City of Santa Cruz
Petition for Temporary Urgency Change
License 9847 (Application 17913)

This Petition seeks a temporary change of a bypass and release condition contained in License 9847 held by the City of Santa Cruz ("City"). The City requests a reduction in its mandatory bypass and release of water from its Newell Creek Reservoir that is made pursuant to a Stipulation and Agreement between the California Department of Fish & Wildlife (formerly Fish & Game) and the City of Santa Cruz (formerly Santa Cruz County Flood Control and Water Conservation District) received by the State Water Board on September 15, 1958 (see **Exhibit 1**). This agreement was incorporated into License 9847 by reference. Absent meaningful precipitation events and the relief from the bypass and release requirement from Newell Creek Reservoir, the City's water supply will approach a dangerously low level for essential health and safety needs.

Background

Water Rights

The City of Santa Cruz holds License 9847 (Application 17913) for the diversion of water from Newell Creek for storage in its existing Newell Creek (formerly Loch Lomond) Reservoir. Below is information on the priority date, source, diversion rate, season of diversion and maximum annual use for License 9847.

License 9847 (Application 17913)

- Priority Date: December 12, 1957
- Source: Newell Creek tributary to San Lorenzo River thence Monterey Bay
- Amount: 5,600 acre-feet per annum
- Maximum Annual Withdrawal: 3,200 acre-feet
- Allowed storage capacity of Loch Lomond Reservoir: 8,624 acre-feet
- Diversion Season: September 1 through July 1
- Purposes of Use: Municipal, Domestic, Industrial, Recreational and Fire Protection

The City also holds Permits 16123 and 16601 (Applications 22318 and 23710, respectively) for diversion of water from the San Lorenzo River for storage in the Loch Lomond Reservoir. At the Felton Diversion facility on San Lorenzo River, Permit 16123 allows for the diversion of water to the Loch Lomond Reservoir from September 1 through June 1, and Permit 16601 allows for the diversion of water to Loch Lomond from October 1 through June 1. The City of Santa Cruz also holds two other Licenses on the San Lorenzo River, and pre-1914 appropriative water rights on several small coastal streams.

Bypass/Release Requirement

The Stipulation and Agreement with California Department of Fish & Wildlife (CDFW) in 1957 was an accommodation for dismissal of a protest filed by CDFW against the granting of a permit to the City of Santa Cruz on Application 17913. The bypass/release was for the purpose of protecting and preserving the fisheries and associated recreational resources of the stream. The bypass/release term in the Agreement is as follows:

> "...Said applicant will at all times release or bypass from or through Newell Creek Reservoir Dam into the natural streambed of Newell Creek immediately below said dam a minimum flow of 1 c.f.s.".

This Petition seeks to temporarily reduce the bypass/release amount to 0.2 cubic feet per second.

Current Diversion and Reservoir Conditions

The ten-year average water level of Newell Creek Reservoir from 2003 to 2012, as measured on April 1st, is 577 feet. On January 28, 2013, the reservoir elevation was 577.40 feet, or 98.95% of storage capacity (2.836 billion gallons.) As of January 28, 2014, the reservoir level had dropped to 557.90 feet, (64.4% of storage, or 1.846 BG.)

Thus, reservoir storage as of January 28, 2014, is 20 feet below the April 1st ten-year average, and is dropping daily. Due to the serious constraints on surface flows of the other City water sources, the City is already being required to withdraw water from storage for municipal purposes, which it does not usually do until summer.

Newell Creek Reservoir is the City's sole water storage facility for drought protection. Between evaporation and reservoir releases to satisfy bypass/releases mandated by the condition of the water right License, the water level in Newell Creek Reservoir dropped some 19.35 feet as of January 15, 2014. Between September 1, 2013 and January 23, 2014, there has been 78.2 acre-feet of recorded inflow in Newell Creek and tributaries upstream of the dam. Currently, upstream tributaries have all gone nearly dry and the flows in the mainstem of Newell Creek are substantially reduced. If the City continues its release of 1 cubic foot per second from storage and assuming it were not required to make any withdrawal for municipal use, by April 1, 2014 Newell Creek Reservoir would fall to approximately 556.4 feet elevation, due solely to the minimal and soon non-existent inflow and continuing release requirement.

California Environmental Quality Act

The City is the lead agency responsible for compliance with the California Environmental Quality Act (CEQA) for this Petition. The City's Notice of Exemption pursuant to CEQA is attached as **Exhibit 2**.

Findings

Pursuant to Water Code Section 1435, any permittee or licensee who has an urgent need to make a change in its permit or license may petition for a condition, temporary change order. The State Water Board must make the following findings in order to grant such a petition:

> (1) The permittee or licensee has an urgent need to make the proposed change.
> (2) The proposed change may be made without injury to any other lawful user of water.
> (3) The proposed change may be made without unreasonable effect upon fish, wildlife, or other instream beneficial uses.
> (4) the proposed change is in the public interest....and may be made without injury to any other lawful user of the water, and without unreasonable effect upon fish, wildlife, and other instream beneficial uses.

The City of Santa Cruz offers the following to demonstrate compliance with the four findings:

(1) Urgent Need for Change

The City of Santa Cruz has an urgent need to temporarily suspend the bypass and release requirement on Newell Creek Reservoir in order to preserve the water remaining in storage so that there will be sufficient water to meet essential health and safety needs. There is, and has for some time been, little or no inflow to the Reservoir. Current inflow is 0.16-0.19 cfs, which represents about 16-20% of the current release of 1 cfs. As upstream flows inevitably recede further and evaporation and transpiration increase as day lengths increase, the disparity between inflow and release will become greater. Currently the City is releasing stored water pursuant to License condition. The releases are reducing the City's only source of stored water for drought protection.

The City is 100% dependent upon local rainfall for its municipal water supply. Newell Creek Reservoir is currently at 64.4% of capacity. While the City holds other rights for diversion from the San Lorenzo River, its primary source of water, the River is currently flowing at near record low levels. As a result, the City is unable to divert any water under its Permits at its Felton diversion facility. The City's coastal water sources are severely constrained due to fishery protection considerations as well as the very low flows resulting from the lack of precipitation. Because of the critically dry weather pattern, the City has already had to initiate withdrawals from storage, something it normally does not do until the summer months, June through October.

The City is currently working on the steps necessary to implement water rationing on the predicate that it will be needed in 2014 given meteorological and hydrologic conditions and projections. The City has a five-stage "Water Shortage Contingency Plan" that addresses shortages in water supply (the Executive Summary of the Plan is attached as **Exhibit 3**). The Plan's five-stage approach is based on the estimated magnitude of water shortage. The Plan sets forth principles, priorities and actions for managing its water shortage. A Stage-1 "Water Storage Alert" was declared by the City in both 2012 and 2013. The Stage-1 water restrictions remain in place currently. If current weather patterns persist, the City may have to adopt its Stage-5 plan, which is based on a water supply shortage of 35-50%. Such water conservation measures have the most effect during the outdoor water use season, which the City anticipates will begin earlier this year than is normal due to the dry conditions.

The severity of the City's water supply situation is discussed in more detail in the attached "Initial Water Supply Outlook for 2014", January 27, 2014, from the City of Santa Cruz' Water Department to the City of Santa Cruz' Water Commission (attached as **Exhibit 4**).

The required release of 1 cubic foot per second (about 2 acre-feet per day) from Newell Creek Reservoir without accruing any inflow from Newell Creek will reduce reservoir storage further, by about 154 acre-feet or to an elevation of 555.1 feet by July 1, 2014. This stored water is essential for the City's municipal use, given the ongoing critically dry conditions and shortage of water from each of the City's other sources.

(2) No Injury to Lawful User of Water

No downstream diverters of record would be injured by this requested change. According to the State Water Board's eWRIMS database, the downstream rightholders consist of seven riparian claims filed in Statements of Water Diversion and Use (SWDU), and the Permits and Licenses held by the City of Santa Cruz. A summary of these downstream diverters is attached as **Exhibit 5**. The diversions are from Newell Creek and the San Lorenzo River. Water being released from storage in Newell Creek for environmental purposes would not be available for diversion under the seven riparian claims.

(3) No Unreasonable Effect to Fish, Wildlife, or Other Instream Beneficial Uses

The City has consulted with both NOAA Fisheries and the California Department of Fish & Wildlife. Corinne Gray of CDFW's Bay Delta Region and Jon Ambrose, Wildlife Biologist from the NOAA Fisheries were contacted regarding this matter. Both Ms. Gray and Mr. Ambrose understood the necessity for this petition, and neither presented any objection regarding the City's proposal for reducing the bypass/release requirement to 0.2 cubic feet per second. Both indicated that their agencies will not protest this petition.

