

18. Utilities and Service Systems

This chapter describes the existing utilities and service systems in the City of Livermore, which includes water facilities and service, wastewater conveyance and treatment, and storm drainage systems.

18.1 REGULATORY FRAMEWORK

This section summarizes regulations for water facilities and service, wastewater, and storm drainage at the federal, state, and local levels.

18.1.1 FEDERAL REGULATIONS

18.1.1.1 FEDERAL SAFE DRINKING WATER ACT (SDWA)¹

The Safe Drinking Water Act (SDWA) was established to ensure the protection of the quality of drinking water in the United States. It authorizes the Environmental Protection Agency (EPA) to establish minimum health standards for public water system owners or operators to comply. Water suppliers are required to remove impurities or contaminants that exceed the maximum levels allowed. The primary regulatory agency in California with regards to enforcement of these standards is the Department of Health Services. If the water supplied by these agencies is not up to standard, the water supplier must notify its customers.

18.1.1.2 FEDERAL CLEAN WATER ACT²

The federal Clean Water Act creates the framework for regulating pollutant discharge into the waters of the United States and provides water quality standards for surface waters. The Clean Water Act was initially enacted in 1948 but was significantly revised and expanded in 1972.

The EPA, under the Clean Water Act, established wastewater standards and made it unlawful to discharge pollutants from a point source to any navigable waters without obtaining a permit. Some of these point sources include pipes and man-made drainage channels that drain industrial facilities or commercial facilities.

¹ Summary of the Safe Drinking Water Act, Retrieved September 8, 2021, from <https://www.epa.gov/laws-regulations/summary-safe-drinking-water-act>.

² Summary of the Clean Water Act, Retrieved September 8, 2021, from <https://www.epa.gov/laws-regulations/summary-clean-water-act>.

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18.1.1.3 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM³

The National Pollutant Discharge Elimination System (NPDES) program was created in 1972 by the federal Clean Water Act. The NPDES program helps regulate water pollution by imposing regulations that control the pollutant at the source of discharge. The EPA has authorized state, tribal, and territorial governments the ability to perform administrative, enforcement and permitting aspects of the NPDES program.

18.1.1.4 NATIONAL FLOOD INSURANCE ACT OF 1968⁴

The City of Livermore has been a regular member of the National Flood Insurance Program. In participating communities that adopt adequate floodplain management policies, the Federal Emergency Management Agency (FEMA) is allowed to make affordable insurance protection against losses from flooding available to property owners. Discount on flood insurance policies is possible through implementation of flood protection and community awareness for a Class 9 rating in the Community Rating System (CRS).

18.1.2 STATE REGULATIONS

18.1.2.1 PORTER-COLOGNE WATER QUALITY CONTROL ACT⁵

The Porter-Cologne Water Quality Act (Water Code Sections 13000 et seq.) passed in California in 1969 and was amended in 2013. It is the basic water quality control law for California. Under this act, the State Water Resources Control Board (SWRCB) has authority over state water rights and water quality policy. The act divided the state into nine regional basins, each under the jurisdiction of a Regional Water Quality Control Board (RWQCB) to oversee water quality on a day-to-day basis at the local and regional levels. RWQCBs engage in various water quality functions in their respective regions and regulate all pollutant or nuisance discharges that may affect either surface water or groundwater. The Livermore Sphere of Influence (SOI) is overseen by the San Francisco Bay RWQCB (Region 2).

18.1.2.2 URBAN WATER MANAGEMENT PLANNING ACT CALIFORNIA SENATE BILLS 610 AND 221⁶

Senate Bill (SB) 610 and SB 221 was amended in 2001 to ensure coordination between the local water and land use decisions to confirm that California cities and communities are provided with adequate water supply. Specific projects are required to prepare a water supply assessment (WSA). The WSA is composed of information regarding existing and forecasted water demands as well as information pertaining to available water supplies for the new development.

³ State of California, No Date. State Laws Porter-Cologne Act, Retrieved September 8, 2021, from https://www.waterboards.ca.gov/water_issues/programs/nps/encyclopedia/0a_laws_policy.html

⁴ City of Livermore, 2019. 2019 Community Services and Infrastructure Report, Livermore, CA.

⁵ State of California, No Date. State Laws Porter-Cologne Act, Retrieved September 8, 2021, from https://www.waterboards.ca.gov/water_issues/programs/nps/encyclopedia/0a_laws_policy.html,

⁶ Wiggins, Patricia, July 10, 2001. SB 610 Senate Bill - Bill Analysis, Retrieved September 8, 2021, from http://www.leginfo.ca.gov/pub/01-02/bill/sen/sb_0601-0650/sb_610_cfa_20010710_173214_asm_comm.html,

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Projects required to prepare a WSA include:

- Residential developments consisting of more than 500 homes.
- A business employing more than 1,000 people or having more than 500,000 square feet.
- A commercial office building employing more than 1,000 people or having more than 250,000 square feet of floor space.
- A hotel having more than 500 rooms.
- An industrial complex with more than 1,000 employees and occupying more than 40 acres of land, or
- A mixed-use project that requires the same or greater amount of water as a 500 dwelling-unit project.

SB 221 requires written verification that there is a sufficient water supply available for new residential subdivisions that include over 500 dwelling units. The verification must be provided before commencement of construction for the project.

General Plan Updates are not required to prepare a WSA.

18.1.2.3 CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT⁷

The California Urban Water Management Planning Act and Section 10620 of the Water Code requires that every urban water supplier within California shall prepare and adopt an Urban Water Management Plan (UWMP) as well as update it every five years. The UWMP describes the service area of the water supplier, projected 20-year water supply and demand for the service area in normal years, dry years, and multiple dry years, as well as water recycling strategies.

18.1.2.4 CALIFORNIA SUSTAINABLE GROUNDWATER MANAGEMENT ACT⁸

The California Sustainable Groundwater Management Act (SGMA), amended in 2014, consists of Assembly Bill (AB) 1739, SB 1168, and SB 1319. The SGMA provides the framework for sustainable groundwater management. The SGMA requires governments and water agencies that deal with high- and medium-priority basins, as assessed by California's Department of Water Resources, to halt overdraft and implement measures to bring the groundwater basins back into sustainable levels of pumping and recharge. As the sustainability plans are implemented, the respective basins should return back into sustainable levels within 20 years. The SGMA supports local agencies by providing guidance, financial, and technical assistance.

⁷ State of California, No Date. Urban Water Management Plans, Retrieved September 8, 2021, from <https://www.water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Urban-Water-Management-Plans>,

⁸ State of California, No Date. SGMA Groundwater Management, Retrieved September 8, 2021, from <https://www.water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management>

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18.1.2.5 CALIFORNIA WATER CONSERVATION ACT OF 2009⁹

The Water Conservation Act of 2009, also known as SB X7-7, requires all California water suppliers to increase their water-use efficiencies. The goal of the bill is to reduce urban water usage by 20 percent by 2020. Urban water suppliers who do not meet the 20 percent by 2020 objective will be ineligible for state water grants or loans. Water suppliers must determine baseline water usage and set goals to meet specified water reductions by certain years.

18.1.2.6 2019 CALIFORNIA PLUMBING CODE¹⁰

The 2019 California Plumbing Code is an overarching document that provides guidelines and requirements for residential and non-residential plumbing. The purpose of the plumbing code is to provide a universal document for reference and to prevent conflicting plumbing codes within local jurisdictions. Some topics covered in the code include potable and non-potable water systems, water fixtures, and recycled water systems.

18.1.2.7 2019 CALGREEN BUILDING CODE¹¹

The State of California adopted the CALGreen mandatory green building standard codes in 2020. The 2019 CALGreen building codes are effective July 2020. The goals and initiatives of the CALGreen building code is to reduce greenhouse gas emissions from buildings, reduce water consumption, and promote environmentally friendly and cost-effective places to live and work.

18.1.2.8 STATE WATER RESOURCES CONTROL BOARD¹²

On May 2, 2006, the SWRCB adopted Statewide General Waste Discharge Requirements (Order No. 2006-0003) and a monitoring and reporting program (Order No. WQ-2013-0058-EXEC) for all publicly owned sanitary sewer collection systems in California with more than one mile of sewer pipes. The order provides a consistent statewide approach to reducing sanitary sewer overflows (SSO). The Waste Discharge Requirements require public agencies that own or operate sanitary sewer systems to develop and implement Sewer System Management Plans (SSMPs) and report all SSOs to the SWRCB's online reporting system. The SWRCB has delegated authority to nine RWQCBs to enforce these requirements within their regions.

⁹ California Department of Water Resources, The Water Conservation Act of 2009, Retrieved September 8, 2021, from <https://water.ca.gov/programs/water-use-and-efficiency/sb-x7-7>

¹⁰ State of California, No Date. SGMA Groundwater Management, Retrieved September 8, 2021, from <https://www.water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management>

¹¹ California Building Standards Commission, 2017. Guide to the 2019 California Green Building Standards Code: Non-residential: CALGreen. Sacramento, CA.

