

L. HYDROLOGY AND FLOODING

This section describes the existing hydrological setting for the project area, including runoff, drainage, and water quality based on information available from previous EIRs prepared for projects in the vicinity, City staff, and published reports. This section identifies impacts that may result from development envisioned by *Strategy 2000*, and suggests mitigation measures to reduce potential impacts, where necessary.

1. Setting

a. Climate. The climate of the San Jose area is characterized as dry-summer subtropical (often referred to as Mediterranean), with cool wet winters and relatively warmer dry summers. The mean annual rainfall in the vicinity of the project site, for the period between 1948 and 2001, was approximately 14.5 inches.¹ Analysis of long-term precipitation records indicates that wetter and drier cycles lasting several years are common in the region. Severe, damaging rainstorms occur about once every three years.²

b. Runoff and Drainage. The Guadalupe River flows through the project area and is the receiving surface water body for drainage from the area. The project area is relatively flat and largely covered with impervious surfaces (buildings and pavement). Where rainfall in the area encounters the impervious surfaces and flows overland into the City-maintained storm drainage system, that runoff is discharged into the Guadalupe River.

c. Flooding. The type of flooding most likely to affect the study area is storm-related flooding of creeks, rivers, and storm sewer conveyances. A relatively wide swath (between 1,000 and 2,000 feet wide) of the central portion of the study area is located within the 100-year flood hazard zone (Figure V.L-1), as mapped by FEMA.³ According to FEMA, areas mapped within the 100-year flood hazard zone may be inundated during the 100-year (or greater magnitude) storm event. The 100-year storm is expected to occur, on average, once every 100 years. The remaining portion of the study area is mapped as "Zone D", areas of undetermined but possible flooding.

Most of the mapped flood hazard areas are associated with flooding on the Guadalupe River. A multi-purpose Guadalupe River project is under phased construction in Downtown San Jose. The modifications to the river include flood protection, recreation, and related mitigation measures primarily along the 2.6 miles of the river north of Grant Street (just upstream of I-280).⁴ The modification project entirely encompasses the reach of the Guadalupe River within the study area.

¹ Western Regional Climate Center, 2002. Website: <http://www.wrcc.dri.edu/elimsmsfo.html>.

² Brown, William M. III, 1988. Historical Setting of the Storm: Perspectives on Population, Development, and Damaging Rainstorms in the San Francisco Bay Region, in *Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region, California*, Stephen D. Ellen and Gerald F. Wiczorek, Eds., U.S. Geological Survey Professional Paper 1434.

³ Federal Emergency Management Agency, 1982. Flood Insurance Rate Map (FIRM), City of San Jose, California, Community Panel Numbers 060349 0025 D, August 2 and 060349 0019E. December 16.

⁴ U.S. Army Corps of Engineers, Santa Clara Valley Water District, and Jones & Stokes, 2001. *Final Integrated General Re-Evaluation Report/Environmental Impact Statement, Report Supplement Environmental Impact Statement for the Proposed Modifications to the Guadalupe River Project, Downtown San Jose, California, February.*

Figure V.L-1: Flooding Zone Map

8x11 b&w

The flood protection elements of the modification project are expected to be completed by December 2004.⁵ When complete, the Guadalupe River channel and the underground bypass structure (which begins near Santa Clara Street, will have an estimated conveyance capacity of 17,000 cubic feet per second, equivalent to calculated 100-year flood flows.⁶ The Letter of Map Revision process, which would result in substantial changes to the flood hazard boundaries on the FIRMs for the study area, is also currently underway and expected to be completed by December 2004.⁷ When completed, the flood hazard zone for the Guadalupe River within the study area would be confined to the channel banks.

The study area could be impacted if one or more of the several dams in the vicinity were to fail catastrophically. Catastrophic structural dam failure can be caused by earthquake or overflow. The Dams include Lexington (renamed James H. Lenihan Dam at Lexington Reservoir in 1996), Leroy Anderson, and Austrian Dam at Lake Elsmán. Each of these dams is under the jurisdiction of the California Department of Water Resources (DWR), Division of Safety of Dams. Existing dams under DWR's jurisdiction are periodically inspected to ensure that they are adequately maintained and to direct the owner to correct any identified deficiencies. Regular inspections and required maintenance of the dams substantially reduces the potential for catastrophic failure. Dam failure inundation hazard maps for this area can be viewed at the Association of Bay Area Governments website (www.abag.ca.gov).