Absent the releases from Newell Creek Reservoir, natural conditions downstream of the dam would be dry as they are today in the stream reaches upstream of the Reservoir. Fish are currently unable to migrate up to this stream reach to spawn due to historically low flows on the lower San Lorenzo River, so maintenance of rearing in pools for juvenile fish already in the system is the

primary consideration during the term of this Petition, or until hydrologic conditions change substantially to the extent that adult migration is possible downstream. It is anticipated that seepage and a reduced fish release will provide sufficient flow to maintain rearing in pools. Therefore, there would be no unreasonable effect to fish, wildlife or other instream uses.

(4) Proposed Change is in the Public Interest

The proposed change is in the public interest. The City's consumption rate is already one of the lowest in the State. City of Santa Cruz' consumption rate is 96 gallons per person per day. Furthermore, the City implemented Stage 1 of its Water Shortage Contingency Plan in May 2013.[1] Stage 1 requires voluntary water conservation from all customers, restrictions on landscape irrigation, shutoff nozzles on all hoses, and adherence to the water waste ordinance. The City Council will be considering enacting the harsher Stages of its Water Shortage Contingency Plan due to the dire water supply outlook for 2014.

Enactment of Stages 3 through 5 (for shortages greater than 15%) will result in more widespread hardships throughout the community, may threaten public health and welfare, and cause more economic harm. Measures for Stages 3 through 5 include water rationing for residential and commercial customers, restriction on exterior washing, prohibition of turf and other outdoor irrigation, prohibition of on-site vehicle washing, rescinding of bulk water permits, elimination of water for recreational purposes.

Even if the City implements Stages 3 through 5, if the current weather pattern continues, the volume of water available for health and safety purposes may be endangered. Conservation of the City's limited drought protection supply as proposed by this petition is essential to the public interest.

[1] The last Stage 1 implementation was from May 2012 through October 2012.

EXHIBIT 1

Edmund G. Brown, Attorney General
of the State of California
Lucian B. Vandegrift, Deputy Attorney General
James B. Sanderson, Deputy Attorney General
Library and Courts Building
Sacramento 14, California
Telephone: Hickory 5-4711, Ext. 4659

Attorneys for Protestant,
California Department of Fish and Game

BEFORE THE STATE WATER RIGHTS BOARD

OF THE STATE OF CALIFORNIA

IN RE: NEWELL CREEK TRIBUTARY TO SAN LORENZO RIVER THENCE MONTEREY BAY SANTA CRUZ COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, Applicant, CALIFORNIA DEPARTMENT OF FISH AND GAME Protestant	Application No. 17913 STIPULATION AND AGREEMENT

WHEREAS, the State Water Rights Board has pending before it Application No. 17913 of the Santa Cruz County Flood Control and Water Conservation District, hereinafter referred to as District, for brevity, and

WHEREAS, the applicant therein desires to appropriate water from Newell Creek and

WHEREAS, the People of the State of California, acting by and through the California Department of Fish and Game, hereinafter referred to as Department for brevity, in the interest of protecting and preserving the fisheries and associated recreational resources of the State, seek to have certain fishing and recreational waters provided and maintained, and

WHEREAS, said parties have reached an accord concerning the conditions under which the applicant's project may be developed and operated consistent with

the public in protecting and preserving the fisheries and associated recreational resources of the stream; and

WHEREAS, it is the desire of said parties to settle and adjust any and all differences that might exist between them so that definite assurances can be had as nearly as practicable that the public interests will be served; and

WHEREAS, the said parties desire to formalize their mutual understanding by this Stipulation and Agreement;

NOW, THEREFORE, it is hereby stipulated and agreed by and between the District, its successors or assigns, and the Department, as follows:

1. Said applicant will at all times release or bypass from or through Newell Creek Reservoir Dam into the natural streambed of Newell Creek immediately below said dam a minimum flow of 1 c.f.s.

2. Said applicant will provide for and permit such public fishing uses on the waters of Newell Creek Reservoir and water district lands on Newell Creek below Newell Creek Reservoir Dam to the extent that such uses are not prohibited by State or local public health laws; said public fishing uses shall include the use of rowboats, the construction and maintenance of boat launching and docking facilities, automobile parking facilities, and such sanitary facilities as may be determined to be adequate and necessary.

3. It is further stipulated and agreed by and between the District, its successors or assigns, and the Department that the terms and provisions of this agreement may be inserted by way of incorporation by reference or by any other means in any permit or license which may be issued by the State Water Rights Board under Application No. 17913; provided further that if the provisions of this agreement relating to the required releases from Newell Creek Reservoir Dam are inserted in any permit and/or license issued by the State Water Rights Board, the protest of the CALIFORNIA DEPARTMENT OF FISH AND GAME to said application may be disregarded and may be considered withdrawn.

Approved as to Form:

Attorney for Applicant

SANTA CRUZ COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT

Chairman

Secretary

Approved as to Form:

EDMUND G. BROWN
Attorney General
LUCIAN B. VANDEGRIFT
Deputy Attorney General
J. M. SANDERSON
Deputy Attorney General

Attorneys for Protestant

CALIFORNIA DEPARTMENT OF FISH AND GAME

Director

EXHIBIT 2

Notice of Exemption

Appendix E

To: Office of Planning and Research
P.O. Box 3044, Room 113
Sacramento, CA 95812-3044

County Clerk
County of: Santa Cruz

From: (Public Agency): City of Santa Cruz Water Departe
212 Locust St.
Santa Cruz, CA 95060
(Address)

Project Title: Newell Creek Reservoir Temporary Urgency Change Petition

Project Applicant: City of Santa Cruz Water Deparment

Project Location - Specific:
Newell Creek Reservoir. 37.101912,-122.072403

Project Location - City: Ben Lomond, CA Project Location - County: Santa Cruz

Description of Nature, Purpose and Beneficiaries of Project:
Temporary Urgency Change Petition in accordance with the SWRCB rules to reduce the bypass/release requirements in order to preserve storage in Newell Creek Reservoir, needed due to drought conditions. Beneficiaries are customers reliant on water supplied by the City of Santa Cruz.

Name of Public Agency Approving Project: City of Santa Cruz; SWRCB is responsible agency

Name of Person or Agency Carrying Out Project: City of Santa Cruz Water Department

Exempt Status: **(check one):**

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☒ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☒ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☒ Categorical Exemption. State type and section number: Class 1; 14 CCR section 15301
- ☒ Statutory Exemptions. State code number: see below

Reasons why project is exempt:
This action by the City is exempt from CEQA pursuant to, inter alia, Public Resources Code Section 21080(b)(3) & (4), 14 CCR Section 15269)(a) & (c), and 14 CCR Section 15301 (Class 1 exemption.) The City's water supply situation is dire. Its only source of stored water for drought protection is being depleted and must be protected to mitigate the effects of the drought emergency declared by the Governor and to prevent worse effects.

Lead Agency Contact Person: Chris Berry Area Code/Telephone/Extension: (831) 420-5483

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project?. ☐ Yes ☒ No

Signature: Rosemary Menard Date: 1/30/2014 Title: Director

☒ Signed by Lead Agency ☐ Signed by Applicant

Authority cited: Sections 21083 and 21110, Public Resources Code.
Reference: Sections 21108, 21152, and 21152.1, Public Resources Code.

Date Received for filing at OPR: _____

Revised 2011

CITY OF SANTA CRUZ

Water Shortage Contingency Plan

Prepared by:

City of Santa Cruz Water Department

March 2009

City of Santa Cruz Water Department

Water Shortage Contingency Plan

SANTA CRUZ CITY COUNCIL

Cynthia Mathews, Mayor
Mike Rotkin, Vice Mayor
Katherine Beiers
Ryan Coonerty
Don Lane
Tony Madrigal
Lynn Robinson

WATER COMMISSION

Howard Whitney, Chair
Susan O'Hara, Vice Chair
Brent Fouse
Laura Kasa
Charlie Keutmann
Mike McClellan
Andrew Schiffrin

Bill Kocher, Water Director

Prepared by
Toby Goddard
Water Conservation Manager

assisted by
Aerin Martin
Water Conservation Representative

March 2009

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Cover graphic courtesy of the California Department of Water Resources

Executive Summary

This report constitutes the first comprehensive review and update of the City's Water Shortage Contingency Plan since the early 1990's. The project is an outgrowth of the City's 2005 Urban Water Management Plan, which recognized the many changes in regional conditions and local water supply planning that had taken place over the previous decade, and identified the need to better prepare for the possibility of future water shortages in advance of the next major drought.

Introduction

This section provides background information about the City water system and the City's Integrated Water Plan, explains the purposes and goals of this plan, summarizes state regulations that pertain to water shortage contingency planning, and describes the process and principles that were used to guide the preparation of this document.

The last time the Santa Cruz area was confronted with a serious water shortage was during a statewide drought that lasted from 1987 through 1992. The exceptional drought of 1976-77, however, remains the most severe event on record. In 2003, the City adopted a long range planning document known as the "Integrated Water Plan", the goal of which was to reduce near term drought shortages and provide a more reliable public water supply through the year 2030. One component of this plan deliberately involves cutting back or "curtailing" system water demand by 15 percent in dry years when water is in short supply.

