

Water Quality and Resources

September 2022

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Table of Contents

Responses to Community Feedback on Environmental Existing Conditions Reports..... iii

Key Findings and Constraints 1

Planning and Regulatory Setting 1

 National Pollutant Discharge Elimination System..... 1

 Federal Clean Water Act 1

 California Water Boards Trash Amendments 2

 California Department of Fish and Wildlife 2

 Federal Emergency Management Agency 2

 Sustainable Groundwater Management Act..... 2

 Petaluma Groundwater Sustainability Plan 3

 Porter-Cologne Water Quality Control Act (1969) 3

 Sonoma Water Supply Strategic Action Plan (2018)..... 3

 Adaptation and Resilience Plan for the Petaluma River Baylands..... 3

 Petaluma Watershed Enhancement Plan..... 3

 Capital Improvement Program..... 4

Watersheds in the Region 4

Existing Waterways 7

 Petaluma River and Russian River..... 7

Surface Hydrology, Flooding, and Inundation 7

Water Quality 8

 Impaired Waters and Stormwater 8

Water Supply and Demand 9

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Responses to Community Feedback on Environmental Existing Conditions Reports

The following responses were drafted by the consultant team in response to extensive community feedback on topics that crosscut the seven Environmental Existing Conditions Reports.

Trees and Urban Canopy: Maintaining and expanding a robust urban forest is a priority for the City and will be incorporated into the updated General Plan goals, policies, and programs to further develop and maintain the urban forest and protect trees of aesthetic, cultural, and biological value to the community. The General Plan Update will capitalize on ways to build on and expand existing plans and programs through tools like tree inventories and tree preservation ordinances.

River Enhancement Program: The River Enhancement Plan will provide an existing foundation for goals, policies, and programs to be implemented as this plan will continue to be in effect and utilized after the General Plan Update. Throughout the General Plan Update process, this plan will be thoroughly reviewed and incorporated into the General Plan.

Wildlife Corridors: The information regarding the wildlife corridors discussion were a compiling of local resources that can be used to understand the stakeholders that the City can partner with in supporting efforts to conserve wildlife corridors, especially in support of efforts by the State, to preserve a statewide network of wildlife movement corridors. There will be opportunities in future steps of the General Plan Update process to include more detail of the wildlife corridors surrounding Petaluma using data from CDFW and other available sources.

Climate Impacts Data: The State of California requires local jurisdictions to use specified data sources for identified hazards such as FEMA for the flood hazards analysis and the Cal Adapt tool for climate change projections. These are the data sources used to conduct the analysis of climate and flood hazards, which will inform various aspects of the General Plan Update.

Integration of Environmental Topics: Environmental issues and considerations will be integrated throughout the General Plan Update process and additional information will be gathered and analyzed during future phases of the project. In particular, environmental analysis will be done during the alternatives and environmental review phases.

Water Resources and Quality

This section of the report assesses current water management practices, plans and policies at the City and regional level to inform policy recommendations.

Key Findings and Constraints

- Petaluma relies primarily on regional surface water purchased from Sonoma Water to meet its potable water demands for the city.
- As of 2020, less than 1 percent of the City's annual water supply was from groundwater. The City intends to phase out all reliance on its water supply wells in the near future.
- The entire 24.27 miles of the Petaluma River main stem is listed by the EPA as an impaired waterbody. The impairment designation is due to elevated fecal indicator bacteria (FIB) levels and excessive algae growth from high nutrient levels.
- The greatest source of surface water pollution comes from agricultural and urban run-off that drains directly into the Petaluma River and then flows into San Pablo Bay.

Planning and Regulatory Setting

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) is a permit program that addresses water pollution by regulating point sources that discharge pollutants to waters of the United States. It was created in 1972 by the Clean Water Act and is delegated to the State of California for implementation through the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs). Local municipalities are required to obtain NPDES permit coverage and implement programs to reduce and eliminate pollutants and hazardous materials from entering their municipal separate storm sewer systems (MS4). The City of Petaluma requires industrial and commercial facilities to install, implement, and maintain Best Management Practices (BMPs) consistent with the California Stormwater Quality Association BMP Handbook.

Federal Clean Water Act

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. Under the CWA, Environmental Protection Agency (EPA) has implemented pollution control programs such as setting wastewater standards for industry. EPA has also developed national water quality criteria recommendations for pollutants in surface waters.

The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained:

- EPA's National Pollutant Discharge Elimination System (NPDES) permit program controls discharges.
- Point sources are discrete conveyances such as pipes or man-made ditches.

- Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need a NPDES permit;

Industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

California Water Boards Trash Amendments

In 2015, the California State Water Board amended the Water Quality Control Plan for Ocean Waters of California to control trash and amended the trash provisions of the State Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California (ISWEBE Plan). These “Trash Amendments” established a narrative water quality objective for trash and officially prohibited the discharge of trash into waterways. Additionally, the Amendments provide implementation requirements for permitted discharges and provides a framework for monitoring and reporting requirements.

