

---

## 10. HYDROLOGY AND WATER QUALITY

This section addresses the quality of groundwater and surface water, and the depletion of groundwater. This section also addresses potential flooding in the Study Area.

### 10.1 EXISTING CONDITIONS

#### 10.1.1 Local Drainage

No major drainages flow within the Study Area. Manteca is located on the relatively higher ground between Lone Tree Creek to the north, the Stanislaus River to the south, and the San Joaquin River to the southwest and west.

Although no major watercourse lies within the Study Area, the San Joaquin River flows approximately four (4) miles to the west of the Study Area boundary. Walthall Slough is a tributary to the river. The Slough's northern boundary is contiguous with the southwestern boundary of the Study Area.

Meteorological events such as intense precipitation may adversely affect the natural drainage of the region. In addition, seasonal snowmelt from the Sierra Nevada mountain range to the east contributes to the volume of water in the local hydrologic system. Urbanization contributes to an increased volume in the hydrologic system by increasing impervious surfaces, which do not allow for infiltration of water into the soil resulting in increased velocities and volumes of runoff.

The South San Joaquin Irrigation District (SSJID) operates drainage facilities that pass through Manteca and carry a portion of the City's drainage. Because of topography, drainage facilities generally follow along an east-to-west alignment. In some instances where subdivisions have developed near irrigation laterals, drainage pumping stations have been installed in lieu of long trunk lines to drains. Water from the SSJID, along with drainage pumped by the City, flows west into French Camp Canal, which eventually flows into French Camp Slough. Storm drainage is gravity-discharged from the Study Area north to French Camp Canal. Existing road and railroad crossings of the Canal are, however, undersized and will require replacement to accommodate peak design flows from the Study Area. The San Joaquin Delta is the ultimate destination of drainage carried by French Camp Slough.

The City's stormwater drainage system is further discussed in Public Facilities and Services (Section 14).

#### 10.1.2 100-Year Flood Areas

The Federal Emergency Management Agency (FEMA) categorizes flood prone areas based on the frequency of occurrence. The City of Manteca has not been mapped. Figure 10-1 shows the location of the FEMA defined 100-year area of potential inundation and the 500-year area of

potential inundation nearest to the City. The primary flood hazard is the San Joaquin River (four miles outside the Study Area) and its tributaries, notably Walthall Slough (contiguous with the southwestern Study Area boundary). A levee running from Williamson Road east to Airport Way provides flood protection for the land north and east of Walthall Slough. This levee is under the jurisdiction of Reclamation District No. 17.

### **10.1.3 Dam Failure Inundation**

Portions of the 100-year floodplain would be subject to inundation in the event of dam failure. Although the likelihood is remote, the area subject to inundation within the Study Area is not specifically defined, but would generally coincide with the area delineated as the 100-year floodplain.

Despite the number of dams near San Joaquin County, the risk of dam failure inundating portions of the County is considered low, and the degree and nature of risk for each dam is unknown. Dam failure can occur under three general conditions: as a result of an earthquake, an isolated incident due to structural instability, or because of intense rain in excess of design capacity.




Section 8589.5 of the California Government Code requires local jurisdictions to adopt emergency procedures for the evacuation of populated inundation areas identified by dam owners. The local Office of Emergency Services has prepared a Dam Failure Plan. This plan includes a description of dams, direction of floodwaters, responsibilities of local jurisdictions, and evacuation plans.

### **10.1.4 Surface Water Quality**



The quantity, quality, and availability of water are vital to both human activities, and vegetation and wildlife in the Study Area. Water is essential to the viability of agriculture; the development of housing, commerce, and industry; recreation; and the maintenance of high-quality fish and wildlife habitats.