Most of the rainfall at the site encounters impervious surfaces (e.g. roofs, roads, parking lots, driveways) and flows overland into the City-maintained storm drainage system. Eventually, all the runoff from the site is discharged into Los Gatos Creek or the Guadalupe River. Los Gatos Creek flows into the main channel of the Guadalupe River within the study area, just north of the Alameda.

d. Coastal Hazards. None of the region encompassing the project area would be susceptible to inundation by coastal hazards, such as tsunamis, extreme high tides, or sea level rise due to the elevation of the area and the distance from the margin of the San Francisco Bay (over 12 miles to the northwest).

e. Water Quality. The quality of surface water and groundwater in the vicinity of the project area is affected by past and current land uses within the watershed, as well as the composition of geologic materials in the vicinity.

Water quality in surface and groundwater bodies is regulated by the State and Regional Water Quality Control Boards. The study area is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (RWQCB), which is responsible for implementation of State and Federal water quality protection guidelines in the vicinity of the project site. The RWQCB implements the Water Quality Control Plan (Basin Plan),⁸ a master policy document for managing water quality

⁵ Chen, Joe, 2003. Senior Project Manager, Santa Clara Valley Water District, personal communication with Bruce Abelli-Amen of Baseline. August 5.

⁶ U.S. Army Corps of Engineers, Santa Clara Valley Water District, and Jones & Stokes 2001, op.cit.

⁷ Chen, Joe, 2003, op.cit.

⁸ San Francisco Bay Regional Water Quality Control Board, 1995. Water Quality Control Plan. June 21.

issues in the region. The Basin Plan establishes beneficial water uses for waterways and water bodies within the region.

The Guadalupe River flows through the project area and is the receiving surface water body for drainage from the area. The designated beneficial uses for the Guadalupe River include non-contact water recreation, warm freshwater habitat, and wildlife habitat. The Guadalupe River is designated as “impaired” by the RWQCB for numerous contaminants, including mercury and diazinon under the Clean Water Act Section 303(d).⁹

Beneficial uses of groundwater for the Santa Clara County (Coyote Creek) aquifer include municipal and domestic water supply, industrial service, and agricultural water supply.

Runoff water quality is regulated by the Federal National Pollution Discharge Elimination System (NPDES) Nonpoint Source Program (established through the Clean Water Act); the NPDES program objective is to control and reduce pollutants to water bodies from nonpoint discharges. The Program is administered by the California Regional Water Quality Control Boards. The study area is under the jurisdiction of the San Francisco Bay RWQCB and the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP). The City of San Jose is a participant in the SCVURPPP. The Program is a function of the County government that maintains compliance with the NPDES Storm Water Discharge Permit and promotes storm water pollution prevention within that context. County compliance with the NPDES Permit is mandated by State and Federal laws, statutes, and regulations.

Recent changes to the permit held by the SCVURPPP are detailed in RWQCB Revised Order 01-024 (NPDES Permit No. CAS029718). Revisions that potentially apply to the study area include Provision C.3, which specifies that significant development or redevelopment projects must include post-construction stormwater controls. A significant redevelopment project is defined as a project on a previously developed site that results in the addition or replacement of impervious surfaces that combine to a total 43,560 square feet or more. The size threshold drops to 5,000 square feet on October 15, 2004.¹⁰

The following excerpts from the RWQCB Revised Order 01-024 (NPDES Permit No. CAS029718) apply to the study area (in this case the “discharger” referred to in the text is the City of San Jose):

- Environmental documents required for those projects that fall under CEQA or NEPA review, such as EIRs, negative declarations, and initial study checklists, shall address stormwater quality impacts during the life of the project (both significant and cumulative), required permits, and specific mitigation measures related to stormwater quality.
- Each Discharger, to the maximum extent practicable, shall require developers of projects with significant stormwater pollution potential to mitigate stormwater quality impacts, through proper site planning and design techniques and/or addition of permanent post-construction stormwater treatment control measures (“treatment controls”).

⁹ State of California, Regional Water Quality Control Board, San Francisco Bay Region, 1998. Section 303(d), Clean Water Act, Impaired Water Body Lists.

¹⁰ Regional Water Quality Control Board, 2003. Letter submitted to Ms. Susie Pineda of the City of San Jose from Brian Wines of the RQWCB. January 24.

- Each Discharger shall require developers of projects that include installation of permanent structural stormwater controls to establish and provide a method for operation and maintenance of such structural controls.