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The San Francisco Bay RWQCB (Region 2) issues and enforces NPDES permits in the SOI. NPDES permits allow the RWQCB to regulate where and how waste is disposed, including the discharge volume and effluent limits of waste and the monitoring and reporting responsibilities of the discharger. The RWQCB is also charged with conducting inspections of permitted discharges and monitoring permit compliance.

18.1.2.9 SANITARY DISTRICT ACT OF 1923¹³

The Sanitary District Act of 1923 (California Health and Safety Code Section 6400 et seq.) authorizes the formation of sanitation districts and enables the sanitation districts to construct, operate, and maintain facilities for the collection, treatment, and disposal of wastewater.

18.1.3 LOCAL REGULATIONS

18.1.3.1 URBAN WATER MANAGEMENT PLAN¹⁴

To comply with the Urban Water Management Planning Act and the California Water Conservation Act of 2009, Cal Water Livermore District, and Livermore Municipal Water (LMW), who are the water providers to the City of Livermore, adopted their respective 2020 UWMPs in July 2020.

18.1.3.2 WATER SHORTAGE CONTINGENCY PLAN¹⁵

Cal Water Livermore District and LMW published a Water Shortage Contingency Plan in June 2021. The water shortage contingency plan is laid out in two separate reports both containing stages of response to water shortages. Some of these water shortages can include drought or sudden catastrophic supply interruptions. The goal of these plans is to ensure there are necessary resources and management responses to protect and preserve human health and environmental assets.

18.1.3.3 2019 COMMUNITY SERVICES AND INFRASTRUCTURE REPORT¹⁶

The 2019 Community Services and Infrastructure Report (CSIR) evaluates the existing and future needs of public services, including water supply and distribution and wastewater. The report summarizes where the City's water supply comes from, projected demand, projects that have helped to increase water supply, and the different municipalities associated with providing water to the region.

18.1.3.4 2021 CITYWIDE ASSET MANAGEMENT PLAN¹⁷

The Asset Management Plan is a large-scale effort by the City of Livermore to document the age of all assets in the city, identify maintenance needs, and plan for replacement of facilities. This program is ongoing and the effort revolving around wastewater and water utility services is in progress. For stormwater assets, the City is currently working on the Storm Drain Master Plan and Stormwater Asset

¹⁴ California Water Service, 2020. 2020 Urban Water Management Plan, Livermore District.

¹⁵ Livermore Municipal Water, 2020. 2020 Water Shortage Contingency Plan.

¹⁶ City of Livermore, 2019. 2019 Community Services and Infrastructure Report.

¹⁷ City of Livermore, 2021. 2021 Citywide Asset Management Plan.

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Condition Assessment Projects. The two projects will identify capacity- and condition-related limitations within the system and propose CIP and O&M programs.

18.1.3.5 CITY OF LIVERMORE MASTER FEE SCHEDULE¹⁸

The Master Fee Schedule is a yearly study in which service charges and connection fees are to be assessed by the City of Livermore and fees updated accordingly. The revenues generated from these fees shall finance the utility service funds, which are used for construction, reconstruction, operation, and maintenance of facilities.

18.1.3.6 LIVERMORE STREAM MAINTENANCE PROGRAM DRAFT MANUAL

The Livermore Stream Maintenance Program was developed by the City of Livermore to improve and define the maintenance and management of the engineered/ modified and non-modified creek channels surrounding the city. The maintenance is defined as removing debris to improve flows and protect against flooding, in channel grading, or channel widening or straightening to improve flows.

18.1.3.7 LIVERMORE 2003-2025 GENERAL PLAN - WATER¹⁹

The City of Livermore 2003-2025 General Plan contains policies and goals addressing water use and conservation, including conserving existing water supplies by practicing efficient and sustainable water use. Table 18-1 provides a summary of the goals, objectives, policies, and actions related to water use and supply.

TABLE 18-1	CITY OF LIVERMORE 2003-2025 GENERAL PLAN OBJECTIVES, POLICIES, AND ACTIONS PERTAINING TO WATER
Objective INF-1.1	Plan, manage and develop the City's public water treatment, storage and distribution systems in a logical, timely and appropriate manner.
Policy INF-1.1-P1	Potable water shall be available to the City's residents and businesses.
Policy INF-1.1-P2	The City shall maintain a water system capable of sustaining required fire flows at all times. The City shall work with California Water Service Company to ensure its system meets required fire flows.
Policy INF-1.1-P3	Support the development of additional sources of irrigation water for vineyards and other cultivated agriculture by investigating recycled water and development of other supply and delivery resources.
Policy INF-1.1-P4	The City shall work with Zone 7 to consider developing a pump monitoring and cost allocation system to cover the cost of new potable water in the event that additional supplies are needed.
Policy INF-1.1-P5	Development will not result in a reduction of water quality below the standards set forth in the state and federal laws and regulations
Action INF-1.1-A1	Review and update as necessary ordinances, policy procedures and/ or fee programs establishing the requirement and mechanisms for collecting financial contributions from new development.
Action INF-1.1-A2	Update the master plan prepared for water as necessary for the areas supplied by the city to identify appropriate storage, pumping and distribution systems to support the current and proposed land use development projections in the General Plan.

¹⁸ City of Livermore, 2021. Master Fee Schedule, Retrieved October 8, 2021, from <https://www.cityoflivermore.net/home/showpublisheddocument/6317/637578116494830000>

¹⁹ City of Livermore, 2004. 2003-2025 City of Livermore General Plan.

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TABLE 18-1 CITY OF LIVERMORE 2003-2025 GENERAL PLAN OBJECTIVES, POLICIES, AND ACTIONS PERTAINING TO WATER

Action INF-1.1-A3	Identify and budget for additional operation costs to support the expanded water storage, pumping and distribution system.
Action INF-1.1-A4	Implement the capital improvement project recommendations contained in the updates to the master plan prepared for water.
Action INF-1.1-A5	Work with Cal Water to improve their existing infrastructure to meet City and fire flow, pressure and storage standards.
Action INF-1.1-A6	Prepare a multi-year schedule in the Capital Improvement Program of water infrastructure improvements.
Action INF-1.1-A7	Criteria to be used for the design of the potable water system shall be in the master plan prepared for water, including maximum day water demand, peak hour maximum day water demand, fire flow requirements, water storage requirements, and adequate water pressure.
Action INF-1.1-A8	All new development projects shall be responsible for constructing an adequate potable water distribution system and paying water connection fees to construct additional necessary storage, pumping and distribution facilities.
Objective INF-3.2	Require coordination between land use planning and water facilities and service to ensure that adequate water supplies are available for proposed development.
Policy INF-3.2-P1	The potable water distribution and storage system shall be sized to serve development anticipated under the general plan and shall not provide for additional growth and development beyond that anticipated under the General Plan.
Policy INF-3.2-P2	The approval of new development shall be conditioned on the availability of sufficient water supply, storage and pressure requirements from the City, California Water Service Company and Zone 7 for the project as applicable.
Policy INF-3.2-P3	Structures with plumbing that are located within City limits shall connect to the water system, unless distance from public water system or other factors indicate a need for exemption.
Policy INF-3.2-P4	Extensions of water service beyond the City approved service area shall be prohibited. Exceptions shall be made for unusual public health and safety hazards, as determined by the city council.
Policy INF-3.2-P5	Water storage and distribution system extensions beyond the approved area shall be prohibited unless such water services are needed to serve properties within the City's Urban Growth Boundary (UGB).
Policy INF-3.2-P6	A water storage tank site shall be conducted to identify the location of proposed water storage tanks. The location selection and construction of these storage tanks should seek to minimize the visual and environmental impacts that such facilities could have to the surrounding areas.
Policy INF-3.2-P6	Major utility lines, such as water supply main and fire protection mains, shall be carefully planned where they cross a seismic fault. They shall cross at right angles, or nearly so, to be accessible for rapid repair, and to be provided with safety features such as automatic shutoff valves, switches and expansion joints. Other equipment shall be provided to ensure minimal adverse impact on adjacent and surrounding areas to facilitate restoration of service in the event of fault displacement.
Policy INF-3.2-P7	The design of water distribution systems shall seek to minimize crossings of wetlands or creeks. Water lines that cross existing creeks should be located at road crossings and use sewer bridges to span the creek at crossings, where possible, or go under creeks.
Policy INF-3.2-P8	Installation of the water distribution system should occur concurrently with construction of new roadways to maximize efficiency and minimize disturbance to construction activity.
Policy INF-3.2-P9	Rural development using individual wells shall be responsible for conforming to applicable health standards and for obtaining the necessary permits from the state of California Department of Health Services, Alameda County and Zone 7.
Objective INF-1.3	Identify potential water conservation and recycling opportunities that could be served by the City's existing recycle water system.
Policy INF-1.3-P1	Voluntary reductions by existing users in per capita water use shall be encouraged.
Policy INF-1.3-P2	Projects deemed appropriate for the use of recycled water shall be required to use recycled water, when available, for uses outlined in the state water code.

