was left in place just below site where the second culvert was removed from.
Woody debris	Continue to leave woody debris from existing trees	Completed	
LWD	Implement large wood enhancement on the BSC and Shasta River as	In progress	Fisheries Technical team will investigate the best approach for the pilot project.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
	specified on Habitat Improvement Map		
Alcoves and off channel	Enhance up to four spring alcoves along the Shasta River and build off-channel habitat along the Shasta River as specified on Habitat Improvement map	In progress	Fisheries Technical team will investigate the best approach for the pilot project.
Riparian fencing	Will continue to perform yearly maintenance as needed on existing riparian fencing	Maintained	Fencing maintained
Riparian	Implement riparian restoration projects on Little Spring Creek and Big Springs Creek	In progress	100 plantings on Little Springs
Riparian Grazing	If riparian grazing occurs, Permittee will implement the riparian grazing plan	In progress	No riparian grazing occurred.
Spawning Gravel Enhancement	Implement spawning gravel enhancement if deemed appropriate on the Shasta River portion of BSRWA as specified on Habitat Improvement Map	In progress	Fisheries Technical team will develop an approach.
Pasture Management	-Permittee will require lessee to rotate cattle through the pastures as part of Permittee's pasture management	In progress	There was no Lessee during this cycle.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Public outreach	Spawning tours, etc	In progress	
Assessments/ Studies	Allow the Parties to use data from existing studies on the ranch to further understand Covered Species habitat use on the Enrolled Property	In progress	Fisheries Technical team will develop an approach.
Studies	Allow access for studies	In progress	Various ROEs have been issued and more are in process
Effectiveness Monitoring Program and Reporting Dashboard	Maintain existing network, install needed real-time stage/flow/temperature stations, further develop dashboard to house all EM stations and POD stations, as well as annual reporting and do data analysis for performance measures	Maintained	DFW working on contract to maintain monitoring network

6. Cardoza Ranch

The Cardoza Ranch is located along Louie Road in central Siskiyou County (41°35'00" N latitude, 122°26'49" W longitude). The ranch operation influences both the Lower Parks and Mid Shasta reaches as designated within the Agreement, however the river corridor is not directly adjacent to the property. The Parks Creek overflow, a small tributary to the Shasta River, runs through the Ranch. The Cardoza Ranch includes a total of 497± acres, with 165 ± acres under irrigation. See Table below for Cardoza's reported progress on SHA commitments.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Efficiency Pipeline	Construct pipeline infrastructure to increase efficiency and reduce tailwater production	Completed	Spring 2021
Cardoza new POD, Fish Screen and Pipeline Project	Construct, properly manage and maintain a new point of diversion on the Shasta River at the Louie Road bridge and abandon existing flashboard diversion structure on Parks Creek	Completed	2021
Interim flow management on Parks	Interim flow management efforts to improve water quality, timing and duration until the diversion is moved to the Shasta and Implement an interim strategy to improve passage until new point of diversion is constructed	Completed	Diversion was moved- interim management not necessary
Tailwater collection and re-use	Collect tailwater in open ditches and reuse as described in Section E.3.a.	Completed	Tailwater ditch was cleaned and spoils were disposed of upland to avoid sediment entering waterways

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Pasture Grazing Management	Add cross fencing to manage pasture grazing to keep grass between 4 to 6 inches.	In progress	2000-feet of cross fencing installed in 2021, met with NRCS for additional funding.
Stock water	Permittee agrees to installation of a stock water system in conjunction with the proposed efficiency piping project.	Completed	Spring 2021
Soil Moisture Sensing program	Install several soil moisture sensor stations to help inform irrigators when to start irrigation rotations, could help reduce water use by informing LO's of reduced ET during Spring and Fall and between rotations to keep water instream- quantified benefit is unknown	Completed	Installed Spring 2021
Effectiveness Monitoring	Monitoring report from POD move	In progress	UCD is still monitoring project benefits until 2024- will submit when completed.
	Access to maintain existing pit tag array and trap and tag fish	In progress	UCD is maintaining pit tag at old POD

Project Name	Project Description	Current Status (04/2022)	Description of Progress
1707 Completions	Work with SWB to finish existing 1707 petitions to get real water instream and develop others for Parks	In progress	SWB working through protests

7. Grenada Irrigation District

Grenada Irrigation District (GID), a Special District of Siskiyou County, is located in Siskiyou County (41°38'11.56" N latitude, 122°29'22.88" W longitude). GID owns four parcels including a small reach of the Shasta River, as well as provides irrigation water to the GID comprising approximately 1477 irrigated acres. Only two parcels located on or near the Shasta River that include intake and pumping infrastructure are included within the Agreement. Approximately 300-feet of the Shasta River is within GID ownership, designated to be in the Mid Shasta Reach in the Agreement. See Table below for GID's reported progress on SHA commitments.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Upgraded POD	Maintain upgraded diversion facility	Maintained	Pump station in working order for duration of season
GID Efficiency Improvement	Implement conveyance pipeline to reduce transmission loss. Conserved water will be provided for instream benefit when the project is implemented. Estimated 1,136 acre-feet will be conserved on an average year	In progress	We applied to WCB in 2021 and were staff recommended. Following delay as a result of antagonistic groups protesting the project, we are regrouping on our application. GID did however, voluntarily delay start up and participated in a pulse flow event as requested to help increase flows instream.

1707 Petition	Conserved water will be provided for instream benefit through SWRCB Change Petition and Water Code 1707	In progress	GID has a 1707 application being reviewed at the SWB. We hope to have it completed in 2022.
Stream Gaging	Work with agencies and SWCG to use streamflow gage at GID riffle to reduce flow variability resulting from GID diversion and curtailment	Completed	GID regularly uses the gage at the GID riffle to help mitigate flow variability. We also use a real time flow station to track diversion data.
Diversion management	Participate in a reach-wide diversion management strategy	In progress	GID continues to work on a reach-wide basis to manage flows.
Passage/Screening	Maintain unimpeded fish passage conditions at the GID diversion. Maintain self-cleaning fish screen at the GID diversion point.	Maintained	Work to maintain the fish screen as needed.
Habitat Complexity	Will maintain the instream barb structures opposite of the Fish Screen	Maintained	Monitor instream barb structure to make sure they are working as intended.
Riparian Fencing	Perform yearly maintenance on existing riparian fencing	Completed	Regular checks on current riparian fencing.

Effectiveness Monitoring Program and Reporting Dashboard	Maintain existing network, Install three needed real-time stage/flow/temperature stations, further develop dashboard to house all EM stations and POD stations, as well as annual reporting and do data analysis for performance measures	Maintained	Have worked with 3rd party and DWR to maintain gages on the diversion site.
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8. Belcampo-North Annex

Belcampo-North Annex Property (North Annex) is owned and operated by Outpost M-R LLC (Permittee). North Annex is located within the Covered Area between Interstate 5 and the Shasta River in central Siskiyou County (41°37'58.93" N latitude, 122°29'35.62" W longitude). Belcampo includes a total of 4167± acres, with 1503 ± acres under irrigation. Approximately 4 miles of the Shasta River is adjacent to the North Annex, within what has been designated as the **Mid Shasta Reach** in the Agreement.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Existing Pipeline	Maintain existing pipeline infrastructure	Maintained	All existing pipelines (irrigation and stockwater) were maintained and repaired as needed

Tailwater	Continue irrigation practices to capture, reuse and reduce tailwater impacts	Maintained	All tailwater was captured and returned to irrigation system via return pump
Stockwater	Continue to maintain stock water systems	Maintained	
Riparian Grazing	Will continue to maintain riparian areas by managing livestock grazing within the riparian area	Maintained	No photos taken in 2021. See “Riparian Grazing” Doc.
Pasture Grazing	Will continue to holistically and intensively manage livestock grazing on the Enrolled Property	Maintained	Cattle were rotationally grazed on the property, following the principles of holistic management
Grazing	Permittee produces many livestock species and management is more intensive than cattle production. The riparian grazing plan will require additional consideration and input from UC Extension Service. Permittee agrees to work with UC Extension Service to develop a	Maintained	Change: Beef cattle are the only species produced by or managed on the property as of October, 2020. For all of 2021 and moving forward, only cattle will be incorporated in the grazing/pasture management.

	riparian grazing plan by the end of the first year of agreement		
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9. Grenada Novy Ranches

The Grenada Novy Ranches is owned by Lowell L. Novy in sole proprietorship, DBA Novy Ranches. The Grenada Ranch is located along Highway A-12, approximately three miles east of Interstate 5, in Siskiyou County (41°38'11.56'' N latitude, 122°29'22.88''W longitude). The Grenada Ranch includes a total of ±1085 acres, with ±586 acres under irrigation based on GIS coverage. Novy Ranches has, and for the term of the Permit, will continue to lease pasture commonly referred to the Zenkus Property. The Zenkus Property is 73 irrigated acres and is contiguous to and surrounded by either the Novy or Rice property. The Grenada Novy Ranches reporting is inclusive of the Zenkus Property hereinafter. Inclusive of the Zenkus Property, the Grenada Novy Ranches is managing 659 acres under the Agreement.

Grenada Novy Ranches is located within the lower part of the Mid-Shasta Reach and is adjacent to the Rice Livestock Company, Inc. Ranch. The Enrolled Property is adjacent to approximately 12,400 feet of the Shasta River. See Table below for Novy’s reported progress on SHA commitments.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Tailwater Reduction	Continue irrigation practices to ensure there are no tailwater impacts	Maintained	Enhance strength of berm in Back 40 prior to an issue of tailwater entering Shasta

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Novy Pump Maintenance	Installed Novy Pump in 2007 to replace usage of the Huseman Ditch, thus leaving at least 5.5 cfc in stream for additional 3.5 miles. Continue to maintain pump to standards	Maintained	Main Novy Pump is visually inspected 1-2 times per day, when pumping.
Tailwater Berms	Installed 6 tailwater berms throughout Novy Ranches from 2009 to 2013 to reduce tailwater inputs and water quality impacts. Continue to monitor and repair tailwater berms as needed	Maintained	Enhance strength of berm in "Back 40" prior to an issue of tailwater entering Shasta River.
Novy Pump	Implement efficiency project on novy pump	In progress	Met with Rod Dowse, RCD 9/14/21 to review and discuss. Will continue to pursue funding options.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Novy Rice Zenkus-Novy Commitment	Implementation of efficiency project on the Novy, Rice, Zenkus Riparian Diversion conserving up to 5 cfs conveyance and Novy Riparian Pump Efficiency Project.	In progress	Headgate and flow measuring device installed at POD 8/12/21. Conditional approved from WCB to fund implementation. Water Board reviewing riparian rights prior to WCB finalizing contract. Continuing to work with State Water Board to rectify notice of violation. WCB conditional funding is awaiting determination from State Water Board.
Soil Moisture Sensing program	Work with UC Extension to further understand soil moisture and further optimize irrigation efficiency	In progress	Met with Grace Woodmansee, UC Extension 8/6/21 to review and discuss. Will continue to pursue funding for soil moisture measuring.
Reach wide flow strategy	Participate in a reach-wide diversion management strategy	In progress	Closely worked with Siskiyou County Watermasters and voluntarily assisted with pulses and flows