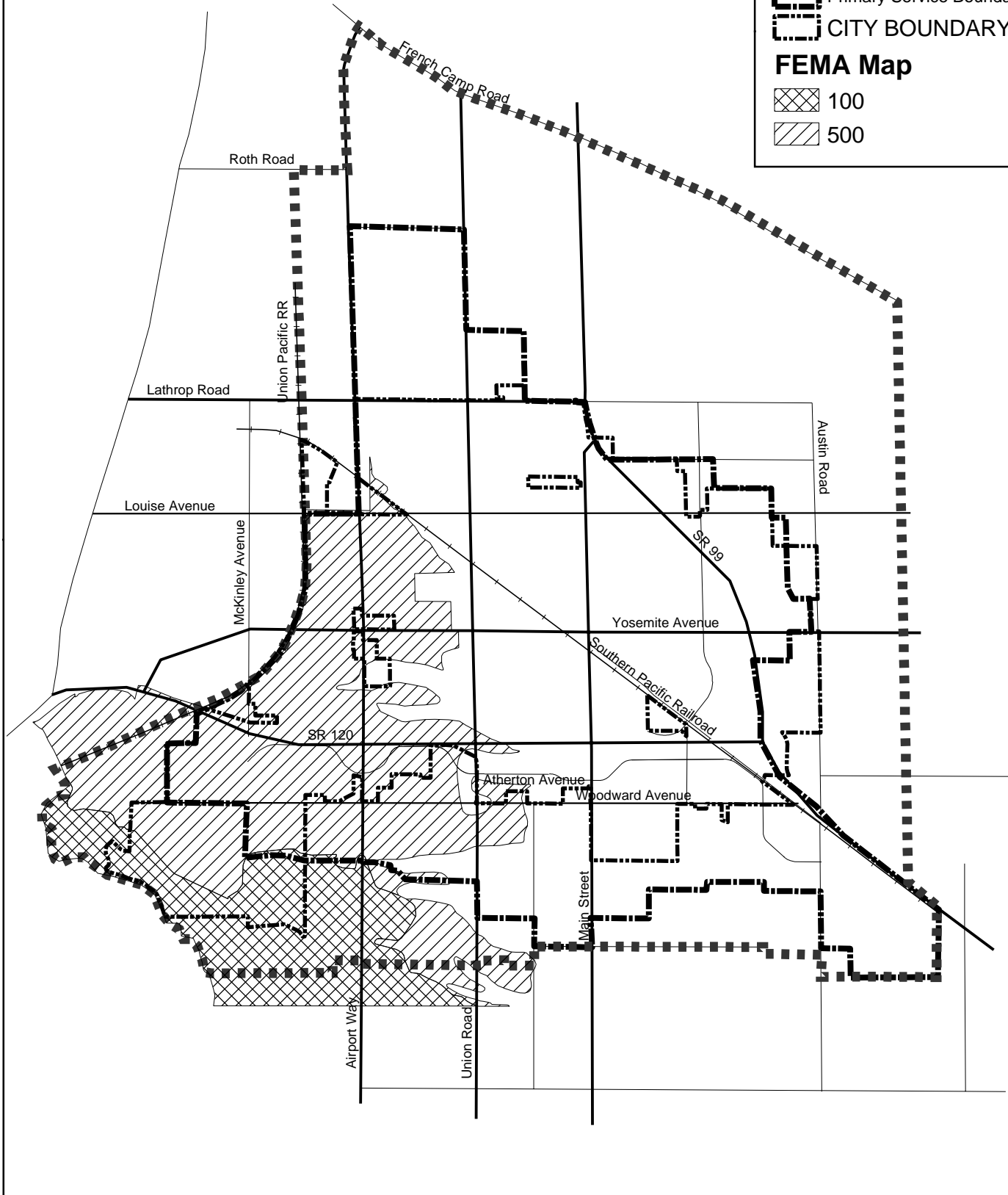
There are land uses and activities which the City must consider in protecting its water quality, including construction activities, agricultural land use, a dairy, urban runoff, and the wastewater treatment plant. Water quality issues associated with underground fuel or chemical storage tanks are discussed in Hazardous Materials (Section 9).

