



**NAPA COUNTY GRAND JURY
2018-2019**

**FINAL REPORT
June 14, 2019**

**Napa County Water Quality:
It's a Matter of Taste**

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Published June 14, 2019

SUMMARY

Water is one of the scarcest and most valuable resources in Napa County, as it is anywhere else. Even with the recent rains that have left our reservoirs overflowing, water, and the health of our reservoirs, is something that City and County officials spend a significant amount of time worrying about. Local officials are currently addressing such topics as the amount of water Napa County receives from the State of California and how to protect our valuable watershed.

While those legislative and administrative efforts are underway, the 2018-2019 Napa County Civil Grand Jury elected to investigate the quality of the drinking water that is provided to County residents. Based on a water quality complaint submitted by a Napa City resident, the Jury decided to investigate the water treatment processes and water quality across Napa County and its five municipalities: the cities of American Canyon, Napa, St. Helena, Calistoga and the town of Yountville.

After an exhaustive review of the County's water treatment plants and State-mandated water quality reports, the Jury finds that water from all the Napa municipalities is well within State and Federally-mandated standards and is "safe to drink." While there have been three non-conforming water quality test results in several cities over the past two years, these issues did not represent immediate health concerns to the public, were quickly addressed, and water quality and test results quickly returned to compliance levels.

Safety notwithstanding, the Jury finds that County water supplies have Taste and Odor (T&O) and color issues. These T&O and color issues generate a large number of consumer complaints, and all five municipalities lack comprehensive procedures to process these complaints. Local municipal water officials at all levels acknowledge the validity of these "subjective" complaints; but the officials instead focus on the more "objective and quantifiable" State and Federal drinking water standards and reports. Several of the local water treatment plants have installed expensive processes to help mitigate T&O issues, while other plants have not. Expensive plant upgrades are also being considered that could mitigate most T&O and color issues. While more might be done to make the water consistently taste better, such improvements come at significant cost. County residents, especially up-valley, already pay high rates for safe drinking water and wastewater.

The Jury recommends that the County municipalities place a higher priority on consumer complaints about T&O and color issues. These recommendations include creating more uniform complaint procedures, as well as public communications protocols to inform consumers about all aspects of water quality. Finally, the Jury recommends that the current Napa County LAFCO Municipal Service Review of countywide water and wastewater now underway be carefully reviewed and responded to by each municipality's Public Works Department and City Council upon its completion in early 2020.

GLOSSARY

CalVet: California Department of Veterans Affairs

CIP: Capital Improvement Program

DWQR: Drinking Water Quality Report: The State mandated report on drinking water quality that each municipality provides to its residents annually.

DPW: Department of Public Works

GPD: Gallons Per Day

HAA5: Haloacetic acid

Jury: 2018-2019 Napa County Grand Jury

LAFCO: Local Area Formation Commission of Napa County <https://www.napa.lafco.ca.gov/>

MSR: Municipal Service Review- A countywide municipal services review—a State-required comprehensive study of services within a designated geographic area.

https://www.napa.lafco.ca.gov/s_municipal_reviews.aspx

<https://sites.google.com/pcateam.com/napamsr/news-and-updates>

<https://sites.google.com/pcateam.com/napamsr/home>

NBA: North Bay Aqueduct <http://www.scwa2.com/home/showdocument?id=918>

SCADA: Supervisory Control and Data Acquisition <https://en.wikipedia.org/wiki/SCADA>

SWRCB: State Water Resources Control Board <https://www.waterboards.ca.gov/>

T&O: Taste and Odor <https://www.doh.wa.gov/portals/1/Documents/pubs/331-286.pdf>

TTHM: Total trihalomethane

USEPA: United States Environmental Protection Agency <https://www.epa.gov>

WTP: Water Treatment Plant

METHODOLOGY

In conducting its investigation, the Jury completed the following:

- **Site Tours:**

The Jury conducted investigative tours at four of the County's nine water treatment facilities including the American Canyon water treatment plant, the City of Napa's Jamieson and Hennessey water treatment plants, and the Calistoga Kimball water treatment facility.

- **Interviews:**

The Jury conducted 17 interviews (including the interviews in Site Tours) with Water Department management and senior Public Works and Water Utility officials of Napa County and in the cities of Napa, American Canyon, St. Helena, Calistoga, the Town of Yountville, and the California Department of Veteran's Affairs Rector water treatment plant (WTP).

- **Research:**

- The Jury researched water quality standards established by the United States Environmental Protection Agency (USEPA) and the California State Water Resources Control Board (SWRCB).
- The Jury reviewed 2017 and 2018 Nextdoor.com water quality social media posts from the cities of Napa, St. Helena and Calistoga, as well as local news articles on water quality issues from the Napa Register, St. Helena Star and the Calistoga Tribune.
- The Jury requested and reviewed extensive water quality test reports from 2016-2018 from each municipality generated for the SWRCB, consumer complaint logs, water treatment plant operational procedures and operating descriptions, and other reports from each municipality's Public Works or Water Utility.

BACKGROUND

The Jury opened its investigation following the receipt of a formal complaint regarding drinking water T&O issues experienced by a Napa City resident. Upon further inquiry, including the review of news media and social media posts in neighboring municipalities, the Jury decided to investigate more broadly and to report on drinking water quality across the five Napa County municipalities.

Overall, the cities of American Canyon, Napa, St. Helena, Calistoga, and the town of Yountville (via the California Department of Veterans Affairs Rector water treatment plant) deliver over 16 million gallons of water a day - almost six trillion gallons of water a year - to 113,500 of Napa

Valley’s 140,000 residents and businesses that access treated drinking water. Residents in unincorporated areas in Napa County generally source their water from Napa County regulated wells. Most people who drink this water have little understanding of how the water gets to their tap, the source of the water, or how the water is processed, treated, and tested so that it is “safe to drink.”

