IV.H HYDROLOGY AND WATER QUALITY

1. Introduction

This section evaluates the potential impacts of the proposed Grand Park Specific Plan relative to surface and groundwater hydrology, surface drainage, and surface and groundwater quality. Where applicable, mitigation measures are provided to address impacts resulting from implementation of the proposed Specific Plan. The analysis presented in this section is based on information and conclusions contained in the proposed Specific Plan, stormwater hydrology calculations provided by the project applicant, and City of Ontario (City) documents, including The Ontario Plan (TOP), The Ontario Plan Final Environmental Impact Report (TOP Final EIR), the Existing Hydrology Conditions Map, and the New Model Colony (NMC) 2012 Master Plan of Drainage (MPD), and correspondence received from the San Bernardino County Department of Public Works. This correspondence is located in Appendix A-3. The Existing Hydrology Conditions Map and the 2012 Master Plan of Drainage are included in Appendix H.

2. Environmental Setting

a) Regulatory Framework

1) Federal Clean Water Act

In 1972, the Federal Water Pollution Control Act (later referred to as the Clean Water Act) was amended to require National Pollutant Discharge Elimination System (NPDES) permits for the discharge of pollutants to waters of the United States from any point source. In 1987, the Clean Water Act was amended to require that the United States Environmental Protection Agency (EPA) establish regulations for the permitting of municipal and industrial stormwater discharges under the NPDES permit program. The Environmental Protection Agency published final regulations regarding stormwater discharges on November 16, 1990. The regulations require that municipal separate storm sewer system (MS4) discharges to surface waters to be regulated by a NPDES permit.

In addition, the Clean Water Act requires states to adopt water quality standards for receiving water bodies and to have those standards approved by the Environmental Protection Agency. Water quality standards consist of designated beneficial uses for a particular receiving water body (e.g., wildlife habitat, agricultural supply, fishing etc.), along with water quality criteria necessary to support those uses. Water quality criteria are prescribed concentrations or levels of constituents (e.g., lead, suspended sediment, and fecal coliform bacteria) or narrative statements that represent the quality of water that support a particular use. Because California had not established a complete list of acceptable water quality criteria, the Environmental Protection Agency established numeric water quality criteria for certain toxic

constituents in receiving waters with human health or aquatic life designated uses in the form of the California Toxics Rule (CTR) (40 CFR 131.38).

2) Clean Water Act Section 303(d) - Total Maximum Daily Loads

When designated beneficial uses of a particular receiving water body are being compromised by water quality, Section 303(d) of the Clean Water Act requires identifying and listing that water body as "impaired." Once a water body has been deemed impaired, a Total Maximum Daily Load (TMDL) must be developed for the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, non-point, and natural sources that a water body may receive without exceeding applicable water quality standards (with a "factor of safety" included). Once established, the TMDL allocates the loads among current and future pollutant sources to the water body.

3) California Toxics Rule

The California Toxics Rule (CTR) is a Federal regulation issued by the Environmental Protection Agency providing water quality criteria for potentially toxic constituents in receiving waters with human health or aquatic life designated uses in the State of California. CTR criteria are applicable to the receiving water body and therefore must be calculated based upon the probable hardness values of the receiving waters for evaluation of acute (and chronic) toxicity criteria. At higher hardness values for the receiving water, copper, lead, and zinc are more likely to be complexed (bound with) components in the water column. This in turn reduces the bioavailability and resulting potential toxicity of these metals.

Due to the intermittent nature of stormwater runoff, especially in Southern California, the acute criteria are considered to be more applicable to stormwater conditions than chronic criteria and therefore are used in assessing impacts. Acute criteria represent the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time without deleterious effects; chronic criteria equal the highest concentration to which aquatic life can be exposed for an extended period of time (four days) without deleterious effects.

4) Clean Water Act Section 401 - Water Quality Certification

In addition to the issuance of NPDES permits or waste discharge requirements, the Regional Water Quality Control Board (RWQCB) acts to protect the quality of surface waters through water quality certification as specified in Section 401 of the Clean Water Act (33 USC 466 et seq.) Section 401 of the Clean Water Act requires that any person applying for a Federal permit or license which may result in a discharge of pollutants into waters of the United States must obtain a state water quality certification that the activity complies with all applicable water quality standards, limitations, and restrictions. Subject to certain limitations, license or permit may be issued by a Federal agency until certification required by Section 401 has been granted. Further, no license or permit may be issued if certification has been denied. Clean Water Act Section 404 permits and authorizations are subject to Section 401 certification by the RWQCBs.