California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW) coordinates with the State Water Resources Control Board by contributing knowledge of aquatic and semi-aquatic animal habitat into water quality policy and legislation. The CDFW is authorized through the Fish and Game Code to protect the waters of California from pollution and provide oversight and approval of projects that may alter or divert lakes or streams. The water quality programs authorized by the CDFW include:

- The Office of Spill Prevention and Response- Prevents environmental impacts associated with oil spills)
- The Law Enforcement Division- Investigates pollution incidents in waters of the state.
- The Aquatic Bioassessment Laboratory- Supports the use of biology for water quality management and assessment programs.
- The Lake and Streambed Alteration Program- Oversees and approves public or private projects that would divert, obstruct, or change the natural flow of any river, stream or lake.

Federal Emergency Management Agency

FEMA is the federal agency that oversees floodplains and manages the National Flood Insurance Program (NFIP). FEMA also prepares the Flood Insurance Rate Maps (FIRM) for communities participating in the NFIP. The FIRMs indicate the regulatory floodplain to assist communities with land use and floodplain management decisions, so that the requirements of the NFIP are met in the event of damaging floods.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA), passed in 2014, created a framework for sustainable, local groundwater management in California. SGMA directed the Department of Water Resources (DWR) to identify priority groundwater basins for the purpose of implementing SGMA. Only high and medium priority basins are currently subject to SGMA requirements, including the requirement of Groundwater Sustainability Agencies (GSA) to develop Groundwater Sustainability Plans (GSP) for groundwater basins. For Petaluma, the Petaluma Valley Sustainable Groundwater Agency is responsible

for drafting and updating the plan over time. The draft Plan is currently available for public review and comment.

Petaluma Groundwater Sustainability Plan

A Groundwater Sustainability Plan (GSP) is a 20-year plan to ensure the sustainable use of groundwater within a groundwater basin. The Petaluma Valley Groundwater Sustainability Agency is conducting community engagement in the writing of the plan and will complete the final GSP by January 30, 2022. A draft of the Plan is currently available for public review and comment. The goal of the GSP is to establish a standard for “sustainability” of groundwater management and use, and to determine how the basin will achieve this standard.

Porter-Cologne Water Quality Control Act (1969)

The Porter-Cologne Water Quality Control Act mandates protection of Waters of the State such that activities that may affect Waters of the State be regulated to attain the highest quality water. The SWRCB is given authority to enforce Porter-Cologne Water Control Act and SWRCB regulations mandate a “non-degradation policy” for state waters, especially those of high quality. Under the authority of the SWRCB, the protection of water quality in the Petaluma River Watershed and its tributaries is under the jurisdiction of the San Francisco RWQCB. The RWQCB establishes requirements prescribing the quality of point sources of discharge and establishes water quality objectives. These objectives are established based on the designated beneficial uses for a particular surface water or groundwater. Beneficial uses of the Petaluma River Watershed above the estuary include municipal, domestic, agricultural, and industrial service supply; groundwater recharge; contact water recreation; non-contact water recreation; wildlife habitat; cold freshwater habitat; wetlands habitat; warm freshwater habitat; migration of aquatic organisms; rare, threatened, or endangered species; freshwater replenishment; and commercial and sport fishing.

Sonoma Water Supply Strategic Action Plan (2018)

This plan outlines the development of new water supply projects, plans, and strategies to meet the reasonable expected future water demands. The 2010 Action Plan emphasizes a regional approach to protect the water supply and make it more resilient to a changing climate. The Action Plan was updated in 2011 and 2013 and again in 2018.

Adaptation and Resilience Plan for the Petaluma River Baylands

This Plan identifies opportunities to increase resilience and facilitate adaptation to climate change within existing and historical tidal and freshwater wetland and adjacent transition zones and identify opportunities for reconnecting wetlands to their watersheds through land protection. For the Petaluma Baylands, the wetlands at the mouth of San Pablo are a vital marine ecosystem, but they are at risk due to rising sea levels and water pollution.

Petaluma Watershed Enhancement Plan

This 2015 plan elaborates on the Petaluma General Plan from 1996 and reclaims the river and its watershed as a community resource. As a central feature of the City, enhancement of the Petaluma

Watershed Enhancement Plan will improve environmental quality for the whole community. Following the principles of the General Plan, the Enhancement Plan will:

- Restore and Preserve natural resources.
- Establish a pedestrian friendly walkway and bike trail for the entire length of the river within the city limits.
- Create a vibrant, high density water-related commercial environment with combined tourism, recreation, commerce, and industry in and around downtown.
- Maintain a Mixture of different uses and activities along the entire river corridor that complement the riverfront location.