Each of the municipalities, excluding the Town of Yountville, processes and delivers its own drinking water to its customers and operates its own water treatment facility. The County’s nine treatment facilities vary greatly in terms of water capacity and technical complexity, but all are designed to safely deliver drinking water. All but one plant uses the same basic filtration techniques of coagulation, flocculation, sedimentation, and filtration, followed by chlorine disinfection addition and pH balancing.¹

Napa County water treatment plants range from T2-T5 rated facilities, with T5 being the most complex.² The T-rating is dependent on the physical size, water processing capacity, and complexity of the facility. Plant operators are themselves T-rated and certified.³ All municipal operating plants deliver water that meets State and Federal standards and is safe to drink.

In the City of Napa and the County’s other municipalities, water treatment utilities are operated as self-funding enterprises.⁴ Water services are paid for by users through direct or tiered water and wastewater rates to recapture operating expenses and fund future capital improvement programs (CIP). It is unusual that each municipality within Napa County manages its own water supply and charges rates to a relatively small population base. Comparable population-sized California counties such as Marin County have one water authority that manages all water treatment, delivery, and wastewater across the County. Napa County’s separate and autonomous water utilities are a legacy of a rural history of city-by-city self-funding and self-management.

Napa County’s Water Treatment Operations by Municipality

The 26,550 residents and 7,000 households, plus wineries and farms that are in unincorporated areas of Napa County, are outside of the municipal water delivery systems and are not covered in this report. They source drinking water from private wells, which are regulated by the County. Napa County itself maintains two very small treatment facilities, with water sourced from Lake Berryessa, that deliver water to a total of 560 households in Berryessa Highlands and Berryessa Estates. These are not covered in the report. Additionally, there are unincorporated County residential neighborhoods, such as Silverado serviced by the City of Napa, or Tucker Estates serviced by St. Helena. They are included in the delivery statistics reported in the table below.

Drinking water generated by or delivered to the municipalities is summarized in the chart below, based upon their submissions to the SWRCB.

¹ Appendix #1 Standard water treatment process

² Appendix #3 facility rating

³ Appendix #4 individual rating

⁴ Appendix #15, Section 1.2

Municipal Sources of Treated Water Delivered in Napa County (Gallons per Day)

Municipality	Population / Water Connections	Water Treatment Capacity	Water average distribution	Comments
City of Napa	79,775 population 25,095 water connections	43,000,000	12,100,000 Peak distribution 20,000,000 + gpd.	Source: Jamieson, Hennessey, and Milliken treatment plants. Napa serves a population of 88,000 including water for residents of Calistoga and St. Helena. Napa on average supplies 325,000 gpd to outside cities. Peak delivery is much higher.
American Canyon	20,250 population 5,400 water connections	5,000,000 can be expanded by 3,000,000 gpd	2,700,000	Accesses some additional water from Vallejo for higher elevation homes. Not included.
Yountville / Veterans Home of California, Yountville	2,925 Population 833 Yountville connections	1,000,000	420,000 Yountville 325,000 Vet. Home 100,000 Other customers	Source of water is the Rector Reservoir operated by the California Department of Veterans Affairs.
St. Helena	6,200 Population 2,423 water connections	650,000	640,725 includes water from Napa	Includes water from wells and the Louis Stralla WTP. Added distribution is up to a maximum of 500,000 gpd purchased from City of Napa Water Utility. This amount fluctuates over the course of wet and dry months.
Calistoga	5,275 Population 1,483 water connections	335,000	269,000	Added distribution of 387,250 gpd is purchased from the City of Napa Water Utility. This amount will fluctuate over the course of wet and dry months.
Unincorporated Napa County	26,550	Well water	Well water	Approximately 7,000 households, wineries, and farms served by wells. 560 households source water from two small Napa County Berryessa WTP facilities. Not included in total numbers
Napa County Total	140,975 35,234 connections	49,975,000	16,554,725	30% of the County's water capacity is utilized on an average day. Summer months see utilization rise to 50% or more of capacity; distribution increases to over 25 million gallons per day.

Source: 2017 State Department Drinking Water Reports provided by each municipality and compiled by the Grand Jury.

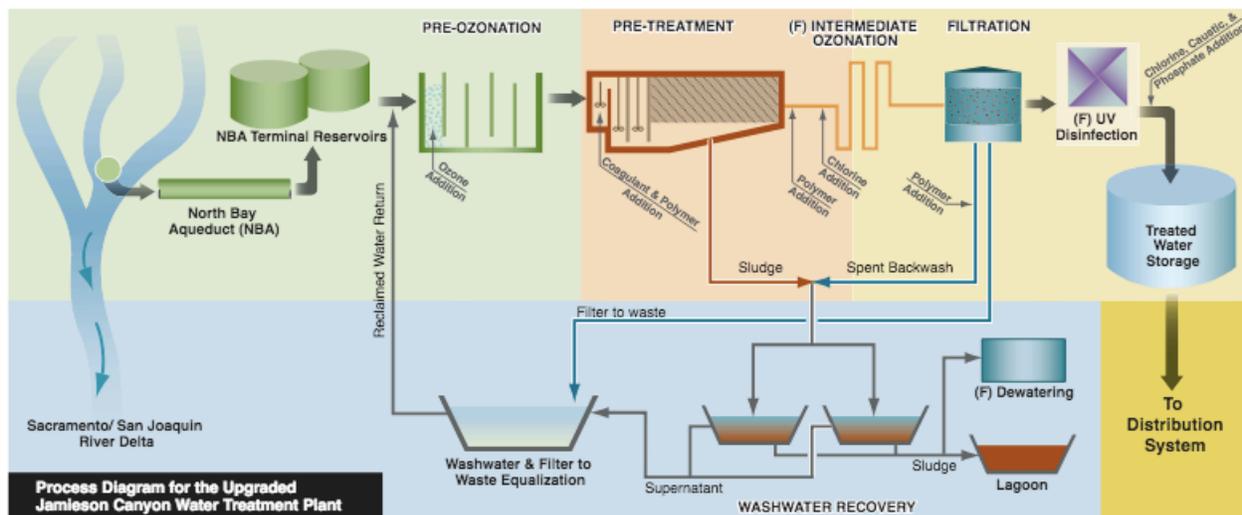
The cities of Napa and American Canyon each purchase water from the California State Water Project managed by the California Department of Water Resources. Sierra water is stored in Lake Oroville and travels through the Sacramento–San Joaquin River Delta. At the Barker Slough Pumping Station, the water begins a 27-mile journey through the North Bay Aqueduct, traveling ultimately to adjacent city holding tanks in Jamieson Canyon at the “end of the line.” Based upon State allocations, fully 50% of the County’s drinking water capacity is paid for and sourced from this North Bay Aqueduct (NBA) water system.

