

## **Drought Operations Technical Advisory Committee**

# **Standards and Guiding Principles of Reservoir Operations During Drought Conditions**

*This document provides a foundation of standards and guiding principles to be used in the development of a proposed reservoir release schedule triggered under specific, seasonally defined conditions.*

*Standards: a level of quality or achievement that is considered acceptable or desirable.*

*Standards are in place to ensure that basic needs are met by partners through clearly defined behaviors that are acceptable. The drought operations technical advisory committee will strive to have attainable standards.*

*Guiding Principles: guide an organization towards its goals.*

*Guiding Principles are in place to ensure we continue to move toward our goals with flexibility and unity of effort.*

### **Introduction**

Prior to being formally established in 1991, the Monterey County Water Resources Agency (MCWRA) was the Monterey County Flood Control and Water Conservation District, established in 1947 and organized as a division of the Public Works Department of the County of Monterey. MCWRA provides services related to the control of flood and storm waters in Monterey County, conservation, protection of water quality, reclamation of water and the exchange of water. MCWRA is a public agency created by the State of California pursuant to the Monterey County Water Resources Agency Act (California Water Code, Appendix 52).

MCWRA owns and operates two dams along with associated reservoirs. Nacimiento Dam is on the Nacimiento River, a tributary to the Salinas River. Nacimiento Dam is approximately 12.3 river miles upstream of its confluence with the Salinas River and forms the Nacimiento Reservoir, with a maximum storage capacity of approximately 377,900 acre-feet. San Antonio Dam, on the San Antonio River is approximately 8.6 river miles upstream of its confluence with the Salinas River. San Antonio Dam forms the San Antonio Reservoir, with a maximum storage capacity of approximately 335,000 acre-feet of water. The Nacimiento and San Antonio Rivers enter the Salinas River at river miles 108 and 104, respectively, from its mouth at the Pacific Ocean in Monterey Bay.

The purpose of the Drought Operations Technical Advisory Committee (D-TAC) is to provide, when drought triggers occur, technical input and advice regarding the operations of Nacimiento and San Antonio Reservoirs. This document was developed by the members of the D-TAC to

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provide a foundation of Standards and Guiding Principles to be used in the development of a proposed reservoir release schedule triggered under specific, seasonally defined conditions. A Habitat Conservation Plan (HCP) is currently being developed to address the effects of reservoir operations and other actions on Federally endangered species and will further address drought operations in the Salinas River system. Documents and procedures developed by the D-TAC will be considered during development of the HCP. MCWRA will convene with stakeholders to determine if modifications to these drought procedures are warranted in light of the terms of the final HCP. Drought operations developed by the D-TAC will also consider management actions and sustainability criteria within the Groundwater Sustainability Plans for the Salinas Valley groundwater basin.

### **Formation of the D-TAC**

The D-TAC was formed through a settlement agreement (Appendix A) to develop Standards and Guiding Principles and proposed reservoir release schedules for MCWRA drought operations. The D-TAC is an ad hoc committee of independent third-party experts with expertise in any of the following fields: hydrology, hydrogeology, hydrologic modeling, civil engineering, ecology, or fish and wildlife biology. The experts are retained and paid for, but not employed by any interested person or organization. The U.S. Fish and Wildlife Service, National Marine Fisheries Service, California Department of Fish and Wildlife, State Water Resources Control Board, Salinas Valley Basin Groundwater Sustainability Agency and the Monterey County Water Resources Agency are using in-house staff as D-TAC members. Each time a Drought Trigger occurs, the chair of the D-TAC shall rotate, in alphabetical order, by the name of the organization D-TAC members represent. Organizations with multiple members will only have one-person chair in the rotation.

