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Water Shortage Emergency Conditions Manual

S&T Mutual Water Company

Public Water System Number: 4000523

a. Subject

This document describes and defines the conditions that define the levels of water shortage emergency and the resulting austerity measures of the S&T Mutual Water Company Water Shortage Contingency Plan.

b. Revision Control

Description and Status of Revision	Revision by	Rev	Date
Early draft form	Cote	1	18Apr2021
Early draft after first edit	Cote	1.1	19Apr2021
Corrected the BMC computer model static assumption for continuous rainfall.	Cote	A	28May2021

3. Contents

d. How to use this document

The references in this document appear as web links in the form, [Ref: Link] where "Link" is a clickable hyperlink that takes the user to a reference source on the internet. Attempts have been made to describe these links sufficiently in the text that a reader of a hardcopy of this document might be able to find the web reference using an internet search engine. However, the best and most efficient way to use this document is in an electronic form on a computer that has web access.

The text and references in this document should be checked periodically to ensure that the legal and system operating descriptions herein continue to be part of a true and correct basis for defining the components of the water shortage emergency declarations available to the S&T Board of Directors that are located in a separate Water Shortage Level Matrix declaration document. These two closely related documents are presented separately so that the Water Shortage Level Declaration document can remain a small and brief statement which communicates the current shortage level condition with associated mitigating factors.

This document and its associated Water Shortage Level Declaration document are revision-controlled documents which may each exist correctly exist with their own individual revision status as dictated by Board approved revisions to either document.

e. Purpose of this document

The body of this document is intended to provide supporting references for the S&T Mutual Water Company (S&T) water shortage emergency plan and the emergency declaration matrix. The separate Emergency Declaration Matrix describes levels of water shortage emergencies along with the current level of water shortage and mitigating operating parameters which have all been adopted by the S&T Board of Directors.

f. Water company responsibilities for managing and protecting water supplies

According to California State law, all California water companies[1] are required to adopt regulations that define water shortage emergency conditions and associated water use restrictions within an affected service area [Ref: WAT, §350 – 359]. California law requires

[1] This California law pertains to all California community water suppliers whether publicly or privately owned, including Mutual Water Companies and water companies that are regulated by the CA Public Utilities Commission [Ref: WAT §350, 357].

water companies to define, adopt and declare water shortage emergencies according these rules.

1) Water shortage emergencies are situations which occur when ordinary demands or requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to an extent that threatens the availability of water[2] sufficient for human consumption, sanitation, and fire protection [Ref: WAT §350].

2) With exceptions for immediate emergency events such as those caused by wildfire, or the failure of critical infrastructure such as water storage tanks or pipelines, the declaration of a water emergency (or change in emergency status) must be made at a public hearing at which consumers shall have an opportunity to protest against the declaration [Ref: WAT §351]. Notice of the time and place of such hearing shall be published one time, at least 7 days prior to the hearing date in a local newspaper [Ref 1: WAT §352], [Ref 1: GOV §6061].

g. Description of the Los Osos Basin Aquifers

All potable water used for human consumption in Los Osos comes from ground water sources in the Los Osos aquifer systems. The California Department of Water Resources considers the Los Osos Water Basin to be in a condition of critical overdraft[3]. The Los Osos Water Basin is considered a "low priority basin" by the CA Department of Water Resources only because the annual production from the basin is less than 9,500 acre ft/year [Ref: SGMA Basin Prioritization Dashboard]. Current basin production was estimated by the Los Osos Water Basin Management Committee (BMC) in 2020 to be 2,010-acre ft/year (with over half of that production to consist of estimates of unmetered domestic and agricultural production). Although the BMC measures and reports on issues of basin health, those reports are not sufficient for evaluating the smaller service areas of individual water company's. This is why it is important for the S&T Board to evaluate and mitigate issues and risks many of which are unique to the S&T water supply and infrastructure.

The water available for production from the Los Osos Basin is recharged by rainwater. There is no other source of water or basin recharge for water producers over the Los Osos Basin other than rainwater and a small amount of water entering from Los Osos Creek.

[2] Since California water companies are not allowed to distribute water which violates the potability standards of state and federal law, we can assume "water" in this case to mean "potable water".

[3] For current status of the water basins declared by the CA DWR to be in critical overdraft [Ref: Critically Overdrafted Basins Map], located at: https://water.ca.gov/Programs/Groundwater-Management/Bulletin-118/Critically-Overdrafted-Basins.

h. Description of the S&T water sources

S&T Mutual Water Company (S&T) has 1 active and 3 standby ground water wells. The status of these wells is as follows:

Well #1 (UA 4): This upper aquifer well currently has nitrate concentrations greater than the maximum contaminant. This well is regularly exercised and tested for potability. Water produced by this well cannot be distributed without advanced treatment, which does not exist at this time. This well is a valuable asset of S&T because it could be used in the future with an advanced treatment system.

Well #3 (CA4000523-003): The well head, consisting of discharge flow meter and check valve have been removed. Water produced by this well has not been tested for several years. This well is a valuable asset of S&T because it could be re-assembled and used in the future with an advanced treatment system.