City of American Canyon

American Canyon's water treatment plant consists of two side-by-side processes with a combined capacity of five million gallons per day (GPD). On one side is a conventional treatment process, while the other side features a unique membrane filtration system.⁵ American Canyon's average daily drinking water generation is 2.7 million gallons. The more recently built membrane filtration system was constructed to allow capacity to be expanded by an additional three million GPD, for a total capacity of eight million GPD. American Canyon, like other Napa County municipalities such as the City of Napa, built its treatment capacities based upon forecasts that predicted substantially higher water consumption than have occurred. Water conservation efforts have largely reduced predicted demand. American Canyon's WTP and plant operators are T4 certified by the SWRCB. Treated water is continuously monitored through an automated Supervisory Control and Data Acquisition system (SCADA) as well as tested daily at an on-site lab to ensure State standards are achieved.

City of Napa

The City of Napa, utilizing NBA water, operates the Jamieson Water Treatment Plant with a maximum capacity of 20 million GPD. The Jamieson WTP was upgraded to its current standard in 2012 at a cost of \$38 million. Its design incorporated the most recent technologies available at that time, including a pre- and post-ozone treatment process to remove residual microscopic particulate matter and algae, minimizing T&O and color residue in the water. The Jamieson WTP and operators are T4-T5 certified by the SWRCB. Water is continuously monitored via SCADA and lab tested onsite every two hours to ensure State regulatory compliance.



Jamieson Water Treatment Plant process flow.

⁵ Appendix #2 Membrane water treatment process



Jamieson Water Treatment Plant aerial view.

Approximately 50% of Napa County drinking water is sourced from Napa County lakes and reservoirs.

Napa operates the Hennessey Water Treatment Plant, built in 1981, with the standard treatment design and with a maximum capacity of 20 million GPD. Water is sourced from Lake Hennessey, which is owned by the City of Napa. Lake Hennessey water may contain runoff microbiological contaminants and algae build up, particularly in late summer when algae blooms⁶, requiring special treatment. The algae are not concentrated in any one section of the Lake. They are present throughout the entire body of the Lake at all water levels, making pre-treatment difficult. The Hennessey WTP has a National Pollutant Discharge Elimination System permit to apply aquatic pesticides to the Lake Hennessey water, close to the intake tower, to help control algae intake.

The Hennessey WTP typically treats water at a rate of 10-12 million GPD when in full operation. Operators are T4 and T5 certified. This water is continuously monitored by SCADA and is lab-tested every two hours.

⁶ Appendix #5 Algae bloom definition

Napa also operates the Milliken Water Treatment Plant, the original Napa City owned water source, built in the late 1920's, with a maximum capacity of four million GPD. This plant operates with a simpler filtration system than Hennessey due to higher purity of Milliken Reservoir water. The Milliken WTP was taken off-line in 2018 due to runoff contamination caused by the 2017 Napa wildfires. The plant is expected to be back online in mid-2019. The WTP is T3 rated and the operators are T3 and higher certified. Water is lab tested daily onsite to ensure SWRCB regulations are achieved.

Combined, Napa's Jamieson, Hennessey, and Milliken water treatment plants represent over 80% of Napa County's total water treatment capacity; they deliver 73% of Napa County's drinking water on an average daily basis.

Town of Yountville and Veteran's Home (CalVet)

The Town of Yountville purchases its drinking water from the California Department of Veterans Affairs (CalVet) which operates a small standard design WTP at the Rector Reservoir with T2 up to T4 operators. The plant uses a recently upgraded SCADA system. Maximum capacity of the plant is upwards of one million GPD. Approximately 450,000 GPD are utilized by the Town of Yountville, 325,000 GPD by the Veterans Home of California in Yountville, and 100,000 GPD are delivered to other local customers. The Town also accesses City of Napa water when the Rector plant has scheduled maintenance or when the Rector Reservoir has low water acre feet capacity during droughts.

St. Helena

The City of St. Helena delivers water to its customers via three sources:

- Approximately 615,000 GPD from the Bell Canyon Reservoir, owned by the City of St Helena, processed through the T-4 rated Louis Stralla Water Treatment Plant. Operators are T2 up to T4 rated.
- An average of 400,000 GPD purchased from the City of Napa at a cost of \$1.2 million a year under a long-term contract.
- Approximately 25,000 GPD from the Stonebridge Potable Wells.

