

**Montague Water Conservation District
Water Operation Plan
March, 2021**

Background: The Montague Water Conservation District (MWCD) owns and operates Dwinnell Reservoir located on the Shasta River, tributary to the Klamath River, in Siskiyou County, California. MWCD holds two water right permits for water stored in Dwinnell Reservoir. One permit is for diversion to storage on the Shasta River while the other is for water delivered to storage from Parks Creek. Both diversions are governed and operated within the confines of the Shasta River Decree and Watermaster service required by Siskiyou County Superior Court.

SWRCB Permit No. 2452; Decree No. 287 (Shasta River at Dwinnell Dam)

Point of Diversion: N. 52°, 43' E., approximately 2601 feet from SW corner of Section 25, T43N, R5W, MDB&M, being within the NE¼ of SW¼ of said Section 25
Place of Use: 19,500 acres within District, as shown on map on file with SWRCB
Purpose of Use: Irrigation
Season of Diversion: October 1 to June 15, collected to storage in Dwinnell Reservoir
Season of Use: April 1 to October 1
Quantity: 35,000 acre-feet per annum
Priority date: July 23, 1923

SWRCB Permit No. 2453; Decree No. 288 (Parks Creek diversion to Dwinnell Reservoir)

Point of Diversion: N. 70°, 30' E., approximately 2511.8 feet from SE corner of Section 29, T42N, R5W, MDB&M, being within the SW¼ of SE¼ of said Section 29
Place of Use: 19,500 acres within District, as shown on map on file with SWRCB
Purpose of Use: Irrigation
Season of Diversion: October 1 to June 15, collected to storage in Dwinnell Reservoir
Season of Use: April 1 to October 1
Quantity: 14,000 acre-feet per annum
Maximum Diversion: 150 cfs
Priority date: July 30, 1923

In 2017, MWCD received federal authorizations to implement its Conservation and Habitat Enhancement and Restoration Project (CHERP), a comprehensive water conservation and salmonid habitat enhancement program consisting of infrastructure improvements and modified operations. The term of CHERP's Section 7 permit through the U.S. Army Corps of Engineers (ACOE) is five years. Concurrent with the implementation of CHERP, MWCD is also developing a long term Safe Harbor Agreement (SHA) that is intended to continue for approximately 20 years. MWCD is currently working toward finalizing a Template Safe Harbor Agreement (SHA) with the National Marine Fisheries Service (NMFS) and (California Department of Fish and Wildlife (CDFW). Under the Template SHA, MWCD has prepared a draft Site Plan that outlines Beneficial Management Activities and Avoidance and Minimization Measures MWCD is proposing to implement for the purpose of promoting the conservation, enhancement of survival, and recovery of the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho salmon. MWCD's draft Site Plan proposes activities and measures that are inclusive and complementary with CHERP, but also includes a number of additional enhancement measures.

As MWCD fully implements its water conservation measures identified in CHERP and SHA, a formal operations plan for MWCD is necessary for managing additional beneficial uses including environmental releases throughout the year dependent on varied water year types.

MWCD is managing its operations to provide water for the following responsibilities during specific times of the year:

<u>Storage Objective:</u>	<u>Timeline Range:</u>
Prior Rights	3/1-10/31
Municipal	1/1-12/31
Environmental	3/1-2/28
MWCD District Irrigation	4/1-9/30

Elements of the MWCD Water Management Plan: Upon full implementation of MWCD's SHA, MWCD will provide efficient deliveries of irrigation water to its District users, meet existing delivery responsibilities to prior rights holders, provide deliveries for municipal use by the City of Montague, and provide instream releases for environmental enhancement objectives. MWCD's goal of maximizing beneficial uses of water is dependent upon clear objectives, scheduling and well defined management triggers and resulting options. Given that demand often exceeds supply, MWCD must estimate the approximate volume of water available, and develop a schedule of timing, volume and priority for the multiple beneficial uses MWCD seeks to provide. MWCD Board can amend the Operations Plan when necessary as the Plan is a living document that will likely need refinement. In the event MWCD elects to change any of the parameters of the Operations Plan, MWCD will CDFW, NOAA, NCRWQCB, SSWD and effected water users, if any. MWCD's Water Operations Plan must be capable of:

- Responding and apportioning to variable water year types
- Restricting use based on priority when supplies are not sufficient
- Providing for year-round beneficial uses including municipal, environmental and irrigation.
- Quickly responding to changes in available water
- Planning for and meeting beneficial uses on a priority scale, often using predictive calculations

Managing for annual supply variability and multiple beneficial uses: Methods and indicators used by water districts to determine available water supply are numerous. Over time, MWCD has refined its operations by making management decisions based on actual condition at specific times of the year, and this approach has proven effective. MWCD now proposes to manage the release of approximately 2,662 to 8,153 acre-feet (af) annually, based on water year type, to the Shasta River for instream beneficial uses to made available through water conservation. Determination of releases of dedicated volumes throughout varied year types for instream beneficial use is a new use to plan for and manage, including year-round releases of water for instream benefit. Pending infrastructure improvements under SHA, MWCD will have the operational flexibility and monitoring capacity to manage and record water for instream benefit distinctly from other uses, concurrent or otherwise. New and existing infrastructure to provide for the release of instream flows is expected to be utilized throughout the calendar year to enhance flows and habitat for all life stages of Coho salmon and other salmonids.

