Posting Date: 04-02-2021

NOTICE OF REGULAR BI-MONTHLY MEETING
BOARD OF DIRECTORS

MEETING DATE: 04-06-2021

TIME: 6:30 p.m.

LOCATION: **This meeting will be held virtually, pursuant to the Governor's Executive Order N-29-20.**

To participate online, go to https://zoom.us/j/93178204499. You can also participate by phone by calling 1-669-900-6833 and entering the webinar ID#: 931 7820 4499.

PARTICIPATION DURING MEETINGS**:** During the public comment periods, the public may comment by clicking the "raise hand" button on the bottom of the Zoom screen; if you are joining by phone and would like to comment, press *9 and we will call on you as appropriate.

EMAILED PUBLIC COMMENTS: You may submit your comments in advance of the meeting by emailing them to BoardComment@MarinWater.org. All emailed comments received by 3 p.m. on the day of the meeting will be provided to the Board of Directors prior to the meeting. Those emailed comments on approval items received by 3 p.m. will also be summarized by the board secretary at the board meeting. All emails will be posted on our website. (Please do not include personal information in your comment that you do not want published on our website such as phone numbers and home addresses.)

AGENDA ITEMS	RECOMMENDATIONS
Call to Order and Roll Call	
Adopt Agenda	*Approve*
Convene to Closed Session (Only the Board of Directors and staff will participate) The public will be asked to leave and come back to the open session beginning at 7:30 p.m.	
Closed Session Item	
1. Conference with Legal Counsel – Anticipated Litigation Significant exposure to litigation pursuant to § 54956.9(b) Number of Cases: Unknown	

AGENDA ITEMS	RECOMMENDATIONS
Convene to Open Session at or after 7:30 p.m.	
Closed Session Report Out	

Public Comment

Members of the public may comment on any items not listed on the agenda during this time. Comments will be limited to three (3) minutes per speaker, and time limits may be reduced by the board president to accommodate the number of speakers and ensure that the meeting is conducted in an efficient manner.

Directors' and General Manager's Announcements	

Consent Calendar

All matters listed on the consent calendar are considered to be routine and will be enacted by a single action of the Board, unless specific items are removed from the consent calendar by the Board during adoption of the agenda for separate discussion and action.

2. Minutes of the Board of Directors' Regular Bi-Monthly Meeting of March 16, 2021	*Approve*
3. Authorize the General Manager to execute Amendment No. 2 to Agreement 5789 with Environmental Services Associates (ESA) to extend the contract end date to July 1, 2022 and expand the scope of work to support the Lagunitas Creek Stream Release Study	*Approve*
Regular Calendar	
4. Drought Update	*Information*
5. Kastania Pump Station Rehabilitation Project	*Information*
6. Marin County Agricultural Commission's Request for Temporary Water Supply for Livestock	*Information*
7. 2020 Urban Water Management Plan Update - Water Supply Reliability Assessment	*Information*

AGENDA ITEMS	RECOMMENDATIONS
8. Approval to fill Engineering Technician position	*Approve*
9. Future Meeting Schedule and Agenda Items	*Information*
Adjournment	

ADA NOTICE AND HEARING IMPAIRED PROVISIONS:

In accordance with the Americans with Disabilities Act (ADA) and California Law, it is Marin Water's policy to offer its public programs, services, and meetings in a manner that is readily accessible to everyone, including those with disabilities. If you are disabled and require a copy of a public hearing notice, an agenda, and/or agenda packet in an appropriate alternative format, or if you require other accommodations, please contact Board Secretary Terrie Gillen at 415.945.1448, at least two days in advance of the meeting. Advance notification will enable the Marin Water to make reasonable arrangements to ensure accessibility.

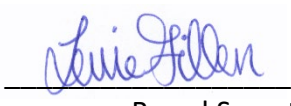
INFORMATION PACKETS ARE AVAILABLE FOR REVIEW AT THE CIVIC CENTER LIBRARY, CORTE MADERA LIBRARY, FAIRFAX LIBRARY, MILL VALLEY LIBRARY, MARIN WATER OFFICE, AND ON THE MARIN WATER WEBSITE (MARINWATER.ORG)

FUTURE BOARD MEETINGS:

- Friday, April 16, 2021
  Operations Committee/Board of Directors (Operations) Special Meeting
  9:30 a.m.

- Tuesday, April 20, 2021
  Board of Directors' Regular Meeting
  7:30 p.m.

- Thursday, April 22, 2021
  Finance & Administration Committee/Board of Directors (Finance & Administration) Meeting
  9:30 a.m.



Board Secretary

Item Number: 02
Meeting Date: 04-06-2021
Meeting: Board of Directors

Approval Item

TITLE
Minutes of the Board of Directors' Regular Bi-Monthly Meeting of March 16, 2021

RECOMMENDATION
Approve the adoption of the minutes.

SUMMARY
On March 16, 2021, the board held its regular bi-monthly meeting. The minutes of this meeting are attached.

DISCUSSION
None

FISCAL IMPACT
None

ATTACHMENT(S)
1. Minutes of the Board of Directors' Regular Bi-Monthly Meeting of March 16, 2021

DEPARTMENT OR DIVISION	DIVISION MANAGER	APPROVED
Communications & Public Affairs Department	Terrie Gillen Board Secretary	Ben Horenstein General Manager

Item Number: 02
Attachment: 1

MARIN MUNICIPAL WATER DISTRICT
BOARD OF DIRECTORS

MEETING MINUTES

Tuesday, March 16, 2021

Via teleconference
(In accordance with Governor Gavin Newsom's Executive Order N-29-20)

DIRECTORS PRESENT: Larry Bragman, John C. Gibson, Larry L. Russell, Monty Schmitt, and Cynthia Koehler

DIRECTORS ABSENT: None

CALL TO ORDER AND ROLL CALL
Board President Koehler called the meeting to order at 6:45 p.m.

ADOPT AGENDA
On motion made by Director Bragman and seconded by Director Gibson, the board adopted the agenda. The following roll call vote was made.

Ayes: Directors Bragman, Gibson, Russell, Schmitt and Koehler
Noes: None
Absent: None

Before convening to Closed Session, there were no public comments.

CONVENE TO CLOSED SESSION

CLOSED SESSION ITEM

1. Public Employee Performance Evaluation
   (Government Code §54957)

   Title: General Manager

The Closed Session ended at 7:27 p.m.

CONVENE TO OPEN SESSION AT OR AFTER 7:30 P.M.

The meeting convened at 7:30 p.m.

CLOSED SESSION REPORT OUT
Board President Koehler stated that no reportable action was taken.

PUBLIC COMMENT
There were no public comments.

DIRECTORS' AND GENERAL MANAGER'S ANNOUNCEMENTS

All, but Director Gibson and General Manager Ben Horenstein, made announcements.

CONSENT CALENDAR (ITEMS 2-4)

Item 2 Minutes of the Board of Directors' Regular Bi-Monthly Meeting of March 2, 2021

Item 3 General Manager's Report for February 2021

Item 4 Fourth Amendment to District Lease No. 47 with the Larkspur Landing 100 Corporation for Lease of District Property at 100 Larkspur Landing Circle (APN 018-191-05)

Director Bragman asked the status of the Porteous Tunnel Project mentioned in Item 3.

There was no public comment.

On motion made by Director Gibson and seconded by both Directors Bragman, the board approved the Consent Calendar by the following roll call vote:

Ayes: Directors Bragman, Gibson, Russell, Schmitt, and Koehler
Noes: None
Abstain: None

REGULAR CALENDAR (ITEMS 5-7)

Item 5 Drought Update

Water Quality Manager Lucy Croy, Communications & Public Affairs Manager Jeanne Belding, Water Conservation Manager Carrie Pollard, and General Manager Horenstein provided a presentation. The board listened to the presentation. A few comments were made and a few questions were asked.

There was no public comment.

The board did not take any formal action on this agenda item.

Item 6 Approval to fill Utility Crew Leader position in the Facilities and Watershed Division

Facilities and Watershed Division Manager Crystal Yezman brought for this item. There was no discussion afterward.

There were no public comments.

On motion made by Director Gibson and seconded by Director Bragman, the board approved the recruitment to fill the position, by the following roll call vote:

Ayes: Directors Bragman, Gibson, Russell, Schmitt, and Koehler
Noes: None
Abstain: None

Item 7 Future Meeting Schedule and Agenda Items

The board secretary brought forth this item. No discussion followed.

There was no public comment.

The board took no formal action.

CONVENE TO CLOSED SESSION

The board convened to Closed Session at 8:20 p.m.

CLOSED SESSION ITEMS

8. **Conference with Legal Counsel – Existing Litigation**
   (Government Code §54956.9)

   Walker v. Marin Municipal Water District
   Marin Superior Court
   Case No. CIV 1501914

9. **Conference with Real Property Negotiators**
   (Government Code §54956.8)

   Property: 50 Crecentia Lane, Sausalito, California
   Agency Negotiator: Ben Horenstein, General Manager
   Negotiating Party: VBT Sub 1 LLC
   Under Negotiation: Price and Terms

10. Conference with Legal Counsel – Existing Litigation
(Government Code §54956.9)

Coalition for Sensible Taxpayers, et al. v. Marin Municipal Water District
Marin Superior Court
Case No. CIV 1903160

The board and staff discussed all three items. No reportable action was taken.

ADJOURNMENT
There being no further business, the regular bi-monthly Board of Directors' meeting of March 16, 2021, adjourned at 9:48 p.m.

_____
Board Secretary

Item Number: 03
Meeting Date: 04-06-2021
Meeting: Board of Directors

Approval Item

TITLE
Lagunitas Creek Stream Releases

RECOMMENDATION
Authorize the General Manager to execute Amend No. 2 to Agreement 5789 with Environmental Services Associates (ESA) to extend the contract end date to July 1, 2022 and expand the scope of work to support the Lagunitas Creek Stream Release Study.

SUMMARY
In calendar year 2020, Marin Water received just over 20 inches of rain, the second lowest rainfall total in the past 90 years. In order to maximize the efficient use of water available in storage, the District is evaluating all uses of water, including the fishery flow permit requirements of State Water Resources Control Board Order WR 95-17. In compliance with Order WR 95-17, the District releases water from Kent Lake into Lagunitas Creek to meet instream flow requirements and support fisheries habitat. In recent years, total annual releases from Kent Lake into Lagunitas Creek have ranged from 4,700 acre-feet in 2015 to 9,000 acre-feet in 2019.