Capital Improvement Program

The City's Capital Improvement Program (CIP) identifies capital projects and financing options that add value to the City's assets and infrastructure. Current projects related to water resources and quality include:

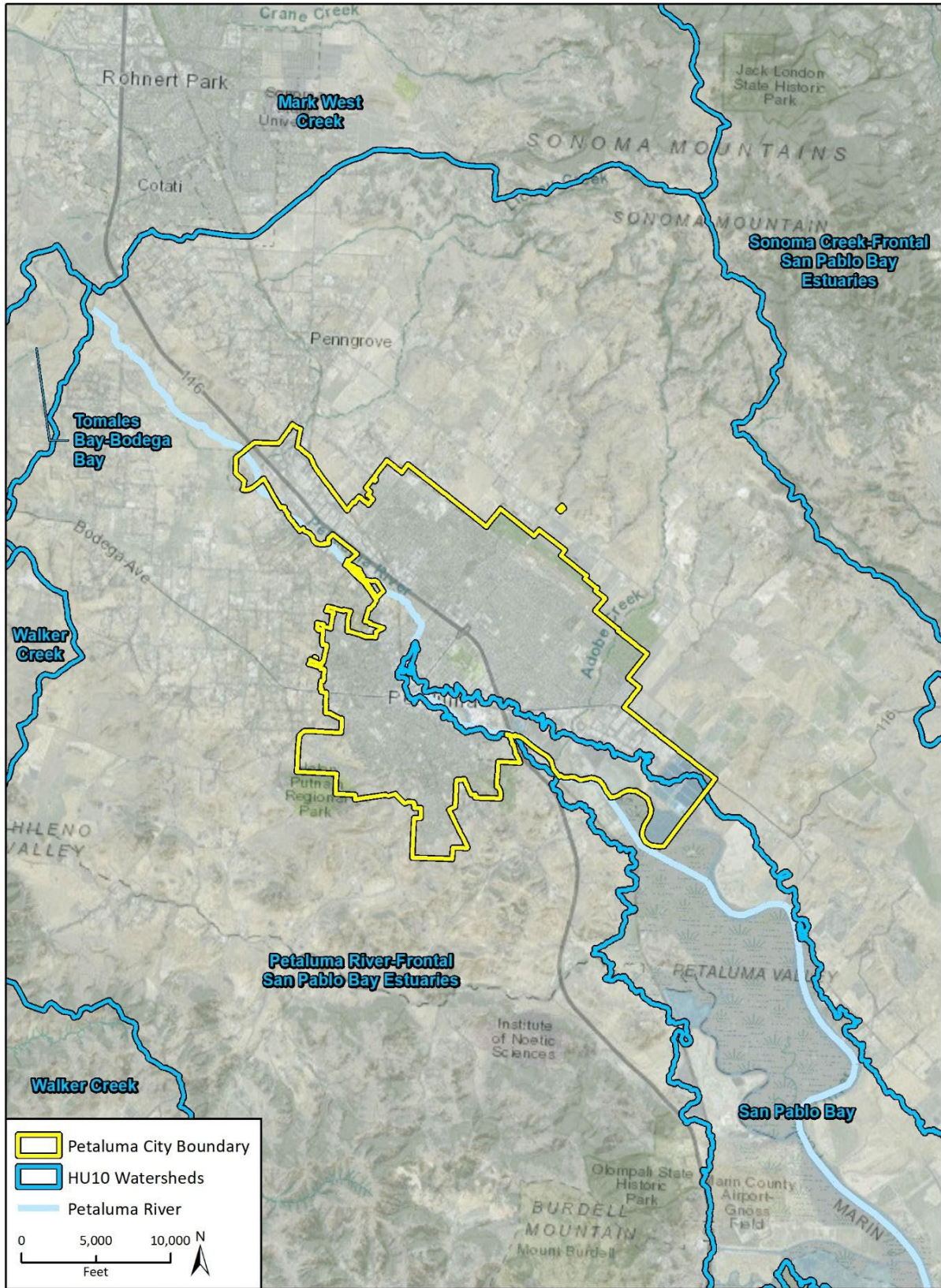
- The McNear Sewer and Water Main Replacement project, which consists of upgrading and replacing water and sewer main infrastructure in the area surrounding McNear Park.
- The Water Main Replacement project (currently underway), designed to replace the aging water main that runs between D Street and Mountain View Avenue. Once completed, the Water Main Replacement will offer improved water service and increased water pressure for fire protection.
- The Water Services Replacement Project, which will replace defective water services that result in frequent pipe breaks and water leaks. Many of the water services installed during the 1970's and early 80's included polybutylene "blue-tube" piping to connect the water main to the customer's water meter. The subject project will upgrade the deteriorated water services and water main service saddles to current City standards.
- The Victoria and Country Club Pump Station Improvements will provide structural, mechanical, electrical, instrument control, and communication upgrades to the Country Club Pump Station, located on the west side of Petaluma off McNear Avenue, and the Victoria Pump Station, located on the west side of Petaluma off Windsor Drive.
- The Oak Hill Well is anticipated to begin construction in early spring of 2022 dependent on the completion of environmental review and certification. The well would be located adjacent to Oak Hill Park.
- The tertiary upgrade to the wastewater treatment plant is a grant funded project anticipated to be completed prior to the end of 2023.