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Fish Passage	Maintain unimpeded fish passage conditions at the Novy Pump diversion	Maintained	Maintained fish cone screen daily, confirming it worked each day the pump was in use, and making sure that the cone screen was clean
NRZ Interim Measures	Manage and adjust flashboards and by-pass volume at Novy, Rice, Zenkus diversion structure based on fish passage objectives	Maintained	Maintain 4' or more opening at all times at flashboard dam. This has been a practice since 1976. DFW Screen Shop replace bypass pipe at NRZ fish screen.
Riparian Grazing	Continue to minimize the potential impacts of grazing in riparian areas by limiting the season of use and by maintaining an approximate 6" stubble heights for herbaceous vegetation	Maintained	Let cattle in after 7/15/21 to graze - after the ducks and geese have fledged their brood. We watch grass and close riparian gates when the grass gets to 6".
Riparian fencing	Continue to perform yearly maintenance on existing riparian fencing	Maintained	Fencing is a never-ending job and we have kept good fence throughout this year. Added Hog wire/panels to areas that continued to be a problem.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Riparian Planting	Maintain the few remaining trees/shrubs from four test plots along the Shasta River that were planted in 2015.	Maintained	Trees planted as part of test plots did not survive. However, willow trees in Riparian section#1 naturally recruited.
Pasture Management	Continue to utilize pasture rotation to avoid overgrazing	Maintained	Notified NOAA of ranch catastrophe that caused us to put more cattle than we wanted on our pastures. We couldn't rotate as we planned. Will need to cull more cows.
Assessments	Continued participation in temperature monitoring at ingress, middle and egress and DO monitoring at the ingress of the Grenada Novy Ranches Shasta Reach via RCD	Maintained	SVRCD onsite every 3 weeks to take DO and temp downloads.
Assessments	Allow access for studies that support objectives of the Agreement and as approved under the Agreement.	Maintained	SVRCD has continued to collect DO and temperature readings.

10. Rice Livestock Company, Inc.

Rice Livestock Company, Inc. (Rice) is located along Highway A-12, approximately three miles east of Interstate 5, in Siskiyou County (41°38’11.56’’ N latitude, 122°29’22.88’’W longitude).

Rice includes a total of 2,100 acres, with approximately 379 acres under irrigation.

Approximately 1.8 river miles of the Shasta River is within ownership of Rice, within what has been designated the **Mid-Shasta Reach** in the Agreement. See Table below for Rice’s reported progress on SHA commitments.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Maintain Huseman POD and Screen	Maintain the Huseman Ditch diversion and fish screen. Continue diversion reduction realized through the Huseman Ditch efficiency project of 2011. Maintain pipeline infrastructure provided with the Huseman Ditch efficiency project of 2011. Continue remote control of Huseman Pump which allows users to turn off pump remotely reducing tail water.	Maintained	Installed new flow meters. Remote control of Huseman pump no longer working but hope to get a new system in with the Huseman pipeline project.
Tailwater Management	Huseman Fields 1 and 2: Improve berm and develop catch ditch to deliver and re-distribute excess tail-water water to under irrigated property.	In progress	Improved berms in field 2 by making them taller and fixing any washed out areas.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Tailwater Management	Novy-Zenkus- Rice Riparian -Gravel Pit Field. Improve berm at Shasta River.	Maintained	Maintained through 2021
NRZ Efficiency Pipeline	Implementation of efficiency project including piping to increase delivery efficiency on the Novy-Rice-Zenkus conveyance and provide irrigation efficiency through flood valves and piping of irrigation laterals	In progress	We are waiting on funding.
Huseman-Rice/Nicoletti Commitment	Change NRCS design, Permit and Plan (CEQA) Pipeline and Implement efficiency project to reduce diversion from 11.9 cfs to 9 cfs	In progress	SVRCD submitted a proposal for design funding for Huseman Ditch. Flow meter data was downloaded and submitted.
Reach wide flow strategy	Participate in a reach-wide flow strategy as outlined in the Mid-Shasta Flow Strategy	In progress	Provided bypass flows as identified in Mid-Shasta flow strategy for both NRZ and Huseman ditches. The real-time data was submitted and RCD has access to real-time data.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Fish passage and screening	Maintain unimpeded fish passage conditions at the Huseman Diversion and Maintain Huseman Ditch Fish Screen	Maintained	Checked regularly for proper water flow by fish screen.
NRZ fish passage	Maintain flashboards at Novy- Zenkus-Rice diversion in consideration of fish passage until fish passage and screening project is implemented. Participate in assessment leading to design and implementation of a fish screening and passage facility meeting NMFS and CDFW criteria.	Maintained	Checked regularly for proper fish passage and board placement.
NRZ fish passage	Participate in current design and permitting process to improve fish passage and protection at Novy Zenkus Rice Riparian Diversion. Upon completion of approved design, seek funding and aid in construction of a new diversion structure at the Novy-Zenkus- Rice Diversion that is	In progress	Waiting for WCB determination of funding of NRZ implementation project.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
	passable for all life stages		
Beavers	Implement beaver Best Management Practices	Maintained	We check for signs of beaver activity regularly but there are no beaver problems on our stretch of the river.
Riparian fencing	Maintain existing cattle exclusion fencing to protect riparian areas. Continue to perform yearly maintenance on existing riparian fencing, crossing and existing alternative stock watering systems	Maintained	Maintain fences throughout the year and monitor alternative stock water troughs to be sure they are producing adequate water.
Pasture Management	Continue to utilize pasture rotation to avoid overgrazing	Maintained	Cattle are rotated on a continuous basis to avoid overgrazing.
Pasture Management	Maintain soil moisture probe in Field #4.	In progress	Moisture probe not functioning will rectify/replace network with Huseman Project.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Pasture Management	Maintain Alternative Stock Watering systems	Maintained	Stock water systems are maintained and functioning.
Pasture Management	Participate in developing design, seeking funding and installation of Alternative stock watering systems on fields irrigated by NRZ riparian diversion.	In progress	Waiting for WCB determination of funding of NRZ implementation project
Effectiveness Monitoring	Diversion monitoring station will be maintained and operated as designed. Provide yearly data	Maintained	NRZ & Huseman diversion monitoring systems are maintained and monitored for proper collection of data. The data was submitted.

11. NB Ranches, Inc.

NB Ranches, Inc. (Nicoletti) is located along DeSoza Lane, approximately three miles east of Interstate 5 near Grenada, in Siskiyou County (41°38'11.56'' N latitude, 122°29'22.88''W longitude). The NB Ranches is located on the Shasta River, within the Mid-Shasta Reach and includes a total of 357.2 acres, with approximately 257.4 acres under irrigation based on GIS coverage. Approximately 1.2 river miles of the Shasta River is within the ownership of NB Ranches. See Table below for Nicoletti's reported progress on SHA commitments.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Maintain 2nd POD	Maintain the existing Huseman second point of diversion that conserves an estimate 240 af compared to previous point of diversion	Maintained	
Continue to manage tailwater	Continue to manage tailwater production using existing collection and reuse system	Maintained	
Hayfield lateral	Install lateral to reduce tailwater impacts	In progress	Working with Gary Black on finding funding for this project. - include copy of final proposal from RCD
SWRA tailwater re-use	Manage fields to reduce tailwater returns from outside sources to reduce diversion	Maintained	SWRA tailwater is collected in long sump and reused on pastures.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Fish Passage	Maintain unimpeded fish passage conditions at the Huseman Diversion	Maintained	photo of huseman fish screen in photo log
Riparian fencing	Continue to perform yearly maintenance on existing riparian fencing	Maintained	Fence is regularly checked and maintained as needed.
Watering lanes	Maintain existing watering lanes for stock water	Maintained	3 active watering lanes that are rocked- photos will be provided in 2022
Grazing Management Plan	Participate in the development of and implementation of a UC Extension guided riparian grazing plan	Completed	Grazing Plan prepared

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Rotation grazing	Continue to utilize pasture rotation to avoid over grazing	Maintained	Riparian area was not grazed in 2021
Huseman-Rice/Nicoletti Commitment	Participate in design and implement Nicoletti component of Huseman Ditch piping to reduce diversion volume	In progress	Working with Gary Black. Flowmeter installed at the pump station. - include EOY flow meter reading.
Soil Moisture Sensing program	Install several soil moisture sensor stations to help inform irrigators when to start irrigation rotations, could help reduce water use by informing LO's of reduced ET during Spring and Fall and between rotations to keep water instream-quantified benefit is unknown	In progress	Priced watermark sensors for purchase intended to install in December 2023

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Effectiveness Monitoring	Diversion monitoring station will be maintained and operated as designed. Provide yearly data	Maintained	Diversion monitoring station on Huseman - flowmeter reading were downloaded and included in report.

12. Edson Foulke Ditch Company

Edson Foulke Yreka Ditch Company (Edson-Foulke), an association consisting of six individual members that divert water through a single delivery system commonly known as the Edson-Foulke or China Ditch. The water diverted through Edson-Foulke ditch is a combination of multiple shared water rights. Edson Foulke, owns no real property and operates it's diversion through an easement on Parks Creek Ranch.

The furthest point of use is 15.45 ditch miles north of Parks Creek diversion point. The location of Edson Foulke diversion is within the **Upper Parks Creek Reach** of the Agreement. See Table below for Edson-Foulke's reported progress on SHA commitments.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Maintain POD	Maintain diversion facility and diversion operation	Maintained	Routine maintenance/cleaning occurred for headgate, fish screen and canal
Water Conservation	Assess, design, permit and implement a water conservation project on Edson-Foulke Ditch that conserves 3.0 cfs when the ditch is operating at 60%	In progress	The concept of the water conservation project has been determined but are currently seeking additional funding to engineer and implement the conservation project.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
	capacity or greater. By-pass the 3.0 cfs of conserved water prior to diverting for irrigation or stock watering purposes.		
Edson-Foulke and Parks Creek Ranch diversion #1 &2 Delivery Efficiency Project	To implement Upper Parks Creek Flow Plan, design and construct a diversion facility which includes: programmable, automated head gate and flow gage for the diverted volume. Facility will also include streamflow gage facility located above or below diversion, based on feasibility and design	In progress	Various designs and methods of automated head gates have been studied but a concept for the diversion facility hasn't completely materialized. Numerous issues such as continuing to convey Belcampo/Parks Creek ranch water or combining their number 1 diversion with our diversion haven't been worked out yet.
Fish Passage	Maintain unimpeded fish passage at EF Parks Creek diversion except when surface flows cease	In progress	Maintained a clear channel instream at the headgate diversion for fish passage.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Fish Screen Maintenance	Maintain Edson - Foulke Fish Screen and by-pass	Maintained	Routine maintenance occurred on the fish screen to insure it was functioning.

