City of Vallejo
Water Management Plan
2017 Criteria

Date of first draft – (December 31, 2018)
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Date of Final Draft – (February 4, 2020)

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Table of Contents

City of Vallejo
2017 Water Management Planner

Table of Attachments

City of Vallejo
2017 Water Management Plan

Section I: Description of the District

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The City of Vallejo is located approximately 30 miles northeast of San Francisco at the southern end of Solano County. The City's water service area is shown in **Attachment A** and encompasses the city limits, unincorporated "Vallejo proper" (i.e., the neighborhoods of Home Acres, Sandy Beach, and Starr Subdivision), as well as the Vallejo Lakes area (the area in the adjacent unincorporated western part of Solano County and southern Napa County). The service area is approximately 31 square miles of moderately varied terrain comprised of residential and commercial users.

In 1851 General Mariano Vallejo offered 166 acres of land to the newly elected State legislature to establish the state capital. Lack of adequate housing and meeting facilities soon ended Vallejo's term as capital, however the importance of Vallejo's waterfront was soon recognized as an ideal location for commercial and military facilities. In 1854, the United States Navy established the first west coast naval facility on Mare Island. Growth was increased significantly by the arrival of the railroad to Vallejo in the 1860's that lasted into the mid-1880's. A variety of industries and commercial enterprises kept the City growing at a moderate rate with spurts of growth at the onset of World Wars I and II.

Initially the City of Vallejo relied on a combination of groundwater and imported surface water, or water purchased off of water barges, to serve the needs of the growing population. In August of 1868 the Vallejo City Water Company began to build a water system. In 1883 Anthony Chabot began the Vallejo Water Company and constructed Lake Chabot, a watershed reservoir intended to supply the City by gravity feed. In July of 1876 Mare Island was connected to the system.

Frustrated by poor water quality citizens of Vallejo passed a measure for $250,000 for land purchase and construction of a municipal water system in June of 1892. Watershed and right-of-way land purchases proceeded confidentially and on January 27, 1894, Vallejo residents got their first taste of Green Valley water. Vallejo now had one of the state's first municipally-owned water systems.

In the early 1990's, the growth and economy of the city slowed as it did throughout California and the rest of the nation. The most profound change in Vallejo during this period of time was the decision made in 1993 to close Mare Island Naval Shipyard by 1996.

The City's General Plan describes the future growth area boundaries. For the purposes of this Plan, the ultimate growth boundary of the City over the life of the City's general plan will be used to describe the future City water system service area. The current water service area is characterized by a mixture of residential and commercial land use in the City of Vallejo and the Lakes Watershed areas. The City currently serves about 38,699 connections (including 421 fire services).

City of Vallejo
2017 Water Management Plan

The Vallejo Water System serves the City of Vallejo, including the former Mare Island Naval Shipyard, and unincorporated areas in Solano County. The City also provides potable water to the former Mare Island Naval Shipyard, which is now undergoing redevelopment. The City also operates a separate water treatment plant for Travis Air Force Base.

A. History

1. Date district formed: *1894* *Date of first Reclamation contract:* *1958*
Original size (acres): *NA* *Current year (last complete calendar year):* *2017*

2. Current size, population, and irrigated acres

Size (acres)	31,705
Population served (urban connections) [(1)]	122,105
Irrigated acres	NA

Note (1) Source = Population estimates, July 1, 2017 from the Census QuickFacts webpage, accessed August 2018

3. Water supplies received in current year (Acre Feet) [See Water Inventory Tables 1, 2, 3 and 6 in Section II Subsection G.]

Water Source	*2017 Volume AF*
Federal urban water (Solano Project/Lake Berryessa) (Tbl 1)	11,279
Federal agricultural water	NA
State water (State Water Project) (Tbl 1)	1,827
Other Wholesaler (Vallejo License Water) (Tbl 1)	6,218
Local surface water (Vallejo Lakes Watershed) (Tbl 1)	367
Upslope drain water (Tbl 1)	NA
District groundwater (Tbl 2)	NA
Banked water (Tbl 1)	NA
Transferred water (Tbl 1)	234
Recycled water (Tbl 3)	0
Total	19,925

The City holds five water rights in four different sources and conveys it to three treatment plants in order to serve customers in two counties, an active military base and a former military base. The three water treatment plants (WTP) consist of Fleming Hill WTP, Green Valley WTP and Travis WTP.

The Fleming Hill WTP has a capacity to treat up to 42 million gallons per day (MGD) of water sourced from the Sacramento River Delta through the North Bay Aqueduct (NBA) and Lake Berryessa (Solano Project). Raw untreated water is pumped to the Fleming Hill WTP, where it is treated and pumped into

the Vallejo distribution system. The Fleming Hill WTP is the main water treatment facility for the City. This WTP is a conventional surface water treatment plant, but with the addition of a preozonation and intermediate ozonation process.

The Green Valley WTP treats 1 MGD of raw water from City-owned Lake Madigan and Lake Frey and with supplemental water from Lake Berryessa. This plant serves the Lake subsystem, including the Gordon Valley area with potable drinking water.

Travis WTP treats NBA raw water, and with the recent installation of pumping facilities, also utilizes Lake Berryessa water. The 1993 upgrade and expansion project for this plant increased the design flow rate capacity to 7.5 MGD.

4. Annual entitlement under each right and/or contract

Urban	*AF*	*Source*	*Contract #*	*Availability period(s)*
USBR (Solano Project - Berryessa)	14,600	Lake Berryessa	14-06-200-4090	Subject to drought reductions
State Water Project/NBA	5,600	Sacramento River	160260	Subject to drought reductions
Vallejo License Water Sacramento Delta	22,800	Sacramento River	7848	Subject to drought reductions
Lake Curry	5,058	Lake Curry	5728	Equals safe yield
Lakes Madigan, Frey	600	Lakes Madigan, Frey	Pre-1914 rights	Equals safe yield
TOTAL	48,658			

Solano Water Project. Solano Project Water is delivered from Lake Berryessa via the Putah South Canal to either Cordelia where it is pumped into Vallejo or the Travis WTP, or via Solano Irrigation District's distribution system to an intertie in Green Valley. The majority of Vallejo's Solano Project water entitlement is delivered to Fleming Hill WTP from USBR terminal reservoir via the Cordelia reservoir.

State Water Project. State Water Project water is delivered from Lake Oroville through the Sacramento River to the North Bay Aqueduct Pumping facility at Barker Slough where it is pumped to the DWR Forebay at Cordelia and then pumped to the Fleming Hill WTP.

Sacramento Delta Entitlement (Vallejo License Water). Delivery of this entitlement has been through the intake of the NBA facilities at Barker Slough, where it is pumped to the DWR Forebay at Cordelia and pumped to the Fleming Hill WTP. NBA water is also treated at the Travis WTP.

Lakes Frey, Madigan and Curry. Lakes Frey and Madigan are located in northern Solano County. The City owns both lakes and the surrounding watershed land. Water flows from Lake Madigan into Lake Frey and then into the Diversion Dam, from which the water continues to flow under gravity through a pipe into the Green Valley WTP located at the end of Green Valley Road. Lake Curry is currently being used for instream flow and anticipated to only be used for this purpose until such time when plans are in place for a conveyance system to deliver water to the City's Fleming Hill water treatment plant.

5. Anticipated land-use changes. For Ag contractors, also include changes in irrigated acres.

No land annexations are planned. New development can be described as infill or redevelopment within existing urbanized areas. The former Mare Island Naval Base continues to undergo gradual redevelopment and reuse, although ultimate water demand will be less than what it was at the height of U.S. Navy use. Conceptual plans have also been prepared for the redevelopment of the Solano County Fair Grounds, under the project name Solano360. This project has been granted its third extension as of 2016.

6. Cropping patterns (Agricultural only)

Not Applicable. The City of Vallejo is not an agricultural water supplier.

7. Major irrigation methods (by acreage) (Agricultural only)

Not Applicable. The City of Vallejo is not an agricultural water supplier.

B. Location and Facilities

See **Attachment A** for maps containing the following: incoming flow locations, turnouts (internal flow), and outflow (spill) points, conveyance system, storage facilities, operational loss recovery system, district wells and lift pumps, water quality monitoring locations, and groundwater facilities.

A map of the entire Vallejo Water Systems is included as **Attachment A**. There are currently two separate distribution systems the City owns and operates: 1) City of Vallejo service area and 2) the Vallejo Lakes service area. This section discusses the distribution systems including pipelines, storage, pump stations, and interconnections.

City of Vallejo Service Area Distribution System. The existing distribution system serving the City originates at the clearwell reservoir of the Fleming Hill WTP. It consists of facilities for pumping, pressure regulation, storage, and transmission.

The City's raw water is pumped from Cordelia through a single 27-inch pipeline that parallels Interstate 80. The Jameson Canyon pump station and pipeline project provides a secondary raw water supply through a 30-inch pipeline. The pump station is built at the existing Cordelia Reservoir Complex, and the pipeline is aligned along Highway 12. The project assures reliable delivery of water to the City.

Fourteen pump stations in the Vallejo distribution system are currently active. Nineteen pressure-reducing stations are used in the transfer of water to lower zones. The Swanzy station has a remotely-operated butterfly valve operated in conjunction with a flow meter. All others have diaphragm-actuated valves.

Vallejo Lakes Service Area Distribution System. The Lakes Water System began in 1893 with the construction of the Green Valley Diversion Dam on Wild Horse Valley Creek. Water trapped by the dam was once conveyed to Vallejo via a 14-inch diameter pipeline (Green line) through Jameson Canyon. In 1894, Lake Frey was constructed upstream of the Green Valley Diversion Dam. Lake

Madigan was constructed further upstream in 1911. In 1924, the Gordon Valley system began with the construction of diversion facilities at the Lake Curry site and a 24- inch-diameter pipeline (Gordon line).

The Green Valley distribution system consists of a water treatment plant and seven distribution system pressure zones. At the Mankas Corner Pump Station water from the Green Valley WTP is pumped to serve customers in the Gordon Valley area.

There are currently a total of 3 treated water storage reservoirs, with a combined capacity of 1.09 million gallons (mg). The reservoirs are distributed throughout the system to provide storage in nearly every pressure zone.

Travis Water Transmission System. The City provides a combination of three water sources to the Travis AFB Water Treatment Plant which the City operates for the U.S. Air Force: State Water Project and Vallejo License Water are conveyed via the North Bay Aqueduct and Northgate Pump Station; Solano Project water, added to improve raw water quality, is pumped via the Travis-Beck Ave. Pump Station. The Travis-Beck Ave. Pump Station was constructed to provide a permanent means of conveyance of an alternate source water (Solano Project) to Travis WTP.

1. *Incoming flow locations and measurement methods*

Location Name	*Physical Location*	*Type of Measurement Device*	*Accuracy*
NBA-Barker Slough PS	Barker Slough	Accusonic 7500 Flowmeter	+/- 0.5%
NBA-Reach 1- Northgate PS	'AKA Travis Pump Station, N of TAFB	Flo-Probe Magmeter Sensor (Model 88L)	Approx. +/- 1.0%
Travis Water Treatment Plant	Travis AFB	Electromagnetic Flowmeter (Danfoss Mag 3100)	
(Plant Influent)	+/- 0.25%		
NBA-Reach 3-Forebay	Cordelia	Venturi Meter	+/- .5%
Cordelia Complex, P# 1,2	Cordelia	Venturi Meter	+/- .5%
Cordelia Complex, P#3	Cordelia	Venturi Meter	+/- .5%
Cordelia Complex, P#4,5,6	Cordelia	Venturi Meter	+/- .5%
Solano Project Terminal Reservoir	AKA Monticello Pump Station, End of Putah South Canal, Green Valley	Venturi Meter	Approx. +/- .5%
Travis Beck Avenue PS	Beck Avenue, Fairfield	Magnetic Flow Meter 16"	+/- 0.25%
Fleming Hill Water Treatment Plant Blending Structure	Fleming Hill Rd., Vallejo	Magnetic Flowmeter (Plant Influent)	+/- 0.25%
Lakes Madigan & Frey	Solano County	Weir - meter	Unknown
Lake Curry	Napa County	Weir -water level sight gauge	Unknown

2. *Current year Agricultural Conveyance System*

Not Applicable. The City of Vallejo is not an agricultural water supplier.

3 Current year Urban Distribution System

Distribution System	*Miles AC Pipe*	*Miles Steel Pipe*	*Miles Cast Iron Pipe*	*Miles - Other*	*Total*
Lakes	0.02	45.0	50	12	107
Vallejo	14.5	8.0	213	246	482

There are approximately 605 miles of distribution mains in the system.

4. Storage facilities (tanks, reservoirs, regulating reservoirs)

Tank Name or ID	*Capacity MG*	*Year Installed*	*System*
Fleming Hill Clearwell	10.0	1968	Vallejo
Alta Loma Tank No. 1	0.5	1960	Vallejo
Alta Loma Tank No. 2	0.5	1960	Vallejo
Burnham Street Tank	0.1	1951	Vallejo
Cimarron Hills Tank	0.5	1987	Vallejo
Columbus Parkway Tank	6.0	1988	Vallejo
Dos Reis Tank No. 1	1.0	1982	Vallejo
Dos Reis Tank No. 2	1.3	1987	Vallejo
Dos Reis Tank No. 3	1.6	1990	Vallejo
Georgia Tank No. 1	0.5	1970	Vallejo
Georgia Tank No. 2	0.5	1980	Vallejo
Georgia Tank No. 3	1.2	1989	Vallejo
Glen Cove Tank	1.5	1986	Vallejo
Hunter Ranch Tank No. 1	1.0	1982	Vallejo
Hunter Ranch Tank No. 2	2.5	1987	Vallejo
Mare Island Tank	5.7	2000	Vallejo
Northgate 600	1.7	1997	Vallejo
Sky Valley 600 Tank	2.3	1992	Vallejo
Sky Valley 726 Tank	1.0	1993	Vallejo
Skyview Tank	6.0	1975	Vallejo
Somerset Tank No. 1	1.0	1980	Vallejo
Somerset Tank No. 2	1.9	1985	Vallejo
Swanzy	37.4	1950	Vallejo
Siebe Reservoir	0.02	1968	Lakes
Rockville Reservoir	0.067	1978	Lakes
Green Valley WTP Reservoir	1.1	1996	Lakes

#	*STATION NAME*	*PUMP UNIT*	*HP*	*DESIGN CAPACITY (GPM)*	*TOTAL FIRM CAPACITY (GPM)*	*THD (FT)*	*RAW/POTABLE*	*SYSTEM SUPPORTED*
1	Capatil Street	1	10	200	200	180	POTABLE	VALLEJO
		2	10	200	200	180	POTABLE	VALLEJO
2	Carter Street	1	15	375	375	86	POTABLE	VALLEJO
		2	15	375	375	86	POTABLE	VALLEJO
3	Columbus Pkwy 600 Zone	1	150	150	1000	4000	POTABLE	VALLEJO
		2	150	150	1000	4000	POTABLE	VALLEJO
		3	150	150	1000	4000	POTABLE	VALLEJO
		4	150	150	1000	4000	POTABLE	VALLEJO
		5	150	150	1000	4000	POTABLE	VALLEJO
4	Columbus Pkwy 400 Zone	1	25	400	800	150	POTABLE	VALLEJO
		2	25	400	800	150	POTABLE	VALLEJO
		3	25	400	800	150	POTABLE	VALLEJO
5	Fleming Hill Grid	1	250	8250	16500	100	POTABLE	VALLEJO
		2	250	8250	16500	100	POTABLE	VALLEJO
		3	250	8250	16500	100	POTABLE	VALLEJO
6	Fleming Hill TV	1	250	3680	11040	200	POTABLE	VALLEJO
		2	250	3680	11040	200	POTABLE	VALLEJO
		3	250	3680	11040	200	POTABLE	VALLEJO
		4	250	3680	11040	200	POTABLE	VALLEJO
7	Fleming Hill Electric TV	1	250	5000	5000	132	POTABLE	VALLEJO
		2	250	5000	5000	132	POTABLE	VALLEJO
8	Fleming Hill Kathy Ellen	1	15	300		135	POTABLE	VALLEJO
9	Georgia Street	1	60	550	1100	210	POTABLE	VALLEJO
		2	60	550	1100	210	POTABLE	VALLEJO
		3	60	550	1100	210	POTABLE	VALLEJO
10	Hollywood Ave 292	1	15	600	600	72	POTABLE	VALLEJO
		2	15	600	600	72	POTABLE	VALLEJO
11	Hollywood Ave 400	1	60	1000	2000	171	POTABLE	VALLEJO
		2	60	1000	2000	171	POTABLE	VALLEJO
		3	60	1000	2000	171	POTABLE	VALLEJO
12	Mira Vista	1	40	600	600	176	POTABLE	VALLEJO
		2	40	600	600	176	POTABLE	VALLEJO
13	Redwood Parkway	1	50	1100	1900	182	POTABLE	VALLEJO
		2	50	1100	1900	182	POTABLE	VALLEJO
		3	50	800	1900	182	POTABLE	VALLEJO
14	Shadow Ridge	1	150	3000	360	150	POTABLE	VALLEJO
		2	15	120	360	150	POTABLE	VALLEJO
		3	15	120	360	150	POTABLE	VALLEJO
		4	15	120	360	150	POTABLE	VALLEJO

#	STATION NAME	PUMP UNIT	HP	DESIGN CAPACITY (GPM)	TOTAL FIRM CAPACITY (GPM)	THD (FT)	RAW/POTABLE	SYSTEM SUPPORTED
15	Sky Valley 736	1	14	100	200	150	POTABLE	VALLEJO
		2	14	100	200	150	POTABLE	VALLEJO
		3	14	100	200	150	POTABLE	VALLEJO
16	Tennessee St 600	1	150	900	Emergency	450	POTABLE	VALLEJO
17	Tennessee St 400	1	75	1000	2000	195	POTABLE	VALLEJO
		2	75	1000	2000	195	POTABLE	VALLEJO
		3	75	1000	2000	195	POTABLE	VALLEJO
18	Monticello	1	200	5,032	300	116'	RAW	ALL
		2	200	5,032	300	116'	RAW	ALL
		3	200	5,032	300	116'	RAW	ALL
		4	200	5,032	300	116'	RAW	ALL
19	Jameson	4	800	4,500	14000	455'	RAW	ALL
		5	800	4,500	14000	455'	RAW	ALL
		6	800	4,500	14000	455'	RAW	ALL
		7	1250	10,000	14000	245'	RAW	ALL
20	Cordelia	1	700	6,550	10000	350'	RAW	ALL
		2	700	6,550	10000	350'	RAW	ALL
21	Chabot	1	60	1,400	1200	120'	RAW	VALLEJO
		2	60	1,400	1200	120'	RAW	VALLEJO
22	Hiddenbrooke Raw	1	100	1,200	1200	160'	RAW	VALLEJO
		2	100	1,200	1200	160'	RAW	VALLEJO
23	Rockville	1	15	175		250'	POTABLE	LAKES
		2	15	175		250'	POTABLE	LAKES
24	Siebe	1	5	143		230'	POTABLE	LAKES
		2	7.5	160		230'	POTABLE	LAKES
25	Mankas Corner	1	5	44		160'	POTABLE	LAKES
		2	10	84		160'	POTABLE	LAKES
		3	10	100		160'	POTABLE	LAKES
26	Beck	1	75	2,480		69'	RAW	ALL

5. Description of the agricultural spill recovery system and outflow points.

Not Applicable. The City of Vallejo is not an agricultural water supplier.

6. Agricultural delivery system operation (check all that apply)

Not Applicable. The City of Vallejo is not an agricultural water supplier.

7. Restrictions on water source(s)

Source	*Restriction*	*Cause of Restriction*	*Effect on Operations*
Lake Curry	Lake Curry (Gordon) WTP Closure	Inability to economically meet Surface Water Treatment Rules led to WTP closure, and thus closure of the only pipeline available to convey lake water.	Inability to access Lake Curry as M&I supply until Lake Curry Water Reuse Project is completed. Ongoing in-stream contribution to support fisheries likely, though amount uncertain.
NBA	NBA conveyance restriction to full use of Vallejo License Water	Clerical error deprived Vallejo of some of the capacity it had purchased.	Full entitlement not available until agreement reached with NBA users, estimated to be completed by 2020.
NBA	NBA water quality issues	Winter run off into Sacramento Delta.	Scheduled greater use of Solano Project water in Vallejo to avoid peak turbidity events. Provided alternative source conveyance to Travis AFB.

8. Proposed changes or additions to facilities and operations for the next 5 years

Capital expenditures are not for system expansion but for equipment and facilities rehabilitation or replacement, or minor upgrades to improve operational flexibility, reliability, and safety (instruments, controllers, chemical systems, pumps, valves, pipelines, corrosion control, reservoir tanks, access roads,). The City also has an ongoing program of meter replacement for improved accuracy and appropriate revenue collection (**Attachment C**).

By the end of the next five years the City anticipates being able to utilize both its Lake Curry water source, and also to have negotiated for the full conveyance of Vallejo License Water through the North Bay Aqueduct, as originally understood and purchased.

C. Topography and Soils

1. Topography of the district and its impact on water operations and management

The Vallejo area is underlain by sedimentary bedrock consisting of sandstone and shale. The units are part of the "Great Valley Sequence." The sandstone usually has good slope stability, while the shale is often weaker and tends to be more landslide prone. Alluvium covers bedrock throughout much of the area. (VSFCD)

Vallejo is characterized by rolling hillsides and flatland with water draining to the Napa River or Carquinez Strait. Elevated water storage tanks are needed to serve customer located above the "grid" (gravity fed) zone.

Expansive soils and creek crossings are a transmission line and distribution system maintenance concern, especially in the Vallejo Lakes Water System. There are no known soil limitations that affect the use of water.

2. District soil association map (Agricultural only)

Not Applicable. The City of Vallejo is not an agricultural water supplier.

3. Agricultural limitations resulting from soil problems (Agricultural only)

Not Applicable. The City of Vallejo is not an agricultural water supplier.

D. Climate

1. General climate of the district service area

The climate of Vallejo is characterized by cool, rainy winters and warm, dry summers. Like the rest of the Bay Area, the Vallejo region is classified as a Marine West Coast Climate type with Mediterranean characteristics.

Climate and air quality data for the Vallejo area are provided in the Vallejo General Plan and by the Bay Area Air Quality Management District. Vallejo is located in the North Basin, which includes all of the nine-county Bay Area north of the San Rafael-Richmond Bridge and Suisun Bay. From west to east, it encompasses climates varying from the cool marine coastal climate to the warm continental Sacramento delta climate. Summer maximum temperatures average in the mid 80's, with summer minimums in the low 50's. Winter maximums are in the mid-50's, with minimums in the low 40's. Sunshine is plentiful, and annual precipitation averages approximately 21 inches, most of it falling between November and May. (VSFCD)

Prevailing wind direction in the Vallejo area is westerly, reflecting exposure to marine air intrusion via Carquinez Strait and San Pablo Bay. A southerly wind flow precedes winter storms. Light winds (i.e.

less than 5 mph) are typical of fall and winter while wind speeds of about 10 mph occur mainly in spring and summer. During nighttime and early morning hours, light winds are maintained. (VSFCD)

The following precipitation and temperature data is from Station 049219 for Vallejo.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg Precip. (in.)[a]	3.94	4.46	2.61	1.66	0.85	0.03	0	0	0.06	0.79	2.27	1.8	21.01
Avg Temp. (^oF)[b]	50	53.5	57.6	59.6	63.9	69.9	72.1	71.2	70.8	65.1	55.9	49.5	62.77
Max. Temp. (^oF)[b]	57.2	62.8	69.6	72.3	77	85.7	87.9	85.1	85.6	78.5	65.4	58.7	74.98
Min. Temp.(^oF)[b]	42.8	44.2	45.5	46.8	50.2	54	56	56.5	55.5	51.5	46.1	40.3	50.56
Et_o (in.)[c]	1.11	1.26	2.88	3.52	5.28	5.73	6.17	4.77	4.15	3.17	1.23	1.45	40.72

[a] Values taken from the Monthly Precipitation Listings table, "MEAN" value.

[b] Values taken from the Monthly Temperature Listings table, "MEAN" value.

[c] Values are from CIMIS Station #109 for Aug 2017 - Jul 2018

Weather station ID NOAA, Vallejo (#049219) Data period: 1998 to 2017
ET Station ID CIMIS, Carneros (#109) Average annual frost-free days: 365

Frost Free Days - According to National Oceanic and Atmospheric Administration (NOAA), frost free days are days with temperatures greater than 28 degrees Fahrenheit.

2. Impact of microclimates on water management within the service area

Within the Vallejo service area there are no significant microclimates which impact overall water management.

E. Natural and Cultural Resources

Vallejo is bordered by San Pablo Bay and the Carquinez Straits and is divided into Mare Island and Vallejo proper by the Napa River. The Napa River marsh is one of the most important remaining estuarine and marine habitats in the San Francisco Bay System. Every anadromous fish that spawns in the Sacramento River System passes through Carquinez Strait. Three rare and/or endangered species exist in the vicinity of Vallejo - the San Francisco Bay salt marsh harvest mouse, the black rail, and the clapper rail.

Within the Vallejo area there are five distinct floral communities. The largest area consists of grassland and is found throughout the area. The other floral communities are found in specific locations. Creek vegetation is associated with the constantly wet soils and muds of creeks and minor drainage channels. The woodlands usually consist of eucalyptus groves and, in some locales, oak trees and associated grasses are found. Along the City's southern boundary bordering the Carquinez Strait and in Glen and

Elliot Coves the vegetation is typical of waterfront, bay muds, and salt marshes. No known rare or endangered plant species are known to exist within these communities.

The City of Vallejo municipal water system has not been involved in the management of natural resources in the Vallejo area. There are no plans for its future involvement.

The Greater Vallejo Recreation District (GVRD) oversees 407 acres of public park space and maintains over 1,000 acres of public land. Dan Foley and Blue Rock Springs Park are two of the better known parks in the area.

The Vallejo area contains a number of buildings of historical significance dating back to the City's founding as the site for the State's first capitol in 1850. Many of the downtown's early 20th century buildings have been restored or rehabilitated. Mare Island, a former Naval base is on the National Register and contains many historic sites and structures.

1. Natural resource areas within the service area

Name	*Estimated Acres*	*Description*
Suisun Creek	Unknown	Lake Curry Dam releases into Suisun Creek.
Solano Project Action Area	Unknown	Subject of a Habitat Conservation Plan

2. Description of district management of these resources in the past or present

Suisun Creek
Water has been released from Lake Curry into Suisun Creek since 1992 to support studies of steelhead trout habitat. The City currently releases water to the creek to help sustain habitat for fish and wildlife.

Habitat Conservation Plan
The U.S.B.R., S.C.W.A., and the member agencies agreed to implement conservation measures for the protection of listed species and their habitats in the action area as defined in the biological opinion (March 1999) addressing the effects of the renewal of the water service contracts, continued delivery of the water, and continued operations and maintenance of the Solano Project based on then current operating parameters.

3. Recreational and/or cultural resources areas within the service area

Name	*Estimated Acres*	*Description*
Mare Island Historic District	Unknown	National Register of Historic Places (#75002103), closed former Naval base.

F. Operating Rules and Regulations

1. Operating rules and regulations

See **Attachment B, District Rules and Regulations** (water related)

The City of Vallejo Water System is an enterprise-funded operational unit of the City of Vallejo. The City Charter and Vallejo Municipal Code Chapter 11 contain rules and regulations "... adopted to govern the general operation of the Vallejo municipal water system to provide an efficient and economical water supply." (Section 11.08.010 VMC) See **Attachment B**, "Water System Rules and Regulations," for the City's water supply and use policies.

Other pertinent sections of the Vallejo Muncipal Code governing the use of water include Section 16.74.030, Water Conservation Guidelines, which states that "all vegetation and landscaping required by the zoning regulations shall employ drought resistant species," and Chapter 16.71, Water Efficient Landscape Requirements, a copy of which is included in **Attachment B**.

Updates to the City's rules and regulations can be found at the City's website www.cityofvallejo.net.

2. *Water allocation policy (Agricultural only)*

Not Applicable. The City of Vallejo is not an agricultural water supplier.

3. *Official and actual lead times necessary for water orders and shut-off (Agricultural only)*

Not Applicable. The City of Vallejo is not an agricultural water supplier.

4. *Policies regarding return flows (surface and subsurface drainage from farms) and outflow (Agricultural only)*

Not Applicable. The City of Vallejo is not an agricultural water supplier.

5. *Policies on water transfers by the district and its customers*

Please See **Attachment B**.

Sections of the City's rules and regulations pertaining to water transfers, including resale or redelivery of water within the City service area are listed below and included in **Attachment B**.

By City policy any long term water transfers or sales outside the City's established service areas or between neighboring water agencies require City Council approval and City Manager signature.

The City restricts the resale of water.

Section 11.08.100, "Selling Water," of the Vallejo Municipal Code.

> *"It is unlawful for any person or entity to sell water within the corporate limits of the city of Vallejo without having first received permission to do so from the city council of the city of Vallejo."*

Section 11.08.110, "Reselling and/or redelivery of water," of the Vallejo Municipal Code

"A. The water system shall not serve or supply water to any customer if the same is to be resold or redistributed to other customers, except only in the case of the federal government, state or local public entities including municipalities, or nonprofit mutual water companies and homeowners' associations, whether incorporated or unincorporated, purchasing water from the water system pursuant to contract approved by the city council for use within the boundaries of the property that the water service connection was approved to supply, unless otherwise provided by contract.

B. It is a violation of these regulations if water received from this system is resold or redelivered to premises other than those stipulated in the water service application."

G. Water Measurement, Pricing, and Billing

1. Agricultural Customers

Not Applicable. The City of Vallejo is not an agricultural water supplier.

2. Urban Customers

a. Total number of connections **38,709**
b. Total number of metered connections **38,709**
c. Total number of connections not billed by quantity **Under Investigation[1]**
d. Percentage of water that was measured at delivery point **99.97**
e. Percentage of delivered water that was billed by quantity **100%**
f. Measurement device table

Meter Size and Type	*Number*	*Accuracy* (+/- percentage)*	*Reading Frequency (Days)*	*Calibration Frequency (Months)[2]*	*Maintenance Frequency (Months)*
5/8-3/4"	33,631	Unknown	60	Never	At failure
1"	3,322	Unknown	60	Never	At failure
1 ½"	529	Unknown	60	Never	At failure
2"	557	Unknown	60	Never	At failure
3"	53	Unknown	60	Never	At failure
4"	55	Unknown	60	Never	At failure
6"	28	Unknown	60	Never	At failure

[1] At the time that the Water Management Plan was being updated, it was reported that we might have a few water connects in/around the Vallejo Marina area that were receiving potable water without being metered. However, one theory presented at the time was that these Vallejo Marina sites may possibly be receiving and recording water use via a single master meter upstream from the point of use. For that reason, the question was answered as "under investigation", with a 99.9% metered response pending the outcome of the investigation.
This issue will require additional investigation by our Water Distribution staff to determine if the Vallejo Marina is indeed 100% metered.

[2] We do calibrate any of the 1.5" and larger meters as they are tested and found to be out of AWWA recommendation. 5/8" to 1" are replaced if they are outside of AWWA recommendations.

8"	5	Unknown	60	Never	At failure
10"	1	Unknown	60	Never	At failure
Compound	303				
Turbo	13				
Other					
Total	38,497				

*Documentation verifying the accuracy of measurement devices included as **Attachment C**.

The City's Distribution Department has updated its meter inventory and formalizing its meter testing program to meet best management practices. A draft Meter Testing, Repair and Replacement Program has been prepared and is included in **Attachment C**.

3. Agricultural and Urban Rates

a. Current year agricultural and /or urban water charges - including rate structures and billing frequency

See **Attachment B** for current year rate ordinance.

See **Attachment B**, Vallejo Municipal Code, Chapter 11.48, Water Rates and Charges, for current year rates.

The City is currently engaged in a detailed water rate study with an anticipated completion date of mid-2019. New water rates and service charges may be adopted for raw and treated water services, with an effective date of late 2019.

Meters are read either every month (non-residential, large multi-family) or every two months (small non-residential, single family residential) depending on the customer classification, typical water usage volume, and route location. All meters are read, even those with inactive accounts. (See chart below.)

A copy of Title 11, "Water," of the Vallejo Municipal Code is included under **Attachment B**. Chapters 11.44, "Billing," and 11.48, "Water Rates and Charges," include descriptions of applicable charges. In summary, all billed customers are charged a service charge and a charge for water volume, and if applicable, a backflow prevention device charge.

Monthly service charges are flat and based on the category of customer and on meter size. Water charges have an inclining block rate structure for single family residential customers of two tiers, with tier break points at 22 hundred cubic feet (HCF) bimonthly in the City system and 13 HCF bimonthly in the Lakes system. By contract, water rate charges for multi-family and non-residential customers are uniform. See sections b and c below for further information on billing and bill format.

RATE CLASS	*VOLUME CHARGE*	*SERVICE CHARGE*	*BILL FREQUENCY*
Single Family Residential	Inclining block rate (2-tires) - Tier break at annual average for rate class.	By meter size	Bimonthy

Multi-Family Residential	Uniform rate	By meter size	Monthly, Bi-monthly
Commercial, Industrial, and Institutional	Uniform rate	By meter size	Monthly, Bi-monthly
Dedicated Irrigation	Uniform rate	By meter size	Monthly, Bi-monthly
Construction & Others	Uniform rate	Standardized to 3" meter	Monthly, Bi-monthly

Utility Billing Data FY 17/18

Rate Category	*Fixed Service Charges*	*Volumetric Charges*	*HCF Units Billed*
Single Family	$8,118,484	$12,464,670	3,049,395
Mult-Family	$1,011,888	$3,881,700	902,840
Commercial - Institutions	$1,286,528	$4,203,766	966,411
Landscape - Irrigation	$636,532	$2,318,046	563,436
Construction & Other	$558,393	$560,793	229,660
Total	$11,611,825	$23,428,975	5,711,742

b. Annual charges collected from agricultural customers

Not Applicable. The City of Vallejo is not an agricultural water supplier.

Tables provided below are for **urban customers.**

City of Vallejo
2017 Water Management Plan

Category	*Rate Class Description*	*Rate Class*	*Service*			*Grand Total*	*Cat Total*
			FS	*IR*	*WA*		
Single Family	Residential Bi-Monthly	RB			$8,116,311	$8,116,311	
	Residential Monthly	RM			$2,173	$2,173	$8,118,484
Multi-Family	Apartment Bi-Monthly	AB			$609,299	$609,299	
	Apartment Monthly	AM			$375,212	$375,212	
	Trailer City Rate	T2			$2,045	$2,045	
	Trailer Park	TP			$25,333	$25,333	$1,011,888
Comm - Institutional	Commercial Bi-monthly	BC			$523,181	$523,181	
	Commercial Monthly	CM			$579,165	$579,165	
	Monthly School	MS			$131,975	$131,975	
	Bi-Month School	BS			$8,061	$8,061	
	Church Monthly	GM			$1,241	$1,241	
	Church Bi-Monthly	GB			$42,904	$42,904	$1,286,528
Landscape Irr	Irrigation Bi-Monthly	IB		$216,141		$216,141	
	Irrigation Monthly	IM		$179,022		$179,022	
	IR Monthly	FB	$241,368			$241,368	$636,532
Other	Fire Bi-Monthly	FM	$497,558			$497,558	
	Commercial Construction	CN			$35,660	$35,660	
	Bi-Monthly Raw	BR		$7,832		$7,832	
	Monthly Raw Water	MR		$12,907		$12,907	
	Raw Water	RW		$3,886	$550	$4,437	$558,393
	Grand Total		**$738,926**	**$419,789**	**$10,453,110**	**$11,611,825**	**$11,611,825**

City of Vallejo
2017 Water Management Plan

DWR Cat	Rate Class Description	Rate Class	IR		WA		Total Volume Charges	Total HCF Units Billed	Cat Total Vol Charges	Total HCF Units Billed	Total AF Used
			Volume Charges	HCF Units Billed	Volume Charges	HCF Units Billed					
Single Family	Residential Bi-Monthly	RB			$12,461,473	3,048,745	$12,461,473	3,048,745			
	Residential Monthly	RM			$3,197	650	$3,197	650	$ 12,464,670	3,049,395	7,000
Multi-Family	Apartment Bi-Monthly	AB			$1,430,659	309,051	$1,430,659	309,051			
	Apartment Monthly	AM			$2,058,387	498,456	$2,058,387	498,456			
	Trailer City Rate	T2			$8,828	2,117	$8,828	2,117			
	Trailer Park	TP			$383,825	93,216	$383,825	93,216	$ 3,881,700	902,840	2,073
Commercial Bi-Monthly	Commercial Bi-monthly	BC			$988,656	221,604	$988,656	221,604			
	Commercial Monthly	CM			$2,622,207	633,000	$2,622,207	633,000			
	Monthly School	MS			$321,531	78,326	$321,531	78,326			
	Bi-Month School	BS			$193,360	13,706	$193,360	13,706			
	Church Monthly	GM			$918	223	$918	223			
	Church Bi-Monthly	GB			$48,629	11,488	$48,629	11,488			
	Monthly Construction	MC			$28,466	8,064	$28,466	8,064	$ 4,203,766	966,411	2,219
Landscape / Irr	Irrigation Bi-Monthly	IB	$801,429	190,732			$801,429	190,732			
	Irrigation Monthly	IM	$1,516,617	372,704			$1,516,617	372,704	$ 2,318,046	563,436	1,293
Other	Commercial Construction	CN			$32,945	7,939	$32,945	7,939			
	Bi-Monthly Raw	BR	$32,346	13,440			$32,346	13,440			
	Monthly Raw Water	MR	$487,061	206,887			$487,061	206,887			
	Raw Water	RW			$8,441	1394	$8,441	1,394	$ 560,793	229,660	527
Grand Total			$2,837,453	783,779	$20,591,522	5,250,194	$23,428,975	6,033,973	$ 23,428,975	5,711,742	13,112

DWR Cat	*Rate Class Description*	*Rate Class*	*Service Code*			*Grand Total*	*Category Total*
			FS	*IR*	*WA*		
Single Family	Residential Bi-Monthly	RB	3	4	32,953	32,960	32,995
	Residential Monthly	RM			4	4	
	Residential Water Entitlement	WR			31	31	
Multi-Family	Apartment Bi-Monthly	AB			1,679	1,679	2,074
	Apartment Monthly	AM		1	367	368	
	Trailer City Rate	T2			1	1	
	Trailer Park	TP			26	26	
Commercial - Institutional	Commercial Bi-monthly	BC	14	3	1,122	1,139	1,886
	Commercial Monthly	CM	14	14	524	552	
	Monthly School	MS	1	1	73	75	
	Bi-Month School	BS			4	4	
	Church Monthly	GM			1	1	
	Church Bi-Monthly	GB		1	89	90	
	City Account	CT	1	17	2	20	
	American Canyon	AC			5	5	
Landscape Irr	Irrigation Bi-Monthly	IB		288		288	448
	Irrigation Monthly	IM		159		159	
	IR Monthly	IR		1		1	
Other	Fire Bi-Monthly	FB	132			132	405
	Fire Monthly	FM	227			227	
	Commercial Construction	CN			24	24	
	Non-Bill	NB	2	5	1	8	
	** Non-Standard BF	NF	4			4	
	Raw Water	RW		2		2	
	Monthly Raw Water	MR		2		2	
	Bi-Monthly Raw	BR		4	1	5	
	Unknown Error	V			1	1	
		Grand Total	398	502	36,908	37,808	

Meter Size	*IR*	*WA*	*Total HCF Units Billed*
	HCF Units Billed	*HCF Units Billed*	
5/8 Inch	6,241	2,478,258	2,484,499.1
3/4 Inch	8,867	645,478	654,344.5
1-Inch	40,517	355,321	395,838.3
1-1/2 Inch	211,265	329,700	540,965.0
2 Inch	168,280	575,265	743,545.0
3 Inch	4,319	119,995	124,314.0
4 Inch	36,562	172,266	208,828.0
6 Inch	100,653	511,420	612,073.0
8 Inch	207,075	54,171	261,246.0
10 Inch	0	8,320	8,320.0
Grand Total	783,779	5,250,194	6,033,972.9

c. Describe the contractor's record management system

Water customers are provided with past water usage information (past billing period, and same billing period of the previous year) on the water bill. Information is provided in units of 100 cubic feet. Customers can request a printout of their consumption data at no charge. Records are available back to year 2000. Customer service representatives and other water staff answer account-specific questions for customers.

Currently meters are tested based on Meter Reader request or if consumption patterns indicate inaccuracy or malfunction. This can include field testing, replacement and in-shop meter bench testing. The City replaces targeted commercial meters due to age and accuracy concerns. Larger high consumption meters are given priority for replacement. Change out to newer meters is done automatically for any service call on a meter installed prior to 1987. To date more than 90 percent of meters installed prior to 1987 have been replaced. Based on the above activity statistics indicate that our average accuracy is 90-95 percent.

The City of Vallejo currently uses a proprietary utility billing software from Sunguard H.T.E. (Note: Historic system-wide information, however, is available but not readily accessible. Water Division staff are trained on how to create queries to extract data. Customer records, however, are typically available for up to twelve previous years, and are provided upon request. The meters are read either every month (non-residential, large multi-family) or every two months (small non-residential, single family residential) depending on the customer classification, typical water usage volume, and route location. All meters are read, even those with inactive accounts.

A copy of Title 11, "Water," of the Vallejo Municipal Code is included in **Attachment B**. Chapters 11.44, "Billing," and 11.48, "Water Rates and Charges," include descriptions of applicable charges. In summary, all billed customers are charged a service charge and a charge for water volume, and if applicable, a backflow prevention device charge. Monthly service charges are flat and based on the category of customer and on meter size. Water charges have an inclining block rate structure for single family residential customers, but are a uniform rate for multi-family and non-residential customers.

H. Water Shortage Allocation Policies

1. *Current year water shortage policies or shortage response plan - specifying how reduced water supplies are allocated*

See **Attachment E** District Water Shortage Plan

2. *Current year policies that address wasteful use of water and enforcement methods*

See **Attachment E** City's Water Shortage Plan

I. Evaluate Policies of Regulatory Agencies Affecting the Contractor and Identify Policies that Inhibit Good Water Management.

No policies of regulatory agencies affecting the City water system have been identified at this time as policies that inhibit good water management.

Section II: Inventory of Water Resources

A. Surface Water Supply

1. Surface water supplies in acre feet, imported and originating within the service area, by month

See Section II-G Water Inventory Table 1

2. Amount of water delivered to the district by each of the district sources for the last 10 years

See Section II-G Water Inventory Table 8.

B. Groundwater Supply

1. Groundwater extracted by the district and delivered, by month ***(Table 2)***

Not Applicable. The City of Vallejo does not utilize groundwater for public supply.

2. Groundwater basin(s) that underlies the service area

Name	*Size (Square Miles)*	*Usable Capacity (AF)*	*Safe Yield (AF/Y)*
Napa Sonoma Lowlands (2-2.03)	40,500	Unknown	Unknown

Note: As of the draft of this document, DWR classifies this subbasin as a "Medium Priority Basin" under the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. The City has sent a comment letter and stands in support of Solano and Napa counties to re-classify this subbasin as a "Low Priority Subbasin". The final prioritization of the basin will not be publicized until early to mid-2019.

3. Map of district-operated wells and managed groundwater recharge areas

Not Applicable. The City of Vallejo does not utilize groundwater for public supply, nor does it recharge groundwater in the subbasin.

4. Description of conjunctive use of surface and groundwater

Not Applicable. The City of Vallejo does not utilize groundwater for public supply, nor does it recharge groundwater in the subbasin.

5. Groundwater Management Plan

Not Applicable. The City of Vallejo does not utilize groundwater for public supply, nor does it currently recharge groundwater in the subbasin. Therefore, the City is has not prepared a Groundwater Management Plan.

6. Groundwater Banking Plan

Not Applicable. The City of Vallejo does not utilize groundwater for public supply, nor does it recharge groundwater in the subbasin.

C. Other Water Supplies

1. "Other" water used as part of the water supply – Describe supply
See Section II-G Water Inventory Table 1

See Section II-G Water Inventory Tables 1 (data year = 2017) and 6 (10 years for quantities of "Other Water." For the purposes of this plan, "other" is described as Vallejo Lakes Watershed water. Lakes Madigan and Frey provide water for treatment and delivery to customers in the Vallejo Lakes service area. Lake Curry is a stranded asset and water accounting was removed from reporting in 2012.

D. Source Water Quality Monitoring Practices

1. Potable Water Quality (Urban only)
See Attachment H – District Annual Potable Water Quality Report

The City of Vallejo's 2017 Annual Water Quality Report (based on 2016 data) is included as Attachment H.