Staff proposes undertaking an objective, data driven, technical analysis to determine if the required flow releases are functioning as intended. The analysis will assist in exploring potential options for temporarily reducing the releases without significantly affecting the aquatic species residing in Lagunitas Creek and examining possible mitigation to address any short-term impact. Staff recognizes that stakeholder engagement is an integral part of this process. Stakeholder involvement will be critical in the event that the District continues to experience drought conditions that necessitate the filing of a temporary urgency change petition seeking a temporary modification to fishery flow permit release requirements while dry conditions persist.

Staff is recommending that the Board of Directors authorize the General Manager to execute Amendment No. 2 to Agreement 5789 with ESA to extend the contract end date to July 1, 2022 and expand the scope of work to support Lagunitas Creek Stream Release Study, and increases funds in the amount of $305,992, with a total annual not to exceed contract amount of $555,992 for FY 2022.

DISCUSSION
As a condition of water rights permits 5633, 9390, and 18546, Marin Water is subject to the conditions of Order WR 95-17, an order amending water rights and requiring changes in water diversion practices to protect fishery resources and to prevent unauthorized diversion and use of water in Lagunitas Creek. This order was issued in October 1995 and, amongst many other

stipulations, requires that certain instream flow requirements and metered releases are met at all times of the year.

Drought Conditions

In calendar year 2020, Marin Water received just over 20 inches of rain, the second lowest rainfall total in the past 90 years. In the current water year (October 2020 – September 2021) 16.85-inches of rainfall has been measured through February 28, which is approximately 43% of average rainfall. As a result of these drought conditions, the District's reservoirs contained 44,930 acre-feet (AF) on February 28, 2021, which is 25,858 AF less than average and 63% of average storage volume for this date. If the dry weather continues through April, storage volumes will be at historically low level as we enter the summer months, and potentially as low as 30,000 AF on December 1, 2021.

In order to preserve the District's limited water supply, the Board adopted a resolution on February 16, 2021 declaring initial drought water conservation actions for District customers to voluntarily reduce their water usage. Should dry conditions continue, staff will provide additional recommendations to the Board in order to maximize the efficient use of water available in storage. As a part of this effort, staff is also evaluating all areas of water use, including the fishery flow permit requirements of Order 95-17, to ensure that water is being used as efficiently as possible.

In preparation for continued drought conditions and a possible dry year next season, the District is interested in initiating a technical analysis to better understand alternative water release schedules that could be used during a critical drought period. Through this analysis the District will evaluate a variety of release schedules and evaluate potential water supply savings that could be achieved through a temporary urgency change petition to Order WR 95-17.

Technical Analysis

To inform this analysis, the District is looking to amend professional services contract No. 5789 with ESA to carry out a study to better understand how to optimize flows to protect salmonid migration and instream habitat while reducing the volume of water released in order to conserve water supplies during this critical drought period, in consideration of a TUCP. The District will undertake an objective, data driven, technical analysis that will include the following components.

Ecological Criteria Development

The District and consultant will use the hydrologic results from subsequent modeling tasks to establish metrics for the biological criteria for coho salmon, steelhead, and freshwater shrimp. These criteria will be developed within a functional flow framework designed to account for the specific life history requirements and habitat needs of these three species. Under this framework, functional flow components (e.g., migration pulses, dry season low flows, etc.) will be quantified by flow characteristics (e.g., magnitude, timing, duration) which are measured by

discrete flow metrics (e.g., flow rate, periodicity, number of migration days, Richards-Baker flashiness index, etc.). Results of this analysis can then be related to physical habitat and water quality conditions to comprehensively analyze the ecological response of the three target species to a modified flow regime.

Winter Migration Flow Analysis

The District and consultant will analyze the potential tradeoffs between water supply savings from reducing winter migration pulse releases between November 1st and January 31st, and upstream salmonid migration, as follows: we will analyze available USGS and District flow gauges for a period of up to 38 years (corresponding to the period of available daily flow data for USGS gauge on Lagunitas Creek at Samuel P. Taylor State Park) to identify flow patterns in a range of "type" water years. The following type years will be considered: wet (approximately 1 Standard Deviation [S.D.] more than mean annual rainfall); average (mean annual rainfall); dry (approx. 1 S.D. drier than mean); critical dry (approx. 2 S.D. drier than mean). Representative year types will be identified from the rainfall record assuming appropriate years exist, or an alternative set of four years may be selected.

Winter Baseflow Analysis Using Habitat Suitability Modeling

The winter baseflow analysis will relate the volume of flow released from Kent Lake between November 1st and March 31st to the quality, water temperature, habitat suitability and relative area of aquatic habitat in Lagunitas Creek. Surveys of up to four representative reaches of up to 150 feet length will be completed using ground-based survey techniques, and a detailed 2D hydraulic models of each reach will be developed. We anticipate that the reaches will be representative of typical habitat assemblages (e.g. a discrete riffle-pool sequence) located at intervals along Lagunitas Creek between Kent Lake and Point Reyes Station to assess variations in response with increasing distance from Kent Lake. This will allow detailed estimations of the effect of flow reductions on velocity and depth to be made, leading to development of a habitat suitability model. Results from these detailed models will be used by fisheries staff and consultant to estimate the change in areas of suitable habitat for up to four species, and over multiple life stages (e.g. spawning conditions for steelhead and coho, emergence conditions for steelhead and coho fry, etc.), under each flow increment. Additionally, a water temperature model of Lagunitas Creek from Kent Lake to the Nicasio Creek confluence will be developed to evaluate the effects of flow changes on water temperature. The model will show the effects of Kent Lake on flow temperatures in Lagunitas Creek, and how this varies with distance and flow inputs downstream.

Watershed Hydrology Model

The District and consultant will construct a continuous-simulation watershed hydrology model of the Lagunitas Creek watershed in HEC-HMS. The model will include two versions; (1) with and (2) without dams. The downstream limit is assumed to be the Highway 1 bridge crossing near Point Reyes Station. The 'with dam' model will include Kent Lake, Alpine Lake, Bon Tempe Lake, and Lagunitas Lake on Lagunitas Creek mainstem, as well as the Nicasio Creek watershed

with Nicasio Reservoir. Staff will provide consultant relationships for stage-storage, stage-discharge, and reservoir operations rules for each of the lakes.

The model will be set up to run daily time steps for periods of a year per simulation, using data from each of the four type water years identified above. The model will be run using rainfall and evaporation data from those years, and the creek flow output will be compared with gauge data to calibrate the model. Once established, the type year models will provide baseline conditions for a range of year types which can then be modified to assess future changes such as changes in reservoir operations, climate change (changes in rainfall total, rainfall distribution, changes in temperature or soil moisture deficit etc.). The models will also be used to interpret and select appropriate flow increments from the habitat suitability models by identifying how flow increases downstream of Kent Lake due to tributary contributions in different year types.

Options Tasks-Temporary Use Change Petition (TUCP) Application Support

If the District elects to proceed with a TUCP the consultant will assist with developing TUCP materials. The consultant will also assist the District in coordinating with State Board staff regarding petition questions, comments and requests for additional information. This optional task includes four meetings with State Board staff, preparation of the TUCP, and associated PowerPoint presentation to inform the review process. The scope has been developed to allow for some flexibility to allow for an interactive review process resources agencies and stakeholders throughout the process.

Stakeholder Engagement

An integral part of this analysis will be engaging the wide-ranging group of stakeholders who are technically, environmentally, and socially invested in the continuing population of fisheries species in Lagunitas Creek, the southernmost waterway for Coho salmon in the United States. Staff proposes to engage this group early and often and incorporate them into a peer review process as the technical analysis progresses. Support from this group will be critical in the event that the District continues to experience drought conditions and needs to file a temporary urgency change petition to temporarily modify fishery flow permit release requirements while drought conditions persist.

FISCAL IMPACT

Amendment No. 2 to Agreement 5789 with ESA would expand the current on-call services scope to assist with Lagunitas Creek Stream Release Study in the amount of $305,992 with a total annual not to exceed contract amount of $555,992.

ATTACHMENT(S)

1. Amendment No. 2 to Agreement No. 5789

Item Number: 03
Meeting Date: 04-06-2021

DEPARTMENT OR DIVISION	DIVISION MANAGER	APPROVED
Facilities and Watershed Division	**Crystal Yezman, Director of System Maintenance and Natural Resources**	**Ben Horenstein General Manager**

AMENDMENT NO. 2 TO
AGREEMENT FOR PROFESSIONAL SERVICES BETWEEN
MARIN MUNICIPAL WATER DISTRICT and ENVIRONMENTAL SCIENCE ASSOCIATES
(Miscellaneous Agreement No. 5789**)**

This contract amendment ("Second Amendment") is entered into by and between Marin Municipal Water District ("District") and Environmental Science Associates ("ESA" or "Consultant").

For good and valuable consideration the receipt and adequacy of which is hereby acknowledged, the parties hereto agree as follows:

Section 1. Recitals:

A. On July 2, 2019, the Marin Municipal Water District Board of Directors approved a two-year contract with Consultant and authorized the General Manager to execute this contract.

B. District and Consultant entered into an Agreement for Professional Services dated **July 30, 2019** ("Agreement")**.**

C. District and Consultant executed Amendment 1 on April 10, 2020 to make a correction to the contract completion date which was incorrectly identified as February 1, 2020 instead of July 31, 2021 as originally intended under the two year contract.

E. At this time, the parties desire to enter into this Second Amendment to the Agreement to extend the contract end date to July 31, 2022, and to expand the scope of work to support a Flow Release Study outlined in Attachment A in accordance with the Board of Directors approval of this Agreement.

Section 2. Terms:

A. Amendment to Agreement: This First Amendment modifies the Agreement. Except for the modifications contained herein, all the terms of the Agreement shall apply.

B. Terms:

1. Part A, Section 1, entitled "DESCRIPTION OF SERVICES AND PAYMENT" is amended to read as follows:

   a. The scope of work covered by this agreement shall be that included in Attachment A of the original Agreement and Attachment A of this Amendment No. 2.

   b. The fee and fee payment for such work shall be as stipulated under the fee scheduled included in the original Agreement for On-Call Services and include Attachment A and expenses as presented in Attachment B of this Amendment No. 2 and shall not exceed $555,992.

2. Part B, Section 4, entitled “PROSECUTION OF WORK” is amended to read as follows:

> The execution of this agreement shall constitute the Consultant's authority to proceed immediately with the performance of this contract. Performance of the services hereunder shall be completed by July 31, 2022, provided, however, that if the performance is delayed by earthquake, flood, high water or other Act of God or by strike, lockout or similar labor disturbance ("Acts"), the time for the Consultant's performance of this contract shall be extended by a number of days equal to the number of days the Consultant has been delayed by such Acts.