**LEGEND**

-  Study Area Boundary
-  Primary Service Boundary
-  CITY BOUNDARY

**FEMA Map**

-  100
-  500



Manteca General Plan

### **Construction Activities**

Construction grading can impact water quality because it exposes bare soil. Rainfall on bare soil can cause erosion and sedimentation into nearby water bodies. Unstabilized soil can be washed or wind-blown into nearby surface water. Construction activities can also result in petroleum products and other pollutants from construction equipment, entering nearby drainages.

### **Agricultural Land Use**

Water running off irrigated agricultural fields may contain fertilizers and pesticides. Improper use and disposal of farm chemicals can contaminate surface and groundwater resources. Agricultural procedures can also result in erosion of unstabilized soil, especially during conversion of vegetation. Aerial spraying could also drift into nearby water bodies.

### **Dairy**

There is a dairy within the Study Area, located along Airport Way north of Yosemite Avenue. Wastes from confined animals can cause problems in nearby surface and groundwater. The wastes include nitrate, ammonia, bacteria, and total dissolved solids (TDS). The current adjacent land uses to the dairy are residential and a golf course. This property is proposed for conversion to residential land use in the General Plan 2023.

### **Urban Runoff**

Urban runoff includes household chemicals (including pesticides, herbicides, and paints), as well as petroleum products from automobiles and landscaping equipment. Municipal sources of pollution include government yards where transportation, fueling, and maintenance activities take place.

### **Wastewater Treatment Plant**

Discharge from municipal treatment plants may result in high coliform counts, elevated temperatures, pH changes, increased turbidity, and low dissolved oxygen in water bodies.

The discharge is subject to standards established by the California Regional Water Quality Control Board.

## **10.1.5 Groundwater Quality**

Groundwater levels are relatively high throughout the Study Area.

The City's wells produce groundwater that meet or exceed the State Department of Health Services recommended drinking water quality standards.

### **10.1.6 Groundwater Recharge**

Area water levels are buoyed by the proximity of the Delta channels to the west. Groundwater recharge comes from irrigation of agricultural lands surrounding the City and infiltration from streams flowing west out of the Sierra Nevada. This recharge occurs in areas with permeable materials which allow the infiltration of water along streams, alluvial fans and foothill areas. The Study Area includes a variety of soil types that provide percolation to groundwater. However, with no streams or alluvial fan conditions, there are no notable groundwater recharge areas identified within the Study Area.

## **10.2 REGULATORY SETTING**

The following is a summary of the regulatory context under which surface water and groundwater resources are managed at the federal, state, and local level.

### **10.2.1 Applicable Federal Regulation**

#### **Water Quality: Federal Clean Water Act**

The Federal Clean Water Act of establishes the basic structure for regulating discharges of pollutants into surface waters of the United States, and sets water quality standards for all contaminants in surface waters. Water quality standards are intended to protect public health, enhance the quality of water, and serve the purposes of the Clean Water Act. The Act defines water quality standards as federal or state provisions or laws that, (1) designate the beneficial uses of water, and (2) establish water quality criteria to protect those designated uses.

#### **Safe Drinking Water Act**

The Safe Drinking Water Act was amended in 1986 and 1996, and requires protection of drinking water and its sources (i.e., rivers, lakes, reservoirs, springs, and groundwater wells). The Act authorizes the U.S. Environmental Protection Agency (EPA) to set national standards for drinking water to protect against pollutants. The EPA, states, and local agencies work together to enforce these standards.

#### **Water Quality: National Pollution Discharge Elimination System (NPDES)**

The Federal Clean Water Act was amended in 1972 to regulate discharge of pollutants from any point source into the waters of the United States. NPDES permits cover industrial and municipal discharges, discharges from storm sewer systems in larger cities, stormwater associated with industrial activity, runoff from construction sites disturbing more than one (1) acre of soil, mining operations, and animal feedlots and agricultural facilities above certain thresholds.