This plan was developed to fulfill two fundamental purposes:

1. To establish the procedures and actions necessary to achieve the up to 15 percent cutback in system-wide demand established in the City's Integrated Water Plan, and

2. To describe how the City would respond if faced with much larger shortages in water supply ranging as high as 50 percent (not only because, as a public water supplier, the City is required to do so by state law, but also because the City remains vulnerable in the near term to a critical water shortage of this magnitude until it secures a new source of supply for drought protection).

Whatever magnitude of shortfall the City may experience, the overarching goals of this plan are as follows:

1. To conserve the water supply of the City for the greatest public benefit,

2. To mitigate the effects of a water supply shortage on public health and safety, economic activity, and customer lifestyle, and

3. To budget water use so that supply will be available for the most essential purposes for the entire duration of the water shortage.

Development of this plan was a collaborative effort among the City Water Department staff, the City's Water Commission, City Council, and the public. The process included reviewing the City's existing ordinance and water shortage plans from many other water agencies, addressing various planning and policy issues, and taking into account state regulations. The Water Commission provided its input and recommendations throughout the entire process. The final step will be to prepare an ordinance that incorporates the structure and policy recommendations embodied in this plan. This ordinance would then be adopted and go into effect only if necessary in an actual water shortage following appropriate public notification and public hearing before City Council.

Assessing Water Supply and Demand

This section describes the key hydrologic factors affecting the City's water supply and discusses the process staff uses to determine whether a water shortage is expected in the year ahead.

The City of Santa Cruz relies on surface flows in coastal streams and the San Lorenzo River for most of its annual water supply needs. The yield of these sources in any given year is directly related to the amount of rainfall received and runoff generated during the winter season.

After an unusually dry winter or period of consecutive dry years, when a lack of supply appears possible, the Water Department undertakes an analysis to determine whether water supplies will be deficient relative to estimated water needs for the coming dry season. This analysis involves first comparing projected water supply and demand on a monthly basis, assuming no restriction on water

use, to forecast the end of season water level and storage volume in Loch Lomond Reservoir. The Department then evaluates whether the amount of carryover storage in Loch Lomond at the end of the year will be sufficient to meet essential health and safety needs in case the dry weather pattern continues into the following year. If this analysis shows that Loch Lomond Reservoir would be depleted to a dangerously low level, then a decision is made regarding how much reservoir water is available to use in the current year and how much should be banked as a safeguard against the possibility of another dry year. The amount of cutback in demand needed to reduce the rate of reservoir depletion and end the year at a safer level of storage is then determined. If necessary, cutbacks would go into effect in late April or early May and span the entire dry season through the end of October.

The degree of shortage is normally defined as the supply deficiency in relation to normal water use over a given period of time, and expressed as a percentage. For example, a 25 percent shortage means the City has one-quarter less water supply available than what is normally used during the seven month long dry season.

Demand Reduction Program

This section describes the five-stage approach and overall strategy for dealing with water shortages, explains how available water would be allocated among various customer categories according to priority of use, and presents the recommended menu of actions for cutting back water demand during a declared water shortage. This section also covers policies and recommendations regarding enforcement methods, exceptions, and appeals.

Table ES-1. Five Stage Structure to Water Shortage Contingency Plan

Stage	Magnitude of Water Shortage	Stage Title
1	0-5%	Water Shortage Alert
2	5-15%	Water Shortage Warning
3	15-25%	Water Shortage Emergency
4	25-35%	Severe Water Shortage Emergency
5	35-50%	Critical Water Shortage Emergency

The updated Water Shortage Contingency Plan uses a staged approach that classifies a shortage event into one of five levels spanning a range from less than 5 percent up to 50 percent. The overall concept is that water shortages of different magnitudes require different measures to overcome the deficiency. Because there is so little the City can do in the short run to increase the supply of water, the focus of this plan is primarily on measures that reduce demand. Each stage includes a set of demand reduction measures that become progressively more stringent as the shortage condition escalates. Normally, only one of these five stages would be put into effect early in the year at the recommendation of the Water Director and remain in force for the entire dry season.

There is an important distinction between Stages 1 and 2, designated above in shades of yellow, and the upper three stages. The lower two stages represent a level of curtailment that is envisioned as being necessary to balance water supply and demand from time to time under the City's Integrated Water Plan. Shortages of 15 percent or less, while inconvenient, do not directly threaten public safety or pose undue economic impact. The upper three stages (3-5) are characterized as emergency water shortages since they result in more widespread hardships being felt throughout the community, may threaten public health and welfare, and cause more economic harm. The intent of the City's Integrated Water Plan, however, is to limit future water shortages to no more than more than 15 percent.

Customer reduction goals for all but the first stage were derived by evaluating the composition of demand for each major group and dividing it into three usage priorities. These priorities are, from highest to lowest, 1) health/safety, i.e., all domestic and sanitary uses, 2) business and industrial uses and, 3) irrigation and other outdoor uses). Normal demands were then scaled back in accordance with the schedule below. The recommended allocation is presented in Table ES-3.

Table ES-2. Reduction in Water Delivery by Usage Priority
(percent of normal deliveries)

Stage	Magnitude of Water Shortage:	Health/Safety	Business	Irrigation
2	15%	95	95	64
3	25%	95	90	34
4	35%	90	85	12
5	50%	75	67	0

Table ES-3. Water Supply Allocation and Customer Reduction Goals

Normal Peak Season Demand = 2,473 mil gal	No Deficiency		Stage 2 15% Deficiency		Stage 3 25% Deficiency		Stage 4 35% Deficiency		Stage 5 50% Deficiency	
	Delivery		Delivery		Delivery		Delivery		Delivery	
	%	Volume (mil gal)	%	Volume (mil gal)	%	Volume (mil gal)	%	Volume (mil gal)	%	Volume (mil gal)
Single Family Residential	100	1,031	84%	864	73%	753	62%	639	48%	495
Multiple Residential	100	524	87%	454	78%	411	69%	361	55%	287
Business	100	438	95%	416	92%	402	87%	381	70%	307
UC Santa Cruz	100	132	85%	113	76%	100	66%	87	52%	68
Other Industrial	100	23	95%	22	90%	21	85%	20	67%	15
Municipal	100	48	76%	36	57%	27	41%	20	28%	14
Irrigation	100	110	64%	70	34%	37	12%	13	0%	0
Golf Course Irrigation	100	106	73%	78	51%	54	34%	36	20%	21
Coast Agriculture	100	59	95%	56	90%	53	85%	50	67%	40
Other	100	2	95%	2	90%	2	50%	1	50%	1
Total	**100**	**2,473**	**85%**	**2,111**	**75%**	**1,861**	**65%**	**1,607**	**50%**	**1,247**
Demand Reduction %, Million gallons	**0**	**0**	**15%**	**-362**	**25%**	**-612**	**35%**	**-866**	**50%**	**-1,226**

In essence, this allocation system strives to balance available supplies in times of drought as much as possible through cutbacks in outdoor water use. At each level of shortfall, public health and sanitation usage is afforded the highest priority by cutting back on interior usage the least. The importance of water in protecting the City's employment base is also acknowledged through proportionately modest cutbacks to the commercial sector as compared to the overall system shortfall. Irrigation and other outdoor uses in all cases is cut back the most. The larger the water shortage, the greater the cutbacks, but this system of priorities is maintained throughout the range of potential shortages. The heavy reliance on outdoor use reductions makes sense, both from a water system perspective because it reduces peak demands, which is important to preserving storage in Loch Lomond Reservoir, and from a public health and welfare perspective, because irrigation and other outdoor uses are the most discretionary of all uses when drinking water is in short supply.

The remainder of this section discusses the demand reduction measures, communications, publicity, and operational activities that apply to each stage.

The primary demand reduction measures used in **Stage 1** are to restrict all landscape irrigation to certain hours of the day and to prohibit various uses deemed to be non-essential.

The recommended approach to reducing water use **Stage 2** involves expanding mandatory water restrictions and limiting landscape irrigation to specified days and times. Large landscape users would be required to adhere to water budgets.

A **Stage 3** water shortage constitutes an emergency situation. The three primary measures being recommended to meet this emergency reduction goal are 1) residential water rationing, 2) mandatory water shortage signage in all commercial buildings, and 3) reduced water budgets for large landscapes.

A **Stage 4** water shortage requires expanding water rationing to cover all water customers, including business, and reducing residential allocations. At this severe level of shortage, only minimal water is available for outdoor purposes.

Stage 5 represents an extraordinary crisis threatening health, safety, and security of the community. It would involve reduced rationing levels for all customers and a ban on outdoor uses to cut back normal water use by half.