Average distribution to drinking water customers from all three sources is approximately one million GPD. The use of Napa water is based upon demand; deliveries are higher during summer months and lower during the winter. All Louis Stralla WTP water is continuously SCADA monitored and lab tested daily. The City of Napa supplied water is tested daily for chlorination levels at a St. Helena receiving site.

Calistoga

Calistoga sources water from the Kimball Reservoir, which is owned by the City of Calistoga, at the T-4 rated Kimball Water Treatment Plant. The plant features the standard operating design with a maximum capacity of 350,000 GPD. Operators are T2 up to T4 rated. The water treatment

process is SCADA monitored and lab tested daily. Average water generation is 269,000 GPD. Calistoga also purchases, on average, 387,000 GPD from the City of Napa Water Utility. Napa water may come from the Jamieson, Hennessey, or Milliken treatment facilities. Water purchases from Napa substantially increase in higher demand summer months.

How is this water treated and tested to make sure that it is safe to drink?

To ensure that drinking water is safe to drink, the USEPA and the SWRCB establish and enforce regulations that limit the number of certain contaminants in water provided by public water systems. The results of all required testing indicate that drinking water meets or exceeds all primary drinking water standards set by the Federal Safe Drinking Water Act, and the USEPA as monitored by the SWRCB.

SWRCB regulation measures include, but are not limited to, inorganic compounds, microscopic coliform bacteria, chlorine levels (both free and total), phosphate, the disinfection byproducts (total trihalomethanes (TTHM) and Haloacetic acids (HAA5))⁷, lead, and copper. Alkalinity, hardness, odor, and color are also measured, with data sent to the SWRCB, but are not generally included in the Drinking Water Quality Report (DWQR) published yearly by each municipality for its citizens. Every Napa County municipality tests water within its distribution system from multiple sites within its boundaries on a recurring, rotating schedule.⁸

Water Quality Tests and Frequency: Source Napa County Public Works Officials

Municipality	DWQR Measures including bacteriological samples	TTHMs/HAA5s Disinfection byproducts	Copper/Lead
Napa	24 sites; 97 total Chlorine sites monthly	8 sites quarterly	30 of 40 sites 3 times a year
American Canyon	15 sites; up to 25 tests per month	4 sites quarterly	30 sites every 3 years
St. Helena	8 sites monthly	2 sites quarterly	20 sites every 3 years
Rector WTP / VA	5 sites monthly	5 sites quarterly	10 sites every 3 years
Yountville	4 sites monthly	4 sites quarterly	10 sites every 3 years
Calistoga	6 sites monthly; 10 sites chlorine/week	2 random sites quarterly	20 sites every 3 years

Data supplied by each municipality and compiled by the Grand Jury

- DWQR tests include bacteriological samples, pH, Cl₂ free and total, turbidity, alkalinity, hardness, odor, and color.
- DWQR tests generally include “Threshold Odor Number” levels which measure the level of Odor in the water, These TON’s are included in SWRCB reporting but generally are not reported in Annual Water Quality Reports presented to the public.⁹
- Disinfection byproducts TTHM and HAA5.
- Detailed SWRBC tests conducted by municipalities are outlined in Appendix #6.

⁷ Appendix #10 Health risk of TTHMs

⁸ Appendix #6 Quantitative Measures and acceptable Ranges Submitted to the SWRCB

⁹ Appendix # 14

DISCUSSION

Over the period 2016-2018, test results for water provided to Napa County municipal water consumers have been well within State and USEPA standards with only a handful of test results outside of SWRCB standards, affecting a small number of residents over a short period of time. These positive measurements do not account for the T&O and color issues that have occurred on a more frequent and predictable basis.

This section will address these results on a city-by-city basis, reporting on how each water district deals with water quality complaints. T&O and color complaints are the most prevalent issues raised, according to interviewed water officials.

T&O issues in drinking water may develop when residual algae as small as “10 parts per trillion” remain in the processed water after its treatment. A senior public works official in Napa County stated: “This may be thought of as the equivalent of 10 drops of algae-affected water in an Olympic-sized swimming pool that can be tasted by individuals with sensitive taste receptors.”

Freshwater algal blooms are the result of an excess of nutrients, particularly some phosphates. The excess of nutrients may originate from fertilizers that are applied to land for agricultural or recreational purposes. They may also originate from household cleaning products containing phosphorus. These nutrients can then enter watersheds through water runoff. Excess carbon and nitrogen have also been suspected as causes. Presence of residual sodium carbonate acts as catalyst for the algae to bloom by providing dissolved carbon dioxide for enhanced photosynthesis in the presence of nutrients.¹⁰

Residual organic compounds from local reservoirs such as Lake Hennessey or from the NBA may also be present in water. This can result in T&O and color aftertaste which, while not dangerous to health, may be off-putting to consumers.

The Napa County water utilities are responsible for providing safe drinking water up to the meter at the household connection. They do not control water between the residents’ intake systems from the meter to the tap. T&O and color complaints can result from standing water at a customer’s own pipe intake system, beyond the city water meter, or by organic leaching within the pipe delivery system. This can often be controlled by simply running the water system for a few seconds before use.¹¹

Most T&O and color complaints derive from algae and residual organic compounds that remain in the treated and delivered water. T&O and color are measured in ongoing reports supplied to the SWRCB but are not included in the DWQR that each water district must publish under State requirements for its residents. The Jury concludes that T&O and color complaints are considered by the water utilities across Napa County as “subjective and qualitative” judgements as opposed to “objective and quantitative” determinations.

¹⁰ Appendix #5 Algae bloom definition

¹¹ Appendix #9 Taste and odor in drinking water

Based upon the social media posts reviewed, the Jury concludes that the reported levels of T&O and color complaints are only a small percentage of actual unreported complaints. This is consistent with complaint report levels across many consumer product categories.