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TABLE 18-1 CITY OF LIVERMORE 2003-2025 GENERAL PLAN OBJECTIVES, POLICIES, AND ACTIONS PERTAINING TO WATER

Policy INF-1.3-P3	The City shall adopt a series of best management practices for water conservation measures that will be mandatory in new development and strongly encouraged in existing developments.
Policy INF-1.3-P4	Require compliance with the state and City's mandatory water efficient landscape ordinance.
Action INF-1.3-A1	Develop and provide incentives for existing and future customers to reduce water consumption.
Action INF-1.3-A2	Develop and institute a City-sponsored program for existing development. Develop a program for existing developments that is based on a voluntary participation with incentives to achieve specific targets for water conservation. Examples include: <ul style="list-style-type: none"> (a) Ultra-low flush toilets (b) Plumbing retrofits (c) Leak detection (d) Efficiency standards for water-using appliances and irrigation devices, and industrial and commercial processes (e) Gray Water use (f) Swimming pool and spa conservation measures such as covers to reduce evaporation (g) Xeriscape Landscape design standards
Action INF-1.3-A3	Require all new industrial, commercial and office development within pressure Zone 1 to use reclaimed water for landscape irrigation, where available.

Source: City of Livermore 2003-2025 General Plan.

18.1.3.8 LIVERMORE MUNICIPAL CODE - WATER

The Livermore Municipal Code includes sections regarding water, distribution, and conservation, as shown in Table 18-2.

TABLE 18-2 LIVERMORE MUNICIPAL CODE SECTIONS RELATED TO WATER

Chapter and Section	Title	Description
13.04	General Provisions	Defines authority, rights, and restrictions for water system
13.08	Service and Service Connections	Lays out application, installation charges, and requirements for the different type of water connections
13.09	Backflow Prevention	Discusses purpose, responsibility, location, and inspection of backflow preventers
13.12	Water Main Extensions	Determines size, application procedures, work performed by, and costs associated with options
13.16	Water Meters	Defines ownership, installation, cost, and maintenance procedures
13.20	Rates and Charges	Discusses billing period, connection fees, payment, and restoring service
13.24	Zone 7 Connection Charges	Defines permit process, determination of charges, service notifications
13.25	Water Efficient Landscape	Discusses design, submittal requirements, existing landscape, irrigation scheduling, and violations
13.26	Water Conservation	Discusses contingency plan, conservation measures, exemptions, and penalties
13.27	Mandatory Drought Conservation Measures	Defines purpose, wasteful water practices, penalties

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TABLE 18-2 LIVERMORE MUNICIPAL CODE SECTIONS RELATED TO WATER

Chapter and Section	Title	Description
Source: Livermore Municipal Code, June 2021		

18.1.3.9 LIVERMORE 2003-2025 GENERAL PLAN - WASTEWATER²⁰

The City of Livermore 2003-2025 General Plan contains goals, objectives, policies, and actions that address the management of wastewater infrastructure, as listed in Table 18-3.

²⁰ City of Livermore, 2004. City of Livermore 2003-2025 General Plan.

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TABLE 18-3	CITY OF LIVERMORE 2003-2025 GENERAL PLAN OBJECTIVES, POLICIES, AND ACTIONS PERTAINING TO WASTEWATER
Objective INF-2.1	Plan, manage, and develop wastewater collection, treatment and disposal systems in a logical, timely and appropriate manner.
Policy INF-2.1-P1	Municipal sewer treatment shall be available to the City's residents and businesses.
Policy INF-2.1-P2	Septic tanks shall be allowed only in agricultural zones if approved by Zone 7 and the Alameda County Health Department.
Policy INF-2.1-P3	The approval of new development shall be conditioned on the availability of adequate long-term capacity of wastewater treatment, conveyance and disposal sufficient to service the proposed development.
Policy INF-2.1-P4	<p>The City shall implement a wastewater disposal master plan designed to provide for the disposal of peak wet weather flows anticipated under buildout of the General Plan. No new development entitlements shall be granted once the Average Dry Weather Flow reaches 7.0 million gallons per day at the Water Reclamation Plant until a master plan for sewer has been adopted that addresses the capacity shortfall, including a schedule for implementation. This master plan may include any, or a combination of the following components:</p> <ul style="list-style-type: none"> (a) Increased water reclamation, storage and disposal via agricultural irrigation and/or other uses. (b) Increased water reclamation, storage within an approved Zone 7 facility such as the Chain of Lakes, and disposal via irrigation within Livermore and the surrounding vicinity. (c) The purchase of additional capacity in the LAVWMA export pipeline. This option must be approved by the voters of Livermore through a subsequent ballot measure. (d) Other options as may be developed that are more cost effective and/or environmentally superior.
Policy INF-2.1-P5	All new development shall demonstrate to the City that the downstream sanitary sewer system is adequately sized.
Policy INF-2.1-P6	Structure with plumbing that are located within City limits shall connect to the public wastewater collection system, unless topography, or distance from the public sewer system indicate a need for an exemption.
Policy INF-2.1-P7	Major sewer collection and transmission systems shall be carefully planned where they cross a seismic fault. They shall cross at right angles, or nearly so, be accessible for rapid repair, and be provided with safety features such as automatic switches, expansion joints and sufficient drop between manholes to accommodate vertical displacement across faults. Other equipment shall be provided to ensure minimal adverse impact on adjacent and surrounding areas and to facilitate restoration of service in the event of fault displacement.
Policy INF-2.1-P8	Sewer collection and transmission systems shall be designed and constructed in such a manner as to minimize potential inflow and infiltration.
Policy INF-2.1-P9	The criteria used to design the sanitary sewer system shall be placed in the master plan prepared for sewer as well as the guidelines for facilities planning, including reliance on gravity drainage to minimize pumping to the extent feasible and basing pipe size on the wet weather flow required per the master plan prepared for sewer.
Policy INF-2.1-P10	All new development projects shall be responsible for construction of a sanitary sewer collection and conveyance system as part of the Citywide infrastructure plan. This system shall be designed to serve developments within the approved General Plan only and shall not be extended to serve uses outside of the Urban Area.
Policy INF-2.1-P11	The sanitary sewer system shall be designed and constructed in such a manner as to minimize potential environmental impacts.
Policy INF-2.1-P12	The City of Livermore shall pursue the implementation of Water Reclamation Plant capacity improvements necessary to accommodate the peak hour wet weather flows anticipated under buildout of the General Plan.
Action INF-2.1-A1	<p>A1 – Prepare a master plan for sewer and update as needed, to identify current deficiencies and quantify needs based on development patterns established in the General Plan. Identify necessary improvements and establish priorities for these improvements. Issues should include:</p> <ul style="list-style-type: none"> (a) Identify the most reliable and cost effective disposal options. (b) Comprehensive analysis of the overall collection system.

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TABLE 18-3 CITY OF LIVERMORE 2003-2025 GENERAL PLAN OBJECTIVES, POLICIES, AND ACTIONS PERTAINING TO WASTEWATER

	<ul style="list-style-type: none"> (c) Evaluation of feasibility of alternative rehabilitation techniques. (d) Infiltration and inflow (I/I) analysis and effective ways to minimize I/I. (e) Water conservation measures.
Action INF-2.1-A2	Improvements that increase the capacity of the City's Water Reclamation Plant shall undergo environmental analysis pursuant to the California Environmental Quality Act, and shall, at a minimum, consider height limits in proximity to the Municipal Airport, effects on the underlying water aquifer, effects on special status wildlife habitat, and effects of secondarily treated effluent on the San Francisco Bay and Arroyo Las Positas.
Action INF-2.1-A3	In areas of high water table, construction materials and techniques shall be used so as to minimize potential inflow and infiltration. Such techniques may include use of water pipelines that have joint designs capable of withstanding higher pressure than standard sewer pipes, using plastic pipe with welded joints, or other pipe types approved by the City.
Action INF-2.1-A4	Enforce the City code requiring all properties with plumbing, located within 200 feet of wastewater sewer, to connect to the public sewer system.
Action INF-2.1-A5	Sewer mains proposed to be constructed parallel to and within creek corridors shall be located within a dedicated easement along the outer boundary of the corridor to avoid impacting creek habitat.
Action INF-2.1-A6	Design of the sewer collection system shall seek to minimize crossings of wet lands or creeks. Sewer mains that cross existing or proposed creeks should be located at road crossing, use sewer bridges to span the creek at crossing where possible (depending on depth of grade), or go under the creek.
Action INF-2.1-A7	Installation of the sanitary sewer system should occur concurrent with construction of new roadways to maximize efficiency and minimize disturbance due to construction activity.
Action INF-2.1-A8	Sections of impermeable backfill ("trench dams") should be constructed across sewer trenches at the boundaries of preferential flow paths to prevent groundwater flows within the preferential flow paths from being diverted along the alignment of the sewer path.
Action INF-2.1-A9	The City shall utilize sanitary sewer connection fees collected from new development and elsewhere within the City to construct necessary improvements to the City's trunk sewer mains (as identified in the latest master plan prepared for sewer) in order to accommodate anticipated cumulative development.
Objective INF-2.2	Enforce City wastewater regulations
Policy INF-2.2-P1	Restaurants and others that discharge grease into the wastewater treatment system shall be required to reduce impacts through individual or collective pretreatment facilities that retain wastewater long enough to permit solids to settle and oil and grease to separate.
Policy INF-2.2-P2	Regulations related to the discharge of mud and silt into the wastewater treatment system shall be enforced.
Action INF-2.2-A1	Enforce current requirements for industrial and commercial users to install pretreatment facilities to reduce the loading of toxic and conventional pollutants to the Livermore Water Reclamation Plant.
Action INF-2.2-A2	Conduct outreach and education to industrial and commercial users to implement pollution prevention techniques to reduce pollutant loading as much as possible.