Multiple water sources are available for treatment at the Fleming Hill WTP, Green Valley WTP, and Travis WTP. Due to seasonal water quality shifts, water treatment staff must select and treat a changing mix of source water in order to optimize use of available sources and minimize treatment costs.

No available supplies to the Fleming Hill WTP are impacted by source water quality impairment, as that plant has the ability to treat even degraded water.

As mentioned above, the only significant water problems pertain to North Bay Aqueduct water deliveries to the Travis WTP. Occasionally, the Travis WTP, which until recently used only an NBA supply, had to be shut down due to excessive turbidity, color, and total organic content (TOC) of the source water supply. The City provides Solano Project water to the plant via the Travis - Beck Avenue Pump Station as an alternative source during NBA water quality-impaired events. During plant shutdowns, Travis Air Force Base is fed from storage reservoirs and may use its wells.

2. Agricultural water quality concerns: Yes _____ *No* ___*X*___

Not Applicable. The City of Vallejo is not an agricultural water supplier.

3. Description of the agricultural water quality testing program and the role of each participant,

including the district, in the program

Not Applicable. The City of Vallejo is not an agricultural water supplier.

4. Current water quality monitoring programs for surface water by source (Agricultural only)

Not Applicable. The City of Vallejo is not an agricultural water supplier.

5. Current water quality monitoring programs for groundwater by source (Agricultural only)

Not Applicable. The City of Vallejo is not an agricultural water supplier.

E. Water Uses within the District

1. Agricultural

Not Applicable. The City of Vallejo is not an agricultural water supplier.

2. Types of irrigation systems used for each crop in current year

Not Applicable. The City of Vallejo is not an agricultural water supplier.

3. Urban use by customer type in current year

2017 volumetric and consumption values are based on fiscal year 2017/2018.

Customer Type	*Number of Connections*	*AF*
Single-family	32,995	7,062
Multi-family	2,074	2,073
Commercial/Industrial	1,886	2,219
Landscape irrigation	448	1,293
Other	405	527
Total	37,808	13,112

4. Urban Wastewater Collection/Treatment Systems serving the service area

Treatment Plant	*Treatment Level (1, 2, 3)*	*AF*	*Disposal to / uses*
Vallejo Flood & Wastewater District Wastewater Treatment Plant	*Secondary (up to 35 MGD)*	*13,631.6*	*Carquinez Straits and Mare Island Straits*
Vallejo Flood & Wastewater District Wastewater Treatment Plant	Blended disinfected primary & secondary (above 35 MGD)	1,220.5	Carquinez Straits
Vallejo Flood & Wastewater District Wastewater Treatment Plant	Secondary (Recycled Wastewater)	0	Very minor use at the Wastewater Treatment Plant for the small-scale propagation of native plants by drip irrigation.
Total		14,852.10	
Total discharged to ocean and/or saline sink		0	

Source: Vallejo Flood and Wastewater District Dec. 2018

5. Groundwater recharge in current year (Table 6)

Not Applicable. The City of Vallejo does not utilize groundwater for public supply, nor does it recharge groundwater in the subbasin.

*6a. Transfers and exchanges **into** the service area in current year*

From Whom	To Whom	AF	Use
SID (Solano Irrigation District)	City of Vallejo	234	From Tolenas GV Exchange - Ag Entitlement

Amount included in State Water Column totals shown in Water Inventory Table 1

*6b. Transfers and exchanges **out** of the service area in current year – (Table 6)*

From Whom	*To Whom*	*AF*	*Use*
City of Vallejo	City of Benicia	1,100	M&I
City of Vallejo	Travis AFB	1,611	M&I
	Total	2,711	

7. Wheeling, or other transactions in and out of the district boundaries – (Table 6)

From Whom	*To Whom*	*AF*	*Use*
City of Vallejo	American Canyon	27	Vineyards-Wheeling Water-Non Potable
City of Vallejo	American Canyon	18	Potable (High School and Montevino)
	Total	45	

8. Other uses of water

No other uses of water are identified. Lake Curry has been removed from water accounting as of 2012.

F. Outflow from the District (Agricultural only)

See **Attachment A – District Maps** for the location of surface and subsurface outflow points, outflow measurement points, outflow water-quality testing locations

1. Surface and subsurface drain/outflow

Not Applicable. The City of Vallejo is not an agricultural water supplier.

2. Description of the Outflow (surface and subsurface) water quality testing program and the role of each participant in the program

Not Applicable. The City of Vallejo is not an agricultural water supplier.

3. Outflow (surface drainage & spill) Quality Testing Program

Not Applicable. The City of Vallejo is not an agricultural water supplier.

4. Provide a brief discussion of the District's involvement in Central Valley Regional Water Quality Control Board programs or requirements for remediating or monitoring any contaminants that would significantly degrade water quality in the receiving surface waters.

Not Applicable. The City of Vallejo is not an agricultural water supplier.

G. Water Accounting (Inventory)

Year of Data	2017	**Enter data year here**

Table 1

Surface Water Supply

2017 Month	Federal Urban Water (acre-feet)	Federal Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (Permit Water) (acre-feet)	Transfers into District (acre-feet)	Other Water (Lakes Wtrshed) (acre-feet)	Total (acre-feet)
Method		Not Applicable					
January	1188	0	0	0	0	24	1,212
February	1067	0	0	0	0	22	1,089
March	980	0	0	0	234	26	1,240
April	1185	0	0	0	0	25	1,210
May	1989	0	0	0	0	30	2,019
June	1948	0	0	214	0	38	2,200
July	1735	0	0	481	0	43	2,259
August	801	0	586	750	0	39	2,176
September	35	0	1241	750	0	36	2,062
October	313	0	0	1,539	0	35	1,887
November	17	0	0	1,309	0	24	1,350
December	21	0	0	1,175	0	26	1,222
TOTAL	11,279	0	1,827	6,218	234	367	19,925

The March 2017 Transfer into the district was a one-time transfer from the Tolenas turnout to Green Valley as an exchange of agricultural entitlement water from 2016.

Table 2 *Not Applicable. The City does not utilize groundwater for public supply.*

Table 3

Total Water Supply

2017 Month	Surface Water Total (acre-feet)	District Groundwater (acre-feet)	Recycled M&I (acre-feet)	Total District Water (acre-feet)
Method			Not Applicable	
January	1,212	0	0	1,212
February	1,089	0	0	1,089
March	1,240	0	0	1,240
April	1,210	0	0	1,210
May	2,019	0	0	2,019
June	2,200	0	0	2,200
July	2,259	0	0	2,259
August	2,176	0	0	2,176
September	2,062	0	0	2,062
October	1,887	0	0	1,887
November	1,350	0	0	1,350
December	1,222	0	0	1,222
TOTAL	19,925	0	0	19,925

*Recycled M&I Wastewater is treated urban wastewater that is used for agriculture.

Table 4

Urban Distribution System

2017 Area or Line	Length (feet)	Leaks (acre-feet)	Breaks (acre-feet)	Flushing/Fire (acre-feet)	Total (acre-feet)
Vallejo Service Area		0.279			0.3
Vallejo Service Area			10.58		10.6
Vallejo Service Area				1.8	1.8
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
TOTAL	0	0.279	10.58	1.8	12.6

Table 5

2017 District Water Budget

Water Supply	Table 3		19,925	
Environmental Consumptive Use		minus	0	(A)
Groundwater Recharge	(Perc ponds & recharge wells)	minus	0	x
Transfers out of District		minus	2,619	(B)
Flushing / Fire	Table 4b	minus	2	
Distribution System Leaks & Breaks	Table 4b	minus	11	
Water Available for sale to customers			17,294	
Actual Water Sales 2017	From District Records		13,112	
Inside Use	Feb urban use x 12		11,189	(C)
Landscape / Outside Use	(calculated)		1,923	
Unaccounted for Water	(calculated)		4,182	

(A) as of 2012, releases from Lake Curry are no longer included

(B) American Canyon, Benicia, Travis AFB

(C) Consumption value for Feb 2017 was 932 acre-feet

Table 6

Annual Water Quantities Delivered Under Each Right or Contract

Year	Federal Urban Water (acre-feet)	Federal Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (Permit Water) (acre-feet)	Transfers into District (acre-feet)	Other Water (Lakes (acre-feet)	Total (acre-feet)
2008	12,696	0	2,761	8,049		2,048	25,554
2009	13,471	0	3,131	3,854		2,011	22,467
2010	14,672	0	4,394	2,693		1,927	23,686
2011	13,741	0	6,140	1,141		1,929	22,951
2012	14,304	0	6,026	4,016		441	24,787
2013	9,681	0	12,347	7,170		408	29,606
2014	16,553	0	4,898	5,473		370	27,294
2015	8,772	0	9,232	3,519		353	21,876
2016	11,376	0	6,660	5,643		359	24,038
2017	11,279	0	1,827	6,218	234	367	19,925
Total	126,545	0	57,416	47,776	234	10,213	242,184
Average	12,654	0	5,742	4,778	234	1,021	24,218
	(USBR - SCWA) M&I		State WP Contract			Lakes Madigan & Frey, and Lake Curry	

Section III: Best Management Practices (BMPs) for Agricultural Contractors

This section is Not Applicable. The City of Vallejo does not provide water for agricultural contractors.

Section IV: Best Management Practices for Urban Contractors

A. Urban BMPs

Foundational BMPs

The City of Vallejo continues to target compliance with water conservation BMP coverage and reporting requirements as originally prescribed by the California Urban Water Conservation Council (CUWCC). Although the City has officially followed the traditional BMP reporting track, it also tracks and records conservation efforts made in other areas. To the maximum extent possible, the City participates in a regional water conservation effort that is centrally administered by the Solano County Water Agency, with direct representation via a voting member of a formal Urban Water Conservation Committee. The City utilized the CUWCC website to facilitate BMP reporting through the FY 2016/17 cycle, until it was closed down.

1. Utilities Operations

1.1. Operations Practices

A.1) Conservation Coordinator

An assigned coordinator develops and manages the conservation program and has budget authority of the conservation program. This is a trained management position that directs best management plan implementation

A.2) Water waste prevention

The City's Wasteful Water Prohibition Ordinance was updated in March 2015 when new drought restrictions, enforcement, and penalties were added. A copy of the ordinance is attached in **Attachment L** The ordinance provides for City staff to respond to complaints of water waste, or observed water waste. In responding to observed water waste, staff may visit or call customers to inform them of their wasteful activity and request that the activity be corrected. Follow-up visits are made to assess whether the water wasting activity has ceased. Notices are tracked for repeat "offenders." During times of water shortage, repeat water waste violators may be fined $200 for a second violation and $500 for a third violation. City staff maintains a log of advisories and actions taken. This ordinance is enforced at all times, with additional restrictions during water shortages.

Prohibitions at all times include:

- Gutter flooding
- Single-pass cooling systems for new connections
- Non-recirculating systems in all new conveyor car wash systems
- Use of hose for washing cars, boats, trailers and other vehicles without a nozzle
- Use of hose to wash sidewalks, walkways, driveways, parking lots, or other hard surfaced areas without a nozzle, unless the washing is required for health reasons
- Outdoor irrigation that causes runoff for more than 15 minutes

- Allowing potable water to escape from breaks within the customer's system for more than 36 hours after notification or discovery of the break
- Decorative water fountains without water recirculation
- Use of potable water for construction, compaction, dust control, street sweeping, or building wash down where non-potable or recycled water is available
- Use of non-recirculating systems in new conveyor car wash facilities

Additional prohibitions during water shortages include:

- Limits on outdoor irrigation with potable water during the day time hours and daily restrictions
- Outdoor irrigation that causes runoff
- Washing sidewalks and driveways with potable water
- Using potable water in a fountain or decorate water feature
- Outdoor irrigation within 48 hours of measurable rainfall
- Serving drinking water other than upon request in eating or drinking establishments
- Failing to provide the option to not have towels and linens laundered daily in hotels and motels
- Limits to outdoor irrigation daily schedules

In addition to the Wasteful Water Prohibition Ordinance, the City adopted an ordinance in March of 2010 incorporating the State Model Water Efficient Landscape Ordinance requirements for new development. The requirements are detailed in Chapter 16.71 of the City's municipal code. The ordinance was updated in February 2016, as required to maintain consistency with state regulations.

A.3) Wholesale agency assistance programs

The City is a wholesale water supplier to the cities of American Canyon and Benicia, but does not provide a wholesale agency assistance program since each city has prepared an Urban Water Management Plan and is running its own water conservation program. In addition, Vallejo operates the Travis Air Force Base Water Treatment Plant on behalf of the U.S. Air Force, but has no responsibility for the distribution system and no influence over end users on the base. Staff also works closely with the Solano County Water Agency (SCWA), the regional wholesaler, when implementing all water conservation programs.

1.2. Water Loss Control

California Senate Bill 555 now requires all urban retail water suppliers to submit a completed and validated water loss audit annually to DWR by October 1. Previously, Senate Bill 1420 established that urban water suppliers submit a report that quantifies water system losses with their urban water management plans.

Water Loss Control is a key conservation strategy to improve water supply reliability and effective water loss control goes beyond fixing leaks and breaks as they occur. It involves monitoring and improving infrastructure conditions and operational practices, with economically justified intervention planning. Proactive water loss control provides multiple benefits in addition to reducing water waste. It also

improves infrastructure durability, prevents property damage, and delays the need for developing additional water resources.

Water Loss Auditing: The City has performed two water audits since 2015 using AWWA Water Loss Control software. The results of the audits are disappointing and are summarized below. The City's overall water loss percentage score remained above 20% in both the 2016 and 2017 water audits. We believe the high water loss number will come down significantly in future audits as better data collection methods are introduced into the audit process and planned routine meter testing and replacement programs take hold. Water meter testing and replacement program will increase the validity of both plant production meters and retail water customer meters. In addition, a formal water audit working group was formed with members from all offices in the Water Department to identify and address specific audit processes and data needs going forward. A plan to improve/streamline production water metering is in work.

Performance Benchmarks Water Audit (2017):

- Data Validity Score: 55 of 100
- 3,237 AF : Water Loss Volume (water supplied – authorized consumption)
- 21.3%: Water Loss as Percent of Water Supplied
- 53 Gal: Real Losses Per Service Connection Per Day

Prior Year (2016) Water Audit Performance Benchmarks:

- Data Validity Score: 50 of 100
- 3,106 AF : Water Loss Volume (water supplied – authorized consumption)
- 21.2%: Water Loss as Percent of Water Supplied
- 58 Gal: Real Losses Per Service Connection Per Day

1.3. Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

There are no know unmetered accounts in the City's water system. All accounts are billed by volume of use. The City is considering undertaking a study to identify any barriers or disincentives to retrofitting mixed-use commercial industrial and institutional (CII) accounts with dedicated landscape meters and will assess the merits of a program to provide incentives to switch mixed use accounts to separate dedicated indoor and landscape meters.

1.4. Retail Conservation Pricing

Since 1999 the City's water rate structure has maintained an inclining block rate structure for the single-family residential water use category where historically over 80 percent of the City's water consumption occurs, and a uniform water rate per hundred cubic foot for multi-family residential and non-residential usage. All customers pay a fixed fee service charge.

An inclining block rate structure is considered a water conserving rate structure by providing a negative pricing signal as each unit of water consumed beyond the first tier rate allotment carries an additional incremental cost. The City's volume charge is per one hundred cubic feet (ccf) and is applied to two rate blocks for single family customers in the Vallejo and Lakes service area as follows:

i) Vallejo 0-22 CCF, Lakes 0-26 CCF and
ii) Vallejo Over 22 CCF, Lakes Over 26 CCF

It is anticipated that the City will continue to use its current inclining block rate structure into the future.

2. Education Programs

2.1. Public Information Programs

Current Public program elements include purchasing and providing educational materials, newspaper display ads and public information notices throughout the year. Water savings tips and other information is distributed at Earth Day and Public Works' Week events, during Water Awareness Month, through office displays (adult and children's), and other outreach events, such as Solano Youth Ag Day, Fix-a-Leak Week, and Loma Vista Farm Festivals. Financial support is provided annually for the Vallejo Downtown Earth Day event, the California Water Awareness Campaign and Loma Vista Farm.

Additional public outreach activities conducted in 2017 included:

- Distribution of multiple water savings-related materials including Sunset Magazine's "Water & Energy Savings in the West," "How to Water Your Garden," and "Water-Wise Gardening for California" through utility offices, at community events and upon request.
- Water staff answered customers' questions on leaks and conducted residential home water surveys upon request to help reduce water waste.
- Annual City-sponsored Water-Wise landscape workshops were held in partnership with local businesses and cities. Since 2006, a series of workshops have provided hands-on outdoor landscape training to local residents. The workshops are taught by business professionals, educational consultants, and Master Gardeners. Friendly Landscaping and Gray Water workshops continue to be offered at various times throughout the year. Workshop class attendance averages between 50 and 60 students per class.
- Our City Water Conservation web page link can be found at: www.vallejowater.org .
- "Project Wet" teacher training workshops are offered twice a year and financial support is provided for teacher participation. These workshops have trained teachers to incorporate interactive water education activities in the classroom.
- Partnerships continue to be exercised with Loma Vista Farm, the Vallejo Flood and Wastewater District, Vallejo Unified School District and private parochial schools, Valcore Recycling, Solano County Water Agency, Pacific Gas & Electric Company (PG&E), Lowes and Home Depot Home Improvement Centers, Honeywell Green Boot Camp representative, Mid-City Nursery in American Canyon and more.
- Water Conservation presentations to HOAs, and various professional and civic groups are routinely performed throughout the year. The City gave Water Conservation presentations to the following groups:
    - Solano Realtors Association - 2016
    - Hiddenbrooke POA – 2016 & 2018
    - Vallejo Chamber of Commerce 2018
    - CSS Community Group - 2016

- Glen Cove Community Association - 2018
- Vallejo Heights Homeowners – 2015 & 2018

The City also participates in a regional public information program through the SCWA's urban water conservation committee. Regional information and outreach include:

- Public service radio announcements with drought messaging
- Water Conservation web page link at: www.solanosaveswater.org.
- Advertising published in local newspapers for Water-Wise workshops and Gray Water workshops.

2.2. School Education Programs

The City has its own school education and outreach program and also participates in a regional program through the SCWA's regional school education and outreach program. The City's program consists of in-classroom presentations, field trips, provision of educational materials, and attendance at Green Academy and STEAM sponsored events.

The City also participates in the Solano County Water Education (SWEP) regional program administered through Solano County Urban Water Conservation Committee. The regional program consists of:

- In-classroom presentations;
- High school video contest;
- Bookmark art contest;
- School assembly programs by professional presenters;
- Providing educational materials to schools; and
- Attendance at regional and state-sponsored water education conferences
- In 2017 the City's School Education Program was responsible for:
  - 49 School Assemblies
  - 30 Field Trips
  - 90 Classroom Presentations
  - 2 Teacher Workshops
  - 4 Festivals
  - 15,000 Student Contacts

The City also provides funding for the Watershed Explorers, a county-wide effort.

Programmatic BMPs

3. Residential

A.1) Residential assistance program

The City continues to provide its residential water customers with water saving devices (shower heads, hose nozzles, moisture meters, faucet aerators, and more. Items are distributed directly to customers at the water billing office or through the mail upon request. In addition, water staff provide customers with on-

demand customized water leak detection reports and analysis. In 2014, a popular turf removal/rebate program first began and the water savings attributed to the program are significant.

A.2) Landscape water survey

Residential water use surveys in Vallejo are conducted for single family homes by a program jointly sponsored and administered by the Solano County Water Agency (SCWA) and the retail agencies' urban water conservation committee. The City of Vallejo began participating in the regional program in Fiscal Year 2008/2009. SCWA performs the majority of residential surveys during the warm weather months, and City staff perform the surveys as time permits during periods when the SCWA program is not available.

A total of 61 residential surveys were performed in 2016 while 58 surveys were completed in 2017. The average water savings attributed to each household participating in a residential survey has been estimated at be between 46 and 70 gallons per household.

The SCWA provides program oversight and tracks the number of surveys offered, as well as the number of surveys performed. The surveys include:

- An interview with the homeowner;
- Historical water use report;
- An irrigation system check for malfunctioning sprinkler heads or other system parts;
- A review of irrigation scheduling and recommendations;
- Leak checks;
- Providing homeowners with information about rebate programs offered including turf replacement, high-efficiency toilets, high efficiency clothes washers, and weather-based irrigation controllers;
- Providing high-efficiency showerheads and low flow faucet aerators.

The program focuses on the highest residential water users by sending letters to the top 20 percent of water users each year. The surveys are also provided as a customer service to any homeowner requesting a survey.

A.3) High-efficiency clothes washers (HECWs)

The City participates in a clothes washer rebate program through its wholesaler, SCWA. The program currently provides between $50 and $150 rebates for clothes washers purchased within the service area receiving water supplied by SCWA. The new clothes washers must meet specified water efficiency standards to qualify, and the amount of the rebate paid depends on the water efficiency of the washer model purchased. The rebate amounts may vary from year to year and customers are encouraged to contact the local electrical utility for additional rebates.

While the program has been a successful one, the City anticipate that its washer rebate program will sunset within the next year as clothes washer technologies have evolved across all washer platforms to the point where monetary incentives are no longer needed to persuade a customer to upgrade.

A.4) WaterSense Specification (WSS) toilets

The City participated in a regional high-efficiency toilet retrofit program for many years beginning in 2007, however, the program ended in 2015 as State legislation regarding retrofit upon resale of single family haves has eliminated the need for a monetary incentive to upgrade

The City does continue to offer WSS toilet rebates in limited numbers to qualified low income customers through Pacific Gas and Electric (PG&E). Energy Saving Assistance Program.

A.5) WaterSense Specifications for residential development

The City has not adopted a discrete resolution and/or ordinance addressing Water Sense specifications for residential development. The City does, however, update its building codes with changing state regulations that address available water efficient fixtures. California's Green Building Code, Cal Green, specifies flow rates for bathroom and kitchen faucets, water closets, urinals, and showerheads identical to the Water Sense Program.

4. Commercial, Industrial, and Institutional (CII)

The City participates in a regional CII program through the Solano County Water Agency's Urban Water Conservation Committee. Since 2007, commercial water customers have been offered free water surveys to determine the efficiency of their existing facility. Typically, the surveys include irrigation system audits as well as audits of indoor water fixtures and appliances.

During the surveys, surveyors install faucet aerators and high efficiency showerheads, ensuring immediate water savings. Pre-rinse spray valves are installed as well, for restaurants in need of retrofitted valve technology. After each survey is completed, a report is generated and provided to the customer, which includes an inventory of water-using fixtures and appliances, recommendations for improving water efficiency, and estimated water savings to be realized from implementing recommendations made during the survey. Sites found to have pre-1992 toilets are also offered participation in a direct installation program of high-efficiency toilets (HET) and high-efficiency urinals (HEU).

SCWA has conducted random reviews of water use for CII customers before and after receiving a water use survey. The program appears to be effective at reducing water use, particularly for those sites where surveys act as incentives for rebates or direct installation of HETs and HEUs.

Several years ago the Solano County Urban Water Conservation Committee developed a "Water Savings Incentive Program." This program has been designed to provide CII customers with assistance in upgrading fixtures, appliances, and irrigation systems for greater efficiency. The assistance comes in the form of rebates for equipment and control systems. This program is in addition to the HET, HEU, and weather-based irrigation controller rebate programs. The key element of the Water Savings Incentive Program is flexibility. Rather than being limited to the specific items typically rebated, such as toilets, urinals, or irrigation controllers, a water customer can make water efficiency repairs and/or upgrades to existing irrigation systems and apply for rebates for equipment based on specific-site conditions. Copies of the "Water Savings Incentive Program" terms and conditions are included in **Appendix L**.

5. Landscape

Landscape audits are offered to commercial and dedicated irrigation accounts through the SCWA's regional landscape audit program. Eleven (11) large landscape surveys were offered in 2017 and six (6) surveys were completed. The audits consist of the following:

- Evaluation of the efficiency and distribution uniformity of the irrigation system;
- Evaluation of the condition of the system components: water pressure; broken, tilted or obstructed heads; over-spray;
- Development of a water budget based on square footage of various hydrozones and average ETo;
- Evaluate the irrigation scheduling and volume applied;
- Recommend improvements in irrigation practices; and
- A written report provided to the City as well as to the water customer.

In 2014, this monitoring effort was expanded and incorporated into a regional large landscape pilot program sponsored by SCWA with partial funding coming from the City of Vallejo. Under the program, the Vallejo Unified School District and Parks and Recreations Departments are routinely provided with water use performance reports that compare actual water consumption with calculated water budget totals. The program is web-based and offered through a company called Waterfluence.

The City has targeted landscape property owners like the Vallejo City Unified School District (VCUSD) and the Greater Vallejo Recreational District (GVRD) and the City's Landscape Maintenance District (LMD)properties in an effort to deploy a regional Large Landscape Irrigation Survey Program. Under the program free landscape surveys that include evaluation of sprinkler systems and an assessment of landscape conditions, a calculated annual water budget, and a review of irrigation controller programming are offered to customers free of charge. Sixty-Two (62) large landscape sites are currently monitored for both the school district and the parks district and work has begun to incorporate LMD properties in 2019.

B. Provide a 5-Year Budget for Expenditures and Staff Effort for BMPs

Table 1: Amount Actually Spent During Current Year

Year : 2017 **FY 17/18**

BMP#	*BMP Name*	*Projected Expenditures*	*Staff Hours*
1	***Utilities Operations***		
1.1	*Operations Practices*	*$10,000*	*100*
1.2	*Water Loss Control*	*$10,000*	*100*
1.3	*Metering*	*$10,000*	*100*
1.4	*Retail Conservation Pricing*	*$2,000*	*10*
2	***Education Programs***		
2.1	*Public Information Programs*	*$14,000*	*50*
2.2	*School Education Programs*	*$33,000*	*1,000*
3	***Residential***	*$32,000*	*800*
4	***CII***	*$32,000*	*800*
5	***Landscape***	*$12,000*	*200*
	Total	**$155,000**	**3,160**

Table 2: Projected budget summary for 2nd Year

Year : 2018 **FY 18/19**

BMP#	*BMP Name*	*Projected Expenditures*	*Staff Hours*
1	***Utilities Operations***		
1.1	*Operations Practices*	*$10,000*	*100*
1.2	*Water Loss Control*	*$15,000*	*150*
1.3	*Metering*	*$10,000*	*100*
1.4	*Retail Conservation Pricing*	*$2,000*	*10*
2	***Education Programs***		
2.1	*Public Information Programs*	*$14,000*	*50*
2.2	*School Education Programs*	*$33,000*	*1,000*
3	***Residential***	*$32,000*	*800*
4	***CII***	*$32,000*	*800*
5	***Landscape***	*$12,000*	*200*
	Total	**$160,000**	**3,210**

Comments FY 18/19: Annual budget amount is projected to increase slightly ($5K) as water loss control program expenditures are likely to increase as state emphasis on water loss as a conservation measure. All other programs held constant.

Table 3: Projected budget summary for 3rd Year

Year : 2019 **FY 19/20**

BMP#	BMP Name	Projected Expenditures	Staff Hours
1	***Utilities Operations***		
1.1	*Operations Practices*	*$8,000*	*100*
1.2	*Water Loss Control*	*$20,000*	*200*
1.3	*Metering*	*$10,000*	*100*
1.4	*Retail Conservation Pricing*	*$2,000*	*10*
2	***Education Programs***		
2.1	*Public Information Programs*	*$14,000*	*50*
2.2	*School Education Programs*	*$35,000*	*1,000*
3	***Residential***	*$29,000*	*700*
4	***CII***	*$30,000*	*700*
5	***Landscape***	*$24,000*	*400*
	Total	**$172,000**	**3,260**

Comments FY 19/20: Annual budget amount is projected to increase 12K over prior year as water loss control program expenditures continue to receive priority due to high water loss numbers reported to the State on annual report. A slight decrease (-5K) in emphasis on rebates in the housing and business sector reduces expenditures in Residential and CII programs and a push to expand the large landscape water budget monitoring program gains momentum. A 6 % increase in school education costs is anticipated for same level of service.

Table 4: Projected budget summary for 4th Year

Year : 2020 **FY 20/21**

BMP#	BMP Name	Projected Expenditures	Staff Hours
1	***Utilities Operations***		
1.1	*Operations Practices*	*$8,400*	*100*
1.2	*Water Loss Control*	*$21,000*	*200*
1.3	*Metering*	*$10,500*	*100*
1.4	*Retail Conservation Pricing*	*$2,100*	*10*
2	***Education Programs***		
2.1	*Public Information Programs*	*$14,700*	*50*
2.2	*School Education Programs*	*$36,750*	*1,000*
3	***Residential***	*$30,450*	*800*
4	***CII***	*$31,500*	*800*
5	***Landscape***	*$25,200*	*400*
	Total	**$180,600**	**3,460**

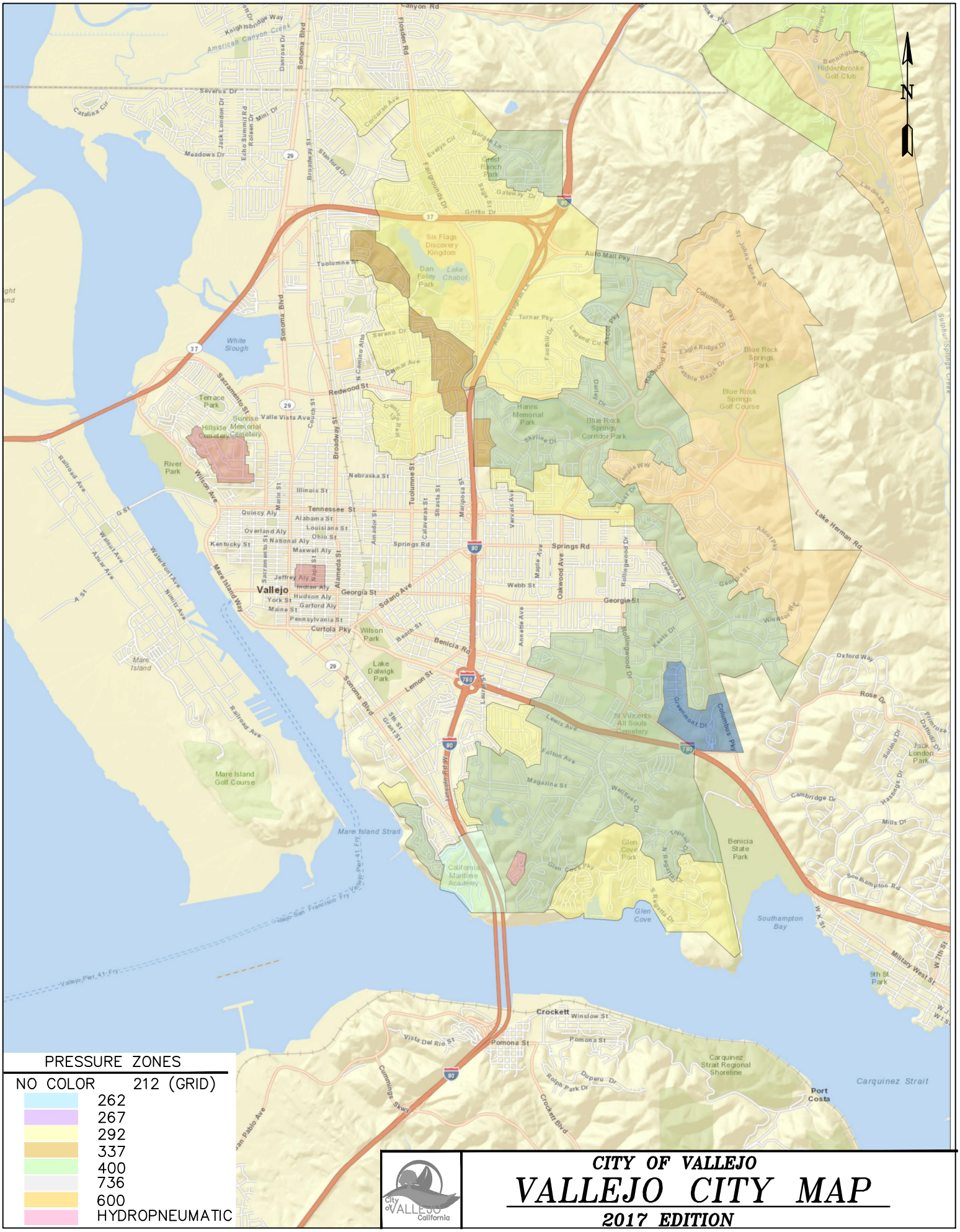
Comments FY 20/21: Annual budget amounts anticipated to increase 5% across the board for the same level of service.

Table 5: Projected budget summary for 5th Year

Year : 2021 **FY 21/22**

BMP#	*BMP Name*	*Projected Expenditures*	*Staff Hours*
1	***Utilities Operations***		
1.1	*Operations Practices*	*$8,820*	*100*
1.2	*Water Loss Control*	*$22,050*	*200*
1.3	*Metering*	*$11,025*	*100*
1.4	*Retail Conservation Pricing*	*$2,205*	*10*
2	***Education Programs***		
2.1	*Public Information Programs*	*$15,435*	*50*
2.2	*School Education Programs*	*$38,588*	*1,000*
3	***Residential***	*$31,973*	*800*
4	***CII***	*$33,075*	*800*
5	***Landscape***	*$26,460*	*400*
	Total	**$189,631**	**3,460**

Comments FY 21/22: Annual budget amounts anticipated to increase 5% across the board for the same level of service.


PRESSURE ZONES
NO COLOR 212 (GRID)
262
267
292
337
400
736
600
HYDROPNEUMATIC
N
CITY OF VALLEJO
VALLEJO CITY MAP
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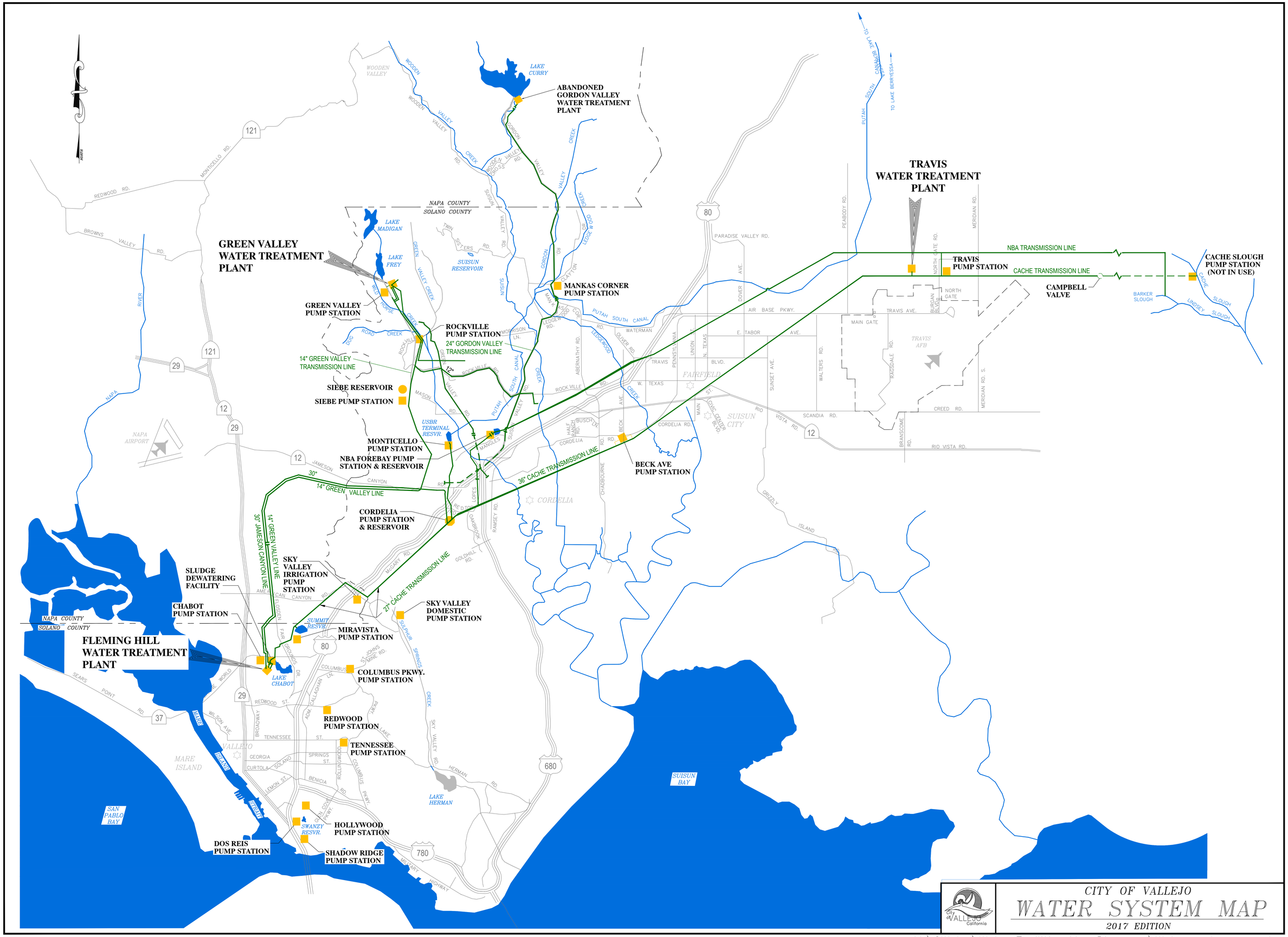
ABANDONED GORDON VALLEY WATER TREATMENT PLANT
LAKE CURRY
GREEN VALLEY WATER TREATMENT PLANT
LAKE MADIGAN
LAKE FREY
GREEN VALLEY PUMP STATION
ROCKVILLE PUMP STATION
24" GORDON VALLEY TRANSMISSION LINE
14" GREEN VALLEY TRANSMISSION LINE
SIEBE RESERVOIR
SIEBE PUMP STATION
USBR TERMINAL RESVR.
MONTICELLO PUMP STATION
NBA FOREBAY PUMP STATION & RESERVOIR
30" 14" GREEN VALLEY LINE
CORDELIA PUMP STATION & RESERVOIR
30" JAMESON CANYON LINE
14" GREEN VALLEY LINE
SLUDGE DEWATERING FACILITY
CHABOT PUMP STATION
NAPA COUNTY
SOLANO COUNTY
FLEMING HILL WATER TREATMENT PLANT
LAKE CHABOT
SKY VALLEY IRRIGATION PUMP STATION
SUMMIT RESVR.
MIRAVISTA PUMP STATION
COLUMBUS PKWY. PUMP STATION
REDWOOD PUMP STATION
TENNESSEE PUMP STATION
HOLLYWOOD PUMP STATION
SWANZY RESVR.
DOS REIS PUMP STATION
SHADOW RIDGE PUMP STATION
27" CACHE TRANSMISSION LINE
SKY VALLEY DOMESTIC PUMP STATION
SUISUN RESERVOIR
MANKAS CORNER PUMP STATION
36" CACHE TRANSMISSION LINE
BECK AVE PUMP STATION
TRAVIS WATER TREATMENT PLANT
TRAVIS PUMP STATION
NBA TRANSMISSION LINE
CACHE TRANSMISSION LINE
CAMPBELL VALVE
CACHE SLOUGH PUMP STATION (NOT IN USE)
LAKE HERMAN
SUISUN BAY
SAN PABLO BAY
MARE ISLAND
VALLEJO
FAIRFIELD
SUISUN CITY
CORDELIA
TRAVIS AFB
NAPA AIRPORT
WOODEN VALLEY
TO LAKE BERRYESSA
TO LAKE BERRYESSA
PUTAH SOUTH CANAL
NAPA RIVER
MARE ISLAND STRAIT
REDWOOD RD.
BROWNS VALLEY RD.
MONTICELLO RD.
JAMESON CANYON RD.
CANYON RD.
PARADISE VALLEY RD.
AIR BASE PKWY.
TRAVIS AVE.
MAIN GATE
NORTH GATE
E. TABOR AVE.
WATERMAN
ROCK VILLE RD.
W. TEXAS
SCANDIA RD.
CREED RD.
RIO VISTA RD.
CORDELIA RD.
REDWOOD ST.
TENNESSEE ST.
GEORGIA ST.
SPRINGS ST.
CURTOLA
BENICIA
LEMON ST.
MILITARY HIGHWAY
ISLAND RD.
GRIZZLY
HERMAN RD.
SKY VALLEY RD.
SULPHUR SPRINGS CREEK
CACHE SLOUGH
LINDSEY SLOUGH
BARKER SLOUGH
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29
12
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680
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CITY OF VALLEJO
WATER SYSTEM MAP
2017 EDITION
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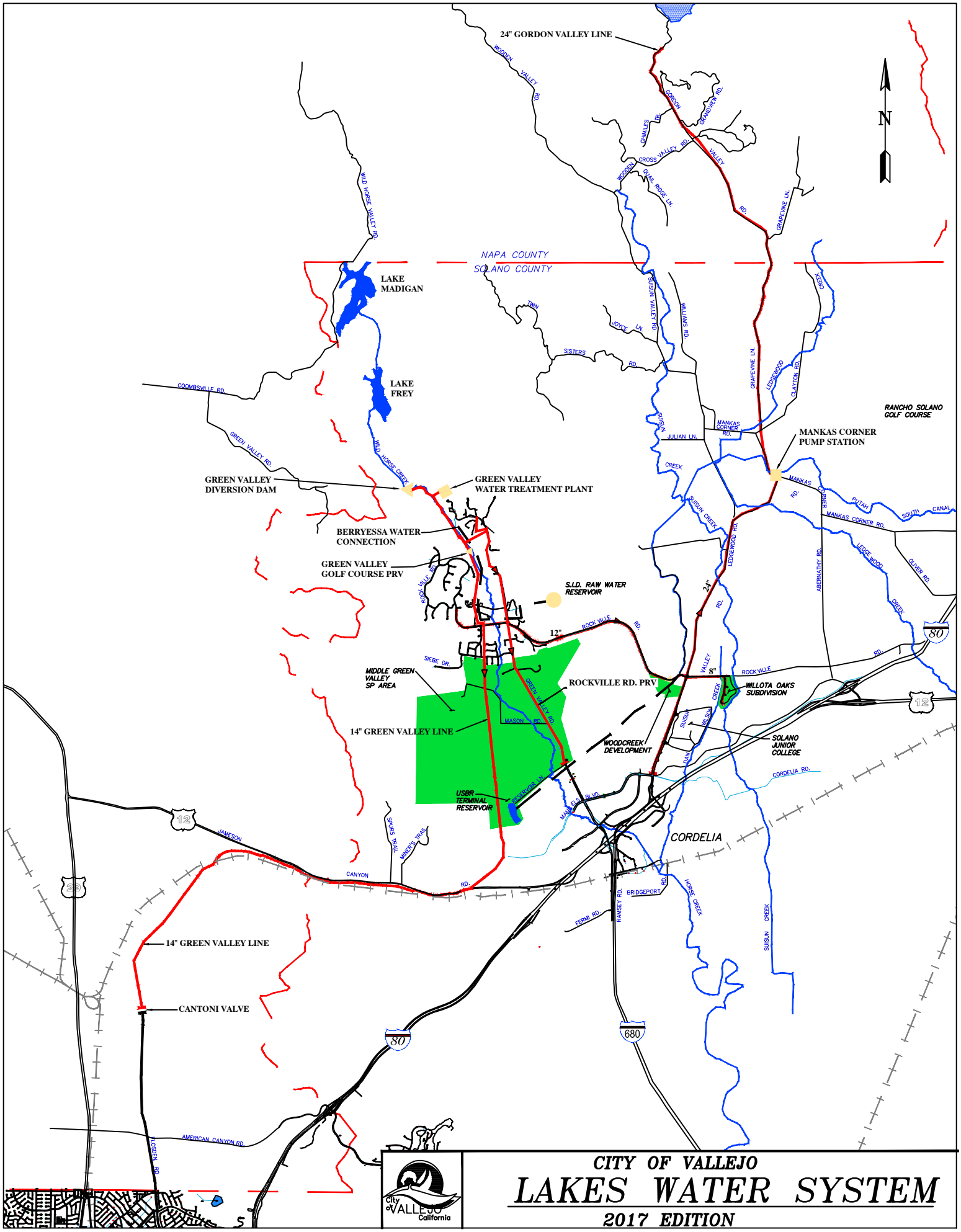

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Attachment B: District Rules and Regulations

City of Vallejo Municipal Code Title 11 – Water

Title 11 - WATER[]

Chapters:

Sections:

"Applicant" means the person, persons or entity or authorized agent applying for water service, water service connection or water main extension.