City of Napa

The City of Napa has achieved 100% compliance of regulatory standards for water safety over the past three years. The City is Environmental Laboratory Accreditation Program¹² certified and conducts its own water quality tests. The City of Napa consistently scores in the best ranges for test values on all measured contaminants. For example, on chlorine levels, the State standard is between .02-4.0 parts per million (ppm) and Napa's average is .08 ppm. Notwithstanding these very positive regulatory results, City of Napa water has had persistent and predictable T&O and color issues, particularly in water processed from the Hennessey WTP. T&O prevalence during summer to early fall months is attributed to algae blooms in Lake Hennessey. All City of Napa Water Utilities Department officials interviewed were very aware of the T&O issues. However, some T&O complaints were dismissed as "from persons with sensitive receptors."

To minimize future T&O and color issues, the Hennessey WTP could be upgraded with additional processes similar to the ozone treatment process at Jamieson. The City of Napa is already planning for substantial and expensive Hennessey upgrades beginning in 2022 with costs that will exceed \$10 Million. The City of Napa Utility Division has also sponsored and undertaken a "Watershed Study and Monitoring and Analysis Plan" to be finalized in 2019. This program should predict future watershed runoff issues at Hennessey, Milliken, and other "runoff reservoir" locations via computer modeling. The results of the modeling could help identify future watershed runoff issues jeopardizing all Napa County reservoirs.

The City of Napa submits Complaint Summaries to the State Department of Drinking Water in an annual report. During 2017, the City logged 62 formal T&O and color complaints, with the majority a result of Hennessey's underlying algae issues. Most complaints were logged as "resolved on the phone" with limited noted follow-up. Sample complaints from a City of Napa supplied log are:

- *5.02.2017: "I explained to her that the chlorine and taste & odor was due to Lake Hennessey and explained about the hot weather and the turning over of the Lake. I did tell her that some customers are more sensitive to chlorine, she was still not satisfied and thought I was making it up. Resolved over the phone."*
- *8.14.2017: "Water tastes like pond water. Undrinkable. Suggested to put it in the refrigerator the colder it is the better. Explained when demand goes down and temperatures even out that it will be back to normal and in the mean-time we will continue to make adjustments the best we can. Resolved over the phone."*

¹² Appendix #7 ELAP certification

- *8.15.2017: “Customer complained of terrible taste and odor in water. Husband said was earthy, wife thought it was metal. Explained water meets all regulations and is constantly tested. Hung up happy? Resolved over the phone.”*
- *9.25.2017: “Customer is complaining of strong odor, complains chlorine smell has gotten worse ...she was not happy.”*
- *11.02.2017: “Customer called multiple times about quality of water ... chlorine smell ...we test, and everything is safe ... spoke to customer ... No additional information needed.”*

The City of Napa’s water complaint procedure begins with a call to the Utilities Department Water Division phone number listed on the Napa City website. The complaint is received and logged by office assistants and contact information is recorded. The majority of logged calls indicate “resolved over the phone.” The City sends no written response to the caller. While the City also compiles the DWQR, it does not include any mention of T&O or other qualitative water complaint issues. During interviews the Jury also noted that the head of the City of Napa Utility Department does not regularly review complaint summaries.

The Town of Yountville / Veterans Home State of California

The California Department of Veterans Affairs’ Rector WTP utilizes the independent Alpha Analytical Laboratories service to take water samples at five locations. The Town of Yountville contracts with the independent Caltest Analytical Laboratory to take its water test samples at four locations for water delivered from the Rector WTP. In the past three full years, from 2016-2018, both the Rector WTP and the Town of Yountville have achieved all SWRCB water standards.

However, as this report was being finalized, the Rector WTP and the Town of Yountville experienced significant T&O issues in April and May, 2019. During an initial event in April, water “Threshold Odor Number” (TON) readings registered a score of 40, ten times the normal measured TON¹³ of 4 as a result of filtration issues at the plant. Yountville discontinued water service from Rector, and switched to City of Napa water. The Rector WTP filtration issue reoccurred in early May and the Rector WTP was again put off-line in order to resolve the issue by replacing the “roughing filters.” These filters are large metal inserts in large tanks into which water flows and sediment is removed. Their life can be 20+ years if properly maintained. Replacing them is a significant and expensive underdoing and will take 4-8 weeks for the Rector WTP to complete. Yountville will use City of Napa water until the issue is resolved.

In April, during the initial event, Yountville officials reported the T&O issues to local residents via social media and through the Yountville Sun, as well as posting updates on the Public Works web site. Because chlorine levels remained high, the Town believed that the water was still safe to drink: “This was not a health issue, but it was a quality issue,” said Public Works Director Joe Tagliaboschi in the Yountville Sun. The response by the Rector WTP to the management and

¹³ Appendix #14

residents of the Veterans Home is unknown. The Town continued social media and news media updates in May.

Normally, a customer calls Town Hall or uses a “MyVille App” to send a water quality complaint to the Town of Yountville. Calls are logged but no written response is issued. During the two years prior to the April and May 2019 T&O incidents, neither CalVet Rector nor the Town of Yountville had any T&O or color complaints on record to report.

The City of American Canyon

The City of American Canyon contracts with the independent Caltest Analytical Laboratory to take test samples at 15 locations. Over the past three years, American Canyon had one test sample in 2017 that did not meet State standards. It was taken in a localized area of American Canyon comprised of 466 households. State regulations require all Napa County municipalities to notify affected households about non-conforming test results. American Canyon officials notified the affected customers in writing and on its Department of Public Works (DPW) website. By the following calendar quarter, the City was once again in compliance with the regulatory standard and no further notices were required or issued.