13. Parks Creek Ranch

Parks Creek Ranch (PCR) is owned by Outpost M R, LLC and operated by Belcampo Farms. PCR is located within the Covered Area along Old Highway 99 and Stewart Springs Road in central Siskiyou County (41°26’54.26” N latitude, 122°27’46.39”W longitude). PCR includes a total of 3,970± acres, with 1,480 ± acres under irrigation from Parks Creek and Spring Creek. Approximately 6.5 miles of Parks Creek flows through PCR within the reach designated as the Upper Parks Creek Reach of the Covered Area. See Table below for PCR’s reported progress on SHA commitments.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Edson-Foulke and Parks Creek Ranch diversion #1 &2 Delivery Efficiency Project	Participate in diversion facilities assessment, design and implementation to combine operate and maintain diversions #1, #2 and the Parks Creek Ranch Edson-Foulke right. Delivery efficiency and irrigation efficiency improvements to conserve water and meet the objectives of the Upper Parks Creek Flow Strategy. Site may also include Edson-Foulke Ditch Parks Creek Diversion. 2.8 cfs (1.2 cfs 1st priority, 1.6 cfs 23rd priority) would be provided for instream benefit prior to diverting.	In progress	Various designs and methods of automated head gates have been studied but a concept for the diversion facility hasn't completely materialized. Numerous issues such as continuing to convey Belcampo/Parks Creek ranch water or combining their number 1 diversion with our diversion haven't been worked out yet.
Maintain crossing and lanes	Continue to maintain crossings and stock watering lanes	Not Necessary	As of the end of 2021, stockwater lanes and/or crossings are not longer needed on a regular basis after riparian fence install

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Fish Passage	Maintain unimpeded fish passage conditions at all Enrolled Property diversions	Maintained	
Fish Screen	Operate and maintain the existing panel fish screens at all of the PODs	Maintained	
Riparian Fencing	Continue to perform yearly maintenance on existing 2.5 miles of riparian fencing	Maintained	Fence checked and maintained. Will provide photos in 2022 report

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Riparian Fencing	Continue to seek funding and implement riparian fencing along the west side of Parks Creek for approx. 2.9 miles of Parks Creek that does not have riparian fencing.	Complete	During the reporting period, we have constructed over 20,000 feet riparian exclusion fencing, completing Reach 2, 3, 4, and 5 of the upper Parks Creek. This completes the properties plans for all riparian exclusion fencing, per our site plan.
Riparian Grazing Plan	Work to develop and Implement the riparian grazing plan with UC Extension service	Maintained	
Alternative Stock Water	Assess, design and implement efficient alternative livestock watering system to aid adult migration and spawning by reducing diversion volume to 1.2 cfs.E.3.a5	In progress	Stockwater system designed and implemented in 2021 through upper parks creek areas reach 2,3, 4, and 5. Alternative stock water needs to be developed in reach 1, west of HWY99. Cattle currently drink out of irrigation ditches.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Effectiveness Monitoring Program	Maintain existing network, Install three needed real-time stage/flow/temperature stations, further develop dashboard to house all EM stations and POD stations, as well as annual reporting and do data analysis for performance measures	In progress	Property maintains UPC, MPD, and PCE

14. Shasta Springs Ranch

Shasta Springs Ranch is located north of Edgewood, California, and east of Interstate 5. The headquarters are accessed from Slough Road, which roughly approximates the west boundary, though the easement is not exclusively on or associated with the property line. The Permittee’s other properties, the Hole in the Ground and Seldom Seen ranches, share boundaries to the north and northeast. One other private landowner borders the Ranch to the east, south, and west.

Parks Creek and Kettle Springs Creek flow through the Enrolled Property. Significant springs, two of which are sometimes referred to as Black Meadow and Bridge Field, emerge at the west margin of the ridge between Lake Shastina and the Ranch. The water from these and other unnamed springs is collected in manmade and natural channels, eventually flowing into Parks Creek, approximately 4.5 miles upstream of the confluence with the Shasta River.

For the purposes of this Report, activities on the Ranch have the potential to influence the mid- and Lower Parks Creek sub-reaches. See Table below for Shasta Spring’s reported progress on SHA commitments.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Cattle Access	Cattle access to the channel will be excluded or restricted to crossings, watering access points, and/or limited season/stocking/ duration that conserves water quality	Maintained	Maintained includes routine inspection or monitoring for repairs. No crossing repairs were necessary in 2021, therefore there are no photos of crossing repairs for 2021.
Maintain Tailwater Berms	Agree to continue maintenance of tailwater berms	Maintained	Inspected but no maintenance needed
Minimize Tailwater	Continue irrigation practices to minimize/eliminate tailwater	Maintained	
Kettle Springs Project	Continue to operate and maintain new (2017) Kettle Springs spring source management structure, as designed	Maintained	Maintained includes routine inspection or monitoring for repairs. No repairs were necessary at the spring source management structure during 2021, therefore there are no photos of repairs for 2021.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Bypass Upper Parks Flow	Participate in, including bypassing flow from Upper reach, Parks Creek Flow Strategy	Maintained	We do not have 2021 data available. We will include the 2022 data in the 2022 Annual Report.
Mid Parks Evaluation	Agree to further evaluation to determine feasibility of getting spring water on east margins of fields east of the Mid-Parks Creek to alcoves or reconfigured Mid-Parks reach (Mid-Parks Creek Project)	In progress	We have conducted field reviews and meetings to begin scoping the feasibility study.
Parks 1 and Parks 4 Diversion Combine	Combine EII Parks 1 and 4 diversions, would leave Parks 1 water (2 cfs) instream at times during spring season (March 1- June 1) to extend migration through reach and add efficiency and management flexibility in combination with Bridgefield and Blackmeadow work-probably a SHRP and CatX.	In progress	We have conducted field reviews and meetings to begin scoping the feasibility study.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Parks #5 operation	Continue to maintain and operate Parks#5 improved POD infrastructure, complying with current CDFW requirements for passage, bypass flows, and screening	Maintained	Photos included with the report
Kettle Springs Tailwater	Agree to construct enhanced tailwater berm if applied irrigation is found to still be creating tailwater returning to Kettle Springs Creek as surface water	In progress	The existing creek banks were examined for breeches indicating water applied to the fields is returning to the creek as surface flow. No breaches were detected, and no tailwater berm maintenance was necessary during 2021, therefore, no 2021 photos of tailwater berm maintenance are available.
Bridgefield and North Slough Water Quality Eval	Agree to conduct water quality investigation of Bridge Field Springs Creek and the North Slough	In progress	With UCCE, water temperature study conducted to inform any modifications to the grazing plan; assessed alternatives for DO and temperature monitoring- Summer21Research_Final Report_Final submitted with Annual Report

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Redd/spawner survey	Continue to conduct redd/spawner surveys	Maintained	We currently do not have maps to submit of redd/spawner surveys.
I-5 Passage Improvement	Agree to continue cooperation in project to eliminate potential salmon migration barrier on upstream landowner (Parks Cr under I-5)	Completed	Completed prior to reporting period by SVRCD- do not have photos to submit but project posted on SVRCD website: https://svrcd.specialdistrict.org/parks-creek
Beaver Management Plan	Agree to develop and implement beaver management plan to alter or provide access around potential migration barriers at dams	In progress	Plan and first draft developed and undergoing internal review 75% completion of beaver exclusion structure around diversion intake
Riparian Grazing Management Plan	In the sub-reaches of Parks Cr. without exclusion fencing, Cattle access to the channel and riparian zone will be restricted to crossings and/or limited season/stocking/duration that conserves habitat quality, consistent with recommendations	Maintained	We acknowledge this requirement and submitted photo point images in our 2021 report. We have established additional photopoints during 2022 and will include those locations in the 2022 Annual Report.

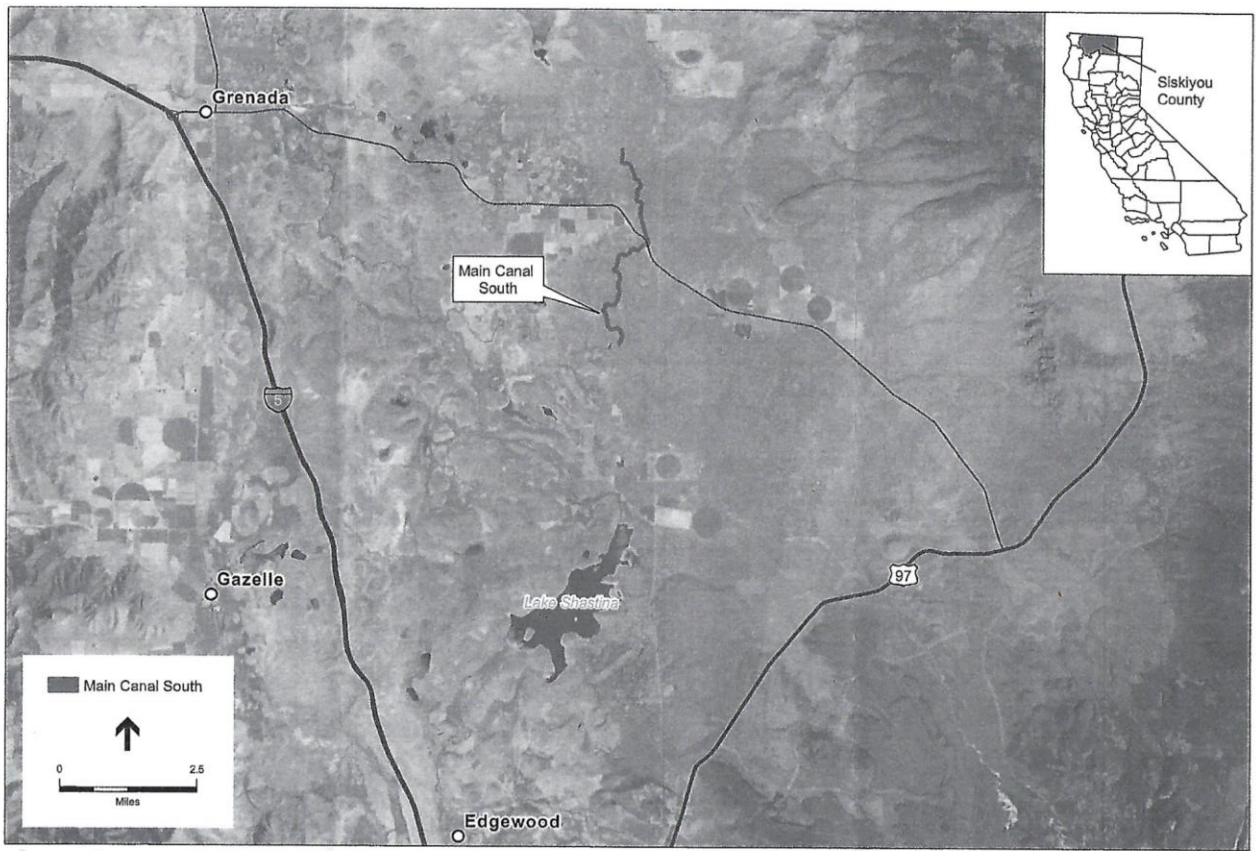
Project Name	Project Description	Current Status (04/2022)	Description of Progress
	of UCCE Range Conservation Specialists (Attachment Tate & Rivers, 2016)		
Wheat Field Fencing	Shasta Springs Ranch will temporarily or permanently fence the Wheat Field pasture, if necessary, to achieve the stated management goals.	Maintained	The field is fenced. To reiterate the commitment: Shasta Springs Ranch will temporarily or permanently fence the creek through the Wheatgrass Field if necessary..."
Soil Moisture Sensing program	Agree to include additional pastures in Study Area to research applicability of soil moisture monitoring technology and incorporate into irrigation management where appropriate	Maintained	Maintained was the commitment to expand participation in testing the efficacy of using soil moisture sensors for irrigation management. We continue this commitment to expand such participation.
Riparian Fencing	Agree to maintain existing riparian exclusion fencing or, if modified, riparian pasture fencing with associated grazing plan developed in consultation with UCCE Range Conservation Specialists	Maintained	We acknowledge this requirement and submitted photo point images in our 2021 report. We have established additional photopoints during 2022 and will include those locations in the 2022 Annual Report.

