
4.6 HYDROLOGY AND WATER QUALITY

This section discusses and analyzes the surface hydrology, groundwater, and water quality characteristics of the proposed project. The information provided in this section is based on the field review and the City of Elk Grove General Plan Conservation and Air Quality Element.

4.6.1 ENVIRONMENTAL SETTING

REGIONAL SETTING

Hydrology

The City of Elk Grove is located in the Sacramento River Basin, which covers 27,210 square miles. The basin includes all watersheds tributary to the Sacramento River located north of the Cosumnes River watershed. The City of Elk Grove is also located in the Morrison Creek Stream group drainage basin, a 192-square mile watershed tributary to the Sacramento River Basin. Storm water in most of the area flows west through Morrison, Laguna, Elder, Elk Grove, and other associated tributaries to the Beach-Stone Lakes basin west of Interstate 5.

Water Quality

Surface Water

Currently, the Sacramento River portion from Red Bluff to the Delta, which includes the portion along the western border of the City of Elk Grove planning area, as well as Elder Creek, Elk Grove Creek, and Morrison Creek are listed water bodies on the Federal Clean Water Act Section 303(d) list due to specific pollutants present in these water bodies. All four water bodies contain the pollutant Diazinon, which is an insecticide used to control pests on crops.

The City of Elk Grove, along with the County of Sacramento and Cities of Citrus Heights, Folsom, Galt, and Sacramento, are co-permittees under the National Pollution Discharge Elimination System (NPDES) permit #CAS082597 covering the Sacramento County Area-Wide Municipal Separate Storm Sewer System (MS4). Under its NPDES permit, the City of Elk Grove has discharge and monitoring requirements for storm waters and a target pollutant reduction strategy for diazinon, chlorpyrifos, copper, lead, mercury, and coliform/pathogens.

The Water Quality Control Plan (Basin Plan) for the Sacramento and San Joaquin River basins, prepared by the California Regional Water Quality Control Board, Central Valley Region (CVRWQCB) identified objectives to maintain pesticide levels in the water bodies, and not to exceed the Maximum Contaminant Levels set forth in the California Code of Regulations, Title 22, Division 4, Chapter 15.

Ground Water

The City of Elk Grove is located within the Sacramento Hydrologic Basin as defined by the California Department of Water Resources (DWR) and is within Zone 40 of the Sacramento County Water Agency (SCWA). Within Zone 40, groundwater is contained in two aquifers. The first is a shallow aquifer (Laguna Formation) that begins approximately 70 to 90 feet below ground surface and is between 130 to 230 feet thick. It is considered to be of good quality, with the exception of the presence of arsenic in some areas. The second is a deeper aquifer (Mehrtens Formation) that is separated from the shallower aquifer by a discontinuous clay layer and averages 1,600 feet thick. It is considered to have poorer quality water with higher concentrations of total dissolved solids (TDS), iron, and manganese. Extraction from the South Sacramento Groundwater Basin has formed a cone-of-depression in the groundwater table

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centered south of Elk Grove Boulevard between Interstate 5 and SR 99. The groundwater quality in the City meets all the CCR Title 22 drinking water quality standards, with the exception of iron, manganese, and arsenic (SCWA, 2004).

In the project area, the aquifer system recharges from a combination of sources including inflow of subsurface water into the aquifer from other regions, rain and irrigation filtering down through the upper soil level into the aquifer, and percolation of water from surface streams and rivers such as the American, Cosumnes, and Sacramento Rivers.