Source: *City of Livermore 2003-2025 General Plan*.

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18.1.3.10 LIVERMORE MUNICIPAL CODE - WASTEWATER

The Livermore Municipal Code includes sections pertaining to wastewater, as shown in Table 18-4.

TABLE 18-4 LIVERMORE MUNICIPAL CODE SECTIONS RELATED TO WASTEWATER

Chapter and Section	Title	Description
13.28	Wastewater Connection and Construction	Describes rules and regulations, connection fees, and service laterals
13.32	Wastewater Collection and Treatment System	Discusses various requirements, permitting, and monitoring systems
13.36	Sewer Service and Use Charges	Describes types of customers, payments, and refunds

Source: Livermore Municipal Code, June 2021

18.1.3.11 CITY OF LIVERMORE 2017 SEWER MASTER PLAN²¹

The 2017 Sewer Master Plan defines the City's long-term wastewater collection system goals and capacity needs. The plan also provides a list of projects with associated priority for sewer upgrades needed to address current deficiencies.

18.1.3.12 CITY OF LIVERMORE 2019 SEWER SYSTEM MANAGEMENT PLAN²²

The 2019 City of Livermore SSMP establishes the policy direction for how the City manages the wastewater collection system. The SSMP provides direction on system management to ensure reliable service, planned projects to increase capacities to allow for peak sewer flows, and strategies to minimize the number of sewer overflows. The SSMP meets the requirements of the RWQCB and the Statewide Waste Discharge Requirements. It is important that system overflows are minimized because they pose as a hazard to natural drainage systems and the environment.

18.1.3.13 LIVERMORE 2003-2025 GENERAL PLAN - STORMWATER²³

The City of Livermore 2003-2025 General Plan contains goals, objectives, policies, and actions addressing management of stormwater and storm drain infrastructure, as listed in Table 18-5.

²¹ City of Livermore, 2017. *2017 Sewer Master Plan*.

²² City of Livermore, 2019. *Sewer System Management Plan*, Retrieved October 15, 2021, from <https://www.cityoflivermore.net/home/showpublisheddocument/1601/637632432352800000>

²³ Fact Sheet, California Water Boards, June 12, 2013, Retrieved September 8, 2021, from https://www.waterboards.ca.gov/publications_forms/publications/factsheets/docs/region_brds.pdf

²³ City of Livermore, 2004. *City of Livermore 2003-2025 General Plan*.

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TABLE 18-5 CITY OF LIVERMORE 2003-2025 GENERAL PLAN OBJECTIVES, POLICIES, AND ACTIONS PERTAINING TO STORMWATER

Objective INF-3.1	Plan, manage and develop the City's stormwater collection system in a logical, timely and appropriate manner.
Policy INF-3.1-P1	Design local storm drainage improvements to carry appropriate design-year flows resulting from build out of the General Plan.
Action INF-3.1-A1	Complete a new master plan for storm drainage facilities and update as needed, in order to accurately evaluate the storm drainage flows and determine appropriate facility improvements consistent with the General Plan.
Action INF-3.1-A2	Prioritize storm drainage improvements recommended in the storm drainage master plan and implement the projects through the City's Capital Improvement Program.
Objective INF-3.2	Encourage coordination between land use planning, site design and stormwater pollution control.
Policy INF-3.2-P1	All new development projects shall be responsible for constructing a stormwater collection system and contributing stormwater collection fees to construct additional necessary facilities. These fees include City storm drain fees as well as Zone 7 regional storm drainage fees.
Policy INF-3.2-P2	Criteria used to design the stormwater system shall be in the master plan prepared for storm drainage.
Policy INF-3.2-P3	The City shall take all necessary measures to regulate runoff from urban uses to protect the quality of surface and ground-waters and other resources from detrimental conditions.
Policy INF-3.2-P4	Installation of stormwater collection systems should occur concurrently with construction of new roadways to maximize efficiency.
Action INF-3.2-A1	Revise the Subdivision Ordinance and other Municipal Codes sections to reduce the creation of impermeable surfaces in new development. Examples of strategies to reach this goal might include: <ul style="list-style-type: none"> (a) Requiring the use of vegetative swales (biofilters). (b) Requiring detention/infiltration basins.
Action INF-3.2-A2	Existing property owners shall be encouraged, or required as appropriate, to reduce stormwater runoff by reducing impermeable surfaces.
Objective INF-3.3	Maintain creeks and arroyos in as natural a state as possible, while maintaining the health and safety of residents, providing flood control, preserving habitat and providing recreational use.
Policy INF-3.3-P1	Stream modifications should only be allowed for development in order to better contain flood flows, re-route stormwater to restore creek conveyance capacity and enhance groundwater recharge, stabilize creek beds and banks and control erosion, remove sediment and debris, provide public access for maintenance and emergency vehicles, provide for trails and recreational facilities, restore natural habitat and wetland areas and provide for water filtration.
Policy INF-3.3-P2	Any stream modifications and flood control structure improvements shall be done in accordance with appropriate engineering design, resource agency approvals, and current environmental restoration best management practices.
Policy INF-3.3-P3	Recreational opportunities adjacent to the arroyos and creeks shall be incorporated where possible. Primary bikeways to the arroyo and creek corridors as outlined in a master plan prepared for bikeways and trails.
Policy INF-3.3-P4	Arroyos shall not be channelized (i.e. converted to a trapezoidal form) or concrete lined. Modifications should only be allowed for public safety reasons. Flood control improvements such as capacity enhancement shall be done in accordance with appropriate engineering design and current environmental best practices.
Policy INF-3.3-P5	New Development shall be required to incorporate appropriate measures to minimize the impacts of stormwater runoff to local creeks and channels.
Action INF-3.3-A1	Educational opportunities regarding habitat and natural resources on local creeks and arroyos may be provided, as appropriate.
Action INF-3.3-A2	The City will work cooperatively with the parks districts, various County and private groups and organizations as appropriate to determine the site specific design criteria and conditions of acceptance as well as the long-term ownership and maintenance responsibilities. Expertise, long-term maintenance capability, acceptability of the improvements, type of facility, use, primary purpose of facility are among the factors that shall be used to evaluate agency, group or organization responsibility.

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TABLE 18-5 CITY OF LIVERMORE 2003-2025 GENERAL PLAN OBJECTIVES, POLICIES, AND ACTIONS PERTAINING TO STORMWATER

Action INF-3.3-A3	The City shall continue to cooperate with Zone 7 to improve and maintain the flood control system.
Action INF-3.3-A4	The City shall work with other agencies to determine the appropriate ownership and long-term maintenance responsibilities for each creek and arroyo property or easement.

Source: *City of Livermore General Plan 2003-2025*.

18.1.3.14 LIVERMORE MUNICIPAL CODE – STORMWATER

The Livermore Municipal Code includes various directives to ensure the safe, efficient management of stormwater in Livermore, as shown in Table 18-6.

TABLE 18-6 LIVERMORE MUNICIPAL CODE SECTIONS RELATED TO STORMWATER

Chapter and Section	Title	Description
13.44	Storm Drainage Facilities	Describes construction, fees, and approval procedures
13.45	Stormwater Management and Control Program	Discusses discharge, inspection, and violations
13.46	Stormwater System Enterprise Fund	Determines revenue, calculation of service charges, and collection

Source: Livermore Municipal Code, June 2021

18.1.3.15 2009 STORM DRAIN MASTER PLAN ADDENDUM²⁴

The 2009 Storm Drain Master Plan Addendum describes the improvements to address current deficiencies and the future improvements needed to support growth. Existing improvements from this report are still based on the 2004 Storm Drain Master Plan. This document looks to identify culvert improvement recommendations as well as capital improvement projects to support new development and reflect the costs associated with those improvements.

18.1.3.16 2021 DRAFT STORM DRAIN MASTER PLAN²⁵

Once adopted, the 2021 Draft Storm Drain Master Plan will supersede the 2004 Storm Drain Master Plan. The 2021 Draft Storm Drain Master Plan identifies and prioritizes capital improvement projects. The Draft Plan also identifies stormwater inundation areas that need stormwater infrastructure improvements.

²⁴ City of Livermore, 2009. *Storm Drain Master Plan Addendum*.

²⁵ City of Livermore, 2021. *Storm Drain Master Plan*.

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18.2 EXISTING CONDITIONS

18.2.1 WATER FACILITIES AND SERVICE

18.2.1.1 EXISTING WATER SUPPLY^{26,27,28}

The City of Livermore receives potable water and raw water from a number of different sources.

The Zone 7 Water Agency (Zone 7) provides wholesale water for the entire Tri-Valley. Zone 7 manages the Livermore Valley Groundwater Basin and is the designated Groundwater Sustainability Agency (GSA) for the basin in accordance with the Sustainable Groundwater Management Act (SGMA) adopted by the State Legislature in 2014.