In order to incorporate MWCD's SHA instream flow release management into MWCD's existing operations, a refined management strategy is proposed to ensure the instream flow volumes are commensurate with supply and fairly apportioned compared to the volume of water expected to be conserved as a result of Main Canal lining actions committed to in MWCD's SHA. In many years, MWCD's storage supply is less

than demand. To plan for and operate under the premise that supply often cannot fully meet all of MWCD's responsibilities, this operations plan provides a method of internal curtailment and apportionment based on two general premises:

- A.) Implementation of an internal allocation and prioritization system among beneficial uses that is predictive.
- B.) Management and operations based on a water year type determination system that is based on real-time storage volumes, storage loss assumptions and predicted inflows.

A. Internal Allocation Priority: To address limited supply conditions, MWCD's Water Operations Plan establishes MWCD's internal priorities for its beneficial uses, always being mindful that MWCD and its users must remain viable for the District and its services to continue. MWCD has the following internal priority objectives for allocation purposes only.

1.) Prior Rights Agreements: Prior to the establishment of MWCD, a number water rights existed within or downstream of the current location of Dwinnell Dam on the Shasta River. Construction of Dwinnell Reservoir interrupted or destroyed the conduits and/or Points of Diversion (PODs) of five water rights holders (hereinafter termed Prior Rights Users). In exchange for allowing construction of Dwinnell Reservoir, MWCD agreed to provide the Prior Rights Users a mutually agreed-upon annual volume of water to be released at the rate and schedule of individual Prior Rights Users' choosing. From a priority standpoint, MWCD considers Prior Rights the highest internal priority as the District is legally bound to provide water to the Prior Rights Users. MWCD's internal priority ranking is supported by the priority schedule of the Shasta River Decree. The Prior Rights Holders have higher priority water rights compared to MWCD's right and must be provided by MWCD per agreement developed with each prior right user. Therefore, MWCD's primary priority is to provide up to 3,382 af annually to Prior Rights Users during the period of March 1 – October 31. Of the 3,382 af allotted to prior rights, 1,398 af are delivered via MWCD's Main Canal to the respective PODs while 1,984 af are released to the Shasta River for downstream re-diversion by Prior Rights Users.

Schedule of MWCD Prior Rights:

The water rights for Tracts 57, 58, 59, 60, 61, and 62 are held in Dwinnell Reservoir and released, by Watermaster, between March 1 and October 31 on demand by agreement with MWCD as follows:

<u>Present Owner</u>	<u>Delivery Conduit</u>	<u>Ac-Ft</u>	<u>Div. Number</u>
Richards, R. & D. Trust	MWCD Main Canal	1,200	153, 154, 157
Emmerson Investment Inc.	Shasta River	471	165, 166
Emmerson Investment Inc.	Shasta River	125	158
Mallett, B.	Shasta River	464	158, 160, 161
Lea, Debra	MWCD Main Canal	65	149
Lassen Canyon Nursery	MWCD Main Canal	133	149
Emmerson Investment Inc.	Shasta River	924	156, 157, 159

Total 3,382

Delivery Conduit and Volume Summary

Shasta River	1,984 af
<u>MWCD Main Canal</u>	<u>1,398 af</u>
Sub-total	3,382 af

2.) Municipal: Based on MWCD’s internal prioritization, municipal water deliveries to the City of Montague (City) is the second highest priority behind only Prior Rights responsibilities. Municipal water deliveries to the City have historically been combined with MWCD’s Main Canal delivery of irrigation water to district users. Municipal use is not recognized as a beneficial use for MWCD’s storage rights, even though it has been a common practice for over 90 years.

MWCD submitted a Change Petition to the SWRCB including adding municipal use as an additional beneficial use. As a result of recently completed infrastructure improvements provided by emergency drought funds for the City of Montague. MWCD now has the ability to deliver municipal water more efficiently via the Shasta River to a re-diversion point constructed in 2014 near the City of Montague while concurrently providing added instream habitat value. MWCD can also divert water for municipal purposes from the Little Shasta River but this source is typically only available between December 15 and April 15 due to the low priority of that water right.