PROJECT SETTING

Hydrology

Elk Grove Creek, the nearest hydrological feature and a tributary to the Sacramento River, flows outside the project study area to the north and northwest. An ephemeral ditch, a man-made drainage ditch, and several intermittent ditches are located south of the cemetery on private property within the project study area. The 0.026 acres (394 linear feet) of intermittent ditches drain storm water northward from just north of the existing northbound SR99 off ramp to the southwestern corner of the cemetery before connecting to a culvert underneath the cemetery. The ephemeral ditch (0.002 acre, 105 linear feet) runs along the southwestern portion of the existing Park & Ride parking lot then joins with the intermittent drainage ditch. The man-made ditch, occupying a total of 0.023 acres (495 linear feet), is located adjacent to the project study area at the southern edge of the cemetery and just north of the existing Park & Ride parking lot. This drainage is shallow, unlined and consists of two channels. One channel begins at the southwestern corner of the cemetery and flows east before flowing northward into a culvert under the cemetery. A second channel begins near the southeastern corner of the cemetery and flows west before merging with the first channel. These man-made channels function as drainage features to collect runoff from roadways and parking lots, and do not exhibit the necessary hydrologic criteria, wetland vegetation, and defined bed or bank that meet the criteria to be USACE jurisdictional features. These drainages converge along the southern border of the cemetery and flow to Elk Grove Creek via a culvert. A seasonal wetland was located in a depression located in the area between SR 99 and the off-ramp (outside of the project disturbance area).

The majority of the project site is located within the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Zone X (other areas), which is identified as areas determined to be outside the 500-year floodplain¹. A portion of the project site (portion of Elk Grove Boulevard) that will not be disturbed (restriping only) is located within Zone AE, which is identified as special flood hazard areas inundated by 100-year flood. The project site is not within a State Adopted Plan of Flood Control, as it is not within the floodplains of any rivers or creeks shown on the DWR Designated Floodway Maps.

Water Quality

The City of Elk Grove has been covered under Sacramento County's NPDES Stormwater Permit No. CA00082597 since 1990. The City was officially named as a Permittee in this Stormwater Permit when it was reissued in December 2002 as Order No. R5-2002-0206. The City adopted a Stormwater Quality Improvement Plan (SQIP) that contains a construction element, a commercial/industrial element, a municipal operations element, an illicit discharge element, a

¹ FEMA Flood Insurance Rate Map, Community Panel Number 060262 0320 E, July 6, 1998.

public outreach element, and a new development element. The Stormwater Permit and SQIP require that the City implement or require performance standards and Best Management Practices (BMPs) that ensure that pollutant discharges associated with stormwater are reduced to the Maximum Extent Practicable. Preparation of a Storm Water Pollution Prevention Plan (SWPPP) will be required for this project to minimize polluted runoff during construction.

4.6.2 REGULATORY FRAMEWORK

There are several agencies with jurisdiction over flood control and water quality activities in the project area. Some of these include the DWR, the CVRWQCB, USACE, SCWA, and the Federal Emergency Management Agency (FEMA).

FEDERAL

Federal Emergency Management Agency (FEMA)

Sacramento County is a member of the National Flood Insurance Program (NFIP). The NFIP is administered through FEMA to carry out a national flood insurance program, which enables interested parties to purchase insurance against loss resulting from physical damage to or loss of real property or personal property related thereto arising from any flood occurring in the United States.

Clean Water Act

The Clean Water Act (CWA) regulates the water quality of all discharges into waters of the United States including wetlands, perennial and intermittent stream channels. Section 401, Title 33, Section 1341 of the CWA sets forth water quality certification requirements for "any applicant applying for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters." Section 404, Title 33, Section 1344 of the CWA in part authorizes USACE to:

- Set requirements and standards pertaining to such discharges: subparagraph (e);
- Issue permits "for the discharge of dredged or fill material into the navigable waters at specified disposal sites": subparagraph (a);
- Specify the disposal sites for such permits: subparagraph (b);
- Deny or restrict the use of specified disposal sites if "the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies and fishery areas": subparagraph (c);
- Specify type of and conditions for non-prohibited discharges: subparagraph (f);
- Provide for individual State or interstate compact administration of general permit programs: subparagraphs (g), (h), and (j);
- Withdraw approval of such State or interstate permit programs: subparagraph (i);
- Ensure public availability of permits and permit applications: subparagraph (o);
- Exempt certain Federal or State projects from regulation under this Section: subparagraph (r); and,

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- Determine conditions and penalties for violation of permit conditions or limitations: subparagraph (s).
- Section 401 certification is required prior to final issuance of Section 404 permits from the U.S. Army Corps of Engineers.