ENVIRONMENTAL SCIENCE ASSOCIATES

Dated: _____

By_____
Jim O’Toole, Vice President

Dated:_____ MARIN MUNICIPAL WATER DISTRICT

By_____
Bennett Horenstein, General Manager

Attachment A

Scope of Work

Project Understanding and Goals

Marin Municipal Water District (District) currently releases four 35 cfs water pulses from Kent Lake between November and January every year to support migration by adult coho salmon and

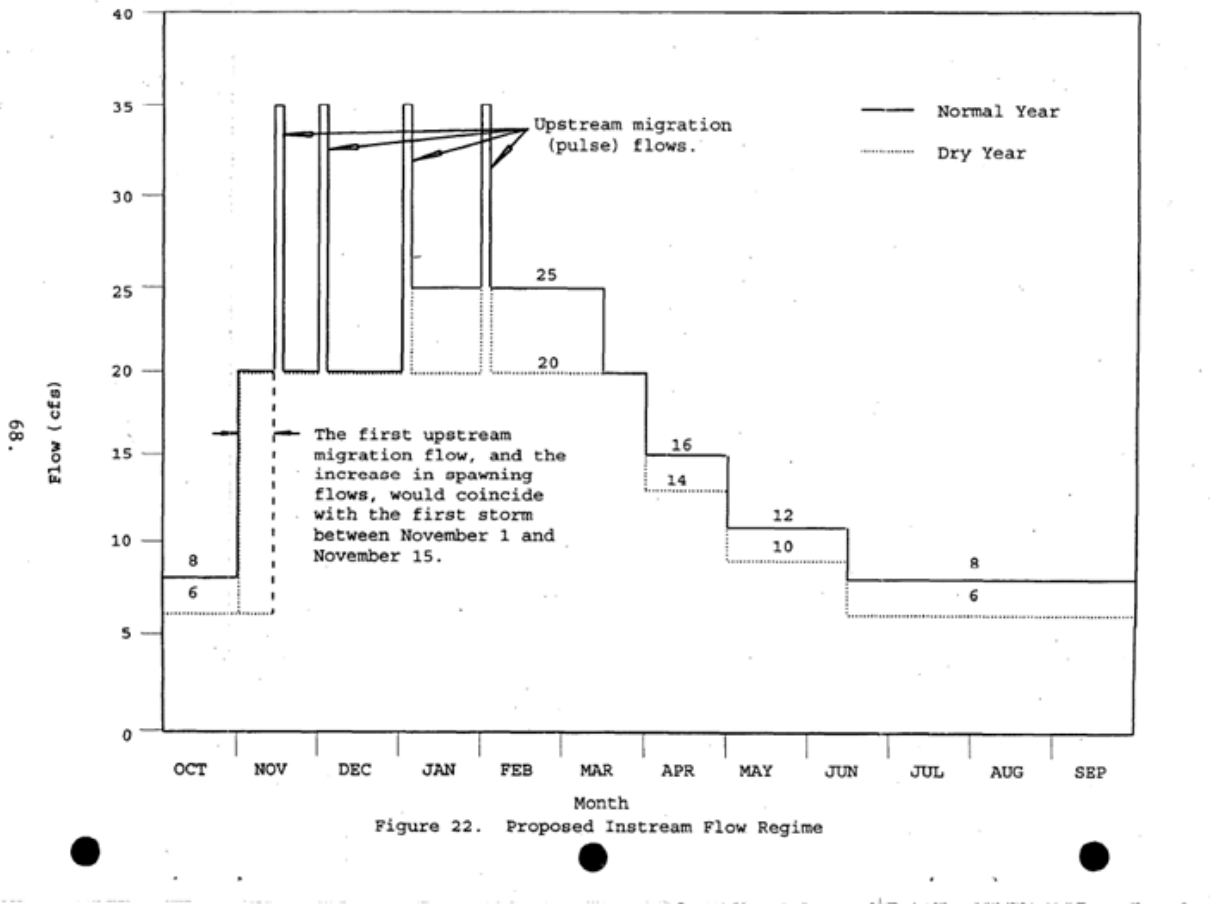


Figure 22. Proposed Instream Flow Regime

steelhead, and releases 20-25 cfs (depending on water year type) between November and March to maintain good flow conditions for spawning, incubation and fry emergence. The District seeks to understand how to optimize flows to protect salmonid migration and instream habitat while reducing the volume of water released in order to conserve water supplies during a critical drought period, in consideration of a Temporary Urgency Change Petition (TUCP). ESA understands the need for flexibility in this scope of work based on initial input from resource agencies as well as early findings that may necessitate the revision of tasks and task details.

To make a temporary change of a water right, the petitioner must provide information as part of the petition process to support the following State Water Quality Control Board (State Board) findings:

- Change does not initiate a new water right;
- The petitioner has an urgent need for the proposed change;
- Change can be made without injuring other legal users of water, and
- Change can be made without unreasonable effect upon fish, wildlife or other instream beneficial uses;
- Change is in the public interest, a concept that is an overriding concern in all Board decisions.
- The revised water right is then issued if the State Board determines that the proposed change meets these criteria. If it determines otherwise, conditions may be imposed to ensure they are satisfied or the petition may be denied.

The following scope of work has been developed to provide technical analysis and support for the possible development of a TUCP, including identification of release alterations that can specifically meet the 4th finding: *change can be made without unreasonable effect on fish, wildlife or other instream beneficial uses.* The scope of work has been developed to allow for optional task authorization: some of the optional tasks identified in our proposed scope of work may only be required if stakeholders seek additional information, or as desired by the District. While every effort has been made to scope all tasks at a reasonable level of detail, it is possible that additional analysis may be needed to respond to questions from the Lagunitas Technical Advisory Committee (TAC) or regulatory agencies.

Task 1. Project Management

ESA will provide project management that reflects the District's technical and schedule needs. Our scope of work includes 1 hour of project management per week (including a weekly check in call) over a 24 week period.

Task 2. Ecological Criteria Development

This task will identify the fisheries metrics to be evaluated in Tasks 3 and 4. Metrics will relate the hydrologic results from subsequent modeling tasks into biological criteria for coho salmon, steelhead, and freshwater shrimp.. These criteria will be developed within a functional flow framework designed to account for the specific life history requirements and habitat needs of these three species. Under this framework, functional flow components (e.g., migration pulses, dry season low flows, etc.) will be quantified by flow characteristics (e.g., magnitude, timing, duration) which are measured by discrete flow metrics (e.g., flow rate, periodicity, no. of migration days, Richards-Baker flashiness index, etc.). Results of this analysis can then be related to physical habitat and water quality conditions to comprehensively analyze the ecological response of the three target species to a modified flow regime.

Deliverable: ESA will write either a section in a report or a standalone technical memorandum that describes the methods used and resulting metrics of the above analysis, including a discussion of how these metrics will be leveraged under subsequent tasks.

Task 3. Winter Migration Flow Analysis

ESA will analyze the potential tradeoffs between water supply savings from reducing winter migration pulse releases between November 1st and January 31st, and upstream salmonid migration, as follows:

ESA will analyze available USGS and District flow gauges for a period of up to 38 years (corresponding to the period of available daily flow data for USGS gauge on Lagunitas Creek at Samuel P. Taylor State Park) to identify flow patterns in a range of "type" water years. As an initial suggestion, we recommend using the following type years: wet (approximately 1 Standard Deviation [S.D.] more than mean annual rainfall); average (mean annual rainfall); dry (approx. 1 S.D. drier than mean); critical dry (approx. 2 S.D. drier than mean). Representative year types will be identified from the rainfall record assuming appropriate years exist, or an alternative set of four years will be selected in consultation with the District. ESA assumes the following flow gauges will be used, and, where appropriate, data will be provided by the District:

- District flow gauge for San Geronimo Creek (Balance gauge)
- District inflow and outflow gauges for Kent Lake (if available). Alternatively, water level gauge for Kent Lake (to be combined with District stage v. storage curve and stage v. outflow relationships for Kent Lake to develop an inflow and outflow estimate).
- USGS gauge for Lagunitas Creek at Samuel P. Taylor State Park

Based on these data ESA will develop a daily water balance for Lagunitas Creek upstream of San Geronimo Creek, in San Geronimo Creek, and in Lagunitas Creek downstream of San Geronimo Creek for the period in which there are available data at all gauges. From the water balance, we will estimate how much flow in Lagunitas Creek originates from Kent Lake flow releases.

For each of the four type water years, ESA will estimate the number of fish migration events meeting the criteria described in the State Board Lagunitas Creek Order WR 95-17 (at least 35 cfs of flow at Samuel P. Taylor State Park for at least three consecutive days between November 1st and February 28th) and compared with criteria developed in Task 2. ESA will quantify the number of "natural" migration events and total migration days that would have occurred because of watershed runoff had the District not released additional water from Kent Lake, and the volume of Kent Lake water the District released to "top up" natural events to meet the migration criteria during the selected type years. This will provide an estimate of the water supply likely to be needed in the 2021/22 winter to meet the existing migration flow release pulses, depending on how wet or dry the water year is.

Once the water balance model has been created, ESA will perform a sensitivity analysis to estimate for each of the four type water years how the number and duration of migration events would change with different volumes of flow release from Kent Lake. This will provide an estimate of the tradeoff between conserving water and effect on winter migration.

Results from the winter flow analysis will be used by fisheries staff to analyze changes in the migration condition for adult and juvenile salmonids, as described within the functional flow framework under *Task 2*. A technical memorandum or report chapter will be written documenting how alterations to winter migration flows, by water year type, may affect the life history requirements for salmonids, including potential changes to physical instream habitat and water quality.

Deliverable: ESA will write either a section in a report or a standalone technical memorandum that describes the methods used and results of the above analysis. ESA will prepare and present

the results at up to two meetings with the Lagunitas Creek Technical Advisory Committee and/or regulatory agencies (Task 6).

Task 4. Winter Baseflow Analysis Using Habitat Suitability Modeling

The winter baseflow analysis will relate the volume of flow released from Kent Lake between November 1st and March 31st to the quality, water temperature, habitat suitability and relative area of aquatic habitat in Lagunitas Creek.