(Ord. 324 N.C. § 2.01, 1958.)

"City" means the city of Vallejo, a municipal corporation, and its duly authorized representatives.

(Ord. 334 N.C. § 2.02, 1958.)

"Commercial office" means the business office of the water division, located in the city hall of the city of Vallejo.

(Ord. 324 N.C. § 2.03, 1958.)

"Consumer" means a person, persons, or entity receiving or taking water.

(Ord. 324 N.C. § 2.04, 1958.)

"Costs" mean the actual or estimated value of materials, equipment rentals, personal services and other expenses incurred, including taxes, engineering and overhead.

(Ord. 324 N.C. § 2.05, 1958.)

"Customer" means a person, persons or entity of record receiving water service or other services from the water system.

(Ord. 324 N.C. § 2.06, 1958.)

"Demand" means the rate of draft of water for a specified period of time; the total quantity of water delivered or received during the month, season and/or year.

(Ord. 324 N.C. § 2.07, 1958.)

11.04.080 - Fire chief.

"Fire chief" means the chief officer of the city fire department.

(Ord. 324 N.C. § 2.08, 1958.)

11.04.090 - Main extension.

"Main extension" means extension of distribution pipe lines, exclusive of service connections, beyond existing facilities.

(Ord. 324 N.C. § 2.10, 1958.)

11.04.100 - Mains.

"Mains" means the transmission and/or distribution pipelines of the water system.

(Ord. 324 N.C. § 2.09, 1958.)

11.04.110 - Premises.

"Premises" means that separate identifiable and transferable lot or parcel of real property, including the improvements thereon, except that portions thereof having well-defined boundaries, such as walls, fences, or hedges which prevent the common use of the property by all occupants, for the purpose of Chapters 11.08 through 11.48, shall be determined separate premises.

(Ord. 324 N.C. § 2.11, 1958.)

11.04.120 - Service.

"Service" means the delivering or receiving of water, a water service connection or an act or duty performed by the water system.

(Ord. 324 N.C. § 2.12, 1958.)

11.04.130 - Superintendent.

"Superintendent" means the city water superintendent charged with the responsibility of administering, directing and representing the water system.

(Ord. 324 N.C. § 2.13, 1958.)

11.04.140 - Water service.

"Water service" means the delivery and/or receipt of water or a water service connection.

(Ord. 324 N.C. § 2.14, 1958.)

11.04.150 - Water service connection.

"Water service connection" means the connection, including service pipes, meters and appurtenances through which water delivery is made.

(Ord. 324 N.C. § 2.15, 1958.)

11.04.160 - Water system.

"Water system" means the water division of the public works department of the city of Vallejo, and the entire physical plant of the water division, including but not limited to real property, reservoirs, treatment plants, pumping stations, transmission and distribution pipelines, and appurtenances thereto.

(Ord. 324 N.C. § 2.16, 1958.)

Chapter 11.08 - GENERAL RULES

Sections:

11.08.010 - Purpose.

The rules and regulations herein contained are adopted to govern the general operation of the Vallejo municipal water system to provide an efficient and economical water supply.

(Ord. 324 N.C. § 1.01, 1958.)

11.08.020 - Rates, fees and charges—Purpose.

The rates, fees and charges herein contained are adopted as conditions to obtaining water supply and other services from the Vallejo municipal water system.

(Ord. 324 N.C. § 1.02, 1958.)

11.08.030 - Inspection.

The water system or its duly authorized agents shall at all reasonable times have the right to enter or leave the customer's premises for any purpose properly connected with service to the customer.

(Ord. 324 N.C. § 11.01, 1958.)

11.08.040 - Construction or street work—Notice.

All persons engaged in construction or street work shall give at least ten days' written notice to the water system for the removal or displacement of water system facilities that may interfere or conflict with street work, and any damage resulting to the facilities from such failure to give notice shall be charged against the person engaged in such work. All costs involved in the removal or displacing of water facilities shall be paid by the person engaged in such work, except where provisions of county or state encroachment permits or city permits or contracts state otherwise.

(Ord. 324 N.C. § 11.02, 1958.)

11.08.050 - Emergency shut off.

In case of fire, or alarm of fire, or in making repairs, or in constructing new work, the water system shall have the right to shut off water from any customer or number of customers without notice and to keep it shut off as long as it may be necessary. In case of fire, or alarm of fine, the use of fountains or yard sprinklers is prohibited, should circumstances warrant.

(Ord. 324 N.C. § 11.03, 1958.)

11.08.060 - System not liable for certain damages.

The water system shall not be liable for damages resulting from:

A. Any interruption of service or damage caused by spigots, valves, and/or other equipment or fixtures that are open when water is turned on, either when water is turned on originally or when turned on after a temporary shut off;

B. Any increase or decrease in delivery pressure, since the water service is subject to such variations in pressure as may be from time to time required or which may occur in the operation of the distribution system.

(Ord. 324 N.C. § 11.04, 1958.)

11.08.070 - Tapping by authorized persons only.

No person except an employee of the water system shall tap any of the water pipes of the main line or distribution system or insert tees, stopcocks or ferrules therein. Where service pipes are found disconnected at the corporation cock, they shall be reconnected only by an employee of the water system.

(Ord. 324 N.C. § 11.05, 1958.)

11.08.080 - Fire chief's authority.

In the event of fire or alarm of fire, the fire chief shall have full authority to request the setting of gates and valves in water mains to secure the possible pressure at the points required. When the need for such changes has passed, the fire chief shall notify the superintendent in order that the system may be restored to its normal operating condition.

(Ord. 324 N.C. § 11.06, 1958.)

11.08.090 - Conditions of service.

A. Every person, firm or corporation taking water shall be considered as having expressed his consent to be bound by this chapter and Chapters 11.12 through 11.48, and whenever any one of these rules and/or regulations is violated, the right is reserved to discontinue water service for noncompliance. Unless otherwise provided, the water system shall discontinue water service if the customer fails to comply within five days after the date of written notice of violation. If such noncompliance affects matters of health or safety, or affects the operation, maintenance or other costs of the water system, water service may be discontinued immediately and without notice.

B. The person, firm or corporation whose water is thus discontinued shall forfeit all deposits made, and the water shall not be turned on again until all unpaid fees and charges are paid and other requirements of this chapter and Chapters 11.12 through 11.48 are fulfilled.

(Ord. 377 N.C.(2d) § 1, 1977; Ord. 324 N.C. § 11.07, 1958.)

11.08.100 - Selling of water.

It is unlawful for any person or entity to sell water within the corporate limits of the city of Vallejo without having first received permission to do so from the city council of the city of Vallejo.

(Ord. 324 N.C. § 11.08, 1958.)

11.08.110 - Reselling and/or redelivery of water.

A. The water system shall not serve or supply water to any customer if the same is to be resold or redistributed to other consumers, except only in the case of the federal government, state or local public entities including municipalities, or nonprofit mutual water companies and homeowners' associations, whether incorporated or unincorporated, purchasing water from the water system pursuant to contract approved by the city council for use within the boundaries of the property that the water service connection was approved to supply, unless otherwise provided by contract.

B. It is a violation of these regulations if water received from this system is resold or redelivered to premises other than those stipulated in the water service application.

(Ord. 377 N.C.(2d) § 3, 1977; Ord. 324 N.C. § 11.09, 1958.)

11.08.120 - Responsibility for damage to water service connections.

A. The customer and the owner of every parcel of real property served by a water service connection shall be responsible for damage, injury or loss of whatever kind occurring to said water service connection, including the meters, pipes, meter boxes and enclosures used in supplying water service to said property, unless said customer or owner, or both, can establish to the satisfaction of the water superintendent that the damage, injury or loss was not caused or occasioned by their neglect or wrongful conduct or that of anyone under their direction or control.

B. Whenever it becomes necessary to make repairs to water service connections, the city shall bill the actual cost of the work, including labor and materials, to the customer, with a copy of said billing to the property owner if different than the customer, giving written notice of the opportunity to refute their responsibility for such damage, injury or loss within ten days of delivery of said billing and notice. If responsibility is not so refuted, and the billing is not paid within thirty days of its delivery, the cost of said repairs may be assessed against and made a lien upon the real property after notice and hearing in accordance with the procedures set forth in Sections 10.04.040 to 10.04.080 inclusive of the Vallejo Municipal Code, or said obligation may be declared a debt and collected by the city using any lawful means of collection for a debt owed by such customer or owner.

C. Nothing herein shall be construed to relieve any third party from liability or responsibility for damage, injury or loss to any water service connection caused or occasioned by his act or omission.

(Ord. 377 N.C.(2d) § 2, 1977.)

Chapter 11.12 - APPLICATION FOR SERVICE

Sections:

11.12.010 - Procedure.

All persons or entities desiring water service from the water system shall make application therefor at the commercial office. The application shall be in the manner prescribed by the superintendent and shall be signed by the applicant or his authorized agent under penalty of perjury that the application is true, correct and complete. Receipt of such application shall not obligate the water system to provide water service until the application has been approved by the superintendent or his authorized agent. The application, a request water for water service, shall not obligate the applicant to take such service for any period of time in excess of that upon which the minimum charges for such account are based.

(Ord. 324 N.C. § 3.01, 1958; Ord. 1713 N.C. (2d), § 1, 7-28-2015)

11.12.020 - Contents.

All applications for water service shall set forth:

A. The definite boundaries of the premises to be served water;

B. The purpose and use of the water to consumed;

C. An estimate of the maximum instantaneous water demand; and

D. Such other information and details as may be deemed proper or necessary by the superintendent.

(Ord. 324 N.C. § 3.02, 1958.)

11.12.021 - Applicant's affirmation; perjury.

Each applicant for water service shall be required before approval of service to file an affirmation setting forth the applicant's belief the applicant meets the specific conditions required for water service. Such statements shall be on a form prescribed by the department and shall contain a written declaration that the affirmation is made under penalty of perjury. A signature on a form as described herein will satisfy the requirements of section 11.12.010.

Any person signing a statement containing such a declaration, who willfully and knowingly with intent to deceive states as true any material matter which he knows to be false, is subject to the penalty prescribed for perjury in the California Penal Code.

(Ord. 1713 N.C. (2d), § 2, 7-28-2015)

11.12.030 - Refusal of service.

The water superintendent shall have the right to refuse to furnish water or may discontinue water service to any premises for the following reasons:

A. To protect the city and/or the water system from fraud and abuse;

B. The requested water service demand may be detrimental or injurious to the water service of other customers;

C. The distribution facilities are inadequate to supply the requested water service demand.

(Ord. 324 N.C. § 3.03, 1958.)

11.12.040 - Limit of service.

The water superintendent shall have the right to limit the total quantity of water furnished to any premises or to establish the times and the rates of draft at which water may be taken or will be furnished to any premises, although a limit or maximum use may or may not appear on the application or permit for the water service. Should conditions seem to warrant the limiting of water service, the superintendent shall be guided by but not restricted to:

A. The past seasonal water use at the premises;

B. The effect of current use on other customers; and

C. The effect of current use on the water system facilities.

(Ord. 324 N.C. § 3.04, 1958.)

11.12.050 - Changes in customer's facilities.

Customers making any material change in the size, character or extent of their facilities utilizing the water service, or whose change in operations results in a large or unusual increase in the use of water, shall immediately give the commercial office written notice of the nature of the change and, if necessary, amend their application for water service. Any request for change in the size,

location or number of water service connections to premises previously receiving water service will require the filing of a new application for water service, and all conditions and requirements of new water service and water service connections shall apply.

(Ord. 324 N.C. § 3.05, 1958.)

11.12.060 - Water used without application.

A person or firm taking possession of premises and using water without having made application to the commercial office for water service, shall be held liable for all the water deliver from the date of the last recorded meter reading. If proper application for service is not made within seven calendar days after notification to do so by the superintendent or if accumulated bills for water service are not paid upon presentation, the water service shall be discontinued without further notice.

(Ord. 324 N.C. § 3.06, 1958.)

11.12.070 - Liability for service.

After water service is commenced, the service applicant shall be liable for payment for all water delivered through that particular service and all other charges applicable to the service. Whenever two or more persons jointly make application for service, they shall receive a single periodic bill but shall be jointly and individually liable for payment of all charges appearing on such bills.

(Ord. 324 N.C. § 3.07, 1958.)

11.12.080 - Former customer owing bills.

When an application for water service is made by a former customer who has failed to pay all bills for water service previously received or charges in relation to any other service received from the water system, the superintendent shall refuse to wish water service to the applicant until the outstanding bills and/or charges are paid; and shall also require a cash deposit as a guarantee for the payment of future bills.

(Ord. 324 N.C. § 3.08, 1958.)

11.12.090 - Deposit.

A. Each applicant may be required to furnish and maintain a cash deposit for payment of charges in connection with the provision of water service where it appears to the finance director that the applicant's credit is insufficient to assure payment of any such charges as they become due. The deposit shall be applied as payment only to the final bill. An applicant will not need to furnish and maintain a cash deposit if the applicant has been a customer of record of the city of Vallejo for water service for twenty-four months or more within the past three years preceding application and having demonstrated a good credit history, which is defined as follows:
    1. No delinquent notices within the last twenty-four months, and
    2. No service disconnection for nonpayment of a bill or deposit within the previous twenty-four months; and
    3. Has not had a check returned to the city for insufficient funds from his/her bank within the past twenty-four months and,
    4. Has not filed for bankruptcy within seven years of the date of application.
B. Where the applicant is required to make a deposit, the amount shall be set as follows:
    1. Residential Applicants. The amount shall not exceed a sum equal to twice the estimated periodic bill and in any event, the amount shall not be less than a minimum amount to be determined by the finance director.
    2. Commercial Applicants. The amount shall not exceed a sum equal to three times the estimated average

monthly bill. In any event, the amount shall not be less than three hundred dollars and which may be adjusted from time to time by the finance director.

Each applicant that is required to make a cash deposit may receive a reduction, as determined by the finance director, in the deposit requirement if, at the time of application, the applicant signs up for the city's electronic Automated Clearing House (ACH) debit program. If the applicant terminates their participation in the ACH debit program, or if the applicant's ACH debit is rejected or otherwise not paid by their financial institution, the applicant must, within thirty days of notice by the city, increase their deposit by the amount of the reduction they received.

(Ord. 1503 N.C.(2d) § 1, 2003: Ord. 587 N.C.(2d) § 1, 1981: Ord. 324 N.C. § 3.09, 1958.)

11.12.100 - Refund of deposit.

When a customer has furnished a deposit to guarantee payment of water bills, and service has been terminated, such deposit will be refunded to the customer after deduction of any unpaid charges.

(Ord. 1503 N.C.(2d) § 2, 2003: Ord. 324 N.C. § 3.10, 1958.)

11.12.110 - Discontinuance of service.

A. Requests to discontinue water service shall be submitted in writing at the commercial office not less than two working days before the date on which the discontinuance is desired. The request shall stipulate a definite date, the same being a working day, during which water service shall be discontinued, and a proper forwarding address at which the customer will receive closing billing.
B. After the effective date of such discontinuance, all charges accruing shall cease for the period during which service shall be shut off, providing the shut off is for a period of not less than one month.

(Ord. 324 N.C. § 3.11, 1958.)

Chapter 11.16 - WATER SERVICE CONNECTIONS

Sections:

11.16.010 - Minimum connection.

The minimum water service connection shall be a three-fourth inch service pipe and five-eighth inch meter. Whenever a water service connection or revision is requested, the city water superintendent shall determine the size of the service pipe and meter to be installed. The determination shall be predicated on, but not limited to, the applicable sections of the city's building, fire and plumbing codes, federal, state and local laws and regulations, governing public health, and any other lawful authority having jurisdiction over such matter.

(Ord. 194 N.C.(2d) § 1 (part), 1973.)

11.16.020 - Water facilities payments.

Each and every applicant for a water service connection to the city municipal water system shall pay a water facilities payment in the amount applicable to the particular classification of the premises to be supplied water as hereinafter set forth in Sections 11.16.021 through 11.16.030; water facilities payments shall be in addition to any and all other taxes, fees or charges of any nature whatsoever relative to a supply of water, water service or water service connection.

(Ord. 1334 N.C.(2d) § 9, 1995: Ord. 1127 N.C.(2d) § 2, 1990: Ord. 194 N.C.(2d) § 1 (part), 1973.)

11.16.021 - Purpose.

The purpose of the water facilities connection ordinance codified in this chapter is to create revenue to assist in providing for capital costs of additions and improvements to the municipal water system. To accomplish this objective, all moneys received under Sections 11.16.020 through 11.16.030 shall be deposited in the capital reserve account of the municipal water system fund as the same is established and designated by Ordinance No. 47 N.C.(2d). That money shall be used, after approval of the city council, to pay for acquisition, installation, or construction of components (including easements, rights-of-way and/or land) of the municipal water system. Those components must be of benefit to the overall municipal water system or supply the water demands required of or anticipated for the municipal water system.

(Ord. 1334 N.C.(2d) § 10, 1995: Ord. 1127 N.C.(2d) § 3, 1990: Ord. 194 N.C.(2d) § 1(a), 1973.)

11.16.022 - Definitions.

The amount of water facilities payment applicable to a particular water service connection shall be based on the definitions set forth in Section 11.48.070.

(Ord. 1127 N.C.(2d) § 4, 1990: Ord. 194 N.C.(2d) § 1(b), 1973.)

11.16.023 - Payments—Vallejo service area water connections.

For water service to premises in the Vallejo service area as defined in section 11.40.010A the amounts set forth below shall be imposed at the time an applicant for a water service connection or for change of service applies for a building permit at the premises that is the subject of the connection or change.

A. Residential. For premises consisting of one or more residential units, an applicant shall pay the following water facilities payment for each residential unit to be supplied water by that water connection, effective on the date indicated.

7/1/2009:	$7,590.00
7/1/2010:	$7,810.00
7/1/2011:	$8,050.00
7/1/2012:	$8,290.00
7/1/2013:	$8,540.00

B. Mobile Home. For premises consisting of one or more mobile home units an applicant shall pay the following water facilities payment for each mobile home unit to be supplied water by that water connection, effective on the date indicated.

7/1/2009:	$7,590.00
7/1/2010:	$7,810.00

7/1/2011:	$8,050.00
7/1/2012:	$8,290.00
7/1/2013:	$8,540.00

C. Commercial. For premises consisting of one or more commercial units an applicant shall pay the following water facilities payment for each commercial unit to be supplied water by that water connection or connections, effective on the date indicated; however, in all instances, the payment shall not be less than hereinafter set forth for the meter size installed on the particular water service connection, effective on the date indicated:

7/1/2009:	$7,590.00
7/1/2010:	$7,810.00
7/1/2011:	$8,050.00
7/1/2012:	$8,290.00
7/1/2013:	$8,540.00

Meter Size	7/1/2009	7/1/2010	7/1/2011	7/1/2012	7/1/2013
5/8 inch	$ 7,590	$ 7,810	$ 8,050	$ 8,290	$ 8,540
¾ inch	$ 7,590	$ 7,810	$ 8,050	$ 8,290	$ 8,540
1 inch	$ 15,170	$ 15,620	$ 16,090	$ 16,570	$ 17,070
1-½ inch	$ 30,330	$ 31,240	$ 32,170	$ 33,140	$ 34,130
2 inch	$ 48,520	$ 49,980	$ 51,480	$ 53,020	$ 54,610
3 inch	$ 90,970	$ 93,700	$ 96,510	$ 99,410	$ 102,390
4 inch	$ 151,620	$ 156,170	$ 160,850	$ 165,680	$ 170,650
6 inch	$ 303,240	$ 312,330	$ 321,700	$ 331,350	$ 341,300
8 inch	$ 485,180	$ 499,730	$ 514,720	$ 530,160	$ 546,070

10 inch	$ 697,440	$ 718,360	$ 739,910	$ 762,110	$ 784,970
12 inch	$ 1,303,900	$ 1,343,020	$ 1,383,310	$ 1,424,810	$ 1,467,550

D. Combination. For premises consisting of any combination of residential units, mobile home units, or commercial units, an applicant shall pay the following water facilities payment for each residential or mobile home unit, effective on the date indicated, plus the amount set forth in subsection C. for the commercial unit(s).

7/1/2009:	$7,590.00
7/1/2010:	$7,810.00
7/1/2011:	$8,050.00
7/1/2012:	$8,290.00
7/1/2013:	$8,540.00

E. Schools. For premises used or occupied as a school, an applicant shall pay the following water facilities payment, effective on the date indicated; however, in all instances, the payment shall not be less than the amount recited in subsection C. for the meter size installed on the particular water service connection.

7/1/2009:	$7,590.00
7/1/2010:	$7,810.00
7/1/2011:	$8,050.00
7/1/2012:	$8,290.00
7/1/2013:	$8,540.00

F. The rate of payment shall annually escalate the same percentage that the latest "Engineer News Record Construction Costs Index" for the San Francisco Bay Area annually escalates. Any escalation shall be presented annually prior to July 1 for consideration and approval by the city council.

(Ord. 1620 N.C.(2d) § 1, 2009: Ord. 1543 N.C.(2d) § 1; 2005: Ord. 1334 N.C.(2d) § 11, 1995: Ord. 1269 N.C. § 2, 1993: Ord. 1127 N.C. (2d) § 5, 1990: Ord. 877 N.C.(2d) § 1, 1986: Ord. 760 N.C.(2d) § 1, 1984: Ord. 539 N.C.(2d) § 1, 1980: Ord. 496 N.C.(2d) § 2, 1979: Ord. 435 N.C.(2d) § 4, 1978: Ord. 379 N.C.(2d) § 4, 1977: Ord. 194 N.C.(2d) § 1(c), 1973.)

11.16.024 - Payments—Lakes service area water connections.

For water service to premises in the Lakes service area as defined in section 11.48.010B, the amounts set forth below shall be imposed at the time an applicant for a water service connection or for change of service applies for a building permit at the premises that is the subject of the connection or change.

A. Residential. For premises consisting of one or more residential units, an applicant shall pay the following water facilities payment for each residential unit to be supplied water by that water connection, effective on the date indicated.

7/1/2009:	$16,660.00
7/1/2010:	$17,300.00
7/1/2011:	$17,970.00
7/1/2012:	$18,630.00
7/1/2013:	$19,330.00

B. Mobile home. For premises consisting of one or more mobile home units an applicant shall pay the following water facilities payment for each mobile home unit to be supplied water by that water connection, effective on the date indicated.

7/1/2009:	$16,660.00
7/1/2010:	$17,300.00
7/1/2011:	$17,970.00
7/1/2012:	$18,630.00
7/1/2013:	$19,330.00

C. Commercial. For premises consisting of one or more commercial units an applicant shall pay the following water facilities payment for each commercial unit to be supplied water by that water connection or connections, effective on the date indicated; however, in all instances, the payment shall not be less than hereinafter set forth for the meter size installed on the particular water service connection, effective on the date indicated:

7/1/2009:	$16,660.00
7/1/2010:	$17,300.00
7/1/2011:	$17,970.00

7/1/2012:	$18,630.00
7/1/2013:	$19,330.00

Meter Size	7/1/2009	7/1/2010	7/1/2011	7/1/2012	7/1/2013
5/8 inch	$ 16,660	$ 17,300	$ 17,970	$ 18,630	$ 19,330
¾ inch	$ 16,660	$ 17,300	$ 17,970	$ 18,630	$ 19,330
1 inch	$ 33,310	$ 34,590	$ 35,930	$ 37,250	$ 38,660
1-½ inch	$ 66,620	$ 69,170	$ 71,860	$ 74,250	$ 77,310
2 inch	$ 106,590	$ 110,680	$ 114,970	$ 119,200	$ 123,690
3 inch	$ 199,850	$ 207,510	$ 215,560	$ 223,500	$ 231,910
4 inch	$ 333,080	$ 345,850	$ 359,270	$ 372,500	$ 386,520
6 inch	$ 666,150	$ 691,680	$ 718,530	$ 744,990	$ 773,030
8 inch	$ 1,065,860	$ 1,106,690	$ 1,652,600	$ 1,713,500	$ 1,778,000
10 inch	$ 1,532,170	$ 1,590,870	$ 1,652,600	$ 1,713,500	$ 1,778,000
12 inch	$ 2,864,490	$ 2,974,230	$ 3,089,640	$ 3,203,500	$ 3,324,080

D. Combination. For premises consisting of any combination of residential units, mobile home units, or commercial units, an applicant shall pay the following water facilities payment for each residential or mobile home unit, effective on the date indicated, plus the amount set forth in subsection C. for the commercial unit(s).

7/1/2009:	$16,660.00
7/1/2010:	$17,300.00
7/1/2011:	$17,970.00
7/1/2012:	$18,630.00
7/1/2013:	$19,330.00

E. Schools. For premises used or occupied as a school, an applicant shall pay the following water facilities payment, effective on the date indicated; however, in all instances, the payment shall not be less than the amount recited in subsection C. for the meter size installed on the particular water service connection.

7/1/2009:	$16,660.00
7/1/2010:	$17,300.00
7/1/2011:	$17,970.00
7/1/2012:	$18,630.00
7/1/2013:	$19,330.00

F. The rate of payment shall annually escalate the same percentage that the latest "Engineer News Record Construction Costs Index" for the San Francisco Bay Area annually escalates. Any escalation shall be presented annually prior to July 1 for consideration and approval by the city council.

(Ord. 1620 N.C.(2d) § 2, 2009: Ord. 1334 N.C.(2d) § 12, 1995.)

11.16.025 - Exceptions.

Water facilities payment requirements shall not be applicable to a water service connection for the following classifications:

A. Fire protection service connections under Section 11.20.010;

B. Temporary service connections under Section 11.20.050;

C. Existing water service connections described in Section 11.16.025.

(Ord. 1334 N.C.(2d) § 13 (part), 1995: Ord. 1127 N.C.(2d) § 6, 1990: Ord. 194 N.C.(2d) § 1(d), 1973.)

11.16.026 - Existing services.

All existing water service connections described below shall deemed to have paid the applicable water facilities payments. Water service connections of the following categories shall be held to be existing water service connections.

A. Water service connections installed prior to the effective date of the ordinance codified in this chapter to supply premises previously completed and suitable for occupancy;

B. Water service connections installed prior to the effective date of the ordinance codified in this chapter to supply premises then under construction or alteration, evidenced by a then valid building permit, if the construction or alteration was completed and the premises suitable for use or occupancy within six months after the effective date of the ordinance codified in this chapter. The six months applicable to a particular water service connection may be extended by the city council for a period of time equal to that resulting from delay caused by acts of God, strikes or other unusual circumstances, providing such delay was not the consequences of the act, or failure to act, of owners or their contractors.

(Ord. 1334 N.C.(2d) § 13 (part), 1995: Ord. 1127 N.C.(2d) § 7, 1990: Ord. 194 N.C.(2d) § 1(e), 1973.)

11.16.027 - Changes of service.

In the event of any change involving an existing water service connection, the following shall be the basis for determining any water facilities payment then due and payable:

A. When there is a change in the classification or number of units on them, the payment shall be reduced by the amount of the payment applicable to the connection immediately before such a change;

B. When there is a change in the connection's meter size, the payment shall be reduced by the amount of the payment applicable to the connection immediately before such a change;

C. When there is a change in the connection's physical location, but the connection continues to supply the same premises, the payment shall be reduced by the amount of the payment applicable to the connection immediately before such a relocation;

D. However, in any of the above instances, the maximum credit shall not exceed the payment applicable to the revised connection; and, further, no refund or future credit shall accrue to any person as a result of the credit.

(Ord. 1334 N.C.(2d) § 13 (part), 1995: Ord. 1127 N.C.(2d) § 8, 1990: Ord. 612 N.C.(2d) § 4, 1981: Ord. 194 N.C.(2d) § 1(f), 1973.)

11.16.028 - Abandonment of service.

Whenever any improvement on a premises has been damaged, dismantled or removed so that the premises may not accommodate use, and there has been no active water service customer account during a twelve consecutive month period, such water service connection shall be deemed abandoned. In that case any water facilities payments shall be without effect and no refund or credit shall accrue to any person associated with the premises.

(Ord. 1543 N.C.(2d) § 2, 2005: Ord. 1334 N.C.(2d) § 13 (part), 1995: Ord. 1127 N.C.(2d) § 9, 1990: Ord. 194 N.C.(2d) § 1(g), 1973.)

11.16.029 - Nontransferable.

Water facilities payments paid, or deemed to have been paid shall not be transferable or creditable to the water facilities payments applicable to any other premises.

(Ord. 1334 N.C.(2d) § 13 (part), 1995: Ord. 1127 N.C.(2d) § 10, 1990: Ord. 194 N.C.(2d) § 1(h), 1973.)

11.16.030 - Special water facilities tax.

The city council reserves the right to find and determine that for the public and community benefit, good and/or welfare, the water facilities tax for a particular water service connection shall be different than those expressed and set forth in any subsection, paragraph or subparagraph of Sections 11.16.020 through 11.16.028 and that such different water facilities tax, then so determined, shall then be applicable to the water service connection and take precedence over any other water facilities tax set forth in any subsection, paragraph or subparagraph of Sections 11.16.020 through 11.16.028.

(Ord. 1334 N.C.(2d) § 13 (part), 1995: Ord. 194 N.C.(2d) § 1(i), 1973.)

11.16.035 - New service installation charges.

The water system shall collect charges for the installation of the following new water service connections:

A. Water Service Connections. Installed, complete in place, by water system forces, connected to an existing water main and consisting of the service piping and meter of the particular sizes required with meter box or other appropriate housing. This subsection covers the following water service connections:

Service Connection

¾″ service pipe & 5/8 ″ meter

¾″ service & ¾″ meter

1″ service pipe & 1″ meter

1 ½″ service pipe & 1 ½″ meter

2″ service pipe & 2″ meter

B. Meter Sets. Whenever, in the course of constructing new water mains, the service piping has been installed by others, the water system is to install only the water meter, complete with meter connections and box. This subsection covers the following meter sets:

Meter Size

5/8 ″ × ¾″ meter

¾″ meter

1″ meter

1 ½″ meter

2″ meter

C. Extra Large Connections. On new service connections requiring service pipe and/or meter larger than two-inch internal diameter or greater than fifty feet in length or otherwise different from the service pipe and meter combinations listed above, or wherever unusual conditions prevail, the charges to be collected by the water system for such service connections shall be on an actual cost basis.

D. Rate Adjustments. The charges for water service connections and meter sets presented in this section shall be established by resolution or resolutions adopted by the city council. The charges for water service connections and meter sets may annually escalate the same percentage that the latest ("Engineering News Record Construction Costs Index" for the San Francisco Bay Area annually escalates. The escalation, if any, shall be presented annually prior to July 1st, the first complete year after the passage of the ordinance codified in this section, and each year thereafter, for consideration and approval by the city council. The city council may also from time to time at its discretion, revise, alter and/or amend any of the charges set forth in this section by adoption of the appropriate resolution or resolutions.

(Ord. 1334 N.C.(2d) § 13 (part), 1995: Ord. 924 N.C.(2d) § 1, 1987: Ord. 539 N.C.(2d) § 2, 1980: Ord. 496 N.C.(2d) § 3, 1979: Ord. 435 N.C.(2d) § 5, 1978: Ord. 374 N.C.(2d) § 1, 1977: Ord. 15 N.C.(2d) § 1, 1971: Ord. 324 § 4.03, 1958.)

11.16.040 - Changes in meter or service pipe size.

Changes in size of meter, service pipe or both of existing service connections shall be at the expense of the customer. The expense shall be computed on the basis of the actual cost of the new installation less the value of any material salvaged. The value of salvaged material shall be the market value less the cost of salvaging the same.

(Ord. 324 N.C. § 4.04, 1958.)

11.16.050 - Changes in location.

When relocation of an existing meter or service connection has been requested for the customer's convenience, such location shall be at the customer's expense for the actual cost thereof. The relocation of existing meters or service connections, when done to protect the property of the water system or the city's interests, will be done without charge to the customer.

(Ord. 324 N.C. § 4.05, 1958.)

11.16.060 - Charges payable in advance.

Charges for new service connections, changes in size and changes in location for customer's benefit shall be due and actually paid before any work is commenced or material ordered. Whenever said charges are to be the actual costs, the estimated cost shall be deposited with the commercial office before any work is commenced or material ordered, and upon completion of the work the actual cost shall be compiled and any difference between the actual and estimated cost shall be billed or refunded for the customer's account.

(Ord. 324 N.C. § 4.06, 1958.)

11.16.070 - Title to connections.

A. Title to all meters, service pipes and appurtenances used in providing a water service connection shall vest in the water system and the charges hereinbefore set forth are for connection and do not convey any right of title to said facilities.
B. The water service connection is for a water supply to the premises stipulated on the application and is not transferable to any other properties or premises.
C. If the water service is discontinued or abandoned, no right of refund of connection charges or credit in any manner accrues to the applicant or customer or his successor.

(Ord. 324 N.C. § 4.07, 1958.)

11.16.080 - Location of connections.

A. Water service connections shall be installed only in public streets and/or easements or rights-of-way under the control of the water system.
B. Where the premises to be served front on more than one street, the superintendent shall have the right to designate on which frontage the service connection shall be installed.
C. New or relocated meters shall be installed in the public sidewalk near the street curb or behind and adjacent to the public sidewalk within the publicly owned and controlled right-of-way.
D. It is unlawful for anyone to enclose a water meter with a fence, wall or hedge or otherwise obstruct access to water service meters. Upon the failure or refusal of the owner or customer to remove any such unlawful obstruction within a reasonable time after written request to do so, the superintendent shall, at his option, order:
    1. The discontinuance of water service to the premises until the obstruction is removed; or
    2. The customer to pay an additional charge of two dollars, as penalty, for each meter reading taken until the obstruction is removed.

(Ord. 324 N.C. § 4.08, 1958.)

11.16.090 - Connection to separate premises.

A. A single service connection shall not serve more than one premises. Separate premises under a single ownership, control or management shall only be supplied water through separate service connections unless the

superintendent, for good and sufficient reasons, shall determine otherwise.

B. When investigating requests for a single service connection to provide service to more than one premises, the superintendent shall be guided by but not be restricted to the following considerations:
    1. That the service connection will not violate the regulations against reselling or redelivery to other consumers;
    2. That the service connection will not establish a private distribution system;
    3. That the service connection will not avoid main extension requirements;
    4. That the service connection will not be a means of avoidance of meter service charges and/or securing an advantageous water price without an equivalent guaranteed minimum.

(Ord. 324 N.C. § 4.09, 1958.)

11.16.100 - Connections to separate consumers.

A. Each separate consumer shall only be supplied water through a separate service connection unless the superintendent shall determine otherwise.

B. Where more than one consumer is supplied through a single service connection, the owner of the property, or other person agreed upon, shall be liable for payment for all water furnished through said single service connection.

C. Wherever it is practical to serve separate customers through separate service connections, the superintendent shall require separate service connections for each separate customer.

(Ord. 324 N.C. § 4.10, 1958.)

11.16.110 - Connections requiring main extension—Installation.

In no event shall a water service connection be installed unless a water main of adequate capacity and delivery pressure extends in a public street or right-of-way across the entire frontage of the property to be served water. Wherever as a prerequisite to service a water main must be extended, the some shall be installed in compliance with the provisions hereinafter set forth.

(Ord. 740 N.C.(2d) § 2 (part), 1984; Ord. 324 N.C. § 4.12, 1958.)

11.16.120 - Connections requiring main extension—Deposit in certain cases.

Whenever a water main extension is a prerequisite of water service but a portion of the property frontage abuts on an existing water main and/or construction of the entire extension is not immediately necessary to provide a water service to the particular property requesting service, the service applicant can comply with the obligation to extend a water main by:

A. Depositing in cash with the city of Vallejo an amount equal to the prorated share of the cost of extending such water main, as such cost is estimated by the water superintendent; or

B. Executing a recordable agreement, supported by a bond of faithful performance, obliging the owner of the property to pay the prorated share of the cost of such water main extension, upon demand of the water system.

(Ord. 740 N.C.(2d) § 2 (part), 1984; Ord. 437 N.C. § 1, 1961: Ord. 324 N.C. § 4.13, 1958.)

Chapter 11.18 - ELEVATED STORAGE FEES

Sections:

11.18.010 - Payment of fee.

Each and every applicant for water service connection to the elevated water storage system of the city municipal water system shall pay an elevated storage fee in the amount applicable to the particular classification of the premises to be supplied water as set out in this chapter. Said elevated storage fee shall be in addition to any and all other taxes, fees and/or charges of any nature whatsoever relative to a supply of water, water service, facilities tax or water service connection.

(Ord. 503 N.C.(2d) § 1 (part), 1979.)

11.18.020 - Purpose.

The purpose of the elevated storage fee is to create revenue to assist in providing for capital costs of additions and improvements to the municipal water system with respect to storage vessels, pump stations, control equipment, and those portions of pipelines above or beyond the serviceable areas of an elevated storage system. To accomplish this objective, all moneys received as payments of the elevated storage fee shall be deposited in an administrative trust fund (elevated storage). Moneys so deposited shall only be expended and/or withdrawn from said fund, to pay the cost of acquisition, installation, and/or construction of appurtenances and/or components (including easements,. rights-of-way and/or land) of the municipal water service found or determined to be of benefit to the elevated portions of the municipal water system, or major sections thereof, or vital and necessary to supply the water demands and/or flows then required or anticipated to be required of the municipal water service.

(Ord. 503 N.C.(2d) § 1 (part), 1979.)

11.18.030 - Definitions.

When determining the amount or amounts of the elevated storage fee applicable to a particular water service connection, the definitions set forth in Section 11.48.070 shall be utilized to establish the classification of the premises to be served.

(Ord. 503 N.C.(2d) § 1 (part), 1979.)

11.18.040 - Rates.

Simultaneously with the application for the installation of water service connection or connections, or any change of service, the applicant shall pay an elevated storage fee in the amount or amounts applicable to the particular classifications as follows:

A. Residential. One thousand three hundred dollars for each residential unit to be supplied by that water service.
B. Mobile Home. One thousand three hundred dollars for each mobile home unit to be supplied by that water service connection or connections.
C. Commercial. One thousand three hundred dollars for each commercial unit to be supplied water by that water connection or connections; however, in all instances, the elevated storage fee shall be not less than that hereafter set forth for the meter size installed on the particular water service connection:

Meter Size	Elevated Storage Fees
5/8 ″	$ 1,300.00
¾″	1,781.00

1″	1,976.00
1 ½″	4,056.00
2″	6,149.00
3″	11,247.00
4″	17,238.00
6″	29,068.00
8″ or larger	To be computed by the city water superintendent

D. Combination. One thousand three hundred dollars for each unit consisting of any combination of residential, mobile home, or commercial units, or the fee computed as meter size for commercial units as set out above.

E. Schools. One thousand three hundred dollars except that the elevated storage fee shall be not less than the fee for commercial units computed on meter size.

F. The rate of payment shall annually escalate the same percentage that the latest "Engineer News Record Construction Costs Index" for the San Francisco Bay Area annually escalates. Any escalation shall be presented. annually prior to July 1st for consideration and approval by the city council.

(Ord. 1269 N.C. § 3, 1993: Ord. 759 N.C.(2d) § 1, 1984: Ord. 538 N.C.(2d) § 1, 1980: Ord. 503 N.C.(2d) § 1 (part), 1979.)

11.18.050 - Exceptions.

The elevated storage fee shall not be applicable to a water service connection of the following classifications:

A. Fire protection service connections as set forth in Section 11.20.010;

B. Temporary service connections as set forth in Section 11.20.050;

C. Existing water service connections as the same are hereinafter described in Section 11.16.025;

D. A water service connection for which an elevated storage fee has previously been paid.

(Ord. 503 N.C.(2d) § 1 (part), 1979.)

11.18.060 - Changes of service.

In the event of any change involving an existing water service connection, the following shall be the basis for the determination of the amount of the elevated storage fee, if any, then due and payable:

A. Changes of classification of the premises and/or number of units on the premises:

The elevated storage fees applicable shall be reduced by the amount of the elevated storage fees applicable to the particular water service connection immediately prior to such change.

B. Changes of the meter size of the water services connection:

The elevated storage fees applicable shall be reduced by the amount of the elevated storage fees applicable to the particular water service connection immediately prior to such change.

C. Changes of the physical location of a water service connection continuing to supply the same premises:

The elevated storage fees applicable to the relocated water service connection shall be reduced by the amount of the elevated storage fees applicable to the particular water service connection immediately prior to such change or relocation.

D. However, in any and all instances of changes of service set forth above, the maximum credit of elevated storage fees applicable to the particular water service connection prior to such change shall never exceed the elevated storage fees applicable to the changed or revise premises or water service connection and further, no right of refund or future credit of any excess shall accrue to the applicant or to any previous or subsequent owner, tenant or occupant of the premises.

(Ord. 503 N.C.(2d) § 1 (part), 1979.)

11.18.070 - Abandonment of service.

Whenever, for any reason whatsoever, the building, structure or improvement on a premises has been damaged, dismantled or removed so that the premises is not suitable for or capable of accommodating use or occupancy and when there has not been an active customer account for the water service connection delivering water to said premises during a twelve-month period, such water service connection shall be conclusively deemed abandoned and any and all elevated storage fees paid, or deemed to have been paid, shall thereafter be without effect and no right of refund or credit of any nature shall accrue to any previous owner or subsequent owner, tenant or occupant of the premises. Any such abandoned water service connection shall be severed from the distribution pipeline upon the written order of the city water superintendent.

(Ord. 503 N.C.(2d) § 1 (part), 1979.)

11.18.080 - Nontransferability.

The elevated storage fees paid, or deemed to have been paid, applicable to a particular water service connection installed to serve a particular premises or lot or parcel of land shall not be transferable or creditable to the fees applicable for any other or different premises or lot or parcel of lard.

(Ord. 503 N.C.(2d) § 1 (part), 1979.)

11.18.090 - Special fees.

The city council reserves the right to find and determine that for the public and community benefit, good and/or welfare, the elevated storage fees for a particular water service connection shall be different than those expressed and set forth in this chapter, and that such different elevated storage fees, then so determined, shall be applicable to said water service connection and take precedence over any other elevated storage fees set forth in this chapter.

(Ord. 503 N.C.(2d) § 1 (part), 1979.)

Chapter 11.20 - SPECIAL SERVICE CONNECTIONS

Sections:

11.20.010 - Fire service connections—Installation.

A. When an application is made for fire service connections, such sprinkler and fire service installation shall not be less than four inches in size and shall be approved by the fire chief and by the Inspection Bureau of the Board of Fire Underwriters of the Pacific before water service is commenced.

B. Each fire service shall have installed therein a detector check valve of such pattern and design as approved by the superintendent.

C. A "detector check-valve" is defined as a spring-loaded or weight-loaded swing check valve equipped with a metered by-pass.

D. Water furnished through fire services shall be used only for extinguishing fires or for authorized testing of the fire fighting system. Whenever a consumer wishes to test he shall notify the commercial office at least two working days before making such test.

(Ord. 324 N.C. § 5.01, 1958.)

11.20.020 - Fire service connections—Unauthorized use.

Where an existing fire service connection is not equipped with a detector check valve, the following applies. If it is found an unauthorized connection has been made or that an unauthorized use has been made of the fire service connection, the consumer shall be notified to discontinue such unauthorized connection or use, and if the consumer fails or refuses to do so, the water to the service shall be shut off, and not turned on again until a proper detector check valve has been installed.

(Ord. 324 N.C. § 5.02, 1958.)

11.20.030 - Fire service connections—Water for fire storage tanks.

Water may be obtained through fire service connection for filling a storage tank for fire protection purposes, but only if written permission is secured from the commercial office in advance, and if an approved means of measurement is available. The standard water rates hereinafter set forth shall be applied to the quantity of water so furnished.

(Ord. 324 N.C. § 5.03, 1958.)

11.20.040 - Temporary service connections—Metering—Permit.

Whenever practical, all water furnished through a temporary service connection shall be metered. Permits for temporary service connections shall be valid for a period not exceeding sixty days after installation. The superintendent may extend such permit for one additional sixty day period only. Upon the discontinuance of use or termination of the period allowed by the permit, the temporary service shall be disconnected and dismantled or removed.

(Ord. 324 N.C. § 5.04, 1958.)

11.20.050 - Temporary service connection—Deposits.

A. The applicant shall make a cash deposit with the commercial office prior to issuance of a permit for a temporary service connection.

B. The deposit shall equal the estimated costs of installing and removing the facilities necessary to provide such service, including the value of materials,

C. Unless the applicant has otherwise established credit, the cost of water estimated to be used during the entire period of service.

(Ord. 324 N.C. § 5.05, 1958.)

11.20.060 - Temporary service connections—Refund of deposit.