The California State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs) enforce State of California statutes that are equivalent to or more stringent than the Federal statutes. RWQCBs are responsible for establishing water quality standards and objectives that protect the beneficial uses of various waters including Morrison Creek, Elk Grove Creek, and other creeks in the Planning Area. In the Planning Area the CVRWQCB is responsible for protecting surface and groundwaters from both point and non-point sources of pollution. Water quality objectives for all of the water bodies within the Planning Area were established by the CVRWQCB and are listed in its Basin Plan.

STATE

Department of Water Resources

The Department of Water Resources' major responsibilities include preparing and updating the California Water Plan to guide development and management of the State's water resources, planning, designing, constructing, operating, and maintaining the State Water Resources Development System, protecting and restoring the Sacramento-San Joaquin Delta, regulating dams, providing flood protection, assisting in emergency management to safeguard life and property, educating the public, and serving local water needs by providing technical assistance. In addition, the DWR cooperates with local agencies on water resources investigations; supports watershed and river restoration programs; encourages water conservation; explores conjunctive use of ground and surface water; facilitates voluntary water transfers; and, when needed, operates a State drought water bank.

Regional Water Quality Control Board

Senate Bill 227, also known as the Porter-Cologne Water Quality Control Act (Porter-Cologne), governs the coordination and control of water quality in the State, and includes provisions relating to non-point source pollution. The SWRCB has the ultimate authority over state water rights and water quality policy. However, Porter-Cologne also establishes nine Regional Water Quality Control Boards to oversee water quality on a day-to-day basis at the local/regional level. The CVRWQCB oversees the Elk Grove area.

Construction activities resulting in the disturbance of more than one acre require an NPDES permit. The City of Elk Grove became a joint participant with Sacramento County's NPDES permit. The permit was renewed in December 2002, and allows for the City to discharge urban runoff from Municipal Separate Storm Sewer Systems (MS4s) in their municipal jurisdictions. The permit requires that the City impose water quality and watershed protection measures for all development and capital improvement projects. The NPDES also requires a permit for every new construction project that implements the following measures:

- Eliminate or reduce non-storm water discharges to storm water systems and other waters of the nation;
- Develop and implement a storm water pollution prevention plan (SWPPP); and
- Perform inspections of storm water control structures and pollution prevention measures.

LOCAL

City of Elk Grove General Plan

The City of Elk Grove General Plan identifies several policies and action items that relate to hydrology, floodplains, and water quality within the City, as they relate to the proposed project:

**TABLE 4.6-1
PROJECT CONSISTENCY WITH GENERAL PLAN POLICIES**

General Plan Policies	Consistency with General Plan	Analysis
<p>Policy CAQ-1: Reduce the amount of water used by residential and non-residential uses by encouraging water conservation.</p>	<p>Yes</p>	<p>Compliance with the City’s Water Conservation Ordinance (City Municipal Code Chapter 14.10) would ensure that water usage within the landscaped loop on-ramp would be consistent with this policy.</p>
<p>Policy CAQ-5: Roads and structures shall be designed, built and landscaped so as to minimize erosion during and after construction.</p>	<p>Yes</p>	<p>The project would be subject to the City’s Land Grading and Erosion Control Ordinance (City Municipal Code Chapter 16.44) that would result in the project being designed, built, and landscaped to minimize erosion.</p>
<p>Policy CAQ-12: The City shall seek to ensure that the quality of groundwater and surface water is protected to the extent possible.</p>	<p>Yes</p>	<p>The project would comply with the City’s Water Conservation Ordinance (City Municipal Code Chapter 14.10) and the NPDES. Compliance with this ordinance and permit would ensure consistency with this policy.</p>
<p>Policy CAQ-13: Implement the City’s NPDES permit through the review and approval of development projects and other activities regulated by the permit.</p>	<p>Yes</p>	<p>The project would comply with the City’s NPDES permit, which is enforced by the CVRWQCB. Compliance with the NPDES permit would result in consistency with this policy.</p>
<p>Policy CAQ-14: The city shall seek to minimize the amount of impervious surfaces and directly connected impervious surfaces in areas of new development and redevelopment and use on-site infiltration of runoff in areas with appropriate soils where the infiltration of storm water would not pose a potential threat to groundwater quality.</p>	<p>Yes</p>	<p>The project would not be located within newly constructed development. Additional storm water flows are expected to be minimal and would be accommodated through the extension of an existing culvert beneath the SR 99 northbound off-ramp, which drains into a man-made drainage.</p>
<p>Policy CAQ-20: Fill may not be placed in any 100-yr floodplain as delineated by currently effective FEMA Flood Insurance Rate Maps or subsequent comprehensive drainage plans unless specifically approved by the City. No fill shall be permitted in wetland areas unless approved by the City and appropriate state and federal agencies.</p>	<p>Yes</p>	<p>The proposed project would not place fill material in any areas located within the 100-yr floodplain. The City will procure a Nationwide 404 dredge and fill permit from USACE and a 401 Water Quality Certification from CVRWQCB prior to filling USACE jurisdictional drainage ditches.</p>