ESA staff will survey up to four representative reaches of up to 150 feet length each using ground-based survey techniques, and develop detailed 2D hydraulic models of each reach. We anticipate that the reaches will be representative of typical habitat assemblages (e.g. a discrete riffle-pool sequence) located at intervals along Lagunitas Creek between Kent Lake and Point Reyes Station to assess variations in response with increasing distance from Kent Lake. This will allow detailed estimations of the effect of flow reductions on velocity and depth to be made, leading to development of a habitat suitability model. Results from these detailed models will be used by fisheries staff to estimate the change in areas of suitable habitat for up to four species, and over multiple life stages (e.g. spawning conditions for steelhead and coho, emergence conditions for steelhead and coho fry, etc.), under each flow increment.

Additionally, ESA will develop a water temperature model of Lagunitas Creek from Kent Lake to the Nicasio Creek confluence to evaluate the effects of flow changes on water temperature. The model will show the effects of Kent Lake on flow temperatures in Lagunitas Creek, and how this varies with distance and flow inputs downstream. We assume that the District will provide water temperature data from San Geronimo Creek, Lagunitas Creek immediately below Kent Lake (or the Kent Lake outflow) and that ESA will use available data from the USGS gauge at Samuel P. Taylor State Park.

Deliverable: A technical memorandum or report chapter will be prepared by ESA documenting how flow reductions may affect life history requirements for salmonids, including changes to physical instream habitat suitability, water temperature, migration conditions, and water quality.

Task 5. Watershed Hydrology Model

ESA will construct a continuous-simulation watershed hydrology model of the Lagunitas Creek watershed in HEC-HMS. The model will include two versions; (1) with and (2) without dams. The downstream limit is assumed to be the Highway 1 bridge crossing near Point Reyes Station. The 'with dam' model will include Kent Lake, Alpine Lake, Bon Tempe Lake, and Lagunitas Lake on Lagunitas Creek mainstem, as well as the Nicasio Creek watershed with Nicasio Reservoir. We assume that relationships for stage-storage, stage-discharge, and reservoir operations rules for each of the lakes will be provided by the District. If these relationships need to be developed, ESA will scope this as a separate task.

The model will be set up to run daily timesteps for periods of a year per simulation, using data from each of the four type water years identified during Task 1. The model will be run using rainfall and evaporation data from those years, and the creek flow output will be compared with gauge data to calibrate the model. The model will be run using soil moisture accounting methods in HMS to reflect subsurface flow processes; however, a detailed groundwater model will not be developed. Once established, the type year models will provide baseline conditions for a range of year types which can then be modified to assess future changes such as changes in reservoir operations, climate change (changes in rainfall total, rainfall distribution, changes in temperature or soil moisture deficit etc.). The model will also be used to interpret and select appropriate flow

increments from the habitat suitability models (Task 4) by identifying how flow increases downstream of Kent Lake due to tributary contributions in different year types.

Task 6. Agency/Stakeholder Coordination
ESA will support the District in regulatory agency coordination and stakeholder presentation. Regulatory Key agencies will include: NMFS, USFWS, CDFW, RWQCB, NMWD, and SWRCB. Our scope of work assumes preparation of three PowerPoint presentations and presentation at up to 10 meetings. Additionally, ESA will prepare and present results in 2 meetings with the Lagunitas Creek TAC. Each meeting will be attended by 1 hydrologist, 1 fisheries biologist and 1 CEQA specialist.

Deliverable: PowerPoint presentation.

Optional Tasks

Optional Task 7. Temporary Use Change Petition (TUCP) Application Support
Task 7.1. TUCP Application
ESA is available to assist the District in developing text and supporting documentation for TUCP Permit application, if the District elects to proceed. Our scope of work and fee estimate (Table 1) includes completion of administrative draft TUCP Application and supporting documentation by ESA. Following one round of review and comment by District staff and legal counsel, ESA will prepare a submittal copy. Our scope of work assumes an order of magnitude level of effort; additional resources may be required depending upon the nature and extent of comments received.

Task 7.2 TUCP State Board Coordination
ESA will assist the District in coordinating with State Board staff regarding petition questions, comments and requests for additional information. Our scope of work includes 4 meetings with State Board staff and preparation of a PowerPoint presentation.

Deliverable: Administrative draft and submittal-ready TUCP Application packages.

Optional Task 8. Gaining/Losing Reach Analysis
As an optional, but recommended, task to support development of a watershed hydrology model, ESA will conduct baseflow measurements at four locations between the San Geronimo confluence and Point Reyes, at four times during a year. The purpose of these measurements is to quantify and locate patterns of gaining and losing conditions along the creek. At each of four locations ESA staff will survey a cross section and measure velocity and discharge along the section using USGS recommended methods. Four cross sections will be surveyed and measured in one day to avoid fluctuations in flow during the measurements. Results will be used to calibrate the hydrology model and as a standalone memo describing creek conditions. If the District chooses to exercise this option, ESA will scope this as a separate task.

ATTACHMENT B: Cost Proposal - Lagunitas Creek TUCP
SupportESA Labor Detail and Expense Summary

								Hernandez Alveraz				
	Employee Names		J. Hamilton									
			C. Fitzer				M. Strom	A. Juang				
		J. O'Toole	A. Collison	J. Gregory	D. Kunz	D. Behrens	G. Leidy	R. Hao	R. DeShetler			
	Labor Category	Senior Director III	Director III	Managing Associate II	Managing Associate I	Senior Associate III	Senior Associate II	Associate III	Associate II	*Subtotal*	Total Hours	Labor Price
Task #	**Task Name/Description**	**$ 257**	**$ 203**	**$ 171**	**$ 160**	**$ 153**	**$ 144**	**$ 122**	**$ 113**			
1.0	Project management	4	24					8		*$ 6,876*	36.00	$ 6,876
2.0	Ecological criteria development		8				100			*$ 16,024*	108.00	$ 16,024
3.0	Winter migration flow analysis		40				60	120		*$ 31,400*	220.00	$ 31,400
4.0	Winter baseflow analysis - habitat suitability model		24		40	40	180	200	40	*$ 72,232*	524.00	$ 72,232
5.0	Watershed hydrology model	4	38	162				328		*$ 76,460*	532.00	$ 76,460
6.0	Agency/Stakeholder coordination	24	120				40			*$ 36,288*	184.00	$ 36,288
Total Hours		32	254	162	40	40	380	656	40	*1604*	**1,604**	
Total Labor Costs		$ 8,224	$ 51,562	$ 27,702	$ 6,400	$ 6,120	$ 54,720	$ 80,032	$ 4,520	*$ 239,280*		**$ 239,280**
Percent of Effort - Labor Hours Only		2.0%	15.8%	10.1%	2.5%	2.5%	23.7%	40.9%	2.5%	*100.0%*	100.0%	
Percent of Effort - Total Project Cost		3.3%	20.8%	11.2%	2.6%	2.5%	22.1%	32.3%	1.8%			96.7%

ESA Labor Cost	**$ 239,280**
Labor Cost Communication Fee	**$ 7,178**
ESA Non-Labor Expenses	
Reimbursable Expenses	$ 690
ESA Equipment Usage	$ 300
Subtotal ESA Non-Labor Expenses	**$ 990**
Subconsultant Costs	**$ - **
Proposed Scope of Work	**$ 247,448**

PROJECT TOTAL

Task #	**Phase 2 / Optional Tasks**											
5.0	TUCP application support									*$ -*	-	$ -
5.1	TUCP Application	8	40	16				40	2	*$ 18,018*	106.00	$ 18,018
5.2	SWRCB Coordination	16	40	16			16			*$ 17,272*	88.00	$ 17,272
8.0	Optional Gaining/losing reach analysis		12	16	48			12	64	*$ 21,548*	152.00	$ 21,548

Labor Cost Communication Fee	**$ 1,705**
Phase 2 / Optional Task Scop	**$ 58,543**
All Tasks	**$ 305,992**

Item Number: 04
Meeting Date: 04-06-2021
Meeting: Board of Directors

Informational Item

TO: Board of Directors

FROM: Ben Horenstein, General Manager

ITEM: Drought Update

SUMMARY
The District's total reservoir storage volume as of April 1st is 59% of the historical average or 54.6% of total storage. Rainfall to date is 20.3-inches, which is lower than the 30.6-inches received last year by this time and just 43% of the average for this time of year. Dry and warm weather is forecasted over the next two weeks. While there is still the possibility of rainfall in late April, staff is preparing for dry conditions to persist through the coming months. In response to the drought, the Board adopted a resolution calling for voluntary conservation at the February 16th meeting. Staff is continuing to pursue supply optimization, while prioritizing the conservation actions and public messaging to educate and engage with our customers. Staff will provide a presentation to update the Board on all drought-related activities at this meeting and further discuss potential implementation of mandatory restrictions.

DISCUSSION

Drought Conditions and Water Supply Updates:

- As of April 1st, 2021, the District had 43,447 acre-feet of reservoir water storage, which is 54.6% of capacity and 41% below average for this date. The projected December 1st reservoir storage volume is in the range of 24,000 – 28,000 acre-feet.

- As of April 1st, 2021, Lake Sonoma had 154,439 acre-feet of water which is 63% of capacity and approximately 65% of historical average for this time of year.

Drought Response:
A Drought Task Force was instituted consisting of staff throughout the organization to work collaboratively to develop and implement key initiatives to optimize our existing water supply and implement conservation actions.

Water Supply Projects:

- Utilize Phoenix Lake - Phoenix Lake is a reserve reservoir, used only during periods of very dry weather. Pumping of Phoenix Lake started on February 10th for treatment at Bon Tempe Treatment Plant. As of April 1st, the reservoir is 25 ft down from the spillway and 290 AF have been pumped and treated. Pumping of Phoenix Lake is expected to

conclude at the end of this week.

- Utilize Soulajule Reservoir - Soulajule reservoir is a reserve reservoir and not used during normal water supply conditions. Given the low levels in storage and dry conditions District staff are continuing to prepare for pumping of Soulajule tentatively scheduled for late April 2021.

- Optimize the Use of Supplemental Water - Water imported from the Sonoma County Water Agency has been an important part of the District's water supply since the 1970s, and accounts for approximately 25 percent of our water supply. The District has been and continues to use this supply source to its fullest availability. As of the end of March the District has purchased 109% or 5,777 acre-feet of the 5,300 acre-feet that is normally received by end of June. The District is continuing to utilize this water to the maximum extent practicable.