The City of Montague currently uses an average of approximately 1,200-1,400 af annually for municipal and industrial use. Historically, delivery of municipal water to the City of Montague used MWCD’s Main Canal as the conduit to deliver municipal water even when not delivering irrigation water to the district. When MWCD is not delivering district irrigation water, delivery of municipal water to the City of Montague Storage very inefficient.

3.) Fish and Wildlife - Instream use: In the past, MWCD has participated in individual or collaborative spring pulse flow releases, fall flow transactions, and water forbearances for instream benefits on numerous occasions. Under full implementation of MWCD’s Safe Harbor Agreement, MWCD will be releasing pre-determined volumes of water, based on water year type determinations and commensurate with estimated volumes of water conserved through lining high loss sections of the Main Canal. These values were re-analyzed and adjusted through MWCD’s Safe Harbor Agreement in collaboration with CDFW, NOAA and other stakeholders. As such, MWCD considers instream environmental uses and MWCD’s in-district irrigation uses to be coequal in priority. The volume of water released for instream benefits by MWCD will depend on water year type, but will remain commensurate with MWCD-District irrigation use based on the volume of water conserved through Main Canal Lining. During Wet and Very Wet water years MWCD will provide more water for instream benefit than would have been conserved through delivery efficiency. MWCD will be providing block volumes of water (in addition to pre-determined flow release schedule volumes and rates) for additional beneficial instream, to be released in coordination with NMFS, CDFW and the NCRWQCB during Wet and Very Wet water years.

3.) MWCD District Irrigation: The volume of water delivered to MWCD users varies greatly from year to year. After accounting for the two top priorities (prior rights and municipal), the average volume of water sold by MWCD in a normal water year is approximately 16,200 af delivered via the Main Canal for irrigation between April 1 and September 30. The average irrigation season for MWCD members is 133 days, but has varied from as little as 11 days during a very dry water year to a full irrigation season, ending on September 30th. As described above, irrigation uses and instream benefits uses are coequal priorities under this water operations plan, and MWCD will continue to provide variable annual volumes of water for district irrigation, based on water year type determinations and efficiency improvements.

4.) Minimum Reservoir Storage: MWCD recognizes Dwinnell Reservoir has an important recreational and distinctly different fishery in Dwinnell Reservoir that is managed by CDFW and Siskiyou County. Depending on water year type and demand, MWCD will target variable October 1 minimum storage volumes, ranging from 600 af in a Very Dry water year to 8,000 af or more in a Very Wet water year. October 1 reservoir storage targets are also used ensure water is available for instream flow releases for the remainder of the water year (i.e., through February 29)¹. Minimum reservoir storage is an internal objective, not a directive. If higher priorities require the reservoir targets storage targets to be missed, the MWCD Board may elect to do so.

B. Dwinnell Reservoir Water Year Determination: Annual supply variation requires MWCD to manage for drier years differently than Average or Wet years. While highest priorities of meeting Prior Rights and Municipal has always been fully met, MWCD District use and instream enhancement allocations will vary based on availability and water year type. In coordination with NMFS and CDFW, MWCD developed a water year type designation methodology specific to Dwinnell Reservoir to determine the volume of water available to be provided for instream benefit to the Shasta River via MWCD's storage and incorporated infrastructure.

The water year type designation methodology utilizes first-of-month storage in Dwinnell Reservoir during March 1, April 1 and May 1. Reservoir storage is the primary criterion for determining year types, and to a lesser extent, snowpack (water content) expected to be released during the snowmelt period for that year. Reservoir storage is estimated to be the most applicable indicator of available water to meet MWCD's uses and obligations and downstream demands. Snowpack is representative of near-future water that may become available but can be diverted prior to MWCD's PODs.

MWCD's methodology uses five water year type designations: Very Dry, Dry, Normal, Wet, and Very Wet. The methodology was developed by Watercourse Engineering (2016) and is summarized below: For purposes of MWCD's water year type designations, a water year determination starts on March 1 and continues through February 29 of the following calendar year. MWCD's water year determination does not follow a standard water year (October 1st through September 30th). Year type designations are evaluated on March 1, April 1, May 1 conditions. March 1st water year type designations are determined based on Dwinnell Reservoir storage alone. April 1st and May 1st water year determinations consider storage and snow pack (snow water content). Storage volumes are determined from the *Dwinnell Reservoir Near Edgewood (DRE)* California Data Exchange Center (CDEC) data station, and snow pack (snow water

¹ For the purposes of MWCD's water operations, a water year extends from March 1 through February 29 of the following year.

content) is determined from the *Peterson Flat* (PET) CDEC station. Both stations provide real-time provisional data.