Upon discontinuance of the temporary service and upon the completion of dismantling of the connections, the deposit shall be refunded without interest (upon application therefore) less any charges then unpaid, including the value of materials used (less salvage value) and materials lost or damaged beyond repair.

(Ord. 324 N.C. § 5.06, 1958.)

11.20.070 - Street construction water service.

Unless otherwise provided, contractors engaged in street construction work shall not take water from the water system except under the terms and conditions above set forth for temporary service connections.

(Ord. 324 N.C. § 5.07, 1958.)

11.20.080 - Subdivision construction water service.

When it is impractical in the opinion of the superintendent to install a temporary water service connection for the building construction work in a subdivision or to otherwise meter the water required for such building construction, the superintendent may allow the subdivider or developer to install water service connections without meters, provided that:

A. The subdivider or developer pays an amount a upon by the contract, but not less then the minimum monthly charge for regular service multiplied by 1.5 times the number of lots in the subdivision from the date of the installation of the first unmetered water service connection until the completion of the construction work, not to exceed six months in any event;
B. All of the temporary service connections shall be disconnected from the house piping and a meter installed prior to selling or transferring any title or interest to the premises or otherwise permitting occupancy of the premises.

(Ord. 324 N.C. § 5.08, 1958.)

Chapter 11.24 - EXTENSION OF FACILITIES

Sections:

11.24.010 - Water main extensions.

Applications for water main extensions shall be made at the commercial office and shall be accompanied by a deposit of ten dollars for each lot to be served in the case of a subdivision, or otherwise sixty dollars for each acre to be served. The superintendent shall cause a survey to be made to determine the adequacy of existing mains, if any, to serve the property of applicant, and if it is found and determined that a main extension should be installed, the city engineer shall prepare plans therefor, taking into consideration estimated future needs and the general plan of serving water to the vicinity surrounding the property of applicant.

(Ord. 324 N.C. § 6.01, 1958.)

11.24.020 - Water mains—Minimum size.

The inside diameter of every water main to be installed shall not be less than six inches except as may be otherwise determined by the superintendent.

(Ord. 324 N.C. § 6.02, 1958.)

11.24.030 - Fire hydrants.

A. In preparing plans to extend water mains to serve property within the city, the city engineer shall provide for the installation of fire hydrants. The cost of such hydrants shall be included as a part of the water main extension and shall be paid for by applicant.

B. In preparing plans to extend mains to serve property outside the city, but within a fire protection district, and it is recommended by the fire protection district that fire hydrants be provided, the city engineer shall provide for the installation of fire hydrants in such number and location as recommended by the fire protection district, the cost of such hydrants shall be included as a part of the water main extension and shall be paid for by applicant.

C. In such case, a fire hydrant service charge shall be made against the fire protection district as hereinafter provided.

(Ord. 324 N.C. § 6.03, 1958.)

11.24.040 - Estimate of cost.

Upon receipt of the plans, the superintendent shall cause an estimate of installation costs to be prepared. The plans, specifications and cost estimates shall be furnished to applicant who shall within sixty days elect to proceed with the installation or abandon the same. If the applicant withdraws the application for the water main extension, all deposits made by applicant less engineering costs (including costs of survey, plans, specifications and estimates) shall be refunded to him.

(Ord. 324 N.C. § 6.04, 1958.)

11.24.050 - Installation by water system.

In the case applicant elects to proceed with the water main installation, the water system shall install the same; provided, however, the water system shall not order the materials required until the applicant has deposited an amount equal to the estimated cost of such materials, nor shall said system install the facilities until the applicant has deposited an amount which, when added to any previous deposits on the same application, is equal to the estimate of installation costs.

(Ord. 324 N.C. § 6.05, 1958.)

11.24.060 - Installation by applicant.

A. If the superintendent determines that it is impossible for the water system to install water main extension within a reasonable time, or that it is not economical for the water system to install the water main extension, the superintendent may permit applicant to install the facilities in accordance with the plans and specifications.

B. However, when the water main extension will be of benefit to properties other than that owned by the applicant and therefore the cost of the main extension will be the basis for calculating charges to other customers and for calculating refunds to the applicant, the applicant shall obtain not less than two bids for the work and the superintendent shall approve the cost prior to the beginning of any construction.

(Ord. 324 N.C. § 6.06, 1958.)

11.24.070 - Standard specifications.

The superintendent shall prepare specifications for the construction of water system facilities. A copy of the standard specifications shall be filed with the city clerk and after their approval and adoption by resolution of the city council, they shall govern all extension, additions and revisions to the water distribution system.

(Ord. 324 N.C. § 6.07, 1958.)

11.24.080 - Surety bonds.

In the event the applicant installs water main extension facilities, he shall furnish the water system a surety company bond in an amount equal to at least one-half the superintendent's estimate of the installation costs, to guarantee faithful performance by the applicant, and a surety company bond in an equal amount to guarantee claims of persons employed by applicant and claims of persons who furnish materials, supplies and implements used by applicant on such work.

(Ord. 324 N.C. § 6.08, 1958.)

11.24.090 - Bill of sale.

When water main extension facilities are installed and upon the execution and delivery by applicant of a good and sufficient bill of sale of said facilities to the city, water shall be furnished to applicant's property.

(Ord. 324 N.C. § 6.09, 1958.)

11.24.100 - Refunding procedure.

A. Whenever an applicant applies for a permit to connect property fronting a main the installation cost of which main was paid by a previous applicant and approved by the water system, such subsequent applicant shall pay to the water system prior to the granting of such permit, an amount calculated as "A" in the following formula:

$$A = F \times C \times .60$$

wherein

F	=	number of feet of applicant's property fronting on main
C	=	cost per foot of installing main
.60	=	factor composed of .50 (for one of two sides fronting on main) and .10 (for intersection allowance)

B. Provided, however, when the superintendent determines that only one side of a street can be benefited by a main installed by a previous applicant, subsequent applicants for permits to connect thereto shall pay to the water system prior to the granting of such permits, an amount calculated as "A" in the following formula:

$$A = F \times C \times \frac{1}{1.10}$$

wherein

F	=	the number of feet of applicant's property fronting on such main
C	=	cost per foot of installing such main

1.10	=	a factor composed of 1.00 (the total cost of the installation) and .10 (for intersection allowance)

C. Amounts collected as provided herein shall be paid by the water system to the applicant who paid the cost of installing the main until the applicant has received an amount calculated as "R" in the following formula:

$$R = T - (.60 \times C \times F)$$

wherein

T	=	total cost of installing main
C	=	cost per foot of installing main
F	=	number of feet of installing applicant's property fronting on main

D. Provided, however, when the superintendent has determined that only one side of a street can be benefited and has made collection on that basis, amounts so collected shall be paid by the water system to the applicant who paid the cost of installing the main until the applicant has received an amount calculated as "R" in the following formula:

$$R = T - (1.10 \times C \times F)$$

wherein

T	=	total cost of installing main
C	=	cost per foot of installing main
F	=	number of feet of installing applicant's property fronting on main

E. Provided further, that the water system shall not make charges to subsequent applicants and refunds to installing applicants after the tenth anniversary of the date the main was placed in service.

F. Any surplus remaining in water system funds, after installing applicant has been reimbursed in accordance with the provisions hereof, may be expended for construction or reconstruction of water mains.

(Ord. 324 N.C. § 6.10, 1958.)

Chapter 11.28 - WATER BENEFIT DISTRICTS

Sections:

11.28.010 - Designation procedure.

A. When the city engineer, in connection with water main extensions, finds that it is necessary to install a major main

of not less than twelve inches inside diameter and not less than one thousand feet in length, the superintendent shall delineate the area which may be served from the major main and thereby be benefited (said area to exclude existing streets, highways and public ways).

B. The superintendent may designate such area as a "Water Benefit District" if:

1. Other refunding procedures for main extensions are not economically feasible for the applicant;
2. It will be more equitable to establish a benefit district therefore;
3. The administration of such benefit district will not result in overlapping of water benefit districts.

(Ord. 324 N.C. § 7.01, 1958.)

11.28.020 - Refunding.

If the applicant elects to install the required mains under benefit district procedures, and does install the major mains in accordance with regulations concerning main extensions, the superintendent shall establish and administer reimbursement procedures as follows:

A. The superintendent shall establish an acreage fee by dividing the total installation costs of said major main (excluding costs of any system connected to said major main) by the number of acres in the benefit district.

B. The superintendent shall pay to the installing applicant all acreage fees collected until the applicant has been reimbursed for the total cost of installing the major main less acreage charges far the applicant's property within said district. Provided, however, that the water system shall not make or collect charges to subsequent applicants or pay refunds to installing applicants after the tenth anniversary of the date the water main was accepted by the city as completed.

(Ord. 324 N.C. § 7.02, 1958.)

11.28.030 - Charges.

An applicant for water service within the benefit district shall pay to the water system the acreage charges for each acre to be served before water service is commenced. If the premises to be served is less than one acre, the acreage charge shall be prorated in direct ratio to fractions of acres, but in any case the charges shall not be less than that for one-sixth acre.

(Ord. 324 N.C. § 7.03, 1958.)

Chapter 11.32 - WATER METERS

Sections:

11.32.010 - Seal required.

All water meters will be sealed at the time of installation and no seal shall be altered or broken except by authorized employees of the water system.

(Ord. 324 N.C. § 8.01, 1958.)

11.32.020 - Maintenance.

A. All water meters shall be maintained, repaired and replaced by the water system.

B. Where replacements or adjustments for any meter are necessary by the act, neglect or carelessness of the owner or

occupant of any premises, any expense thereby caused to the water system shall be charged against and collected from the customer.

(Ord. 324 N.C. § 8.02, 1958.)

11.32.030 - Testing.

A. Customers shall have the right to request a test be made of the meter serving their premises. The water system shall arrange for such test within three working days after receipt of the request and shall notify the customer twenty-four hours before the time set for the test in order that the customer may witness the same. The request for meter tests must be accompanied by a cash deposit based on meter size as adopted by city council resolution.

B. If the results of the meter test determine that the meter is:

1. Registering not more than two percent fast or slow than the actual quantity of water passing through it, the deposit shall be retained by the water system;
2. Registering more than two percent over registration, an accurate meter shall be installed, the deposit refunded and the water bills adjusted to correct the error discovered;
3. Registering more than two percent under registration, an accurate meter shall be installed, the deposit refunded and the customer billed for the amount of the undercharge;
4. In any event, the adjustment for overcharge or undercharge shall not exceed a period of six months or that during which it was measuring service to the customer, whichever is the lesser.

(Ord. 1436 N.C. (2nd) § 1, 2000: Ord. 324 N.C. § 8.03, 1958.)

11.32.040 - Erroneous meters.

Whenever a meter fails to register correctly, the customer shall be charged for a minimum service charge or for an estimated amount of water used, based upon the customer's prior consumption during the same season of the year, if conditions were unchanged, or upon a reasonable comparison with use of other customers during the same period receiving the same class of service under similar circumstances.

(Ord. 324 N.C. § 8.04, 1958.)

11.32.050 - Connection to meter.

Whenever any person connecting service pipes to the property side of the meter uses the water for testing pipes, he shall shut the water off from unoccupied premises before leaving same, and in all cases leave the meter box properly installed to full depth in the ground or sidewalk, with the cover securely fastened in place.

(Ord. 324 N.C. § 8.05, 1958.)

Chapter 11.36 - CUSTOMER'S EQUIPMENT

Sections:

11.36.010 - Customer's responsibility.

The customer shall, at his own risk and expense, furnish, install and keep in good and safe condition all equipment that may be required for receiving, controlling, applying and utilizing water, and the water system shall not be responsible for any loss or damage caused by the improper installation of such water equipment, or the negligence, want of proper care or wrongful act of the customer or of any of his tenants, agents, employees, contractors, licensees or permittees in installing, maintaining, using,

operating or interfering with such equipment. The customer shall be responsible for determining the pressure operation limits of his fixtures and equipment and shall properly protect the same from any variance of water delivery pressures, including periods when for any reason whatsoever there is no water available.

(Ord. 324 N.C. § 9.01, 1958.)

1136.020 - Control valve.

The owner of premises to be served shall install a control valve on the house piping between the water meter and the first fixture outlet on the premises. When old premises, to which a service connection has previously been installed, are being altered, a control valve shall be installed by the owner, if such is not already provided. The customer shall not operate the curb stop in the meter box at any time.

(Ord. 324 N.C. § 9.02, 1958.)

11.36.030 - Check valve.

The owner of the premises to be served shall install a suitable check valve on the house lead pipe as close to the meter location as practical. When old premises, to which a service connection has previously been installed are being altered, a check valve shall be installed by the owner, if such is not already provided. Such single check valves are merely to prevent the draining of the customer's piping and plumbing in the event the water need be shut off temporarily and shall not be considered adequate if a back flow protection device is required.

(Ord. 324 N.C. § 9.03, 1958.)

11.36.040 - Pressure relief valve.

Each water heater shall be equipped with a suitable pressure relief valve of a type and nature required by the Uniform Plumbing and Building Codes.

(Ord. 324 N.C. § 9.04, 1958.)

Chapter 11.38 - CONTROL OF BACKFLOW AND CROSS-CONNECTION TO MUNICIPAL WATER SYSTEM

Sections:

11.38.010 - Purpose.

The purpose of this chapter is:

A. To protect the public potable water supply of the city from the possibility of contamination or pollution by isolating within its customers' internal distribution system(s) such contaminants or pollutants which could backflow or back-siphon into the public water supply system; and

B. To promote the elimination or control of existing cross-connections, actual or potential, between its customers inplant potable water system(s) and nonpotable water systems, plumbing fixtures and industrial piping systems; and

C. To provide for the maintenance of a continuing program of cross-connection control which will systematically and effectively prevent the contamination or pollution of all potable water systems.

(Ord. 922 N.C.(2d) § 2 (part), 1987.)

11.38.020 - Responsibility.

The director shall be responsible for the protection of the public potable water distribution system from contamination or pollution due to the backflow or backsiphonage of contaminants or pollutants through the water service connection. If, in the judgment of the director, an approved backflow prevention device is required, at the city's water service connection to any customer's premises, for the safety of the water system, the director or his/her designated agent shall give notice in writing to the customer to do one of the following:

A. For standard installations pay to the city the fee specified by council resolution for the purchase and installation of a protective device required under the terms of this chapter; and a failure, refusal or inability on the part of the customer to pay for the installation of the device or devices immediately shall constitute a ground for discontinuing water service to the premises until such device or devices have been properly installed.

B. For nonstandard installations install an approved backflow prevention device at each service connection to his/her premises. The customer shall immediately install such approved device or devices at his/her own expense; and a failure, refusal or inability on the part of the customer to install the device or devices immediately shall constitute a ground for discontinuing water service to the premises until such device or devices have been properly installed.

(Ord. 1579 N.C. (2d) § 1, 2007: Ord. 922 N.C. (2d) § 2 (part), 1987.)

11.38.030 - Definitions.

In this chapter:

A. "Approved" means accepted by the director as meeting an applicable specification stated or cited in this chapter, or as suitable for the proposed use.

B. "Auxiliary water supply" means any water supply on or available to the premises other than the city's approved public potable water supply. These auxiliary waters may include water from another purveyor's public potable water supply or any natural source(s) such as a well, spring, river, stream, harbor, etc., or "used waters" or "industrial fluids." These waters may be polluted or contaminated or they may be objectionable and constitute an unacceptable water source over which the city does not have sanitary control.

C. "Backflow" means the flow of water or other liquids, mixtures or substances under pressure into the distributing pipes of potable water supply system from any source or sources other than its intended source.

D. "Back-siphonage" means the flow of water or other liquids, mixtures or substances into the distributing pipes of a potable water supply system from any source other than its intended source caused by the sudden reduction of pressure in the potable water supply system.

E. "Backflow preventer" means a device or means designed to prevent backflow or back-siphonage.

F. "Air-gap" means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood level rim of the vessel. An approved air-gap shall be at least double the diameter of the supply pipe, and, in no case, less than one inch. When an air-gap is used at the service connection to prevent the contamination or pollution of the public potable water system, an emergency bypass shall be installed around the air-gap system and an approved reduced pressure principle device shall be installed in the bypass system.

G. "Reduced pressure principle device" means an assembly of two independently operating approved check valves with an automatically operating differential relief valve between the two check valves, tightly closing shutoff valves on either side of the check valves, plus properly located test cocks for the testing of the check

and relief valves. The entire assembly shall meet the design and performance specifications and approval of a recognized and city approved testing agency for backflow prevention assemblies. The device shall operate to maintain the pressure in the zone between the two check valves at the level less than the pressure on the public water supply side of the device. At cessation of normal flow, the pressure between the two check valves shall be less than the pressure on the public water supply side of the device. In case of leakage of either of the check valves, the differential relief valve shall open to the atmosphere. To be approved, these devices must be readily accessible for in-line maintenance and testing and be installed in a location where no part of the device will be submerged.

H. "Double check valve assembly" means an assembly of two independently operating approved check valves with tightly closing shutoff valves on each side of the check valves, plus properly located test cocks for the testing of each check valve. The entire assembly hall meet the design and performance specifications and approval of a recognized and city-approved testing agency for back flow prevention devices. To be approved, these devices must be readily accessible for in-line maintenance and testing.

I. "Contamination" means an impairment of the quality of the potable water by sewage. industrial fluids or waste liquids. compounds or other materials to a degree which creates an actual hazard to the public health through poisoning or through the spread of disease.

J. "Cross-connection" means any physical connection or arrangement of piping or fixtures between two otherwise separate piping systems, one of which contains potable water and the other nonpotable water or industrial fluids of questionable safety, through which, or because of which backflow or back-siphonage may occur into the potable water system. A water service connection between a public potable water distribution system and a customer's water distribution system which is cross-connected to a contaminated fixture. industrial fluid system, or with a potentially contaminated supply or auxiliary water system constitutes one type of cross-connection. Other types of cross-connections include connectors such as swing connections, removable sections, four-way plug valves. spools, dummy sections of pipe, swivel or changeover devices, sliding multiport tube, solid connections, etc.

K. "Cross-connections - Controlled" means a connection between a potable water system and a nonpotable water system with an approved backflow prevention device properly installed that will continuously afford the protection commensurate with the degree of hazard.

L. "Cross-connection control by containment" means the installation of an approved backflow prevention device at the water service connection to any customer's premises where it is physically and economically infeasible to find and permanently eliminate or control all actual or potential cross-connections within the customer's water system; or it shall mean the installation of an approved backflow prevention device on the service line leading to and supplying a portion of a customer's water system where there are actual or potential cross-connections which cannot be effectively eliminated or controlled at the point of cross-connection.

M. "Director" means the director of the public works department of the city or his/her designee.

N. "Hazard, degree of" means the elevation of the potential risk to public health and the adverse effect of the hazard upon the potable water system as:

1. Hazard — Health. Any condition, device or practice in the water supply system and its operation which could create, or in the judgment of the director may create a danger to the health and well-being of the water consumer. An example of a health hazard is a structural defect, including cross-connections, in a water supply system.
2. Hazard — Plumbing. A plumbing type cross-connection in a consumer's potable water system that has not been properly protected by a vacuum breaker, air-gap separation. or backflow prevention device. Unprotected plumbing type cross-connections are considered to be a health hazard.
3. Hazard — Pollutional. An actual or potential threat to the physical properties of the water system or to

the potability of the public or the consumer's potable water system but which would constitute a nuisance or be aesthetically objectionable or could cause damage to the system or its appurtenances, but would not be dangerous to health.

4. Hazard — System. An actual or potential threat of severe damage to the physical properties of the public potable water system or the consumer's potable water system or of a pollution or contamination which would have a protracted effect on the quality of the potable water in the system.

O. "Industrial fluids system" means any system containing a fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health, system, pollutional or plumbing hazard if introduced into an approved water supply. This may include, but not be limited to, polluted or contaminated waters; all types of process waters and "used waters" originating from the public potable water system which may have deteriorated in sanitary quality; chemicals in fluid form; plating acids and alkalis, circulated cooling waters connected to an open cooling tower and/or cooling towers that are chemically or biologically treated or stabilized with toxic substances; contaminated natural waters such as from wells, springs, streams, rivers, bays, harbors, seas, irrigation canals or systems, etc.; oils, gases, glycerine, paraffins, caustic and acid solutions, and other liquid and gaseous fluids used in industrial or other purposes or for firefighting purposes.

P. "Nonstandard installation" means an installation of an approved backflow prevention device at the water service connection to any customer's premises at a location, other than at or near the property line or immediately outside the building being served, to conform with design standards adopted by the city council, or due to site constraints making a standard installation physically infeasible, as determined by the water superintendent; but in all cases before the first branch line leading off the service line. The cost of installation and all future maintenance and inspection shall be borne by the water user or property owner of a nonstandard installation.

Q. "Pollution" means the presence of any foreign substance (organic, inorganic or biological) in water which tends to degrade its quality so as to constitute a hazard or impair the usefulness or quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably affect such waters for domestic use.

R. "Standard installation" means an installation of an approved backflow prevention device at or near the property line or immediately outside the building being served; but in all cases located outside the building being served and before the first branch line leading off the service line.

S. "Water — Potable" means any water which, according to recognized standards, is safe for human consumption.

T. Water — Nonpotable" means water which is not safe for human consumption or which is of questionable potability.

U. "Water service connection" means the terminal end of a service connection from the public potable water system; i.e. where the water purveyor loses jurisdiction and sanitary control over the water to its point of delivery to the customer's water system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the meter. There should be no unprotected takeoffs from the service line ahead of any meter or backflow prevention device located at the point of delivery to the customer's water system. Service connection shall also include water service connection from a fire hydrant and all other temporary or emergency water service connections from the public potable water system.

V. "Water — Used" means any water supplied by the city through its potable water system to a consumer's water system after it has passed through the point of delivery and is no longer under the sanitary control of the water purveyor.

(Ord. 1579 N.C. (2d) § 2, 2007: Ord. 922 N.C. (2d) § 2 (part), 1987.)

11.38.040 - Requirements.

A. Water System.

1. The water system shall be considered as made up of two parts: The city system and the customer system.
2. The city system shall consist of the source facilities and the distribution system, and shall include, all those facilities of the water system under the complete control of the city, from the source of supply up to the point where the customer's system begins. The source shall include all components of the facilities utilized in the production, treatment, storage and delivery of water to the distribution system.
3. The distribution system shall include the network of conduits used for the delivery of water from the source to the customer's system, and shall extend to the downstream end of the water meter. In the case of fire service connections, the city system shall cease at the property line intersected by the water service.
4. The customer's system shall include those parts of the facilities beyond the termination of the city distribution system which are utilized in conveying city-delivered domestic water to points of use.

B. Policy.

1. No water service connection to any premises shall be installed or maintained by the water purveyor unless the water supply is protected as required by state laws and this chapter. Service of water to any premises shall be discontinued by the water purveyor if a backflow prevention device required by state law or this chapter is not installed, tested or maintained, or if it is found that a backflow prevention device has been removed, by-passed, or if an unprotected cross-connection exists on the premises. Service will not be restored until such conditions or defects are corrected.
2. The customer's system should be open for inspection at all reasonable times to authorized representatives of the public works department to determine whether cross-connections or other structural or sanitary hazards, including violations of this chapter exist. When such a condition becomes known, the director shall deny or immediately discontinue service to the premises by providing for a physical break in the service line until the customer has corrected the condition(s) in conformance with state and city laws relating to plumbing and water supplies and the regulations adopted pursuant thereto.
3. An approved backflow prevention device shall also be installed on each service line to a customer's water system at or near the property line or immediately outside the building being served; but in all cases before the first branch line leading off the service line wherever the following conditions exist:
    a. In the case of premises having an auxiliary water supply which is not or may not be of safe bacteriological or chemical quality and which is not acceptable as an additional source by the director, the public water system shall be protected against backflow from the premises by installing a backflow prevention device in the service line appropriate to the degree of hazard.
    b. In the case of premises on which any industrial fluids or any other objectionable substance is handled in such a fashion as to create an actual or potential hazard to the public water system, the public system shall be protected against backflow from the premises by installing a backflow prevention device in the service line appropriate to the degree of hazard. This shall include handling of process waters and waters originating from the city system which have been subject to deterioration in quality.
    c. In the case of premises having any internal cross-connection that cannot be permanently corrected and controlled, or intricate plumbing and piping arrangements, or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not dangerous cross-connections exist, the public water system shall be protected against backflow from the premises by installing a backflow prevention device in the service line.

4. The type or protective device required under subsections (B)(3)(a), (b) and (c) of this section, shall depend upon th hazard which exists as follows:
    a. In the case of any premises where there is an auxiliary water supply as stated in subsection (B)(3)(a) of this section, which is not otherwise subject to the provisions of this chapter, the public water system shall be protected by an approved air-gap separation or an approved reduced pressure principal backflow prevention device.
    b. In the case of any premises where there is any water or substance that would be objectionable but not hazardous to health if introduced into the public water system, the public water system shall be protected by an approved double check valve assembly.
    c. In the case of any premises where there is any material dangerous to health, which is handled in such a fashion as to create an actual or potential hazard to the public water system, the public water system shall be protected by an approved air-gap separation or an approved reduced pressure principle backflow prevention device. Examples of premises where these conditions will exist include sewage treatment plants, sewage pumping stations, chemical manufacturing plans, hospitals, mortuaries and plating plants.
    d. In the case of any premises where there are "uncontrolled" cross-connections, either actual or potential, the public water system shall be protected by an approved air-gap separation or an approved reduced pressure principle backflow prevention device at the service connection.
    e. In the case of any premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impracticable to make a complete in-plant cross-connection survey, the public water system shall be protected against backflow or back-siphonage from the premises by the installation of a backflow prevention device in the service line. In this case, maximum protection will be required; that is, an approved air-gap separation or an approved reduced pressure principle backflow prevention device shall be installed in each service to the premises.
5. The following specific types of uses and other uses as designated by the director shall be required to install a backflow prevention indicated as a minimum.

Use	Type of Device
Auxiliary water systems (interconnected)	Reduced pressure
Auxiliary water systems (not interconnected)	Double check valve
Beverage bottling plants	Double check valve
Buildings with booster pump systems and/or water storage tanks	Double check valve
Canneries, packinghouses or reduction plants	Reduced pressure
Buildings with sewage ejectors	Air-gap separation
Car washes	Reduced pressure
Chemical processing or storage facilities	Reduced pressure

Laundries	Reduced pressure
Dairies	Double check valve
Dye works	Reduced pressure
Film processing laboratories	Reduced pressure
Fire systems (no auxiliary supply)	Double detector check valve
Fire systems (auxiliary supply)	Reduced pressure
Frozen food processing plants	Reduced pressure
Schools (lab facility, auxiliary supply)	Reduced pressure
Schools (no lab facility, no auxiliary supply)	Double check valve
Schools (no lab facility, auxiliary supply)	Reduced pressure
Hospitals	Reduced pressure
Mortuaries, medical/dental buildings	Reduced pressure
Irrigation systems (all)	Double check valve
Laboratories—Commercial	Reduced pressure
Manufacturing or processing using toxic materials	Reduced pressure
Mobilehome parks	Double check valve
Multistory buildings (three or more stories)	Double check valve
Oil or gas production facilities	Reduced pressure
Pulp and paper processing	Reduced pressure
Plating plants	Reduced pressure
Sand and gravel plants	Double check valve
Sewage and storm drain pumping facilities	Air-gap separation
Swimming pools	Reduced pressure

Boat docks—Marinas	Reduced pressure
Tank trucks using hydrant supply	Double check valve
Portable insecticide and herbicide spray tanks	Air-gap separation

6. Any backflow prevention device required in this chapter shall be of a mold and size approved by the director. The term "approved backflow prevention device" means a device that has been manufactured in full conformance with the standards established by the American Water Works Association (AWWA) entitled:

AWWA C506-69 Standards for Reduced Pressure Principle and Double Check Valve Backflow Prevention Devices:

and have met completely the laboratory and field performance specifications of the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California (FCCC&HR) established by:

Specifications of Backflow Prevention Devices-No. 69-2 dated March, 1969, or the most current issue.

The AWWA and FCCC&HR standards and specifications have been adopted by the director. Final approval of any device or system proposed for installation under the terms of this chapter shall be evidenced by a "Certificate of Approval" issued by an approved testing laboratory certifying full compliance with said AWWA standards and FCCC&HR Specifications.

The following testing laboratory has been qualified by the director to test and certify backflow preventers:

Foundation for Cross-Connection Control and Hydraulic Research
University of Southern California
University Park
Los Angeles, California 90007

Testing laboratories other than the laboratory listed above will be added to an approved list as they are qualified by the director. Backflow preventers which may be subject to back pressure or back siphonage that have been fully tested and have been granted a certificate of approval by such qualified laboratory and are listed on the laboratory's current list of "Approved Devices" may be used without further test or qualification.

7. It shall be the duty of the city at any premises where backflow prevention devices are installed to ensure a certified inspection or operation test is made at least once per year. These inspections and tests shall be at the expense of the customer and shall be performed by city maintenance division personnel for standard installations after applicable fees are paid, or by a certified tester, approved by the director, hired by customer, for nonstandard installations.

Certified testers shall:

a. Maintain current American Water Works Association certification;
b. Perform field testing in accordance with the test procedures outlined in the State of California Department of Health Services' Manual of Cross-Connection Control;
c. Use a differential pressure gauge that is calibrated annually;
d. Use and submit required city certification forms; and
e. Have a business license to operate in the city of Vallejo prior to conducting any tests.

In those instances where the director deems the hazard to be great enough he may require certified inspections at more frequent intervals. These additional inspections and tests shall be at the expense of the customer and shall be performed by a certified tester approved by the director. It shall be the duty of the director to see that these timely tests are made. Those devices found to be defective shall be repaired, overhauled or replaced at the expense of the customer. Records of all such tests, repairs and overhaul shall be submitted to the city water maintenance division within seven days of testing.

(Ord. 1579 N.C. (2d) § 3, 2007: Ord. 922 N.C. (2d) § 2 (part), 1987.)

11.38.050 - Fees.

A. The customer or property owner of a standard installation shall pay to the city the fee specified by council resolution for each initial and/or annual inspection and maintenance of a backflow prevention device made under the terms of this chapter and performed by city personnel. The customer or property owner shall pay the city the fee specified for any inspection that reveals a failure to comply with the provisions of this chapter. Any request by a customer or property owner to inspect a backflow prevention device shall be accompanied by the fee specified. The inspecting official shall have the discretion to waive or reduce fees in the event that unusual circumstances, not the fault of the customer or property owner, necessitate repeated inspection.

B. The customer or property owner of a nonstandard installation shall pay to the city the administrative fee specified by council resolution for the city's collection and maintenance of submitted testing, maintenance, and certification records for each initial and/or annual inspection and maintenance of a backflow prevention device performed by a certified tester other than city personnel.

(Ord. 1579 N.C. (2d) § 4, 2007: Ord. 922 N.C. (2d) § 2 (part), 1987.)

Chapter 11.40 - FIRE HYDRANTS

Sections:

11.40.010 - Purpose.

Fire hydrants are provided for the sole purpose of extinguishing fires and are to be opened and used only by the water system and fire department or such persons as may officially be authorized to do so.

(Ord. 324 N.C. § 10.01, 1958.)

11.40.020 - Operation.

To insure the safety of fire hydrants for fire protection, any person authorized to open fire hydrants shall use only an approved spanner wrench and shall replace the caps on the outlets when not in use.

(Ord. 324 N.C. § 10.02, 1958.)

11.40.030 - Temporary service.

If temporary service is to be supplied through a fire hydrant, a permit for same must be obtained from the commercial office, and such permit must be exhibited upon the work while taking water. If the hydrant is outside the city limits, the fire chief or other person of authority must approve the permit by signing same before it is validated by the commercial office.

(Ord. 324 N.C. § 10.03, 1958.)

11.40.040 - Relocation.

A. Property owners and/or others desiring the removal or change in location of a fire hydrant or hydrants shall first make a request, in writing, of the water system. After obtaining the approval of the fire chief of the proposed removal or relocation, the superintendent shall prepare an estimate of cost of the proposed work. Before the water system can proceed with the work or order materials for same, the person or persons requesting the removal or relocation must deposit an amount equal to the estimated cost with the commercial office. Upon completion of the work the actual cost shall be compiled and any difference between the actual and the estimated cost shall be billed or refunded for the applicant's account.

B. If the hydrant in question is outside the city limits, the applicant must first obtain written approval of the fire district having jurisdiction over the same.

(Ord. 324 N.C. § 10.04, 1958.)

Chapter 11.44 - BILLING

Sections:

11.44.010 - Billing periods.

A. Bills for all metered service will be rendered monthly or bimonthly as determined by the water system. Meters shall be read at approximately equal intervals for the preparation of periodic billing. Special readings shall be taken for opening or closing bills.

B. Monthly billing periods shall apply to the following classes of customer accounts:

1. Accounts having a usage of twenty thousand cubic feet or more of water used during any two consecutive months of the preceding twelve month period;
2. Accounts of water service outside the boundaries of Vallejo judicial township;
3. Accounts of "temporary service connections";
4. Accounts of "fire service connections";
5. Accounts under "contract;"

C. Bi-monthly billing periods shall apply to all accounts not listed in subsection B of this section.

(Ord. 324 N.C. § 12.01, 1958.)

11.44.020 - Billing of separate meters.

Each meter on a customer's premises shall be billed separately and the readings of two or more meters will not be combined unless the water system shall, for operating convenience or necessity, install two or more meters in place of one.

(Ord. 324 N.C. § 12.02, 1958.)

11.44.030 - Back-billing.

If a consumer is found to be using water for which no bills have been issued, the water system shall install a meter and render an average bill for a period of twelve months last past or for as much of the past twelve months as the consumer has been occupying or in possession of the premises without paying bills.

(Ord. 324 N.C. § 12.03, 1958.)

11.44.040 - Opening and closing bills.

If the total period of service is less than thirty days, monthly minimum charges shall be applied to the account. If the total period of service is greater than thirty-six days but less than sixty-six days the bi-monthly minimum charges shall be applied to the account. Except in either case if the quantity of water consumed is greater than that for the periodic minimum, the charges shall be calculated on the actual water consumption.

(Ord. 324 N.C. § 12.04, 1958.)

11.44.050 - Payment.

Bills are due and payable on presentation. Payment shall be made at the commercial services division of the finance department or other place(s) designated by the finance director.

(Ord. 1503 N.C.(2d) § 3, 2003: Ord. 324 N.C. § 12.05, 1958.)

11.44.060 - Delinquent accounts.

All bills become delinquent thirty days after the date shown on the bill and a late payment penalty, as established by city council resolution, shall be assessed. In addition to the late payment penalty assessed, a finance charge shall be assessed, at the rate established by city council resolution, from the date on which the bill became delinquent until paid. Service may be discontinued for nonpayment of a bill for services rendered if said bill, including penalty and interest owed, has not been paid within five days after the delinquent date.

(Ord. 1503 N.C.(2d) § 4, 2003: Ord. 1212 N.C.(2d) § 1, 1992: Ord. 324 N.C. § 12.06, 1958.)

11.44.061 - Delinquent charges—Constitute lien.

When the water service customer is also the owner of the property for which water service is being supplied, then charges that remain unpaid forty-five days following the past due date may be recovered through a lien on the property.

(Ord. 1503 N.C.(2d) § 5, 2003.)

11.44.070 - Delinquent at one service location.

If a customer receives service at more than one service location and the bill for any one of that customer's accounts becomes delinquent and service is discontinued, service at all other locations may also be discontinued.

(Ord. 324 N.C. § 12.07, 1958.)

11.44.080 - Delinquency—Shut off.

When water service has been discontinued because of delinquency in payment of a water bill the customer shall pay a disconnection fee, as established by city council resolution. The water service shall not be turned on until all charges together with a reconnection fee, as established by city council resolution, has been paid, and a cash deposit is made to reestablish credit pursuant to Section 11.44.081.

(Ord. 1503 N.C.(2d) § 6, 2003: Ord. 897 N.C.(2d) § 1, 1986: Ord. 324 N.C. § 12.08, 1958.)

11.44.081 - Reestablishment of credit.

A. Any customer shall be required to reestablish credit in any of the following cases:

1. If the customer's service was discontinued for nonpayment;
2. If the customer has had a check for water services returned to the city for insufficient funds;
3. If for any reason, the deposit furnished by the customer becomes inadequate under the provisions of this title; or
4. If the customer files for bankruptcy.

B. When a customer is required to reestablish credit, the deposit amount shall be set as follows:

1. Residential Customers. The deposit shall be the lesser of: a) an amount not to exceed a sum equal to twice the estimated periodic bill, based on the customer's prior twelve months of consumption, or b) two hundred dollars, which may be adjusted from time to time by. the finance director. At least one-half of the deposit required to reestablish credit must be paid at the time service is reestablished, with the remaining amount to be due with the next regularly scheduled billing.

Should a residential customer be required to reestablish credit for a second time, the deposit amount shall not be less than a sum equal to twice the estimated periodic bill based on the customer's prior twelve months of consumption and which may be adjusted from time to time by the finance director.

2. Commercial Customers. The deposit amount shall be the greater of: a) the sum equal to four times the estimated average monthly bill based on the customer's prior twelve months of consumption, or b) six hundred dollars which may be adjusted from time to time by the finance director.

Should a commercial customer be required to reestablish credit for a second time, the finance director shall fix the amount so that the city will not be required to risk a loss as a result of nonpayment of bills by the customer.

(Ord. 1503 N.C.(2d) § 7, 2003)

11.44.090 - Unauthorized turn on.

If, after service is discontinued for delinquency in payment, service is resumed without authorization, the city may remove the meter or take other actions to prevent the unauthorized use of water. If a request for restoration of service is made, the service shall not be turned on until the customer has paid the city for the actual cost of the work, including labor and materials, performed to prevent the unauthorized use of water and an unauthorized turn on fee, as established by city council resolution.

(Ord. 1503 N.C.(2d) § 8, 2003: Ord. 897 N.C.(2d) § 2, 1986; Ord. 324 N.C. § 12.09, 1958.)

11.44.100 - Disputed bills.

In case of dispute as to payment of a bill previously rendered, the customer will be required to present the receipted bill, canceled check or other satisfactory evidence before adjustment or correction shall be made.

(Ord. 324 N.C. § 12.10, 1958.)

11.44.110 - Bill adjustment for leak or loss.

A. No allowance will be made for a leak or loss of water except upon findings in writing by the water superintendent that there are extenuating circumstances for the leak or loss clearly beyond the control of the customer; and, in addition, that imposition of the full charge for the water would work an extreme economic or financial hardship on the customer, and approval of said written findings by the city manager. An adjustment will only be granted after repairs have been made and it is certain such leak or loss will not again occur. No adjustment or allowance will be

made covering more than two consecutive billing periods, including the one in which the same was requested. Not more than one adjustment or allowance shall be made to the same customer for the same premises in any twelve-month period.

B. The water system shall determine the amount of excess delivery by calculating the average bill in accordance with their standard method and subtracting that amount from the total water delivered.

C. Adjustments ordinarily will be made on the basis of one half of the excess delivery but, in the case of concealed leaks in underground or unexposed pipes, full excess may be allowed.

D. The quantity of water for which an adjustment is to be made shall be charged to the customer at the lowest rate applicable to the particular water service connection affected.

E. All other water delivered shall be charged at the regular rates applicable to that customer's account.

(Ord. 377 N.C.(2d) § 4, 1977; Ord. 324 N.C. § 12.11, 1958.)

11.44.120 - Inspections for excessive use.

After the water system has made a complete inspection of a customer's premises on account of excessive water bills, or upon the request of the customer, or for other reasons, no further inspections shall be made for a period of six months; provided, however, the superintendent may order an inspection at any time if in his opinion conditions warrant.

(Ord. 324 N.C. § 12.12, 1958.)

Chapter 11.48 - WATER RATES AND CHARGES

Sections:

11.48.005 - Reserved.

11.48.010 - Application of rates.

A. The Vallejo service area water rates as set forth in Section 11.48.020 shall apply to all water service to premises served treated water from the Fleming Hill Water Treatment Plant distribution system regardless of whether the premises are located inside or outside the boundaries of the city.

B. The Lakes service area rates as set forth in Section 11.48.040 shall apply to water service to premises served treated water from the Green Valley Water Treatment Plant distribution system, and to premises served treated water purchased by the City of Vallejo from the City of Fairfield.

C. The raw water rates as set forth in Section 11.48.050 shall apply to water service to premises served through connections delivering untreated, raw water.

D. The construction water rates as set forth in Section 11.48.055 shall apply to all temporary water service to premises served through temporary connections delivering treated water for construction purposes. Construction water users are encouraged to utilize treated effluent, if available, for allowable uses.

E. Drought water surcharges as set forth in Section 11.48.056 shall apply to water service to premises served through connections delivering untreated, raw water or treated water.

(Ord. 1542 N.C.(2d) § 1, 2005: Ord. 1334 N.C.(2d) §§ 1, 2, 1995: Ord. 1211 N.C.(2d) § 1, 1992: Ord, 1203 N.C.(2d) § 1, 1992: Ord. 26 N.C.(2d) § 1, 1971: Ord. 324 N.C. § 13.01, 1958.; Ord. No. 1757 N.C. (2d) , § 1, 5-9-2017)

11.48.015 - Reserved.

11.48.020 - Vallejo service area water rates.

For water service to premises as defined in Section 11.48.010A, rates shall be as follows and shall be effective on the dates indicated:

A. Single Family Residential Service - Each customer shall pay the applicable monthly service charge as hereinafter set forth in Sections 11.48.060 through 11.48.120 and the following consumption charges for water supplied:

6/9/2017:

0-1,100 cubic feet: $3.40 per 100 cubic feet.

Over 1,100 cubic feet: $6.38 per 100 cubic feet.

7/1/2018:

0-1,100 cubic feet: $3.52 per 100 cubic feet.

Over 1,100 cubic feet:$6.61 per 100 cubic feet.

7/1/2019:

0-1,100 cubic feet: $3.65 per 100 cubic feet.

Over 1,100 cubic feet: $6.84 per 100 cubic feet.

7/1/2020:

0-1,100 cubic feet: $3.77 per 100 cubic feet.

Over 1,100 cubic feet: $7.08 per 100 cubic feet.

7/1/2021:

0-1,100 cubic feet: $3.91 per 100 cubic feet.

Over 1,100 cubic feet: $7.32 per 100 cubic feet.

The minimum monthly charge is the monthly service charge.

B. Multi-Family Residential Service and Non-Residential (Commercial, Industrial, and Institutional) Service. Each customer shall pay the applicable monthly service charge as hereinafter set forth in Sections 11.48.060 through 11.48.120 and the following consumption charge for water supplied:

6/9/2017:

Actual consumption - $4.17 per 100 cubic feet.

7/1/2018:

Actual consumption - $4.32 per 100 cubic feet.

7/1/2019:

Actual consumption - $4.47 per 100 cubic feet.

7/1/2020:

Actual consumption - $4.63 per 100 cubic feet.

7/1/2021:

Actual consumption - $4.79 per 100 cubic feet.

The minimum monthly charge is the monthly service charge.

(Ord. 1619 N.C.(2d) § 2, 2009: Ord. 1542 N.C.(2d) § 2, 2005: Ord. 1435 N.C. (2nd) § 3, 2000: Ord. 1379 N.C.(2d) § 2, 1997: Ord. 1211 N.C.(2d) § 2, 1992: Ord. 1203 N.C.(2d) § 2, 1992: Ord. 875 N.C.(2d) § 1, 1986: Ord. 805 N.C.(2d) § 1, 1985: Ord. 748 N.C.(2d) § 1, 1984: Ord. 537 N.C.(2d) § 1, 1980: Ord. 374 N.C.(2d) § 3(m), 1977: Ord. 26 N.C.(2d) § 2, 1971: Ord. 324 N.C. § 13.02, 1958.; Ord. No. 1757 N.C. (2d) , § 2, 5-9-2017)

11.48.030 - Reserved.

11.48.040 - Lakes service area water rates.

For water service to premises as defined in Section 11.48.010B, rates shall be as follows and shall be effective on the dates indicated:

A. Single-Family Residential Service - Each customer shall pay the applicable monthly service charge as hereinafter set forth in Sections 11.48.060 through 11.48.120 and the following consumption charges for water supplied:

6/9/2017:

0-1,300 cubic feet: $11.84 per 100 cubic feet.

Over 1,300 cubic feet:$18.43 per 100 cubic feet.

7/1/2018:

0-1,300 cubic feet: $12.26 per 100 cubic feet.

Over 1,300 cubic feet: $19.07 per 100 cubic feet.

7/1/2019:

0-1,300 cubic feet: $12.69 per 100 cubic feet.

Over 1,300 cubic feet: $19.74 per 100 cubic feet.