- Kastania Pump Station Rehabilitation Design - At the February 16, 2021 meeting, the Board approved hiring a consulting team to assist staff in the evaluation and development of a rapid rehabilitation plan for Kastania pump station. The team has reviewed engineering plans, developed a hydraulic model to help understand the potential yield for this project, and conducted site visits to assess the condition of the pump station and site constraints. The project team will be presenting to the Board on April 6th with preliminary recommendations to improve hydraulic constraints in the imported water supply network.

- Las Gallinas Valley Sanitary District (LGVSD) Recycled Water Treatment Plant Update - Distribution of recycled water is proceeding as planned as LGVSD completes the upgrade of the Recycled Water Treatment facility. Staff is following the reliability and acceptance testing closely. The Functional Acceptance Testing (looping Title 22 water within the Plant) was completed in early March and Reliability Acceptance Testing (distribution of Title 22 water to MMWD and NMWD) is underway. MMWD's recycled water system is ready to distribute recycled water as soon as it is available.

- Recycled Water Truck Hauling - Staff has confirmed with CMSA that their secondary 23 water is available for sewer flushing and construction dust control and is communicating with potential users. In addition staff is exploring sites in the distribution system and reaching out to potential partners to develop a recycled water fill station to allow members of the public to collect recycled water for irrigating their plants during this drought period.

- Leak Detection - District staff is pursuing an evaluation of current leak detection practices and technology for opportunities to improve or enhance the existing District

program and participated in the first Regional Water Loss Control Working Group for Bay Area utilities on March 17th.

- Environmental Releases - Staff is in the early stages of exploring the potential for modifications in environmental releases from Kent Lake. An preliminary approach was presented and discussed at the Watershed Committee on March 18th and a separate item recommending contract award of a technical analysis will be presented at the April 6th Board meeting.

Conservation and Public Outreach:

- Extended the project completion date for the turf replacement programs from 90 days to 1 year to allow customers to participate in the lawn conversion program while delaying replanting during the drought

- Continuing to distribute yard signs through the Thursday and Sunday Farmers Market organizers, via a social media push, and to homeowner associations

- Training field utility crew and watershed staff to educate customers about the drought and related conservation initiatives

- In support of the District's call to action regarding the drought, the City of San Rafael's Mayor will be initiating The Mayor's Challenge for Water Conservation, pledging water savings and asking consumers to save water April 1st – 30th

- Scheduling presentations with cities, towns, and community groups. Presented to San Rafael City Council on March 15th and scheduled for Town of Corte Madera for April 6th followed by Fairfax on April 7th. Presentations to various rotaries and community groups are scheduled throughout the month of April.

- Consistent and frequent messaging emphasizing the dry conditions and need for water conservation. Increased social media messaging on Facebook, Twitter, Nextdoor and Instagram includes water saving tips, educational information about the district's water code, and rebates and incentives.

- Public awareness and drought conservation ad campaign in development and will begin distribution in April.

Mandatory Water Use Reduction Program:

- With below average rainfall continuing in February and March, staff presented at the March 2nd and March 16th Board meetings preliminary options for discussion regarding potential mandatory restrictions in the coming months if dry conditions persist. An example approach to implementing mandatory irrigation restrictions was presented and

discussed at the March 16th Board meeting.

- Given the current projections for little to no additional rainfall for the remainder of the spring through the summer, staff has developed for the Board to consider the following actions for the April 20th Board meeting:
    - Adopt a resolution implementing mandatory water curtailment based on current storage and future projections in order to preserve water supply;
    - Adopt an urgency ordinance, that would go into effect on April 20th, setting forth a comprehensive list of water waste prohibitions for mandatory conservation, including limiting irrigation to one day per week and setting out a comprehensive enforcement plan for ongoing violations as well as multiple repeat violations, including fines, following notice and a right of appeal, to be placed on customers' water bills.
    - Adopt a resolution deferring the implementation of drought rates triggered by the voluntary and mandatory reductions in water use implemented by the Board and direct the General Manger to implement cost savings measure, utilize rate stabilization reserves and report regularly to the Board regarding the financial impacts of the adopted conservation measures.

FISCAL IMPACT

As previously shared with the Board, the combined loss in revenue and unbudgeted expenses due to the drought is projected at $12.5M over the next 8 months due to voluntary conservation efforts. The District's Rate Stabilization Revenue of $9.4M, along with tight expenditure controls, is anticipated to address the deficit.

Item Number: 05
Meeting Date: 04-06-2021
Meeting: Board of Directors

Informational Item

TO: Board of Directors

FROM: Michael Ban, Director of Engineering

THROUGH: Ben Horenstein, General Manager

DIVISION NAME: Engineering

ITEM: Kastania Pump Station Rehabilitation Project

SUMMARY
The Kastania Pump Station was used to increase the flow and pressure in the North Marin Aqueduct, which is jointly used by the North Marin Water District and the Marin Municipal Water District to import water from the Sonoma County Water Agency, until it was taken off-line in August 2015. In February 2021, the Board authorized an agreement with Carollo Engineers to evaluate placing the Kastania Pump Station back in service to improve the operational efficiency of the District's imported supplemental water supply. At tonight's Board meeting, Carollo Engineers and District staff will present two options for returning the Kastania Pump Station to service: Option 1 includes refurbishing the pump station as-is, and Option 2 includes an extensive rehabilitation of the pump station.

DISCUSSION
If this year's dry weather continues, storage levels in the District's reservoirs will reach historically low levels. In order to preserve the District's water supply, the District is pursuing numerous actions, including evaluating the rehabilitation of the Kastania Pump Station (KPS) as reported to the Board on January 19, 2021, as part of the Water Supply Report and Drought Action Plan presentation, and as authorized by the Board on February 16, 2021, when the professional services agreement with Carollo Engineers was approved.

The KPS is located at 4100 Kastania Road in Petaluma, CA. Constructed in 1977 by the District, the KPS was designed to increase the flow and pressure in the North Marin Aqueduct and offset the hydraulic impact of increased consumption of imported water by Petaluma and the North Marin Water District. The District completed construction of the pump station in September 1977 and operated it until 1999.

The KPS is located on a 0.83 acre parcel and comprises a 1,200 square foot building which houses two pumps. Pump No. 1 is rated at 12,000 gallons per minute at 110 feet of head and

Pump No. 2 is rated at 9,000 gpm at 90-feet of head. Both pumps are driven by 400-hp motors. Imported water supply to the North Marin Water District and the Marin Municipal Water District's Ignacio Pump Station could be delivered either by gravity, during periods of lower demand, or be pumped through the Kastania Pump Station during periods of higher demand. Imported water was delivered to the KPS through a 30-inch pipeline which was connected to the 30-inch North Marin Aqueduct in Kastania Road by a 30-inch wye fitting. After leaving the KPS, treated water entered a 30-inch discharge pipe which was connected to the North Marin Aqueduct at a point further south on Kastania Road. At the time the KPS was constructed, the North Marin Aqueduct originated at a connection to Sonoma Water's Petaluma Aqueduct in McNear Road near the intersection of Petaluma Blvd in Petaluma.

The District owned and operated the KPS until 1999 when it transferred ownership to the Sonoma County Water Agency. In August 2015, following completion of the North Marin Water District's Aqueduct Energy Efficiency Project, which was prompted by the Caltrans Highway 101 expansion and included replacement of a substantial portion of the North Marin Aqueduct with new pipe, the KPS was removed from service. Subsequently, the imported water supply for the North Marin Water District and the Marin Municipal Water District has flowed by gravity from Petaluma and the Sonoma County Water Agency's Kastania Storage Tank located in southern Petaluma.

The District's water supply is balanced approximately 75% from water stored in the District's seven reservoirs on Mount Tamalpais and west Marin, and approximately 25% from supply imported from Sonoma Water, whose primary source of water is water stored in Lake Sonoma. However, the ability of the District to efficiently access its imported water supply is impacted by hydraulic constraints in the imported water supply pipe network and the modifications to the system completed in 2015. In order for the District to efficiently operate its water supply system, the District is evaluating options for rehabilitating the KPS and returning it to service.

In support of the Kastania Pump Station Rehabilitation Project, the District and its project team have conducted a number of actions, including:

- Reviewed relevant as-built or record drawings, including the District's original design drawings from construction of the pump station in 1976 and contract documents for the North Marin Water District's Aqueduct Energy Efficiency Project;
- Reviewed pump curves for the Sonoma County Water Agency's Ely Booster Pump Station and the District's Ignacio Pump Station;
- Reviewed relevant Supervisory Control and Data Acquisition (SCADA) data for the District's water system and the North Marin Water District's water system;
- Reviewed historic monthly delivery data from the Sonoma County Water Agency;

- Conducted an initial site investigation of the Kastania Pump Station on January 19th and a detailed site investigation on March 1st;
- Prepared a draft operational test work plan to be implemented at a later date;
- Developed a hydraulic model of the imported water supply network, starting in the north with the Sonoma County Water Agency's Cotati Tanks and ending at the District's Ignacio Pump Station in Novato;
- Developed and evaluated several pipeline configurations at the Kastania Pump Station site; and
- Engaged GHD to provide environmental services on the project.

Preliminary information regarding the Kastania Pump Station is described below:

- The pump station structure and building appear to be in relatively good shape, given their age.
- The motor for Pump No. 1 sustained fire damage and cannot be used.
- Pump Set No. 2 appears to be in good condition.
- Reconfiguration of the pipe network at the Kastania Pump Station site will be needed to route flow through the pump station again.

The District is currently evaluating two options for rehabilitating the KPS and returning it to service:

- Option 1 includes refurbishing the KPS using existing equipment as much as possible.
- Option 2 includes substantially rehabilitating the pump station.

Detailed information regarding these options will be presented to the Board on April 6, 2021, including estimated costs and schedule. If the District determines to proceed with the Kastania Pump Station Rehabilitation Project, next steps include, but are not limited to:

- Conduct environmental review of the project and prepare the necessary environmental documentation;
- Prepare the final operational test work plan and implement the work plan in coordination with other water agencies;
- Executing a professional services agreement with a consulting engineer to complete design of the project and prepare the plans and specifications; and
- Pursue returning ownership of the Kastania Pump Station back to the Marin Municipal Water District.

FISCAL IMPACT
None

ATTACHMENT(S)
None

Item Number: 06
Meeting Date: 04-06-2021
Meeting: Board of Directors

Informational Item

TO: Board of Directors

FROM: Paul Sellier, Operations Director

THROUGH: Ben Horenstein, General Manager

DIVISION NAME: Operations

ITEM: Marin County Agricultural Commission's Request for Temporary Water Supply for Livestock

SUMMARY
Staff received a request from the Marin County Agricultural Commission seeking use of water from a fire hydrant at Nicasio reservoir to provide untreated water to ranching operations for livestock.

