

4.7 HYDROLOGY AND DRAINAGE

This Section describes the current conditions related to hydrology and drainage in the City of Cypress. Additionally, this Section provides an assessment of hydrologic and drainage impacts that could result from implementation of the proposed General Plan Update, and identifies appropriate mitigation measures.

4.7.1 ENVIRONMENTAL SETTING

WATER RESOURCES

Water resources are diminishing throughout Southern California with increased development. As the native water supply decreases, the region's dependence on imported water grows. This section describes the quantity and quality of surface and ground water resources within Cypress.

SURFACE WATER

No naturally occurring permanent surface water features exist within Cypress. The Los Alamitos Race Track and Cypress Golf Course in southwestern Cypress, do however, contain a number of manmade lakes. In addition, six storm drain channels intermittently carry water: Moody Creek, Coyote Creek, 2A, Carbon Creek, Stanton Creek and Bolsa Chica Creek.

GROUND WATER

The Southern California Water Company (SCWC) is responsible for water distribution in Cypress. Approximately 75 percent of Cypress' water use is obtained from the ground water basin managed by the Orange County Water District (OCWD). The remaining 25 percent of water is imported through the Municipal Water District of Orange County. Created by the State legislature in 1933, OCWD is responsible for maintaining the quantity and quality of ground water underlying Cypress and much of northern Orange County. The OCWD prevents local water companies from overdrafting the basin's water supply. Each jurisdiction is allowed to extract only 75 percent of their water needs from ground water. In some areas of the City of Cypress, groundwater can be found approximately three feet below the surface.

CONSERVATION OF WATER RESOURCES

Southern California suffered a severe drought during the 1980's and early 1990's and has had to import water to meet the growing demands on the region. The Metropolitan Water District (MWD) imports water from the Colorado River via the Colorado River Aqueduct and from northern California via the State Water Project to obtain water supplies from sources outside of Southern California.

In recognition of California's limited water supply, the Southern California Water Company (SCWC) has created voluntary measures to promote water conservation in Cypress. Current programs include the distribution of low flush toilets and offering feedback to residential customers regarding their water use patterns.

NATURAL HAZARDS

FLOODING

The City of Cypress contains no natural, permanent water features. A number of man-made lakes exist within the Cypress Golf Course and the Los Alamitos Race Track. In addition, six storm drain channels traverse the City and transport water on occasion: Moody Creek, Coyote Creek, 2A, Carbon Creek,

Stanton Creek, and Bolsa Chica Creek. Moody and Coyote Creek Channels provide drainage facilities for northern Cypress. The central portion of the community drains into 2A and Carbon Creek Channels. Drainage of the southern portion of Cypress is accommodated by the Stanton Creek and Bolsa Chica Channels. The Orange County Safety Element identifies Carbon Creek as a major drainage facility for northern Orange County.

Historically, Orange County has experienced intermittent widespread flooding. Storm drain improvements by the Orange County Flood Control District generally provide relief from the flooding. According to the flood insurance rate map for Orange County, the projected 100-year flood for Cypress is contained within the Carbon Creek and Bolsa Chica storm drain channels. However, like most of Orange County, the projected 500-year flood may result in widespread flooding throughout the entire City (see Exhibit 4.7-1, *Flood Zones*).

Outside Orange County, the Los Angeles County Drainage Area's (LACDA) flood control system manages storm waters. According to the United States Army Corps of Engineers, it has become evident that the system does not have sufficient capacity to provide adequate flood protection. In fact, a 100-year flood on the main system would inundate about 82 square miles, and existing drainage facilities only provide a 25-year-level protection in the lower basin, where over 500,000 people reside. According to the Los Angeles County Drainage Area Review, all flood waters will be accommodated in the Coyote Creek Channel and Cypress will not be affected.