Watersheds in the Region

The Petaluma River watershed is in southern Sonoma and northern Marin Counties (**Figure 1**). Tributaries to the Petaluma River include Petaluma Creek, Willow Brook Creek, Lichau Creek, Liberty Creek, Marin Creek, Wiggins Creek, Wilson Creek, Corona Creek, Capri Creek, Lynch Creek, Washington Creek, East Washington Creek, Thompson Creek, Kelly Creek, and Adobe Creek. The RQWCB Basin Plan for the San Pablo Basin classifies the following streams as major surface waters: Petaluma River, Willow Brook Creek, and Adobe Creek. The lower 11 miles of the Petaluma River flow

through the Petaluma Marsh. The river ultimately empties into the northwest portion of San Pablo Bay. Tidal influence extends approximately 14 miles upstream of San

Figure 1: Watersheds in Petaluma and Surrounding Area



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Additional data provided by Geotracker, 2021.

Fig. WR 1 Watersheds in Petaluma

Pablo Bay, near the confluence of Lynch Creek above downtown Petaluma. The flow of the Petaluma River has great importance to ecological systems in the area, as well as a direct impact on the health of San Pablo Bay. Petaluma also sits within the San Pablo Bay Watershed, which primarily encompasses the bay and adjoining wetlands at the mouth of the River.

Existing Waterways

Petaluma River and Russian River

The Petaluma River and the Russian River are both important waterways to Petaluma. The Petaluma River runs directly through the city's Historic Downtown and serves as a cultural, ecological, and economic asset to the City. Originally, the River was a tidal marsh that was fully influenced by the ebb and flow of tides. Today the river remains tidal from the estuary to the bay. Before the Army Corps of engineers were brought in to dredge the river, it could be difficult to navigate due to sediment buildup of tidal flows. The River is the vehicle that transports stormwater and stormwater run-off from roads to San Pablo Bay, so maintaining the health of the region contributes to the overall health of the region and its natural resources.

The California Environmental Protection Agency and the San Francisco Bay RWQCB list existing beneficial uses for the Petaluma River, Willow Brook Creek, and Adobe Creek in the Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin. Existing beneficial uses for the Petaluma River include a cold freshwater habitat, marine habitat, fish migration, navigation, preservation of rare and endangered species, water contact recreation, noncontact water recreation, fish spawning, warm freshwater habitat, and wildlife habitat. Although no beneficial uses are listed for Willow Brook Creek and Adobe Creek in the Basin Plan, the City of Petaluma considers Adobe Creek to provide a beneficial use for freshwater fish spawning.

The Russian River does not flow directly through Petaluma but is still an important biological resource and major source of water for the City. The Russian River supplies water to the Lake Mendocino and Lake Sonoma reservoirs which supply the City with its water via the Sonoma Aqueduct. Its levels have been highly variable in recent history with drought becoming more common as precipitation patterns continue to change.

Surface Hydrology, Flooding, and Inundation

Due to the surrounding surface hydrology consisting of steep, dry terrain, stream flows in the region are highly correlated with rainfall intensity; thus, flood events are almost exclusively associated with rainfall events that occur in January or February.

Petaluma's location at the convergence of multiple rivers, creeks and streams in the region causes low-lying parts of the City to be designated by FEMA as within a 100-year flood zone or 500-year flood zone. The Natural Hazards section of this Existing Conditions report includes a map of FEMA flood zones in Petaluma and surrounding areas (see Figure NH-2 in *Chapter 4, Natural Hazards*). The Petaluma River is known to flood into low-lying areas during periods of heavy precipitation, the most recent occurrence of flooding was in 2019. Further information on flooding is located in Chapter 4, Natural Hazards.

Water Quality

Surface water quality continues to be an issue for the Petaluma River, which is considered an impaired water body due to sedimentation/siltation and high levels of nutrients and pathogens. High nutrient levels could be attributed to the fertilizers and other chemicals used by nearby dairy farms, agriculture, viticulture, equine facilities, and livestock producers. Sedimentation buildup in tributaries are generally associated with new development and agricultural land use practices. Urban run-off is one the biggest sources of surface water pollution. Agricultural and urban runoff can adversely impact plant and animal habitats and contaminate drinking water.

Groundwater quality is generally adequate to support existing uses within most areas of the Basin and contributing watershed. Localized areas of poor groundwater quality are primarily related to the following potential sources of impairment: brackish waters of San Pablo Bay and associated tidal marshland areas; deep connate waters associated with ancient seawater entrapped during deposition of Tertiary Era sedimentary units; and anthropogenic inputs associated with certain land-use activities (e.g., industrial, agricultural, or urban land uses), including an area of historical nitrate contamination in the northwestern portions of the Basin, following the path of Petaluma Highway and Stony Point Road .