DISCUSSION
Calendar year 2020 was the 2nd driest year in the past 90 years; and, so far in 2021, precipitation totals are less than 2020. If the dry weather continues, as expected, the District's reservoirs are projected to be at historically low levels by December 1, 2021. As a result of the low storage levels, the Board declared initial drought conditions on February 16, 2021 and requested that customers voluntarily reduce water usage. Further restrictions on water are expected to be considered if conditions do not improve.

The dry conditions are affecting the availability of water for ranchers in Marin County. Due to these drought conditions, the Marin Agricultural Commission has requested that the District provide access to untreated water via a hydrant located below Nicasio dam for the ranch operators to provide water for livestock only. Staff has preliminarily determined that the hydrant location is accessible to water trucks, subject to landowner permission, and that any water pulled from the hydrant can be provided, metered and billed pursuant to District Code sections 11.32.070 and 11.56.030. The hydrant is located on a private road and prospective users would need the landowner permission for access to the hydrant. The amount of water requested is unspecified at this time. While staff believes that the proposed water use is likely to be just a few acre-feet, any permit issued for such use could include language expressly providing for the District's revocation of the permit in the sole discretion of the District if it is found that the water use is beyond the minimal amount expected or it is determined that the District has insufficient supply to allow the continued use.

The location of the Nicasio Reservoir, including the hydrant mentioned above, is located outside the District's service area. Article 11, section 9 of the California Constitution and Section 10005 of the Public Utilities Code authorize the District to sell water for use outside the of the District's service area provided that the Board determines surplus water exists and no other water agency providing water to the area objects. At the present time, the District's reservoirs contain approximately 44,000 acre-feet of water, an amount just in excess of total annual demands including environmental releases and evaporative losses. Additionally, staff is unaware of any objections from other water agencies servicing the area, as North Marin Water District has already allowed use of Stafford Lake for this purpose.

At this time, staff is seeking direction from the Board regarding the Marin County Agricultural Commission's request for temporary water supply for livestock.

FISCAL IMPACT
None

ATTACHMENT(S)
None

Item Number: 07
Meeting Date: 04-06-2021
Meeting: Board of Directors

Informational Item

TO: Board of Directors

FROM: Crystal Yezman, Director of System Maintenance and Natural Resources
Paul Sellier, Director of Operations

THROUGH: Ben Horenstein, General Manager

DIVISION NAMES: Facilities & Watershed and Operations

ITEM: 2020 Urban Water Management Plan Update - Water Supply Reliability Assessment

SUMMARY
In preparation for the development of the 2020 Urban Water Management Plan (UWMP), staff will review the methodology and assessment of water supply reliability under varying hydrological scenarios. This step adheres to the prescribed methodology for development of the Urban Water Management Plan.

DISCUSSION
Accurately characterizing the District's water supply reliability under varying hydrological scenarios is a key component in the development of developing an UWMP. Water supply reliability requires assessing the combined results from projected water demands, which were reviewed with the Board at the February 2, 2020 Board of Directors regular meeting, and historical water supply conditions through a required 20-year time horizon. Specifically, water supplies and water demand are required to be analyzed under 1) normal hydrological conditions, 2) a single dry year condition, and 3) a historical five year period of drought. Ideally, these water supply and use analyses fully represent variances in both historical supply sources and projected customer use under those scenarios.

Assessment of water supply reliability is complex and dependent upon a number of factors, such as; the sources of water, regulatory and legal constraints, hydrological and environmental conditions, projected climate change impacts, and expected growth, among others. Based on (i) available historical data, (ii) a refined water supply model, (iii) projections of future water uses, and (iv) imported water and recycled water projections, staff has made an assessment of future water supply reliability for the District. The results indicate available water supply when modeling with historical weather patterns.

A new provision of the Water Code directs suppliers to prepare a Drought Risk Assessment (DRA) as part of the water supply reliability assessment and include it in their 2020 UWMP. Suppliers are now required to consider plausible changes in climate, among other considerations, as part of the DRA. A shortage condition may indicate a water service reliability concern that the district may want to address with specific Water Shortage Contingency Plan (WSCP) shortage response actions. The Department of Water Resources expects that the DRA will correlate with the WSCP water shortage actions and may be an iterative exercise where the District adjusts its water supply and use characterization as the practical timing and anticipated benefits of WSCP-defined water shortage level response actions are evaluated.

Following this Water Supply Reliability Assessment, the next step in the Urban Water Management Planning process will be the development of a Water Shortage Contingency Plan, including six drought triggers. Staff will return to the board at a future meeting to discuss drought triggers and actions under future, climate change scenarios as part of the Water Shortage Contingency Plan.

FISCAL IMPACT
No fiscal impact

ATTACHMENT(S)
1. PowerPoint Presentation

Item Number: 07
Attachment: 1

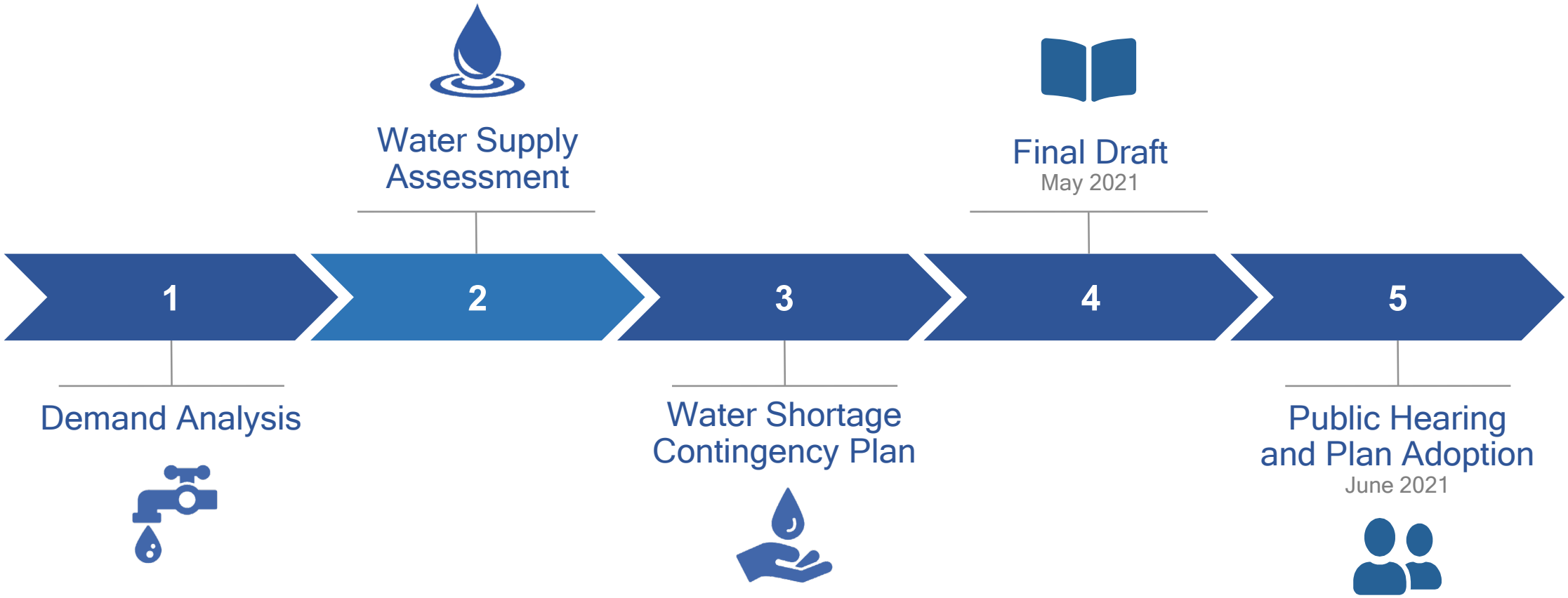
MARIN WATER

Urban Water Management Plan

Water Supply Reliability Assessment

Board of Directors Meeting
April 6, 2021

2020 Urban Water Management Plan (UWMP) Key Milestones



Plan Overview and Water Supply Reliability

Overview of the 2020 UWMP

1. Introduction
2. Plan Preparation
3. System Description
4. Water Use Characterization (Demand Analysis)
5. Regional Alliance for 20 by 2020 Compliance (Comparison of Demands to Target)
6. Water Supply Characterization
7. ***Water Service Reliability and Drought Risk Assessment***
8. Water Shortage Contingency Plan
9. Demand Management Measures
10. Plan Adoption and Submittal

Section 7 of the UWMP: Supply Reliability

7.1 Constraints on Water Resources

- Supply Availability
- Water Quality Impacts to Reliability
- Climate Change Impacts to Supply