The California Water Service (Cal Water) and LMW purchase water from Zone 7 and provides service to the customers within the City Limits. Cal Water is a private utility company that serves districts throughout California. Livermore Municipal Water (LMW) is the City of Livermore's water utility and is part of the City's Water Resources Division.

Figure 18-1 shows the service boundaries for Cal Water and LMW. Cal Water provides water to the downtown area, central, and southern regions of the city, and LMW serves the northwest, northeast, and east portions of the City Limits.

The City and County of San Francisco's Hetch Hetchy supply system provides water to the Lawrence Livermore National Laboratory and Sandia National Laboratory. It should be noted that LMW's service boundary extends across these areas although they do not provide service to the laboratories.

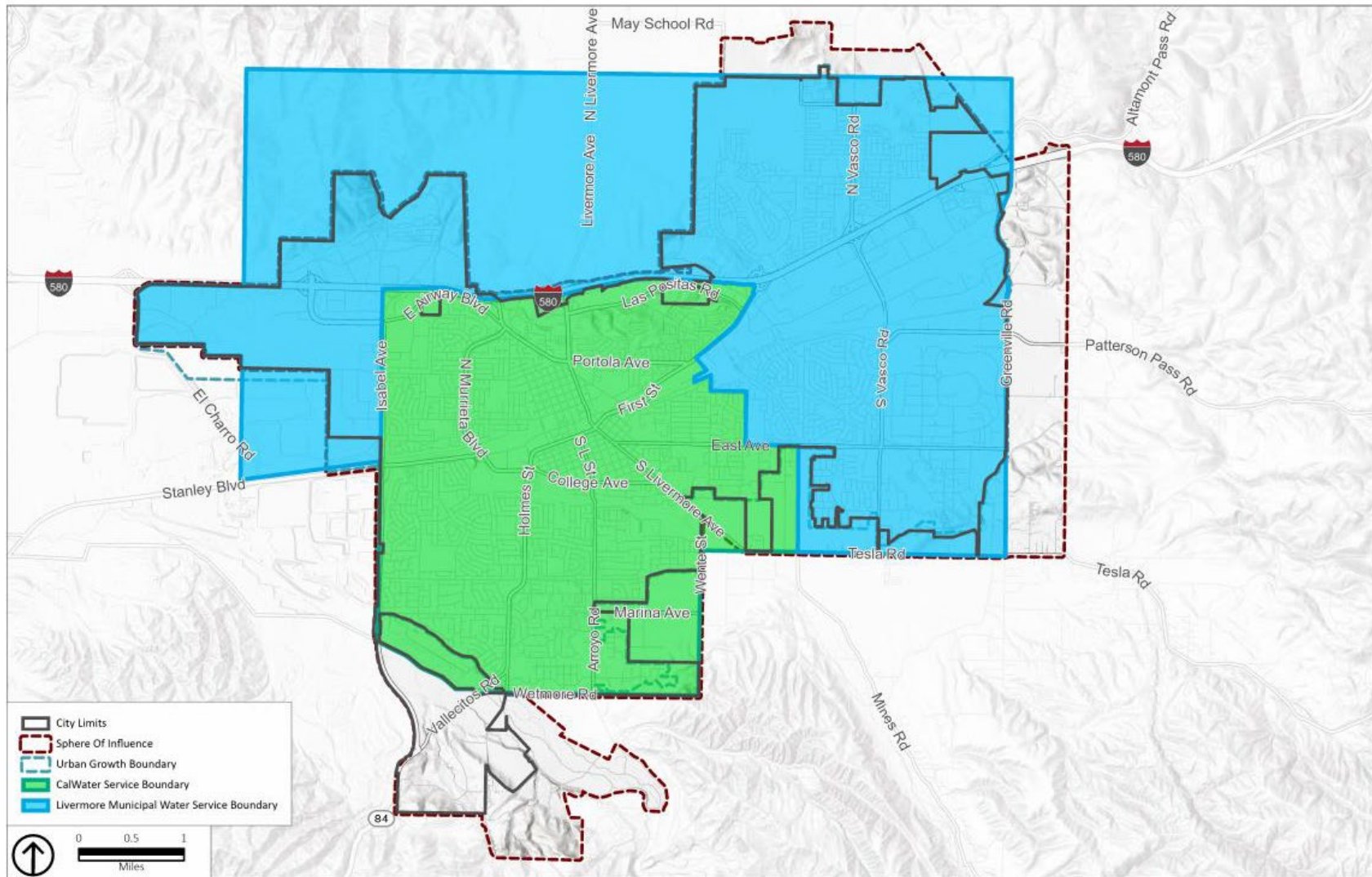
²⁶ Zone 7 Urban Water Management Plan, 2020. *Urban Water Management Plan*.

²⁷ Livermore Municipal Water Urban Water Management Plan, 2020. *Urban Water Management Plan*.

²⁸ California Water Service, 2020. *California Water Service Urban Water Management Plan*.

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Figure 18-1 City of Livermore Water Service Districts



Source: City of Livermore, 2021; Esri, 2021; PlaceWorks, 2021

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In 2020, LMW provided water to 10,522 service connections. Table 18-7 shows the demands of potable and non-potable water.

TABLE 18-7 LIVERMORE MUNICIPAL WATER DEMANDS FOR POTABLE AND NON-POTABLE WATER - ACTUAL

Use Type	2020 Actual	
	Level of Treatment When Delivered	Volume (AF)**
Single-Family	Drinking Water	2996
Multifamily	Drinking Water	436
Commercial	Drinking Water	954
Industrial	Drinking Water	0
Institutional/Governmental	Drinking Water	61
Landscape	Drinking Water	1353
Losses*	---	669
Other	Drinking Water	83
Total		6551

Source: Kennedy Jenks. 2020 Urban Water Management Plan.

*Losses are tabulated as both real (leakages) and apparent losses (under registration, water theft, and billing errors)

AF = Acre-feet

**Volume was converted from Million Gallons to Acre-feet

In 2020, California Water Service provided water service to 18,000 service connections in the city center. Table 18-8 shows demands of both potable and non-potable water.

TABLE 18-8 CAL WATER SERVICE DEMANDS FOR POTABLE AND NON-POTABLE WATER - ACTUAL

Use Type	2020 Actual	
	Level of Treatment When Delivered	Volume (AF)
Single-Family	Drinking Water	6,580
Multifamily	Drinking Water	439
Commercial	Drinking Water	1,291
Industrial	Drinking Water	0
Institutional/Governmental	Drinking Water	743
Landscape	Drinking Water	6
Losses	---	501
Other	Drinking Water	11
Total		9,571

Source: California Water Service. 2020 Urban Water Management Plan.

AF = Acre-feet

²⁹ California Water Service, 2020. 2020 Urban Water Management Plan, Livermore District.

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The San Francisco Public Utilities Commission has not published water demand data for the Lawrence Livermore and Sandia National Laboratories.

18.2.1.3 FUTURE DEMAND³⁰

The Zone 7 2020 Urban Water Management Plan (UWMP) provides projections on supply and demand for drought risk assessment for the Tri-Valley as shown in Table 18-9. Zone 7 anticipates being able to handle all of Livermore's water needs over the next 20 years and is continuing to explore other sources to prop up supply needs to the area in the event of a drought. Zone 7 is investigating four potential projects that may be implemented by 2030 and could provide a combined 22,600 acre-ft per year (AF) of increased water supply. One of the potential projects is potable reuse. In 2018, Zone 7, Cal Water, LMW, and other Tri-Valley water agencies conducted a joint feasibility study to evaluate potable water reuse. The study concluded that potable water reuse was feasible in Livermore and recommended next steps that included public outreach and technical studies to support the potential project.

TABLE 18-9 PROJECTED SUPPLY AND DEMAND FOR DROUGHT RISK ASSESSMENT: 2021-2025

Supply Source	Available Supply, AFY					
	Calendar Year	2021	2022	2023	2024	2025
Equivalent Hydrologic Year		Actual	1988	1989	1990	1991
State Water Project Table A		4,000	8,900	48,400	10,500	20,200
State Water Project Carryover from Previous Year		8,900	10,300	9,600	12,800	9,900
Water Transfers		10,000	6,000	5,000	6,000	8,000
Arroyo Valle (Local Water)		700	700	6,900	6,900	2,700
Main Basin (Local Groundwater)		13,200	13,200	11,000	10,000	11,000
Semitropic Water Storage District (Groundwater Bank)		9,100	9,100	0	9,100	9,100
Cawelo Water District (Groundwater Bank)		10,000	10,000	0	5,000	1,900
Total Supplies		55,900	58,200	80,900	60,300	62,800
Total Demands		45,200	47,600	48,500	49,400	50,300
Difference/ Surplus		10,700	10,600	32,400	10,900	12,500

Source: Zone 7 Water Agency. 2020 Urban Water Management Plan.

The LMW UWMP provides projected water uses, both potable and non-potable, in Table 18-10. These projections consider anticipated water-reduction efforts (i.e., increased appliance water efficiency, more efficient plumbing codes, and conservation and customer assistance programs). Projections in this table are based on the total volumes projected from Zone 7 and does take into account full buildout of the Urban Growth Boundary.³¹

³⁰ California Water Service, 2020. 2020 Urban Water Management Plan, Livermore District.