### **D-TAC Members (ordered alphabetically by organization):**

- Donald Baldwin, Environmental Scientist, - California Department of Fish and Wildlife
- Dennis Michniuk, District Biologist Coastal Fisheries - California Department of Fish and Wildlife
- Robert Abrams, PhD, PG, CHg – Grower-Shipper Association
- William Stevens, Natural Resource Management Specialist - National Marine Fisheries Service
- Shaunna Murray, Senior Water Resources Engineer – Monterey County Water Resources Agency
- Germán Criollo, PE, Associate Hydrologist – Monterey County Water Resources Agency
- Jason Demers, Associate Engineer – Monterey County Water Resources Agency
- Emily Gardner, Dep. General Manager – Salinas Valley Basin Groundwater Sustainability Agency
- Curtis Weeks, PE, - Salinas Valley Water Coalition
- Mark Ogonowski, Senior Fish and Wildlife Biologist – U.S. Fish and Wildlife Service

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### Facilitation and Support:

- Howard Franklin, PG, Senior Hydrologist – Monterey County Water Resources Agency
- Nicole Koerth, GIT, Hydrologist – Monterey County Water Resources Agency

### D-TAC Triggers

Drought Triggers, or reservoir storage thresholds for when the D-TAC shall meet to develop a release schedule, are defined in Exhibit B of the Settlement Agreement (Appendix A). These triggers are based on operational considerations and not water year type. The storage thresholds defined assume that MCWRA can make conservation releases to the Salinas River Diversion Facility (SRDF) for two months and maintain minimum releases until September.

A Drought Trigger occurs if the following criteria is met:

- At the October Reservoir Operations Advisory Committee meeting of each year, MCWRA staff will present an updated reservoir release schedule and the then-current forecast for December 1<sup>st</sup> storage at Nacimiento and San Antonio Reservoirs. If the December 1<sup>st</sup> forecasted combined reservoir storage volume at Nacimiento and San Antonio Reservoirs is below 220,000 acre-feet and the San Antonio Reservoir's December 1<sup>st</sup> forecasted storage is below 82,000 acre-feet, the D-TAC process shall commence.
- The MCWRA will schedule the first D-TAC meeting to occur no earlier than February 15<sup>th</sup> and the D-TAC will meet as needed through March 31<sup>st</sup>. The D-TAC will develop a recommended release schedule that is consistent with the Standards and Guiding Principles.
- If at any time between December 1<sup>st</sup> and March 31<sup>st</sup> the actual reservoir storage volumes equals or exceeds the combined or individual minimum storage thresholds, the D-TAC process will terminate, and no release schedule will be prepared by the D-TAC.

### Standards:

- The proposed reservoir release operations schedule triggered under specific, seasonally defined conditions of drought will be developed based on the best available scientific knowledge, data, and understanding of the environmental biology, hydrology and hydrogeology of the Salinas Valley; under the technical expertise of the members of the D-TAC.
- The proposed reservoir release schedule will be implemented based on specific tools and templates made available to the D-TAC. These are discussed further in the Implementation Procedures section.
- The proposed reservoir release schedule will acknowledge, address, and balance the water needs of various stakeholders for limited resources during a drought.

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### **Guiding Principles:**

- MCWRA is a public agency charged with the long-term management of water resources in the Salinas Valley and is also the flood control agency for Monterey County. Therefore, any releases of water from Nacimiento or San Antonio Reservoirs will be made with consideration given first to safety, including flow conditions and the structural integrity of Nacimiento and San Antonio Dams.
- MCWRA operates Nacimiento and San Antonio Reservoirs under regulatory authorizations; as well as through legal agreements (Appendix C).
- Any reservoir release schedule developed by the D-TAC should:
  - When conservation releases are made, maintain geographic equity to fullest extent possible;
  - Comply with applicable regulations and agreements relating to the operation of Nacimiento and San Antonio Reservoirs;
  - Avoid, to the extent possible, consecutive years where only minimum releases are made from the reservoirs;
  - Avoid, to the extent possible, adverse effects to native species and their habitats;
  - Safely use existing MCWRA infrastructure while balancing water availability and use; and
  - Avoid, to the extent possible, adverse impacts to valley-wide agricultural operations.