7/1/2020:

0-1,300 cubic feet: $13.13 per 100 cubic feet.

Over 1,300 cubic feet: $20.43 per 100 cubic feet.

7/1/2021:

0-1,300 cubic feet: $13.59 per 100 cubic feet.

Over 1,300 cubic feet: $21.15 per 100 cubic feet.

The minimum monthly charge is the monthly service charge and any applicable surcharge.

B. Multi-Family Residential Service and Non-Residential (Commercial, Industrial, and Institutional) Service. Each customer shall pay the applicable monthly service charge as hereinafter set forth in Sections 11.48.060 through 11.48.120 and the following consumption charges for water supplied:

6/9/2017:

Actual consumption - $14.12 per 100 cubic feet.

7/1/2018:

Actual consumption - $14.62 per 100 cubic feet.

7/1/2019:

Actual consumption - $15.13 per 100 cubic feet.

7/1/2020:

Actual consumption - $15.66 per 100 cubic feet.

7/1/2021:

Actual consumption - $16.21 per 100 cubic feet.

The minimum monthly charge is the monthly service charge and any applicable surcharge.

(Ord. 1619 N.C.(2d) § 5, 2009: Ord. 1542 N.C.(2d) § 4, 2005: Ord. 1435 N.C. (2nd) § 5, 2000: Ord. 1379 N.C.(2d) § 4, 1997: Ord. 1334 N.C.(2d) § 3, 1995: Ord. 1211 N.C.(2d) § 4, 1992: Ord. 1203 N.C.(2d) § 4, 1992: Ord. 875 N.C.(2d) § 3, 1986: Ord. 805 N.C.(2d) § 3, 1985: Ord. 748 N.C.(2d) § 3, 1984: Ord. 537 N.C.(2d) § 3, 1980: Ord. 386 N.C.(2d) § 1, 1977: Ord. 374 N.C.(2d) § 3 (part), 1977: Ord. 26 N.C.(2d) § 4, 1971: Ord. 324 N.C. § 3.035, 1958.; Ord. No. 1757 N.C. (2d) , § 3, 5-9-2017)

11.48.050 - Raw water rates.

For raw water service as defined in Section 11.48.010 (C), each customer shall pay the applicable monthly service charge as hereinafter set forth in Sections 11.48.060 through 11.48.120 and the following charges per unit of 100 cubic feet for the raw water source supplied, effective on the dates indicated:

Raw Water Source	6/9/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
Lakes Madigan/Frey	$6.11	$6.32	$6.55	$6.78	$7.01
Other Sources	$2.41	$2.50	$2.58	$2.67	$2.77

(Ord. 1619 N.C.(2d) § 5, 2009: Ord. 1542 N.C.(2d) § 5, 2005: Ord. 1379 N.C.(2d) § 5, 1997: Ord. 1211 N.C.(2d) § 5, 1992: Ord. 1203 N.C.(2d) § 3, 1992: Ord. 875 N.C.(2d) § 4, 1986: Ord. 805 N.C.(2d) § 4, 1985: Ord. 748 N.C.(2d) § 4, 1984: Ord. 537 N.C.(2d) § 4, 1980: Ord. 374 N.C.(2d) § 3 (part), 1977: Ord. 26 N.C.(2d) § 5, 1971: Ord. 324 N.C. § 13.04, 1958.; Ord. No. 1757 N.C. (2d) , § 4, 5-9-2017)

11.48.055 - Construction water rates.

For temporary treated water service for construction purposes as defined in Section 11.48.010(D), each customer shall pay the applicable monthly service charge as hereinafter set forth in Sections 11.48.060 through 11.48.120 and the following charges per unit of 100 cubic feet for water supplied in the service areas, as defined in Section 11.48.010(A) and (B), effective on the dates

indicated:

	6/9/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
Vallejo service area	$4.17	$4.32	$4.47	$4.63	$4.79
Lakes service area	$14.12	$14.62	$15.13	$15.66	$16.21

(Ord. 1619 N.C.(2d) § 6, 2009: Ord. 1542 N.C.(2d) § 6, 2005: Ord. 1379 N.C.(2d) § 6, 1997: Ord. 1211 N.C.(2d) § 6, 1992: Ord. 875 N.C.(2d) § 5, 1986.; Ord. No. 1757 N.C. (2d) , § 5, 5-9-2017)

11.48.056 - Drought water surcharges.

In times of water use reduction due to state mandated water use restriction goals, the city council may authorize implementation of the following percentage adjustment increase to the consumption charges included in Sections 11.48.020 through 11.48.055, for water supplied in all service areas, as defined in Section 11.48.010, effective on the date indicated:

Mandated Conservation Goal	Adjustment Increase Effective 6/9/2017
Less than 10%	0%
10%	10%
11%	11%
12%	12%
13%	13%
14%	14%
15%	15%
16%	16%
17%	17%
18%	18%
19%	19%
20%	20%

21%	21%
22%	22%
23%	23%
24%	24%
25%	25%
26%	26%
27%	27%
28%	28%
29%	29%
30%	30%

(Ord. No. 1757 N.C. (2d) , § 6, 5-9-2017)

11.48.060 - Service charges—Generally.

Each customer account for water service shall pay a service charge in the amount or amounts applicable to the particular account as hereinafter set forth in this section and Sections 11.48.070 through 11.48.110; said service charge shall be in addition to any and all other taxes, fees, and/or charges of any nature whatsoever for water delivered; provided, however, that the service charge shall not be applicable to customer accounts for a fire service connection, as the same is described in Section 11.20.010, if the customer account qualifies for monthly charges as set forth in paragraph A of Section 11.48.120.

(Ord. 195 N.C.(2d) § 1 (part), 1973: Ord. 84 N.C.(2d) § 1 (part), 1972: Ord. 324 N.C. § 13.05 (part), 1958.)

11.48.065 - Service charges—Purpose.

The purpose of the service charge is to create sufficient revenue to provide for essential maintenance, restoration and/or upgrading of water system treatment and distribution facilities and to equitably distribute the basic cost of assuring that at all times the facilities are capable of properly distributing the maximum and/or instantaneous water demands or flows in the distribution areas. To accomplish these objectives the moneys received as payment of the service charges set forth in this section shall be set aside for capital facilities replacement and shall be utilized only upon approval of the city council to pay costs associated with the installation, construction, replacement and/or rehabilitation of pipelines, appurtenances and/or components of the municipal water system.

(Ord. 1211 N.C.(2d) § 7, 1992: Ord. 374 N.C.(2d) § 4, 1977: Ord. 195 N.C.(2d) § 1(a), 1973.)

11.48.070 - Service charges—Definitions.

The following descriptions and/or definitions shall be used to determine the service charge applicable to all customer accounts:

A. "Residential unit" means a single-family residence; a room or suite of rooms capable of human habitation or occupancy and providing accommodations for cooking, sleeping and living separately and independently of the occupants or tenants of any other residential unit or residential units in the same building or other buildings an the same premises; excluding and excepting therefrom hotels, motels and auto courts as the same are defined herein;

B. "Mobilehome unit" means a pad or stall improved, prepared or equipped to accommodate occupancy or use as a mobilehome (trailer) lot as defined in Section 18210 of the Health and Safety Code of the state of California;

C. "Commercial unit" means an establishment, enterprise or entity, having a business or professional license or other separate identity engaged in trade, business, professional activities, providing service and/or the processing or manufacturing of material or product; and/or a hotel, motel or auto court as the same are defined herein;

D. "Hotel" means lodging house, rooming house, or other building or structure maintained, advertised, or held out to the public as a place where sleeping or rooming accommodations are furnished to the whole or any part of the public whether with or without meals;

E. "Motel" means a building of not more than two stories containing six or more guest rooms or apartments, or combination thereof, each of which has a separate, individual entrance leading directly from the outside of the building and is designed, used, or intended wholly or in part for the accommodation of motor vehicle transients;

F. "Combination units" means each unit or the combination of one or more residential units and/or one or more mobile home units and/or one or more commercial units on the same premises;

G. "School" means premises used or occupied as a school or classroom for educational purposes and operated or accredited by a governmental authority or agency and/or any premises used or occupied as an extension or supporting facility or integral function of such school or classroom.

(Ord. 1435 N.C.(2nd) § 6, 2000: Ord. 195 N.C.(2d) § 1(b), 1973: Ord. 84 N.C.(2d) § 1 (part), 1972: Ord. 324 N.C. § 13.05(a), 1958.)

11.48.080 - Service charges—Vallejo service area customer accounts.

All customer accounts which qualify for water rates as set forth in Section 11.48.020 shall pay the following monthly service charges based on the meter size installed on the particular water service connection, effective on the dates indicated:

A. Single-Family Residential. Premises consisting of one residential unit:

Meter Size	6/9/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
5/8 or 3/4-inch	$19.44	$20.12	$20.83	$21.56	$22.31
1 inch	$29.19	$30.21	$31.27	$32.37	$33.50
1- ½ inch	$48.70	$50.40	$52.16	$53.99	$55.88
2 inch	$72.10	$74.62	$77.23	$79.94	$82.74

B. Multi-Family Residential. Premises consisting of two or more residential units, and/or two or more mobilehome units:

Meter Size	6/9/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
5/8 or 3/4-inch	$26.24	$27.16	$28.11	$29.09	$30.11
1 inch	$36.76	$38.05	$39.38	$40.76	$42.18
1-½ inch	$57.92	$59.95	$62.04	$64.21	$66.46
2 inch	$83.33	$86.25	$89.27	$92.39	$95.62
3 inch	$142.55	$147.54	$152.70	$158.05	$163.58
4 inch	$227.18	$235.13	$243.36	$251.88	$260.69
6 inch	$438.64	$453.99	$469.88	$486.33	$503.35
8 inch	$692.42	$716.65	$741.73	$767.69	$794.56
10 inch	$988.51	$1,023.10	$1,058.91	$1,095.97	$1,134.33
12 inch	$1,834.58	$1,898.79	$1,965.25	$2,034.03	$2,105.23

C. Non-Residential. Premises consisting of one or more commercial or combination units, including hotels, motels, and institutional uses such as schools and churches.

Meter Size	6/9/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
5/8 or 3/4-inch	$27.90	$28.87	$29.88	$30.93	$32.01
1 inch	$40.07	$41.47	$42.92	$44.43	$45.98
1-½ inch	$66.66	$69.00	$71.41	$73.91	$76.50
2 inch	$104.49	$108.15	$111.93	$115.85	$119.90
3 inch	$192.78	$199.53	$206.52	$213.74	$221.22
4 inch	$318.79	$329.94	$341.49	$353.44	$365.81
6 inch	$634.14	$656.34	$679.31	$703.09	$727.69

8 inch	$1,012.50	$1,047.94	$1,084.62	$1,122.58	$1,161.87
10 inch	$1,453.86	$1,504.75	$1,557.41	$1,611.92	$1,668.34
12 inch	$2,714.94	$2,809.96	$2,908.31	$3,010.10	$3,115.45

(Ord. 1619 N.C.(2d) § 7, 2009: Ord. 1542 N.C.(2d) § 7, 2005: Ord. 1435 N.C.(2nd) § 7, 2000: Ord. 1211 N.C.(2d) § 8, 1992: Ord. 806 N.C.(2d) § 1 (part), 1985: Ord. 374 N.C.(2d) § 5 (part), 1977: Ord. 195 N.C.(2d) § 1(c), 1973: Ord. 84 N.C.(2d) § 1 (part), 1972: Ord. 324 N.C. § 13.05(b), 1958.; Ord. No. 1757 N.C. (2d) , § 7, 5-9-2017)

11.48.090 - Reserved.

11.48.100 - Service charges—Lakes service area customer accounts.

All customer accounts which qualify for water rates as set forth in Section 11.48.040 shall pay the following monthly service charges based on the meter size installed on the particular water service connection, effective on the dates indicated:

A. Single-Family Residential. Premises consisting of one residential unit:

Meter Size	6/9/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
5/8 or 3/4-inch	$41.07	$42.51	$44.00	$45.54	$47.13
1 inch	$56.85	$58.84	$60.90	$63.03	$65.24
1-½ inch	$88.41	$91.51	$94.71	$98.02	$101.45
2 inch	$126.24	$130.65	$135.23	$139.96	$144.86

B. Multi-Family Residential. Premises consisting of two or more residential units, and/or two or more mobilehome units:

Meter Size	6/9/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
5/8 or 3/4-inch	$41.13	$42.57	$44.06	$45.61	$47.20
1 inch	$56.85	$58.84	$60.90	$63.04	$65.24
1-½ inch	$88.41	$91.51	$94.71	$98.03	$101.46
2 inch	$126.24	$130.66	$135.23	$139.96	$144.86
3 inch	$214.65	$222.16	$229.94	$237.99	$246.32

4 inch	$340.89	$352.82	$365.17	$377.95	$391.18
6 inch	$656.48	$679.46	$703.24	$727.85	$753.33
8 inch	$1,035.08	$1,071.31	$1,108.80	$1,147.61	$1,187.78
10 inch	$1,476.91	$1,528.60	$1,582.10	$1,637.48	$1,694.79
12 inch	$2,739.17	$2,835.04	$2,934.26	$3,036.96	$3,143.26

C. Non-Residential. Premises consisting of one or more commercial or combination units, including hotels, motels, and institutional uses such as schools and churches.

Meter Size	6/9/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
5/8 or 3/4-inch	$57.68	$59.70	$61.79	$63.95	$66.19
1 inch	$73.52	$76.09	$78.76	$81.51	$84.37
1-½ inch	$105.08	$108.76	$112.56	$116.50	$120.58
2 inch	$142.90	$147.91	$153.08	$158.44	$163.99
3 inch	$231.32	$239.41	$247.79	$256.47	$265.44
4 inch	$357.44	$369.95	$382.90	$396.30	$410.17
6 inch	$673.03	$696.59	$720.97	$746.20	$772.32
8 inch	$1,051.74	$1,088.55	$1,126.65	$1,166.09	$1,206.90
10 inch	$1,493.58	$1,545.85	$1,599.96	$1,655.95	$1,713.91
12 inch	$2,755.83	$2,852.29	$2,952.12	$3,055.44	$3,162.38

(Ord. 1619 N.C.(2d) § 9, 2009: Ord. 1542 N.C.(2d) § 9, 2005: Ord. 1435 N.C.(2nd) § 9, 2000: Ord. 1334 N.C.(2d) § 4, 1995: Ord. 1211 N.C.(2d) § 10, 1992: Ord. 806 N.C.(2d) § 1 (part), 1985: Ord. 374 N.C.(2d) § 5 (part), 1977: Ord. 195 N.C.(2d) § 1(e), 1973: Ord. 84 N.C.(2d) § 1 (part), 1972: Ord. 324 N.C. § 13.05(e), 1958.; Ord. No. 1757 N.C. (2d) , § 8, 5-9-2017)

11.48.110 - Service charges—Raw water customer accounts.

Customer accounts for water service which qualify for water rates as set forth in Section 11.48.050 shall pay the following monthly service charges based on the source of raw water and the meter size installed on the particular water service connection, effective on the dates indicated:

Lakes Madigan/Frey raw water source

Meter Size	6/9/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
5/8 or 3/4-inch	$40.19	$41.59	$43.05	$44.56	$46.12
1 inch	$54.37	$56.28	$58.24	$60.28	$62.39
1-½ inch	$85.10	$88.08	$91.17	$94.36	$97.66
2 inch	$120.56	$124.78	$129.15	$133.67	$138.35
3 inch	$204.49	$211.64	$219.05	$226.72	$234.65
4 inch	$323.87	$335.20	$346.94	$359.08	$371.65
6 inch	$622.91	$644.72	$667.28	$690.64	$714.81
8 inch	$981.06	$1,015.40	$1,050.94	$1,087.72	$1,125.79
10 inch	$1,399.49	$1,448.47	$1,499.17	$1,551.64	$1,605.94
12 inch	$2,594.49	$2.685.30	$2,779.28	$2,876.56	$2,977.24

Other raw water sources

Meter Size	6/9/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
5/8 or 3/4-inch	$21.28	$22.02	$22.79	$23.59	$24.41
1 inch	$30.73	$31.81	$32.92	$34.07	$35.27
1-½ inch	$52.01	$53.83	$55.71	$57.66	$59.68
2 inch	$75.65	$78.30	$81.04	$83.87	$86.81
3 inch	$133.57	$138.24	$143.08	$148.09	$153.27
4 inch	$215.12	$222.65	$230.45	$238.51	$246.86

6 inch	$420.79	$435.52	$450.76	$466.54	$482.87
8 inch	$666.65	$689.98	$714.13	$739.12	$764.99
10 inch	$953.87	$987.26	$1,021.81	$1,057.58	$1,094.59
12 inch	$1,773.00	$1,835.06	$1,899.28	$1,965.76	$2,034.56

(Ord. 1619 N.C. (2d) § 10, 2009: Ord. 1542 N.C.(2d) § 10, 2005: Ord. 1211 N.C. (2d) § 11, 1992: Ord. 806 N.C.(2d) § 1 (part), 1985: Ord. 374 N.C.(2d) § 5 (part), 1977: Ord. 195 N.C.(2d) § 1(f), 1973: Ord. 84 N.C.(2d) § 1 (part), 1972: Ord. 324 N.C. § 13.05(e),1958.; Ord. No. 1757 N.C. (2d) , § , 5-9-2017)

11.48.115 - Service charges—Construction water customer accounts.

Customer accounts which qualify for water rates as set forth in Section 11.48.055 shall pay the following monthly service charge, effective on the dates indicated:

	6/9/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
Vallejo and Lakes service areas	$124.11	$128.45	$132.95	$137.60	$142.42

(Ord. 1619 N.C. (2d) § 11, 2009: Ord. 1542 N.C.(2d) § 11, 2005: Ord. 1211 N.C.(2d) § 12, 1992.)

(Ord. No. 1757 N.C. (2d) , § , 5-9-2017)

11.48.120 - Service charges—Fire protection service customer accounts.

For each fire protection service connected to the municipal water system pipelines separately of the customer's domestic water service connection, excepting residential single-family dwellings, such customer shall pay the following monthly service charges based on the meter size installed on the particular fire protection service connection, effective for the service areas, as defined in Sections 11.48.010 A and B, and on the dates indicated:

Vallejo Service Area

Meter Size	6/9/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
5/8 or 3/4-inch	$19.38	$20.06	$20.77	$21.49	$22.24
1 inch	$23.05	$23.86	$24.69	$25.55	$26.45
1-½ inch	$30.50	$31.56	$32.67	$33.81	$34.99

2 inch	$39.48	$40.86	$42.29	$43.77	$45.30
3 inch	$60.40	$62.51	$64.70	$66.97	$69.31
4 inch	$90.19	$93.34	$96.61	$99.99	$103.49
6 inch	$164.77	$170.54	$176.51	$182.68	$189.08
8 inch	$254.25	$263.15	$272.36	$281.89	$291.76
10 inch	$358.74	$371.29	$384.29	$397.74	$411.66

Lakes Service Area

Meter Size	6/9/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
5/8 or 3/4-inch	$42.91	$44.41	$45.96	$47.57	$49.24
1 inch	$43.97	$45.51	$47.10	$48.75	$50.46
1-½ inch	$45.98	$47.59	$49.25	$50.98	$52.76
2 inch	$48.46	$50.16	$51.91	$53.73	$55.61
3 inch	$54.14	$56.03	$57.99	$60.02	$62.12
4 inch	$62.29	$64.47	$66.73	$69.06	$71.48
6 inch	$82.74	$85.64	$88.63	$91.74	$94.95
8 inch	$107.21	$110.96	$114.84	$118.86	$123.02
10 inch	$135.81	$140.57	$145.48	$150.58	$155.85

(Ord. 1619 N.C.(2d) § 12, 2009: Ord. 1580 N.C. (2d) § 1, 2007: Ord. 1542 N.C.(2d) § 12, 2005: Ord. 1211 N.C.(2d) § 13, 1992: Ord. 799 N.C. §§ 1 (part), 2 (part), 1967: Ord. 324 N.C. § 13.06, 1958.; Ord. No. 1757 N.C. (2d) , § 11, 5-9-2017)

11.48.130 - Contractual rates.

The city council reserves the right to negotiate by contract rates and/or charges different than those expressed in any paragraph or section of this chapter, and such contractual rates and/or charges shall take preference over any other rates and/or charges set forth in any paragraph or section of this chapter.

(Ord. 799 N.C. §§ 1 (part), 2 (part), 1967: Ord. 324 N.C. § 13.07, 1958.)

11.48.140 - Reduction in service charges upon retirement of 1992 water system revenue bond issue.

Upon retirement of the water system revenue bond issue (Fleming Hill Treatment Plant Improvements), scheduled for 2018, or at an earlier date if sooner retired, the service charges shall be reduced on the date of the next succeeding billing cycle by the amount representing the debt service on the aforementioned bond issue.

(Ord. 1211 N.C.(2d) § 14, 1992.)

11.48.170 - Service call charge.

A service call charge (to be established by city council resolution) shall be assessed on the water bill for any service call occasioned by the necessity to make a call to the service address for reasons other than providing initial water service or discontinuation of service for reasons other than nonpayment.

(Ord. 1212 N.C.(2d) § 2, 1992.)

11.48.180 - Lakes Water System upgrade surcharge—Generally.

Each customer account for water service within the Lakes Water System shall pay a monthly surcharge in the amount applicable to the particular account as hereinafter set forth in Sections 11.48.181 through 11.48.183; said surcharge shall be in addition to any and all taxes, fees, or charges of any nature whatsoever relative to a supply of water, water service or water service connection.

(Ord. 1334 N.C.(2d) § 5, 1995.)

11.48.181 - Lakes Water System upgrade surcharge—Purpose.

The surcharge is assessed to generate sufficient revenue to construct improvements in the Lakes Water System; primarily, water treatment facilities improvements and requirements that will comply with the new surface water treatment required by the U.S. Environmental Protection Agency and the State of California, Department of Health Services, and associated debt service. The moneys received shall be deposited into a dedicated account, and shall be expended and/or withdrawn from said account only for the purposes herein indicated.

(Ord. 1334 N.C.(2d) § 6, 1995.)

11.48.182 - Lakes Water System upgrade surcharge—Payments.

Customer accounts for water service which qualify for water rates as set forth in Section 11.48.040 shall pay the following monthly surcharge, in addition to the monthly service charge as set forth in Section 11.48.100, for each water service connection.

A. Residential Service. Premises consisting of one or more residential units; surcharges are for each unit supplied by that water service connection:

	7/1/95	7/1/96
Single-family	$30.00	$40.00
Mobilehome	30.00	40.00

Multifamily	27.00	36.00

B. Commercial. Premises consisting of one or more commercial units; surcharges are for each unit supplied by that water service connection; however, in all instances, the surcharge shall not be less than hereinafter set forth for the meter size installed on the particular water service connection.

Meter Size	7/1/95	7/1/96
5/8 or ¾"	$30.00	$ 40.00
1 inch	120.00	160.00
1 ½ inch	300.00	400.00
2 inch	450.00	600.00
3 inch	810.00	1080.00
4 inch	1260.00	1680.00
6 inch	3000.00	4000.00
8 inch	6300.00	8400.00
10 inch	10500.00	14000.00
12 inch and larger	To be computed by the city water superintendent	

C. Combination. For premises consisting of any combination of residential units and/or mobile home units and/or commercial units; the applicable monthly surcharge for each residential unit shall be added to the surcharge for the commercial unit or units supplied by that water service connection as set forth in subsection B of this section.

D. Schools. Premises used for school purposes as defined by Section 11.48.070H; surcharges are for each unit supplied by that water service connection; however, in all instances, the surcharge shall not be less than the

amount recited in subsection C of this section for the meter size installed on the particular water service connection.

(Ord. 1334 N.C.(2d) § 7, 1995.)

11.48.183 - Removal of Lakes Water System upgrade surcharge.

The Lakes Water System upgrade surcharge shall expire on September 30, 2015. The surcharge shall be removed on the date of the next succeeding billing cycle.

(Ord. 1334 N.C.(2d) § 8, 1995.)

II. - Miscellaneous Water Regulations

Chapter 11.52 - WATER WELLS

Sections:

11.52.010 - Use for drinking—Using after notice to close.

It is unlawful for any person, firm or corporation to maintain or use any well for the purpose of drawing therefrom any water intended for drinking purposes without first obtaining from the board of health a permit so to do; or to use any well after notice from the board of health to close or fill it.

(Ord. 96 N.S. § 1, 1912.)

11.52.020 - Pollution—Notice to close.

Whenever it appears to the satisfaction of the board of health that any well, the water of which is used for domestic purposes, has come polluted, or in anywise rendered unsafe for domestic or drinking purposes, or has become otherwise prejudicial to health or dangerous to life, the board of health shall give to the owner or his agent, lessee, tenant or other person in charge of such well, written notice to close and to fill it within a time to be specified in such notice. If such notice is not complied with, the board of health shall cause such well to be closed and filled up at the cost and expense of the owner thereof.

(Ord. 96 N.S. § 2, 1912.)

Chapter 11.53 - WELL REGULATION AND MONITORING

Sections:

11.53.010 - County code adopted—Violations, penalties and inspections.

That certain document entitled Ordinance 1348 adopted by the Solano County board of supervisors to regulate the construction, reconstruction, destruction and inactivation of water, cathodic protection, and monitoring wells is adopted by the city of Vallejo and incorporated herein as though set forth in full and is made a part of this chapter except for the additions, revisions and omissions as set forth below. A copy of said county ordinance is on file in the office of the public works director of the city. The city authorizes the Solano County Department of Environmental Management, Division of Environmental Health, or any successor agency to undertake the inspections and other activities encompassed within said ordinance and to enforce the provisions of the ordinance codified in this chapter within the corporate limits of the city.

(Ord. 1077 N.C.(2d) § 2 (part), 1990.)

11.53.020 - Fees.

Those fees and charges established by the Solano County board of supervisors in County Resolution 89-179 relating to Ordinance 1348 and modified hereafter by said board from time to time are likewise adopted and incorporated herein as though set forth in full. Said fees and charges shall apply to any person, firm or corporation subject to the provisions of this chapter.

(Ord. 1077 N.C.(2d) § 2 (part), 1990.)

11.53.030 - Amendments.

Ordinance 1346, as adopted and incorporated herein is amended as follows:

A. The definition of "person" found in Section 13.10.101 is amended to read as follows:

Person shall mean any individual, firm, partnership, general corporation, association or governmental entity. "Governmental entity," as used herein, shall not include the City of Vallejo, an irrigation district, nor any local agency exempt from the application of the Ordinance pursuant to state law, and shall include the United States to the extent authorized by federal law.

B. The third full sentence of Section 13.10-104(a) **Well sites** is amended to read as follows, and in all other respects said section remains the same:

Water wells may be located in public utility easements, provided that written permission is obtained from the utility.

(Ord. 1077 N.C.(2d) § 2 (part), 1990.)

Chapter 11.54 - WASTEFUL WATER USE PROHIBITION ORDINANCE

Sections:

11.54.010 - Purpose and intent.

The purpose of this chapter is to ensure that the water supply of the city of Vallejo is put to maximum beneficial use and that waste or unreasonable use or unreasonable method of use be prevented.

(Ord. 1567 N.C.(2d) § 1 (part), 2006.)

11.54.020 - Short title.

This chapter shall be known and cited as the Wasteful Water Use Prohibition Ordinance.

(Ord. 1567 N.C.(2d) § 1 (part), 2006.)

11.54.030 - Regulations and restrictions on water use.

A. To prevent the waste and unreasonable use of water and to promote water conservation, each of the following actions is prohibited, except where necessary to address an immediate health and safety need or to comply with the term or condition in a permit issued by a state or federal agency:

1. The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows

onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures;

2. The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use;
3. The application of potable water to driveways and sidewalks;
4. The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system;
5. The application of potable water to outdoor landscapes during and within 48 hours after measurable rainfall;
6. The serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafés, cafeterias, bars, or other public places where food or drink are served and/or purchased;
7. The irrigation with potable water of landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development as adopted by the city;
8. Allowing potable water to escape from breaks within the customer's plumbing system for more than thirty-six hours after the customer is notified or discovers the break.
9. The use of potable water for construction, compaction, dust control, street or parking lot sweeping, or building wash down where nonpotable or recycled water is available in sufficient quantities.
10. The use of single-pass cooling systems;
11. The use of nonrecirculating systems in new conveyor car wash facilities.

B. To promote water conservation, operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom using clear and easily understood language.

(Ord. 1567 N.C.(2d) § 1 (part), 2006.; Ord. No. 1768 N.C. (2d) , § 1, 7-25-2017)

11.54.040 - Water efficient landscaping.

Landscaping shall be installed and maintained in accordance with Section 16.74.030 Water Conservation Guidelines and Chapter 16.71 Water Efficient Landscape Regulations of the Vallejo Municipal Code.

(Ord. No. 1634 N.C.(2d), § 1, 3-23-2010)

11.54.050 - Reserved.

11.54.060 - Enforcement and penalties.

Violations of any provision of Section 11.54.030 shall be enforced as follows:

A. For a first violation, the customer shall receive a notice of violation.
B. For a second violation, the customer shall receive an administrative citation with a fine of two hundred dollars.
C. For a third violation, the customer shall receive an administrative citation with a fine of five hundred dollars.
D. Administrative citations shall be issued pursuant to Chapter 1.15.

(Ord. No. 1708 N.C. (2d), § 1, 5-12-2015; Ord. No. 1768 N.C. (2d) , § 3, 7-25-2017)

Chapter 11.56 - WATER POLLUTION

Sections:

11.56.010 - Unlawful.

It is unlawful for any person to put or place in or on, or to allow to run into or on, any public reservoir of water, or the bank, border or margin thereof, or into any water pipe, aqueduct, conduit, canal, stream, tank, or excavation therewith connected, any animal, vegetable; or mineral substance; or to do, perform, or commit any act or thing which will pollute the purity and wholesomeness of any water intended for human consumption. Nothing contained in this section shall prohibit any officer or employee of the city acting within the course and scope of this employment, or any person, firm, or corporation acting with express authorization of the city of Vallejo from introducing any substance into the public water supply deemed essential by the city to maintain or preserve such water supply.

(Ord. 144 N.C.(2d) § 1, 1973.)

Chapter 11.60 - RESERVOIR KEEPERS

Sections:

11.60.010 - Designation.

The city manager shall have the authority to designate certain employees to be reservoir keepers.

(Ord. 317 N.C.(2d) § 1 (part), 1976.)

11.60.020 - Duties.

While they are on duty on reservoir property owned and operated by the city, in addition to other duties which may be specified by the water department, reservoir keepers shall have the duty to enforce all statutes of the state and/or ordinances of the county in which the reservoir is located relating to trespass, vandalism, and water pollution.

(Ord. 317 N.C.(2d) § 1(part), 1976.)

11.60.030 - Powers.

A reservoir keeper may arrest a person without a warrant whenever he has reasonable cause to believe that the person to be arrested has committed a misdemeanor in his presence which is in violation of a statute or ordinance which the keeper has the duty to enforce. If the person arrested does not demand to be taken before a magistrate, the reservoir keeper shall prepare a written notice to appear and release the person on his promise to appear, as prescribed by Chapter 5C (commencing with Section 853.6) of the Penal Code. Reservoir keepers shall have any other power granted by Section 836.5 of the Penal Code, or successive legislation, and shall be immune from civil liability as specified in that Penal Code section.

(Ord. 317 N.C.(2d) § 1 (part), 1976.)

11.60.040 - Identification.

The city manager may authorize reservoir keepers to carry such badges, shields, or other identification, and to wear such uniforms as he shall from time to time consider to be appropriate.

(Ord. 317 N.C.(2d) § 1(part), 1976.)

11.60.050 - Other powers.

Nothing in this chapter shall prevent a reservoir keeper from making a citizen's arrest for violation of any statute or ordinance which is beyond his designated duty to enforce.

(Ord. 317 N.C.(2d) § 1 (part), 1976.)

TITLE 11 FOOTNOTES

1. For statutory provisions pertaining to municipal operation and/or regulation of the city's water supply, see Gov. Code § 38730 et seq.
2. For statutory provisions regarding the power of cities to prescribe, revise, and collect charges for the water furnished by it, see Gov. Cod § 54344.
3. For statutory provisions defining water wells, see Water Code § 13710.
4. For statutory provisions pertaining to poisoning of springs, wells or reservoirs of water, see Pen. Code § 347. For statutory provisions regarding pollution of water supply, see Health & Safe. Code §§ 4450—4461.
5. Former Section 11.48.005, Annual adjustment of water rates, previously codified herein and containing portions of Ordinance No. 1379 N.C.(2d) was repealed in its entirety by Ordinance No. 1435 N.C.(2nd).
6. Former Section 11.48.015, Multiple unit water rates, previously codified herein and containing portions of Ordinance No. 374 N.C.(2d) was repealed in its entirety by Ordinance No. 1435 N.C.(2nd).
7. Former Section 11.48.030, outside water rates, previously codified herein and containing portions of Ordinance Nos. 324, N.C. 26 N.C., 374 N.C.(2d), 537 N.C. (2d), 748 N.C. (2d), 805 N.C.(2d), 875 N.C.(2d), 1203 N.C.(2d), 1211 N.C. (2d), 1379 N.C.(2d), 1435 N.C.(2d) and 1542 N.C.(2d) was repealed in its entirety by Ordinance No. 1619 N.C.(2d).
8. Former Section 11.48.090, Service charges—Outside customer accounts, previously codified herein and containing portions of Ordinance Nos. 324 N.C., 84 N.C.(2d), 195 N.C.(2d), 374 N.C.(2d), 806 N.C.(2d), 1211 N.C.(2d), 1434 N.C. (2d) and 1542 N.C.(2d) was repealed in its entirety by Ordinance No. 1619 N.C.(2d).
9. Ord. No. 1768 N.C. (2d) , § 2, adopted July 25, 2017, repealed § 11.54.050, which pertained to drought restrictions and derived from Ord. No. 1708 N.C. (2d), § 1, 5-12-2015.

City of Vallejo Chapter 16.71 – Water Efficient Landscape Requirements

Chapter 16.71 - WATER EFFICIENT LANDSCAPE REQUIREMENTS

16.71.010 - Title and purpose.

The purpose of these provisions is to maintain consistency with Section 2 of Article X of the California Constitution which specifies that the right to use water is limited to the amount reasonably required for the beneficial use to be served and the right does not and shall not extend to waste or unreasonable method of use. These provisions promote the values and benefits of landscaping practices that integrate and go beyond the conservation and efficient use of water; establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new construction and rehabilitated projects by encouraging the use of a watershed approach that requires cross-sector collaboration of industry, government and property owners to achieve the many benefits possible; establish provisions for water management practices and water waste prevention for existing landscapes; use water efficiently without waste by setting a maximum applied water allowance as an upper limit for water use and reduce water use to the lowest practical amount; promote the benefits of consistent landscape ordinances with neighboring local and regional agencies; encourage use of economic incentives that promote the efficient use of water, such as implementing a tiered-rate structure; and encourage cooperation between the city of Vallejo and local agencies to implement and enforce these regulations.

Landscapes that are planned, designed, installed, managed and maintained with the watershed based approach can improve California's environmental conditions and provide benefits and realize sustainability goals. Such landscapes will make the urban environment resilient in the face of climatic extremes. Consistent with the legislative findings and purpose of the regulations, conditions in the urban setting will be improved by:

1. Creating conditions to support life in the soil by reducing compaction, incorporating organic matter that increases water retention, and promoting productive plant growth that leads to more carbon storage, oxygen production, shade, habitat and esthetic benefits
2. Minimizing energy use by reducing irrigation water requirements, reducing reliance on petroleum based fertilizers and pesticides, and planting climate appropriate shade trees in urban areas.
3. Conserving water by capturing and reusing rainwater and graywater wherever possible and selecting climate appropriate plants that need minimal supplemental water after establishment.
4. Protecting air and water quality by reducing power equipment use and landfill disposal trips, electing recycled and locally sourced materials, and using compost, mulch and efficient irrigation equipment to prevent erosion.
5. Protecting existing habitat and creating new habitat by choosing local native plants, climate adapted non-natives and avoiding invasive plants. Utilizing integrated pest management with least toxic methods as the first course of action.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65593, Government Code. Reference: Sections 65591, 65593, 65596, Government Code.)

16.71.020 - Applicability.

A. After January 1, 2016 and consistent with the Executive Order No. B-29-15, these regulations shall apply to all of the following landscape projects:
   1. New construction projects with an aggregate landscape area equal to or greater than five hundred square feet requiring a building or landscape permit, plan check or design review;
   2. Rehabilitated landscape projects with an aggregated landscape area equal to or greater than two thousand, five hundred square feet requiring a building or landscape permit, plan check, or design review;

3. Existing landscapes limited to Sections 16.71.059, 16.71.061, and 16.71.062; and
4. Cemeteries. Recognizing the special landscape management needs of cemeteries, new and rehabilitated cemeteries are limited to Sections 16.71.044, 16.71.050 and 16.71.052; and existing cemeteries are limited to Sections 16.71.059, 16.71.061 and 16.71.062.

B. Any project with an aggregate landscape area of two thousand, five hundred square feet or less may comply with the performance requirements of in these regulations or conform to the prescriptive measures contained in Appendix D.

C. For projects using treated or untreated graywater or rainwater captured on site, any lot or parcel within the project that has less than two thousand, five hundred square feet of landscape and meets the lot or parcel's landscape water requirement (Estimated Total Water Use) entirely with treated or untreated graywater or through stored rainwater captured on site is subject only to Appendix D section (5).

D. These regulations do not apply to:
1. Registered local, state or federal historical sites;
2. Ecological restoration projects that do not require a permanent irrigation system;
3. Mined-land reclamation projects that do not require a permanent irrigation system; or
4. Existing plant collections, as part of botanical gardens and arboretums open to the public.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.030 - Definitions.

In addition to the definitions contained in the Vallejo Municipal Code, the following terms, for the purposes of this chapter, shall have the meaning set forth below:

A. "Applied water" means the portion of water supplied by the irrigation system to the landscape.

B. "Automatic irrigation controller" means timing device used to remotely control valves that operate an irrigation system. Automatic irrigation controllers are able to self-adjust and schedule irrigation events using either evapotranspiration (weather-based) or soil moisture data.

C. "Backflow prevention device" means a safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

D. "Certificate of completion" means the document required under Section 16.71.049.

E. "Certified irrigation designer" means a person certified to design irrigation systems by an accredited academic institution, a professional trade organization or other program such as the U.S. Environmental Protection Agency's Water Sense Irrigation Designer Certification program and Irrigation Association's Certified Irrigation Designer program.

F. "Certified landscape irrigation auditor" means a person certified to perform landscape irrigation audits by an accredited academic institution, a professional trade organization or other program such as the U.S. Environmental Protection Agency's Water Sense Irrigation Auditor Certification program and Irrigation Association's Certified Landscape Irrigation Auditor program.

G. "Check valve" or "anti-drain valve" means a valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.

H. "Common interest developments" means community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351.

I. "Compost" means the safe and stable product of controlled biologic decomposition of organic materials that is b growth.

J. "Conversion factor (0.62)" means the number that converts acre-inches per acre per year to gallons per square foot per year.

K. "Distribution uniformity" means the measure of the uniformity of irrigation water over a defined area.

L. "Drip irrigation" means any non-spray low volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

M. "Ecological restoration project" means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

N. "Effective precipitation" or "usable rainfall" (Eppt) means the portion of total precipitation which becomes available for plant growth.

O. "Emitter" means a drip irrigation emission device that delivers water slowly from the system to the soil.

P. "Established landscape" means the point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.

Q. "Establishment period of the plants" means the first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment. Typically, most plants are established after one or two years of growth. Native habitat mitigation areas and trees may need three to five years for establishment.

R. "Estimated total water use" (ETWU) means the total water used for the landscape as described in Section 16.71.044.

S. "ET adjustment factor" (ETAF) means a factor of 0.55 for residential areas and 0.45 for non-residential areas, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape. The ETAF for new and existing (non-rehabilitated) Special Landscape Areas shall not exceed 1.0. The ETAF for existing non-rehabilitated landscapes is 0.8.

T. "Evapotranspiration rate" means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

U. "Flow rate" means the rate at which water flows through pipes, valves and emission devices, measured in gallons per minute, gallons per hour, or cubic feet per second.

V. "Flow sensor" means an inline device installed at the supply point of the irrigation system that produces a repeatable signal proportional to flow rate. Flow sensors must be connected to an automatic irrigation controller, or flow monitor capable of receiving flow signals and operating master valves. This combination flow sensor/controller may also function as a landscape water meter or submeter.

W. "Friable" means a soil condition that is easily crumbled or loosely compacted down to a minimum depth per planting material requirements, whereby the root structure of newly planted material will be allowed to spread unimpeded.

X. "Fuel Modification Plan Guideline" means guidelines from a local fire authority to assist residents and businesses that are developing land or building structures in a fire hazard severity zone.

Y. "Graywater" means untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes but is not

limited to, wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers. Health and Safety Code Section 17922.12.

Z. "Hardscapes" means any durable material (pervious and non-pervious).

AA. "Hydrozone" means a portion of the landscaped area having plants with similar water needs and rooting depth. A hydrozone may be irrigated or non-irrigated.

BB. "Infiltration rate" means the rate of water entry into the soil expressed as a depth of water per unit of time (e.g., inches per hour).

CC. "Invasive plant species" means species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species. Lists of invasive plants are maintained at the California Invasive Plant Inventory and USDA invasive and noxious weeds database.

DD. "Irrigation audit" means an in-depth evaluation of the performance of an irrigation system conducted by a certified landscape irrigation auditor. An irrigation audit includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule. The audit must be conducted in a manner consistent with the irrigation Association's Landscape Irrigation Auditor Certification program or other U.S. Environmental Protection Agency "Watersense" labeled auditing program.

EE. "Irrigation efficiency" (IE) means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The irrigation efficiency for purposes of this chapter is 0.75 for overhead spray devices and 0.81 for drip systems.

FF. "Irrigation survey" means an evaluation of an irrigation system that is less detailed than an irrigation audit. An irrigation survey includes, but is not limited to: inspection, system test, and written recommendations to improve performance of the irrigation system.

GG. "Irrigation water use analysis" means an analysis of water use data based on meter readings and billing data.

HH. "Landscape architect" means a person who holds a license to practice landscape architecture in the state of California Business and Professions Code, Section 5615.

II. "Landscape area" means all the planting areas, turf areas, and water features in a landscape design plan subject to the maximum applied water allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).

JJ. "Landscape contractor" means a person licensed by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems.

KK. "Landscape documentation package" means the documents required under Section 16.71.043.

LL. "Landscape project" means total area of landscape in a project as defined in "landscape area" for the purposes of this ordinance, meeting requirements under Section 16.71.020.

MM. "Landscape water meter" means an inline device installed at the irrigation supply point that measures the flow of water into the irrigation system and is connected to a totalizer to record water use.

NN. "Lateral line" means the water delivery pipeline that supplies water to the emitters or sprinklers from the valve.

OO. "Local water purveyor" is referred to as the water division in this chapter.

PP. "Low volume irrigation" means the application of irrigation water at low pressure through a system of tubing

or lateral lines and low-volume emitters such as drip, drip lines, and bubblers. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

QQ. "Main line" means the pressurized pipeline that delivers water from the water source to the valve or outlet.

RR. "Master shut-off valve" is an automatic valve installed at the irrigation supply point which controls water flow into the irrigation system. When this valve is closed, water will not be supplied to the irrigation system. A master valve will greatly reduce any water loss due to a leaky station valve.

SS. "Maximum applied water allowance" (MAWA) means the upper limit of annual applied water for the established landscaped area as specified in Section 16.71.044. It is based upon the area's reference evapotranspiration, the ET adjustment factor, and the size of the landscape area. The estimated total water use shall not exceed the maximum applied water allowance. Special landscape areas, including recreation areas, areas permanently and solely dedicated to edible plants such as orchards and vegetable gardens, and areas irrigated with recycled water are subject to the MAWA with an ETAF not to exceed 1.0. MAWA = (ETo) (0.62) [(ETAF x LA) + ((1-ETAF) x SLA)].

TT. "Median" is an area between opposing lanes of traffic that may be unplanted or planted with trees, shrubs, perennials, and ornamental grasses.

UU. "Microclimate" means the climate of a small, specific area that may contrast with the climate of the overall landscape area due to factors such as wind, sun exposure, plant density, or proximity to reflective surfaces.

VV. "Mined-land reclamation projects" means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.

WW. "Mulch" means any organic material such as leaves, bark, straw, compost, or inorganic mineral materials such as rocks, gravel, or decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.