Cypress is located within the dam inundation area of three dams: Prado, Carbon Canyon and Whittier Narrows (see Exhibit 4.7-2, *Dam Inundation Areas*). Prado Dam is located northeast of Cypress in Riverside County. The dam was designed in the 1930s, but has recently increased its functioning capability due to the Seven Oaks Dam, which was completed in November 1999 and is located approximately 40 miles upstream on the Santa Ana River. During a flood, Seven Oaks Dam will store water destined for Prado Dam for as long as the reservoir pool at Prado Dam is rising. When the flood threat at Prado Dam has passed, Seven Oaks Dam will begin to release its stored flood water at a rate that does not exceed the downstream channel capacity. Working in tandem, the Prado and Seven Oaks Dams provide increased flood protection to Orange County.

In addition, the Santa Ana River Mainstem project is designed to provide flood protection to Orange, Riverside and San Bernardino Counties. The proposed improvements cover 75 miles from the headwater of the Santa Ana River east of the City of San Bernardino to the mouth of the river at the Pacific Ocean between the Cities of Newport Beach and Huntington Beach. The Mainstem Project will increase flood protection to more than 3.35 million people within the three Counties. The project includes seven independent features: Seven Oaks Dam, Mill Creek Levee, San Timoteo Creek, Oak Street Drain, Prado Dam, Santiago Creek and the lower Santa Ana River.

Carbon Canyon Dam, located in the northeastern portion of the City of Brea, is an earthfill dam that was designed to hold 12,000-acre feet of water. If dam waters were to exceed this capacity, the portion of Cypress below Orange Avenue could be completely covered.

The Whittier Narrows Dam is located in Pico Rivera and is also of earthfill construction. The City of Cypress has prepared emergency evacuation plans for the Prado, Carbon Canyon, and Whittier Narrows Dams.

EXISTING POLICIES AND REGULATIONS

National Pollutant Discharge Elimination System Permit Program. The National Pollutant Discharge Elimination System (NPDES) program requires the owner or operator of any facility, or person responsible for any activity that discharges waste into the surface waters of the U.S. to obtain an NPDES permit from the Regional Water Quality Control Board, as mandated by the National Clean

Insert Exhibit 4.7-1, Flood Zones

Insert Exhibit 4.7-2, Dam Inundation Areas

Water Act. The existing NPDES (Phase I) storm water program requires municipalities serving greater than 100,000 persons to obtain a NPDES storm water permit for construction projects greater than five acres. Proposed NPDES storm water regulations (Phase II), expand this existing national program to smaller municipalities with populations of 10,000 or more and construction sites that disturb greater than one acre of land.

4.7.2 STANDARDS OF SIGNIFICANCE

SIGNIFICANCE CRITERIA

In accordance with CEQA, the effects of a project are evaluated to determine if they will result in a significant adverse impact on the environment. An EIR is required to focus on these effects and offer mitigation measures to reduce or avoid any significant impacts that are identified. The criteria, or standards, used to determine the significance of impacts may vary depending on the nature of the project. Hydrology and Water Quality impacts resulting from the implementation of the proposed General Plan Update could be considered significant if they cause any of the following results:

- 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;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- 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; and/or
- Inundation by seiche, tsunami, or mudflow (see Section 7.0, *Effects Found Not To Be Significant*).

Based on these standards, the effects of the proposed project have been categorized as either a “less than significant impact” or a “potentially significant impact.” Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than

significant level through the application of mitigation, it is categorized as a significant and unavoidable impact.

4.7.3 IMPACTS AND MITIGATION MEASURES

WATER QUALITY STANDARDS AND WASTE DISCHARGE REQUIREMENTS

- **BUILDOUT OF THE CITY OF CYPRESS RESULTING FROM IMPLEMENTATION OF THE PROPOSED GENERAL PLAN UPDATE MAY VIOLATE WATER QUALITY STANDARDS OR WASTE DISCHARGE REQUIREMENTS.**

Level of Significance Before Policies/Mitigation: Potentially Significant Impact.