Project Name	Project Description	Current Status (04/2022)	Description of Progress
Riparian Fencing	Will replace, out-of-pocket, up to 20% of riparian fencing damaged by high flow events and seek additional funding if necessary to complete repairs	Maintained	Fencing maintained
Riparian Planting	Permittee agrees to monitor survival of riparian plantings at Parks#5 and replace damaged beaver enclosures until cuttings are established	In progress	Riparian monitoring memo provided with Annual Report
Cattle Access/crossings	Seven livestock/vehicle crossings/watering access lanes will be maintained as rocked fords (Section E.1.d.) One instream stock water only access point will be maintained with rock and panels, minimizing erosion potential to bank	Maintained	Maintained includes routine inspection or monitoring for repairs. No crossing repairs were necessary in 2021, therefore there are no photos for 2021.
Riparian Grazing	In the subreaches of Parks Cr. without exclusion fencing, Cattle access to the channel and riparian zone will be restricted to crossings and/or limited season/stocking/duration that conserves habitat quality,	Maintained	

Project Name	Project Description	Current Status (04/2022)	Description of Progress
	consistent with recommendations of UCCE Range Conservation Specialists		
Effectiveness Monitoring Program	Reasonable access for monitoring salmonid use of created/restored habitat at Kettle Springs and Mid Park, East side Pastures and Spring Channel Renovation Projects.	Maintained	Spawning surveys were performed in 2021

Implementation Photos

-MWCD lining 1.3 miles of canal and working toward a finalized 1707 to dedicate conserved water for the benefits of Fish and Wildlife.



SOURCE: USDA, 2016; ESRI, 2012; ESA, 2020

120908

Figure 1
Project Vicinity Map

MWCD-Main Canal Lining 2020/2021



Canal reach being prepared to receive geo-membrane liner



Main Canal lining at Hwy A-12 culvert crossing



Reach of recently lined canal during spring of 2021



Flow Measuring Site within recently constructed reach



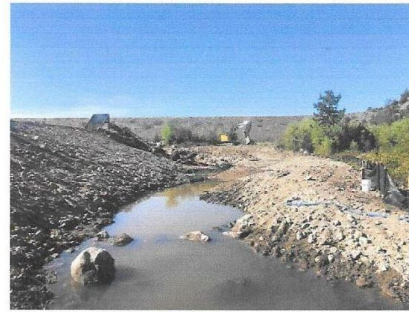
Looking downstream at canal lining reach completed in spring 2021.

-MWCD completed the construction of a dedicated cold water habitat at the base of Dwinnell Dam to accept 5.5 cfs of cold groundwater. Maintaining water temperatures leaving MWCD property close to or below 18 degrees C.



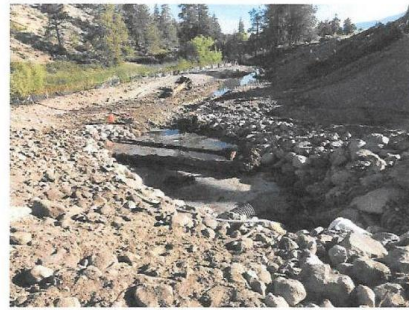
Above: Excavation and grading of upper end of site

Below: Installation and backfill of water source pipes



Above: Final grading of channel

Below: Loading the channel with wood and structures





Above: Introduction of flow into channel after cuttings and irrigation are installed

Below: Habitat during the fall of 2020 showing wetland and riparian growth.



- The fish barrier at Seldom Seen diversion was eliminated by constructing a roughened channel



Photo Point 2- Pre project condition just downstream of the concrete sill and barrier looking south



Photo Point 2- Post project conditions just downstream of concrete sill. Roughened channel backwaters the structure.

-Habitat improvement work was completed on Seldom Seen and Hidden Valley Ranch that included installation of Large Woody Debris (LWD), roughened channel construction, adding spawning gravels and planting +700 riparian trees. The following photos are representative of project activities.

Site 2-1- Pre project photos Lat: 41.5472 Long: -122.3863

Site 2-1- Looking south across the riffle crest from river right pre-project



Site 2-1- Looking upstream at riffle site from river right



Site 2-1- Looking downstream at riffle site from river right

Site 2-1- Post Project Riffle Lat: 41.5472 Long: -122.3863



Site 2-1- Spawning gravel riffle construction. Looking across riffle crest from river right. Flow is 3 cfs.



Site 2-1- Looking upstream at pool above riffle from the riffle crest on river right.



Site 2-1- Looking downstream at riffle from riffle crest on river right- 3 cfs



Site 2-1- View of LWD structures installed directly upstream of riffle in pool.

Pictures of habitat improvement projects at Seldom Seen and Hidden Valley Ranch

Site 2-1 Planting Lat: 41.5472 Long: -122.3863



Site 2-1: View of riffle with 15 cfs of flow and riparian planting

Site 2-1- Showing planting along river right. 29 trees on river right and 28 trees on river left



-Hidden Valley Ranch's fish screen was relocated onto the Shasta River and efficiency improvements were made to keep more water instream. The project included real-time monitoring station equipment to record prior right use, spring water use and release to the river.



Looking downstream above HVR head gate- Fish Screen is down ditch



Looking downstream above HVR new on-channel fish screen

-Hidden Valley Ranch installed a pipeline connecting an upgradient spring to the Shasta River to enable cold water to be released to the river when available.



Pre construction HV4D_Pre_2.2.17



Post construction HV4D_PC_3.20.17

The fish barrier on lower parks on the Hole in the Ground Ranch was removed in 2021 and replaced with a fish friendly culvert.

Parks Creek Fish Passage Component



- The Cardoza point of diversion was moved 3 miles downstream to the Shasta River, enhancing flows in lower Parks Creek and eliminating the fish passage barrier. A new pump station and more than 3 miles of efficiency pipeline was installed to effectively conserve 435 acre-feet during the 2021 irrigation season.

Shasta River- upstream of Louie Road bridge- Pre-project August 2020



Fish Screen completed. Fencing and testing of the system to complete the phase.

-Park Creek Ranch constructed over 20,000 feet of riparian exclusion fencing, completing Reach 2, 3, 4, and 5 of the upper Parks Creek. Over 17,000 feet of water line was installed to supply stock water to 6 different troughs in pastures now excluded from parks creek.

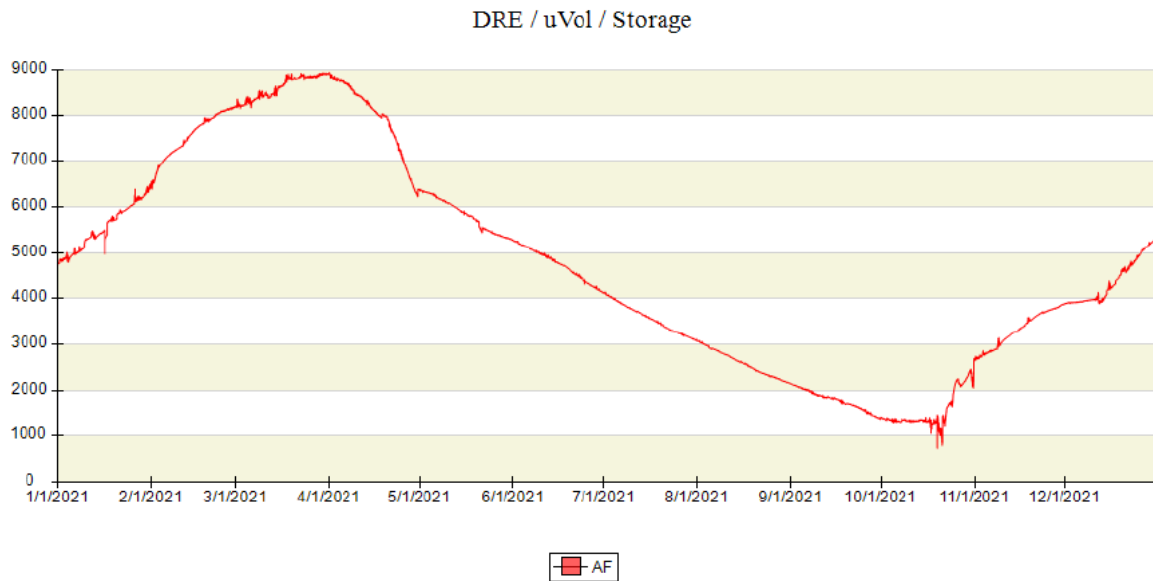


Monitoring Data

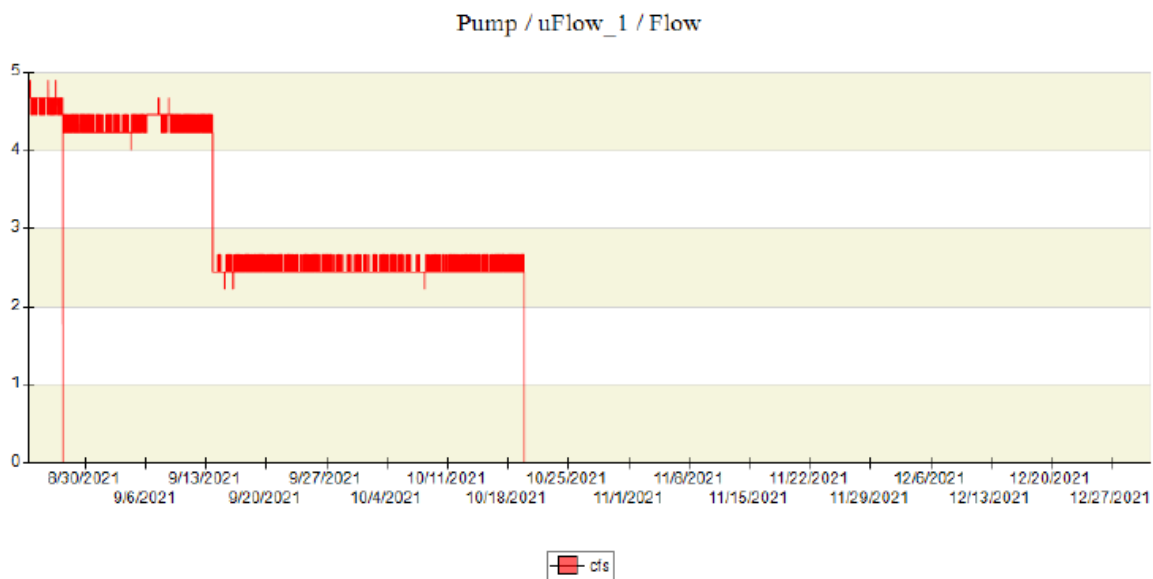
The effectiveness monitoring station installation is in process and the third party monitoring scope of work and contract was not established during the 2021 reporting year. The following graphs are data reports that were included in the 2021 Annual Reports for MWCD, Cardoza, Rice, Novy or the data was downloaded from the real-time stations NOAA has access to on the Eyasco grabdata site that is established for SHA monitoring.