March 1 Year Type Determination: The March 1 year type designation is based only on storage in Dwinnell Reservoir. Dependent on storage volume on March 1, a water year determination is made and the corresponding instream flow schedule per water year type (Tables 4-8) released (per daily time step) for the month of March. The storage criteria for each water year type are provided in Table 1 below.

Table 1. March 1 year type designation criteria

March 1 st Storage (af)	Year Type
Less than 17,000	Very Dry
17,000 - 23,999	Dry
24,000 - 35,999	Normal
36,000 - 42,999	Wet
43,000 or greater	Very Wet

April 1 Year Type Determination: The April 1 year type designation is based primarily on storage in Dwinnell Reservoir, with a secondary criterion based on first-of-month accumulated snow pack at Peterson Flat (snow water content). When first of month storage in Dwinnell Reservoir is within 2,000 af of April 1 storage criterion threshold, snow water content is used to determine if the year type should be adjusted. If the storage is within 2,000 af of the lower storage criterion for a year type (e.g., lower storage criterion plus 2,000 af) and snow water content is less than 75 percent of normal, the year type will be adjusted down one step (e.g., normal to dry). If the storage is within 2,000 af of the upper storage criterion for a year type (e.g., upper storage criterion minus 2,000 af) and snow water content is greater than 125 percent of normal, the year type will be adjusted up one step (e.g., normal to wet). Table 2 provides the storage and snow water content-based water year determinations for April 1.

Table 2. April 1 year type designation by storage and snow water content

April 1 Storage (af)	April 1 Snow Water Content (% of normal)	Year Type
Less than 16,000	N/A	Very Dry
16,000-17,999	< 125%	Very Dry
	> 125%	Dry
18,000 - 19,999	< 75%	Very Dry
	> 75%	Dry
20,000 - 23,999	N/A	Dry

24,000 - 25,999	< 125%	Dry
	> 125%	Normal
26,000 - 27,999	< 75%	Dry
	> 75%	Normal
28,000 - 35,999	N/A	Normal
36,000 - 37,999	< 125%	Normal
	> 125%	Wet
38,000 - 39,999	< 75%	Normal
	> 75%	Wet
40,000 - 43,999	N/A	Wet
44,000 - 45,999	< 125%	Wet
	> 125%	Very Wet
46,000 - 47,999	< 75%	Wet
	> 75%	Very Wet
48,000 or greater	N/A	Very Wet

May 1 Year Type Determination: The May 1st year type designation has the same format as the April 1st designation, but with different storage criteria. The May 1st determination is important because it sets the water year type and instream flow schedule through the month of February of the following year. The storage and snow water content-based water year determinations for May 1 are presented in Table 3.

Table 3. May 1 year type designation by storage and snow water content

May 1 Storage (af)	May 1 Snow Water Content (% of normal)	Year Type
Less than 12,500	N/A	Very Dry
12,500 - 14,499	< 125%	Very Dry
	> 125%	Dry
14,500 - 16,499	< 75%	Very Dry
	> 75%	Dry
26,500 - 21,999	N/A	Dry
22,000 - 23,999	< 125%	Dry
	> 125%	Normal
24,000 - 25,999	< 75%	Dry
	> 75%	Normal
26,000 - 35,999	N/A	Normal
36,000 - 37,999	< 125%	Normal
	> 125%	Wet
38,000 - 39,999	< 75%	Normal
	> 75%	Wet
40,000 - 42,999	N/A	Wet
43,000 - 44,999	< 125%	Wet
	> 125%	Very Wet
45,000 - 46,999	< 75%	Wet
	> 75%	Very Wet
47,000 or greater	N/A	Very Wet

Environmental Flow Release Schedules: Water year types can change from March 1st through May 1st depending on precipitation conditions. For instance, it is possible to release instream values for an average March and end up with a wet or dry water year determination on May 1. If a March 1 water year determination were for a dry year, MWCD would release water for instream benefit per daily time step for a dry year through March. If the April 1 determination was for a normal year, MWCD would release for instream benefit per daily time step for a normal year in March. The final water year determination on May 1 set the water year type from May 1 through February 28th. Upon full implementation of MWCD's SHA, MWCD will release variable volumes of water to the Shasta River per flow schedule developed with CDFW and NOAA. Annual instream water year determination volumes are presented below by water year type:

Very Dry:	2,662 af
Dry:	3,541 af
Normal:	4,437 af
Wet:	6,236 af (includes 684 af of unscheduled releases to be managed adaptively)
Very Wet:	8,152 af (includes 1,154 af of unscheduled releases to be managed adaptively)

Tables 4 through 8 provide the daily release rates for instream benefit based on the water year type determinations. The initial release schedule is implemented on March 1 based on storage, as described above. Potential shifts to a higher or lower water year type release schedule may occur on April 1 and May 1. As such, the total volume released in any given CHERP water year (i.e., March 1 through February 29) may differ from the above volumes (for example, when a Normal water year schedule is implemented on March 1, but switched over to a Wet water year schedule on April 1).