Table ES-4. Summary of Demand Reduction Actions and Measures

Water Shortage Condition	Key Water Department Communication and Operating Actions	Customer Demand Reduction Measures
Stage 1: Water Shortage Alert (0-5%)	• Initiate public information and advertising campaign • Publicize suggestions and requirements to reduce water use • Adopt water shortage ordinance prohibiting nonessential uses • Step up enforcement of water waste • Coordinate conservation actions with other City Departments, green industry	• Voluntary water conservation requested of all customers • Adhere to water waste ordinance • Landscape irrigation restricted to early morning and evening • Non-essential water uses banned • Shutoff nozzles on all hoses used for any purpose • Encourage conversion to drip, low volume irrigation
Stage 2: Water Shortage Warning (5-15%)	• Intensify public information campaign • Send direct notices to all customers • Establish conservation hotline • Conduct workshops on large landscape requirements • Optimize existing water sources; intensify system leak detection and repair; suspend flushing • Increase water waste patrol • Convene and staff appeals board	• Continue all Stage 1 measures • Landscape irrigation restricted to designated watering days and times • Require large landscapes to adhere to water budgets • Prohibit exterior washing of structures • Require large users to audit premises and repair leaks • Encourage regular household meter reading and leak detection
Stage 3: Emergency Water Shortage (15-25%)	• Expand, intensify public information campaign • Provide regular media briefings; publish weekly consumption reports • Modify utility billing system and bill format to accommodate residential rationing, add penalty rates • Convert outside-City customers to monthly billing • Hire additional temporary staff in customer service, conservation, and water distribution • Give advance notice of possible moratorium on new connections if shortage continues	• Institute water rationing for residential customers • Reduce water budgets for large landscapes • Require all commercial customers to prominently display "save water" signage and develop conservation plans • Maintain restrictions on exterior washing • Continue to promote regular household meter reading and leak detection
Stage 4: Severe Water Shortage Emergency (25-35%)	• Contract with advertising agency to carry out major publicity campaign • Continue to provide regular media briefings • Open centralized drought information center • Promote gray water use to save landscaping • Scale up appeals staff and frequency of hearings • Expand water waste enforcement to 24/7 • Develop strategy to mitigate revenue losses and plan for continuing/escalating shortage	• Reduce residential water allocations • Institute water rationing for commercial customers • Minimal water budgets for large landscape customers • Prohibit turf irrigation, installation in new development • Prohibition on on-site vehicle washing • Rescind hydrant and bulk water permits
Stage 5: Critical Water Shortage Emergency (35-50%)	• Continue all previous actions • Implement crisis communications plan and campaign • Activate emergency notification lists • Coordinate with CA Department of Public Health regarding water quality, public health issues and with law enforcement and other emergency response agencies to address enforcement challenges • Continue water waster enforcement 24/7	• Further reduce residential water allocations • Reduce commercial water allocations • Prohibit outdoor irrigation • No water for recreational purposes, close pools • Continue all measures initiated in prior stages as appropriate

The City's existing water shortage emergency ordinance contains several provisions for enforcing water use rules and regulations, and a process for issuing exceptions and hearing appeals. These provisions were reviewed by staff and the Water Commission, which put forth several recommendations to be incorporated into the updated water shortage ordinance. Recommendations include revised penalty fees and excess use fees, adding specified findings for authorizing exceptions, and adding an alternative enforcement approach to reduce the likely caseload of appeals.

Implementation

This section describes the essential elements of implementing the updated Water Shortage Contingency Plan, discusses the approximate lead time needed to prepare for and activate a demand reduction program, outlines the process for declaring a water shortage, and identifies areas where additional ongoing efforts are necessary to address critical gaps.

Although the Water Department closely monitors rainfall, runoff and reservoir storage all winter, it is not usually until the end of March that the water supply outlook for the year ahead becomes certain. This leaves very little lead time to prepare for implementing the water shortage contingency plan.

Formal action declaring a water shortage is taken by City Council. The legal requirements for such action are covered in Section 350 et.seq. of the California Water Code. The code requires the following process be followed:

- That City Council hold a public hearing on the matter;
- That the public hearing be properly noticed (minimum of publishing once in newspaper at least seven days prior to the date of the hearing);
- Upon determining and declaring the existence of a water shortage, City Council may then adopt regulations and restrictions governing the use and delivery of water.

By municipal code, rules adopted by the City Council establishing water use regulations become effective immediately after their publication in the newspaper.

Effective communication is essential to the success of any water shortage contingency plan in achieving the desired water use reductions. All customers need to be adequately informed about water supply conditions, understand the need to conserve, and know what actions they are being requested or required to take to mitigate the shortage. Even before formal declaration of a water shortage, a public information/media program should be activated to provide customers with as much advance notice as possible. Following Council action, all residents and businesses, not just customers of record, would need to be provided notice of water shortage rules and regulations via a variety of media and communications methods, including print and television media, internet, utility newsletter, and other methods. Public notification and communication will be provided in Spanish language for non-English speakers.

The additional staff needed to carry out this contingency plan and personnel costs are estimated according to stage. These may consist of existing staff reassigned from regular duties in the Water or other City departments, new part-time temporary employees, interns, or some combination of the above. Additional office space and equipment needs are also addressed.

The financial impact of short-term demand reduction was estimated to range from just under $0.6 million in a Stage 1 water shortage alert situation to almost $5.8 million in a Stage 5 critical water shortage emergency. Compared to 2007 revenues of just over $22 million, the Department's net revenue would be reduced to approximately $21.5 million in Stage 1 to less than $16.4 million in Stage 5. Options to lessen or overcome the revenue shortfall include the following:

- Tapping into the Department's Rate Stabilization Fund (currently $2.2 million)
- Deferring planned capital improvements
- Considering possible rate adjustments or surcharges

Implementing this Water Shortage Contingency Plan will require utility billing system software that provides the necessary capabilities and flexibility to quickly shift from normal billing practices to water rationing mode. The newly installed EDEN utility billing module appears to be able to handle the type of computations needed to implement the recommended method for rationing residential customers. It does not, however, have the capability or flexibility to handle large landscape water budgets, or commercial water rationing which is based on some

percentage of past use. This capability will have to be custom developed over time.

Another key challenge involves implementing large landscape water budgets. This is the next major work priority scheduled for the City's Water Conservation Office. These programs have a long development time (1-2 years) due to the need to measure landscape areas, differentiate among plant materials, and integrate water budget data into the billing system. This latter task requires changing the bill design and layout to show water budget information and tying performance relative to the water budget to water pricing. If the City were confronted with a water shortage before large landscape water budgets and budget-based pricing could be implemented, alternative methods to curtail water in the large landscape sector would have to be considered.

The final tasks in updating the City's Water Shortage Contingency Plan include the following steps:

- Involving the community and soliciting public review and input on this document;
- Finalizing and presenting the plan to City Council for adoption;
- Preparing an updated water shortage ordinance;
- Preparing and mailing a Proposition 218 notice about proposed changes to penalty and excess use fees.

As far as critical gaps that require ongoing work, the most important recommendations are to:

1. Continue to work on the new utility billing system so that the database is able to meet the City's requirements for use in water rationing if it becomes necessary, and

2. Focus on developing the large landscape program so that water budgets described above can be used to professionally manage large irrigation accounts the next time a water shortage arises.

3. As much as possible, prepare water shortage notices, announcements, materials, and mailing lists in advance, including bilingual materials for non-English speakers.

CITY OF SANTA CRUZ

WATER DEPARTMENT MEMORANDUM

DATE: January 27, 2014

TO: Water Commission

FROM: Toby Goddard, Administrative Services Manager

SUBJECT: Initial Water Supply Outlook for 2014

RECOMMENDATION: For information and deliberation by the Water Commission.

This report provides an overview of current water conditions and presents the Water Department's first formal outlook covering the City's water supply situation for water year 2014. It will be updated at the end of February as the season progresses and a final water supply outlook will be prepared in the month of March, when the bulk of the winter wet season has passed and the water supply situation becomes more certain.

Given the extraordinary and very serious circumstances that the City potentially faces this year, we begin with a summary of recent actions at the state level.

On Friday, January 17, 2014, Governor Brown officially declared a drought emergency in California. He asked California residents and businesses to voluntarily reduce their water consumption 20 percent and directed state agencies to take a range of steps to ease the effects of water shortages on agriculture, communities, and fish and wildlife. Earlier in December, the Governor convened an Interagency Drought Task Force to coordinate state efforts with Federal and local agencies. These actions follow the designation of 2013 as being the driest calendar year on record, which has left many of the state's largest reservoirs, river systems, and Sierra snowpack at dangerously low levels and has contributed to unseasonable winter wildfires. The U.S. Drought Monitor, as of January 21, 2014, now classifies over 60 percent of California, including all of the San Francisco Bay Area and Central Coast regions, in a condition of "extreme drought", one stage below the most severe designation, "exceptional".

Rainfall

At roughly halfway through the winter "wet" season, the City of Santa Cruz, like the rest of California, is experiencing unprecedented dry conditions. It would be an understatement to say that 2014 is shaping up to be the third straight dry year. Normal rainfall for this time of year is about **16.4** inches. So far this year, the Santa Cruz area has received only **1.3** inches of rain, scarcely eight percent of average. Most notably, there has been no measureable rainfall detected

this January, which is historically the wettest month of the year. During the 1976-77 drought, the worst drought on record for the City, rainfall totals, by comparison, measured 8.6 inches at the end of January 1977. The extraordinary lack of rain this year is being attributed to persistent high atmospheric pressure centered over the eastern Pacific Ocean, which has forced weather systems far to the north and shows no signs of abating in the near future.