MWCD Data:

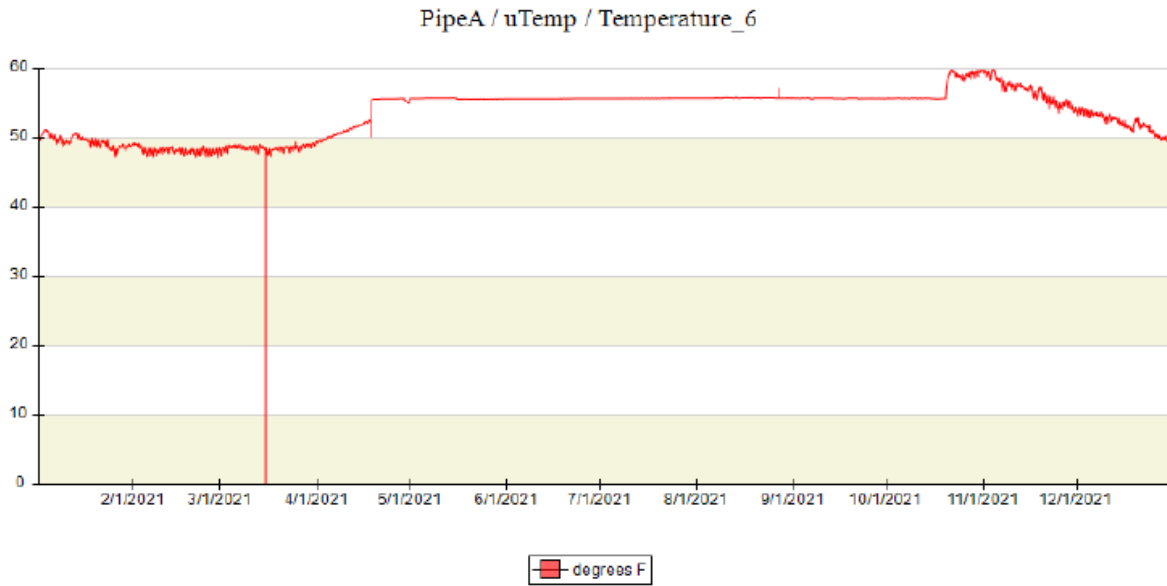
Dwinnell Storage as reported by Eyasco



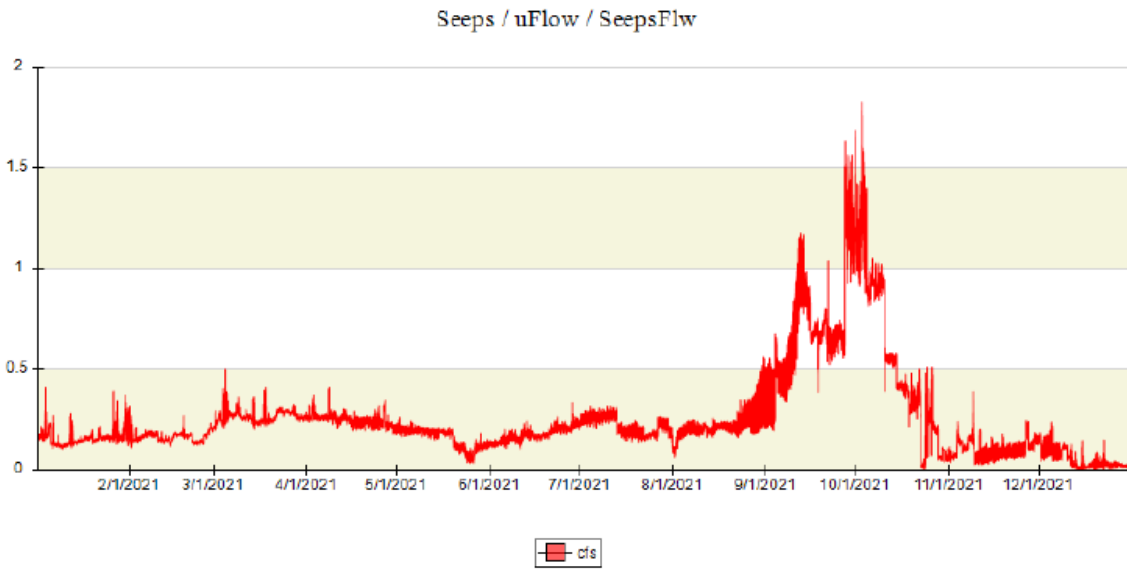
Flying L - Groundwater Contribution



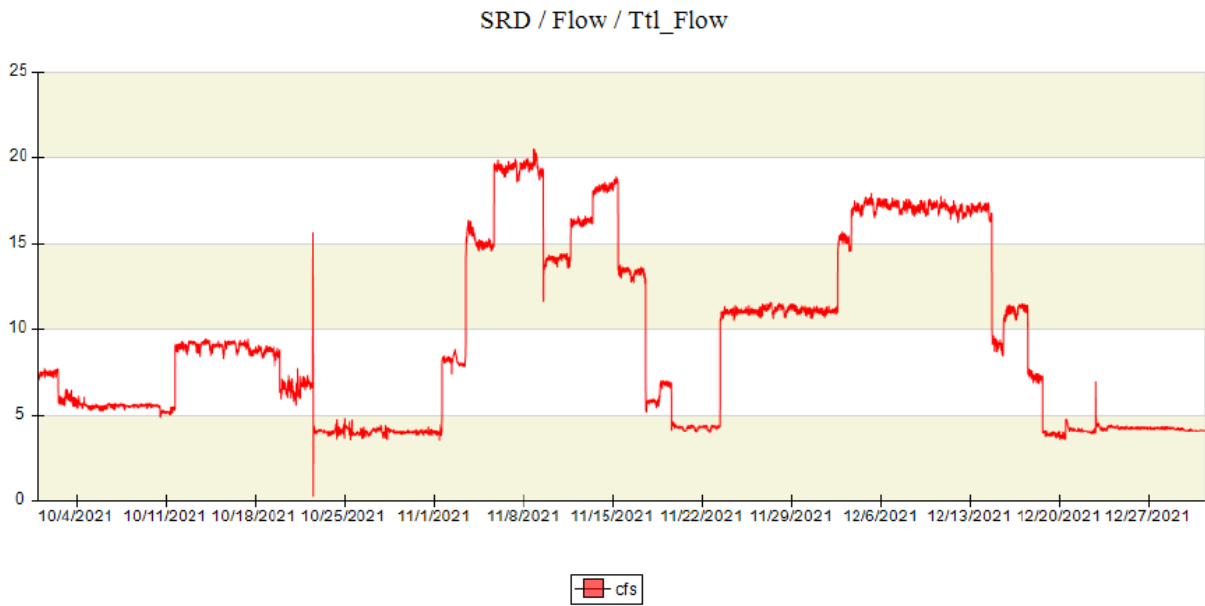
Flying L Temperatures-Note: Some of this data is ambient temperature when the pump was not running. Groundwater is a constant 55 degrees F (12.7 degrees C)