The total release volumes for Wet and Very Wet water years include 684 af and 1,154 af blocks of water, respectively, that are not included in the releases schedules for those years. These blocks of water will be released adaptively in coordination with NCRWQCB, NMFS and CDFW for purposes such as flushing flows, habitat maintenance, or enhanced salmonid migration.

In the rare event that both prior rights users on the Shasta River request temporary cessation of water deliveries during the summer of a Very Dry water year, MWCD will provide an additional 2.0 cfs (in addition to the proposed CHERP flow release of 1.0 cfs) from Flying L wells (see below) until prior rights deliveries are resumed to maintain sufficient flow and water quality for instream benefit.

Furthermore, all water year schedules listed in Tables 4 through 8 include an August 21 increase to 5 cfs of SHA releases. It is important to note that August 21 is simply an estimated schedule placeholder representing the average date when prior rights deliveries have historically ended. Under SHA, MWCD commits to ensuring at least 5.0 cfs is released the Shasta River through the end of August, regardless of purpose (unless the release would increase increase water temperatures above 18°C at MWCD's verification site).

Use of Flying L Pumps: An important component of the CHERP and SHA water operations plan is the incorporation of MWCD's Flying L well/pumps to provide improved water quality through delivery of groundwater (12.8°C) to the Shasta River. Under CHERP, water temperatures released to the Shasta River will be monitored in the Shasta River on MWCD property downstream of the connected cold water wetland habitat feature. As maximum daily release temperatures from Dwinnell Reservoir approach 18°C, MWCD will incorporate cold water from the Flying L wells to reduce water temperatures released into the Shasta River. MWCD will provide variable rates (up to a maximum of 5.5 cfs) of water from Flying L wells to

maintain the water quality and keep the flow released to the Shasta River at or under 18° C or less. The groundwater is intended to maintain a water quality objective while also serving an identified approved purpose.

**TABLE 4
PROPOSED CHERP FLOW RELEASES – VERY DRY YEAR (2,662
AF)**

Date	Release Rate (cfs)											
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
1	4	15	5	3	1	1	3	3	3	3	2	2
2	4	15	5	3	1	1	3	3	3	3	2	2
3	4	15	5	3	1	1	3	3	3	3	2	2
4	4	15	5	3	1	1	3	3	3	3	2	2
5	4	15	5	3	1	1	3	3	3	3	2	2
6	4	15	5	3	1	1	3	3	3	3	2	2
7	4	15	5	3	1	1	3	3	3	3	2	2
8	4	15	5	3	1	1	3	3	3	3	2	2
9	4	15	5	1	1	1	3	3	3	3	2	2
10	4	15	5	1	1	1	3	3	3	3	2	2
11	4	15	5	1	1	1	3	3	3	3	2	2
12	4	15	5	1	1	1	3	3	3	3	2	2
13	4	15	5	1	1	1	3	3	3	3	2	2
14	4	15	5	1	1	1	3	3	3	3	2	2
15	4	15	5	1	1	1	3	3	3	3	2	2
16	4	15	3	1	1	1	3	3	3	3	2	2
17	4	15	3	1	1	1	3	3	3	3	2	2
18	4	10	3	1	1	1	3	3	3	3	2	2
19	4	10	3	1	1	1	3	3	3	3	2	2
20	4	10	3	1	1	1	3	3	3	3	2	2
21	4	10	3	1	1	5	3	3	3	3	2	2
22	4	10	3	1	1	5	3	3	3	3	2	2
23	15	10	3	1	1	5	3	3	3	3	2	2
24	15	10	3	1	1	5	3	3	3	3	2	2
25	15	10	3	1	1	5	3	3	3	3	2	2
26	15	5	3	1	1	5	3	3	3	3	2	2
27	15	5	3	1	1	5	3	3	3	3	2	2
28	15	5	3	1	1	5	3	3	3	3	2	2
29	15	5	3	1	1	5	3	3	3	3	2	2
30	15	5	3	1	1	5	3	3	3	3	2	
31	15		3		1	5		3		3	2	

*If all prior rights on the Shasta River cease to call for water during summer rearing period, MWCD will provide 2.0 cfs to the Shasta River for instream benefit until prior rights are again resumed.