### **Implementation Procedures:**

- The D-TAC will use a MCWRA provided template when developing the release schedule. The specific actions will also be described in a narrative form to expound upon the actions taken for each month shown in the release schedule.
- The release schedule will be developed for April through December of the current year. If significant inflow occurs during this period, then modifications to the release schedule will be made through existing MCWRA protocols.
- The D-TAC will develop a dry winter scenario narrative for the following January- March period to allow for the possibility of multiple dry winter release operations.
- The reservoir release schedule includes estimated values for demands, releases and associated reservoir elevations and storage volumes. It serves as a guideline for reservoir operations. Actual operations will require the flexibility to respond to current hydrologic and facility conditions.
- The release schedule will be updated on a monthly basis for discussion at the Reservoir Operations Committee.
- Reservoir releases will be made under direction of the MCWRA Board of Directors or Board of Supervisors through the adoption of a reservoir release schedule or dry winter release priorities, to be executed by MCWRA staff.

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### **Summary Actions**

The Standards and Guiding Principles Document and any recommended release schedule prepared by the D-TAC will first be received by the Reservoir Operations Advisory Committee. The Reservoir Operations Advisory Committee will meet to discuss the Standards and Guiding Principles or release schedule and will solicit information, data and public comment regarding appropriate MCWRA operations during droughts. Following receipt of public input regarding the Standards and Guiding Principles or any subsequent release schedule, the Reservoir Operations Advisory Committee will then prepare a written recommendation regarding reservoir operations which will be transmitted to the MCWRA Board of Directors for consideration and action. Any interested party that dissents from the Reservoir Operations Committee's recommendation may submit separate written comments to the MCWRA Board of Directors. The MCWRA Board of Directors will determine, in accordance with applicable law, whether MCWRA will adopt and implement the Standards and Guiding Principles or release schedule, provided the MCWRA General Manager may, in his sole discretion, refer the question of whether MCWRA should adopt and implement the Standards and Guiding Principles or a release schedule to the MCWRA Board of Supervisors for final determination. In the event the MCWRA General Manager elects not to refer the question of adoption and implementation of Standards and Guiding Principles or a release schedule to the MCWRA Board of Supervisors, the decision of the MCWRA Board of Directors regarding such questions shall constitute final agency action for all purposes. The MCWRA Board of Directors (or MCWRA Board of Supervisors, if applicable) will retain full discretion and authority to accept or reject, in whole or in part, the written recommendations of the Reservoir Operations Advisory Committee.

## APPENDICES

Appendix A: *Settlement Agreement Between Monterey County Water Resources Agency, The Agency Board of Supervisors, the Agency Board of Directors, the County of Monterey, the County Board of Supervisors, and the Salinas Valley Water Coalition; November 15, 2019*

- <https://www.co.monterey.ca.us/Home/ShowDocument?id=98911>

Documents referenced in Exhibit B of the Settlement Agreement

- *Salinas Valley Water Project, Engineer's Report, January 2003*
  - <https://www.co.monterey.ca.us/home/showdocument?id=24202>
- *Final Environmental Impact Report/Environmental Impact Statement for the Salinas Valley Water Project*
  - *Draft, June 2001:*  
<https://www.co.monterey.ca.us/home/showdocument?id=24180>
  - *Final Volume 1, April 2002:*  
<https://www.co.monterey.ca.us/home/showdocument?id=24186>
  - *Final Volume 2, April 2002:*  
<https://www.co.monterey.ca.us/home/showdocument?id=24188>
- *Salinas Valley Water Project EIR Addendum, July 17, 2007*
  - <https://www.co.monterey.ca.us/home/showpublisheddocument?id=98572>

Appendix B: *Definition of Terms*

Appendix C: *Monterey County Water Resources Agency's Water Rights and Agreements*

## **Appendix B: Definition of Terms**

**Adult Steelhead Upstream Migration Releases** – Reservoir releases made to facilitate upstream migration of adult steelhead between February 1<sup>st</sup>- March 31<sup>st</sup>, when triggers are met. If the 1) combined storage of Nacimiento and San Antonio reservoirs is greater than 220,000 AF, 2) 340 cfs or higher flows are present at the Arroyo Seco near Soledad gage (USGS streamflow gage 11152000), and 3) 173 cfs or higher flows are present at the Arroyo Seco below the Reliz Creek gage (USGS streamflow gage 11152050), MCWRA will provide flows of at least 260 cfs at the Salinas River near Chualar (USGS streamflow gage 11152300) for five or more consecutive days, when the river mouth is open to the ocean.