Well #4 (LA5): this lower aquifer well is currently producing water with a nitrate concentration of 11 mg/L (ppm). Water from this well cannot presently be used in the distribution system without blending or treatment to reduce the nitrate concentration. This well, because of its proximity to the ocean is threatened by sea water intrusion.

Well #5 (LA8): This well is located further west than any other purveyor well and is deemed to be very close to the sea water intrusion front. The water produced by this well currently has a nitrate concentration of 7-8 ppm. There is a trend in the produced water for rising nitrate over time. The nitrate pollution in this well is coming from permitted high density septic fields in the proximity of this well.

2-inch intertie pipe with Golden State water: This 2-inch intertie was installed in the 1970s by an agreement with California Cities Water Company (this company was later purchased by Golden State Water Co.). Negotiations between S&T and Golden State have been underway for the past year in an effort to determine an operating agreement for the use of this intertie.

In summary, S&T currently has one source of potable water, Well #5. A single component failure is all that is necessary to end production from this well. S&T is embarked on a plan to raise capital for the addition of new intertie and/or advanced treatment systems for creating redundancy of sources.

i. Description and quantification of S&T water source risks

a. Supply reliability

Water supply issues can affect the ability of the water company to provide a reliable water service. Some types of supply issues can be mitigated temporarily with reductions in customer demand, and reduced production. Long term mitigation of water supply problems require capital projects for the creation of redundancies[4] (independent, installed, backup systems).

b. Climate related risks (rainfall)

The Los Osos Basin Management Committee (BMC) uses a static computer model of the water basins to track past trends and predict future trends related to the sustainability of water sources in the Los Osos Water Basin systems. The BMC bases basin sustainability[5] metrics on an assumption that 17.5 inches of water arrives over the basin during each rainfall year [Ref: Spencer Harris, CHG, conversation, 28May2021]. Rainfall figures used for this purpose are collected at the San Luis Obispo Public Works Station #727 located at the old Los Osos Landfill [Ref: Station 727 data].

c. Water quality issues (Nitrate pollution)

The S&T service area and water sources are in areas where the upper portions of the aquifer were polluted by high density septic systems. The upper aquifer wells operated by S&T access source water that have nitrate concentrations that exceed the maximum contaminant limit and that water cannot be distributed to customers without expensive advanced treatment systems. The lower aquifer wells operated by S&T are being polluted by nitrate that is leaking down through the regional aquitard into the S&T source water in the lower aquifer.

S&T well #5, the only remaining viable water source available to S&T at this time, has a rising trend in nitrate that will eventually reach the MCL, rendering that water non-potable without advanced treatment.

[4] A redundancy is a parallel piece of infrastructure which duplicates the function of another piece of existing infrastructure. These two functional components are redundant when they are arranged in a manner which allows them to be used at the same time or individually removed from the system for offline maintenance without disturbing the system operation as a whole.

[5] The Los Osos Water Basin systems are complicated. Some areas of the water basin have unique issues not apparent in other areas of the basin.

d. Water quality issues (Sea water intrusion)

Sea water intrusion affects a ground water well as fresh water is depleted and sea water flows in to take its place in the aquifer. Sea water intrusion at a specific well is quantified by the amount of chloride concentration in the produced water.

e. Mitigating measures for reducing demand during water supply shortages

During times of water shortages, it is important for the water company to implement mitigating measures for the purpose of reducing water production demand. S&T has installed an advanced metering data analytics (AMA) system that uses LTEm cellular endpoints on each point-of-sale water meter. This system records the real time water use for each metered service in 15-minute increments and uploads this data to a web-based analysis and reporting system. The company uses this data as a conservation tool for stopping water leaks and wasteful practices within days of their occurrences.

a. Conservation measures

S&T has determined, through the use of the AMA system that the majority of customers are already very conservative with their water use. Most water savings through conservation comes from the continuing use of the AMA system to help customers stop water leaks and curtail wasteful practices.

b. Will serve processes

The county planning department requires applicants for building permits for projects which affect utility services to solicit each utility company to provide a will serve letter or service continuation letter. This process can be used during higher stages of water shortage emergencies to curtail the demand for new water production.

c. References:

Ref #		
A	Water Shortage Contingency Plan Matrix	
	Web Link	{** insert web link to company website location when that location exists **}
B	California Water Code, Section 350 - 359	
	Web Link	*https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=WAT&division=1.&title=&part=&chapter=3.&article=*
B	Water Shortage Contingency Plan toolbox, with example plans from California Water Companies (California Water Boards)	
	Web Link	https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/drought/sample_drought_contin_plan.docx
C	Water shortage contingency plan toolbox (California Water Efficiency Partnership)	
	Web Link	http://toolbox.calwep.org/wiki/Model_Water_Shortage_Contingency_Plans#:~:text=Water%20shortage%20contingency%20plans%20(WSCP,shortages%20in%20a%20timely%20manner.