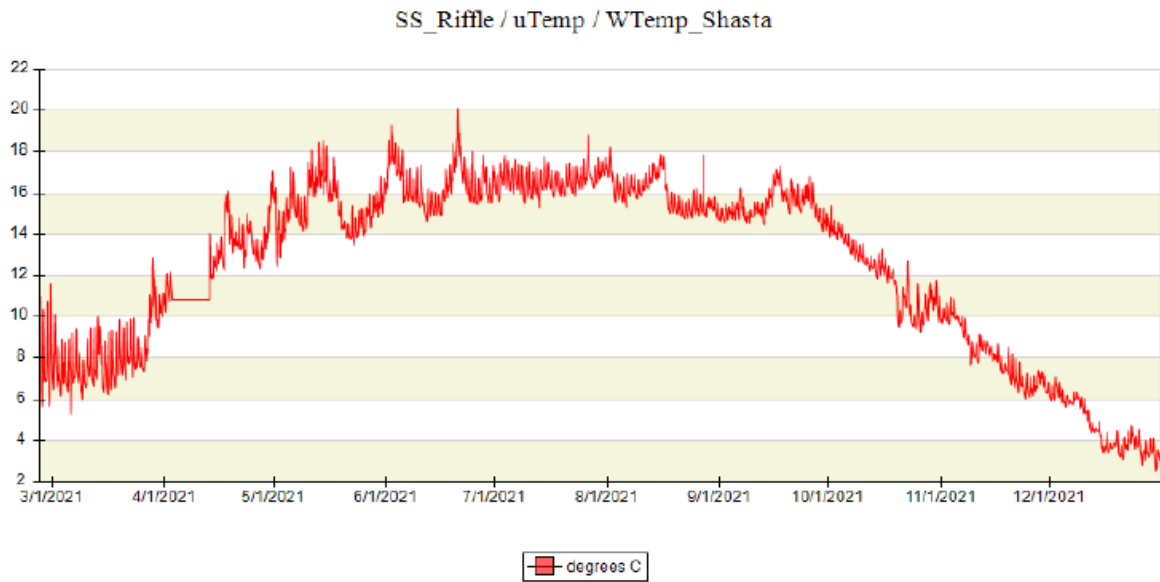
Seeps Flow



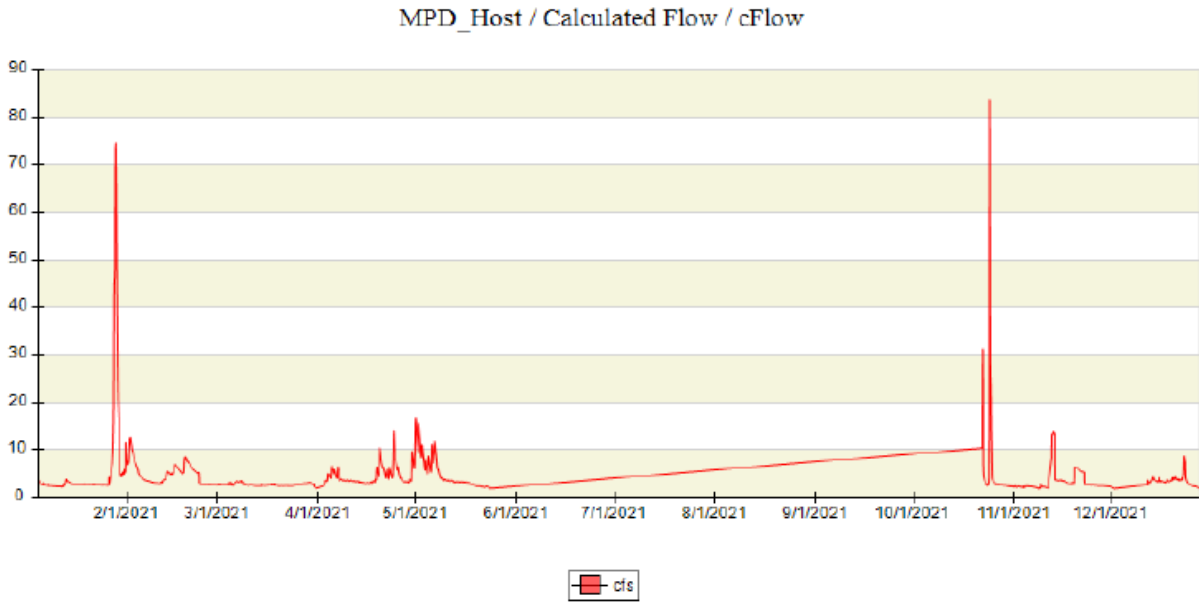
Total Flow leaving MWCD at SRD:



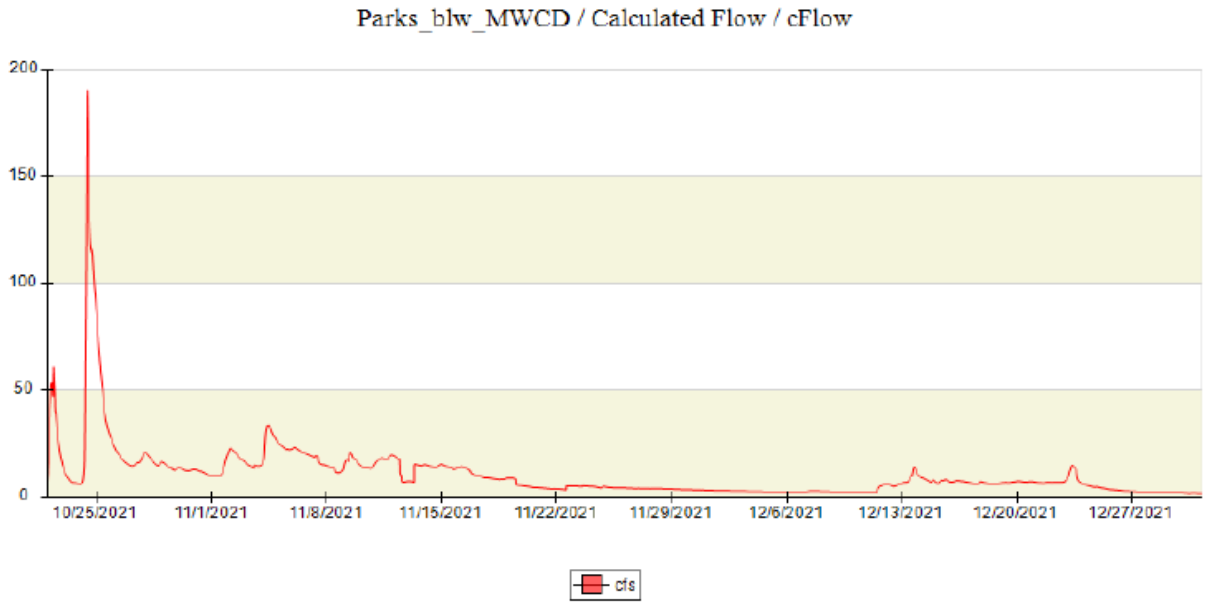
Temperature of water leaving MWCD at SRD:



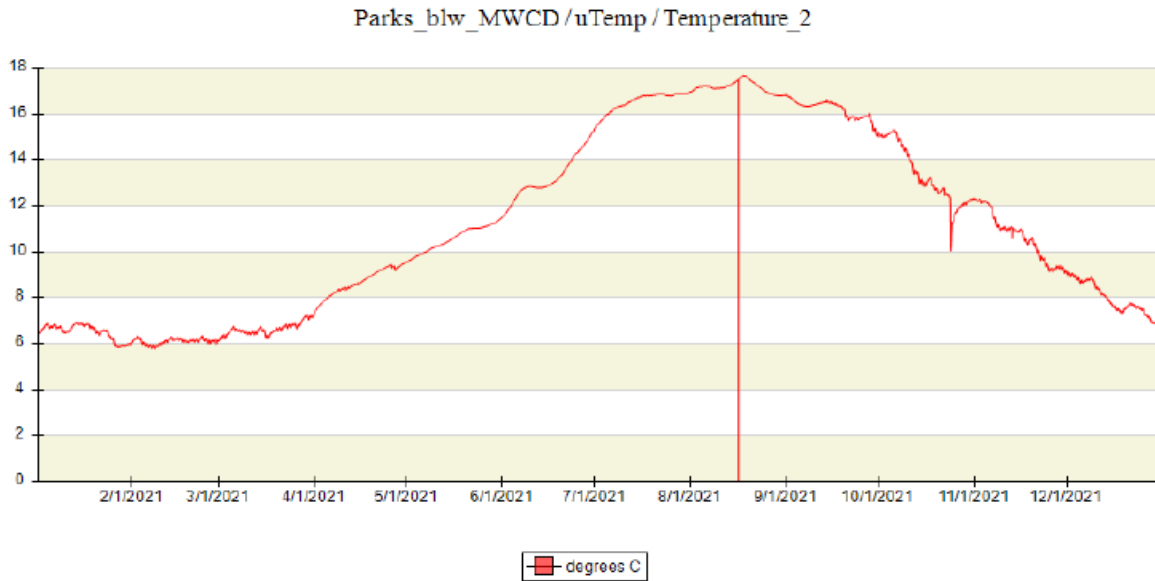
MWCD Diversion on Parks Creek:



Parks Creek Blow MWCD POD (PME):

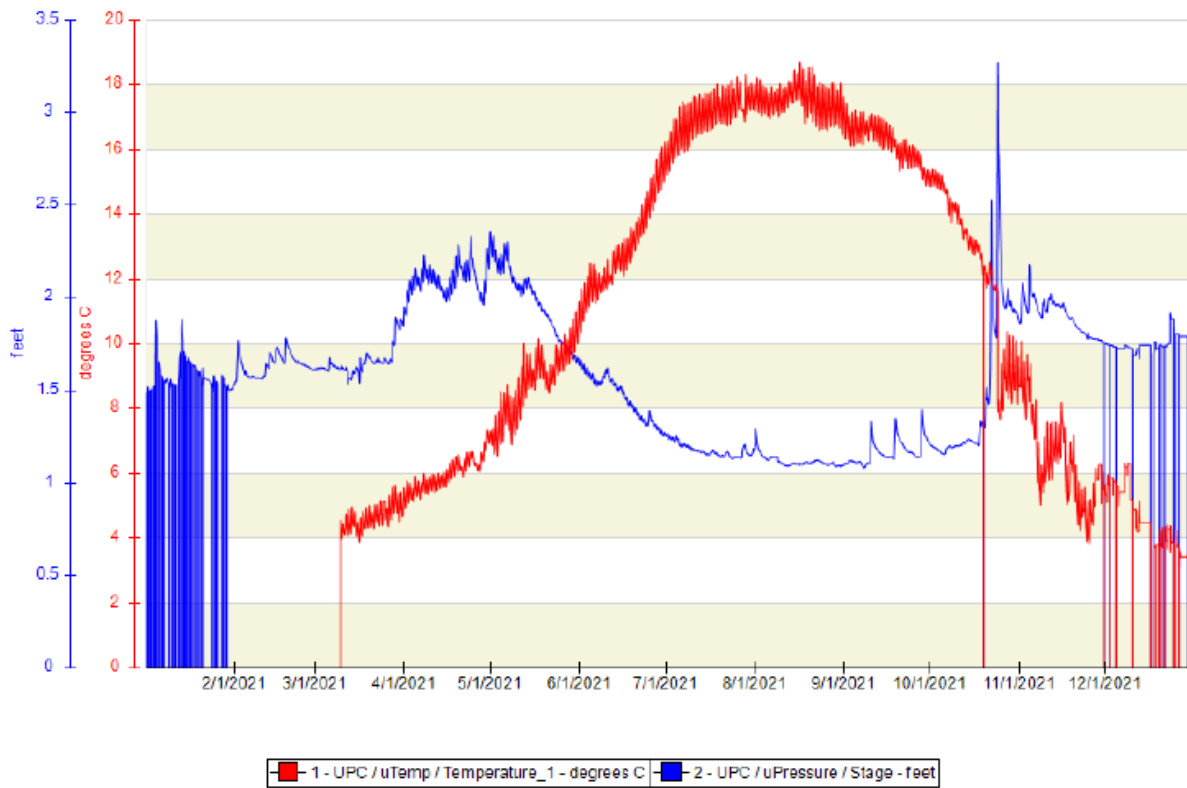


Parks Creek Temperature Below MWCD POD (PME):