Stormwater discharges from both large and small construction sites are now subject to NPDES requirements. Large construction sites are those that involve five or more acres of soil

disturbance. Small construction sites are those that involve from one to five acres of soil disturbance.

The NPDES stormwater permitting program is administered by the State Regional Water Quality Control Boards on behalf of the U.S. Environmental Protection Agency (EPA).

### **Flooding and Drainage: FEMA 100-Year Floodplain**

The boundaries of the 100-year floodplain are delineated by FEMA on the basis of hydrology, topography and modeling during predicted rainstorms. Areas designated as flood zones are shown on published Flood Insurance Rate Maps (FIRM). FEMA requirements for residential development in a designated 'A' Zone include raising the first floor to at or above the base flood elevation (100-year). The National Flood Insurance Program (NFIP) requires owners of property within designated flood zones to purchase flood insurance.

### **10.2.2 Applicable State Regulation**

#### **Porter-Cologne Water Quality Control Act**

The Porter-Cologne Water Quality Control Act, also known as the California Water Code, is California's statutory authority for the protection of water quality. Under this Act, the state must adopt water quality policies, plans and objectives that protect the state's waters. The Act sets forth the obligations of the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCB) pertaining to the adoption of Basin Plans and establishment of water quality objectives. Unlike the Federal Clean Water Act, which regulates only surface water, the Porter-Cologne Act regulates both surface and ground water.

#### **State Water Resources Control Board (SWRCB)**

The State Water Resources Control Board (SWRCB) administers state water rights and water quality functions. The SWRCB and its nine (9) Regional Water Quality Control Boards (RWQCB) administer water rights and enforce pollution control standards. The SWRCB and RWQCB's are responsible for ensuring implementation and compliance with the provisions of the Federal Clean Water Act (CWA) and California's Porter-Cologne Water Quality Control Act. The project is situated within the jurisdiction of the Central Valley Region of the RWQCB. The Central Valley RWQCB has the authority to implement water quality standards through the issuance of permits for discharges to waters within its jurisdiction.

#### **General Construction Activity Stormwater Permit**

General Stormwater Discharge Permits are required by the state for stormwater discharges associated with construction activities involving disturbance of five (5) acres or more. Construction on sites of fewer than five acres requires a permit if part of a larger development or

land sale. Landowners are responsible for obtaining and complying with the permits, but may delegate specific duties to developers and contractors by mutual consent.

Regulations under Section 402(p) of the Federal Clean Water Act are now in effect. They involve control of pollution in stormwater discharges. In California, the Section 402(p) NPDES Permit applicants are required to prepare and retain at the construction site a Stormwater Pollution Prevention Plan (SWPPP), and implement Best Management Practices (BMP) to reduce construction effects on receiving water quality by implementing erosion control measures. The SWPPP must describe the site, erosion and sediment controls, means of waste disposal, implementation of approved local plans, control of post-construction sediment and erosion control measures, maintenance responsibilities, and non-stormwater management controls. Dischargers are also required to inspect construction sites before and after storms to identify stormwater discharge from construction activity, and to identify and implement controls where necessary.

#### **Central Valley RWQCB Basin Plan**

The Water Quality Control Plan for the Sacramento and San Joaquin River Basins provides water quality objectives and standards for waters of these two river basins. The Basin Plan contains specific water quality objectives for bacteria, dissolved oxygen, pH, pesticides, electrical conductivity, total dissolved solids (TDS), temperature, turbidity, and trace elements. It also includes objectives for groundwater quality that pertain to bacteria, chemical constituents, radioactivity, taste, color, and toxicity.

#### **California and Section 303(d) of the Clean Water Act**

Section 303(d) of the Clean Water Act requires states to develop lists of water bodies that will not attain water quality standards after implementation of minimum required levels of treatment by point-source dischargers (municipalities and industries). Section 303(d) requires states to develop a total maximum daily load (TMDL) for each of the listed pollutants and water bodies. TMDL is the amount of loading that the water body can receive and still meet water quality standards.