American Canyon had over 100 water color complaints registered in 2017. Water discoloration is caused by elevated organic activity, algae growth and the presence of soluble minerals in the vicinity of a water body. The color issues were caused by high turbidity¹⁴ in water accessed from the NBA during that period. American Canyon DPW publishes a DWQR, which has no mention of T&O or color complaints.

American Canyon has an employee-monitored online complaint response form. Anyone can click on a link to various DPW officials to send an email. While there is an online form to send in a DPW complaint, there is no explanation of “how to file a water quality or other complaint” nor is there any advice as to what might be expected in response from the City. In interviews, the Jury understood that reports submitted to the SWRCB are seen neither by senior Public Works officials nor other City officials. A Quarterly DPW report presented to the American Canyon City Council by senior Public Works officials does not include any reference to any water quality complaints.

The City of St. Helena

The City of St. Helena contracts with independent Alpha Analytics Laboratories to test water samples from eight specified locations and electronically report quarterly to the SWRCB. The City also uses Eurofins Scientific for disinfection byproduct testing, and Caltest Analytical Laboratories for lead testing. Reports are issued electronically to the SWRCB.

According to Q4 2016 and Q1 2017 reports, based on a 12-month running average, the drinking water provided to the Madrone Knoll and Meadowood areas had a running annual average measurement of HAA5s that did not meet SWRCB standards. The levels found were just over

¹⁴ Appendix # 13

the safe water limit, restricted to one test period, and localized. Since water sourced from the City of Napa did not exceed HAA5 levels at that time, the source of the contamination was likely water processed at the Louis Stralla WTP.

As required by California State Law, St. Helena notified its residents of these results in letters sent by the DPW. To mitigate future issues, St. Helena Public Works undertook a series of additional steps:

- added Powder Activated Carbon at the Louis Stralla Treatment Plant at an annual cost of \$100,000. The plant was originally designed to use this material process. It was not used until new DPW management was installed in 2016.
- increased mixing and aeration at the City's three water holding tanks.
- Capital funds were set aside by the St. Helena DPW to replace the obsolete redwood tanks that serve the Madrone Knoll area and Meadowood resort.

The City of St. Helena DPW Water Treatment Division monitors water quality complaints made by phone calls to its employees. These complaints are typically T&O issues from water supplied from Lake Hennessey or water processed via the Bell Canyon reservoir. In 2017 and 2018, the City advised citizens of T&O issues and efforts to resolve them by way of press releases.

Phone numbers and email addresses of department officials are posted on the DPW website. An average of 30-40 complaints per year were recorded in 2017 and 2018. The majority of complaints focused on T&O. St. Helena DPW maintains an ongoing log of complaints. However, there is no specific form for reporting complaints online. St. Helena's personnel followed up personally with many, if not most, customer complaints. A summary of water complaints is not supplied to senior DPW or City management. Complaints are not summarized in the annual DWQR.

The City of Calistoga

Calistoga contracts with the independent Alpha Analytical Laboratory and Caltest Analytical Laboratory for SWRCB reporting.

In Q4 2017, Calistoga exceeded the standards for TTHMs and HAA5s. The local newspaper, the Calistoga Tribune, carried an article that mentioned a "risk of cancer" caused by heavy consumption of these contaminants. Test samples for Q1 2018 were within State standards as were the four-quarter averaging standards. Notifications were issued to customers. Several press releases were issued in 2018 detailing updated steps taken by the Calistoga DPW to mitigate future TTHM and HAA5 problems.

Steps included:

- Installed a new sprinkler system and mixer in the Mt. Washington storage tank.
- DPW implemented a State approved pre-oxidant at the Kimball Water Treatment Plant to improve the removal of organic carbon prior to disinfection.

- Began “drawing down” water levels in the reservoirs to promote greater “turn-over” of the water.
- Resumed a water system flushing program which had been suspended during the drought.

The Calistoga DPW receives water quality complaints by phone calls to a DPW assistant. A summary report is prepared and, if warranted, an action request is issued to a city employee for follow-up. In 2017 a total of 10 complaints were registered and eight concerned T&O and color issues. Complaints were not summarized in the Calistoga DWQR.

Additional issues raised by the Grand Jury:

1. There are 3,734 mobile home sites in Napa County; 99% within the five municipalities.¹⁵ The Jury learned that all Napa County municipalities treat mobile homes, gated communities with a common meter address, and some apartment buildings as a single meter connection. Utility and Water notices are sent only to the account holder on record, usually the management office of the facility, not to individual residents. Therefore, notices of water quality issues and rate issues may bypass these water customers altogether.
2. While all municipalities deliver water that meets State and Federal standards, the water treatment plant capacities, level of technical sophistication of water treatment, amount of water delivery and waste-water management, and capital budgets for system upgrades is commensurate and proportionate with the relative size of each municipality. The City of Napa Utilities Department has a large staff of highly experienced and technically trained managers with 21 T-rated and certified positions. A number of Napa’s Utilities Department employees have advanced master’s level engineering degrees.

The City of Napa’s T4-T5 rated water treatment plants are substantially larger and more sophisticated than the other treatment facilities in the County. American Canyon’s T4-rated water treatment facilities efficiently generate sufficient water demand for city residents, with capacity to spare. The Cities of Calistoga and St. Helena have smaller and less-sophisticated facilities with lower staffing levels and lower T certification levels. They rely on City of Napa Water Utility agreements to provide a significant level of their water deliveries. Yountville benefits from the CalVet Rector plant’s T rating and State CIP funding.

3. The annual cost for drinking water and wastewater paid by Calistoga and St. Helena residents for a single household can be more than double the cost of the City of Napa, American Canyon, or Town of Yountville rates. This amounts to an extra \$1,000-\$1,500 per household per year, or \$10,000-\$15,000 over 10 years. The smaller up-valley cities have fewer water connections and households to amortize the cost of large capital improvements. For example, St. Helena’s current bond debt for past water projects and State-mandated capital projects for future drinking and wastewater projects exceeds \$15,000 per household.