Projects disturbing more than one acre of land¹¹ during construction are required to file a Notice of Intent (NOI) with the RWQCB to be covered under the State NPDES General Construction Permit for discharges of storm water associated with construction activity. A developer must propose control measures that are consistent with the State General Permit. A Storm Water Pollution Prevention Plan (SWPPP) must be developed and implemented for each site covered by the general permit. A SWPPP should include Best Management Practices (BMPs) designed to reduce potential impacts to surface water quality through the construction and life of the project.

f. San Jose 2020 General Plan Policies. One City of San Jose Council Policy and eight key General Plan policies specifically address hydrology and storm drainage.

- Post-Construction Urban Runoff Management Policy: This Policy establishes that all new development projects incorporating 5,000 square feet or more of new building rooftop or paved area, or 25 or more uncovered parking stalls are required to include specific measures for improving the water quality of urban runoff to the maximum extent feasible. In addition, the Policy establishes general guidelines and best management practices for particular land uses, and requires that all post-construction treatment control measures be maintained to operate effectively.
- Water Resources Policy 7: The City shall require the proper construction and monitoring of facilities storing hazardous materials in order to prevent contamination of the surface water, groundwater and underlying aquifers. In furtherance of this policy, design standards for such facilities should consider high groundwater tables and/or the potential for freshwater or saltwater flooding.
- Water Resources Policy 8: The City should establish policies, programs, and guidelines to adequately control the discharge of urban runoff and other pollutants into the City's storm drains.
- Water Resources Policy 9: The City should take a proactive role in the implementation of the Santa Clara Valley Urban Runoff Pollution Prevention Program.
- Water Resources Policy 10: The City should encourage more efficient use of water by promoting water conservation and the use of water-saving devices.
- Water Resources Policy 11: The City should promote the use of reclaimed water when feasible, particularly for industrial users, for irrigation and in groundwater recharge areas.
- Water Resources Policy 12: For all new discretionary development permits for projects incorporating large paved areas or other hard surface areas (e.g., building roofs), or major expansion of a building or use, the City should require specific construction and post-construction measures to control the quantity and improve the water quality of urban runoff.

¹¹ The State Water Resources Control Board, Water Quality Order 99-08-DWQ, National Pollutant Discharge Elimination System (NPDES), General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) states that:

The regulations provide that discharges of storm water to waters of the United States from construction projects that encompass five (5) or more acres of soil disturbance are effectively prohibited unless the discharge is in compliance with an NPDES Permit. Regulations (Phase II Rule) that became final on December 8, 1999 expand the existing NPDES program to address storm water discharges from construction sites that disturb land equal to or greater than one (1) acre and less than five (5) acres (small construction activity). The regulations require that small construction activity, other than those regulated under an individual or Regional Water Quality Control Board General Permit, must be permitted no later than March 10, 2003.

- **Bay and Baylands Policy 5:** The City should continue to participate in the Santa Clara Valley Urban Run-off Pollution Prevention Program and take other necessary actions to formulate and meet regional water quality standards which are implemented through the National Pollution Discharge Elimination System Permits and other measures.
- **Flooding Policy 1:** New development should be designed to provide protection from potential impacts of flooding during the “1 percent” or “100-year” flood.

2. Impacts and Mitigation Measures

This section outlines potential hydrology and water quality impacts and recommends mitigation measures. Less-than-significant impacts to hydrology and water quality are listed first, followed by significant impacts.

a. Significance Criteria. For the purposes of this project, a hydrology and flooding impact is considered significant if the project will:

- Violate any water quality standards or waste discharge standards set by the Regional Water Quality Control Board (RWQCB) or otherwise substantially degrade surface or groundwater quality;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the local groundwater table would be lowered;
- Substantially reduce the amount or quality of water otherwise available for public water supplies;
- Create or substantially contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems or create an increase in calculated peak flood discharges;
- Place within a 100-year flood zone hazard area structures which would impede or redirect flood flows;
- Increase the risk of flood-related property loss or hazard to human life from the 100-year flood hazard zone, as defined by FEMA, or from levee or dam failure;
- 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; or
- Place housing within a 100 year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.

b. Less-Than-Significant Hydrology and Flooding Impacts. Development of the project area would not contribute to depletion of groundwater supplies or reduce the amount or quality of water available for public water supplies. *Strategy 2000* does not propose development that would substantially alter a natural watercourse. Since the project area is highly urbanized, the amount of impervious surfaces would not be substantially altered. Implementation of the proposed project would not expose people or property to flooding associated with seiches or tsunamis.

Infrastructure upgrades to the storm sewer system may be required for some specific projects under *Strategy 2000*. These upgrades would be designed and implemented when specific projects are proposed under existing City programs. Therefore, potential conveyance problems associated with local storm drainage infrastructure would not be considered a significant impact for the proposed project.

c. **Significant Hydrology and Flooding Impacts.** Four potentially significant impacts are evaluated below. With implementation of each recommended mitigation measure, these impacts would be reduced to less than significant levels.