In the Newell Creek watershed, only **2.26** inches of rain has been recorded this year, and, like the City, there has been no measureable rainfall so far in January. Normal rainfall for this time of year in the watershed is about 24 inches. In 1977, the Ben Lomond area had received about 10 inches of rain by the end of January.

The short-term weather outlook indicates a chance of rain later this week, the first possibility of rain since December 7, 2013. Long-term, the National Weather Service Climate Prediction Center is showing the probability of below normal precipitation and above normal temperatures across California in its winter outlook over next three months.

Figure 1 shows monthly rainfall amounts in Santa Cruz for the year to date through January 24, 2014.

Stream Flow

Like many other rivers across California, stream flow in the San Lorenzo River is at a record low level for this time of year. The flow in the river measured at the U.S. geological Survey gauge in Felton is currently running **12 cubic feet per second** (cfs). The previous record low, 13 cfs, was set in 1991 in what was then the 5th year of a six-year drought. The mean monthly flow for January is **351** cfs, meaning that the river currently is running at a tiny fraction of normal, about four percent. It is even lower than would be expected late in summer or early fall. Without any rainfall to help replenish the watershed, flow in the San Lorenzo River is expected to continue dropping gradually over time.

Figure 2 shows mean monthly stream flows in the San Lorenzo River for the season to date, along with the long-term average values, and the 2013 water year for comparison. Figure 3 shows mean monthly stream flow this year compared with flows recorded during the 1976/77 drought. The level of flow in the river now is an astonishing 37 to 43 percent lower than it was in that critically dry period.

Reservoir Storage

Loch Lomond Reservoir presently stands at about **65 percent of capacity**, holding **1.85 billion gallons** of its 2.83 billion gallon capacity. Although this percent of storage is significantly better than many large reservoirs statewide, its capacity is relatively small. Even when full, the reservoir holds the equivalent of less than one year's supply. Right now, the water level in the reservoir is down nearly 20 feet below the spillway elevation.

While Stage 1 water restrictions instituted last May and extended this October helped to reduce system water demand and to preserve reservoir storage for the possibility (now a probability) of

a third dry year, the lack of rain this past fall meant that plant operators had rely more on its reserves than expected in the months of October and November 2013. Since then, operators have been able to meet daily demands without having to draw further on the reservoir. However, with extended dry conditions, warmer than average weather, extremely low river flows, we are now at the point once again of having to tap Loch Lomond to meet the community's wintertime daily water needs. It is not unusual for the City water system to need lake water in the winter season. What is extraordinary is the reason. In most years, the reservoir serves as a backup source of supply when winter storms make the river and coast sources untreatable at the Graham Hill Water Treatment Plant due to high turbidity. This year, it is simply that the yield from the City's flowing sources is close to a level that cannot sustain even seasonally low winter water needs, which are currently averaging about **7.8 million gallons per day** (mgd).

One major difference between this time in 1977 and 2014 is that reservoir storage today is in comparatively better shape. In 1977, reservoir storage was at only **35 percent** of capacity at the end of January, heading into the second year of that drought.

Water Year Classification

The Water Department uses a water year classification system to characterize the City's overall annual water supply condition. Under this classification system, the water year beginning October 1 is designated as one of four types – Wet, Normal, Dry, or Critically Dry - depending on the total annual discharge of the San Lorenzo River, measured at the stream gage in Felton, and expressed in acre-feet[1].

Water Year 2014 is so far shaping up to be a **Critically Dry** year. Cumulative discharge for the water year to date measures only **3,089** acre-feet , less than one-tenth of the 33,000 acre-foot long-term average discharge for this time of year. Annual discharge from the San Lorenzo River must reach a threshold of **29,000** acre-feet for the year to be reclassified as **Dry** and **49,000** acre-feet to be upgraded to **Normal**.

Figure 4 shows the cumulative discharge from October 1, 2013 through January 24, 2014, along with the long term average, and two prior years for comparison. It illustrates how local runoff patterns can differ from year to year. In water year 2012, the bulk of seasonal runoff occurred early in late November and December, while in water year 2011, runoff did not develop until

[1] Discharge refers to the accumulated volume of runoff. One acre-foot of water is equal to 325,851 gallons. 3.07 acre-feet equals one million gallons.

Annual discharge of the San Lorenzo River is regarded as the best individual benchmark of the City's water supply condition for two reasons. First, the river is the city's single largest source of drinking water, providing about half the normal annual supply. Second, about three quarters of all the water used by city water customers is obtained from a flowing source of supply. In general, the higher the volume discharged from the San Lorenzo River means that:

- the local watersheds in the Santa Cruz mountains are more saturated;
- the stream sources will flow at higher levels later into the dry season; and
- there is more water available from all surface water sources, including the reservoir, to meet system demands over the course of the year.

The converse is also generally true; the lower the volume discharged by the San Lorenzo River means less water is available from all surface sources to meet system demands.

much later in the season. How this year will ultimately develop cannot be predicted. What is known is that it typically takes about 12 inches of rain in the watershed before soils become saturated and significant runoff develops. The two inches of rain that fell in the watershed earlier in the year have long since been lost to evaporation, so the preconditions for runoff to occur this year are basically the same as if there had been no rainfall at all. Each additional day without rain makes it that much harder to catch up.

Figure 5 shows the tiny amount of discharge measured this season compared to the historical record going back to 1921. While a not a complete year, it is another visualization of how unprecedented and scarce the water supply could be if conditions do not improve in the second half of the wet season.

Initial Estimate of Water Supply Availability

At this time, the water supply outlook for 2014 is dire. Three months have gone by with virtually no rain. Unless there is a dramatic change in weather in the second half of the season, the City potentially faces the very real threat of a devastating, critical water shortage emergency that is unprecedented in the City's history.

Experience tells that winter weather can change suddenly, and with a few major storms, the outlook can improve quickly. There have been years when winter got off to a late start, but came on strong later in the season. But the opposite has also occurred when the second half of the winter season was almost completely dry, like last year.

The situation underscores how vulnerable the City is to water shortage in extended and or critically dry years when available supply runs low. Unfortunately, there is very little that the City can to in the short run to increase its supply. The Water Department is in the process of preparing a petition, in coordination with state regulatory agencies, to potentially cut instream fish releases temporarily below Loch Lomond Reservoir, and to reduce the amount of water the City has been bypassing at its diversion facilities. Water Production staff is looking at the possibility of changing its standard for treating turbid water to help preserve storage. These measures would all help but only to a small degree. Ultimately, the only option in lieu of a supplemental water supply during times of shortage is to put in place measures to curtail water use.

One key decision concerning supply that will need to be made, assuming conditions remain dry, will be how much reservoir water should be made available for use in 2014 and how much should be banked as a safeguard against the possibility of another dry year. The considerations and guidance to help inform that decision are contained in Chapter 2 of the City's Water Shortage Contingency Plan.

The Stage 1 Water Shortage Alert adopted in May 2013 and extended last October still remains in force. Normally, any recommendation to change the level of shortage would be brought forward to City Council in the April timeframe. Doing so beforehand would be premature, for two reasons. One, there are too many uncertainties trying to project available supplies for the season ahead any earlier than March. Two, the measures to curtail water use are geared around

reducing peak season demands. Nevertheless, given the extraordinary circumstances, and to honor the Governor's emergency proclamation, staff will be recommending that City Council in the meantime adopt a resolution that echoes the Governor's call for a voluntary 20 percent reduction in water use by all City water customers.

The Water Department will continue to monitor water supply conditions and reevaluate the water supply outlook at the end of February, and again in late March. At that time, we should have enough information on which to make a monthly projection of the City's water supply availability and evaluate the adequacy of this supply to meet expected water demands within the City's water service area for the rest of 2014.

At the same time, staff is working hard on a variety of related communications and internal operating actions, which include the following:

- Launching a web page dedicated to ongoing drought information,
- Implementing a major advertising campaign,
- Creating signage for key gateway locations throughout the City service, and
- Making modifications to the City's utility billing system, billing frequency, and billing format in order to implement water rationing, should it be needed in 2014.

Finally it is worth mentioning that the City of Santa Cruz has a Local Hazard Mitigation Plan, updated in 2013, that has passed its initial review by the California Office of Emergency Services. The LHMP Update is currently under final review by FEMA. Once the plan is approved by FEMA and adopted by the City Council, the City becomes eligible to compete for funds through FEMA's Pre-Disaster Mitigation (PDM) Grant Program. These funds are awarded annually on a competitive basis for hazard mitigation planning as well as for the implementation of mitigation projects prior to a disaster event.