Impaired Waters and Stormwater

The United States EPA maintains a list of existing impaired waterbodies throughout the country. Those listed waterbodies are considered impaired due to pollutants that originate from stormwater sources. All impaired waters are assigned a Total Maximum Daily Load (TMDL), a calculation of the total pollutant loading that a waterbody can receive and still meet water quality standards. Both the Petaluma River and Russian River are identified as impaired waterbodies.

The entire 24.27 miles of the Petaluma River main stem is listed by the EPA as an impaired waterbody. The impairment designation is due to elevated fecal indicator bacteria (FIB) levels and excessive algae growth from high nutrient levels. San Antonio Creek and other tributaries to the Petaluma River are also impaired due to elevated bacteria. Impaired segments include San Antonio Creek, Lichau Creek, Willow Brook, Lynch Creek, Adobe Creek, Ellis Creek, as well as other named and unnamed tributaries. The TMDLs for FIB in the Petaluma River are listed below:

- Enterococcus: 110 (cfu/100 mL)
- E. Coli: 320 (cfu/100 mL)

TMDLs are implemented in part by the National Pollutant Discharge Elimination System (NPDES) stormwater permitting system. The federal Clean Water Act requires municipalities to obtain NPDES permits for discharges of municipal runoff from their Municipal Separate Storm Sewer Systems (MS4s) into United States waterbodies. The permit includes a limit on what pollutants can be discharged, acceptable levels of pollutants, and monitoring and reporting requirements.

For the City of Petaluma, MS4 requirements have been adopted in the Phase II General Permit for Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4) (NPDES Permit No. CAS000004). **Error! Bookmark not defined.** Under this permit, the City is responsible for adopting and implementing control measures or best management practices (BMPs) to prevent or reduce pollutants in stormwater. The City must notify the Water Board promptly if discharges are causing or contributing to an exceedance of an applicable water quality standard. A map of

Petaluma's Phase II Municipal Separate Storm Water System (MS4) is shown in **Figure 2** below. The figure also outlines the County of Sonoma's Phase I Municipal Separate Storm Sewer System MS4 boundaries.

Water Supply and Demand

The City of Petaluma is in the Petaluma Valley groundwater basin as well the Petaluma River-Frontal San Pablo Bay Estuary. The Petaluma Valley basin is shown in **Figure 3** below. The Petaluma Valley basin is 46,043 acres and stretches from San Pablo Bay northward to a series of low hills near the town of Penngrove. It is bounded on the west and east by the Mendocino and Sonoma Mountains and characterized by a few geologic structures along the Valley. Recharge of the Basin relies primarily on local precipitation and drainage from the Petaluma River. Variance in local precipitation and river levels can impact the levels of groundwater sources.

The City of Petaluma manages its own public water system that provides drinking water for human consumption and recycled water for irrigation. The system is primarily a single retail drinking water system which receives water from a wholesale supplier (Sonoma Water) and from the City's groundwater wells. The service area for the City's water system includes 20,713 customer connections, providing 7,731 acre-feet (AF) of water in the year 2020. The City's water system serves the majority of the water customers within the city boundary. Recycled water through the City's water system is provided to landscape irrigation customers within the city boundary and agricultural irrigation customers outside the boundary. **Table 1** below depicts the projected water demand for the City of Petaluma Water System.

Figure 2: City of Petaluma Municipal Separate Storm Water System (MS4)