XX. "New construction" means, for the purposes of this ordinance, a new building with a landscape or other new landscape, such as a park, playground, or greenbelt without an associated building.

YY. "Non-residential landscape" means landscapes in commercial, institutional, industrial and public settings that may have areas designated for recreation or public assembly. It also includes portions of common areas of common interest developments with designated recreational areas.

ZZ. "Operating pressure" means the pressure at which the parts of an irrigation system are designed by the manufacturer to operate.

AAA. "Overhead sprinkler irrigation systems" or "overhead spray irrigation systems" means systems that deliver water through the air (e.g., spray heads and rotors).

BBB. "Overspray" means the irrigation water which is delivered beyond the target area.

CCC. "Parkway"means the area between a sidewalk and the curb or traffic lane. It may be planted or unplanted, and with or without pedestrian egress.

DDD. "Permit" means an authorizing document issued by local agencies for new construction or rehabilitated landscapes.

EEE. "Pervious" means any surface or material that allows the passage of water through the material and into the underlying soil.

FFF. "Plant factor" or "plant water use factor" is a factor, when multiplied by ETo, estimates the amount of water needed by plants. For purposes of this ordinance, the plant factor range for very low water use plants is 0 to 0.1, the plant factor range for low water use plants is 0.1 to 0.3, the plant factor range for moderate water use plants is 0.4 to 0.6, and the plant factor range for high water use plants is 0.7 to 1.0. Plant factors cited in this

chapter are derived from the publication "Water Use Classification of Landscape Species". Plant factors may also be obtained from horticultural researchers from academic institutions or professional associations as approved by the California Department of Water Resources (DWR).

GGG. "Project applicant" means the individual or entity submitting a Landscape Documentation Package required under Section 16.71.043, to request a permit, plan check, or design review from the City of Vallejo. A project applicant may be the property owner or his or her designee.

HHH. "Rain sensor" or "rain sensing shutoff device" means a component which automatically suspends an irrigation event when it rains.

III. "Record drawing" or "as-builts" means a set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.

JJJ. "Recreational area" means areas, excluding private single family residential areas designated for active play, recreation or public assembly in parks, sports fields, picnic grounds, amphitheaters or golf course tees, fairways, roughs, surrounds and greens.

KKK. "Recycled water", "reclaimed water", or "treated sewage effluent water" means treated or recycled waste water of a quality suitable for nonpotable uses such as landscape irrigation and water features. This water is not intended for human consumption.

LLL. "Reference evapotranspiration" or "ETo" means a standard measurement of environmental parameters which affect the water use of plants. ETo is expressed in inches per day, month, or year as represented in Appendix A, and is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis of determining the maximum applied water allowance so that regional differences in climate can be accommodated.

MMM. "Regional Water Efficient Landscape Ordinance" means a local Ordinance adopted by two or more local agencies, water suppliers and other stakeholders for implementing a consistent set of landscape provisions throughout a geographical region. Regional ordinances are strongly encouraged to provide a consistent framework for the landscape industry and applicants to adhere to.

NNN. "Rehabilitated landscape" means any re-landscaping project that requires a permit, plan check, or design review, meets the requirements of Section 16.71.020, and the modified landscape area is equal to or greater than two thousand five hundred square feet.

OOO. "Residential landscape" means landscapes surrounding single or multi-family homes.

PPP. "Runoff" means water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a slope.

QQQ. "Soil moisture sensing device" or "soil moisture sensor" means a device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.

RRR. "Soil texture" means the classification of soil based on its percentage of sand, silt, and clay.

SSS. "Special Landscape Area" (SLA) means an area of the landscape dedicated solely to edible plants, recreational areas, areas irrigated with recycled water, or water features using recycled water.

TTT. "Sprinkler head" or "spray head" means a device which delivers water through a nozzle.

UUU. "Static water pressure" means the pipeline or municipal water supply pressure when water is not flowing.

VVV. "Station" means an area served by one valve or by a set of valves that operate simultaneously.

WWW. "Swing joint" means an irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

XXX. "Submeter" means a metering device to measure water applied to the landscape that is installed after the

primary utility water meter.

YYY. "Turf" means a ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermuda grass, Kikuyu grass, Seashore Paspalum, St. Augustine grass, Zoysia grass, and Buffalo grass are warm-season grasses.

ZZZ. "Valve" means a device used to control the flow of water in the irrigation system.

AAAA. "Water conserving plant species" means a plant species identified as having a very low or low plant factor.

BBBB. "Water feature" means a design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in the high water use hydrozone of the landscape area. Constructed wetlands used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation.

CCCC. "Watering window" means the time of day irrigation is allowed.

DDDD. "WUCOLS" means the Water Use Classification of Landscape Species published by the University of California Cooperative Extension, and the Department of Water Resources 2014.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Sections 65592, 65596, Government Code.)

16.71.040 Provisions - for new construction or rehabilitated landscapes.

A. The City Manager may designate by mutual agreement, another agency, such as a water purveyor, to implement some or all of the requirements contained in this chapter. Local agencies may collaborate with water purveyors to define each entity's specific responsibilities relating to this chapter.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.041 - Compliance with landscape documentation package.

A. Prior to construction, the planning division shall:
   1. Provide the project applicant with these regulations and procedures for permits, plan checks, or design reviews;
   2. Review the landscape documentation package submitted by the project applicant;
   3. Approve or deny the landscape documentation package;
   4. Approve the plan check or design review for the project applicant; and
   5. Upon approval of the landscape documentation package, submit a copy of the water efficient landscape worksheet to the water division.

B. Prior to construction, the project applicant shall:
   1. Submit a landscape documentation package to the planning division;

C. Upon approval of the landscape documentation package by the planning division, the project applicant shall:
   1. Receive approval of the plan check or design review and record the date of the permit in the certificate of completion;
   2. Submit a copy of the approved landscape documentation package along with the record drawings, and any other information to the property owner or his/her designee; and

3. Submit a copy of the water efficient landscape worksheet to the water division.

(Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.042 - Penalties.

Landscaping that is installed, constructed, altered, enlarged, converted, moved or maintained contrary to these regulations is a violation of the Vallejo Municipal Code and subject to enforcement action by the city which may be result in a citation and imposition of a fine as established a city council resolution or any other legal remedy.

(Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.043 - Elements of the landscape documentation package.

A. The landscape documentation package shall include the following six elements:
    1. Project information:
        a. Date;
        b. Project applicant;
        c. Project address [if available, parcel and/or lot number(s)];
        d. Total landscape area (square feet);
        e. Project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed);
        f. Water supply type (e.g., potable, recycled, well) and identify the water division if the applicant is not served by a private well;
        g. Checklist of all documents in landscape documentation package;
        h. Project contacts to include contact information for the project applicant and property owner;
        i. Applicant signature and date with statement, "I agree to comply with the requirements of the water efficient landscape ordinance and submit a complete Landscape Documentation Package".
    2. Water efficient landscape worksheet:
        a. Hydrozone information table;
        b. Water budget calculations:
            i. Maximum applied water allowance (MAWA);
            ii. Estimated total water use (ETWU).
    3. Soil management report.
    4. Landscape design plan.
    5. Irrigation design plan in compliance with the planning division and/or public works landscape maintenance recommended standards.
    6. Grading design plan.

(Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.044 - Water efficient landscape worksheet.

A. A project applicant shall complete the Water Efficient Landscape Worksheet in Appendix B which contains

information on the plant factor, irrigation method, irrigation efficiency, and area associated with each hydrozone. Calculations are then made to show that the evapotranspiration adjustment factor (ETAF) for the landscape project does not exceed a factor of 0.55 for residential areas and 0.45 for non-residential areas, exclusive of Special Landscape Areas. The ETAF for a landscape project is based on the plant factors and irrigation methods selected. The Maximum Applied Water Allowance is calculated based on the maximum ETAF allowed (0.55 for residential areas and 0.45 for non-residential areas) and expressed as annual gallons required. The Estimated Total Water Use (ETWU) is calculated based on the plants used and irrigation method selected for the landscape design. ETWU must be below the MAWA.

1. In calculating the maximum applied water allowance and estimated total water use, a project applicant shall use the ETo values from the Reference Evapotranspiration Table in Appendix A. For Vallejo, use data from other cities in Solano County.

B. Water budget calculations shall adhere to the following requirements:

1. The plant factor used shall be from WUCOLS or from horticultural researchers with academic institutions or professional associations as approved by the California Department of Water Resources (DWR). The plant factor ranges from 0 to 0.1 for very low water using plants, 0.1 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, and from 0.7 to 1.0 for high water use plants.
2. All water features shall be included in the high water use hydrozone and temporarily irrigated areas shall be included in the low water use hydrozone.
3. All special landscape areas shall be identified and their water use calculated as shown in Appendix B. ETAF for new and existing (non-rehabilitated) special landscape areas shall not exceed 1.0.
4. ETAF for special landscape areas shall not exceed 1.0.

C. Maximum applied water allowance. The maximum applied water allowance shall be calculated using the equation:

MAWA = (ETo) (0.62) [(0.7 × LA) + (0.3 × SLA)] Where:

MAWA = Maximum Applied Water Allowance (gallons per year)

ETo = Reference Evapotranspiration (inches per year)

0.62 = Conversion Factor (to gallons)

0.7 = ET Adjustment Factor (ETAF)

LA = Landscape Area including SLA (square feet)

0.3 = Additional Water Allowance for SLA

SLA = Special Landscape Area (square feet)

Examples of how to use this calculation are provided in Appendix A.I.

D. Estimated Total Water Use. The estimated total water use shall be calculated using the equation below. The sum of the estimated total water use calculated for all hydrozones shall not exceed MAWA.

ETWU =	(ETo)(0.62)	($\frac{PF \times HA}{IE}$	+SLA)

Where:

ETWU = Estimated Total Water Use per year (gallons)

Eto = Reference Evapotranspiration (inches)

PF = Plant Factor from WUCOLS (see Section 16.71.030)

HA = Hydrozone Area [high, medium, and low water use areas] (square feet)

SLA = Special Landscape Area (square feet)

0.62 = Conversion Factor

IE = Irrigation Efficiency (minimum 0.71)

Examples of how to use this calculation are provided in Appendix A.l.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.045 - Soil Management Report.

A. In order to reduce runoff and encourage healthy plant growth, a soil management report shall be completed by the project applicant, or his/her designee, as follows:
    1. Submit soil samples to a laboratory for analysis and recommendations.
        a. Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.
        b. The soil analysis shall include:
            i. Soil texture;
            ii. Infiltration rate determined by laboratory test or soil texture infiltration rate table;
            iii. pH;
            iv. Total soluble salts;
            v. Sodium;
            vi. Percent organic matter; and
            vii. Recommendations.
        c. In projects with multiple landscape installations (i.e. production home developments) a soil sampling rate of one in seven lots or approximately fifteen percent will satisfy this requirement. Large landscape projects shall sample at a rate equivalent to one in seven lots.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.046 - Landscape Design Plan.

A. For the efficient use of water, a landscape shall be carefully designed and planned for the intended function of the project. A landscape design plan meeting the following design criteria shall be submitted as part of the landscape documentation package.
    1. Plant material.
        a. Any plant not within a "required landscaped area," may be selected for the landscape, providing the estimated total water use in the landscape area does not exceed the maximum applied water allowance.

Plants to be located within a required landscaped area must be of a drought tolerant variety. Methods to achieve water efficiency shall include one or more of the following:

i. Protection and preservation of native species and natural vegetation;

ii. Selection of water-conserving plant, tree and turf species, especially local native plants;

iii. Selection of plants based on local climate suitability, disease and pest resistance;

iv. Selection of street trees based on city of Vallejo approved street tree list and size at maturity as appropriate for the planting area;

v. Selection of plants from local and regional landscape program plant lists.

vi. Selection of plants from local Modification Plan Guidelines.

b. Each hydrozone shall have plant materials with similar water use, with the exception of hydrozones with plants of mixed water use, as specified in Section 16.71.044(A)(c)(ii).

c. Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. Methods to achieve water efficiency shall include one or more of the following:

i. Use the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate;

ii. Recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure (e.g., buildings, sidewalks, power lines); and

iii. Consider the solar orientation for plant placement to maximize summer shade and winter solar gain.

iv. Turf is not allowed on slopes greater than twenty-five percent where the toe of the slope is adjacent to an impermeable hardscape and where twenty-five percent means one foot of vertical elevation change for every four feet of horizontal length (rise divided by run x 100 = slope percent).

d. Recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure [e.g. buildings, sidewalks, power lines]; allow for adequate soil volume for healthy root growth and

e. High water use plants, characterized by a plant factor of 0.7 to 1.0, are prohibited in street medians.

f. A landscape design plan for projects in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required per Public Resources Code Section 4291(a) and (b). Avoid fire-prone plant materials and highly flammable mulches. Refer to the local Fuel Modification Plan guidelines.

g. The use of invasive plant species such as those listed by the California Invasive Plant Council shall not be permitted.

h. The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group.

2. Water features.

a. Recirculating water systems shall be used for water features.

b. Where available, recycled water shall be used as a source for decorative water features.

c. Surface area of a water feature shall be included in the high water use hydrozone area of the water budget calculation.

d. Pool and spa covers are highly recommended.

3. Soil Preparation, mulch and amendments.
    a. Prior to the planting of any materials, compacted soils shall be transformed to a friable condition. On engineered slopes, only amended planting holes need meet this requirement.
    b. Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected (see Section 16.71.054).
    c. For landscape installations, compost at a rate of a minimum of four cubic yards per one thousand square feet of permeable area shall be incorporated to a depth of six inches into the soil. Soils with greater than six percent organic matter in the top six inches of soil are exempt from adding compost and tilling.
    d. A minimum three inch layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated. To provide habitat for beneficial insects and other wildlife, up to five percent of the landscape area may be left without mulch. Designated insect habitat must be included in the landscape design plan as such.
    e. Stabilizing mulching products shall be used on slopes that meet current engineering standards.
    f. The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.
    g. Organic mulch materials made from recycled or post-consumer shall take precedence over inorganic materials or virgin forest products unless the recycled post-consumer organic products are not locally available. Organic mulches are not required where prohibited by local Fuel Modification Plan Guidelines or other applicable local ordinances.

B. The landscape design plan, at a minimum, shall:
    1. Delineate and label each hydrozone by number, letter, or other method;
    2. Identify each hydrozone as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the landscape shall be included in the low water use hydrozone for the water budget calculation;
    3. Identify recreational areas;
    4. Identify areas permanently and solely dedicated to edible plants;
    5. Identify areas irrigated with recycled water;
    6. Identify type of mulch and application depth;
    7. Identify soil amendments, type, and quantity;
    8. Identify type and surface area of water features;
    9. Identify hardscapes (pervious and non-pervious);
    10. Identify location, and installation details, and twenty-four hour retention or infiltration capacity of any applicable stormwater best management practices that encourage on-site retention and infiltration of stormwater. Project applicants shall refer to the Public Works Department or regional Water Quality Control Board for information on any applicable stormwater technical requirements. Stormwater best management practices are encouraged in the landscape design plan and are provided in Section 16.71.055.
    11. Identify any applicable rain harvesting or catchment technologies as discussed in Section 16.71.055 and their twenty-four hour retention or infiltration capacity;
    12. Identify any applicable graywater discharge piping, system components and area(s) of distribution;
    13. Contain the following statement: "I have complied with the criteria of the ordinance and applied them for the efficient use of water in the landscape design plan"; and
    14. Bear the signature of a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5,

5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 6 of the California Code of Regulations, and Section 6721 of the Food and Agriculture Code.)

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code and Section 1351, Civil Code.)

16.71.047 - Irrigation Design Plan.

A. This section applies to landscaped areas requiring permanent irrigation, not areas that require temporary irrigation solely for the plant establishment period. For the efficient use of water, an irrigation system shall meet the planning division and/or public works recommended standards and all the requirements listed in this section as well as manufacturers' recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria shall be submitted as part of the landscape documentation package.

1. System.

a. Landscape water meters, defined as either a dedicated water service meter or private submeter, shall be installed for all non-residential irrigated landscapes of one thousand square feet but not more than five thousand square feet (the level at which Water Code 535 applies) and residential irrigated landscapes of five thousand square feet or greater. A landscape water meter may be either:

i. A customer service meter dedicated to landscape use provided by the water division; or

ii. A privately owned meter or submeter.

b. Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data utilizing non-volatile memory shall be required for irrigation scheduling in all irrigation systems.

c. If the water pressure is below or exceeds the recommended pressure of the specified irrigation devices, the installation of a pressure regulating device is required to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.

d. Sensors (rain, freeze, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy or freezing weather, or during rain.

e. Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required, as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency (such as a main line break) or routine repair.

f. Backflow prevention devices shall be required to protect the water supply from contamination by the irrigation system. A project applicant shall refer to Chapter 11.38 of this code for additional backflow prevention requirements.

g. Flow sensors that detect high flow conditions created by system damage or malfunction are required for all on non-residential landscapes and residential landscapes of five thousand square feet or larger.

h. Master shut-off valves are required on all projects except landscapes that make use of technologies that allow for the individual control of sprinklers that are individually pressurized in a system equipped with low pressure shut down features.

i. The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.

j. Relevant information from the soil management plan, such as soil type and infiltration rate, shall be

utilized when designing irrigation systems.

k. The design of the irrigation system shall conform to the hydrozones of the landscape design plan.

l. The irrigation system must be designed and installed to meet, at a minimum, the irrigation efficiency criteria as described in Section 16.71.044 regarding the maximum applied water allowance.

m. All irrigation emission devices must meet the requirements set in the American National Standards Institute (ANSI) standard, American Society of Agricultural and Biological Engineers'/International Code Council's (ASABE/ICC) 802-2014" Landscape Irrigation Sprinkler and Emitter Standard. All sprinkler heads installed in the landscape must document a distribution uniformity low quarter of 0.65 or higher using the protocol defined in ASABE/ICC 802-2014.

n. It is highly recommended that the project applicant inquire with the water division about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system.

o. In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.

p. Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.

q. Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.

r. Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to hardscapes or in high traffic areas of turfgrass.

s. Check valves or anti-drain valves are required on all sprinkler heads where low point drainage could occur.

t. Areas less than ten feet in width in any direction shall be irrigated with subsurface irrigation or other means that produces no runoff or overspray.

u. Overhead irrigation shall not be permitted within twenty-four inches of any non-permeable surface. Allowable irrigation within the setback from non-permeable surfaces may include drip, drip line, or other low flow non-spray technology. The setback area may be planted or unplanted. The surfacing of the setback may be mulch, gravel, or other porous material. These restrictions may be modified if:

i. The landscape area is adjacent to permeable surfacing and no runoff occurs; or

ii. The adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or

iii. The irrigation designer specifies an alternative design or technology, as part of the landscape documentation package and clearly demonstrates strict adherence to irrigation system design criteria in Section 16.71.047 A(1)(I). Prevention of overspray and runoff must be confirmed during the irrigation audit.

v. Slopes greater than twenty-five percent shall not be irrigated with an irrigation system with an application rate exceeding 0.75 inches per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology, as part of the landscape documentation package, and clearly demonstrates no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during the irrigation audit.

2. Hydrozone.

a. Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.

b. Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant

type within that hydrozone.

c. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf to facilitate the appropriate irrigation of trees. The mature size and extent of the root zone shall be considered when designing irrigation for the tree.

d. Individual hydrozones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if:

i. Plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or

ii. The plant factor of the higher water using plant is used for calculations.

e. Individual hydrozones that mix high and low water use plants shall not be permitted.

f. On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the Hydrozone Information Table (see Appendix B, Section A). This table can also assist with the irrigation audit and programming the controller.

B. The irrigation design plan, at a minimum, shall contain:

1. Location and size of separate water meters for landscape;

2. Location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices;

3. Static water pressure at the point of connection to the public water supply;

4. Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station;

5. Recycled water irrigation systems as specified in Section 16.71.054;

6. The following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the irrigation design plan"; and

7. The signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor, or any other person authorized to design an irrigation system. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agricultural Code.)

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.048 - Grading design plan.

A. For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan shall be submitted as part of the landscape documentation package. A comprehensive grading plan prepared by a civil engineer for other permits satisfies this requirement.

1. The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area including:

a. Height of graded slopes;

b. Drainage patterns;

c. Pad elevations;

d. Finish grade; and

e. Stormwater retention improvements, if applicable.

2. To prevent excessive erosion and runoff, it is highly recommended that project applicants:

a. Grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable hardscapes;

b. Avoid disruption of natural drainage patterns and undisturbed soil; and

c. Avoid soil compaction in landscape areas.

3. The grading design plan shall contain the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the grading design plan" and shall bear the signature of a licensed professional as authorized by law.

(Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.049 - Certificate of completion.

A. The certificate of completion (see Appendix C for a sample certificate) shall include the following six elements:

1. Project information sheet that contains:

a. Date;

b. Project name;

c. Project applicant name, telephone, and mailing address;

d. Project address and location; and

e. property owner name, telephone, and mailing address;

2. Certification by either the signer of the landscape design plan, the signer of the irrigation design plan, or the licensed landscape contractor that the landscape project has been installed per the approved landscape documentation package;

a. Where there have been significant changes made in the field during construction, these "as-built" or record drawings shall be included with the certification;

b. A diagram of the irrigation plan showing hydrozones shall be kept with the irrigation controller for subsequent management purposes.

3. Irrigation scheduling parameters used to set the controller (see Section 16.71.050);

4. Landscape and irrigation maintenance schedule (see Section 16.71.051);

5. Irrigation audit report (see Section 16.71.052); and

6. Soil analysis report, if not submitted with landscape documentation package, and documentation verifying implementation of soil report recommendations (see Section 16.71.045).

B. The project applicant shall:

1. Submit the signed certificate of completion to the planning division for review;

2. Ensure that copies of the approved certificate of completion are submitted to the water division and property owner or his or her designee.

C. Prior to building permit issuance, the planning division shall:

1. Receive the signed certificate of completion from the project applicant;

2. Approve or deny the certificate of completion. If the certificate of completion is denied, the planning division shall provide information to the project applicant regarding reapplication, appeal, or other assistance.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.050 - Irrigation scheduling.

A. For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria:
   1. Irrigation scheduling shall be regulated by automatic irrigation controllers.
   2. Overhead irrigation shall be scheduled between 8:00 p.m. and 10:00 a.m. unless weather conditions prevent it. If allowable hours of irrigation differ from the water division, the stricter of the two shall apply. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
   3. For implementation of the irrigation schedule, particular attention must be paid to irrigation run times, emission device, flow rate, and current reference evapotranspiration, so that applied water meets the estimated total water use. Total annual applied water shall be less than or equal to maximum applied water allowance (MAWA). Actual irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data (e.g., CIMIS) or soil moisture sensor data.

[B.] 1. Parameters used to set the automatic controller shall be developed and submitted for each of the following:
   a. The plant establishment period;
   b. The established landscape; and
   c. Temporarily irrigated areas.
2. Each irrigation schedule shall consider for each station all of the following that apply:
   a. Irrigation interval (days between irrigation);
   b. Irrigation run times (hours or minutes per irrigation event to avoid runoff);
   c. Number of cycle starts required for each irrigation event to avoid runoff;
   d. Amount of applied water scheduled to be applied on a monthly basis;
   e. Application rate setting;
   f. Root depth setting;
   g. Plant type setting;
   h. Soil type;
   i. Slope factor setting;
   j. Shade factor setting; and
   k. Irrigation uniformity or efficiency setting.

(Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.051 - Landscape and irrigation maintenance schedule.

A. Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the certificate of completion.

B. A regular maintenance schedule shall include, but not be limited to, routine inspection; auditing, adjustment and repair of the irrigation system and its components; aerating and dethatching turf areas; topdressing with compost, replenishing mulch; fertilizing; pruning; weeding in all landscape areas, and removing obstructions to emission

devices. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.

C. Repair of all irrigation equipment shall be done with the originally installed components or their equivalents or with components with greater efficiency.

D. A project applicant is encouraged to implement established landscape industry sustainable Best Practices for all landscape maintenance activities.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.052 - Irrigation audit, irrigation survey, and irrigation water use analysis.

A. All landscape irrigation audits shall be conducted by a city designated irrigation auditor or a third party certified landscape irrigation auditor. Landscape audits shall not be conducted by the person who designed the landscape or installed the landscape.

B. In large projects or projects with multiple landscape installation (i.e. production home developments) an auditing rate of one in seven lots or approximately fifteen percent will satisfy this requirement.

C. For new construction and rehabilitated landscape projects installed after January 1, 2016, as described in Section 16.71.020:

1. The project applicant shall submit an irrigation audit report with the certificate of completion to the planning division that may include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, reporting overspray or run off that causes overland flow, and preparation of an irrigation schedule; including configuring irrigation controllers with application rate, soil types, plant factors, slope, exposure and any other factors necessary for accurate programming;

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.053 - Irrigation efficiency.

A. For the purpose of determining estimated total water use, average irrigation efficiency is assumed to be 0.75 for overhead spray devices and 0.81 for drip system devices.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.054 - Recycled water.

A. The installation of recycled water irrigation systems shall allow for the current and future use of recycled water.

B. All recycled water irrigation systems shall be designed and operated in accordance with all applicable local and state laws.

C. Landscapes using recycled water are considered special landscape areas. The ET adjustment factor for new and existing (non-rehabilitated) special landscape areas shall not exceed 1.0.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.055 - Graywater Systems.

A. Graywater systems promote the efficient use of water and are encouraged to assist in on-site landscape irrigation. All systems shall conform to the California Plumbing Code (this 24, Part 5, Chapter 16) and any applicable local ordinance Refer to 16.71.010 for the applicability of this chapter to landscape areas less than two-thousand five-hundred square the Estimated Total Water Use met entirely by graywater.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.

16.71.056 - Stormwater management and rainwater retention.

A. Stormwater management practices minimize runoff and increase infiltration which recharges groundwater and improves water quality. Implementing stormwater best management practices into the landscape and grading design plans to minimize runoff and to increase on-site rainwater retention and infiltration are encouraged.

B. Project applicants shall be referred to the Public Works Department and Section 12.41 for information on any applicable stormwater technical requirements.

C. All planted landscape areas are required to have friable soil to maximize water retention and infiltration. Refer to 16.71.047(A)(3).

D. It is strongly recommended that landscape areas be designed for capture and infiltration capacity that is sufficient to prevent runoff from impervious surfaces (i.e. roof and paved areas) from either: (1) the one inch twenty-four hour rain event or (2) the eighty-fifth percentile, twenty-four hour rain event, and/or additional capacity as required by any applicable local, regional, state or federal regulation.

E. It is recommended that stormwater projects incorporate any of the following elements to improve on-site stormwater and dry weather runoff capture and use:

1. Grade impervious surfaces, such as driveways, during construction to drain to vegetated areas.
2. Minimize the area of impervious surfaces such as paved areas, roof and concrete driveways.
3. Incorporate pervious or porous surfaces (e.g., permeable pavers or blocks, pervious or porous concrete, etc.) that minimize runoff.
4. Direct runoff from paved surfaces and roof areas into planting beds or landscaped areas to maximize site water capture and reuse.
5. Incorporate rain gardens, cisterns, and other rain harvesting or catchment systems.
6. Incorporate infiltration beds, swales, basins and drywells to capture stormwater and dry weather runoff and increase percolation into the soil.
7. Consider constructed wetlands and retention ponds that retain water, equalize excess flow, and filter pollutants.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.057 - Public education.

A. Publications. Education is a critical component to promote the efficient use of water in landscapes. The use of appropriate principles of design, installation, management and maintenance that save water is encouraged in the community.

1. The water division shall provide information to owners of permitted renovations and new, single-family residential homes regarding the design, installation, management, and maintenance of water efficient landscapes based on a water budget.

B. Model Homes. All model homes that are landscaped shall use signs and written information to demonstrate the princi water efficient landscapes described in this chapter.

1. Signs shall be used to identify the model as an example of a water efficient landscape featuring elements such as hydrozones, irrigation equipment, and others that contribute to the overall water efficient theme. Signage shall include information about the site water use as designed per this chapter; specify who designed and installed the water efficient landscape; and demonstrate low water use approaches to landscaping such as using native plants, graywater systems, and rainwater catchment systems.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016)

16.71.058 - Environmental review.

All projects must comply with the California Environmental Quality Act (CEQA), as appropriate.

(Ord. No. 1634 N.C.(2d), § 4, 3-23-2010; Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016)

State Law reference— (Section 21082, Public Resources Code. Reference: Sections 21080, 21082, Public Resources Code.)

16.71.059 - Provisions for existing landscapes.

The city manager shall designate the planning division, public works department, water division, or any other agency as deemed appropriate to implement some or all of the requirements contained in this chapter.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.060 - Reserved.

16.71.061 - Irrigation audit,

irrigation survey, and irrigation water use analysis.

A. This section shall apply to all existing landscapes that were installed before January 1, 2016, and are over one acre in size.

1. For all landscapes in Section 16.71.061(A) that have a water meter, the water division shall administer programs that may include, but not be limited to, irrigation water use analyses, irrigation surveys, and irrigation audits to evaluate water use and provide recommendations as necessary to reduce landscape water use to a level that does not exceed the maximum applied water allowance for existing landscapes. The maximum applied water allowance for existing landscapes shall be calculated as: MAWA = (0.8) (ETo)(LA)(0.62).
2. For all landscapes in Section 16.71.061(A) that do not have a meter, the water division shall administer programs that may include, but not be limited to, irrigation surveys and irrigation audits to evaluate water use and provide recommendations as necessary in order to prevent water waste.

B. All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.062 - Water waste prevention.

A. The water division shall prevent water waste resulting from inefficient landscape irrigation by prohibiting runoff

from leaving the target landscape due to low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, parking lots, or structures. Penalties for violation of these prohibitions may be established and administered to the project applicant.

B. Restrictions regarding overspray and runoff may be modified if:
   1. The landscape area is adjacent to permeable surfacing and no runoff occurs; or
   2. The adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping.

(Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65594, Government Code. Reference: Section 65596, Government Code.)

16.71.070 - Effective precipitation.

A. The city may consider effective precipitation (twenty-five percent of annual precipitation) in tracking water use and may use the following equation to calculate maximum applied water allowance:

   MAWA= (ETo - ToEppt) (0.5) [(0.7 × LA) + (0.3 × SLA)] for residential areas.

   MAWA= (ETo - Eppt) (0.62) [0.45 x LA) + (0.55 x SLA)] for non-residential uses.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016; Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

State Law reference— (Section 65595, Government Code. Reference: Section 65596, Government Code.)

16.71.080 - Appendices.

Appendices for this chapter shall be maintained by the planning division under separate cover.

(Ord. No. 1634 N.C.(2d), § 4, 3-23-2010)

16.71.090 - Reporting.

A. The city planning division shall report on implementation and enforcement by December 31, 2015. Subsequently, reporting will be due by January 31st of each year. Reports shall be submitted to the Department of Water Resources. Reports should be submitted as follows.

B. The city planning division shall address the following:
   1. State whether the city is adopting a single-agency ordinance or a regional agency alliance ordinance and the date of adoption or anticipated date adoption.
   2. Define the reporting period. The reporting period shall commence on December 3, 2015 and end on December 28, 2015. In subsequent years, the reporting will be for the calendar year.
   3. State if using a locally modified Water Efficient Landscape Ordinance (WELO) or the Model WELO. If using a locally modified WELO, how is it different than MWELO, and are there any exemptions specified?
   4. State the entity responsible for implementing the regulations of this chapter.
   5. State number and types of projects subject to the regulations during the specified reporting period.
   6. State the total area (in square feet or acres) subject to the regulations over the reporting period, if available.
   7. Provide the number of new housing starts, new commercial projects, and landscape retrofits during the reporting period.
   8. Describe the procedure for review of projects subject to the regulations of this chapter.
   9. Describe actions taken to verify compliance. Is a plan check performed; if so, by what entity? Is a site inspection performed; if so, by what entity? Is a post-installation audit required; if so, by whom?

10. Describe enforcement measures.
11. Explain challenges to implementing and enforcing the regulations of this chapter.
12. Describe educational and other needs to properly apply the regulations of this chapter.

(Ord. No. 1718 N.C.(2d) , § 2, 2-9-2016)

State Law reference— (Authority cited: Section 655595, Government Code. Reference: Section 65596, Government Code.)

Attachment C: Measurement Device Documentation

Water Department · 202 Fleming Hill Road · Vallejo · CA · 94589 · 707.648.4307

Approved by: _____ Date:_____

Mike Malone, Water Department Director

Meter Testing, Repair and Replacement Program

Purpose: Implement a program to test, repair and/or replace all distribution system meters at regular intervals.

Introduction:

Background:

The Vallejo Water Department has two major service areas where staff test, repair and/or replace distribution system meters: The City of Vallejo service area (COV) where there are 37,559 meters and the Lakes System service area (Lakes) of which there are 903-metered connections. In many cases, the programs for both systems will be identical and the use of Vallejo Water System (VWS) to designate reference to both service areas, however as the COV and Lakes areas may be funded separately or use technologies that are specific to each service area there will be a differentiation made when necessary.

Meter size is determined by a series of factors including: building use, number of plumbing fixtures, and fire protection system demand. As changes to any of these factors change there may be a resulting need to change the size of a meter. This may be an increase or a decrease however generally there is an addition of fixtures or added demand due to fire protection requirements.

Meters generally fall into three main types: Positive Displacement, Velocity, and Electromagnetic.

Positive Displacement (PD) metering is generally used for small to medium flow applications (less than 2 in) as found in most residences and small businesses. PD meters use flowing water to physically move an oscillating piston or a wobbling (nutating) disk. Built-in strainers are used to catch debris in the water stream that could damage the meter.

Velocity (Jet)-type water meters utilize a jet of water influencing impellors that rotate on an axle to move a register. Jet meters are best suited for relatively small flow measurements (less than 2 in) as found in most residences and small businesses. Jet meters also utilize internal strainers to remove debris.

In high-flow situations, **turbine** meters are often used. Similar to velocity meters, Turbo meters measure flow using the rate of spin induced on an in-line turbine. Turbine meters are used in large industrial processes, large landscape areas, firefighting, and to meter water transfer within a water distribution system. Turbine meters can be installed in water lines up to 12 inches in diameter. Turbine meters require

a higher volume to induce spin and therefore are not ideal for use on residential or small businesses with low flows

At locations where water flow rates are highly variable, compound meters, which have two measuring chambers for high flows and low flows can be used. To prevent backflow between the chambers, the meter is equipped with a check valve or spring. As water flow rates drop, the pressure inside the meter falls and the check valve or spring actuates. This diverts the flow to the low-flow rate-measuring chamber, which is typically a Jet meter.

Electromagnetic flow (MAG) meters utilize the voltage created when large volumes of water flow. This voltage crosses the force lines of a magnetic field. The strength of this voltage accumulates with flow volume and translates electronically into water flow rates. MAG meters have no moving parts, which make them ideal for measuring raw water flows whose debris or contaminants could damage other meter types. MAG meters would be used to meter mains 12 in. and larger. MAG meters are also used for measuring large flows such as water transfer within a water distribution system between zones. In Vallejo, MAG meters are generally used at the plant or at pump stations. Their maintenance would be performed by the Utility Mechanic group and not be maintained by the Distribution Meter Shop.

Analysis:

This program is designed to address the testing, repair, and replacement of PD and Jet style meters within the distribution system by the Meter Shop.

In Table 1 there is a breakdown of meters by size and age. Meter sizes 1-in. and smaller generally serve single-family residences. Table 2 the lower and upper limit of meters are indicated. As meter size increases the ability to read lower flow values decreases as the higher flow reading capacity increases. Therefore, the way to detect a lower flow is to typically have a smaller meter. However, larger facilities have a demand based on size or occupancy that is beyond the metering capability of smaller meters and larger meters are installed accordingly. Even in a high flow connection, low flow demands are still present in services with large meters and there is usage that the large meters may fail to capture. The determination of the delta between the lower limit of the meter and the lower limit of actual usage makes meter selection critical as error in their registration has a greater effect on customer equity, utility credibility and on revenue issues.

The best way to capture the high and low flow is to install a compound, floating ball or Mag type meters Regardless of method, the meter installation must match the usage as every water provider must account for their total amount of water and where losses occur is part of that accounting.

Meters degrade with time and become less efficient. Wear on moving parts, scale, deposits, particulate damage all work together to degrade the meter. The general life of a PD meter is 20 years. Jet meter life is similar in length but in all cases testing must be performed to assure accuracy. Once a meter loses more than 2.5% accuracy it should be repaired or replaced. Thus a meter running 97.5%- 102.5% is within tolerance. Generally, meters lose accuracy reading the low flow and typically read lower than the actual. Testing is required to determine the accuracy.

Testing needs to be performed regardless of meter age. Based on multi-agency summaries we know that new meters may not read accurately out of the box from the meter distributor. There are many ways to

address this. For this policy, testing 10% of the new meters will provide a representative sample of the accuracy of new meters. During testing if any meters register outside the expected accuracy range, an additional 10% should be tested.

This Meter Testing/repair/replacement Program is being implemented to test, calibrate, repair, and replace meters on a regular basis. The meters will be selected, installed, operated, calibrated, and maintained following generally accepted industry and manufacturer standards. The top 10% of water users will be identified and will have their meters tested annually.

The meter evaluation program will have the following elements:
(a) Evaluate and replace older meters as scheduled. The meter replacement program will consider the recalibration or replacement of customer meters consistent with AWWA recommendations.
(b) Ensure that meters are appropriately sized. If a meter is too large for a customer, it will typically under register water use, resulting in lower revenues. A regularly scheduled meter-testing program will ensure meter accuracy for the utility.
c) Install master meters at all water sources (produced or purchased) and test as necessary to the printed recommendations of the meter manufacturer.
d) Measure the volume of water delivered to water users on all meters installed on all direct service connections. The volume of water may be measured through a single meter for the following clustered entities, as applicable: campgrounds; recreational vehicle parks; buildings with multiple units; complexes with multiple buildings served by a single connection. A protocol based on age of meter will be established for the testing and replacement frequency best suited for the City of Vallejo.

In accordance with the guidelines provided by the American Water Works Association (AWWA) Manual M6, 95 percent of meters scheduled for tests on a periodic basis should be actually tested. In addition, at least 95 percent of the meters actually tested should register results within the accuracy limits established for both normal and minimum test-flow rates.

According to AWWA Table 5-2 State Public Service Commission Regulations recommends that meters in service be tested, on average, as follows:
Meter sizes 5/8 in. = Every 20 years
Meters 1 in. =Every 15 years
Meter sizes 1.5 in. and larger = Every 10 years

More frequent tests of large meters on the basis that an error in their registration has a greater effect on customer equity, utility credibility and on revenue issues. Older meters and those registering the largest volume will be given priority, since they generally read low.

Using the AWWA testing recommendation we can establish a priority hierarchy. Therefore, the largest meter applications would have a high priority of testing, repair and replacement.

In 2006 California enacted AB1953/Prop 65 which prohibited the use of plumbing fittings and fixtures which come into direct contact with potable water with a lead content higher than 0.25 percent. Manufacturers were to get into compliance with AB 1953 by 2010. Meters with lead content that conforms to AB 1953 are indicated by markings on the meter body. When the non-compliant meters

require repair, they must be repaired in situ because if they are removed they cannot be reinstalled because of their lead content.

The highest priority meters to replace will be the oldest large meters installed in the VWS prior to the lead-free transition (in 2010). This is roughly 1,870 meters, or less than 5%, of the meters in the VWS. In many cases these meters are likely to be low reading due to age already.

During data collection to determine the age of the meters in the VWS several non-reading large meters were discovered. The next highest priority will be to review the usage of all large meters and flag any for immediate review of any non-active meters since 2010. As many of the large meters are commercial services, they are read and billed monthly. After two consecutive non-usage cycles have occurred those meters should have a mandatory service check to determine accuracy. This test can generally be performed with the remote testing apparatus.

The next priority is to systematically work from large meters 10 in. down, for each size testing the top 10% of users to 8 in. and for each size testing the top 10% of users and the meters with 2 consecutive billing cycles of no use. This should be done down through the 1 ½ in meters.

For the meters 1 in. and smaller: In Table 5 there is a breakdown of meters by size and age. The standard meter lifespan of a residential meter is 20 years. There are approximately 14,900 meters currently reading that were installed prior to 2000. In Table 3 we compare the cost of small meter repair to full replacement. What is found is that the cost of a new meter is less than 4% greater than the cost to repair. Therefore most of the smaller meters would benefit from a direct replacement over repair. Of the 14,900 meters installed before the year 2000, 96% (14,300) are 5/8 in. to 1 in. It appears that replacement of 14,300 meters could be warranted purely by age.

There is a change of how society uses water. The 5/8" meter can capture the 1/4 gallon per minute(gpm) low flow, the high flow 20 gpm is a limiting factor. Meters should normally operate at half of maximum flow for longevity of the meter. The standard meter size in most single family houses was 5/8". After the adoption of the International Plumbing Code, the meter sizes were based on a fixture count which considers the number of bathrooms, kitchen sink, clothes washer, dishwasher, other water using fixtures. This increase in water using fixtures required an increase to the meter size, generally a ¾" meter or greater per condition. Since 2010 the meter must account for the demand of fire protection sprinkler systems and has caused an additional increase to 1" meters. In many older homes in the City, the owners have made updates to a home and have increased the demand beyond the capability of the 5/8" meter. Therefore, the 5/8" meter is likely undersized for the fixture demand of current occupancies regardless of age. The ¾" meter uses the same lateral but has a 50% increase in capacity without a change in lateral size or service charge. This increase meets most needs of existing homes built before 2010 and will assure meter longevity. Thus it is in the best interest to adopt a policy to remove the 5/8" meters and replace them with the ¾" meter when the existing structure is not protected by a fire sprinkler system.

Our water meter testing, repair and replacement program will consider many aspects: age, technology, size, meter composition, and the changing demand of a society. Those considerations have been addressed with the recommendations below.

Recommendations:

- Test new meters. Start with 10% and adjust based on results.
- Eliminate repair of meters 5/8 x ¾-inch and 1-meters as not cost effective.
- Install ¾-inch meters where existing 5/8 x ¾-inch meters are being replaced.
- Start random testing of 5/8 x ¾-inch, ¾-inch and 1-meters in the 15 to 25 years-after-installation range to see what the failure (under-registration) rate is vs. replacement costs. Expand the range as necessary. Use results to determine automatic change-out policy based on age and/or total meter usage.
- Check meters with no registered use in 2018, starting with largest sizes, to make sure they have not failed.
- Start testing meters 1 ½-inch to 10-inch for accuracy. Determine failure (under-registration) rate vs replacement cost. Prioritize testing based on water use. If testing not practical do measuring element change-out. Meters using more than 2,000 hundred cubic feet (ccf) per year should be prioritized. At $3.53 per ccf this is a revenue of $7,000+ per year.
- Test a sample of meters $\geq$ 2-inch that are over 10 years old and use over 1,000 ccf of water per year to see what the under-registration rate is.
- Ensure that all meters proposed to be rebuilt and replaced meet current state of California Proposition 65 (AB 1953) Lead standards before they rebuilt and are returned to service.
- Confirm the placement of turbine meters at multi-residential locations and replace with compound meters on domestic service meters.
- Confirm and test the meters for the Landscape Maintenance District and other City-owned facilities.