**Block Flow Releases** – Reservoir releases made to facilitate the downstream migration of smolts and rearing juvenile steelhead in the Salinas River beginning March 15<sup>th</sup> in normal-category type years. The following triggers must be met for releases to be made 1) water year type is dry-normal, normal or wet-normal, 2) combined storage of Nacimiento and San Antonio reservoirs is 150,000 AF or more on March 15<sup>th</sup>, and 3) 125 cfs or higher at the Nacimiento River below Sapaque Creek gage (USGS streamflow gage 111489000) or 70 cfs at the Arroyo Seco below Reliz Creek gage (USGS streamflow gage 11152050). Amount and duration of block flow depends on when the flows are triggered.

**Conservation Pool** – Water in reservoirs used for groundwater recharge, operation of the Salinas River Diversion Facility, water supply, fish migration, and fish habitat requirements. Volume of 289,013 acre-feet between 687.8 feet and 787.75 feet in Nacimiento Reservoir and volume of 282,000 acre-feet between 666 feet and 774.5 feet in San Antonio Reservoir.

**Conservation Releases** – Water discharged for the purpose of recharging the groundwater basin.

**Dead Pool** – The storage between the bottom of the reservoir and elevation 670 feet for Nacimiento Reservoir, the invert of the intake structure of the low-level outlet works, and elevation 645 feet for San Antonio Reservoir, the invert of the intake structure of the outlet works. The volume of the Dead Pool is 10,300 acre-feet in Nacimiento Reservoir and 10,000 acre-feet in San Antonio Reservoir. Water cannot flow out by gravity out of Nacimiento Reservoir below 670 feet elevation and out of San Antonio below 645 feet elevation.

**Downstream Migration of Juvenile Steelhead and Kelts Releases** – Reservoir releases and SRDF bypass flows made to enhance migration opportunities for juvenile steelhead and post-spawn adult steelhead (kelts) made in years when block flow releases for smolt migration don't occur by April 1st.

**Dry Year** – Water year in which unimpaired annual mean flow at the USGS streamgage on the Arroyo Seco near Soledad (USGS streamgage 11152000) falls in the 75-100% percentile of mean annual flows ranked in descending order (as defined in the Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River).

**Environmental Compliance** – Conforming to any environmental regulatory requirements currently imposed or those that become imposed in the future.

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**Flood Pool** – Water used to temporarily store flood water during the winter. Volume of 66,587 acre-feet between 787.75 feet and 800 feet in Nacimiento Reservoir and volume of 30,000 acre-feet between 774.5 feet and 780 feet in San Antonio Reservoir.

**Maximum Reservoir Elevation** – Maximum reservoir elevation that can be sustained, and the level at which the reservoir is considered full. Elevation of 800 feet in Nacimiento Reservoir and 780 feet in San Antonio Reservoir.

**Minimum Releases** – Reservoir releases made to provide steelhead spawning and rearing habitat flows. Minimum releases are 60 cfs from Nacimiento Dam as long as the water surface elevation of Nacimiento Reservoir is above 687.8 feet, and 10 cfs from San Antonio Dam as long as the water surface elevation of San Antonio Reservoir is above 666 feet.

**Minimum Pool** – The storage above Dead Pool and below Conservation Pool. This is between elevation 670 feet and 687.8 feet in Nacimiento Reservoir. The volume of this pool is 12,000 acre-feet which is reserved for use by the County of San Luis Obispo per the 1959 San Luis Obispo County Agreement. In San Antonio Reservoir, minimum pool is between elevation 670 feet and 687.7 feet, with a volume of 12,000 acre-feet.

**Minimum Recreation Elevation** – Lowest Nacimiento Reservoir elevation at which most of the boat ramps around the reservoir are useable and which most private property owners have access to the reservoir.

**Natural Flow** – Water that would exist in a stream at a given point in time in the absence of human activity (Source: [https://www.waterboards.ca.gov/waterrights/board\\_info/faqs.html](https://www.waterboards.ca.gov/waterrights/board_info/faqs.html) )

**NWP Intake Elevation** – Lowest Nacimiento Reservoir elevation at which San Luis Obispo County can take water through the Nacimiento Water Project. Elevation of 670 feet.