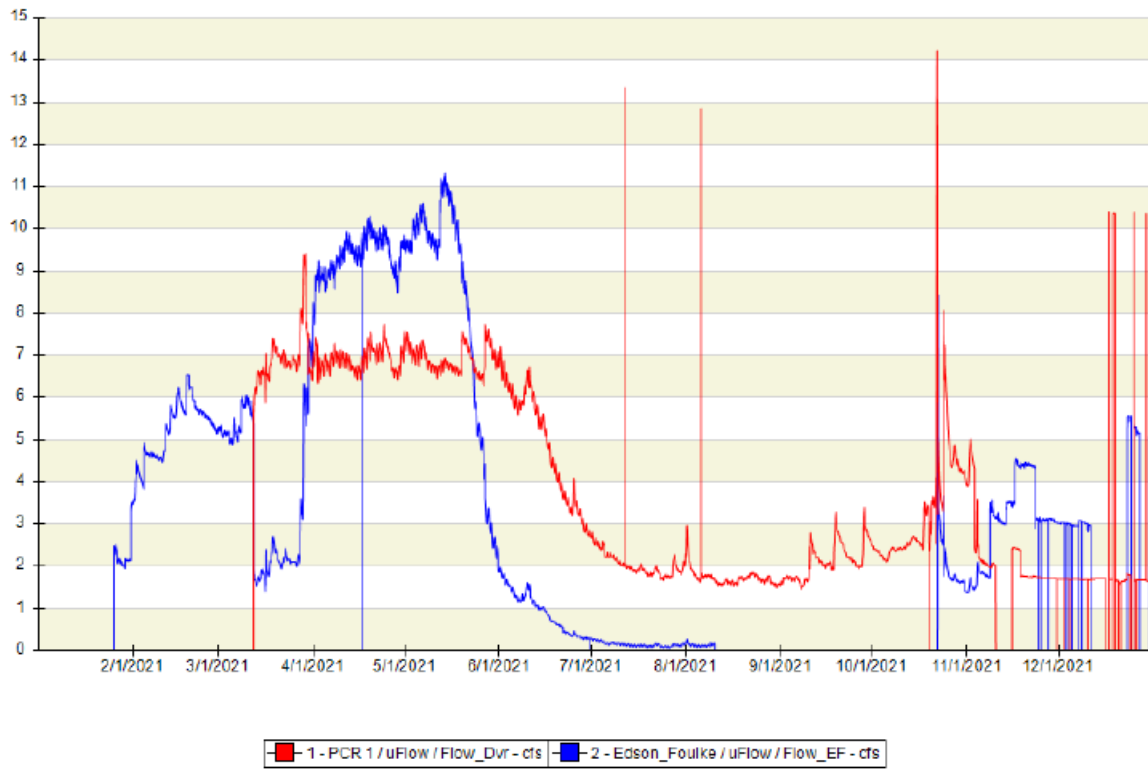


Upper Parks Creek Data

Upper Parks Creek Data (UPC)- This station was only reporting stage and temperature in 2021

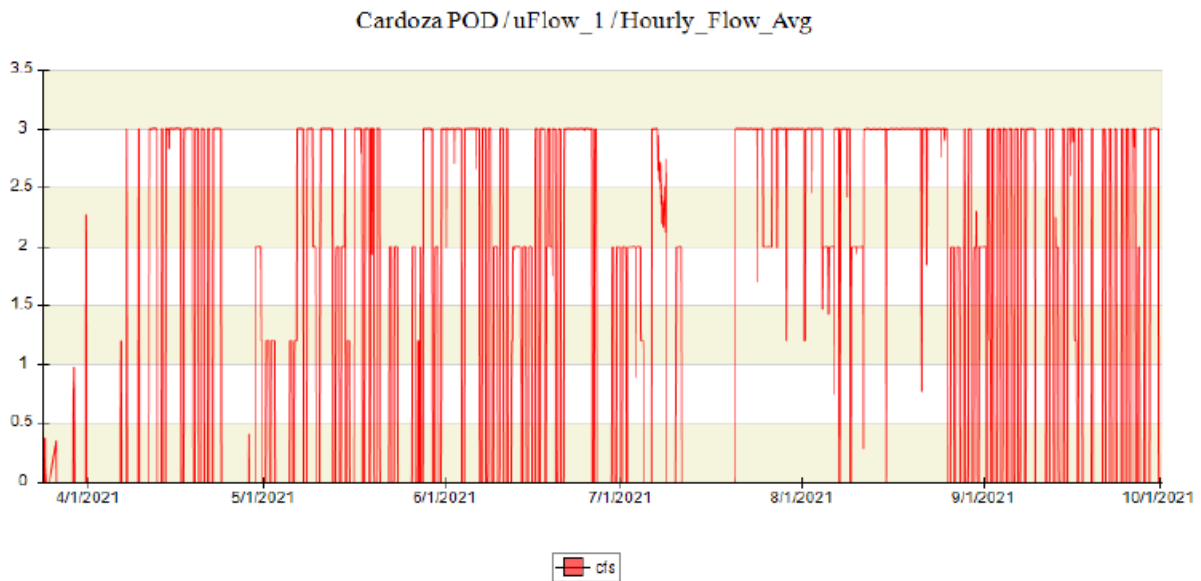


Diversion Data for Edson Foulke and PCR 1:



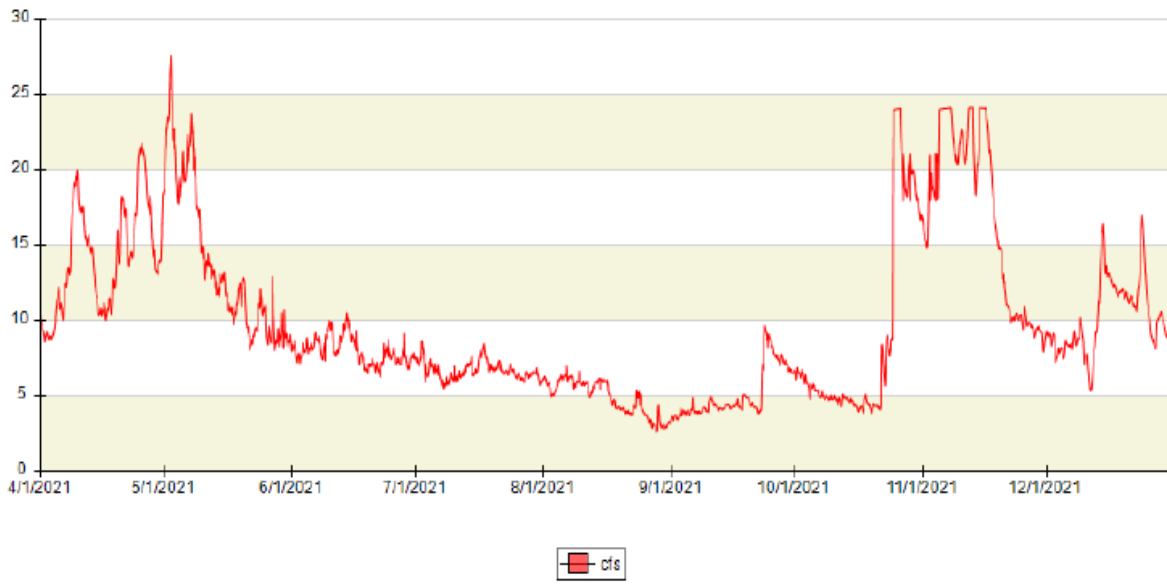
Cardoza Data

Cardoza POD Data at New Pump Station

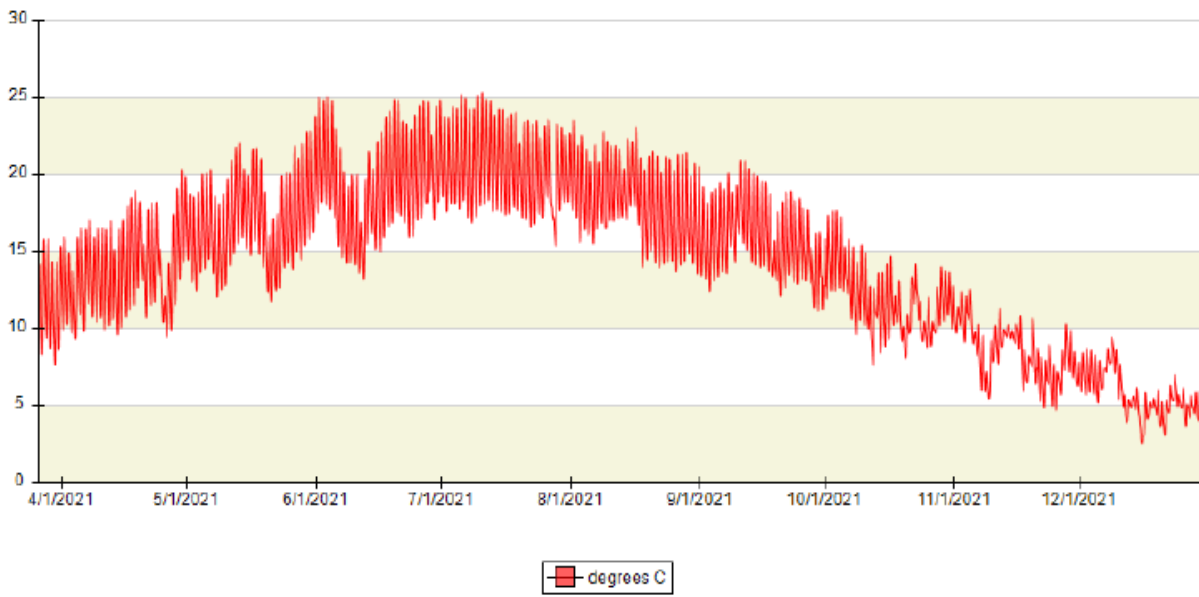


Flow and Temperature at Lower Parks Creek (PBS)