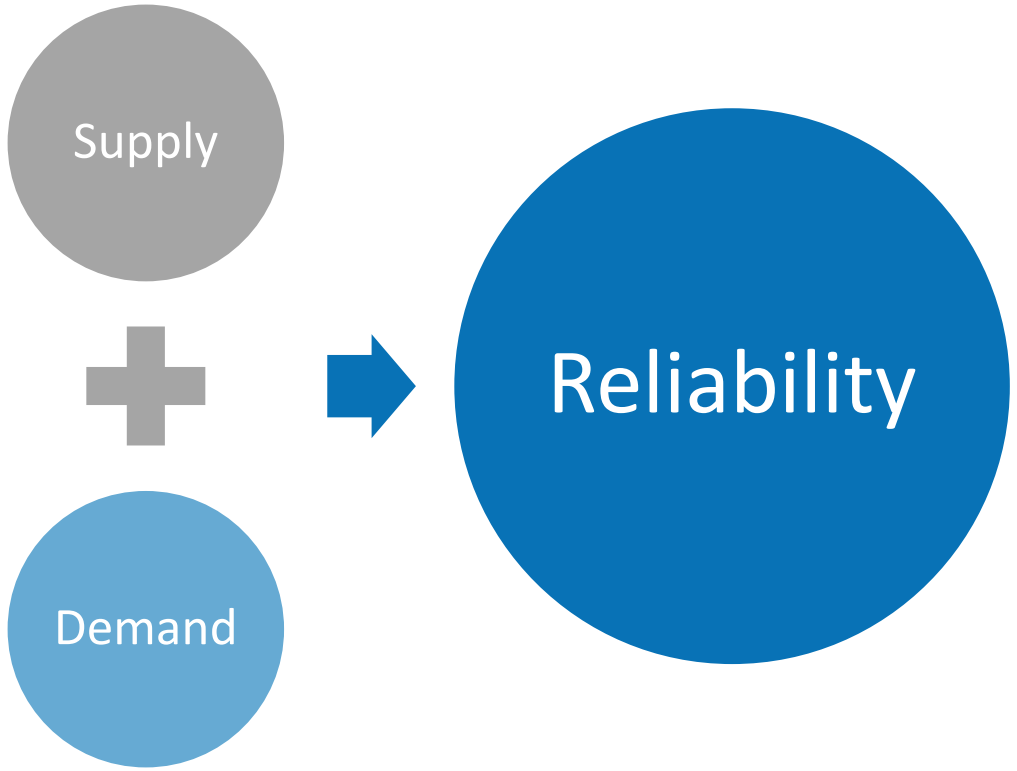
7.2 Reliability by Type of Year

- Normal Year
- Single Dry Year
- Multiple Dry Years

7.3 Supply and Demand Assessment

7.4 Water Management Tools

7.5 Drought Risk Assessment



Reliability by Type of Water Year

Reliability Dependent on Type of Water Year

Normal Year

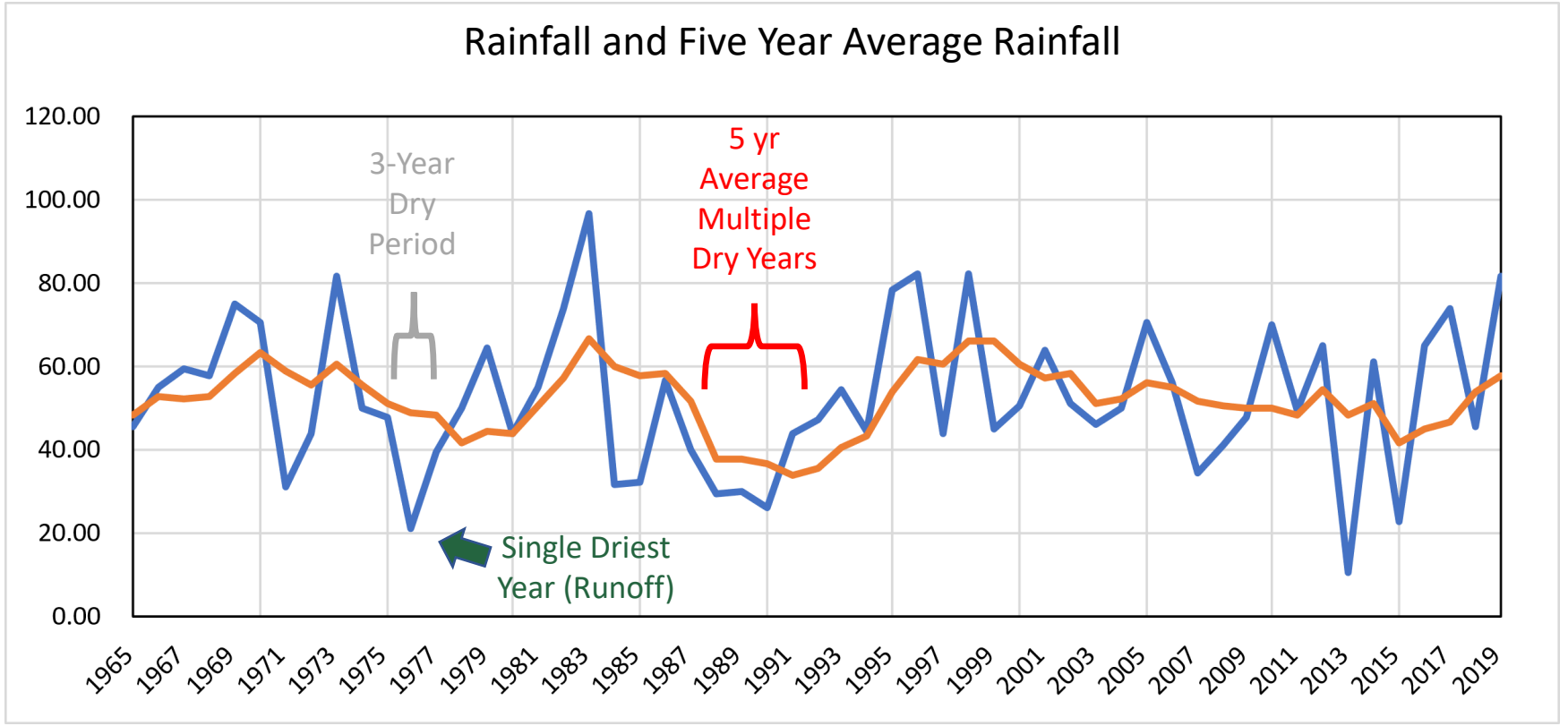
- Average Year
- Basis: 2004

Single Dry Year

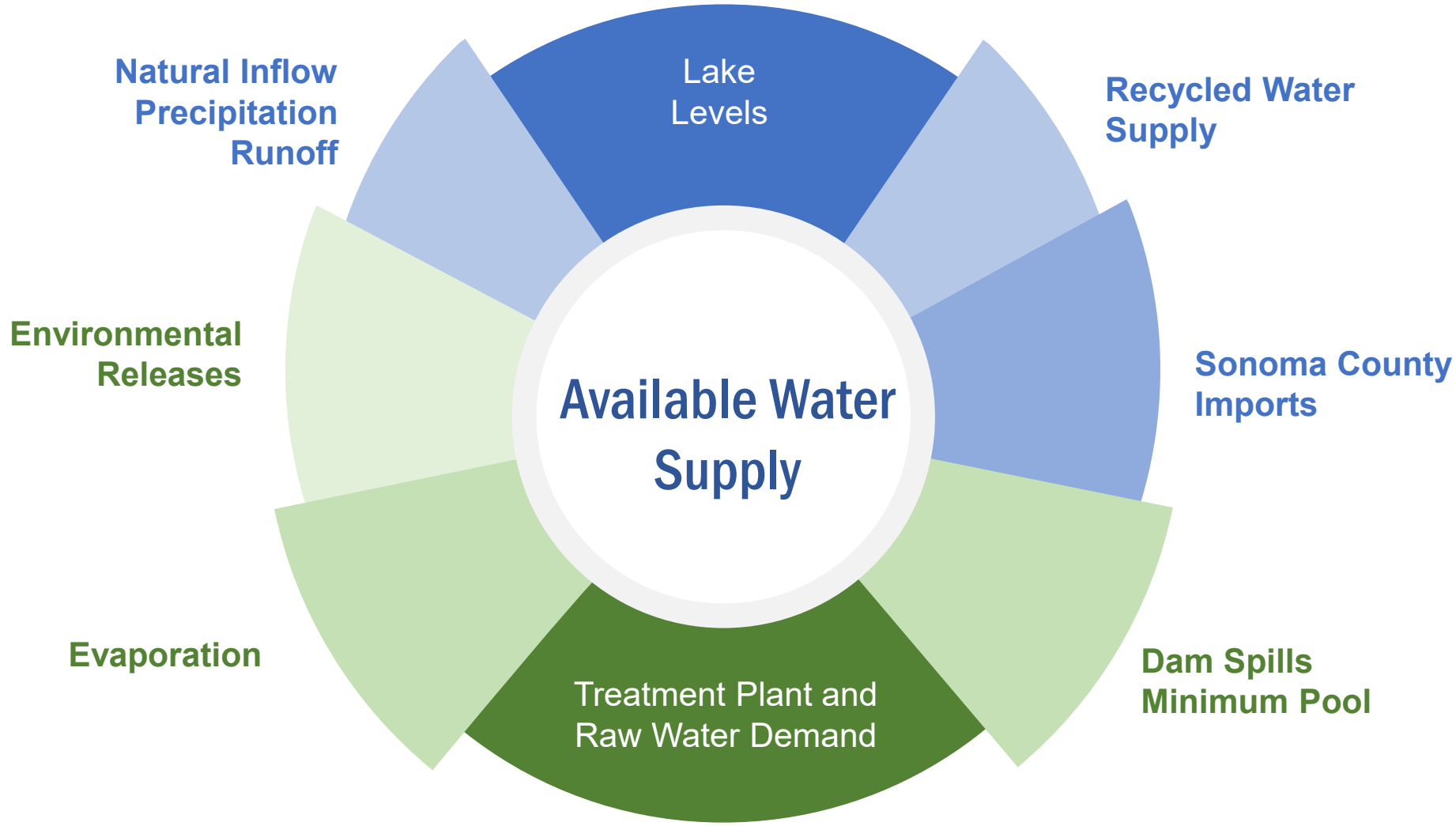
- **Year with lowest inflow**, yet not just lowest rainfall
- Basis: 1977

Multiple Consecutive Dry Year

- 5-Year Period with Lowest Rainfall
- Basis: 1987-1991
- Differs from previous basis, which was a 3-year period (1975-1977)



WaterSim Modeling and Historical Analysis



Available Supply (Historical) by Water Year

DRAFT Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)			
Year Type	**Base Year**	**Volume Available**	**% of Average Supply**
Normal Year (Average)	2004	84,590	100%
Single-Dry Year	1977	51,961	61%
Consectutive Dry Years 1st Year	1987	79,385	94%
Consectutive Dry Years 2nd Year	1988	84,150	99%
Consectutive Dry Years 3rd Year	1989	86,262	102%
Consectutive Dry Years 4th Year	1990	72,529	86%
Consectutive Dry Years 5th Year	1991	69,270	82%

Supply and Demand Assessment

Reliability for Normal Year

DRAFT Submittal Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045
Local Surface Water	78,540	78,793	78,525	78,558	78,626
SCWA	5,300	5,300	5,300	5,300	5,300
Recycled Water	750	750	750	750	750
Supply totals	84,590	84,843	84,575	84,608	84,676
Demand totals	27,476	27,515	27,450	27,528	27,686
Difference	57,114	57,328	57,125	57,080	56,990

Reliability for Single Dry Year

DRAFT Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 (Opt)
Local Surface Water	44,011	44,013	44,009	44,013	44,023
SCWA	7,200	7,200	7,200	7,200	7,200
Recycled Water	750	750	750	750	750
Supply totals	51,961	51,963	51,959	51,963	51,973
Demand totals	27,476	27,515	27,450	27,528	27,686
Difference	24,485	24,448	24,509	24,435	24,287