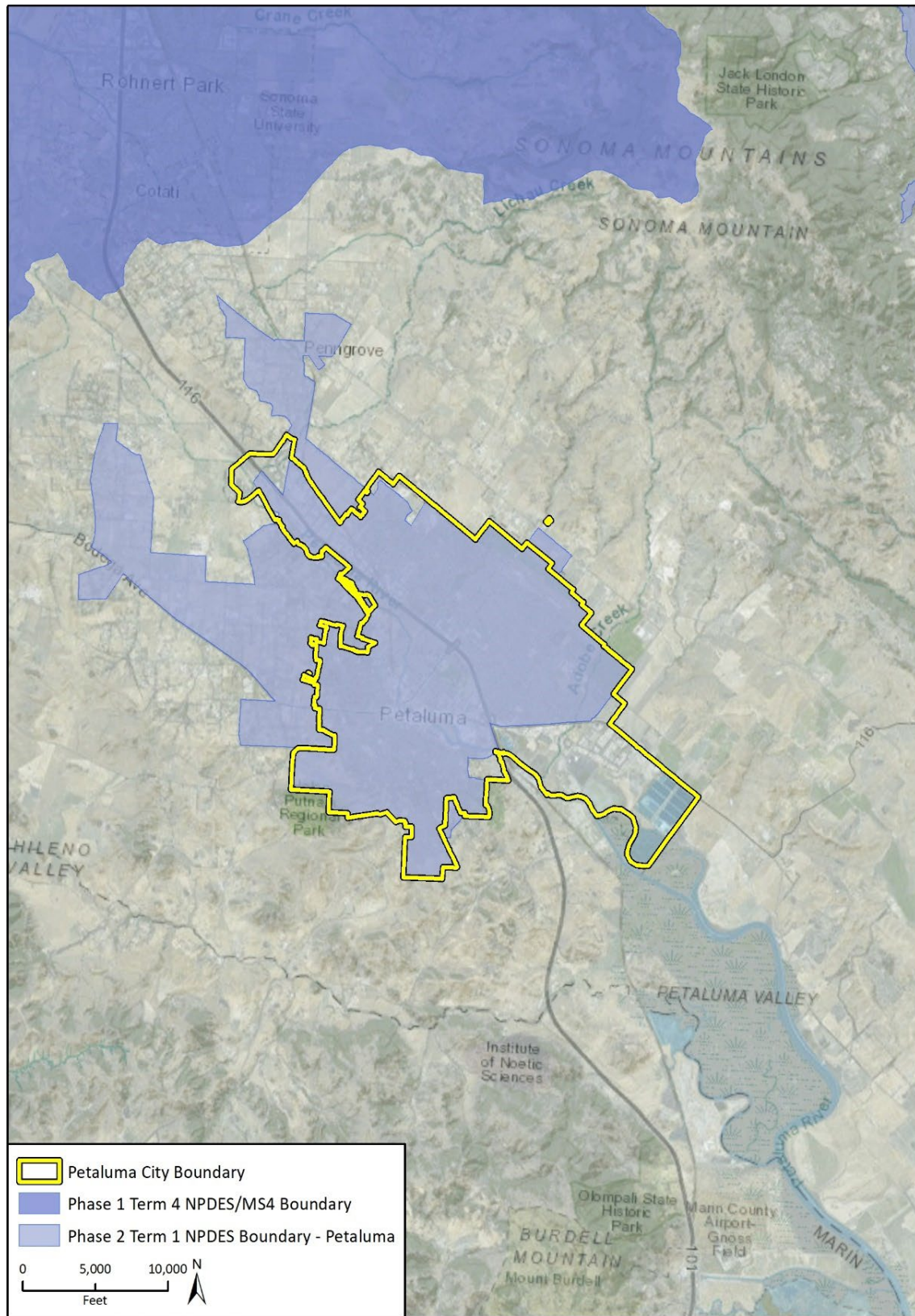
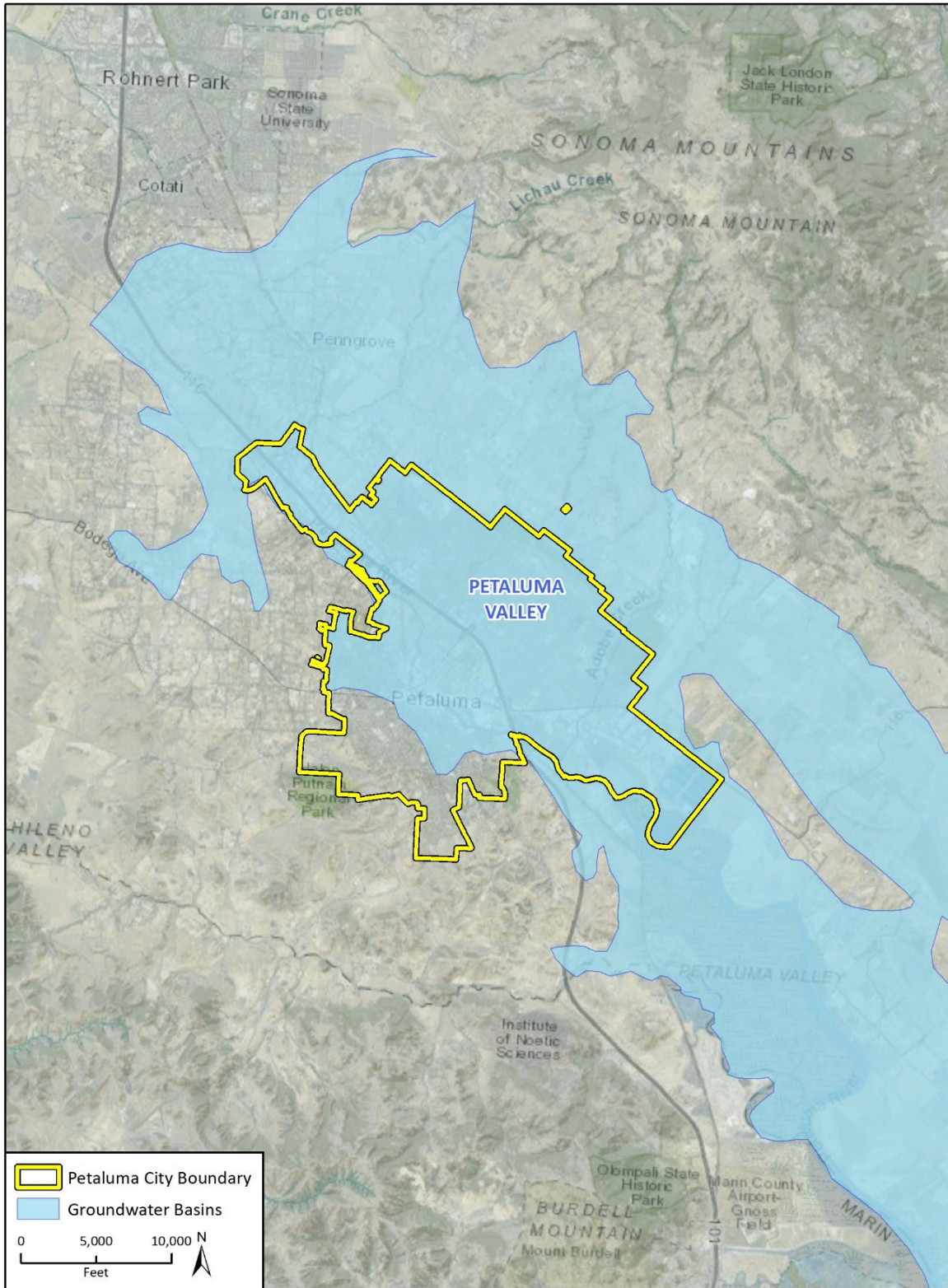