³¹ City of Livermore, 2020. 2020 Urban Water Management Plan.

UTILITIES AND SERVICE SYSTEMS**TABLE 18-10 CITY OF LIVERMORE MUNICIPAL WATER USE FOR POTABLE AND NON-POTABLE WATER - PROJECTED**

	2025	2030	2035	2040	2045
Single-Family	2890	2927	2952	2961	2961
Multifamily	521	663	816	982	982
Commercial	2317	2292	2268	2243	2243
Institutional/ Gov't	74	74	76	76	76
Industrial	0	0	0	0	0
Other Potable	71	74	76	76	76
Landscape	184	184	184	184	184
Losses	457	469	481	494	494
Total (AF)	6514	6683	6853	7016	7016

Source: Livermore Municipal Water. *2020 Urban Water Management Plan*.

AF = Acre-feet

Table values converted from Million Gallons to Acre-feet

The Cal Water UWMP summarizes projected water uses, both potable and non-potable, for customers in Livermore, as shown in Table 18-11. These projections take into account anticipated water-reduction efforts (i.e., increased appliance water efficiency, more efficient plumbing codes, and conservation and customer assistance programs). Cal Water projects that the service population will increase by 14 percent between 2020 and 2045, but that water demand will only increase by less than 5 percent during this same timeframe. Cal Water anticipates there will be sufficient supply to meet their projected demands.³²

TABLE 18-11 CALIFORNIA WATER SERVICE USE FOR POTABLE AND NON-POTABLE WATER - PROJECTED

	2025	2030	2035	2040	2045
Single-Family	6,393	6,383	6,461	6,488	6,545
Multifamily	524	662	773	814	858
Commercial	1,222	1,175	1,144	1,120	1,100
Institutional/ Gov't	714	693	680	668	657
Industrial	0	0	0	0	0
Other Potable	10	10	10	10	10
Landscape	6	6	6	6	6
Losses	464	431	441	449	457
Total (AF)	9,333	9,361	9,515	9,555	9,632

Source: California Water Service. *2020 Urban Water Management Plan*.

AF = Acre-feet

³² California Water Service. *2020 Urban Water Management Plan*, pages 33 to 34.

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18.2.2 WATER SUPPLY INFRASTRUCTURE³³

Zone 7 and Cal Water are the suppliers of water to the area, LMW and Cal Water then distribute the water to the Service Areas defined in Figure 18-1. LMW and Cal Water own the distribution pipes in their respective areas and are in charge of maintenance in those areas. Zone 7 anticipates being able to handle all of Livermore's water needs over the next 20 years and continue to explore other sources to prop up supply needs to the area. Zone 7 is investigating four potential projects that may implemented by 2030 and could provide a combined 22,600 acre-ft (AF) of increased water supply. per year

. Livermore Municipal Water capital improvement projects are discussed at length in the 2017 Water Master Plan; these projects are aimed at increasing capacity for fire flow and upgrading pumps to have adequate flows for peak-hour. Major Livermore Municipal Water planned projects include the Southfront Road water main improvements, as well as Preston Avenue water main improvements.

18.2.3 WASTEWATER

18.2.3.1 EXISTING WASTEWATER COLLECTION AND TREATMENT SYSTEM³⁴

The City of Livermore's wastewater collection and treatment system consists of over 300 miles of sewer pipe, 3 miles of force main, 7,000 cleanout and manholes, and about 30,000 sewer service connections city wide.³⁵ The 30,000 sewer connections consists of approximately 2,700 permitted laterals, which typically contain a two-way cleanout near the curb, and another 27,000 laterals that will be replaced with permitted laterals as the system ages. The collection pipes consist primarily of PVC and VCP materials, which comprises over 90 percent of the pipes in the sewer system. The City's wastewater system also includes four lift stations and two siphons. These assets are summarized in Table 18-13 and shown in Figure 18-2.

TABLE 18-13 COLLECTION SYSTEM PIPE INVENTORY

Asset Type	Segment Count	Length (ft)	Length (mi)
Forced Main	42	15,084	2.86
Pipe	7,391	1,591,090	301.34
Cleanout	419		
Manhole	6,822		
Lateral*	2,723	136,150	25.79

Source: City of Livermore, Sewer System Management Plan (July 2019).

ft = feet

mi = mile

*Permitted laterals maintained by the City of Livermore

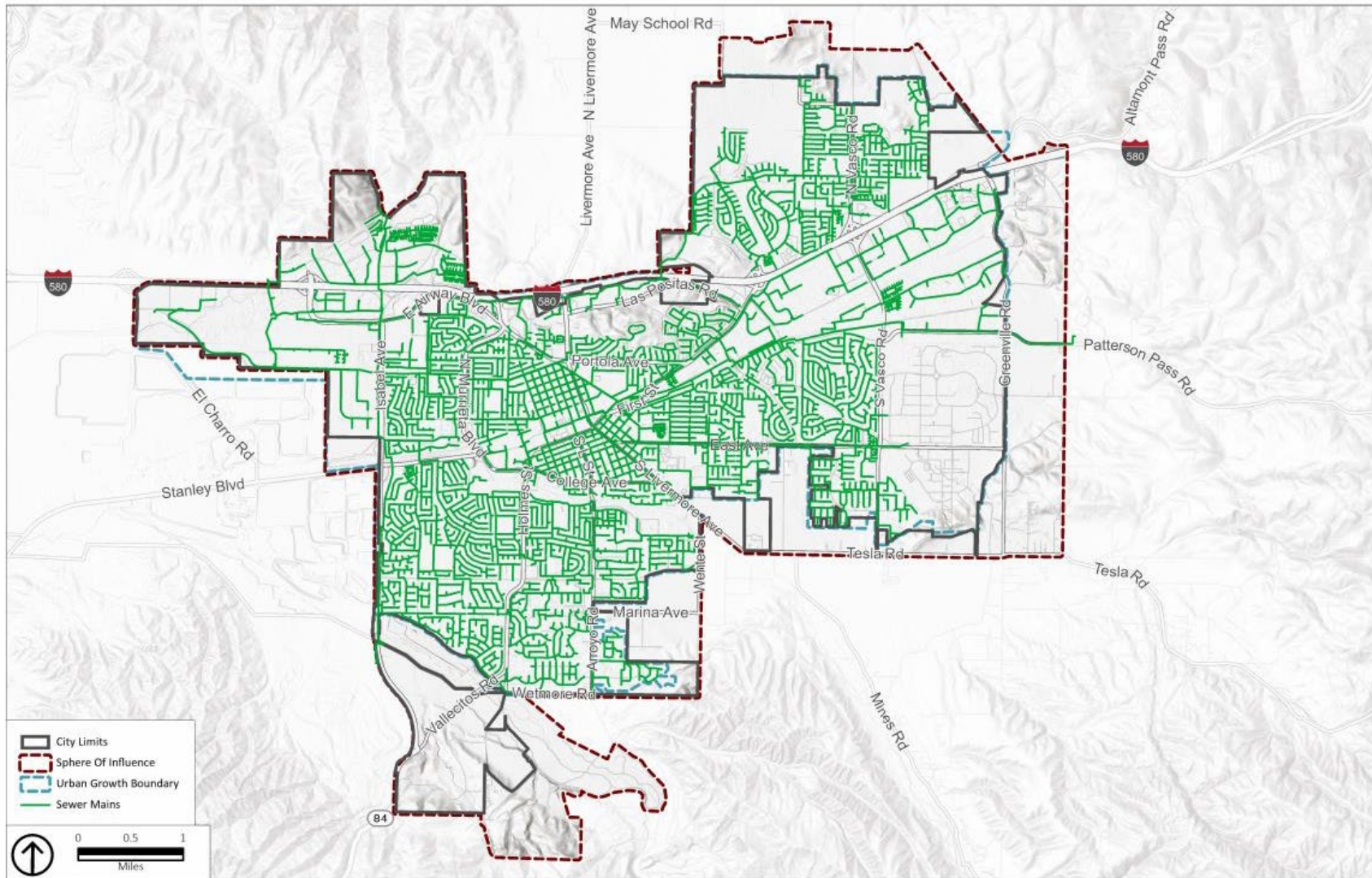
The sewage generated within the City Limits is typically collected and then routed for treatment at the Livermore Water Reclamation Plant, which is owned and maintained by the City's Water Resources Division. After the water is treated, it either is used as recycled water or is sent to the Livermore Amador Valley Water Management Agency (LAVWMA) to be routed to and disposed of in the San Francisco Bay via pipeline.

³³ Zone 7 Urban Water Management Plan, 2020. *Urban Water Management Plan*.

³⁴ City of Livermore, 2017. 2017 Sanitary Sewer Master Plan.