Reliability for Multiple Dry Years

DRAFT Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2025	2030	2035	2040	2045 (Opt)
Fist Year	*Local Surface Water*	71,435	71,436	71,434	71,436	71,441
	SCWA	7,200	7,200	7,200	7,200	7,200
	Recycled Water	750	750	750	750	750
	Supply totals	79,385	79,386	79,384	79,386	79,391
	Demand totals	27,476	27,515	27,450	27,528	27,686
	Difference	51,909	51,871	51,934	51,858	51,705
Second year	*Local Surface Water*	76,200	76,189	76,216	76,188	76,136
	SCWA	7,200	7,200	7,200	7,200	7,200
	Recycled Water	750	750	750	750	750
	Supply totals	84,150	84,139	84,166	84,138	84,086
	Demand totals	27,476	27,515	27,450	27,528	27,686
	Difference	56,674	56,624	56,716	56,610	56,400

DRAFT Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2025	2030	2035	2040	2045 (Opt)
Third year	*Local Surface Water*	80,912	80,927	80,896	80,930	81,007
	SCWA	4,600	4,600	4,600	4,600	4,600
	Recycled Water	750	750	750	750	750
	Supply totals	86,262	86,277	86,246	86,280	86,357
	Demand totals	27,476	27,515	27,450	27,528	27,686
	Difference	58,786	58,762	58,796	58,752	58,671
Fourth year	*Local Surface Water*	67,479	67,471	67,502	67,470	67,401
	SCWA	4,300	4,300	4,300	4,300	4,300
	Recycled Water	750	750	750	750	750
	Supply totals	72,529	72,521	72,552	72,520	72,451
	Demand totals	27,476	27,515	27,450	27,528	27,686
	Difference	45,053	45,006	45,102	44,992	44,765

Reliability for Multiple Dry Years (Year 5)

DRAFT Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2025	2030	2035	2040	2045 (Opt)
Fifth year	*Local Surface Water*	64,220	64,208	64,245	64,206	64,102
	SCWA	4,300	4,300	4,300	4,300	4,300
	Recycled Water	750	750	750	750	750
	Supply totals	69,270	69,258	69,295	69,256	69,152
	Demand totals	27,476	27,515	27,450	27,528	27,686
	Difference	41,794	41,743	41,845	41,728	41,466

Supply and Demand Comparison – Key Takeaways

- Based on **historical water supply patterns**, the District can meet future demands under normal, single dry year, and multiple dry year scenarios.
- However, there is significant uncertainty in the future due to climate change.
  - The current drought, if it were to continue similar to 2020, would be dryer than the historical five-year drought scenario.
- A five-year drought would be particularly problematic in a climate change scenario.

Drought Risk Assessment

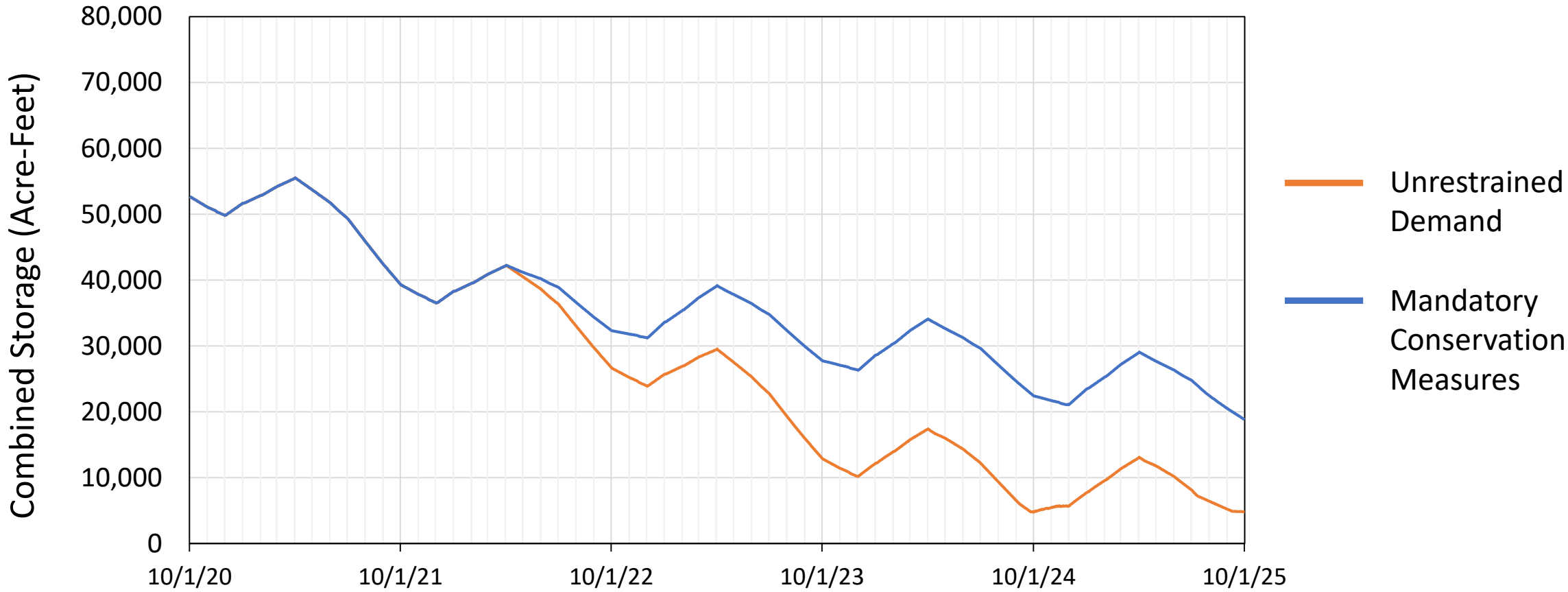
Modeling Risk Assessment for a Synthetic 5-year Drought (2020 water demand repeated 5 Years)

DRAFT Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)					
	2021	2022	2023	2024	2025
Gross Water Use	28,199	28,199	28,199	28,199	28,199
Local Surface Water	55,578	41,961	31,014	20,956	10,060
SCWA	7,200	4,200	3,600	3,000	3,000
Recycled Water	750	750	750	750	750
Total Supplies	63,528	46,911	35,364	24,706	13,810
Surplus/Shortfall w/o WSCP Actions	35,329	18,712	7,165	(3,493)	(14,389)

Water Shortage Contingency Plan Impacts on a Synthetic 5-Year Drought Scenario

DRAFT Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)					
Planned WSCP Actions (use reduction and supply augmentation)					
Gross Water Use	28,199	20,797	18,329	16,919	16,919
Local Surface Water	55,578	41,752	37,555	32,788	30,125
SCWA	7,200	4,200	3,600	3,000	3,000
Recycled Water	750	750	750	750	750
Total Supplies	63,528	46,702	41,905	36,538	33,875
Revised Surplus/(Shortfall)	35,329	25,905	23,576	19,618	16,955
WSCP Reduction and Supply Augementation Benefits					
WSCP – Use Reduction Savings Benefit	0	7,402	9,870	11,280	11,280
WSCP – Supply Augmentation Benefit	0	0	0	0	0
Resulting % Use Reduction from WSCP Action	0%	26%	35%	40%	40%

Water Shortage Contingency Plan Impacts on a Synthetic 5-Year Drought Scenario



Next Steps

- Water Shortage Contingency Plan
  - Triggers and Proposed Actions
- Urban Water Management Plan
  - Final Draft
- Public Review Period
  - 30 Days
- Public Hearing and Plan Adoption
  - June 2021

Item Number: 08
Meeting Date: 04-06-2021
Meeting: Board of Directors

Approval Item

TITLE
Approval to fill Engineering Technician position

RECOMMENDATION
Authorize the General Manager to recruit and hire one Engineering Technician in the Engineering Division.

SUMMARY
The District successfully filled a recently vacated Associate Engineer position through the internal promotion of an existing employee from the position of Engineering Technician to Assistant Engineer in the Engineering Division. This has now created a vacant Engineering Technician position. The Engineering Technician supports the District's Capital Improvement Program (CIP) by working closely with the District's design engineers and conducting a variety of tasks. These tasks include collecting project survey data and creating topographical base maps, collecting and mapping utility data, assisting in the marking and locating of utilities potentially in conflict with the design and providing this information to the design engineer, preparing detailed construction contract drawings using AutoCAD Civil 3D and, when the project is completed, preparing final record drawings of the project and updating the District's GIS to reflect the new facilities. District staff anticipate filling this position in May 2021.

In summary, staff requests the Board authorize the General Manager to recruit and fill the vacant Engineering Technician position. Staff intends to fill this position through an internal recruitment process, which supports promoting qualified District personnel. Therefore, staff further requests the Board authorize the General Manager to recruit and fill any vacant position that may be subsequently created upon filling this Engineering Technician position.

FISCAL IMPACT
The budgeted amount of $22,313 reflects the anticipated annual salary with benefits based on filling the Engineering Technician position on May 1, 2021. Salary and benefits for the Engineering Technician position are budgeted in the Engineering Division's budget for FYE 2021. The total annual salary with benefits for the Engineering Technician position ranges from $111,602 to $133,879. Filling this position will not increase the total number of FTEs in the Engineering Division.

ATTACHMENT(S)
None

Item Number: 08
Meeting Date: 04-06-2021

DEPARTMENT OR DIVISION	DIVISION MANAGER	APPROVED
Engineering	**Michael Ban** **Director of Engineering**	**Ben Horenstein** **General Manager**

Item Number: 09
Meeting Date: 04-06-2021
Meeting: Board of Directors

Informational Item

TO: Board of Directors

FROM: Terrie Gillen, Board Secretary

THROUGH: Ben Horenstein, General Manager

DIVISION NAME: Communications & Public Affairs Department

ITEM: Future Meeting Schedule and Agenda Items

SUMMARY
Review of the upcoming Board of Directors and Committee meetings.

DISCUSSION
Below are the upcoming meetings of the Board of Directors and/or Committees:

- Friday, April 16, 2021
  Operations Committee/Board of Directors (Operations) Special Meeting
  9:30 a.m.

- Tuesday, April 20, 2021
  Board of Directors' Regular Bi-Monthly Meeting
  7:30 p.m.

- Thursday, April 22, 2021
  Finance & Administration Committee/Board of Directors (Finance & Administration) Meeting
  9:30 a.m.

- Tuesday, May 4, 2021
  Board of Directors' Regular Bi-Monthly Meeting
  7:30 p.m.

FISCAL IMPACT
None

ATTACHMENT(S)
None