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4.6.3 PROJECT IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance:

- Violate any water quality standards or waste discharge requirements.
- 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).
- 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.
- 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 flooding on-or off-site.
- 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.
- Otherwise substantially degrade water quality.
- 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.
- 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.
- Inundation by a seiche, tsunami, or mudflow.

PROJECT IMPACTS

Build Alternative

Hydrology & Flooding

Impact 4.6-1 Construction of the new loop on-ramp would increase impervious surfaces that could interfere with groundwater recharge. This is considered a **less than significant** impact.

The project would add approximately 35,000 square feet (0.8 acre) of impervious surfaces in the project area, a quantity that is not expected to significantly interfere with current groundwater recharge. The majority of the project area is urban and paved, with most surface water drainage routed underground to the north into Elk Grove Creek. Also, subsoils beneath the project site exhibit shallow clay pan layers with low permeability. Thus, the project area is not a

major source of ground water recharge. The proposed project would include minimal excavation to replace a portion of a man-made drainage with a culvert that would extend from an existing culvert beneath the SR 99 northbound off-ramp. In addition, underground drainage facilities would be extended for the new SR 99 northbound loop on-ramp. These features would be constructed as to not significantly interfere with the capacity or flow of water and ground water recharge. Therefore, this impact is considered less than significant.

Mitigation Measures

None required.

Impact 4.6-2 Site improvements associated with the proposed project would alter the existing drainage pattern and increase the risk of flooding within the project area. This is considered a **less than significant** impact.

The proposed project is not expected to substantially alter the existing drainage pattern of the site that would result in flooding on- or off-site. The project would cause a slight increase in the quantity of runoff generated in a storm event through the increase in impervious area associated with the pavement and sidewalk surfaces. The quantity of additional run-off generated from the project would not be substantial, and drainage improvements would be designed to accommodate the increased flows. Storm water from the additional roadway pavement would flow through underground storm drainage facilities and the extension of a culvert that exists beneath the SR 99 northbound off-ramp, which drains into a man-made drainage. Therefore, impacts associated with flooding are considered less than significant.

Water Quality

Impact 4.6-3 The proposed project would accumulate small quantities of heavy metals, oil and grease, as well as an increase in other chemicals used by motor vehicles that may be released into nearby waterways during first rains. This is considered a **less than significant** impact.

Operation of the proposed project would include use of the roadway and shoulder areas by motor vehicles, and other uses associated with local roadways. These uses typically result in the deposit of various materials on the roadway and adjacent areas that constitute urban pollution. Engine oil, antifreeze, heavy metals, transmission fluid, rubber, etc., can be transported in surface water runoff during storm events. These additional sources of polluted runoff, however, would be minimal and would occur without the implementation of the project, as the Elk Grove Boulevard/SR 99 interchange and East Stockton Boulevard are existing facilities in the project area. In addition, project operations would not involve vehicle parking or maintenance, further decreasing the likelihood of motor vehicle chemical releases.