Impact Analysis: Surface runoff in the City of Cypress may contribute to water quality degradation. However, the Conservation Element in the proposed General Plan Update contains a Conservation Plan, the intent of which is to “address preservation of the City’s remaining natural resources.” The second goal of the Water Resources section of the Conservation Plan is to protect and enhance water quality within the City of Cypress. Measures to protect rather than violate standards, or degrade water quality are included in the proposed General Plan Update. The Conservation Plan, along with the goals and policies included in the proposed Conservation/Open Space/Recreation Element would help to maintain water quality in the City of Cypress as it approaches buildout. Therefore, no significant water quality impacts would occur with implementation of the proposed General Plan Update.

Policies in the Proposed General Plan Update: The Conservation/Open Space/Recreation Element includes the following policy:

COSR-1.3 Protect ground water resources from depletion and sources of pollution.

Mitigation Measures: In addition to the above mentioned proposed General Plan Update policy, the following mitigation measures are recommended to further reduce water quality impacts.

4.7.1 The City of Cypress shall require individual development projects to reduce runoff. Additionally, landscape irrigation waste and runoff shall be reduced by water conserving irrigation systems, moisture-sensing devices, and/or avoidance of mounded landscaped areas. The amount and specific type of runoff control will be determined during individual project design review.

4.7.2 Individual development projects shall comply with NPDES rules and regulations, as well as applicable permits. The City of Cypress shall actively enforce all NPDES rules and regulations, including total maximum daily load (TMDL) guidelines, to further reduce the amount of water runoff from the City. Future development projects shall not be approved without compliance to these regulations.

Level of Significance After Policies/Mitigation: Less Than Significant Impact.

GROUND WATER DEPLETION

- **THE CITY OF CYPRESS OBTAINS APPROXIMATELY 75 PERCENT OF ITS WATER SUPPLY FROM LOCAL GROUND WATER. BUILDOUT OF THE PROPOSED GENERAL PLAN UPDATE MAY RESULT IN IMPACTS ASSOCIATED WITH THE DEPLETION OF GROUND WATER SOURCES.**

Level of Significance Before Policies/Mitigation: Potentially Significant Impact.

Impact Analysis: Approximately 75 percent of the water supply for the City of Cypress is obtained from a local groundwater basin managed by the Orange County Water District (OCWD). The remaining 25 percent of the City's water supply is imported through the Municipal Water District of Orange County. The OCWD is charged with maintaining the quantity and quality of groundwater underlying the City of Cypress, as well as much of northern Orange County. The OCWD ensures that each jurisdiction within northern Orange County only extracts 75 percent of its water supply from ground water. The City is largely built-out (approximately 95 percent), and future growth is expected to minimal.

Conservation of water resources became increasingly important throughout Southern California in the 1980s and early 1990s, when the entire region suffered a severe drought. In recognition of California's limited water supply, the Southern California Water Company (SCWC) has created voluntary measures to promote water conservation in the City of Cypress. Current programs include the distribution of low flush toilets and offering feedback to residential customers regarding their water consumption patterns. These water conservation programs already in place, as well as policies included in the proposed General Plan Update would result in further protection of ground water resources in the City of Cypress. Therefore, implementation of the proposed General Plan Update would result in less than significant ground water impacts.

Policies in the Proposed General Plan Update: The Conservation/Open Space/Recreation Element contains the following policies:

- COSR-1.1 Pursue agreements with Southern California Water Company and Orange County Water District to design and implement water conservation measures.
- COSR-1.2 Promote the use of native trees in landscaping to conserve water resources.
- COSR-1.4 Conserve imported water by utilizing water conservation techniques, water conserving appliances, and drought-resistant landscaping.
- COSR-1.5 Support the expansion of reclaimed water production and use wherever possible and economically feasible.

Mitigation Measures: No mitigation measures beyond the policies identified in the proposed General Plan Update are required.

Level of Significance After Policies/Mitigation: Less Than Significant Impact.