Impact HYD-1: Construction activities and post-construction operation of specific development projects within the project area could result in degradation of water quality in the Guadalupe River and the Bay by reducing the quality of storm water runoff. (S)

(1) **Construction-Period Impacts.** Any proposed projects that require grading and/or excavation would temporarily disturb surface soils and/or impervious surfaces. During the construction period, grading and excavation activities would result in exposure of soil to runoff, potentially causing erosion and entrainment of sediment in the runoff. Soil stockpiles and excavated parcels on the project site would be exposed to runoff and, if not managed properly, the runoff could cause erosion and increased sedimentation in water courses at or away from the project site. The accumulation of sediment could result in blockage of flows, potentially resulting in increased localized ponding or flooding.

The potential for chemical releases is present at most construction sites. Once released, substances such as fuels, oils, paints, and solvents could be transported to nearby surface waterways and/or groundwater in storm water runoff, wash water, and dust control water, potentially reducing the quality of the receiving waters.

(2) **Operation-Period Impacts.** Continued and potentially intensified urban uses within the project area would result in increased vehicle use and potential discharge of associated pollutants. Leaks of fuel or lubricants, tire wear, and fallout from exhaust contribute petroleum hydrocarbons, heavy metals, and sediment to the pollutant load in runoff being transported to receiving waters. Runoff from the proposed common landscaped areas and the parks may contain residual pesticides and nutrients. Long-term degradation of water quality runoff from the site could impact water quality in the Guadalupe River and the Bay.

Implementation of this mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure HYD-1: The applicant of a development or redevelopment project shall prepare a Storm Water Pollution Prevention Plan (SWPPP) designed to reduce potential impacts to surface water quality through the construction and life of the project. The SWPPP would act as the overall program document designed to provide measures to mitigate potential water quality impacts associated with implementation of the project. The SWPPP shall include:

- **Specific and detailed BMPs designed to mitigate construction-related pollutants.** These controls shall include practices to minimize the contact of construction materials, equipment, and maintenance supplies (e.g., fuels, lubricants, paints, solvents, adhesives) with storm water. The SWPPP shall specify properly designed centralized storage areas that keep these materials out of the rain.

An important component of the storm water quality protection effort will be the education of the site supervisors and workers. To educate on-site personnel and maintain awareness of the importance of storm water quality protection, site supervisors shall conduct regular tailgate meetings to discuss pollution prevention. The frequency of the meetings and required personnel attendance list shall be specified in the SWPPP.

The SWPPP shall specify a monitoring program to be implemented by the construction site supervisor, and must include both dry and wet weather inspections. City of San Jose and RWQCB personnel may make unannounced site inspections and are empowered to levy considerable fines if it is determined that the SWPPP has not been properly prepared and implemented.

Best Management Practices (BMPs) designed to reduce erosion of exposed soil may include, but are not limited to: soil stabilization controls, watering for dust control, perimeter silt fences, placement of straw wattles, and sediment basins. The potential for erosion is generally increased when grading occurs during the rainy season, as disturbed soil can be exposed to rainfall and storm runoff. If grading must be conducted during the rainy season, the primary BMPs selected shall focus on erosion control, that is, keeping sediment on the site. End-of-pipe sediment control measures (e.g., basins and traps) shall be used only as secondary measures. Access to and egress from the construction site shall be carefully controlled to minimize off-site tracking of sediment. Vehicle and equipment wash down facilities shall be designed to be accessible and functional both during dry and wet conditions.

- **Measures designed to mitigate post construction-related pollutants.** The project shall include measures designed to mitigate potential water quality degradation of runoff from all portions of the completed development, including roof and sidewalk runoff. Design teams for new projects should review *Start at the Source*, Design Guidance Manual for Stormwater Quality Protection.¹² The selected permanent stormwater treatment measures may include biofilters and grassy swales; and the selected measure must meet the hydraulic sizing criteria specified in the most current NPDES municipal stormwater permit issued to the City of San Jose, unless the developer demonstrates that it is impracticable to meet the criteria; and the project includes an alternative method for treating an equivalent pollutant loading or quantity of stormwater runoff, or provides another equivalent water quality benefit. (LTS)

Impact HYD-2: Portions of the project site are located in the 100-year flood hazard zone and could be inundated during extreme storm events. (S)

Portions of the project area are currently located in the FEMA 100-year flood hazard zone. Under existing conditions, during an extreme storm event these areas may be inundated with flood waters, endangering people and property. As described earlier, the primary source of flooding, the Guadalupe River, is undergoing hydraulic modifications. The completed channel (and underground bypass system), which are estimated to be finished by December 2004, will contain the 100-year flows, virtually eliminating the FEMA 100-year flood hazard zone from the study area.