**TABLE 5
PROPOSED CHERP FLOW RELEASES – DRY YEAR (3,541 AF)**

Date	Release Rate (cfs)											
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
1	4	15	10	5	3	3	3	3	4	3	2	2
2	4	15	10	5	3	3	3	3	4	3	2	2
3	4	15	10	5	3	3	3	3	4	3	2	2
4	4	15	10	5	3	3	3	3	4	3	2	2
5	4	15	10	5	3	3	3	3	4	3	2	2
6	4	15	10	5	3	3	3	3	4	3	2	2
7	4	15	10	5	3	3	3	3	4	3	2	2
8	4	15	10	5	3	3	3	3	4	3	2	2
9	4	15	10	5	3	3	3	3	4	3	2	2
10	4	15	10	5	3	3	3	3	4	3	2	2
11	4	15	10	5	3	3	3	3	4	3	2	2
12	4	15	10	5	3	3	3	3	4	3	2	2
13	4	15	10	5	3	3	3	3	4	3	2	2
14	4	15	10	5	3	3	3	3	4	3	2	2
15	4	15	5	3	3	3	3	3	4	3	2	2
16	15	15	5	3	3	3	3	3	4	3	2	2
17	15	15	5	3	3	3	3	3	4	3	2	2
18	15	15	5	3	3	3	3	3	4	3	2	2
19	15	15	5	3	3	3	3	3	4	3	2	2
20	15	15	5	3	3	3	3	3	4	3	2	2
21	15	15	5	3	3	5	3	3	4	3	2	2
22	15	15	5	3	3	5	3	3	4	3	2	2
23	15	15	5	3	3	5	3	3	4	3	2	2
24	15	15	5	3	3	5	3	3	4	3	2	2
25	15	10	5	3	3	5	3	3	4	3	2	2
26	15	10	5	3	3	5	3	3	4	3	2	2
27	15	10	5	3	3	5	3	3	4	3	2	2
28	15	10	5	3	3	5	3	3	4	3	2	2
29	15	10	5	3	3	5	3	3	4	3	2	2
30	15	10	5	3	3	5	3	3	4	3	2	
31	15		5		3	5		3		3	2	

**TABLE 6
PROPOSED FLOW RELEASES – NORMAL YEAR (4,437 AF)**

Date	Release Rate (cfs)											
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
1	4	25	10	5	3	3	3	6	6	3	4	4
2	4	15	10	5	3	3	3	6	6	3	4	4
3	4	15	10	5	3	3	3	6	6	3	4	4
4	4	15	10	5	3	3	3	6	6	3	4	4
5	4	15	10	5	3	3	3	6	6	3	4	4
6	4	15	10	5	3	3	3	6	6	3	4	4
7	4	15	10	5	3	3	3	6	6	3	4	4
8	4	15	10	5	3	3	3	6	6	3	4	4
9	4	15	10	5	3	3	3	6	6	3	4	4
10	4	15	10	5	3	3	3	6	6	3	4	4
11	4	15	10	5	3	3	3	6	6	3	4	4
12	4	15	10	5	3	3	3	6	6	3	4	4
13	4	15	10	5	3	3	3	6	6	3	4	4
14	4	15	10	5	3	3	3	6	6	3	4	4
15	4	15	5	3	3	3	6	6	6	3	4	4
16	15	15	5	3	3	3	6	6	6	3	4	4
17	15	15	5	3	3	3	6	6	6	3	4	4
18	15	15	5	3	3	3	6	6	6	3	4	4
19	15	15	5	3	3	3	6	6	6	3	4	4
20	15	15	5	3	3	3	6	6	6	3	4	4
21	15	15	5	3	3	5	6	6	6	3	4	4
22	15	15	5	3	3	5	6	6	6	3	4	4
23	15	15	5	3	3	5	6	6	6	3	4	4
24	15	15	5	3	3	5	6	6	6	3	4	4
25	15	10	5	3	3	5	6	6	6	3	4	4
26	15	10	5	3	3	5	6	6	6	3	4	4
27	15	10	5	3	3	5	6	6	6	3	4	4
28	15	10	5	3	3	5	6	6	6	3	4	4
29	25	10	5	3	3	5	6	6	6	3	4	4
30	25	10	5	3	3	5	6	6	6	3	4	
31	25		5		3	5		6		3	4	