DRAINAGE AND RUNOFF

- IMPLEMENTATION OF THE PROPOSED GENERAL PLAN UPDATE MAY RESULT IN IMPACTS TO DRAINAGE PATTERNS IN THE CITY OF CYPRESS THAT MAY LEAD TO EROSION, SILTATION, OR SURFACE WATER RUNOFF. IMPLEMENTATION OF THE PROPOSED GENERAL PLAN UPDATE MAY CREATE OR CONTRIBUTE RUNOFF WATER TO THE STORMWATER DRAINAGE SYSTEMS IN THE CITY.

Level of Significance Before Policies/Mitigation: Less Than Significant Impact.

Impact Analysis: There are no naturally occurring permanent surface water features within the City of Cypress, such as streams or rivers. However, the Los Alamitos Race Track and the Cypress Golf Course in southwestern Cypress do contain a number of man-made lakes. Additionally, six storm drain channels intermittently carry water through the City: Moody Creek, Coyote Creek, 2A, Carbon Creek, Stanton Creek, and Bolsa Chica Creek. Moody and Coyote Creek Channels provide drainage facilities for northern Cypress while 2A and Carbon Creek Channels provide drainage for central Cypress, and Stanton and Bolsa Chica Channels provide drainage for the southern portion of Cypress. The proposed General Plan Update would not involve any changes to these drainage facilities. No new drainage systems are planned for the City of Cypress, as those identified are considered sufficient to handle current and projected future use of the system. Therefore, no impacts to City of Cypress drainage patterns would occur with project implementation.

Policies in the Proposed General Plan Update: No policies within the proposed General Plan Update pertain to potential impacts related to drainage patterns within the City of Cypress.

Conditions of Approval: Future development projects shall be subject to the following condition of approval:

- COA-HYD1 Drainage shall be solved to the satisfaction of the City Engineer. A grading and drainage plan, in ink on Mylar, signed by a registered California civil engineer and using actual grades from an Orange County Surveyor's Benchmark shall be submitted for approval by the City Engineer. A topography of the area surrounding this development shall be made to establish existing drainage flow patterns. If the existing natural flow of any adjoining parcel is across the land of this development, a drainage easement shall be granted and drainage facilities provided for that property to the satisfaction of the City Engineer. All on-site drainage conveyed to the street shall be by means of an under-sidewalk drain. On-site landscape shall have a slope gradient of one percent (1%) minimum in landscape areas. In parking areas, AC shall have a minimum slope gradient of one and one-half percent (1.5%) or as approved by the City Engineer, and concrete shall have a minimum slope gradient of two-tenths percent (0.2%).

Mitigation Measures: No mitigation measures beyond the standard City conditions of approval are required.

Level of Significance After Policies/Mitigation: Less Than Significant Impact.

FLOODING

- BUILDOUT OF THE PROPOSED GENERAL PLAN UPDATE MAY RESULT IN POTENTIAL FLOODING IMPACTS WITHIN THE CITY OF CYPRESS.

Level of Significance Before Policies/Mitigation: Potentially Significant Impact.

Impact Analysis: The City of Cypress is largely built out. Buildout of the proposed General Plan Update would ultimately result in the addition of approximately 1,230 additional dwelling units citywide. These units would most likely be accommodated through intensification of lower density residential uses, as well as the integration of multi-family units on Lincoln Avenue. Commercial uses within the City are also largely built out. As such, the proposed General Plan Update anticipates the recycling of properties that are currently underdeveloped or improperly utilized. In addition, as shown on the Orange County Flood Insurance Rate Map, the City of Cypress would be contained within the Carbon Creek and Bolsa Chica storm drain channels for the 100-year flood event. However, like most of Orange County, the projected 500-year flood may result in widespread flooding throughout the entire City of Cypress.

Flood hazards are discussed in both the Safety and Land Use Elements of the proposed General Plan Update. The City of Cypress has identified flooding as a Key Safety Issue in the proposed Safety Element. Specific goals and policies have been included in the proposed General Plan Update to decrease potential flood hazards. Therefore, buildout of the proposed General Plan Update would not create any significant impacts.