Attachments:

Figure 1. Monthly Rainfall, City of Santa Cruz
Figure 2. Mean Monthly Stream Flow, San Lorenzo River at Big Trees
Figure 3. Mean Monthly Stream Flow, WY 2014 Compared to WYs 1976 and 1977
Figure 4. Cumulative Runoff and Water Year Classification
Figure 5. Water Year Classification System
Figure 6. U.S. Drought Monitor, California

Figure 1. Monthly Rainfall, City of Santa Cruz
(inches)

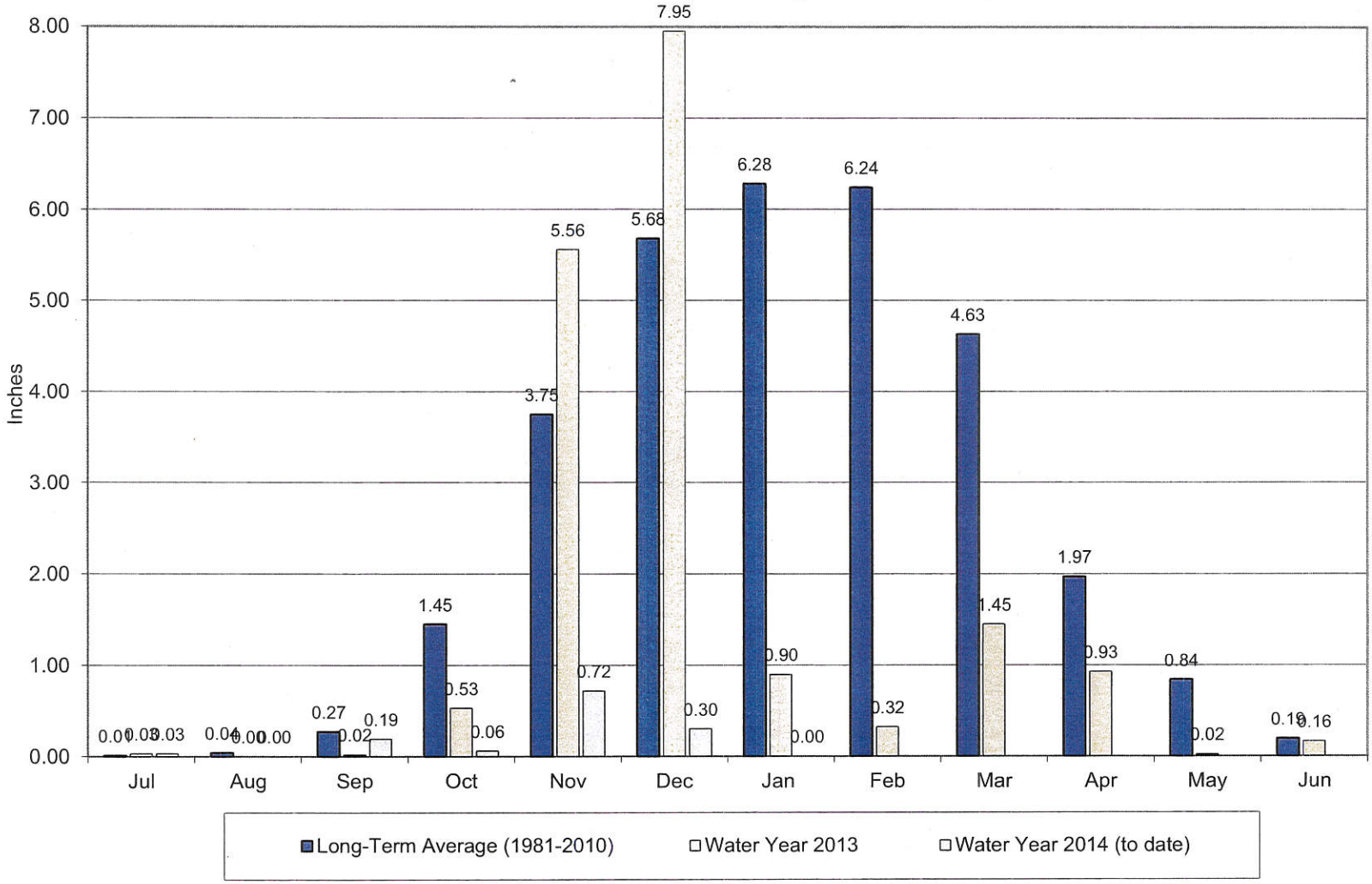


Figure 2. Mean Monthly Streamflow, San Lorenzo River at Big Trees, (cubic feet per second)

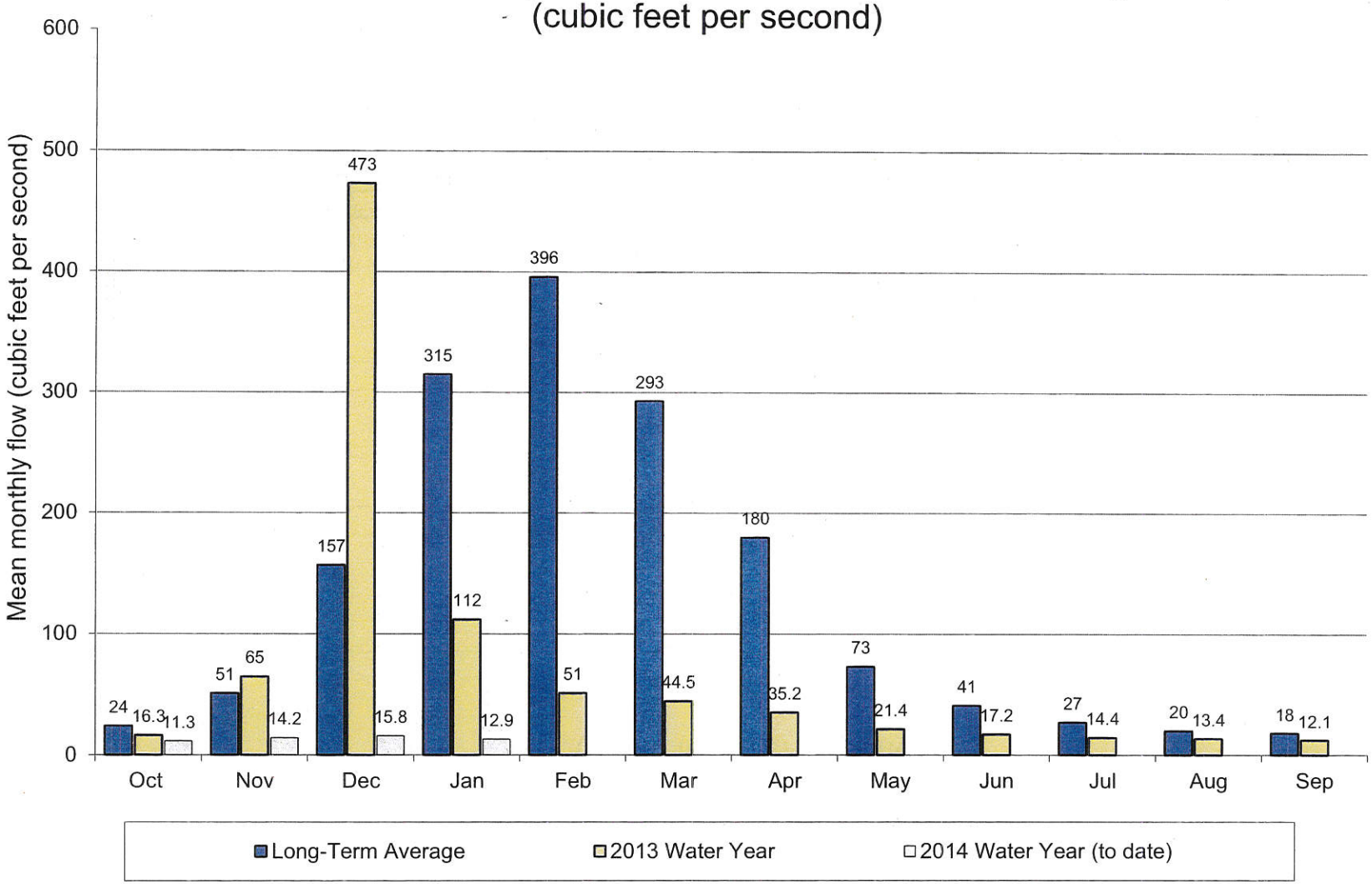


Figure 3. Mean Monthly Streamflow,
WY 2014 Compared to WYs 1976 and 1977
(cubic feet per second)