Figure 3: Petaluma Valley Groundwater Basin



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Additional data provided by Geotracker, 2021.

Fig W1-2 Groundwater Basins Petaluma

Table 1: Summary of Projected Water Use (City of Petaluma Water System)

Use Type	2020 (actual)	2025	2030	2035	2040	2045
Single-Family	4,354	4,642	4,740	4,826	4,930	5,036
Multifamily	888	523	631	653	679	706
Commercial	955	1,067	1,102	1,144	1,239	1,341
Industrial	403	497	497	497	497	497
Institutional/Gov.	235	384	397	412	446	483
Landscape (Irrig.)	893	1,043	1,078	1,119	1,211	1,312
Other Potable	3	-	-	-	-	-
Losses		749	775	794	826	861
Passive Savings		-200	-350	-471	-573	-659
Total (Potable)	7,731	8,705	8,870	8,974	9,255	9,577
Total (Potable + Recycled)	9,487	10,705	11,410	11,514	11,795	12,117

The City of Petaluma purchases water from Sonoma Water, which is supplied by the federal Russian River project. According to the Urban Water Management Plan for Sonoma County, the City of Petaluma bought 7,020 acre-foot per year as of 2015 from the Russian River. That number was expected to increase to 8,273 acre-feet for 2020, and by 2040 demand is projected to reach 9,757 acre-feet. A summary of projected future water demand can be found in **Table 2: Summary of Projected Water Demand for Sonoma Water Agency**. For a single dry-year, the levels of Lake Mendocino and Lake Sonoma could fall to their lowest levels possible to release water. A sharp reduction in water available, such as the 30 percent reduction in August of 2014, effects water dependent uses such as industry and agriculture the most, as well as wildlife habitability, especially for sensitive species such as coho salmon and steelhead. As droughts become longer and more extreme with climate changes, water supply from tradition sources are at risk in the future. However, supply is expected to meet expected projected demand for the future.

Table 2: Summary of Projected Water Demand for Sonoma Water Agency

Water Contractor	Actual	Projected Demand				
	2015	2020	2025	2030	2035	2040
City of Petaluma (acre-ft per year)	7,020	8,737	8,989	9,137	9,478	9,757
Agency Total (acre-ft per year)	43,145	64,439	68,372	70,997	73,045	73,895
<i>Source: Sonoma Water Agency</i>						

The remaining supply for Petaluma Water, not sourced from Sonoma Water, comes from the Petaluma Valley Groundwater Basin. The City maintains 10 water supply wells that pump from the Basin, but only relies on groundwater supply for peak water demand needs and emergency purposes. As of 2020, less

than 1 percent of the City's annual water supply was from groundwater. The City intends to phase out all reliance on its water supply wells in the near future.

Surface Water Trends

The City of Petaluma Water System does not have self-supplied surface water. For Sonoma Water, the primary source of drinking water is Lake Mendocino and Lake Sonoma, which are fed by the Russian River. Water is pumped from the River to many of the cities in Sonoma Valley, including Petaluma. In recent years, the river has seen unprecedented drought with the river flowing at historic lows. In May 2021, the Sonoma Water agency which manages export from the Russian River, is considering decreasing water use from the rivers by 20 percent to mitigate the projected drought projections of the near future. According to the Sonoma Water Agency Urban Water Management Plan for 2015, a reliability analysis indicated that there would be no impact to Petaluma's water supplies during drought years. However, an updated water model analysis from Petaluma's Urban Water Management Plan indicates up to 19 percent reduction in wholesale water supply during Single Dry-Years by 2045. **Error! Bookmark not defined.** An updated analysis of the City's main supply of water (Sonoma Water imported surface water) performed in 2020 indicated that the Sonoma Water system is relatively resistant to impacts from the average precipitation year. However, during a single-dry year scenario, the Sonoma Water supply is expected to have an impact due to reduced volumes at Lake Sonoma. Additionally, based on terms of the Sonoma Water's water rights, Sonoma Water is required to reduce their diversions from the Russian River by 30 percent during a single-dry year. To satisfy the City of Petaluma's potential demand with this dry-year reduced supply, the City of Petaluma would be required to enact the City's water shortage contingency plan. Estimates for water supply from Sonoma Water for average precipitation years are projected to be adequate to satisfy the City of Petaluma's demands until the year 2045, while single dry-year estimates are expected to fall short.