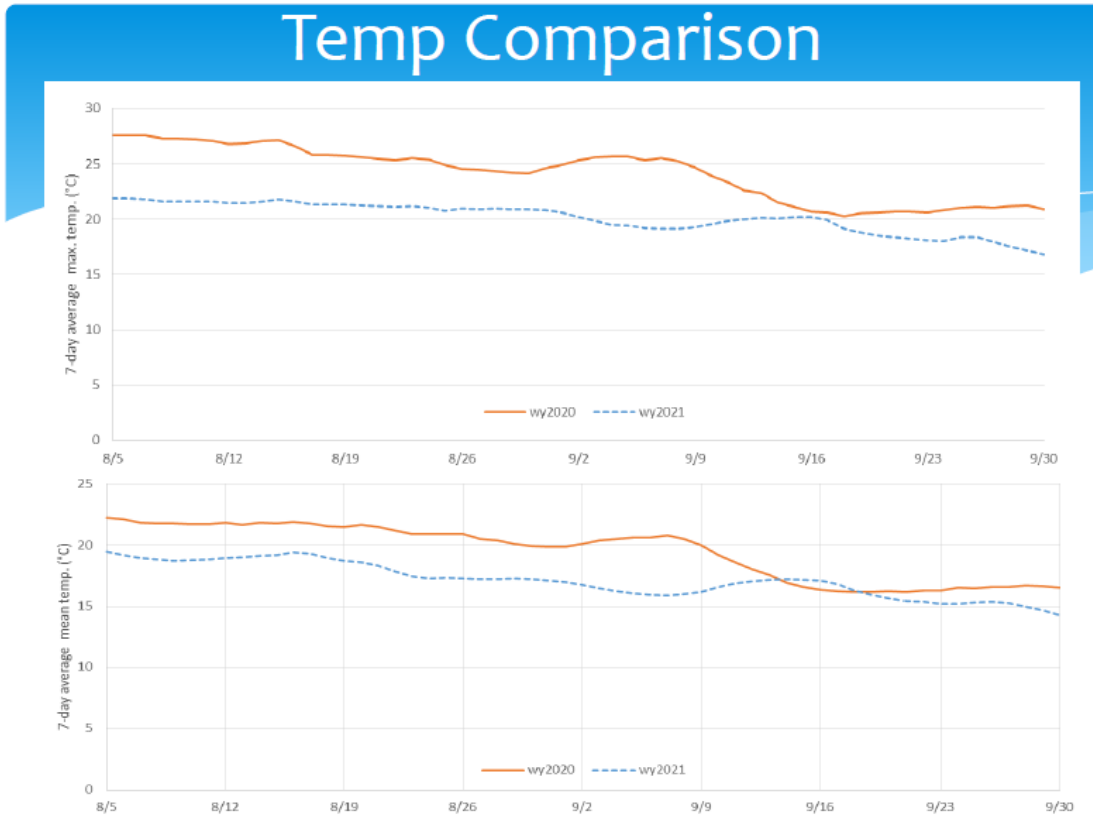
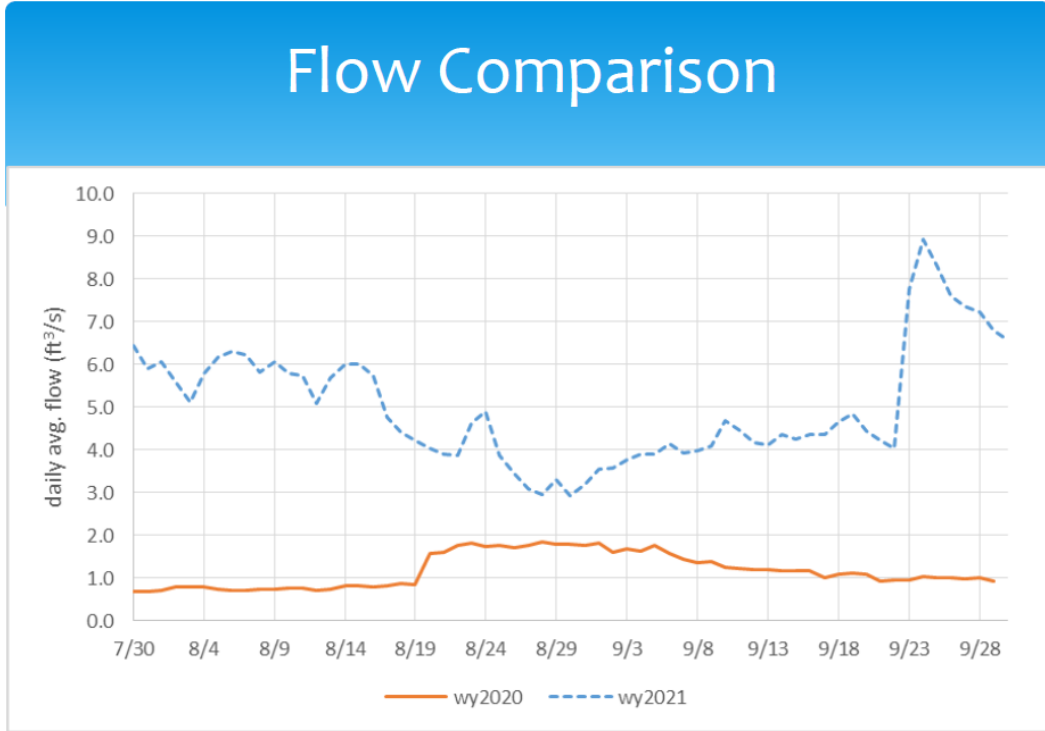
PBS / Calculated Flow / cFlow



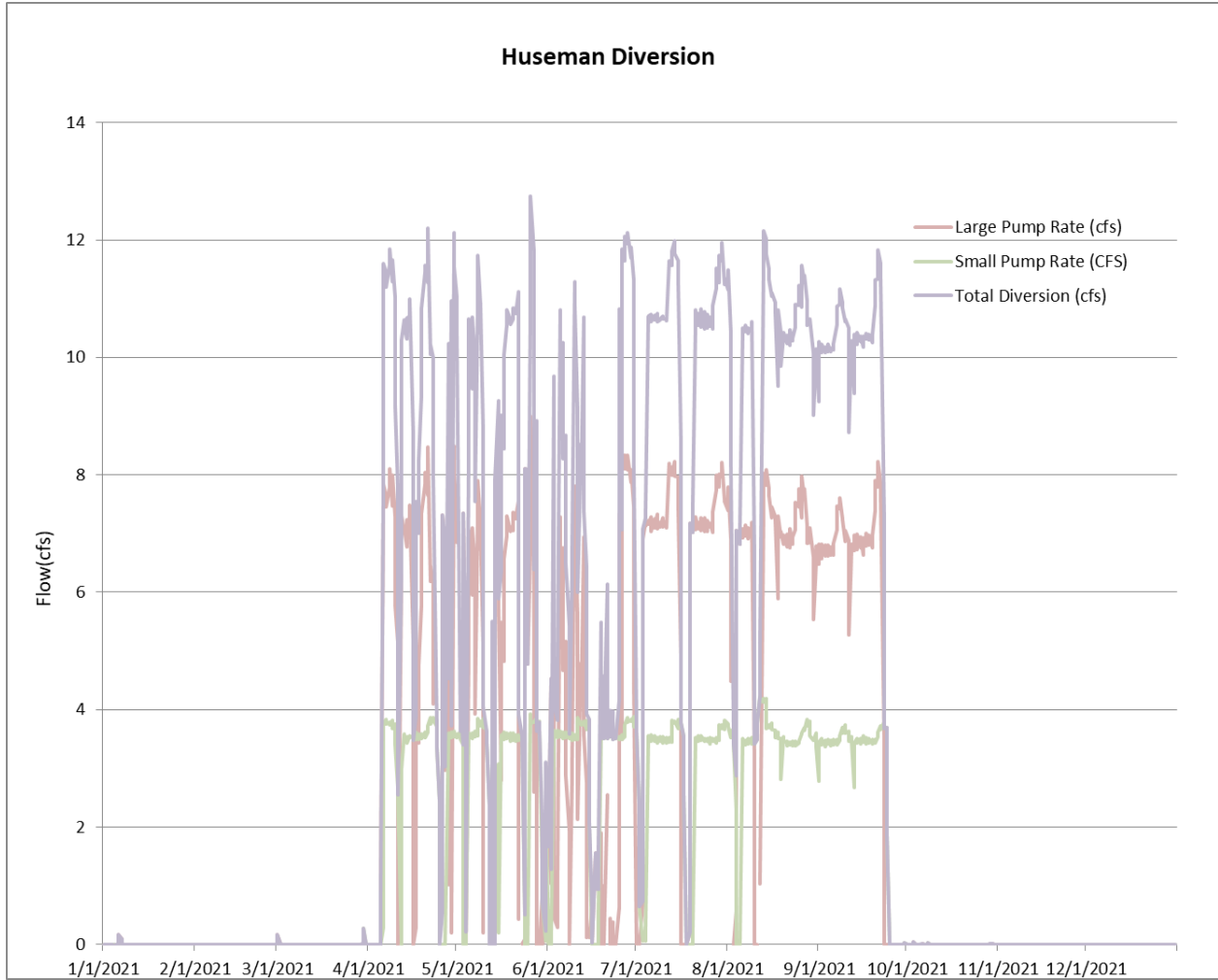
PBS / uTemp_1 / Water Temperature



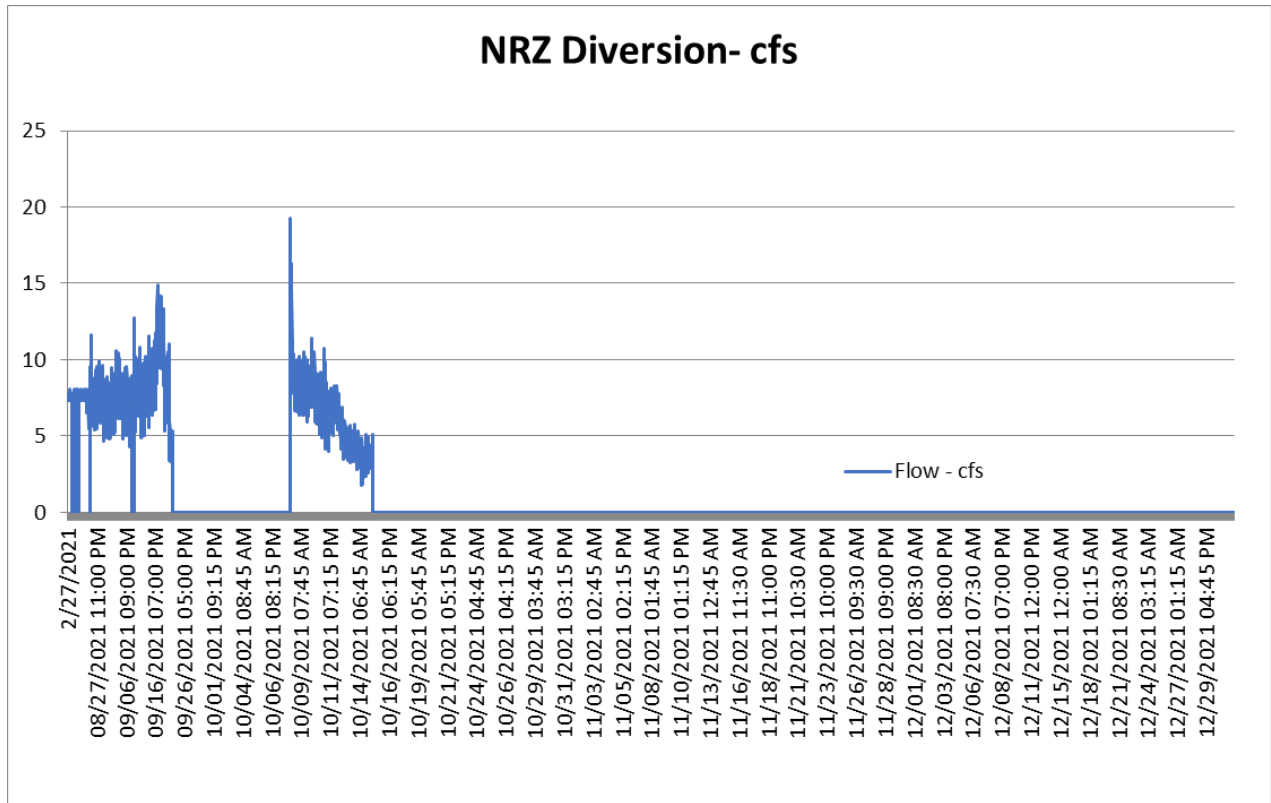
Data Comparison at PBS Before (WY2020) and After (WY2021) the Cardoza POD was moved (graphs prepared by UCD):



Huseman Diversion Record- Showing Small Pump, Large Pump and Total Diversion Rates for 2021



Novy Rice Zenkus Diversion Rates for 2021



Novy Pump Diversion Rates for 2021