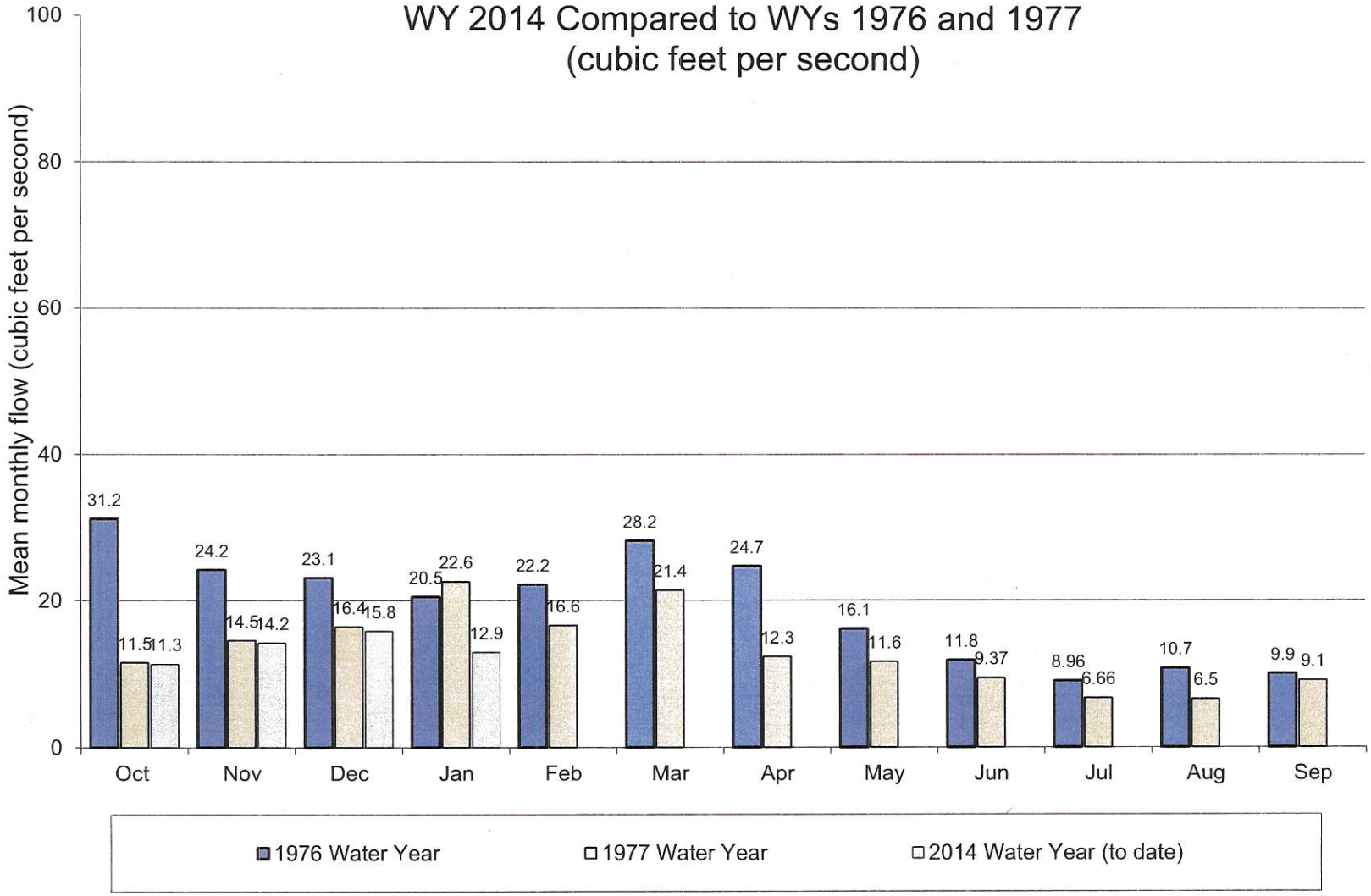


Figure 4. Cumulative Runoff and Water Year Classification, 1/24/14 (acre-feet)