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FIGURE 18-2 CITY OF LIVERMORE WASTEWATER SYSTEM



Source: City of Livermore, 2021; Esri, 2021; PlaceWorks, 2021

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18.2.3.2 CURRENT DEMAND AND KNOWN DEFICIENCIES^{36,37}

Per the 2019 Community Services and Infrastructure Report (CSIR) the City's sewer system is sized appropriately and can accommodate sewage flows at the buildout of the City's existing General Plan once the expansion projects are completed. The City has identified \$5.3 million in collection system expansion projects to accommodate the buildout of the existing General Plan. Funding for these projects will be through the updated Master Fee Schedule. The capital improvement projects are discussed at length in the 2017 Sewer Master Plan; these projects are aimed at increasing capacity in gravity mains across the city as well as upsizing lift stations. Many of the mains across the city are not adequately sized. The capital improvements project list identifies several projects to increase sewer mains, including South Street Main Upgrade, East Stanley Main Upgrade, and Airport Lift Station.

The Livermore Water Reclamation Plant was originally constructed in 1958 with a capacity of 2.5 MGD average dry weather flow. Four major plant expansions and/or modifications have occurred since 1958 to match influent flow increases and changing discharge regulations. The last major expansion in 1991 increased the rated plant capacity to 8.5 MGD average dry weather flow. One final plant expansion is planned to meet projected build-out flows.³⁸

The Livermore Water Reclamation Plant has capacity to accept 8.5 million gallons per day (MGD) average dry weather flow, and has adequate capacity to handle the planned projects listed in the 2017 Sewer System Master Plan. Per the Sewer System Management Plan, it was noted that \$11 million worth of sewer pipes needed replacement. The Asset Management Plan recommended the City study this issue in more detail to verify the pipes that need replacement.

The City's allocated peak wet weather capacity in the LAVWMA system increased from 8.728 MGD to 12.4 MGD in 2005 after Livermore voters approved participation in the LAVWMA expansion project. Since then, LAVWMA has completed major expansion projects, including a wastewater pump station at the Livermore Water Reclamation Plant and construction of a new export pipeline between the Pleasanton pump station and the San Francisco Bay. With the expanded capacity, the City has adequate wastewater disposal capacity to meet the build-out sewer flow of the current General Plan.³⁹

³⁶City of Livermore, 2019. Sewer System Management Plan.

³⁷City of Livermore, 2019. 2019 Community Services and Infrastructure Report.

³⁸City of Livermore, 2019, 2019 Community Services and Infrastructure Report, page 35.

³⁹City of Livermore, 2019, 2019 Community Services and Infrastructure Report, page 36.

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18.2.4 STORM DRAINAGE SYSTEMS

18.2.4.1 EXISTING STORMWATER SYSTEM⁴⁰

The City of Livermore's storm drainage system covers 26 square miles and includes more than 200 miles of storm pipeline, which ranges from 8 to 66 inches in diameter. The drainage systems are within close proximity to major drainage channels, and as a result are relatively short in length. The city also has three storm drain pump stations. These assets are shown in Figure 18-3.

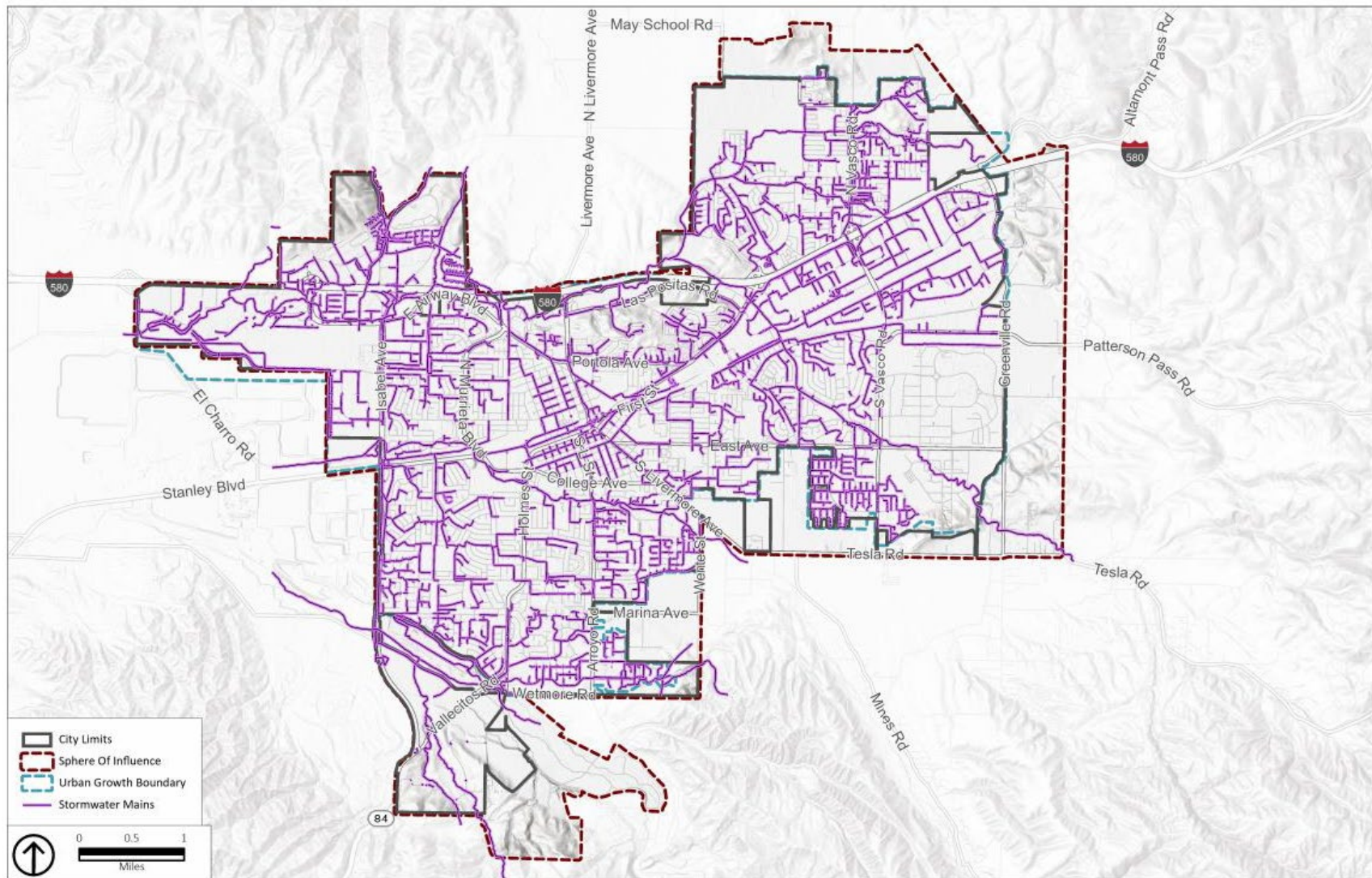
The City is divided into four major drainage watersheds: Arroyo del Valle, Arroyo Mocho, Arroyo Las Positas, and Altamont Creek. Each of the watersheds are drained by a major channel within the watershed.

The City of Livermore's Water Resources Division maintains the storm drain system within public areas and along city streets. Zone 7 Water Agency maintains and is responsible for regional flood control and/or stream management, including portions of the four watersheds within the City Limits. The 2019 CSIR stated that the City's storm drain infrastructure is fairly new and is in good condition.

⁴⁰ City of Livermore, 2009. 2009 Storm Drain Master Plan Addendum.

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FIGURE 18-3 CITY OF LIVERMORE STORMWATER SYSTEM



Source: City of Livermore, 2021; Esri, 2021; PlaceWorks, 2021

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18.2.4.2 KNOWN DEFICIENCIES^{41,42}

The 2021 Storm Drain Master Plan identified deficient storm drain system areas. As shown in Figure 18-4, pipelines in these areas will require CIP projects to increase capacities to handle the 10-year storm event..

In addition, the 2021 Storm Drain Master Plan includes a study of the 100-year flood capacity of creek culverts. The plan identified the following deficient culverts that need improvement: Arroyo Seco, Las Positas, Altamont Creek, and Arroyo Las Positas. Approximately half of these culverts are required to address existing deficiencies and the other half are to support future demand.

Required by Provision C.3 of the Municipal Regional Stormwater NPDES Permit, new developments over one acre of impervious area are required to include on-site storm and floodwater detention facilities to limit drainage into the storm drain system and creeks to pre-project flows.

18.2.4.3 CAPITAL IMPROVEMENT INITIATIVES^{41,43}

The City has estimated that new developments built from 2010 to 2040 could increase the impervious areas by approximately 894 acres.⁴³ New development will necessitate various storm drain expansion projects outlined in the 2021 Storm Drain Master Plan. The storm drain improvements identified in the Master Plan will cost \$21.6 million to construct. These projects are aimed at increasing capacity in mains across the city and alleviating stormwater from inundated areas. A few of the major storm drain improvement projects include Ruby Road Storm Drain Replacement and the Arroyo Mocho Outfall. According to the 2019 CSIR, there is no current funding identified for the existing deficiency capital improvement projects.