The most recently approved (1988) Clean Water Act Section 303(d) list for California identifies the various waterways throughout the state that are water quality impaired for a number of constituents. The SWRCB is responsible for compiling the list. The San Joaquin River is on that list. The TMDL end dates for the pollutant constituents for the river range from December 1999 to December 2011. (1)

### 10.2.3 City of Manteca

#### **South San Joaquin Irrigation District (SSJID) Surface Water Project**

Groundwater is the City's primary source of domestic water. The City of Manteca is participating in the South San Joaquin Irrigation District (SSJID) Surface Water Project. This project will deliver surface water to provide a conjunctive use of groundwater and surface water. This will enhance the available water supply and will substantially reduce the amount of groundwater withdrawal. The South San Joaquin Irrigation District (SSJID) Surface Water Project and the conjunctive use of surface and ground water is described in Subsection 14.1.1 of this EIR.

#### **Drainage**

The City of Manteca Public Facilities Implementation Plan (1993) identifies a series of specific improvements required to accommodate drainage of the existing urban areas of the City. In addition, the plan identified other measures that apply to future development.

The PFIP requires that:

- Wherever possible, the land ultimately required for each improvement (included in the Drainage Master Plan) will be preserved before development occurs in an area.
- Storm drainage and flood protection facilities should be constructed when each new development begins.

Manteca has predominantly relied upon the lateral and drain facilities of South San Joaquin Irrigation District for terminal drainage. In concert with development, the SSJID facilities have been realigned into rights-of-way and/or structurally upgraded to be compatible with the land conversion from agricultural to urban use. As in the past, drainage improvements will be constructed in a timely manner in order to maintain the level of service standard. This is accomplished by constructing the storm drainage and flood protection facilities for each new project, and by having the necessary facilities in place at time of occupancy.

Manteca presently administers a variety of regulations designed to prevent flooding and address stormwater management. These include a flood ordinance, various provisions of the zoning ordinance and subdivision ordinance, and construction codes for residential and non-residential developments.

The City's municipal drainage system is further discussed in Public Facilities and Services, Section 14.

### 10.3 IMPACT EVALUATION CRITERIA

In accordance with CEQA Guidelines, Appendix G, any land use directed by the General Plan 2023 would have a significant impact on the environment if the land use would:

- a. Violate any water quality standards or waste discharge requirements.
- b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in substantial flooding on- or off-site.
- e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- f. Otherwise substantially degrade water quality.
- g. Place housing within a 100-year flood hazard as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map, or other flood hazard delineation map.
- h. Place within 100-year flood hazard area structures which would impede or redirect flood flows.
- i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- j. Inundation by seiche, tsunami, or mudflow.

Soil erosion is addressed in Geology, Soils, and Seismicity, Section 8.

Stormwater drainage system capacity is addressed in Public Facilities and Services, Section 14.

### 10.4 IMPACTS AND MITIGATION

**POTENTIAL IMPACT HWQ-1:      Planned development in the General Plan 2023 could violate water quality standards or waste discharge requirements.**

**Level of Significance:**                    **Potentially Significant**

**Mitigation Measures:**

**HWQ-1.1:**        Subsection 8.6 of the Resource Conservation Element of the proposed General Plan 2023 addresses water quality. The following implementation measure (I) should be **amended (as shown below in bold)** to meet water quality standards and waste discharge requirements for groundwater and surface water:

RC-I-24            Comply with the Regional Water Control Board's regulations and standards to maintain and improve groundwater **and surface water quality** in Manteca.

**Residual Level of Significance:**                    **Less than Significant with Mitigation**

Through compliance with the RWQCB regulations, the City of Manteca will meet water quality standards.

**POTENTIAL IMPACT HWQ-2:**        **Planned development in the General Plan 2023 could substantially deplete groundwater supplies or interfere with groundwater recharge.**

**Level of Significance:**                    **Less Than Significant**

As discussed in Subsection 10.1.6 above, the Study Area includes a variety of soil types that provide percolation to groundwater. However, with no streams or alluvial fan conditions, there are no notable groundwater recharge areas identified within the Study Area.