¹⁵ Source: Napa County Assessor’s Office

2018 Drinking Water and Wastewater Rate Comparisons for 1" Pipe Single Family Households: \$/Yr.

**Cities of Napa, American Canyon, Yountville, St. Helena, Calistoga¹⁶
86,000 | 125,000 | 200,000 gallons per annum. 1,000 gallons = 1 Unit**

		City of Napa	American Canyon	St. Helena	Calistoga	Yountville
Base annual Household Water Rate per City	Included in the drinking water annual cost.	\$198	\$76	\$675	\$991	\$626
Household Usage Total 86,000 GPA	Drinking water	\$363 \$4.07/Unit. Average less than 14 Units used per billing period	\$707	\$1,423	\$1,601	\$944
	Wastewater	\$678	\$647	\$1,248	\$942	\$675
86,000 GPA	Household annual cost . \$/yr.	\$1,239	\$1,354	\$2,671	\$2,543	\$1,619
Index		100%	109	215	207	130
Household Usage Total 125,000 GPA	Drinking Water	\$760 \$4.50/Unit A higher rate was used for usage over 14 Units used per billing period	\$1,032	\$1,762	\$1,877	\$1,098
	Wastewater	\$678	\$680	\$1,507	\$942	\$675
125,000 GPA	Household annual cost . \$/yr.	\$1,438	\$1,712	\$3,268	\$2,819	\$1,763
Index		100	119	227	195	122
Household Usage Total 200,000 GPA	Drinking Water	\$1,298 \$5.50/Unit A higher rate was used for 33 Units used per billing period	\$1,665	\$2,416	\$2,409	\$1,365
	Wastewater	\$678	\$680	\$2,004	\$942	\$675
200,000 GPA	Household annual cost . \$/yr.	\$1,976	\$2,345	\$4,420	\$3,351	\$2,040
Index		100	119	224	170	104

¹⁶ Source: Data supplied by or confirmed by each City Public Works Department as requested by the Grand Jury

4. The Jury is aware that the Napa County Local Area Formation Commission (LAFCO) has begun a countywide Municipal Service Review (MSR) of drinking water and wastewater. LAFCO has selected Policy Consulting Associates and Berkson Associates to undertake the MSR at an approximate cost of \$150,000. In part, the MSR will evaluate whether there are opportunities for shared County service resources, facilities, equipment, etc., and may consider the viability of forming a “countywide municipal utility district” or single utility water provider. This could result in better countywide utilization of water capacity and water processing operations. Consolidation could also facilitate a more equitable rate structure and assist with coordination of a countywide watershed policy.

The LAFCO MSR was coincidentally initiated soon after the Jury began investigating County water issues. The Jury was pleased to see that this review would include several issues that were brought up during the Jury’s investigation, including the possibility of sharing water supplies, consolidating water operations, reducing capital improvement demands, and more. The findings could go a long way toward keeping County residents’ water and wastewater rates in check in the future. The Jury will be very interested to learn the results of the MSR and encourages the municipalities involved to give serious consideration to the results of the study.

5. The April 2019 episode at the CalVet Rector WTP revealed that Rector plant management initially did not disclose a severe Taste and Odor problem to Yountville City officials. The plant only decided to flush the system after a sternly worded message was sent by the Yountville Public Works Department to plant management, and the Town stopped taking deliveries of Rector water. Communication between CalVet management and the Town appears to be strained, according to Jury interviews. This may be problematic and should be watched closely by local Yountville city officials.

FINDINGS

The 2018-2019 Napa County Grand Jury finds that:

- F1. Drinking water supplied by all Napa County municipalities meets all USEPA and State Water Resources Control Board standards and is safe to drink.
- F2. Drinking water supplied by each municipality is acknowledged by all Napa County Public Works officials to have, from time-to-time, predictable Taste and Odor (T&O) and color issues which, while not unsafe, the water-consuming public may find objectionable and a cause for concern.
- F3. Communication of water quality testing and T&O and color issues to the public by all Napa County Public Works municipalities is inconsistent and, at times, inadequate.
- F4. Napa County Public Works officials are aware of existing T&O and color issues and a number of municipalities are assessing and testing various treatment options for improvement, including long-term capital improvement projects.

- F5. Public Works officials countywide treat T&O and color issues as less important than Federal and State regulated contaminant standards, thereby minimizing T&O and color concerns in their water treatment standards and reporting.
- F6. All municipalities lack formal written procedures for the handling of water quality complaints.
- F7. There are large disparities in household drinking water and wastewater rates between the municipalities, with smaller up-valley cities in Napa County paying much higher costs for the same amount of residential drinking water and wastewater.
- F8. Residents of mobile home parks, gated communities and apartment buildings do not always receive communication about water quality or taste and odor issues – rather the owner/operator/manager of the site receives required water quality notifications and is not required to pass the notification on to individual residents.