However, it is possible that development and/or redevelopment projects under *Strategy 2000* could be initiated prior to completion of the flood protection elements and the approval of the FEMA Letter of Map Revision. If projects are proposed within areas designated as 100-year flood hazard zones, the project components could be inundated during extreme storm events, causing property damage and potentially injuries to site users.

¹² Bay Area Stormwater Management Agencies Association, 1999. *Start at the Source*, Design Guidance Manual for Stormwater Quality Protection.

Implementation of this mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure HYD-2: All structures shall be built so that potential injuries to project occupants and property damage are minimized in the event of a flood. Specifically, and in accordance with the San Jose Municipal Code, Title 17, Chapter 17.08, any new development projects or substantial redevelopment shall comply with floodplain management regulations. The lowest finished floor of each structure shall be elevated to or above the inundation elevation specified on the Flood Insurance Rate Map. In addition, any below-ground parking structures shall be designed and constructed so that the base flood would not inundate these areas. Flood protection of below-ground parking could be achieved either by grade control and/or berms. Those areas removed from the 100-year flood hazard zone by the Letter of Map Revision process shall not be required to comply with floodplain regulations. (LTS)

Impact HYD-3: Some of the activities proposed by the project could result in the inefficient use of water supplies. (S)

Many of the subarea goals include a substantial increase in the amount of landscaping, relative to existing conditions. The “greening” of a major portion of the Downtown area will require substantial volumes of irrigation water, particularly in the early phases of the program as plant material is getting established. Species selections that do not consider the nature of the relatively dry climate, but rely on liberal volumes of irrigation water, could be considered wasteful and in conflict with General Plan policies that encourage efficient use of water. In addition, spray and/or flood irrigation methods could waste water by: 1) using more than is needed to sustain the plant material or 2) not delivering the water to the specific area needed (e.g. flooding sidewalks and gutters). Inefficient use of water is considered a significant impact requiring mitigation.

Implementation of this mitigation measure would reduce this potentially significant impact to a level of less than significant.

Mitigation Measure HYD-3: Each landscaping plan proposed as part of future development in the project area shall be designed to use the minimum volume of irrigation water necessary to meet the objectives of the landscaping plan. In general, low water-need plants shall be emphasized. In particular, species of trees and shrubs that only require water to become established shall be specified whenever possible. Turf grass, which is among the highest water users of all common landscaping choices, shall be avoided to the extent feasible. In addition, efficient irrigation systems, including but not limited to drip systems, shall be emphasized. Use of reclaimed water should be considered for each project. The City of San Jose Planning Department shall review and approve each of the landscaping plans proposed as part of specific development projects to ensure that they minimize irrigation to the extent feasible. (LTS)

Impact HYD-4: Dewatering effluent may contain contaminants and if not properly managed could cause impacts to construction workers and the environment. (S)

Dewatering operations may be required during the excavation for, and construction of specific projects under *Strategy 2000*. There are two general classes of pollutants that may result from dewatering operations: sediment and chemical compounds (including toxics and petroleum hydrocarbons). High sediment content in dewatering discharges is common because of the nature of the operation in

which soil and water mixes in the turbulent flow of high volume pump intakes. Chemical pollutants are most commonly found in dewatering effluent in areas with a history of groundwater contamination (e.g. leaks to the subsurface from industrial sites). Portions of the study area are located in areas of confirmed historic chemical releases (refer to Chapter V.J, Hazards, for discussion of identified areas of potential subsurface contamination). Direct discharge of dewatering effluent to the storm drainage system could result in water quality impacts to downstream drainages and the Bay.

Implementation of this mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure HYD-4: Each future project proposed under *Strategy 2000* requiring discharge of dewatering effluent shall prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include provisions for the proper management of dewatering effluent. At a minimum, all dewatering effluent will be contained prior to discharge to allow the sediment to settle out, and filtered, if necessary, to ensure that only clear water is discharged to the storm or sanitary sewer system. In areas of suspected groundwater contamination (i.e., underlain by fill or near sites where chemical releases are known or suspected to have occurred), groundwater will be analyzed by a State-certified laboratory for the suspected pollutants prior to discharge. Based on the results of the analytical testing, the applicant will work with the RWQCB and/or the local wastewater treatment plant to determine appropriate disposal options. (LTS)