Continued use of groundwater as the City's primary source of domestic water would be a significant impact. However, the level of significance will be reduced when surface water supplies are available through the SSJID Surface Water Project. Delivery of this water is planned for 2005, well before major new development would occur under the General Plan 2023. Even with the Surface Water project, Manteca would continue to pump groundwater water to meet the full projected demand associated with planned growth but would do so at the safe yield rate of extraction. Therefore, the impact is less than significant.

In addition, the General Plan 2023 provides the following goals, policies (P), and implementation measures (I) from the Resource Conservation Element (Section 8) will help to lessen the impacts to groundwater supplies:

- 
- Goal RC-1 Minimize the consumption of water to reasonable levels consistent with a high level of amenities and quality of life for City residents and visitors.
- Goal RC-2 Maximize the beneficial uses of water by recycling water for irrigation and other non-potable uses.
- Goal RC-7 To protect water quality in the San Joaquin River and in the area's groundwater basin.
- RC-P-1 The City shall continue to implement water conservation standards for all commercial and industrial development, and for all existing and new residential development.
- RC-P-2 The City shall explore potential uses of treated wastewater when such opportunities become available.
- RC-P-4 The City shall require ~~promote~~ water conservation in both City operations and private development to minimize the need for the development of new water sources.
- Development of private water wells within the city limits shall be allowed only where the City makes a finding that municipal water service is not readily and feasibly available, and such private well systems shall only be allowed to be used until such time as City water service becomes available.
- RC-I-1 Continue to implement standards for water conserving landscape practices, including the use of drought tolerant plants, for both public and private projects.
- RC-I-2 Continue efforts to increase public participation in water conservation.
- RC-I-3 Require large commercial and industrial water users to submit a use and conservation plan as part of the project entitlement review and approval process, and develop a program to monitor compliance with and effectiveness of that plan.
- RC-I-4 Cooperate with other agencies and jurisdictions to expand water conservation programs, and to develop methods of water reuse.
- RC-I-5 Actively pursue the use of treated wastewater in irrigation and industrial applications, including development of appropriate infrastructure.

- |         |   |
|---------|---|
| RC-P-12 | Protect the quality of Manteca’s groundwater.   |
| RC-P-13 | Encourage participation of the County and surrounding communities in a basin-wide groundwater management study.   |
| RC-I-19 | The City shall work with the County and surrounding communities to develop an action plan and/or to create an agency to manage and protect local and regional groundwater resources.                    |
| RC-I-20 | The City shall not approve new industrial or commercial development that has a significant potential for adversely affecting water quality in the San Joaquin River or in the area’s groundwater basin. |

**POTENTIAL IMPACT HWQ-3:      Implementation of the General Plan 2023 could alter the existing drainage pattern, or increase the rate of runoff that could result in flooding.**

**Level of Significance:              Potentially Significant**

There are no natural drainages in the Study Area. The South San Joaquin Irrigation District (SSJID) operates drainage facilities that pass through Manteca and carry a portion of the City’s drainage. Water from the SSJID, along with drainage pumped by the City, flows west into French Camp Canal, which eventually flows into French Camp Slough.

Urban development increases the amount of impervious surfaces, which in turn increases the amount of runoff.

**Mitigation Measures:**

**HWQ-3.1:**                              The Safety Element (Section 7) of the General Plan 2023 addresses the issue of impervious surfaces and flooding potential. The following implementation measures (I) are intended to reduce the amount of impervious surfaces and the subsequent flooding potential:

- |       |   |
|-------|---|
| S-I-6 | Discourage large continuous paved areas <u>unless provided with engineered drainage facilities.</u> |
|-------|---|



**Residual Level of Significance:**

The level of significant of urban pollutants entering receiving waters will be reduced to less-than-significant with above implementation measures. BMPs are specifically designed to reduce the impact of urban runoff.