**TABLE 7
PROPOSED CHERP FLOW RELEASES – WET YEAR (6,236 AF)***

Date	Release Rate (cfs)											
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
1	8	25	10	5	3	3	3	10	10	10	4	4
2	8	20	10	5	3	3	3	10	10	10	4	4
3	8	20	10	5	3	3	3	10	10	10	4	4
4	8	20	10	5	3	3	3	10	10	10	4	4
5	8	20	10	5	3	3	3	10	10	10	4	4
6	8	20	10	5	3	3	3	10	10	10	4	4
7	8	20	10	5	3	3	3	10	10	10	4	4
8	8	20	10	5	3	3	3	10	10	10	4	4
9	8	20	10	5	3	3	3	10	10	10	4	4
10	8	20	10	5	3	3	3	10	10	10	4	4
11	8	20	10	5	3	3	3	10	10	10	4	4
12	8	20	10	5	3	3	3	10	10	10	4	4
13	8	20	10	5	3	3	3	10	10	10	4	4
14	8	20	10	5	3	3	3	10	10	10	4	4
15	8	20	5	3	3	3	10	10	10	10	4	4
16	15	15	5	3	3	3	10	10	10	10	4	4
17	15	15	5	3	3	3	10	10	10	10	4	4
18	15	15	5	3	3	3	10	10	10	10	4	4
19	15	15	5	3	3	3	10	10	10	10	4	4
20	15	15	5	3	3	3	10	10	10	10	4	4
21	15	15	5	3	3	5	10	10	10	10	4	4
22	15	15	5	3	3	5	10	10	10	10	4	4
23	15	15	5	3	3	5	10	10	10	10	4	4
24	15	15	5	3	3	5	10	10	10	10	4	4
25	15	10	5	3	3	5	10	10	10	10	4	4
26	15	10	5	3	3	5	10	10	10	10	4	4
27	15	10	5	3	3	5	10	10	10	10	4	4
28	15	10	5	3	3	5	10	10	10	10	4	4
29	25	10	5	3	3	5	10	10	10	10	4	4
30	25	10	5	3	3	5	10	10	10	10	4	
31	25		5		3	5		10		10	4	

*Note: 5,552 AF scheduled; 684 AF Block for flushing, habitat maintenance, migration, etc.

**TABLE 8
PROPOSED CHERP FLOW RELEASES – VERY WET YEAR (8,152 AF)***

Date	Release Rate (cfs)											
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
1	10	25	15	5	3	3	3	13	13	10	4	4
2	10	25	15	5	3	3	3	13	13	10	4	4
3	10	25	15	5	3	3	3	13	13	10	4	4
4	10	25	15	5	3	3	3	13	13	10	4	4
5	10	25	15	5	3	3	3	13	13	10	4	4
6	10	25	15	5	3	3	3	13	13	10	4	4
7	10	25	15	5	3	3	3	13	13	10	4	4
8	10	25	15	5	3	3	3	13	13	10	4	4
9	10	25	15	5	3	3	3	13	13	10	4	4
10	10	25	15	5	3	3	3	13	13	10	4	4
11	10	25	15	5	3	3	3	13	13	10	4	4
12	10	25	15	5	3	3	3	13	13	10	4	4
13	10	25	15	5	3	3	3	13	13	10	4	4
14	10	25	15	5	3	3	3	13	13	10	4	4
15	10	25	10	3	3	3	10	13	13	10	4	4
16	15	20	10	3	3	3	10	13	13	10	4	4
17	15	20	10	3	3	3	10	13	13	10	4	4
18	15	20	10	3	3	3	10	13	13	10	4	4
19	15	20	10	3	3	3	10	13	13	10	4	4
20	15	20	10	3	3	3	10	13	13	10	4	4
21	15	20	10	3	3	5	10	13	13	10	4	4
22	15	20	10	3	3	5	10	13	13	10	4	4
23	15	20	10	3	3	5	10	13	13	10	4	4
24	15	20	10	3	3	5	10	13	13	10	4	4
25	15	20	10	3	3	5	10	13	13	10	4	4
26	15	20	10	3	3	5	10	13	13	10	4	4
27	15	20	10	3	3	5	10	13	13	10	4	4
28	15	20	10	3	3	5	10	13	13	10	4	4
29	25	20	10	3	3	5	10	13	13	10	4	4
30	25	20	10	3	3	5	10	13	13	10	4	
31	25		10		3	5		13		10	4	

*Note: 6,998 AF scheduled; 1,154 AF block for flushing, habitat maintenance, migration, etc.