RECOMMENDATIONS

The 2018-2019 Napa Grand Jury recommends that:

- R1. Each Napa County municipality's Department of Public Works explain on its City and/or Department of Public Works website, in water invoices, via social and other local media, what ongoing water quality tests are taken, where and when are they taken, and what is required if results do not meet USEPA and State standards. Each of Napa County's five Department of Public Works should implement these actions no later than June 30, 2020.
- R2. Each Napa County municipality's Department of Public Works advise citizens of known and anticipated T&O and color issues by notices on its Department of Public Works website and within social media and news media. Each of Napa County's five Department of Public Works should implement these actions no later than June 30, 2020.
- R3. Each Napa County municipality's Department of Public Works identify, evaluate, and estimate water treatment process improvements and longer-term capital improvement programs that could mitigate T&O and color issues in their respective water treatment operations. Each of Napa County's Department of Public Works should implement these actions no later than June 30, 2020 for the 2021/2022 budget year.
- R4. Each Napa County municipality's Department of Public Works publish T&O and color quality measures and results as part of their Annual Consumer Confidence Water Quality Report provided to citizens. Each of Napa County's Department of Public Works should implement this action in the 2019 Report published by June 30, 2020.
- R5. Each Napa County municipality's Department of Public Works establish a formal written complaint policy identifying how complaints should be received, processed, tracked, responded to, and reported, including a written complaint resolution notice to be issued

for every complaint. Each of Napa County's Department of Public Works should implement these actions no later than June 30, 2020.

- R6. Each Napa County municipality's Department of Public Works establish a formal written communication policy identifying how to better communicate to and interact with customers in mobile home parks, gated communities, and apartment residents that are beyond the water meter. Each of Napa County's Department of Public Works should implement these actions no later than June 30, 2020.
- R7. The LAFCO Municipal Service Review of drinking water and wastewater countywide resources recommendations are due in February 2020. Each Napa County municipality's senior municipal elected officials should review, evaluate, respond to, and where appropriate, incorporate the LAFCO MSR recommendations into each Napa County municipality's operating and long-range plans. Each of Napa County's senior municipal elected officials should implement these actions by no later than June 30, 2020.

REQUIRED RESPONSES

Pursuant to Penal Code sections 933 and 933.05, the Grand Jury requests responses as follows:

From the following City Councils within 90 days:

- City of Napa (F1-F8 and R1-R7)
- City of American Canyon (F1-F8 and R1-R7)
- City of St. Helena (F1-F8 and R1-R7)
- City of Calistoga (F1-F8 and R1-R7)
- Town of Yountville (F1-F8 and R1-R7)

INVITED RESPONSES

Pursuant to Penal Code sections 933 and 933.05, the Grand Jury invites responses as follows:

From the following County municipal officials within 60 days:

- Utilities Director of the City of Napa, Director of Public Works the City of American Canyon, Director of Public Works the Town of Yountville, Director of Public Works the City of St. Helena, and Director of Public Works the City of Calistoga. (F1-F6 and R1-R6)
- Mayors of the Cities of Napa, American Canyon, St. Helena, Calistoga, and Town of Yountville (F7 and R7)
- Director of the Napa County LAFCO (R7)

APPENDICES

1. Standard water treatment plant process to process drinking water:
https://www.cdc.gov/healthywater/drinking/public/water_treatment.html
2. Membrane Water Treatment Process used in American Canyon:
<https://blog.harnrosystems.com/what-is-membrane-water-treatment-technology-and-why-do-we-specialize-in-it>
<https://blog.harnrosystems.com/topic/membrane-treatment-system>
3. Water Treatment Plants T Classifications (see pages 7-12)
<https://legacy.azdeq.gov/envirion/water/dw/download/opcert.pdf>
4. Water Treatment Operators Certification T1 -T5:
https://www.waterboards.ca.gov/water_issues/programs/operator_certification/cert.html
https://www.waterboards.ca.gov/water_issues/programs/operator_certification/docs/ocr_table.pdf
5. Algae Bloom: https://en.wikipedia.org/wiki/Algal_bloom
6. Quantitative Measures and acceptable Ranges Submitted to the State Water Resources Control Board
https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/CCR.html
(Appendix A: Regulated Contaminants with Primary Drinking Water Standards (Word))
7. Environmental Laboratory Accreditation Program
https://www.waterboards.ca.gov/drinking_water/certlic/labs/
8. EPA Drinking Water and Test Standards: <https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>
<https://www.doh.wa.gov/portals/1/Documents/pubs/331-286.pdf>
9. Taste and Odor in drinking water:
<https://www.mrwa.com/WaterWorksMnl/Chapter%2020%20Taste%20and%20Odor.pdf>
10. Health Risk of the Total Trihalomethanes Found in Drinking Water:
https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display.highlight/abstract/22/report/F <https://www.lenntech.com/processes/disinfection/byproducts/disinfection-byproducts-types.htm#ixzz5WeUQPDCt>

11. City of Napa, American Canyon, Calistoga, St. Helena and Town of Yountville 2017 Annual Water Quality Consumer Reports:
 - <https://www.cityofnapa.org/672/Water-Quality-Report>
 - <https://www.cityofamericancanyon.org/Home/ShowDocument?id=15724>
 - <http://www.ci.calistoga.ca.us/home/showdocument?id=29547>
 - http://www.cityofstheleena.org/sites/default/files/fileattachments/public_works/page/3334/2017_cosh_ccr_cc.pdf
 - <http://www.townofyountville.com/home/showdocument?id=9933>

12. NPDES: National Pollutant Discharge Elimination System – The NPDES permit program addresses water pollution by regulating point sources that discharge pollutants to waters of the United States. <https://www.epa.gov/npdes>

13. Turbidity: <https://en.wikipedia.org/wiki/Turbidity>

14. Threshold Odor Number (TON):
<https://www.epa.gov/dwstandardsregulations/secondary-drinking-water-standards-guidance-nuisance-chemicals>

15. Self-supporting enterprise:
<https://www.cityofnapa.org/DocumentCenter/View/2208/2017-Water-Cost-of-Service-Rate-Study-PDF?bidId=>

Reports issued by the Grand Jury do not identify individuals interviewed. Penal Code section 929 requires that reports of the Grand Jury not contain the name of any person or facts leading to the identity of any person who provides information to the Grand Jury.
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