Policies in the Proposed General Plan Update: The Safety and Land Use Elements include the following policies:

- SAF-1.1 Manage development to insure that flooding concerns have been considered prior to development.

- LU-5.5 Continue to make incremental improvements to the City’s flood control and drainage system.

Mitigation Measures: In addition to the policies identified above, the following mitigation measure is recommended to further reduce impacts.

- 4.7.3 Potential flooding in the Business Park shall be reduced through project-specific mitigation measures during individual design review. Future development in the City of Cypress would largely be limited to the Business Park. As such, specific mitigation measures designed to reduce flooding impacts shall be required and approved during design review for individual development projects.

Level of Significance After Policies/Mitigation: Less Than Significant Impact.

DAM FAILURE

- **BUILDOUT OF THE PROPOSED GENERAL PLAN UPDATE MAY EXPOSE PEOPLE OR STRUCTURES TO HAZARDS INVOLVING FLOODING OR THE FAILURE OF A DAM.**

Level of Significance Before Policies/Mitigation: Potentially Significant Impact.

Impact Analysis: Implementation of the proposed General Plan Update would not expose people or structures to hazards involving flooding or the failure of a levee or dam. However, the Safety Element in the proposed General Plan Update states that “failure of the Prado, Carbon Canyon, or Whittier Narrows dams would result in inundation throughout the City” of Cypress. Prado Dam is located northeast of the City of Cypress in Riverside County. The Carbon Canyon Dam is located in the northeastern portion of the City of Brea, and is an earthfill dam that holds 12,000-acre feet of water. If waters were to exceed the capacity of the Carbon Canyon Dam, the portion of Cypress below Orange Avenue could be completely inundated. The Whittier Narrows Dam is located in Pico Rivera and is also earthfill. The Prado Dam currently works in tandem with the Seven Oaks Dam, located approximately 40 miles upstream of the City of Cypress on the Santa Ana River, to provide increased flood protection

to Orange County. Additional flood protection is provided to the Counties of Orange, Riverside, and San Bernardino through the Santa Ana River Mainstem project. The project involves improvements to the Seven Oaks Dam, Mill Creek Levee, San Timoteo Creek, Oak Street Drain, Prado Dam, Santiago Creek, and the lower Santa Ana River. The project would increase flood protection to more than 3.35 million people within the three Counties. The City of Cypress supports this project, and would benefit from increased flood protection.

Flood hazards associated with the failure of a dam are discussed in the Safety Element of the proposed General Plan Update. The City of Cypress has identified flooding as a Key Safety Issue in the proposed Safety Element. Specific goals and policies have been included in the proposed Safety Element to decrease potential flood hazards associated with the failure of a dam. Given that the City is largely built out and that the proposed General Plan Update does not anticipate substantial population and employment growth that could place additional people in danger of flooding hazards. Thus, no significant impacts are anticipated in this regard.

Policies in the Proposed General Plan Update: The Safety Element contains the following policies:

- SAF-1.1 Manage development to insure that flooding concerns have been considered prior to development.
- SAF-1.2 Minimize flood hazards by working with the Orange County Department of Public Works to identify and construct needed local and regional storm drain improvements.
- SAF-1.3 Minimize dam inundation hazards through engineering and construction.
- SAF-1.4 Review on an annual basis the emergency evacuation plan to ensure its continued effectiveness.
- SAF-1.5 Support the U.S. Army Corps of Engineers' improvements to Los Angeles County's flood control system and to the Santa Ana River Mainstem project.

Mitigation Measures: No mitigation measures beyond the policies identified in the proposed General Plan Update are required.

Level of Significance After Policies/Mitigation: Less Than Significant Impact.

4.7.4 UNAVOIDABLE SIGNIFICANT IMPACTS

All hydrology and drainage impacts associated with implementation of the proposed General Plan Update would be less than significant by adherence to/compliance with policies in the proposed General Plan Update and standard City Conditions of Approval, and with the imposition of mitigation measures. No unavoidable significant hydrology and drainage impacts would occur as a result of buildout of the proposed General Plan Update.