Parks Creek Water Diversion: MWCD has a right to divert Parks Creek flows into Dwinnell Reservoir from October 1st through June 15th. Through the SHA, MWCD has committed to provide additional by-pass in exchange for an improved and compliant diversion point. Until the infrastructure improvements have been made, MWCD will abide by current interim operational commitments. Upon completed construction of improved infrastructure at the Parks Creek diversion, MWCD will increase its bypass values to enhance instream flow conditions. Under SHA, the following seasonal bypass flows will be provided at the MWCD's Parks Creek diversion when infrastructure improvements to the diversion are made:

<u>Season</u>	<u>Proposed</u>	<u>Current</u>
10/1-1/1	20 cfs	6 cfs
1/1-3/1	6 cfs	6 cfs
3/1-6/15	21 cfs	16 cfs

MWCD - SHA -Upper Parks Creek Flow Strategy - Instream flow targets at PCE:

Upper Parks Creek Flow Strategy: MWCD will participate in a reach-wide flow strategy on upper Parks Creek including seeking funding for water conservation projects, and serve on an advisory panel to confirm implementation plans and monitoring. MWCD will participate throughout the term of this agreement. Upon completion of MWCD's infrastructure improvements at Parks Creek Diversion (described in E.2c), MWCD will expand the bypass terms to include the following terms proposed in the Upper Parks Creek Flow Plan:

- **10/1-12/31:** Bypass 21.0 cfs at the Parks Creek at Edgewood (PCE) gage, located at the downstream extent of Upper Parks Creek reach, prior to diverting to aid adult migration and spawning from 10/1-12/31. 21 cfs includes conserved water made available when water conservation measures are implemented by Upper Parks Creek stream reach participants.

MWCD's Parks Creek Diversion By-pass at PCE from 10/1-12/31: In order to provide increased flow variation below MWCD Parks Creek diversion, MWCD agrees to increase by-pass values proportionality with diverted volume, verified downstream by CDEC stream flow gage PCE (PCE stream flow gage is the downstream extent of Upper Parks Creek reach). Proportionate by-pass to diversion values include:

- 1.) Stream flow in Parks Creek at PCE gage must equal 21.0 cfs or more before MWCD can begin diversion and can divert up to 20 cfs.
- 2.) Stream flow in Parks Creek at PCE gage must equal 30 cfs or more before MWCD can divert more than 20 cfs but less than 90 cfs.
- 3.) Stream flow in Parks Creek at PCE gage must equal 40 cfs or more before MWCD can divert more than 90 cfs but less than 150 cfs.

- **1/1-2/28:** Bypass 6.0 cfs at PCE from 1/1-2/28 prior to diverting. MWCD will work with agencies and other participants in the Upper Parks Creek stream reach to evaluate if redds are sufficiently protected with 6.0 cfs of bypass by the close of the 5th year of the agreement. If redds are not sufficiently protected, up to 10.0 cfs may need to be bypassed at PCE to meet the biological objective. MWCD will assure 10.0 cfs is at PCE after MWCD diverts more than 20 cfs from 1/1-2/28, bypass 21.0 cfs at PCE prior to diverting from 3/1-6/15. The 21 cfs bypass includes water conserved through conservation projects conducted by Parks Creek Ranch and Edson-Foulke Ditch when proposed upstream water conservation projects are completed. Bypass of conserved water by other participants is contingent on operating gages at PCE and participating diversions.

MWCD's Parks Creek Diversion By-pass at PCE from 1/1-2/28: In order to provide increased flow variation below MWCD Parks Creek diversion, MWCD agrees to increase by-pass values proportionality with diverted volume, verified downstream by CDEC stream flow gage PCE (PCE stream flow gage is the downstream extent of Upper Parks Creek reach). Proportionate by-pass to diversion values include:

- 1.) Stream flow in Parks Creek at PCE gage must equal 6.0 cfs or more before MWCD can begin diversion and can divert up to 20 cfs.
- 2.) Stream flow in Parks Creek at PCE gage must equal 30 cfs or more before MWCD can divert more than 20 cfs but less than 90 cfs.
- 3.) Stream flow in Parks Creek at PCE gage must equal 40 cfs or more before MWCD can divert more than 90 cfs but less than 150 cfs.

- **3/1-6/15:** By-pass values from 3/1-6/15 prior to diverting. In order to provide flow variability in Parks Creek, MWCD will provide the following bypass values as diversion volumes increase as presented below:

MWCD's Parks Creek Diversion By-pass at PCE from 3/1-6/15: In order to provide increased flow variation below MWCD Parks Creek diversion, MWCD agrees to increase by-pass values proportionality with diverted volume, verified downstream by CDEC stream flow gage PCE (PCE stream flow gage is the downstream extent of Upper Parks Creek reach). Proportionate by-pass to diversion values include:

- 1.) Stream flow in Parks Creek at PCE gage must equal 21.0 cfs or more before MWCD can begin diversion and can divert up to 20 cfs.
- 2.) Stream flow in Parks Creek at PCE gage must equal 30 cfs or more before MWCD can divert more than 20 cfs but less than 90 cfs.
- 3.) Stream flow in Parks Creek at PCE gage must equal 40 cfs or more before MWCD can divert more than 90 cfs but less than 150 cfs.

- **6/16-9/30:** MWCD does not divert from 6/16-9/30.