**POTENTIAL IMPACT HWQ-5: Implementation of the City of Manteca General Plan 2023 may expose people and structures to the flood hazards of the San Joaquin River 100-year floodplain.**

**Level of Significance: Potentially Significant**

The FEMA 100-Year Potential Flood Map nearest to Manteca is that for the San Joaquin River, as shown in Figure 10-1. The City of Manteca has not been mapped. The San Joaquin River and its tributary, Walthall Slough (contiguous with the southwestern Study Area boundary) are the primary flood hazards for the Study Area. A levee running from Williamson Road east to Airport Way provides flood protection for the land north and east of Walthall Slough. This levee is under the jurisdiction of Reclamation District No. 17.

**Mitigation Measures:**

**HWQ-5.1:** The Safety Element (Section 7) of the City of Manteca General Plan 2023 provides the following goals, policies (P), and implementation measures (I) to mitigate potential exposure of people and structures to a significant loss of property and life involving flooding from the designated San Joaquin River 100-year floodplain:

- Goal S-3 Prevent loss of lives, injury, and property damage due to flooding.
- Goal S-4 Pursue flood control solutions that minimize environmental impacts.
- S-P-7 Regulate all uses and development in areas subject to potential flooding through zoning and other land use regulations.
- S-P-8 Cooperate with other agencies in the pursuit of ~~Pursue~~ a regional approach to flood issues.
- S-P-9 Combine flood control, recreation, water quality, and open space functions where feasible.

- S-P-10 Ensure that any existing structures subject to the 100-year flood provide adequate protection from flood hazards.
- S-P-11 Ensure that the impacts of potential flooding are adequately analyzed when considering areas for future urban expansion.
- S-P-12 New residential development, including mobile homes, shall be constructed so that the lowest floor is at least one foot above the 100-year flood level.
- S-P-13 Non-residential development shall be anchored and flood-proofed in accord with the Federal Emergency Management Agency (FEMA) standards to prevent damage or causing damage due to a ~~from the~~ 100-year flood or, alternatively, elevated to at least one foot above the 100-year flood level.

When improvements to existing development are made costing at least 50 percent of the current market value of the structure before improvements, the structure shall be brought into compliance with FEMA standards.

- S-I-4 The City shall continue to participate in the National Flood Insurance Program. To this end, the City shall ensure that local regulations are in full compliance with standards adopted by the Federal Emergency Management Agency (FEMA).
- S-I-5 Provide flood warning and forecasting information to City residents.
- The City shall adopt and implement local flood management development standards.

**Residual Level of Significance:                      Less than Significant with Mitigation**

The level of significance will be less than significant after implementation of the above goals, policies, and implementation measures. Combined with General Plan 2023 open space designations nearest the 100-year floodplain and the levee system, these measures will significantly reduce the flood hazards to the Study Area.

**POTENTIAL IMPACT HWQ-6:                      Implementation of the proposed General Plan 2023 could expose people of structures to inundation by seiche, tsunami, or mudflow.**

**Level of Significance:                      Less Than Significant**

It is highly unlikely that inundation from a seiche (earthquake-induced, tsunami-like flows of water from an inland body of water) will affect the Study Area. The nearest body of inland water is the San Joaquin River, and the Study Area is protected by a levee system.

Given that the Study Area is nearly level in topography; ~~(Geology, Soils, and Seismicity, Section 8)~~, it is highly unlikely that the Study Area would be inundated by mudflows. The nearest source of possible mudflow is the San Joaquin River located at the southwesterly perimeter of the Study Area ~~four miles outside the Study Area boundary, and the Study Area is protected by a levee system.~~

## References

- (1) Central Valley Water Quality Control Board, 1988 303(d) List, By Water Body.  
[www.swrcb.ca.gov/rwqcb5](http://www.swrcb.ca.gov/rwqcb5).