**Operations Ratio** – The ratio of empty space in the conservation pools of San Antonio and Nacimiento Reservoirs, with Nacimiento as the numerator. Historically, this ratio was defined as 3 to 1, and reservoir releases were made in such a manner that the ratio was reached prior to halting releases at onset of the rainy season.

**Salinas River Diversion Facility (SRDF)** – A component of the Salinas Valley Water Project that consists of an inflatable Obermeyer dam and a river intake structure to provide treated river water to growers within the Castroville Seawater Intrusion Project service area. This facility is located approximately 5 river miles upstream of the mouth of the Salinas River.

**Salinas Valley Water Project (SVWP)** – A project developed by MCWRA and Salinas Valley interests that consists of the modifications of the spillway at Nacimiento Dam and the construction of the Salinas River Diversion Facility, near the city of Marina. The goals of the project are to help stop seawater intrusion, improve flood control, recharge Salinas Valley groundwater, and improve conditions for steelhead trout.

**Top of Dam** – The dam crest. Elevation of 825 feet at Nacimiento Dam and 802 feet at San Antonio Dam.

**Water Year** – The 12-month period from October 1<sup>st</sup> through September 30<sup>th</sup>. The water year is designated by the calendar year in which it ends, and which included 9 out of the 12 months. For examples, the year ending on September 30<sup>th</sup>, 1959 is called “1959 water year”.



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**Water Year Type** – Determination of water year type (e.g. dry, normal, wet) is made based on unimpaired annual mean flows at the USGS streamgage on the Arroyo Seco near Soledad (USGS Streamgage 11152000). Annual mean flows are ranked in descending order and stream flow corresponding to the 25<sup>th</sup> and 75<sup>th</sup> percentile are selected as the thresholds. Wet years are defined as flows below the 25<sup>th</sup> percentile, Normal years between the 25<sup>th</sup> and 75<sup>th</sup> percentile, and Dry years above the 75<sup>th</sup> percentile. Year type determinations are made on March 15<sup>th</sup> (preliminary) and April 1<sup>st</sup> (official) of each year. (as defined in the Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River).

## **Appendix C: Monterey County Water Resources Agency's Water Rights and Agreements**

### **Nacimiento Reservoir**

**Water Rights License 7543** – License for Diversion and Use of Water, No. 7543, from the California State Water Resources Control Board, was issued November 4, 1965.

This license was last amended September 5, 2008 to specify that the place of use of water from this license changed to include 421,435 acres of land comprising MCWRA's Zone 2C assessment zone, to add a point of rediversion at the Salinas River Diversion Facility (SRDF), and to add fish flow requirements that were consistent with the June 21, 2007, National Marine Fisheries Service (NMFS) biological opinion issued to the U.S. Army Corps of Engineers (biological opinion).

License No. 7543 gives MCWRA the right to store 350,000 AF from October 1 of each year to July 1 of the succeeding year and to withdraw a maximum of 180,000 AF per year. The purpose of use are for irrigation, domestic, municipal, industrial, and recreational uses.

*Documents for this can be found in Appendix B of the Nacimiento Dam Operation Policy:*

<https://www.co.monterey.ca.us/Home/ShowDocument?id=63151>

**Water Rights Permit 21089** – Permit for Diversion and Use of Water, No. 21089, from the California State Water Resources Control Board, was issued March 23, 2001. This permit was last amended September 5, 2008, to specify that the place of use of water from this license changed to include 421,435 acres of land comprising MCWRA's Zone 2C assessment zone, to add a point of rediversion at the SRDF, and to add fish flow requirements that were consistent with the NMFS biological opinion.

The original reservoir volume computations submitted and subsequently approved in License No. 7543, were based on United States Geological Survey (USGS) Quad sheets from the 1940s. In the early 1990s, aerial surveys with increased accuracy showed that the actual volume of Nacimiento Reservoir was greater than the 350,000 AF in License 7543. In order to correct this discrepancy, MCWRA filed water rights Application No. 30532. Nacimiento Dam has never been modified in any way to increase storage and the reservoir volume is unchanged from the time of the dam's construction, with the exception of the inflow of silt from natural runoff which has decreased storage volume.