Groundwater Trends

Groundwater levels near the city began to drop in the 1950s until the 1960s when seawater intrusion occurred along the Petaluma River due to increased groundwater pumping. In 1962, the city began importing water from the Russian River to restore groundwater levels. At this time Lake Mendocino and Lake Sonoma became the cities primary source of water (Via the Sonoma County Water System). Since then, groundwater has remained steady with seasonal fluctuations of approximately 10 feet. Long-term hydrological monitoring and planning is conducted by The Petaluma Valley Groundwater Sustainability Agency. The agency is currently drafting a plan to monitor and manage the groundwater supply and that current uses are supported, but climate change remains a threat to water sources in the region. The current levels are approximately 84 percent of 1980 levels, which according to the California Department of Water Resources is due to topographic constraints that prevent groundwater capacity from reaching 100 percent. Although the City gets most of its water from surface sources such as the Russian river, groundwater is a supplemental source of water for the City. Current water used by municipal, rural domestic, and agricultural uses accounted for an average of 4,500 acre-feet of groundwater per year between 2012 and 2018. Total groundwater pumping is projected to decrease to an average of 2,300 acre-feet per year from 2021-2070, with the greatest reduction coming from the agricultural sector due to projected reduction in irrigated acreage.

Petaluma Water Conservation Initiative

The city has a robust water conservation initiative to help residential and commercial customers conserve water. The initiative includes programs, rebates, resources, and other incentives to help Petaluma residents save water. Reducing water demand through domestic water conservation is one of the most impactful ways to mitigate drought conditions. The following is a list of programs and resources included in the water conservation initiative:

- **Complimentary water-saving devices:**

The City offers complimentary water conservation devices to all Petaluma water customers. The devices include shower heads, faucet aerators, hose nozzles, toilet leak detection tabs, and more.

- **High efficiency water fixtures rebates:**

The City offers rebates for the installation of various high efficiency water fixtures. Qualifying fixtures include residential High Efficiency Toilets (HET), commercial High-Efficiency Toilets and Urinals, and high-efficiency clothes washers.

- **Complementary Mulch Madness program:**

This program offers free mulch to residents and businesses who convert grass lawn into a drought-friendly landscape. The program includes free sheet mulching supplies (compost, cardboard, mulch) and delivery, as well as irrigation conversion kits for residential participants.

- **Water-Wise HouseCall Program:**

This program offers residents a free consultation with a trained water efficiency professional. The water professional will assess a residence's current water usage and outline the best ways to maximize water savings.

- **Do-It-Yourself (DIY) Leak Kits:**

The City offers free DIY Leak Kits to all community members. Each kit includes instructions, a practical plumbing handbook, toilet dye tablets, and more.

Dams and Levees

There are several Dams that regulate the flow of water from the lakes in the region to the Petaluma and Russian Rivers. Lake Mendocino was created by the Army Corps of Engineers in 1959 and its discharge is regulated by the Coyote Dam. The Dam has the capacity to hold 118,000 acre-feet of water. The Warm Springs Dam located on Lake Sonoma is used to generate hydroelectricity through turbine generation and can store up to 381,000 acre-feet. The City also owns and operates two floodwalls along the Petaluma River. These two levees are located west of Washington Street. There are several other levees that exist in the planning area and the City plans to pursue certification of these levees to better protect infrastructure through the Local Hazard Mitigation Plan.

Recycled Water

The City of Petaluma Water System uses recycled water for agricultural, golf course, and landscape irrigation. Tertiary recycled water is used onsite at Ellis Creek Water Recycling Facility for flushing toilets, process water, and landscape irrigation. The City is planning an expansion of the urban recycled water system to deliver recycled water to more agricultural customers outside of the City's current service area. The City pursues funding opportunities through the North Bay Water Reuse Authority NBWRA for its

recycled water projects. The NBWRA is a regional water recycling initiative comprised of multiple water agency's recycled water projects for areas north of the San Francisco Bay. There is currently a planned expansion of the recycled water system for Petaluma which includes tertiary treatment expansion, urban pipeline expansion, and ag pipeline expansion. Future expansions to the City's recycled water system have the potential to offset potable water demand for uses that do not necessarily require potable water.