APPENDICIES

Table 1 Number of meters per size

Vallejo

age range	5/8”	1"	1 1/2"	2"	3"	4"	6'	8"	10"
1958 - 1969	5	3	1			1			
1970 - 1974	4	1	1		2				
1975-1979	9	1	5	3					
1980-1984	7	4	3						
1985-1989	26	5	17	3		1			
1990-1994	614	453	44	109	3	5			
1995-1999	335	114	169	40	2	6	4		
2000-2004	736	492	121	107	6	7	3		
2005 - 2009*	28,158	943	178	147	9	9	7	2	
2010 - present	7,665	573	206	238	18	28	21	1	1
total	**37,559**	2,589	745	647	40	57	35	3	1

* before 2010 for small meters (lead-free meters started 2010)

Lakes System

age range	5/8”	1"	1 1/2"	2"	3"	4"	6'	8"	
up to 1999	330	94	8	5	0	0	1	0	
2000-2010	397	137	9	12	1	3	1	2	
2010-present	176	36	4	3	1	1	1	0	
total	**903**	**267**	**21**	**20**	**2**	**4**	**3**	**2**	

≤ 1-inch total	851	
pre-2010	685	81%

total both systems	**38,462**	**2,856**	**766**	**667**	**42**	**61**	**38**	**5**	**1**

Table 2 NORMAL OPERATING FLOW RANGE
(100% ± 1.5%)

5/8"	1 to 20 gpm
¾"	2 to 30 gpm
1"	3 to 50 gpm
1 ½"	4 to 120 gpm
2"	35 to 170 gpm
3"	40 to 400 gpm
4"	50 to 1000 gpm
6"	90 to 2000 gpm

Table 3 LOW FLOW REGISTRATION

5/8"	¼ gpm
¾"	1/2 gpm
1"	3/4 gpm

Table 4 Meter Replacement vs. Rebuilding costs (8/9/2017)
5/8 x 3/4-inch Water Meter costs

new		**$129.86**
rebuild	register head	$71.66
	Measuring chamber	$26.24
	Strainer	$1.70
	Bottom Plate liner	$1.72
	materials total	$101.32
	staff time (1/2 hour)	$24.22
	total	**$125.54**

WATER METERING REPORTING AND TRACKING FORM

I. *GENERAL SYSTEM INFORMATION*
Reporting Period (Year):
Water System Permit (circle one) CA 4810007 Vallejo; CA 4810021 Lakes
Water System Name: City of Vallejo
Water System Address: 111 Amador St., Vallejo, CA 94590

Meter size _____ Meter type: _____ Installation date: _____

Customer Contact Person Name _____

Customer Class _____

Flow tests (gpm)

Flow rates field meter test meter

	Start read	End Read	Register total	water weight in lb's	water weight in CuFt	Accuracy	Passed
Low flow							
Medium flow							
High flow							

CERTIFICATION OF WATER METER CALIBRATION AND REPAIR

Tested by: _____

Date:_____ Signature:_____

Title:_____

Water Department · 202 Fleming Hill Road · Vallejo · CA · 94589 · 707.648.4307

Meter Test Bench Standard Operations Procedure (S.O.P)

Testing the Meter

These steps provide the proper procedure for testing meters.

1.Place the meter on the test bench. Clamp the meter securely. Verify that meter bore axes are centered within the test bench piping.
2.On mechanical registers remove the register and manually turn the dial to the nearest tenth to start the read and run water through the system to remove any entrapped air. This purging should last roughly one minute, at or near the meter's maximum rated flow, to ensure the system and meters have been fully purged of air before re-installing the register.
3. Record the starting read of the meter.
4. For new meter testing, start with a high-flow test and then proceed down to the lower flows. This ensures that any minor pockets of remaining entrapped air are removed during the first few seconds of the total test sequence. The meter flow tube must be full to avoid an empty pipe condition. For meters pulled from service, the meter internals may need to be fully hydrated prior to the start of testing.
5. Open the test bench discharge valve to the desired flow rate for the maximum flow test.
6. Continue the flow at the maximum flow rate until the meter reaches the desired quantity.
7. Record the results of this test.
8. To determine the accuracy of the meter after each test, divide the consumption indicated by the meter under test by the total tank or reference meter volume/gravimetric weight.
9. If the meter is not operating within expected standards, repeat the test to verify repeatability. If the second test provides acceptable results, run the test one more time. If the second test does not produce acceptable results, repair, replace or consult the manufacturer's manual or contact the technical support team.
10. Repeat steps 2 to 8 for intermediate and minimum flow tests. For the minimum flow test in particular, it is important to verify that the actual test flow rate closely matches the target flow

rate.

11. When the tests are complete, remove the meter from the test bench

Important Steps

Proper procedures are critical for accurate meter testing:

- Use guidelines such as the American Water Works Assn.'s M6 manual to help reduce testing errors.
- Test benches must be kept clean and in good repair.
- Calibration of flow measurement instrumentation and equipment should be done on a regular basis. Calibration of volumetric tanks, gravimetric scales and reference/master meters should be traceable to national standards.
- Replace any worn gaskets periodically to prevent intrusion into flow passages or leaks.
- Carefully inspect the system for leaks. Leaking joints, control and diversion valves, or drain ports in benches are a common cause for meter testing errors.
- Flush the air from the test bench at the beginning of the test.
- Minimize pressure fluctuations through the system.
- Make sure the meters are completely full of water.
- Mount the meters horizontally to ensure pipe and meters remain full.
- Use adequate test quantities to reduce testing errors. See the M6 manual for guidelines or consult the meter manufacturer's documentation for correct testing quantities.
- To avoid any issues due to turbulence, use the appropriate upstream and downstream straight pipe requirements and always install any reference meters downstream of the meters in test. See the manufacturer's manual for upstream and downstream straight pipe requirements.

Other Considerations

- Use adequate test quantities at minimum flow rates. Higher test quantities help eliminate system or test errors.
- When testing multiple meters in sequence, system pressure and spacing between meters may affect testing accuracy.
- Avoid testing electronic meters downstream of other types of meters and provide ample straight piping upstream of each meter. Mechanical meters, tested in front of an electronic meter could cause disturbances. Place electronic meters first in the bench test, followed by other types of meters, when multiple types of meters are tested in line.
- Insufficient volumes, or not enough resolution on reference meters, can cause testing errors.

CITYWIDE WATER SYSTEM

Location	Quantity	Frequency	Type of Equipment
Alta Loma .54 Tank	1	Semi-annually	Level Transmitter
Burnham Street Pump Station	1	Semi-annually	Flow Transmitter
Burnham Street Pump Station	1	Semi-annually	Level Transmitter
Burnham Street Pump Station	1	Semi-annually	Pressure Switch - Discharge
Burnham Street Pump Station	1	Semi-annually	Pressure Switch - Suction
Carter Street Pump Station	1	Semi-annually	Pressure Switch - Discharge
Carter Street Pump Station	1	Semi-annually	Pressure Switch - Suction
Chabot Pump Station	2	Semi-annually	Chart Recorder - Discharge Pressure
Chabot Pump Station	2	Semi-annually	Chart Recorder - Suction Pressure
Chabot Pump Station	2	Semi-annually	Flow Transmitter
Chabot Pump Station	1	Semi-annually	Pressure Switch - High Discharge
Chabot Pump Station	1	Semi-annually	Pressure Switch - Low Suction
Chabot Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Chabot Pump Station	1	Semi-annually	Pressure Transmitter - Suction
Cimarron .54 MG Tank	1	Semi-annually	Level Transmitter
Columbus Pkwy 400 zone Pump Station	1	Semi-annually	Chart Recorder - Discharge Pressure
Columbus Pkwy 400 zone Pump Station	1	Semi-annually	Chart Recorder - Flow
Columbus Pkwy 400 zone Pump Station	1	Semi-annually	Chart Recorder - Suction Pressure
Columbus Pkwy 400 zone Pump Station	1	Semi-annually	Flow Transmitter
Columbus Pkwy 400 zone Pump Station	1	Semi-annually	Pressure Switch - High Discharge
Columbus Pkwy 400 zone Pump Station	1	Semi-annually	Pressure Switch - Low Suction
Columbus Pkwy 400 zone Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Columbus Pkwy 400 zone Pump Station	1	Semi-annually	Pressure Transmitter - Suction
Columbus Pkwy 600 zone Pump Station	1	Semi-annually	Chart Recorder - Discharge Pressure
Columbus Pkwy 600 zone Pump Station	1	Semi-annually	Chart Recorder - Flow
Columbus Pkwy 600 zone Pump Station	1	Semi-annually	Chart Recorder - Suction Pressure
Columbus Pkwy 600 zone Pump Station	1	Semi-annually	Flow Transmitter
Columbus Pkwy 600 zone Pump Station	1	Semi-annually	Pressure Switch - High Discharge
Columbus Pkwy 600 zone Pump Station	1	Semi-annually	Pressure Switch - Low Discharge
Columbus Pkwy 600 zone Pump Station	1	Semi-annually	Pressure Switch - Low Suction
Columbus Pkwy 600 zone Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Columbus Pkwy 600 zone Pump Station	1	Semi-annually	Pressure Transmitter - Suction
Cordelia Pump Station	1	Semi-annually	Flow Transmitter
Cordelia Pump Station	1	Semi-annually	Level Transmitter
Cordelia Pump Station	1	Annually	Pressure Switch - High Discharge
Cordelia Pump Station	1	Annually	Pressure Switch - Low Discharge
Cordelia Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Dos Reis Reservoirs	1	Semi-annually	Level Transmitter
Fleming Hill WTP	2	Weekly	Chlorine Analyzer (Hach)
Fleming Hill WTP	1	Weekly	Combined filtered water turbidimeter
Fleming Hill WTP	2	Weekly	Fluoride Analyzer
Fleming Hill WTP	1	Weekly	Turbidity Meter
Fleming Hill WTP	1	Monthly	A.I.T Scrubber Exhaust
Fleming Hill WTP	4	Monthly	Chlorine Leak Detector
Fleming Hill WTP	1	Monthly	Conductivity Analyzer
Fleming Hill WTP	4	Monthly	Effluent Flow Meter
Fleming Hill WTP	1	Monthly	Flow Transmitter (Clearwell)
Fleming Hill WTP	2	Monthly	Fluoride Analyzer
Fleming Hill WTP	2	Monthly	O3 Dissolved Analyzer
Fleming Hill WTP	1	Monthly	pH Analyzer
Fleming Hill WTP	2	Monthly	pH Analyzer
Fleming Hill WTP	4	Monthly	Pressure Transmitter (Gas House)

Fleming Hill WTP	2	Monthly	Streaming Current
Fleming Hill WTP	21	Monthly	Turbidity Meter
Fleming Hill WTP	3	Monthly	UPS
Fleming Hill WTP	1	8 Weeks	Fluoride Analyzer
Fleming Hill WTP	16	Quarterly	Filter Head Loss Indicators
Fleming Hill WTP	1	Quarterly	Hydro Battery Set
Fleming Hill WTP	2	Quarterly	Influent Flow Meter
Fleming Hill WTP	1	Quarterly	Level Transmitter - Lox
Fleming Hill WTP	2	Quarterly	O3 Gas Analyzer Ambient
Fleming Hill WTP	3	Quarterly	O3 Gas Analyzer Concentration
Fleming Hill WTP	8	Quarterly	O3 Off Gas Analyzer
Fleming Hill WTP	12	Quarterly	O3 Pressure Transmitter
Fleming Hill WTP	1	Semi-annually	Fluoride Analyzer
Fleming Hill WTP	15	Semi-annually	Metering pump motors
Fleming Hill WTP	15	Semi-annually	Metering Pumps
Fleming Hill WTP	6	Semi-annually	Metering Pumps - DC
Fleming Hill WTP	3	Semi-annually	O3 Press Sending Unit Rotometer
Fleming Hill WTP	1	Semi-annually	Pressure Transmitter - Plant
Fleming Hill WTP	3	Semi-annually	UPS
Fleming Hill WTP	1	Annually	Hydro Battery Set
Fleming Hill WTP	1	Annually	Main Disconnect
Fleming Hill WTP	9	Annually	MCC
Fleming Hill WTP	4	Annually	O3 Destruct T.I.T. & Gen
Fleming Hill WTP	10	Annually	O3 Destruct T.I.T. & Gen
Fleming Hill WTP	1	Annually	Pressure Transmitter - Scrubber Exhaust
Georgia 2.2 MG Tank	1	Semi-annually	Level Transmitter
Glen Cove 1.5 MG Tank	1	Semi-annually	Level Transmitter
Grid Pressure Site #1	1	Semi-annually	Level Transmitter
Grid Pressure Site #2	1	Semi-annually	Level Transmitter
Hiddenbrooke 0.99 MG Tank	1	Semi-annually	Level Transmitter
Hiddenbrooke 2.3 MG Tank	1	Semi-annually	Level Transmitter
Hiddenbrooke Domestic Pump Station	1	Semi-annually	Chart Recorder - Discharge Pressure
Hiddenbrooke Domestic Pump Station	1	Semi-annually	Chart Recorder - Flow
Hiddenbrooke Domestic Pump Station	1	Semi-annually	Chart Recorder - Suction Pressure
Hiddenbrooke Domestic Pump Station	1	Semi-annually	Flow Transmitter
Hiddenbrooke Domestic Pump Station	1	Semi-annually	Pressure Switch - High Discharge
Hiddenbrooke Domestic Pump Station	1	Semi-annually	Pressure Switch - Low Discharge
Hiddenbrooke Domestic Pump Station	1	Semi-annually	Pressure Switch - Low Suction
Hiddenbrooke Domestic Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Hiddenbrooke Domestic Pump Station	1	Semi-annually	Pressure Transmitter - Suction
Hiddenbrooke Irrigation Pump Station	1	Semi-annually	Chart Recorder - Discharge Pressure
Hiddenbrooke Irrigation Pump Station	1	Semi-annually	Chart Recorder - Suction Pressure
Hiddenbrooke Irrigation Pump Station	1	Semi-annually	Chart Recorder - Flow
Hiddenbrooke Irrigation Pump Station	1	Semi-annually	Flow Transmitter
Hiddenbrooke Irrigation Pump Station	1	Semi-annually	Pressure Switch - High Discharge
Hiddenbrooke Irrigation Pump Station	1	Semi-annually	Pressure Switch - Low Discharge
Hiddenbrooke Irrigation Pump Station	1	Semi-annually	Pressure Switch - Low Suction
Hiddenbrooke Irrigation Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Hiddenbrooke Irrigation Pump Station	1	Semi-annually	Pressure Transmitter - Suction
Hiddenbrooke Raw Water Lake	1	Semi-annually	Level Transmitter
Hollywood 292 Zone Pump Station	1	Semi-annually	Flow Transmitter
Hollywood 292 Zone Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Hollywood 400 Zone Pump Station	1	Semi-annually	Flow Transmitter
Hollywood 400 Zone Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Hollywood Pump Station	1	Semi-annually	Pressure Transmitter - Suction

Hunter Ranch Tank	1	Semi-annually	Level Transmitter
Hydrogenerator Plant	1	Quarterly	Pressure Transmitter
Hydrogenerator Plant	2	Quarterly	Valve Position Transmitter
Jamison Canyon Pump Station	1	Semi-annually	Chart Recorder - Discharge Pressure
Jamison Canyon Pump Station	1	Semi-annually	Chart Recorder - Flow
Jamison Canyon Pump Station	1	Semi-annually	Chart Recorder - Level
Jamison Canyon Pump Station	2	Semi-annually	Flow Transmitter
Jamison Canyon Pump Station	1	Semi-annually	Level Transmitter (Wet Well)
Jamison Canyon Pump Station	1	Semi-annually	Pressure Switch - Low Discharge
Jamison Canyon Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Kathy Ellen Pump Station	1	Monthly	Pressure Transmitter - Discharge
Mare Island 5.7 MG Tank	1	Semi-annually	Level Transmitter
Mira Vista Pump Station	1	Semi-annually	Flow Transmitter
Mira Vista Pump Station	1	Semi-annually	Pressure Switch - High Discharge
Mira Vista Pump Station	1	Semi-annually	Pressure Switch - Low Suction
Mira Vista Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Monticello Pump Station	1	Semi-annually	Chart Recorder - Discharge Pressure
Monticello Pump Station	1	Semi-annually	Chart Recorder - Flow
Monticello Pump Station	1	Semi-annually	Chart Recorder - Level
Monticello Pump Station	1	Semi-annually	Flow Transmitter
Monticello Pump Station	1	Semi-annually	Level Transmitter
Monticello Pump Station	1	Semi-annually	Pressure Switch
Monticello Pump Station	1	Semi-annually	Pressure Switch - High Discharge
Monticello Pump Station	1	Semi-annually	Pressure Switch - Low Discharge
Monticello Pump Station	1	Semi-annually	Pressure Switch - Low Suction
Monticello Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Northgate 1.7 MG Tank	1	Semi-annually	Level Transmitter
Northgate 6 MG Tank	1	Semi-annually	Level Transmitter
Redwood St. Pump Station	1	Semi-annually	Flow Transmitter
Redwood St. Pump Station	1	Semi-annually	Pressure Switch - High Discharge
Redwood St. Pump Station	1	Semi-annually	Pressure Switch - Low Suction
Redwood St. Pump Station	1	Semi-annually	Pressure Transmtter - High Discharge
Shadow Ridge Pump Station	1	Semi-annually	Pressure Transmitter - Suction
Shadow Ridge Pump Station	1	Semi-annually	Chart Recorder - Flow
Shadow Ridge Pump Station	1	Semi-annually	Chart Recorder - Discharge Pressure
Shadow Ridge Pump Station	1	Semi-annually	Chart Recorder - Suction Pressure
Shadow Ridge Pump Station	1	Semi-annually	Flow Transmitter
Shadow Ridge 0.01 MG Tank	1	Semi-annually	Level Transmitter
Shadow Ridge Pump Station	1	Semi-annually	Pressure Switch - High Discharge
Shadow Ridge Pump Station	2	Semi-annually	Pressure Switch - Low Suction
Shadow Ridge Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Skyview 6 MG Tank	1	Semi-annually	Level Transmitter
Somerset Tank	1	Semi-annually	Level Transmitter
Summit Reservoir	1	Semi-annually	Level Transmitter
Tennessee St. Pump Station	1	Semi-annually	Flow Transmitter
Tennessee St. Pump Station	2	Semi-annually	Pressure Switch - High Discharge
Tennessee St. Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Tennessee St. Pump Station	1	Semi-annually	Pressure Transmitter - Suction

TRAVIS AFB WATER SYSTEM

Location	Quantity	Frequency	Type of Equipment
Travis AFB WTP	6	Weekly	Turbidity Meter
Travis AFB WTP	1	Weekly	Fluoride A.I.T.
Travis AFB WTP	1	Bimonthly	Fluoride A.I.T.

Travis AFB WTP	1	Bimonthly	Fluoride A.I.T.
Travis AFB WTP	1	Monthly	Conductivity A.I.T.
Travis AFB WTP	1	Monthly	Streaming Current Monitor
Travis AFB WTP	2	Monthly	pH Analyzer
Travis AFB WTP	3	Monthly	Flow Meter
Travis AFB WTP	1	Quarterly	Chlorine Analyzer (W.T.)
Travis AFB WTP	1	Quarterly	Level Monitors
Travis AFB WTP	2	Quarterly	Filter Differential P.I.T.
Travis AFB WTP	2	Quarterly	Pressure Transmitter - Potable H2O
Travis AFB WTP	1	Annual	Dew Point Monitor
Travis AFB WTP	1	Annual	O3 Ambient Air Monitor
Travis AFB WTP	10	Annual	Pressure Switch - O3 Flow
Travis AFB WTP	2	Annual	MCC
Travis AFB WTP	1	Annual	Generator Transfer Switch
Travis Beck Ave Pump Station	1	Semi-annually	Flow Transmitter
Travis Beck Ave Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Travis Beck Ave Pump Station	1	Semi-annually	Pressure Transmitter - Suction
Travis Northgate Pump Station	1	Semi-annually	Pressure Switch - High Discharge
Travis Northgate Pump Station	1	Semi-annually	Pressure Switch - Low Suction
Travis Northgate Pump Station	1	Semi-annually	Pressure Transmitter - Discharge
Travis Northgate Pump Station	1	Semi-annually	Pressure Transmitter - Suction

LAKES WATER SYSTEM

Location	Quantity	Frequency	Type of Equipment
Green Valley Tank	1	Semi-annually	Level Transmitter
Green Valley WTP	1	Weekly	Combine Filtered Turbidity
Green Valley WTP	1	Weekly	Post Chlorine Analyzer
Green Valley WTP	1	Monthly	TOC Analyzer
Green Valley WTP	1	Monthly	UPS
Green Valley WTP	9	Monthly	Turbidity
Green Valley WTP	2	Monthly	pH Meter
Green Valley WTP	1	Monthly	Streaming Current Meter
Green Valley WTP	2	Monthly	Chlorine Analyzer
Green Valley WTP	1	Quarterly	Influent Pressure Transmitter
Green Valley WTP	2	Annually	MCC
Mankas Corner Pump Station	2	Semi-annually	Pressure Transmitter - Discharge
Mankas Corner Pump Station	1	Semi-annually	Pressure Transmitter - Suction
Mankas Corner Pump Station	1	Semi-annually	Flow Transmitter
Mankas Corner Pump Station	1	Semi-annually	Chlorine Analyzer
Mankas Corner Pump Station	1	Semi-annually	Pressure Switch - Low Suction
Mankas Corner Pump Station	1	Semi-annually	Pressure Switch - High Discharge
Mankas Corner Pump Station	1	Semi-annually	Flow Chart Recorder
Mankas Corner Pump Station	1	Semi-annually	Discharge Pressure Chart Recorder
Mankas Corner Pump Station	1	Semi-annually	Suction Pressure Chart Recorder
Mankas Corner Pump Station	1	Semi-annually	Chlorine Chart Recorder
Rockville Pump Station	1	Semi-annually	Discharge Pressure Transmitter
Rockville Pump Station	1	Semi-annually	Suction Pressure Transmitter
Rockville Pump Station	1	Semi-annually	Flow Transmitter
Rockville Pump Station	1	Semi-annually	Flow Recorder
Rockville Tank	1	Semi-annually	Level Switches
Siebe Pump Station	1	Semi-annually	Level Transmitter
Siebe Pump Station	1	Semi-annually	Low Suction Pressure Switch
Siebe Pump Station	1	Semi-annually	High Discharge Pressure Switch

Siebe Tank	1	Semi-annually	Level Transmitter

Attachment D – Water System Sample Bills

MUNICIPAL SERVICES BILL

CITY OF VALLEJO
COMMERCIAL SERVICES DIVISION
P.O. BOX 3068 • 555 SANTA CLARA STREET
VALLEJO, CA 94590

For billing Inquiries, call:
(707) 648-4345

SERVICE ADDRESS			
143 HOLLYWOOD AVE PS			
ACCOUNT NUMBER	**CYCLE**	**BILL DATE**	**DUE DATE**
243119-81320	11-05	8/31/12	10/01/12

CITY OF VALLEJO-WATER DIV.
202 FLEMING HILL ROAD
VALLEJO CA 94589-2399

LAST BILL AMOUNT	.00
PAYMENTS RECEIVED	.00
CURRENT CHARGES	0.00
ADJUSTMENTS	0.00
TOTAL AMOUNT DUE	.00

Rate Class : IRRIGATION BI-MONTHLY

SERVICE CHARGES

SERVICE PERIOD FROM	SERVICE PERIOD TO	DAYS	CURRENT READING	PREVIOUS READING	CURRENT USAGE	PRIOR YEAR USAGE
6/25/12	8/28/12	64	.00	.00	.00	.00

IR IRRIGATION 0.00

BILL MESSAGE:
ATTENTION: NEW WATER RATES IN EFFECT JULY 1,2012 PER COUNCIL ACTION OF MAY 19,2009- Average single family bimonthly water bill will go up appx 6% in the Vallejo service area and 5% in the Lakes service area. The full rate schedule is available at www.ci.vallejo.ca.us.For water saving tips for this summer and beyond, visit www.vallejowater.org

BUSINESS HOURS: 8:30 A.M. to 5:15 P.M. MONDAY THRU FRIDAY

GI120831.TXT-4654-000000207

PLEASE DETACH HERE AND RETURN THIS PORTION WITH YOUR PAYMENT
MAKE CHECKS PAYABLE TO: CITY OF VALLEJO

CHARGES ARE SUBJECT TO INTEREST AND PENALTIES IF PAYMENTS ARE RECEIVED AFTER 11:00 A.M. ON THE DUE DATE. TO AVOID ADDITIONAL FEES PAY TOTAL BY 11:00 A.M. : 10/01/12

CITY OF VALLEJO
P.O. BOX 3068 • 555 SANTA CLARA STREET
VALLEJO, CA 94590
BILLING INQUIRES: (707) 648-4345

SERVICE ADDRESS			
143 HOLLYWOOD AVE PS			
ACCOUNT NUMBER	**CYCLE**	**BILL DATE**	**DUE DATE**
243119-81320	11-05	8/31/12	10/01/12

TOTAL CURRENT CHARGES	0.00
BALANCE FORWARD	0.00
TOTAL AMOUNT DUE	.00
AMOUNT ENCLOSED	

4654 000000207

CITY OF VALLEJO-WATER DIV.
202 FLEMING HILL ROAD
VALLEJO CA 94589-2399

0002431190000813200000000000008

City of Vallejo
2015 Urban Water Management Plan

Prepared by:

November 2016
Revised August 2018

Section 8 Water Shortage Contingency Plan

This chapter describes the City's plans for water supply shortage or catastrophic supply interruptions in compliance with Water Code Section 10632(a). Prior to the preparation of this UWMP, the last version of the City's Water Shortage Contingency Plan (WSCP) had been prepared in 2005. This updated plan reflects changes in statewide and regional water shortage planning resulting from the recent ongoing drought. Although included as a section of the UWMP, the WSCP, upon its adoption by the City Council, can be separately cited as a stand-alone plan.

8.1. Stages of Action

The City of Vallejo employs a five stage water-shortage response plan (Table 8-1) which is triggered at prescribed levels. Water-shortage stages are monitored, reported and acted upon according to the plan set out in this WSCP for each water supply condition for each stage. Each stage consists of specific prohibitions, regulations, penalties, and/or rate structure to encourage the appropriate level of conservation. Though all five stages have both voluntary and mandatory components, none can be considered a rationing program because they do not strictly limit water use. However, Stages IV and V are most restrictive primarily due to the landscape irrigation component, which prohibits irrigation of any decorative landscaping. Under drought conditions, the City does not anticipate having to implement any conservation level above Stage III. Conservation Stages IV and V are prepared to meet emergency conditions brought about by catastrophic events.

Table 8-1: Stages of Water Shortage Contingency Plan (DWR Table 8-1)

Stage	Percent Supply Reduction	Water Supply Condition
Stage I – Normal Conditions	0% Normal Usage (Voluntary Conservation)	Full deliveries of water supply to all City customers and the ability to meet maximum day demand with largest unit out of service.
Stage II – Water Warning	Up to 10% reduction of normal usage	A cutback in supply of up to 10 percent of baseline supply and the inability to obtain additional water, or demand is greater than 90 percent of available supply.
Stage III – Water Shortage	Up to 20% reduction of normal usage	A cutback in supply of 20 percent and the inability to obtain additional water, or demand is greater than 105 percent of available supply.
Stage IV – Water Crisis	Up to 35% reduction of normal usage	A cutback in supply by 20-35 percent and the inability to obtain additional water, or demand is greater than 120 percent of available supply.
Stage V – Water Emergency	Up to and above 50% reduction of normal usage	A cutback in supply of up to or greater than 50 percent and the inability to obtain additional water, or demand is greater than 125 percent of available supply.

Table 8-1 Notes:

1. Stages II through V are mandatory compliance stages.

Given the potential requirement for various levels of demand reduction due to catastrophic events and drought scenarios, prioritization of use of available water resource must be considered. The principle of maximum beneficial usage must be implemented and plans created to efficiently produce such a result. Conservation measures utilized in each stage are based on the priorities set in the

California Water Code (CWC) Chapter 3 and through public input. A summary of those priorities is presented below.

Priority 1: Maintain essential public health and safety uses.

Uses include minimum drinking, sanitation, food preparation activities, and fire protection requirements. These uses are considered the core minimum water use of the community and are estimated at approximately 50 gallons per person per day.

Priority 2: Maintain the existing economic and job base of the community.

Acceptable uses would include water sufficient to allow restaurant operation, water necessary for existing industrial uses, and additional commercial uses which protect the employment base of the communities served. All these activities would be under condition of efficient water usage or penalty.

Priority 3: Continued discretionary uses for existing customers.

Existing customers make use of large quantities of non-essential water use through such activities as outdoor landscaping, swimming pools, and car washing. These activities would be heavily discouraged and would be expected to account for a large percentage of demand reductions. Provisions may be made to allow continued irrigation of heritage trees and plants which benefit the community.

Priority 4: New Service Connections

New connections would not be permitted during times of severe shortage. Only those approved connections permitted before supply reduction events occurred would be allowed to be connected to the system. Any additional service requests would be conditioned to fund demand reduction measures which produce verifiable savings greater than the proposed connection impacts.

8.2. Prohibitions on End Use

The specific water use reduction measures for the five stages are summarized in Table 8-2. The narrative description of the stages of action and restrictions and prohibitions on end use is provided in the following sections.

Stage I: Normal Supply

Stage I is to be in place at all times as it does not require any cutback in water usage. Instead, Stage 1 establishes recommendations for voluntary water conservation and water waste restrictions. All normal water efficiency programs are in place.

Stage II: Water Warning

In Stage II, all customers are required to reduce consumption by 10% for the duration of the water warning. Customers are also required or recommended to implement the following water shortage response measures:

- No hose washing of sidewalks, walkways, driveways, parking areas, patios, porches or verandas, except flammable or other similar dangerous substances may be washed from said areas by direct hose flushing for the benefit of public health and safety. This prohibition shall not apply where hosing of sidewalks or driveways is required by law.
- No water shall be used to clean, fill, operate, or maintain levels in decorative fountains unless such water is part of a recycling system.
- No customer shall permit water to leak from any facility on his/her premises. Such facilities shall include sprinklers and irrigation systems, faucets, toilets, water heaters, or any other fixture used in providing water service. Any leak shall be repaired in 72 hours.

- No customer shall sprinkle, water, or irrigate any shrubbery, trees, lawns, grass, ground cover, plants, vines, gardens, vegetables, flowers, or any other landscaped or vegetated area between the hours of 9:00 a.m. and 6:00 p.m. Such watering shall not be in excess of needs nor be of a manner that allows water to flow into streets. Watering by hand shall be allowed.
- Non-commercial washing of privately owned vehicles, trailers, buses, boats, and equipment, except from a bucket and except with a hose equipped with a shut-off nozzle may be used.
- Any use of water from a fire hydrant, except for fire protection purposes, is prohibited unless authorized by the City.
- Use of water for construction purposes, such as consolidation of backfill, unless no other source of water or method can be used, is prohibited.
- Water will be available only for beneficial uses; all unnecessary and wasteful uses of water are prohibited.
- Water efficient plumbing fixtures, water efficient appliances, and high efficiency irrigation techniques, such as drip irrigation, are encouraged.
- Mow less frequently allowing grass to grow longer, inducing hydration.
- Check the soil moisture in the root zone to determine when irrigation is required.
- Restaurants shall serve water only upon request.

Stage III: Water Shortage

Stage III is to be implemented when water demands need to be reduced by up to 20%. Customers will be notified that Stage III water conservation measures are in effect, and compliance with the following water shortage response measures will be required:

- All Stage I and II actions remain in force.
- Further reduction in landscape irrigation is required. Reduce watering time; tolerate some plant wilting.
- Landscape, pasture, common areas, and street median irrigation shall be limited to a maximum of three days per week, when necessary, based on the following schedule:
    - Customers with street addresses that end with an odd number may irrigate only on Tuesdays, Thursdays, and Saturdays.
    - Customers with street addresses that end with an even number may irrigate only on Monday, Wednesdays, and Fridays.
    - Common areas and street medians may irrigate only on Mondays, Wednesdays, and Fridays.

Stage IV: Water Crisis

Stage IV is to be implemented when water use reductions up to 35% are required. Customers will be notified of the water shortage response measures as listed below:

- All Stage I, II, and III actions remain in force.
- Landscape, pasture, common areas, and street median irrigation shall be limited to a maximum of two days per week based on the following odd-even schedule:

  - Customers with street addresses that end with odd numbers may irrigate only on Tuesdays and Saturdays.
  - Customers with street addresses that end with even number may irrigate only on Monday and Fridays.
  - Common areas and street medians may irrigate only on Mondays and Fridays.
- Water use for ornamental ponds and fountains is prohibited.
- Automobiles or equipment shall be washed only at commercial establishments that use recycled or reclaimed water.
- Water shall not be used for cooling mists.
- Flushing of sewers or fire hydrants is prohibited except in case of any emergency and for essential operations.

Stage V: Water Emergency

Customers will be required to comply with all of the following Stage V water shortage response measures when up to a 50% usage reduction is required. The water shortage response measures are listed below:

- All Stage I, II, III and IV actions remain in force.
- Landscape and pasture irrigation is prohibited.
- Activation of additional water service connections to the City will not be allowed.

Table 8-2: Restrictions and Prohibitions on End Use (DWR Table 8-2)

Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement[1]?
II	Other - Prohibit use of potable water for washing hard surfaces		Yes
II	Water Features - Restrict water use for decorative water features, such as fountains		Yes
II	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Leaks shall be repaired within 72 hours.	Yes
II	Landscape - Limit landscape irrigation to specific times		Yes
II	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		Yes
II	Other	Any use of water from a fire hydrant, except for fire protection purposes, is prohibited, unless authorized by the City.	Yes
II	Other - Prohibit use of potable water for construction and dust control		Yes
II	CII - Restaurants may only serve water upon request		Yes
III	Landscape - Limit landscape irrigation to specific days	Landscape, pasture, common areas and street median irrigation shall be limited to a maximum of three days per week when necessary.	Yes
IV	Landscape - Limit landscape irrigation to specific days	Landscape, pasture, common areas and street median irrigation shall be limited to a maximum of two days per week when necessary.	Yes
IV	Other	Water shall not be used for cooling mists.	Yes
IV	Other	Flushing of sewers or fire hydrants is prohibited except in case of any emergency and for essential operations.	Yes
V	Landscape - Prohibit all landscape irrigation		Yes
V	Other	Activation of additional water service connections to the City will not be allowed.	Yes

Notes:

1. *Enforcement for Stages II through V is as follows: First offense results in a warning - delivered in person to the customer or left at the premises as a "door hanger." Second offense results in a fine of $200. Third offense results in a fine of $500.*

8.3. Penalties, Charges, Other Enforcement of Prohibitions

In order to discourage non-compliance with the mandatory water use restrictions in Stages II through V, the following enforcement practices and penalties will be implemented for violation of the stage-specific unauthorized water use:

- The first offense will result in a warning to the customer, which will be personally delivered or left at the premises as a "door hanger."
- The second offense shall result in a fine of $200.
- The third offense shall result in a fine of $500.

8.4. Consumption Reduction Methods

When the Water Shortage Contingency Plan is put into effect, the City will implement various consumption reduction methods depending on the stage of action. These consumption reduction methods are described below and summarized in Table 8-3.

Starting in Stage I, the City, in partnership with SCWA, will offer water surveys to customers to help them determine effect water conservation strategies. Additionally, the City will partner with SCWA, DWR and PG&E to offer rebates on high efficiency toilets and washing machines, smart irrigation controls and turf irrigation.[6] During Stage I, all normal water use efficiency programs will continue. During Stage II, the City will, notify local jurisdictions and customers that Stage II is being implemented, initiate a public information campaign explaining the water supply condition, maintain a water conservation hotline, provide free water conservation kits, and initiate "conservation monitor" duties to existing personnel to identify and document excessive water use. Additionally, the City will host conservation events and outreach in local schools.

If Stage III is implemented, the City will notify local jurisdictions and customers, continue those outreach strategies started in Stage II and tighten restrictions on water usage.

Should Stages IV or V be implemented, timely notice will be given to customers and local jurisdictions. Consumption reduction methods in Stages IV and V will build upon the actions of previous stages and include a moratorium on new water connections.

[6] http://www.cityofvallejo.net/cms/One.aspx?portalId=13506&pageId=23562

Table 8-3: Consumption Reduction Methods (DWR Table 8-3)

Stage	Consumption Reduction Methods	Additional Reduction or Reference
II	Expand Public Information Campaign	This will include distribution of literature, direct mailers, bill inserts, restaurants message tents, educational programs in schools and weekly water shortage status update and conservation messages printed in local newspapers. Additionally, a Water Conservation Hotline will be established with specially trained conservation representatives to answer customer questions about conservation and water use efficiency.
II	Other	Provide free water conservation kits at the Water Billing Office for customer pickup.
II	Increase Water Waste Patrols	Initiate "conservation monitor" duties to existing personnel to identify and document excessive water use and advise customers regarding the appropriate watering schedule.
II	Implement or Modify Drought Rate Structure or Surcharge	
III	Offer Water Use Surveys	In partnership with SCWA.
III	Other	Provide free water savings devices such as low-flow showerheads and aerators.
III	Provide Rebates on Plumbing Fixtures and Devices	In partnership with SCWA, offer rebates on high efficiency toilets ($100) and washers (up to $150) and irrigation controllers (up to $1,000).
III	Provide Rebates for Turf Replacement	In partnership with SCWA, offer rebates on turf replacement ($1/square-foot up to $2,000).
V	Moratorium or Net Zero Demand Increase on New Connections	

8.5. Determining Water Shortage Reductions

The success of the City's response to a water shortage depends on its ability to accurately monitor water usage, to determine if current stage mandatory water use reductions are being met, and project ongoing water supply adequacy. Billing data for the City of Vallejo lags approximately 1-2 months behind usage. Given the nature of standard rotating meter reading and the inability to hire and train meter reading personnel to increase the speed of data collection, the City will use water treatment plant production volume data to monitor water use reduction goals. Depending on the level of supply reduction and the corresponding requirement for demand reduction, water plant production will be monitored on a monthly, weekly, or daily schedule as described below to ensure that the necessary level of demand reduction is being achieved.

During Stage I periods, water production/consumption is reported by the Assistant Public Works Director – Water on a monthly basis to the Public Works Director to ensure adequate demand and supply balance is maintained.

During Stage II and III periods, water production/consumption is reported by the Assistant Public Works Director – Water on a weekly basis to the Public Works Director to ensure adequate demand and supply balance is maintained. If sufficient reductions are not being realized to ensure balance of supply and demand, recommendations will be presented to the City Manager for corrective actions to be taken.

During Stage IV and V periods, water production/consumption will be monitored on a daily basis with recommendations given daily if shortages are projected.

8.6. Revenue and Expenditure Impacts

As previously noted, the success of the City's response to a water shortage depends on its ability to accurately monitor water usage, to determine if current stage mandatory water use reductions are being met, and project ongoing water supply adequacy. It also depends on the City's careful review of revenue levels to ensure steps are taken, as needed, to maintain adequate water system funding during times of reduced water sales.

The City anticipates a reduction in revenue ranging from 9% in Stage II conditions to 35% in Stage V conditions due to reduced water sales. The reduction in revenue would be partially counteracted by a reduction in operations and maintenance expenses from the reduced deliveries. However, the reductions in expenses is not expected to entirely balance the City's reduced revenue, so the water fund will need to be monitored and a drought rate structure will likely need to be implemented. The plans for water fund monitoring and a drought rate structure are discussed below.

8.6.1. Water Fund Financial Monitoring

During Stage I periods, under normal conditions, water revenue figures are provided quarterly for review by department and division heads. The Assistant Public Works Director – Water will report monthly to the Public Works Director to ensure adequate revenue is being collected to meet existing and projected budgeted needs.

During Stage II and III periods, water revenue figures will be provided monthly for review by department and division heads. The Assistant Public Works Director – Water will report monthly to the Public Works Director to ensure adequate revenue is being collected to meet existing and projected budgeted needs. If revenues are projected to be inadequate, recommendations will be presented to the City Manager for corrective actions to be taken. Such actions may include increases or decreases in either or both the service charge and consumption charge, to ensure adequate funds are collected to maintain the financial stability of the water fund.

During Stage IV and V periods, water revenue figures will be provided weekly for review by department and division heads. The Assistant Public Works Director – Water will report monthly to the Public Works Director to ensure adequate revenue is being collected to meet existing and projected budgeted needs. If revenues are projected to be inadequate, recommendations will be presented to the City Manager for corrective actions to be taken. Such actions may include increases or decreases in either or both the service charge and consumption charge, to ensure adequate funds are collected to maintain the financial stability of the water fund.

8.6.2. Drought Rate Structure

Beyond Stage II, the City's existing rate structure is not likely to be adequate to meet expenses. The City recently conducted a rate study to determine future rates under both normal and drought conditions. The recent rate study recommends a volumetric increase in rates as conservation targets are increased to account for decreasing water usage. As proposed in the rate study, in the event of a

Stage III, IV or V Shortage Contingency event, City Council would enact the volumetric drought surcharge in parallel to the stage-appropriate water use reduction measures.

A new rate structure has not yet been adopted, but the City will pursue adoption of drought rates to allow the City to generate sufficient funds to operate, manage, and maintain its facilities and services in times of severe drought and water use reduction. The final rate structure may be imposed to adjust water volume rates by a specified percentage depending on the severity of the water shortage and the City's revenue needs. If a drought rate is implemented, customers who follow conservation recommendations provided by the City would experience minimal cost changes on their water bill while customers who do not conserve will experience higher bills. The 2016 rate study (NBS 2016) can be found on the City's website.[7]

8.7. Resolution or Ordinance

The City has prepared a draft water shortage contingency resolution which can be found in Appendix F. In the event of a water shortage emergency, the draft resolution will be brought before the City Council for adoption. The resolution includes a declaration of the water shortage and signals an official implementation of the prohibitions on end use and consumption reduction methods described in this WSCP.

8.8. Catastrophic Supply Interruption

Aside from drought-caused water shortages, the City is also vulnerable to other potential disaster situations that could result in a catastrophic interruption of water supplies including, but not limited to, regional power outages, landslides, earthquakes, and water contamination. Below is a brief summary of how catastrophic events, other than extreme drought, may affect the City's water supplies from the State Water Project (delivery of both State Water Project Table A and Vallejo Permit Water) and Solano Project facilities, as provided by SCWA, the City's wholesale supplier of water through these regional supply facilities.

North Bay Aqueduct Supply Interruption

The North Bay Aqueduct (NBA) supplies water to the City from the SWP, including conveyance of both Table A allotments and Vallejo Permit water entitlements. Potential catastrophic outages may occur from earthquakes that cause major damage to the NBA facilities, prolonged loss of PG&E power required for pumping water through the NBA, or contamination at the intake to the NBA. The NBA is an underground pipeline and not subject to landslide damage.

In the event of loss of NBA supply for any reason, the City would immediately switch to Solano Project water supplies while the emergency condition was being resolved and normal water supply restored. This high level of redundancy is possible due to the geographical separation of the two sources.

Solano Project Supply Interruption

The Solano Project supplies nearly half of all water to the City under normal conditions. In the event of an earthquake, the Solano Project Emergency Response Plan is invoked. The Plan, developed in coordination with the U.S. Bureau of Reclamation, provides a detailed response for various levels of seismic activities both at the Monticello Dam site and within a specified geographical area surrounding the Solano Project. No actions are necessary from the City of Vallejo, which will be notified at the time of the condition of the Solano Project and its ability to deliver. In the event of loss of Solano Project water, the City would attempt to shift to supplies delivered through the NBA including SWP water and Vallejo permit entitlements.

[7] http://www.cityofvallejo.net/common/pages/DisplayFile.aspx?itemId=2783255

The Putah South Canal is susceptible to a landslide which could either block or damage its ability to deliver Solano Project water. SCWA recently invested in a $3 million project to provide an underground pipeline bypass of an area that is most susceptible to a landslide. Any detection of contamination of Solano Project water may result in a shut-down of the Solano Project deliveries. The City of Vallejo receives its supply at the end of the delivery canal and, as such, is more exposed to potential supply interruptions due to canal impairment. Solano Project is a gravity system and is not dependent upon power to operate.

Vallejo Lakes Supply Interruption

Delivery of water from the Vallejo Lakes – Frey, Madigan, and Curry – is via gravity systems which are susceptible to earthquake damage. Each Lakes supply is inspected after earthquakes to assure public safety and determine the viability of the supply after an event. Damage may require changeover to the Solano Project through an exchange agreement with the Solano Irrigation District.

Emergency Response Plan

The City has completed a Water System Emergency Response Plan (ERP) in accordance with the Public Health Security and Bioterrorism Preparedness and Response Act of 2002. The City's ERP identifies the City's standardized response and recovery protocols to prevent, minimize, and mitigate injury and damage resulting from emergencies or natural disasters as described previously in this section. The ERP has been exercised once previously when the State pumps delivering NBA water were down for more than 24 hours. A copy of the City's ERP is available at the Office of the Assistant Public Works Director – Water at the Fleming Hill WTP. A summary of ERP actions are illustrated in Table 8-4.

Table 8-4: Preparation Actions for Catastrophes

Decision Stage Process	Actions Taken	ERP Activation Level
Stage 1 – Possible Threat	• Evaluate available information • Determine if a threat is possible	• Implement precautionary response actions
Stage 2 – Credible Threat	• Determine that threat is credible by establishing corroborating information: ○ Highly credible source ○ Health Department/customer reports ○ Unusual monitoring results	• Activate portions of ERP • Initiate internal and external notifications • Issue public health advisory • Initiate water sampling and analysis • Consider partial or full activation of EOC
Stage 3 – Confirmed Major Event	• Confirm threat by verifying definitive evidence and information that establishes the major event • Perform water sampling and analysis	• Fully implement ERP • Immediately initiate appropriate action plan • Fully activate EOC

Notes:

1. These stages are not related to those defined for the Water Shortage Contingency Plan.

The City has engineered its critical pump stations and reservoirs to meet all California seismic safety standards for critical facilities. In addition, the City has, as required by law, completed and filed a Vulnerability Assessment (VA) addressing security of the City's distribution system facilities. Regional power outages are not expected to prevent the City from receiving adequate water supplies due to the multitude of facilities and the fact that due to the geographical separation of the facilities they are fed from different power grids. It is highly unlikely that all water supplies will be

simultaneously affected and prevent water delivery. The City should be able to function until regional power is available by relying on whatever raw water deliveries are available combined with available in-town treated water storage.