As a result of this application, MCWRA has a permit to collect to storage 27,900 AF per annum from October 1 of each year to July 1 of the succeeding year. The total quantity of water collected to storage under this permit and License 7543 shall not exceed 377,900 AF per year.

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*Documents for this can be found in Appendix B of the Nacimiento Dam Operation Policy:*

<https://www.co.monterey.ca.us/Home/ShowDocument?id=63151>

**Water Rights Permit 19940** – Permit for Diversion and Use of Water, No. 19940, from the California State Water Resources Control Board, was issued December 31, 1986. Permit 19940 gives MCWRA the right to divert up to 500 cfs through the Hydroelectric Plant from January 1 to December 31 of each year for irrigation, domestic, municipal, industrial and recreational uses. Diversion under this permit is incidental to releases being made for other purposes.

*Documents for this can be found in Appendix B of the Nacimiento Dam Operation Policy:*

<https://www.co.monterey.ca.us/Home/ShowDocument?id=63151>

**San Luis Obispo County Agreement** – MCWRA's Water Rights License No. 7543 is subject to an agreement between MCWRA and SLO District which gives SLO District the right to use 17,500 AF of water annually from Nacimiento Reservoir. The SLO District Board has adopted a policy designating a portion of the total, approximately 1,750 acre-feet per year (AFY), for use around Nacimiento Reservoir; Heritage Ranch Community Services District (HRCSD) has agreements with SLO District which collectively entitle HRCSD to use 889 AFY of the 1,750 AFY; pursuant to these agreements, HRCSD takes its allotment from a well gallery in the Nacimiento River downstream of the Dam. SLO District can use up to the remaining 15,750 AF per water year through the NWP. The agreement also provides that MCWRA shall not make conservation releases during the water year that result in a reservoir elevation below 687.8 feet on September 30 of each year in order to assure SLO District of its rights and entitlements to water under the terms of the agreement (i.e. in order to assure the maintenance of a minimum storage pool of 12,000 AF above the present low-level outlet works for SLO District use). The original agreement is dated October 19, 1959, and it has been amended six different times in 1959, 1967, 1970, 1977, 1988, and 2007. These documents are collectively referred to as the SLO County Agreement.

*Documents for this can be found in Appendix C of the Nacimiento Dam Operation Policy:*

<https://www.co.monterey.ca.us/Home/ShowDocument?id=63151>

**Nacimiento Water Company Agreement** – The 1984 agreement with MCWRA allows the Nacimiento Water Company a water allocation of up to 600 AF per year to be extracted from wells within the floodage easement of Nacimiento Reservoir. The Nacimiento Water Company shall pay MCWRA quarterly for water from the allocation on the basis of AF used at a rate determined by this agreement.

*Documents for this can be found in Appendix D of the Nacimiento Dam Operation Policy:*

<https://www.co.monterey.ca.us/Home/ShowDocument?id=63151>

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### **San Antonio Reservoir**

**Water Rights License 12624** - License for Diversion and Use of Water, No. 12624, from the California State Water Resources Control Board, was issued December 2, 1965 and amended April 22, 1990. This license was most recently amended September 5, 2008 to specify that the place of use of water from this license changed to include 421,435 acres of land comprising MCWRA's Zone 2C assessment zone, to add a point of rediversion at the SRDF, and to add fish flow requirements consistent with the June 21, 2007, National Marine Fisheries Service BO.

License No. 12624 gives MCWRA the right to store 220,000 AF from October 1 of each year to July 1 of the succeeding year and to withdraw a maximum of 210,000 AF per year for municipal, domestic, industrial, irrigation, and recreational uses.

*The amended license can be found on the CA State Water Resources Control Board website:*  
[https://www.waterboards.ca.gov/waterrights/board\\_decisions/adopted\\_orders/orders/2008/wro2008\\_0037dwr.pdf](https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2008/wro2008_0037dwr.pdf)