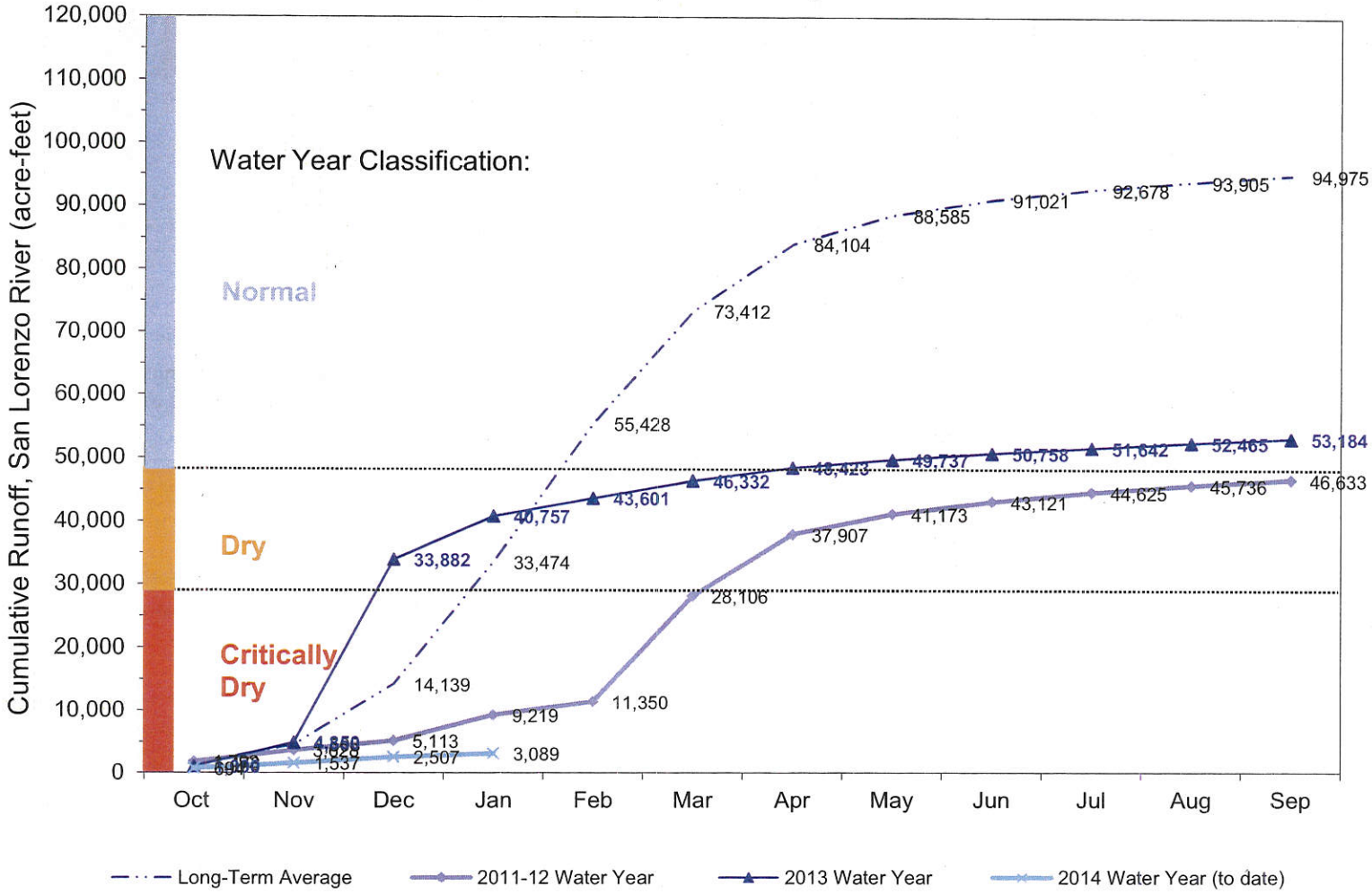
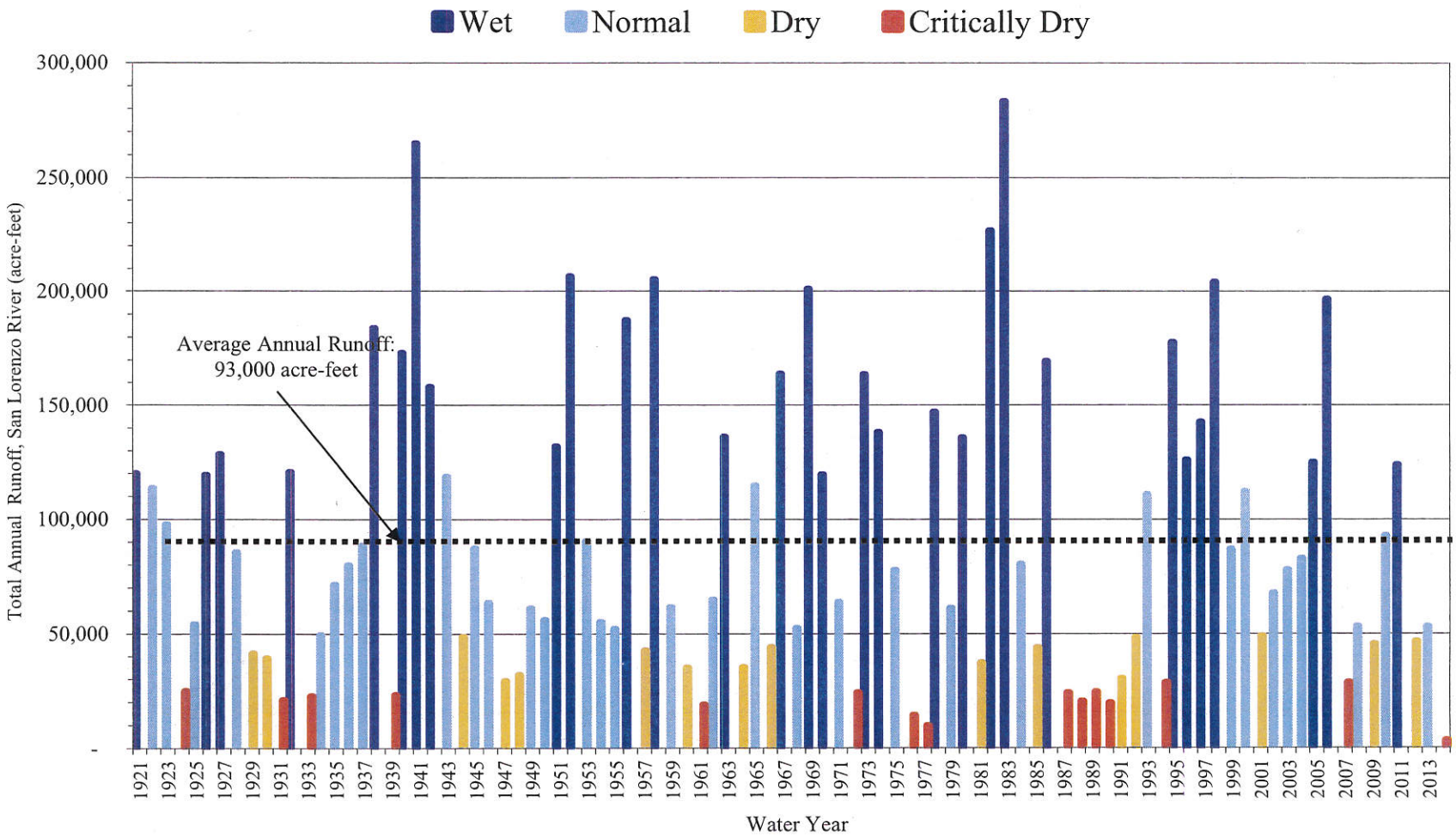
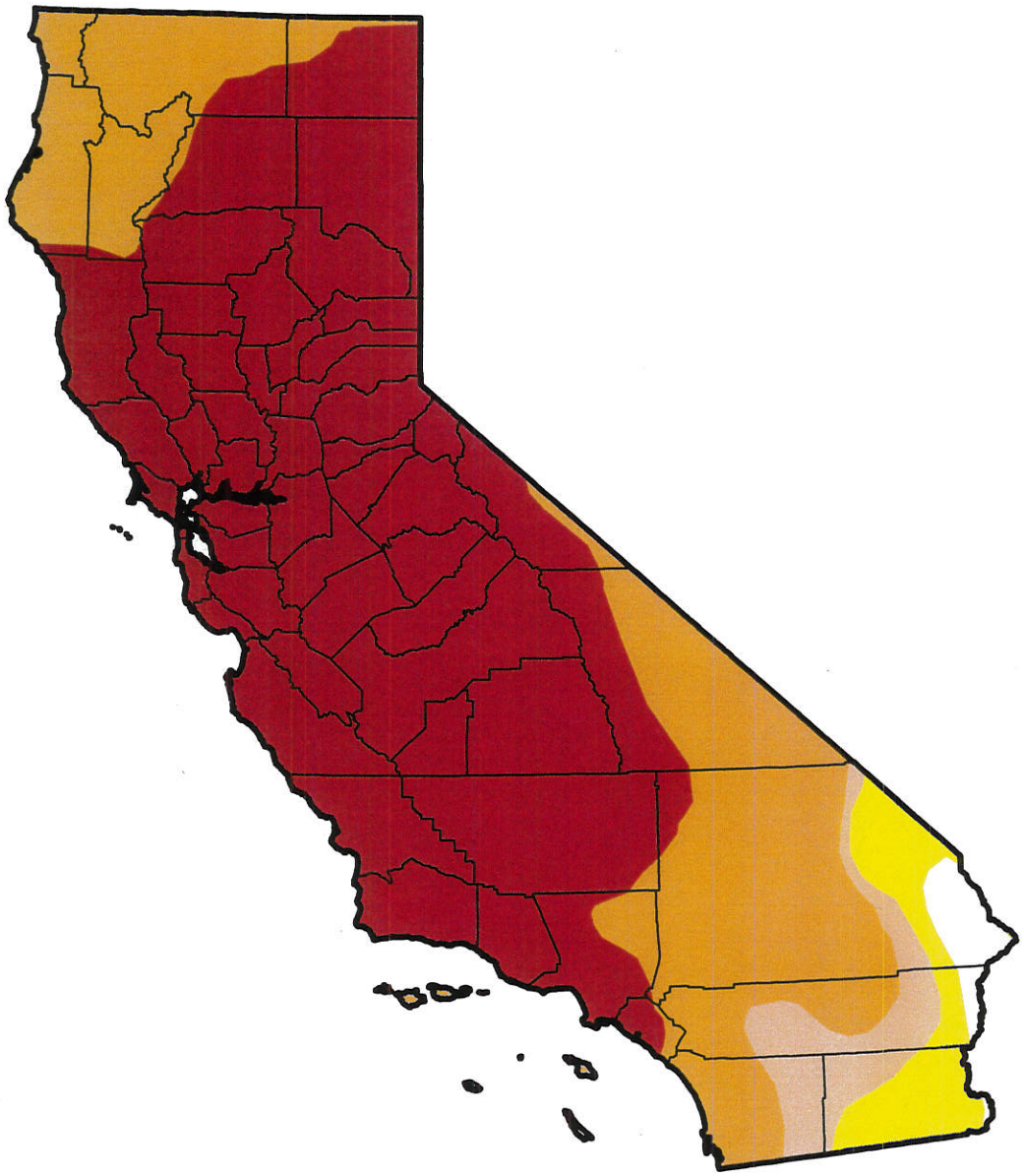


Figure 5. Water Year Classification System



U.S. Drought Monitor
California



January 21, 2014
(Released Thursday, Jan. 23, 2014)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	1.43	98.57	94.18	89.91	62.71	0.00
Last Week *1/14/2014*	1.43	98.57	94.18	89.91	62.71	0.00
3 Months Ago *10/22/2013*	2.66	97.34	95.98	84.12	11.36	0.00
Start of Calendar Year *12/31/2013*	2.61	97.39	94.25	87.53	27.59	0.00
Start of Water Year	-	-	-	-	-	-
One Year Ago *1/22/2013*	34.20	65.80	53.58	21.57	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Richard Tinker
CPC/NOAA/NWS/NCEP

http://droughtmonitor.unl.edu/

Exhibit 5
Water Rights of Record Downstream from City of Santa Cruz
License 9847 (Application 17913)
(As of 1/23/2014)

Right No.	Permit/Lic.	Type	Status	Name	Face Value	Season	Source	Purpose
S009200	-	Statement	Claimed	Michael Finley	*630 Gallons/Annum	May - Oct	Newell Creek	Irrigation
S009194	-	Statement	Inactive	J H Morrison	Not Stated	Not Stated	Newell Creek	Not Stated
S009248	-	Statement	Inactive	Marilyn A. Gray	131,040 Gallons/Annum	Jan 1 - Dec 31	Newell Creek	Irrigation
S009249	-	Statement	Inactive	Grace E. Reichert	8.09 AF/Annum	Apr - Sep	Newell Creek	Small Garden
S009255	-	Statement	Inactive	Emily Richey	Not Stated	Not Stated	Newell Creek	Not Stated
S009680	-	Statement	Claimed	Edward R. Hill	Not Stated	Not Stated	Newell Creek	Not Stated
S015526	-	Statement	Inactive	Paradise Park Masonic Club	2.6 AF/Annum	Not Stated	San Lorenzo River	Fire and Recreation
A004017	L001553	Appropriation	Licensed	City of Santa Cruz	4488.6 AF/Annum	Jan 1 - Dec 31	San Lorenzo River	Municipal and Domestic
A005215	L007200	Appropriation	Licensed	City of Santa Cruz	4343.8 AF/Annum	Jan 1 - Dec 31	San Lorenzo River	Municipal and Domestic
A017913	L009847	Appropriation	Licensed	City of Santa Cruz	5600 AF/Annum	Sep 1 - Jul 1	Newell Creek	Muni, Dom, Indust, Rec & Fire
A022318	P016123	Appropriation	Permitted	City of Santa Cruz	3000 AF/Annum	Sep 1 - Jun 1	San Lorenzo River	Municipal
A023710	P016601	Appropriation	Permitted	City of Santa Cruz	3000 AF/Annum	Oct 1 - Jun 1	San Lorenzo River	Municipal

* Based on average amounts filed in annual reporting with SWRCB