The City continues to work cooperatively with SCWA to investigate regional funding opportunities for measures to improve the reliability of key water supply facilities through participation in the Solano Water Agencies Committee. Through this committee, recommendations for water supply quality monitoring and modeling have been forwarded, and hydrologic studies have been undertaken to determine water quality and quantity parameters of the NBA facilities in Barker Slough. This type of modeling is necessary to determine the sources of water being pumped at the NBA intake during different times of the year and different hydrologic conditions. It will also show how NBA water quality will be affected by changes in the Delta, such as levee failures. Failures of the levees are predicted to drastically reduce the ability of the NBA pump station to provide water, and as with earthquake damage, will necessitate a changeover to Solano Project Water until mitigated.

8.8.1. Potential Emergency Preparedness Actions

In order to better prepare for potential catastrophic supply interruptions, the City has developed a list of potential projects and plans that could be implemented.

Increase existing water storage.

The City has over 87 MG of treated water storage currently available, with up to 59 MG of raw water available by gravity which may be treated during an emergency. This translates to greater than a 3 day supply at maximum day usage, or greater than 7 days with notification of water shortages. Opportunities for greater storage volume are being investigated.

Install backup power at the raw water pump station.

A backup diesel generator can be installed at the main pump station which supplies raw water to Vallejo to provide up to 50% of total water need in times of power outage.

Coordinate with other agencies for additional water supply funding sources.

The City, as noted above, participates in regional planning and grant applications with the Solano County Water Agency.

Put employees/contractors on-call.

Water maintenance and engineering currently have on-call and after hours contact lists available for use in emergencies.

Develop public communication methods/plans.

The City currently employs a Public Information Officer for timely distribution of City policies and announcements. In addition, Public Works Department staff are available to assist in public outreach, including use of social media.

Water Shortage Response Measures.

Because water supply is a sensitive and extremely valuable resource in California, all water utilities in the region practice water conservation programs. Beyond these normal practices, additional water shortage response measures are often needed when unforeseeable droughts and emergencies reduce water supplies. This WSCP includes proposed water shortage response measures which can be put into effect by the City Council.

8.9. Minimum Supply Next Three Years

Table 8-5 shows the minimum water supply available over the next three years: 2016, 2017, and 2018. This assumes that the hydrology will be the same as the hydrology during the multiple-dry year period reported in Section 7.

Table 8-5 – Minimum Supply Next Three Years (DWR Table 8-4)

	2016	2017	2018
Available Water Supply (MG)[1]	10,138	10,138	10,138

Notes:

1. *The minimum supply available in the next three years is based on the supply available in consecutive dry years.*

Appendix F. Draft Water Shortage Contingency Plan Resolution

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SAMPLE WATER SHORTAGE CONTINGENCY RESOLUTION

City of Vallejo

RESOLUTION NO. _____

WHEREAS, the California Legislature enacted Assembly Bill 1lX during the 1991 Extraordinary Session of the California Legislature (an act to amend California Water Code Sections 10620, 10631, and 10652, and to add Section 10656 to the California Water Code, relating to water); and

WHEREAS, AB11X requires that every urban water supplier providing potable water directly to more than 3,000 customers or supplying more than 3,000 acre feet of water to develop a Water Shortage Contingency Plan; and

WHEREAS, AB11X mandates that said Water Shortage Contingency Plan be filed with the California Department of Water Resources by January 31, 1992; and

WHEREAS, The City of Vallejo is an urban water supplier providing water to more than 3,000 customers, and therefore, has prepared and filed a Water Shortage Contingency Plan, in compliance with requirements of AB11X; and

WHEREAS, The City of Vallejo (City) obtains water from the State Water Project, Solano Project and Lakes Frey and Madigan; and

WHEREAS, The City, has determined that a shortage condition exists because the projected available water supply is less than projected system-wide water purchases in the upcoming Supply Year beginning July 1; and

WHEREAS, the City of Vallejo's 2015 Urban Water Management Plan (UWMP) was approved in October 2016, and includes a Water Shortage Contingency Plan (WSCP) that sets forth five water conservation stages, attached hereto as Exhibit A, designed to reduce overall water usage; and

WHEREAS, public hearings have been conducted regarding the implementation of the City's Water Shortage Contingency Plan;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF VALLEJO:

1. The Water Shortage Contingency Plan is hereby implemented;

2. The City is hereby authorized (should the need arise) to declare a Water Shortage Emergency and implement the Water Shortage Contingency Plan;

3. The City shall take necessary actions to mitigate the effects on customers of the water shortage while continuing to fulfill its duties as a public utility water company.

I hereby certify that the foregoing resolution was adopted by the City of Vallejo at its meeting of

_____

_____

(signee)

Appendix I. UWMP Adoption Resolution

RESOLUTION NO. 16-115 N.C.

APPROVING THE 2015 URBAN WATER MANAGEMENT PLAN

WHEREAS, the City is an urban supplier providing water to over 37,000 customer connections and is therefore subject to the Urban Water Management Planning Act, California Water Code section 10610 et. seq., requiring all urban water suppliers providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet annually to update their Urban Water Management Plan (UWMP) at least every five years and to submit the UWMP to the California Department of Water Resources; and

WHEREAS, an UWMP is required for a water supplier to be eligible for state-administered grants, loans, and drought assistance; and

WHEREAS, the City is required to adopt a Water Shortage Contingency Plan as part of an Urban Water Management Plan; and

WHEREAS, the Water Conservation Act of 2009 required water suppliers to calculate and report 2015 and 2020 Water Use Targets in the UWMP, as well as assess progress toward meeting the 2020 target; and

WHEREAS, the City has updated its UWMP in compliance with state law and consistent with the 2015 UWMP Guidebook for Urban Water Suppliers issued by the California Department of Water Resources; and

WHEREAS, the UWMP was available for public review and comment beginning October 1, 2016; and

WHEREAS, a properly noticed public hearing was held on October 25, 2016, to receive oral or written statements regarding the UWMP; and

WHEREAS, the City Council finds that the adoption and implementation of the Urban Water Management Plan, including the Water Shortage Contingency Plan, and the 2015 and 2020 Water Use Targets, will meet the existing and projected future water demand through 2040 during normal years and during multiple dry years either through existing water supplies or through the implementation of the Water Shortage Contingency Plan.

NOW THEREFORE, BE IT RESOLVED that the City Council of the City of Vallejo hereby approves and adopts the City of Vallejo's 2015 Urban Water Management Plan, dated September 2016, as prepared or as modified after the hearing as directed by the City Council.

BE IT FURTHER RESOLVED that the City Manager or his designee is directed to submit the adopted plan to the California Department of Water Resources, the California State Library and to any city or county in which the City of Vallejo provides water within 30 days of the date of adoption.

Adopted by the City Council of the City of Vallejo at a regular meeting held on October 25, 2016 with the following vote.

AYES:	Mayor Davis, Vice Mayor Verder-Aliga, Councilmembers Dew-Costa, McConnell, Miessner, and Sampayan
NOES:	None
ABSENT:	Councilmember Malgapo
ABSTAIN:	None

OSBY DAVIS, MAYOR

ATTEST:

DAWN G. ABRAHAMSON, CITY CLERK

Attachment F: Groundwater Management Plan – N/A

Attachment G: Groundwater Banking Plan – N/A

Attachment H: Annual Potable Water Quality Report – Urban

Annual
Water Quality Report

Water Testing Performed in 2016

WATER
Clear Vision
Bright Future
City of
VALLEJO
California

City of Vallejo System, CA4810007

City of Vallejo Lakes System, CA4810021

30073-I-0027

The City of Vallejo welcomes this yearly opportunity to provide our customers with the Annual Water Quality Report. We have included information so you know where your drinking water comes from, how it is treated and how its quality compares to drinking water standards.

This report contains information from water quality testing in 2016 and shows how your water compares with primary and secondary standards established by the State Water Resources Control Board and the U.S. Environmental Protection Agency (USEPA). Primary standards are health related standards whereas secondary standards relate to consumer acceptance of the water supply and govern qualities such as taste, odor and color.

The tables in this report show each constituent found, the level at which they occur, how their level compares with standards and their most likely source. For more information about this report, or for any questions relating to your drinking water, please call Jason Frink, City of Vallejo, Laboratory Supervisor, at (707) 649-3473.

Public Participation

You are invited to participate in our public forum and voice your opinions and concerns about your drinking water. The Vallejo City Council meets on various Tuesdays, throughout the year, at 7:00 p.m. at 555 Santa Clara Street, Vallejo. You may call the City Clerk at (707) 648-4527 for specific meeting dates.

Your Water Treatment Process

The **City of Vallejo** water system and service area receives its finished water from the forty-two million gallons per day Fleming Hill Water Treatment Plant. This conventional treatment facility utilizes a multi-barrier process to ensure compliance with all State and Federal drinking water regulations and standards.

Initially, ozone is added to help remove dissolved organic matter and to aid in downstream processes. The water then flows to mixing basins where coagulants are added and the water is gently agitated so that fine suspended particles come together to form large 'floc' particles that settle out of the water. This process, known as coagulation, flocculation and sedimentation is followed by the addition of more ozone to disinfect and remove unwanted color, taste and odor.

The next step is filtration, where the water flows through multimedia filters consisting of granular activated carbon and sand in order to meet strict standards for clarity and to reduce the levels of microbial contaminants that could be in the untreated source water. Following filtration, the water receives additions of caustic soda, for pH and alkalinity control; fluoride, for the prevention of dental caries; and finally, chlorine to provide microbial protection throughout Vallejo's distribution system. Quality control and assurance is maintained at all times through uniform adherence to standard operating procedures and a meticulous schedule of laboratory analyses.

The **City of Vallejo Lakes System's** Green Valley Water Treatment Plant, which provides water service to the Lakes service area, can treat up to one million gallons a day.

First, the MIEX™ pretreatment process removes naturally occurring dissolved organic matter. This treatment, using ion exchange resin, enables us to meet the Disinfectant/Disinfection By-products Rule by sufficiently lowering the levels of total organic carbon, therefore limiting the formation of disinfection by-products such as total trihalomethanes. Total trihalomethanes are chemicals formed over time in the distribution system when dissolved organic matter combines with chlorine. Regulations require we use chlorine to disinfect surface water.

The treatment plant's conventional treatment process uses polymer to promote coagulation, flocculation and sedimentation that remove the majority of soil particles from the water. Then, the water gravity flows through multimedia filters consisting of anthracite and sand so that it will meet clarity standards required to decrease microbial contaminants and to aid the disinfection process. Depending on which water source or blend of sources we are treating (Lakes Madigan and Frey and/or Putah South Canal), we may add soda ash in order to increase alkalinity and pH. The last step of the treatment process adds chlorine to disinfect the water supply and to provide continual protection in the distribution system. This treatment plant does not add fluoride to your water.

A Message From the United States Environmental Protection Agency

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife;

continued on outside panel

Environmental Protection Agency continued from inside

- Inorganic Contaminants, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming;
- Pesticides and Herbicides, that may come from a variety of sources such as agriculture, urban storm water runoff and residential uses;
- Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, agricultural applications and septic systems; and
- Radioactive Contaminants, that can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the State Water Resources Control Board (State Board) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. State Board regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline at 1-800-426-4791.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo ó hable con alguien que lo entienda bien.

Mahalaga ang impormasyong ito. Mangyaring ipasalin ito.

(707) 648-4307

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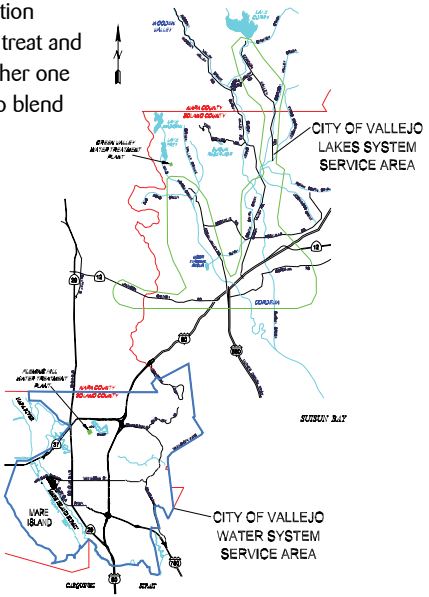
Your Water Sources

The City of Vallejo owns and operates two permitted public water systems for the benefit of our customers in two major service areas. The City of Vallejo Water System and service area provides drinking water to customers within the city limits, to some customers in the unincorporated areas adjacent to City boundaries and to a limited number of customers in the City of American Canyon.

The City of Vallejo Water System customers are fortunate because they receive water supplies from two surface water sources. The Solano Project provides source water from Lake Berryessa, transported to our facilities by the Putah South Canal. The City also receives surface water from the State Water Project. This water, from Lake Oroville, travels through the Sacramento River to the State's North Bay Aqueduct pumping facilities. Our source water pumping and distribution facilities enable us to treat and deliver water from either one of these sources or to blend these sources before treatment at the Fleming Hill Water Treatment Plant and distribution to the Vallejo service area. The City of Vallejo Lakes System and service area is a public water system with its own treatment plant and distribution system that delivers drinking water to customers residing in the Green Valley, Old Cordelia, Jameson Canyon, Suisun Valley, Willotta Oaks and Gordon Valley areas.



This system and service area also has water available from two distinct surface water sources. In addition to the Solano Project's Lake Berryessa water delivered from the Putah South Canal by agreement with the Solano Irrigation District, this system treats water from Lakes Frey and Madigan, which are two interconnected lakes owned by the City of Vallejo. The Green Valley Water Treatment Plant can either treat these two sources separately or blend these two sources before treatment and delivery to our customers. In case of emergencies, portions of this system can receive treated water from the City of Fairfield. For a copy of their Annual Water Quality Report, please call (707) 437-5387.

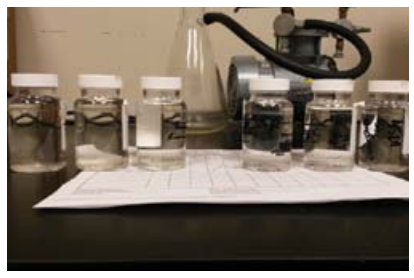
City of Vallejo Annual **Water Quality Report** *Water Testing Performed in 2016*

PRIMARY DRINKING WATER STANDARDS - Health Related Standards

PARAMETER/CONSTITUENTS (units of measurement)	STATE MCL	PHG (MCLG)	VALLEJO SERVICE AREA		LAKES SERVICE AREA		MAJOR SOURCES IN DRINKING WATER
			RANGE	AVG	RANGE	AVG	
INORGANICS							
ALUMINUM	1	0.6	0.1	0.1	ND	ND	Erosion of natural deposits; residue from some surface water treatment processes
FLUORIDE (ppm)	2	1	0 - 1.1	0.7	0.1 - 0.2	0.1	Water additive or natural minerals
MICROBIAL							
TOTAL COLIFORM (% positive samples or number of samples positive)	5% or 1 sample	(0)	ND - 0.6	ND	ND - 1	ND	Naturally present in the environment
For the City of Vallejo Water System, no more than 5% of all samples taken during a single month may be positive for total coliform. For the Lakes System, no more than one sample per month may be positive for total coliform bacteria.							
CLARITY							
TURBIDITY (NTU)	TT = 95% of samples ≤ 0.3 Maximum ≤ 1 TT = % reduction ≥ 80%		100% of samples ≤ 0.3 Maximum = 0.12 99% - 100%	99%	100% of samples ≤ 0.3 Maximum = 0.11 99% - 100%	99%	Soil runoff
Turbidity is a measurement of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system. MCL compliance is based on all samples taken each month. All samples were in compliance.							
RADIOLOGICAL							
RADIUM 228 (pCi/L)	5	0.019	1.58 - 1.58	1.58	ND	ND	Erosion of natural deposits
City of Vallejo System sampled in 2013 and Lakes System sampled in 2016. The State requires us to monitor for certain substances less than once a year because their concentration does not change frequently.							
DISINFECTANT	MRDL	EPG MRDLG					
CHLORINE, Free Residual as Cl2 (ppm)	4.0*	4*	ND - 1.6	0.7	ND - 2.2	0.4	Drinking water disinfection
DISINFECTION BY-PRODUCTS							
BROMATE (ppb)	10*	0.1	ND - 1.0	1.0	n/a	n/a	Drinking water disinfection
TRIHALOMETHANES, TOTAL (ppb)	80*	n/a	14 - 92	69	21 - 79	68	Drinking water disinfection
HALOACETIC ACIDS (ppb)	60*	n/a	3.3 - 23	12	ND - 14	10	Drinking water disinfection
DISINFECTION BY-PRODUCTS PRECURSOR							
TOTAL ORGANIC CARBON (%Removal Ratio)	TT = Running Annual Average (RAA) ≥ 1*		All RAA ≥ 1 minimum = 1.7		All RAA ≥ 1 minimum = 1.9		Decay of natural organic matter

*Compliance levels for the five parameters listed above are based on a running annual average determined quarterly. This means that every three months, we average all the samples taken during the prior twelve month period. Results for minimum and maximum values are based on single samples.

Monitoring for Cryptosporidium



Beginning in 2006, federal regulations required us to monitor our raw, untreated water sources (the Putah South Canal and the North Bay Aqueduct) for levels of *Cryptosporidium* contamination for two years. *Cryptosporidium* is a microbial parasite commonly found in surface water throughout the U.S. After analyzing twenty-four monthly samples from each source, we did not find *Cryptosporidium* in the North Bay Aqueduct water and the Putah South Canal had low levels in only two samples. Results from this monitoring program demonstrated that currently, our water treatment processes are sufficient to treat the levels of *Cryptosporidium* possibly encountered in our raw water supplies. The filtration process removes *Cryptosporidium*, although commonly used methods cannot guarantee 100% removal. Please refer to the article "Special Health Concerns" for more information regarding *Cryptosporidium*.

PRIMARY STANDARDS—LEAD and COPPER STUDY—Monitoring of Customers' Tap Water

PARAMETER/CONSTITUENTS (units of measurement)	AL	PHG	Vallejo Service Area 90th %	Number of Homes Above Action Level	Number of Homes Sampled in 2015	Lakes Service Area 90th %	Number of Homes Above Action Level	Number of Homes Sampled in 2014	MAJOR SOURCE IN DRINKING WATER
COPPER (ppb at the 90th %)	1.3	0.3	ND	0	52	0.13	0	12	Internal corrosion of household plumbing
LEAD (ppb at the 90th %)	15	0.2	ND	0	52	ND	0	12	Internal corrosion of household plumbing

Every three years the City is required to sample at the customers' faucets for lead and copper. This monitoring ensures our water is not too corrosive and does not leach unsafe levels of these metals into your drinking water. Compliance measurements are from the 90th percentile (the highest level measured from 90% of the homes sampled). The latest monitoring, for both water systems, did not detect lead from 90% of the homes sampled.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Vallejo is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

SECONDARY DRINKING WATER STANDARDS - Aesthetics Related Standards

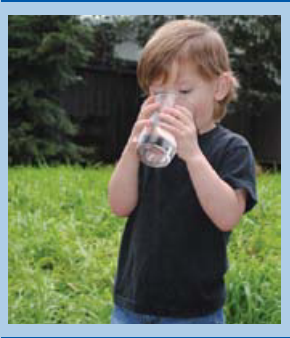
PARAMETER/CONSTITUENTS (units of measurement)	STATE MCL	PHG or (MCLG)	VALLEJO SERVICE AREA WATER		LAKES SERVICE AREA WATER		MAJOR SOURCES IN DRINKING WATER
			RANGE	AVG	RANGE	AVG	
ALUMINUM (ppm)	0.2	none	0.1	0.1	ND	ND	Natural minerals
CHLORIDE (ppm)	500	none	8 - 40	13	22 - 78	43	Natural minerals
ODOR-THRESHOLD (units)	3	none	1.0 - 2.0	1	1.0 - 2.0	1	Natural organic matter
SPECIFIC CONDUCTANCE (µS/cm)	1,600	none	284 - 502	330	287 - 528	400	Natural minerals
SULFATE (ppm)	500	none	34 - 71	45	6 - 14	10	Natural minerals
TOTAL DISSOLVED SOLIDS (ppm)	1,000	none	178 - 314	200	179 - 330	220	Natural minerals
MONITORING FOR SODIUM and HARDNESS							
SODIUM (ppm)	none	none	22	22	29	29	Natural minerals
TOTAL HARDNESS (ppm as $CaCO_3$)	none	none	72 -190	120	22 - 176	140	Natural minerals
TOTAL HARDNESS (grains/gallon as $CaCO_3$)	none	none	4 - 11	7	1 - 10	8	Natural minerals

USEPA Unregulated Contaminants Monitoring Rule Requirements

Between 2013 and 2015, the USEPA required all large public water systems to monitor for additional chemicals, not yet regulated. The purpose of this monitoring identifies the occurrence and levels of these chemicals in the public water supply. The USEPA uses this information to determine whether these chemicals need to be assessed for health effects and future regulations. This table shows the chemicals found and the levels at which they occur. This monitoring program pertains only to the City of Vallejo Water System and occurred in 2014.

CHEMICAL	RANGE	AVG
CHLORATE (ppb)	61 - 240	154
CHROMIUM (ppb)	ND - 0.038	ND
CHROMIUM 6 (ppb)	0.048 - 0.13	0.098
MOLYBDENUM (ppb)	ND - 1.6	ND
STRONTIUM (ppb)	110 - 170	149
VANADIUM (ppb)	1.7 - 3.9	2.3

Special Health Concerns



Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at 1-800-426-4791.

Source Water Assessments and Vulnerability Summaries

Source Water Assessments evaluate the quality of the water used as a drinking water supply for local communities and examine the water's vulnerability to possible contamination from activities within the watershed. Source Water Assessments were completed in 2012 for the Putah South Canal and Lakes Frey and Madigan. The North Bay Aqueduct's (Sacramento Delta) assessment was completed in 2011. The adjacent table summarizes the vulnerability of each water source and provides a contact name if you would like copies of the complete assessments.

Vulnerability Assessments Table

Source	Most Vulnerable Activities	Moderately Vulnerable Activities	Contact
Lakes Frey and Madigan	Illegal body contact* Wild animal access* Agricultural drainage*	Other animal operations Wildfires	Brian Vanciel City of Vallejo (707) 648-4307
Putah South Canal	Illegal activities/ Dumping Herbicide applications	Road/Streets Storm drain discharge Recreational area	Alex Rabidoux Solano County Water Agency (707) 451-6090
North Bay Aqueduct	Grazing animals* Runoff from grazing land	Runoff from agricultural land	Alex Rabidoux Solano County Water Agency (707) 451-6090

*Associated with detected contaminants

Notice to Customers

Your tap water met all USEPA and State drinking water health standards.

Pertains to Lakes System Service Area Only

If you reside in the Old Cordelia service area please contact City of Fairfield at 707-437-5387 for a copy of their Annual Water Quality Report.

All residences on Willotta Drive received Vallejo Lakes System water in 2016.

DEFINITION OF TERMS USED IN THIS REPORT

AL-Regulatory Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Level 1 Assessment: A study of the water system to identify potential problems and determine (if possible) why total coliform have been found in our water system.

MCL-Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste and appearance of drinking water.

MCLG-Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. EPA.

MRDL-Maximum Residual Disinfectant Level: The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG-Maximum Residual Disinfectant Level Goal: The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

n/a: Not applicable

ND: Not detected

NTU-Nephelometric Turbidity Units: Particles in water that make it appear cloudy

pCi/L: picoCuries per liter: A measure of radioactivity

PHG-Public Health Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California EPA.

ppb: parts per billion or micrograms per liter (ug/L)

ppm: parts per million or milligrams per liter (mg/L)

Primary Drinking Water Standards: MCLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Secondary Drinking Water Standards: MCLs for aesthetic characteristics of water (such as color, taste, and odor) that may affect the consumer's acceptance of their water supply.

TT-Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.

µS/cm-Microsiemens per Centimeter: A measure of electrical conductivity

City of Vallejo Water Conservation Program

Contact us for information on free water-saving devices and services or rebates to help reduce water use.

www.vallejowater.org

(707) 648-5299 or (707) 648-4479

Attachment I: Notices of District Education Programs and Services Available to Customers

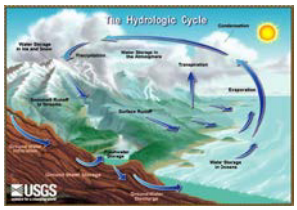
CITY OF VALLEJO

FREE WATER EDUCATION PRESENTATIONS

~ PROVIDED BY YOUR CITY WATER UTILITY ~

WATER ACTIVITIES PRESENTED IN YOUR CLASSROOM

Interactive hands-on water-related activities are taught by Water Education Specialists right in your classroom. You pick the activity and we do the rest. Each thought provoking activity takes approximately 50 minutes to present and is packed with essential information and concepts that meet stringent Educational Standards for California Public Schools. All material and staffing costs are paid by the City of Vallejo's Water Conservation Program. Currently available activities are:



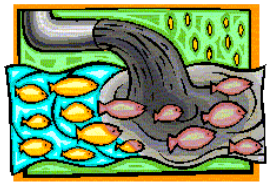
The Incredible Journey: With a roll of the die, students interactively simulate the movement of water as it moves through the water cycle. They record their journey and identify and describe the movement and states of water as it circulates through the water cycle. Students learn skills necessary to organize, analyze and interpret information.
(California Standard: Grade 2-set; Grade 3-set 1; Grade 4-set 3; Grade 5- set 1 & 3a-e & 4b)

The Life Box: A thought provoking interactive exercise used to introduce the four essential factors for life (soil, sun, air, water), with special focus on how plants, wildlife, and human communities have formed around water. *(California Standard: Grade 2-set 2 & 3; Grade 4-set 1 & 2a; Grade 6-set 5)*

A House of Seasons: By constructing (cutting and pasting) a collage of pictures, students learn the role water plays in each of Earth's changing seasons. This activity engages students to think critically about the four seasons and how water use changes throughout the year.
(California Standard: Grade 2-set 4; Grade 5-set 5 (History))

Water Facts: Using a "slide glide" and colorful handouts, students identify and calculate how much water is routinely used around the house and in the agricultural community. The activity emphasizes simple ways to conserve water by modifying daily water use habits.
(California Standard: Grade 4-set 2)

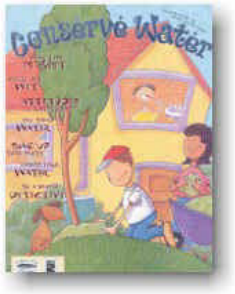
Sum of The Parts: Students participate in a creative group activity that demonstrates how everyone contributes to the pollution of a river as it flows through a watershed. They learn to recognize how everyone's "contribution" can be reduced and how to measure the distance pollution travels from site to site.
(California Standard Grade 2-set 1; Grad 3-set 3; Grade 4-set 3 & 5; Grade 5-set 3; Grade 6-set 2)

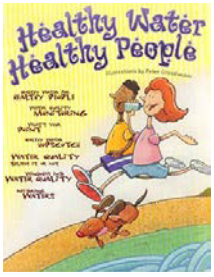


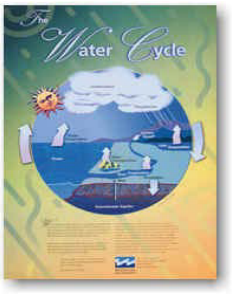
Who Dirtied The Bay: Students participate in an interactive history lesson that demonstrates how California settlers contributed to the pollution of San Pablo Bay and California's waterways. The lesson teaches children to interpret, analyze, and come up with solutions to prevent urban water pollution. *(California Standard: Grade 4-set 4 (History) & 5 (Science))*

RESOURCE LIBRARY

All teaching professionals can take advantage of our growing water education library that is packed with informative books, periodicals, maps and videos for children of all ages. If we don't have what you need on the shelf, we will find a way to get it for you.





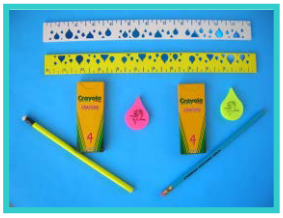


WATER-SAVING DEVICES & CLASSROOM SUPPLIES

Take advantage of our large selection of water-saving devices that can be used to save water around the home and in the yard. These items can be integrated into any environmental learning experience.







FUNDED BY THE VALLEJO WATER CONSERVATION PROGRAM

State mandates require local water purveyors to implement and promote water conservation measures. All water education activities and associated materials and services are paid for through a combination of local water rate revenue and grant funding.

Helping You Conserve - Every Drops Counts!

CONTACTS

For more information about our program, please go to our website www.vallejowater.org.

Roger Judy
Water Education Program Manager
(707) 648-5299
rljudy@ci.vallejo.ca.us

Pamela Sahin
Water Conservation Coordinator
(707) 648- 4479
waterinfo@ci.vallejo.ca.us

202 Fleming Hill Road
Vallejo, CA 94589
Phone (707) 648-4307
Fax (707) 648-4060

Attachment J: District Agricultural Water Order Form – N/A

Attachment K: Drainage Problem Area Report - N/A

Attachment L: Other

Wasteful Water Prohibition Ordinance

Effective June 11, 2015

ORDINANCE NO. 1708 N.C. (2d)

AN ORDINANCE OF THE CITY OF VALLEJO AMENDING CHAPTER 11 OF THE VALLEJO MUNICIPAL CODE RELATED TO DROUGHT RESTRICTIONS AND PENALTIES

WHEREAS, On January 17, 2014, Governor Edmund G. Brown, Jr. issued Proclamation No. 1-17-2014 declaring a State of Emergency to exist in California due to severe drought conditions and calling on Californians to reduce their water usage by 20 percent; and

WHEREAS, On April 25, 2014, the Governor issued an Executive Order to strengthen the State's ability to manage water and directed the State Water Resources Control Board (SWRCB) to adopt emergency regulations as it deems necessary to address water shortage conditions; and

WHEREAS, On July 15, 2014, the SWRCB adopted 23 California Code of Regulations, Sections 863, 864, and 865, emergency regulations finding a drought emergency in California and imposing water conservation measures on individuals and water suppliers, which regulation became effective July 28, 2014, upon approval by the Office of Administrative Law and was scheduled to expire on April 25, 2015; and

WHEREAS, On March 17, 2015, the SWRCB re-adopted and expanded emergency regulations because of the continuing emergency drought conditions, and the need to act to extend the prohibitions before they expired; and

WHEREAS, Section 864 applies to all Californians and prohibits certain activities in promotion of water conservation, and Section 865 requires mandatory outdoor irrigation restrictions and reporting by water suppliers, including urban water suppliers like the City of Vallejo; and

WHEREAS, On March 27, 2015, the State Office of Administrative Law approved the SWRCB's proposed regulations and they became effective; and

WHEREAS, the City Council adopted Resolution No. 14-102 N.C. on August 26, 2014 to implement outdoor water use restrictions in compliance with the July 2014 State emergency drought regulation; and

WHEREAS, the City has promoted conservation and sought voluntary reductions in water use by its customers and City departments and has achieved a 10 percent reduction in 2014 over the same period in 2013; and

WHEREAS, the City's water supply has been limited for extended periods of time in 2014 and will be limited for an extended period of time in 2015 to 100 percent Solano Project (Lake Berryessa); and

WHEREAS, the City is party to the Solano Project Members' Agreement which requires curtailments in the amounts of water taken under the respective member's annual entitlements during certain drought conditions; and

WHEREAS, lake levels in Lake Berryessa have not triggered mandatory curtailments of Solano Project members' annual entitlements; and

WHEREAS, the City's Municipal Code, and Water Shortage Contingency Plan adopted by resolution of City Council in 2006 contain provisions to achieve responsible management of the City's water resources.

THE COUNCIL OF THE CITY OF VALLEJO DOES ORDAIN AS FOLLOWS:

SECTION 1. Chapter 11.54 of the Vallejo Municipal Code is amended to add the following:

11.54.050 – Drought Restrictions.

Until December 23, 2015, the 270-day period specified in State Water Resources Control Board ("Board") Resolution No. 2015-0013, or as extended by the Board:

a. No outdoor irrigation of ornamental landscapes or turf with potable water is permitted between the hours of 9:00 a.m. and 6:00 p.m., except for drip irrigation, soaker hoses and hand watering by container or hose equipped with a shut-off nozzle.

b. The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, parking lots, or structures is prohibited.

c. The application of potable water to driveways and sidewalks is prohibited, except where necessary to address an immediate health and safety need or to comply with a term or condition in a permit issued by a state or federal agency.

d. The use of potable water in a fountain or other decorative feature is prohibited.

e. The application of potable water to outdoor landscapes during and within 48 hours after measurable rainfall is prohibited.

f. The serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased, is prohibited.

g. Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily, and the hotel or motel shall prominently display notice of this option in each guestroom using clear and easily understood language.

h. Irrigation of landscape, pasture, and common areas shall be limited to a maximum of three days per week when necessary based on the following schedule: Customers with street addresses that end with an odd number may irrigate only on Tuesday, Thursday, and Saturday; customers with street addresses that end with an even number may irrigate only on Monday, Wednesday, and Friday. Common areas may be irrigated only on Monday, Wednesday, and Friday.

11.54.060 – Enforcement and Penalties.

Violations of any provision of Section 11.54.050 shall be enforced as follows:
a. For a first violation, the customer shall receive a notice of violation.
b. For a second violation, the customer shall receive an administrative citation with a fine of $100.
c. For a third violation, the customer shall receive an administrative citation with a fine of $500.
d. Administrative citations shall be issued pursuant to chapter 1.15.

SECTION 2. SEVERABILITY

If any section, subsection, sentence, clause, phrase, or word of this Ordinance is for any reason held to be invalid by a court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have passed and adopted this Ordinance, and each and all provisions hereof, irrespective of the fact that one or more provisions may be declared invalid.

SECTION 3. EFFECTIVE DATE

This Ordinance shall take effect and be in full force thirty (30) days from and after its final passage.

FIRST READ at a regular meeting of the Council of the City of Vallejo held on the 28th day of April, 2015 and finally passed and adopted a regular meeting of the Council held on the 12th day of May, 2015 by the following vote:

AYES:	Mayor Davis, Vice Mayor Malgapo, Councilmembers Dew-Costa, McConnell, Miessner, Sampayan and Verder-Aliga
NOES:	None
ABSTAIN:	None
ABSENT:	None

OSBY DAVIS, MAYOR

ATTEST:

DAWN G. ABRAHAMSON, CITY CLERK

ORDINANCE NO. 1768 N.C. (2d)

AN ORDINANCE OF THE CITY OF VALLEJO AMENDING CHAPTER 11.54 OF THE VALLEJO MUNICIPAL CODE RELATED TO WASTEFUL WATER USE PROHIBITION

WHEREAS, on April 7, 2017, Governor Edmund G. Brown, Jr. issued Executive Order B-40-17 directing the State Water Resources Control Board (SWRCB) to rescind portions of the State's existing drought emergency regulations that require mandatory conservation standards for urban water agencies and to continue the portions prohibiting wasteful water practices; and

WHEREAS, on April 26, 2017, the SWRCB adopted Resolution No. 2017-0024, partially repealing the regulation for statewide urban water conservation, including those portions requiring mandatory conservation standards; and

WHEREAS, the water use restrictions previously adopted by Council in May 2015 and included in Ordinance No. 1708 N.C. (2d) should be revised to remove watering restrictions rescinded by the State, while retaining those that prohibit wasteful water practices; and

WHEREAS, retaining enforcement through the administrative citation procedure will support the efficient use of the City's water resources.

THE COUNCIL OF THE CITY OF VALLEJO DOES ORDAIN AS FOLLOWS:

SECTION 1. Section 11.54.030 – Regulations and restrictions on water use – of the Vallejo Municipal Code is amended and shall read as follows:

A. To prevent the waste and unreasonable use of water and to promote water conservation, each of the following actions is prohibited, except where necessary to address an immediate health and safety need or to comply with the term or condition in a permit issued by a state or federal agency:

1. The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures;

2. The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use;

3. The application of potable water to driveways and sidewalks;

4. The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system;

5. The application of potable water to outdoor landscapes during and within 48 hours after measurable rainfall;

6. The serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafés, cafeterias, bars, or other public places where food or drink are served and/or purchased;

7. The irrigation with potable water of landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development as adopted by the city;

8. Allowing potable water to escape from breaks within the customer's plumbing system for more than thirty-six hours after the customer is notified or discovers the break.

9. The use of potable water for construction, compaction, dust control, street or parking lot sweeping, or building wash down where nonpotable or recycled water is available in sufficient quantities.

10. The use of single-pass cooling systems;

11. The use of nonrecirculating systems in new conveyor car wash facilities.

B. To promote water conservation, operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom using clear and easily understood language.

SECTION 2. Section 11.54.050 – Drought restrictions - of the Vallejo Municipal Code is hereby repealed in its entirety.

SECTION 3. Section 11.54.060 – Enforcement and penalties - of the Vallejo Municipal Code is amended and shall read as follows:

Violations of any provision of Section 11.54.030 shall be enforced as follows:

A. For a first violation, the customer shall receive a notice of violation.

B. For a second violation, the customer shall receive an administrative citation with a fine of two hundred dollars.

C. For a third violation, the customer shall receive an administrative citation with a fine of five hundred dollars.

D. Administrative citations shall be issued pursuant to chapter 1.15.

SECTION 4. SEVERABILITY

If any section, subsection, sentence, clause, phrase, or word of this Ordinance is for any reason held to be invalid by a court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have passed and adopted this Ordinance, and each and all provisions hereof, irrespective of the fact that one or more provisions may be declared invalid.

SECTION 5. EFFECTIVE DATE

This Ordinance shall take effect and be in full force thirty (30) days from and after its final passage.

FIRST READ at a regular meeting of the Council of the City of Vallejo held on the 11th day of July 2017 and finally passed and adopted at a regular meeting of the Council held on the 25th day of July 2017, by the following vote:

AYES:	Mayor Sampayan, Vice-Mayor McConnell, Councilmembers Malgapo, Meissner, Sunga and Verder-Aliga
NOES:	None
ABSENT:	Councilmember Dew-Costa
ABSTAIN:	None

BOB SAMPAYAN, MAYOR

ATTEST:

DAWN G. ABRAHAMSON, CITY CLERK

Water Savings Incentive Program

Customized Water Efficiency Rebate Program

The Customized Water Efficiency Rebate Program is a partnership between SCWA, its member agencies, and large water-using customers working to improve water use efficiency. The water savings potential of individualized projects helps Solano businesses, commercial properties, and institutions achieve their efficiency goals. These efforts encourage economic expansion in the region and improve water supply reliability throughout Solano County.

Potential participants must first receive a SCWA water use efficiency survey (at no cost to the participant) to determine the potential for water savings at the site. Acceptance into the program will be based on the findings and recommendations outlined in the water survey report. Sites are eligible if the survey findings indicate that repairs or upgrades to the site irrigation system would likely significantly increase water use efficiency at the site. See WSIP terms and conditions for full programs details.

Potential participants should contact Cristina Goulart at 707.523.1010 or Cristina.Goulart@ghd.com. Download the Application Form.

Business Water Savings Survey

This is a **FREE** service to local businesses, provided to help you conserve water. It could result in savings on your water bill, sewer bill, and potentially on your energy bill.

Indoor Survey

The surveys will be performed by SCWA-contracted water use specialists who will come out to your business location.

The indoor survey will include the following services (as appropriate):

- Search for hidden water leaks
- Identify high water using appliances and fixtures
- Provide high-efficiency toilets at a later date (where feasible)

Outdoor Survey

The outdoor survey will include the following, where feasible:

- Evaluate your irrigation system efficiency
- Review of your irrigation controller's programming
- Provide a rain sensor on request

Schedule an Appointment

Email Cristina Goulart or call **707-523-1010** to schedule a free water survey of your place of business.

Forms

- Rebate Application Form
- Participant Application Form

SOLANO COUNTY WATER AGENCY

COMMERCIAL, INDUSTRIAL, INSTITUTIONAL (CII)

CUSTOMIZED WATER EFFICIENCY REBATE PROGRAM

TERMS, CONDITIONS, AND INSTRUCTIONS FOR PARTICIPATION

PURPOSE:

To provide rebates for CII accounts to upgrade their irrigation systems, plumbing fixtures, and/or water-using appliances for the purpose of improving water use efficiency.

Rebates are tailored to each individual site as each site has varying water savings potential. Rebates will be granted at the sole discretion of the Solano County Water Agency (SCWA).

REBATE AMOUNT:

Each publicly-funded or non-profit site defined as one water account, will be eligible for ***up to a maximum of $5,000*** in rebates for upgrades in addition to rebates or direct installations received from other SCWA water conservation programs including High Efficiency Toilet installations, turf replacement or weather-based irrigation controllers. Publicly funded and non-profit sites will receive 100% reimbursement, ***excluding labor costs,*** up to $5,000 per account on a pre-approved basis. When the program serves commercial accounts, reimbursements will be 50% of expenditures, excluding labor costs, on a pre-approved basis, up to a maximum of $5,000. In other words, for a commercial participant to receive a $5,000 rebate, that participating business must spend a total of $10,000, half of which will be returned as a rebate.

PARTICIPANT ELIGIBILITY:

Participants must be:

- CII water customers in Solano County,
- Have a water service account that has been active for at least twelve months, and
- Use potable water for irrigation (for irrigation upgrade requests).

Properties using recycled water or groundwater from privately owned wells do not qualify. Preference will be given to areas of irrigated turf 10,000 square feet or greater.

WHAT SYSTEMS ARE ELIGIBLE FOR REIMBURSEMENT?

Irrigation Systems

Water customers will be reimbursed for the cost of replacing existing irrigation system parts and equipment only. ***No labor costs will be covered by this program.*** Eligible expenses include:

- Replacement or upgrade to irrigation equipment (replacement of rotor or spray equipment, replacement with drip, etc.)
- Replacement of sprinkler heads for matching precipitation rates
- Pressure regulators and station control devices
- Rain sensors/ shut-off devices

Addition of irrigation lines or spray heads may be eligible for reimbursements if they are completed to improve overall water efficiency (e.g. adding additional spray heads to an existing line.) Such requests must be requested and approved by SCWA. It is recommended that these requests be made prior to installation to ensure eligibility for reimbursement.

Indoor Water Use Systems or Fixtures

Replacement or upgrades of indoor water use systems or fixtures will be determined on a case-by-case basis depending on the results of an on-site survey or pre-inspection and water savings potential for the site. Note that high-efficiency toilets (HETs), faucet aerators, and efficiency showerheads are available through the HET Direct Install program.

INSTRUCTIONS:

Pre-inspections or surveys may be required for rebates for water-using appliances or equipment. **You must receive approval from SCWA prior to any purchases or the upgrades being made.** Irrigation system upgrades must receive a SCWA irrigation system survey to evaluate the potential for water savings at the site. Sites are eligible if the survey findings indicate that repairs or upgrades to the site irrigation system would likely increase water use efficiency at the site.

1. **Request a water efficiency survey** or pre-inspection. (No cost to you.) You may also request a rebate for a specific water-using appliance.
2. Complete and **submit a Participant Application Form.** Note that if the results of the survey suggest little or no potential for water savings at the site, the rebate application may be rejected.
3. **Wait for approval** (written or electronic) to proceed with the upgrades. This should occur within one to two weeks.
4. After approval to proceed is received from SCWA, **purchase and install**, or hire a contractor to install, the efficiency equipment. If you hire a contractor, please ask them for receipts.
5. **Submit a Rebate Request Form and original receipts** within within 90 days after receiving approval. If you need an extension, you must request an extension from SCWA.

DISCLAIMER:

- This program is subject to change or termination without prior notice.
- Funding is limited. Program participation is available on a first come, first-served basis only. Program participation is subject to availability of funds and will end upon depletion of program funding.
- SCWA reserves the right to deny any application that does not meet all requirements for program participation. Due to variables beyond the control of SCWA, the Agency cannot guarantee that the installation of any of the program elements will result in a lower utility bill. Applicant waives and releases SCWA, participating water utilities, and their contractors or agents from any and all claims and causes of action arising out of the installation and use of this product. SCWA is not responsible for any damage that may occur to participants' property as a result of the program.

Questions and Form Submittals:

Cristina Goulart: **Phone: (707) 523-1010**
Email: Cristina.Goulart@ghd.com
Address: 2235 Mercury Way, Suite 150, Santa Rosa, CA 95407