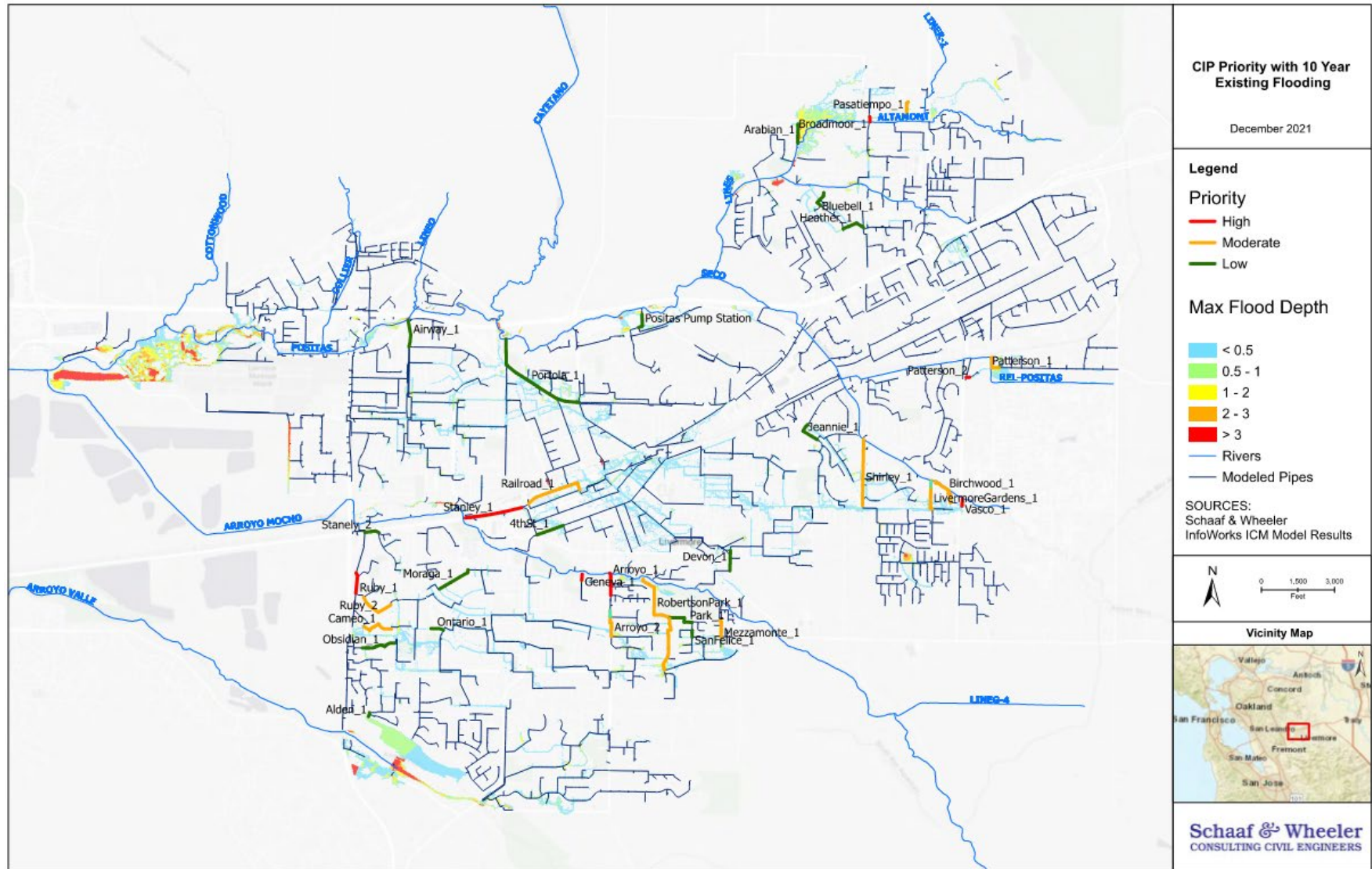
⁴¹ City of Livermore, 2009. *2009 Storm Drain Master Plan Addendum*.

⁴² City of Livermore, 2020. *2021 Draft Storm Drain Master Plan*.

⁴³ City of Livermore, 2019. *2019 Community Services and Infrastructure Report*.

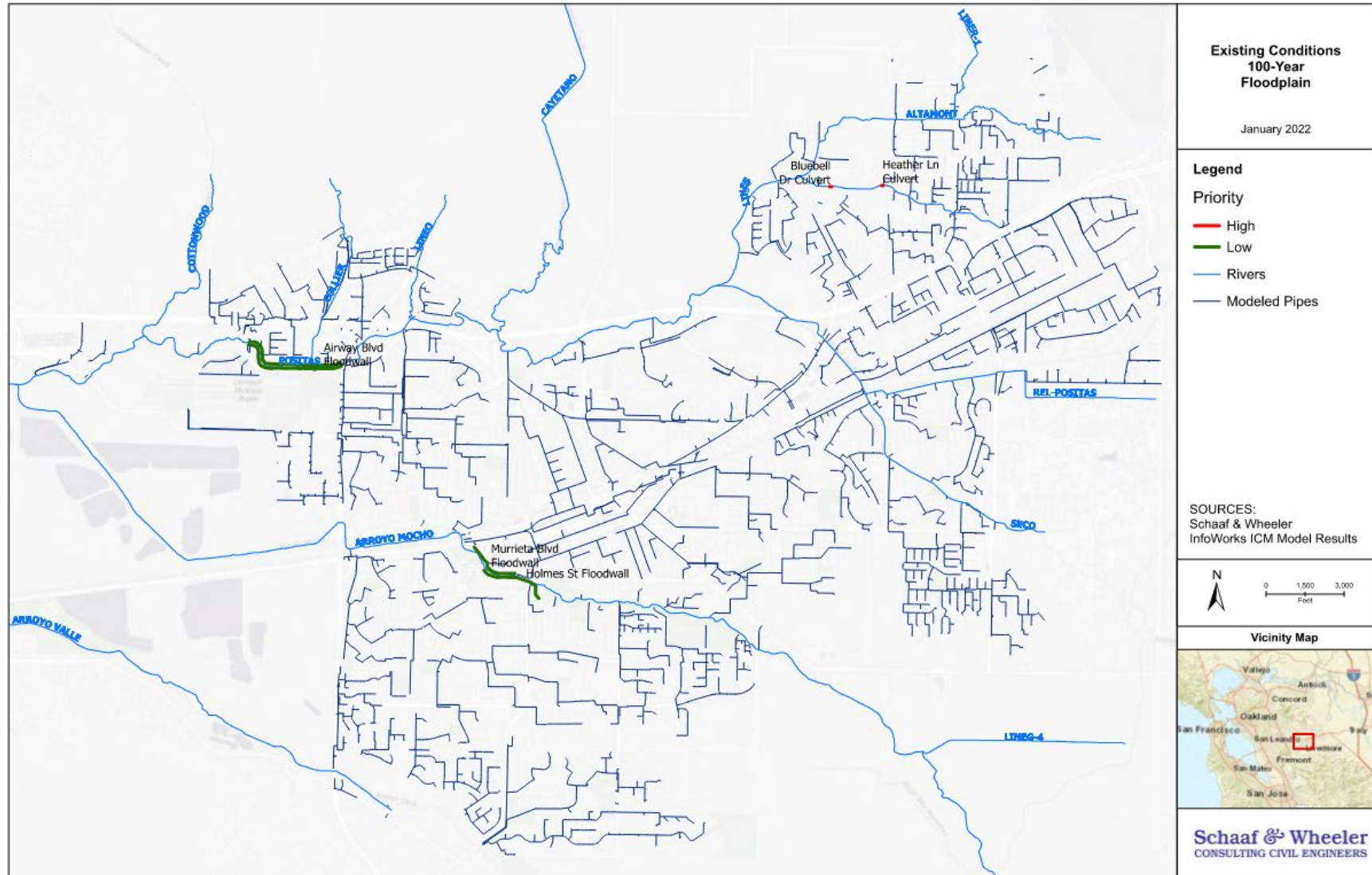
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FIGURE 18-4 PROPOSED STORM DRAIN IMPROVEMENT AREAS



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FIGURE 18-5 PROPOSED CREEK SYSTEM IMPROVEMENT AREA



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18.3 IMPLICATIONS FOR THE GENERAL PLAN UPDATE

Based on information contained in this chapter, the General Plan Update should consider the following:

- Water Facilities and Service
 - Coordinate with staff from LMW and Cal Water to identify capacity for future development.
 - Consider creating additional water reuse strategies to further decrease future demand.
 - Participate in Zone 7's improvements to water supply and treatment infrastructure that will be needed by 2045.
- Wastewater
 - Identify system capacity improvements needed by 2045 and whether there are any deficiencies that could potentially constrain the location, type, or amount of future development.
 - Consider further research to identify reaches of pipe that are nearing the end of their useful life and prioritize replacement.
 - Coordinate with the Livermore Water Reclamation Plant staff to identify capacity limitations to support future development.
- Storm Drainage
 - Continue to use best practices for on-site stormwater retention, detention, and filtration as to reduce impacts to existing infrastructure.
 - Plan for the impacts of climate change on stormwater infrastructure such as large storm events.
 - Minimize hardscape and promote natural landscaping to lessen impacts of water quality and reduce the needs for subsurface conveyance improvements.
 - Establish the schedule of the CIP recommended by the Storm Drain Master Plan and identify funding mechanism to support them.
 - Conduct further research to refine understanding of storm drainage issues in areas where floods are not predicted by current hydrologic modeling.