All construction activities in the City of Elk Grove are required to meet the conditions of the City's NPDES permit. Under the NPDES requirements, a Notice of Intent (NOI) is required to be submitted for construction projects greater than one acre. The permit also requires that the following water quality measures be implemented during construction activities, including demolition:

- Elimination or reduction of non-stormwater discharges to stormwater systems and other waters of the United States;

4.6 HYDROLOGY AND WATER QUALITY

- Development and implementation of a Storm Water Pollution Prevention Plan (SWPPP); and
- Inspections of stormwater control structures and pollution prevention measures.

Measures would be included in the grading plans that would minimize erosion potential and water quality degradation of the project area in accordance with the City's Land Grading and Erosion Control Ordinance (City Municipal Code Chapter 16.44). This ordinance establishes administrative procedures, minimum standards for review, and implementation and enforcement procedures for controlling erosion, sedimentation, disruption of existing drainage, and related environmental damage caused by land clearing activities, grading, filling, and land excavation. The ordinance applies to all projects that would disturb 350 cubic yards or more of soil. Additionally, the State has published a set of Best Management Practices (BMPs) for both pre- and post-construction periods, which would be applied to the project. The City would identify the appropriate BMPs in coordination with the CVRWQCB for the proposed project.

The increased amount of runoff generated by the project would be minimal compared to existing conditions. The potential for impacts to ground water quality is unlikely due to the low permeability of the soils in the area (San Joaquin Silt Loam and San Joaquin Urban Complex). Low permeability soils tend to prevent leaching of contaminants into the ground water aquifer in quantities sufficient to degrade the ground water quality. Compliance with the provisions of the NPDES, SWPPP, BMPs, and the City's Land Grading and Erosion Control Ordinance would reduce impacts associated with water quality to a less than significant level.

No build Alternative

Under the No Build alternative, changes to the hydrology and water quality of the project area would not occur because the project would not be implemented. Thus, impacts to hydrology and water quality would be less than with the project.

4.6.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

CEQA Guidelines Section 15064(i) states that a Lead Agency shall consider whether the cumulative impact of a project is significant and whether the effects of the project are cumulatively considerable. The assessment of the significance of the cumulative effects of a project must, therefore, be conducted in connection with the effects of past projects, other current projects, and probable future projects.

The cumulative setting for hydrology and water quality associated with the proposed project is the Sacramento River watershed, which covers approximately 27,000 square miles. The City of Elk Grove is located in the Morrison Creek Stream Group drainage basin, a 192-square mile sub-shed of the Sacramento River watershed. Surface water resources that are a part of the Morrison Creek Stream group include Elder, Elk Grove, Laguna (and tributaries), Morrison, Strawberry, and Whitehouse creeks. Storm water in most of this stream group flows west to the Beach-Stone Lakes basin west of Interstate 5 and ultimately to the Sacramento River.

Cumulative impacts consider the proposed, planned, approved, or reasonably foreseeable projects in the City of Elk Grove. Cumulative impacts associated with hydrology and water quality from increased development include, but are not limited to, impacts on transportation,

air quality, hazardous materials, and biological resources. The cumulative impacts associated with these potentially affected resources are analyzed in the applicable sections of this Draft EIR.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Impact 4.6-4 The proposed project would modify an existing interchange by constructing a loop on-ramp to accommodate existing and proposed traffic demands. The project itself would not include any components that would significantly increase sources of polluted runoff, as it would not create or encourage new vehicle trips or usage over existing conditions. Construction of the proposed project along with other construction within the City would contribute to cumulative impacts regarding hydrology; however, due to the nature of the project, consistency with General Plan policies, City ordinances, and incorporation of mitigation measures, incremental contributions are considered **less than cumulatively considerable**.

Mitigation Measures

None required.

4.6.5 REFERENCES

California Department of Water Resources. Designated Floodway Maps, American and Consumnes River. Website accessed by City of Elk Grove Planning Department February 25, 2009. <http://recbd.ca.gov>.

U.S. Department of Agriculture. Natural Resource Conservation Service. April, 1993. *Soil Survey of Sacramento County, California*.