5) California Water Code

The Federal Clean Water Act places the primary responsibility for the control of surface water pollution and for planning the development and use of water resources with the states, although this does establish certain guidelines for the States to follow in developing their programs and allows the Environmental Protection Agency to withdraw control from states with inadequate implementation mechanisms.

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Division 7 of the California Water Code) (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Resource Control Board (SWRCB) and each of the RWQCBs power to protect water quality, and is the primary vehicle for implementation of California's responsibilities under the Federal Clean Water Act. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a water quality control plan (Basin Plan) for its region. The regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its state water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

6) Water Quality Control Plan for the Santa Ana River Basin

The project site is located within the Santa Ana River Basin, which includes the upper and lower Santa Ana River watersheds, the San Jacinto River watershed, and several other small drainage areas. The Santa Ana Region covers part of southwestern San Bernardino County, western Riverside County, and northwestern Orange County.

The Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) includes a summary of beneficial water uses, water quality objectives needed to protect the identified beneficial uses, and implementation measures. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The term "water quality standards," as used in the Federal Clean Water Act, includes both the beneficial uses of specific water bodies and the levels of quality which must be met and maintained to protect those uses. The Basin Plan includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and maintain the water quality standards.

The RWQCB regulates waste discharges to minimize and control their effects on the quality of the region's ground and surface water. Permits are issued under a number of programs and authorities. The terms and conditions of these discharge permits are enforced through a variety of technical, administrative, and legal means. Water quality problems in the region

are listed in the Basin Plan, along with the causes, where they are known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. The Basin Plan reflects, incorporates, and implements applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code and the Clean Water Act.

The City is also subject to the conditions of the San Bernardino County Regional Municipal Separate Stormwater Sewer System (MS4) permit. As a co-permittee, the City is responsible for regulating stormwater runoff as required by the permit conditions, inspecting construction sites for compliance with the Ontario Municipal Code, San Bernardino County NPDES permit, and the Statewide general permit conditions, and requiring new development projects to prepare a Water Quality Management Plan.

7) Nonpoint Source Management Plan (Resolution No. 88-123)

In addition to the Basin Plan, a number of water quality control plans and policies adopted by the State Water Resources Control Board (SWRCB) direct the Regional Water Quality Control Board's (RWQCB's) actions. In 1988, the SWRCB adopted the Nonpoint Source Management Plan which established the framework for statewide nonpoint source activities. Four of the six statewide objectives and implementation strategies to manage nonpoint source problems are included in the plan. Nonpoint source pollution comes from many diffuse sources including agriculture (pesticides, herbicides), urban runoff (construction sites, roads, industry, residential areas), marinas and boating, hydromodification, and mining.

8) Beneficial Uses

A beneficial use is one of the various ways the water can be used for the benefit of people and/or wildlife. Examples include drinking, swimming, industrial, and agricultural water supply, and the support of fresh and saline aquatic habitats. Section 303 of the Federal Clean Water Act (33 USC 1313) defines water quality standards as consisting of both the uses of the surface (navigable) waters involved and the water quality criteria which are applied to protect those uses. Under the Porter-Cologne Water Quality Control Act, these concepts are separately considered as beneficial uses and water quality objectives.

In all, 23 beneficial uses are now defined statewide; of these, 19 are recognized within the Santa Ana Region. The four not utilized are Migration of Aquatic Organisms, Freshwater Replenishment, Inland Saline Water Habitat, and Aquaculture. One beneficial use specific to the Region, Limited Warm Freshwater Habitat, has been added, bringing the total number of beneficial uses recognized in the Santa Ana Region to 20. The region's beneficial uses are listed and described below.

Beneficial Use Definitions

The following beneficial uses are provided by the Santa Ana Regional Water Quality Control Board, and are defined as follows:

- Municipal and Domestic Supply (MUN) waters are used for community, military, municipal or individual water supply systems. These uses may include, but are not limited to, drinking water supply.
- Agricultural Supply (AGR) waters are used for farming, horticulture or ranching. These uses may include, but are not limited to, irrigation, stock watering, and support of vegetation for range grazing.
- Industrial Service Supply (IND) waters are used for industrial activities that do not depend primarily on water quality. These uses may include, but are not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well re-pressurization.
- Industrial Process Supply (PROC) waters are used for industrial activities that depend primarily on water quality. These uses may include, but are not limited to, process water supply and all uses of water related to product manufacture or food preparation.
- Groundwater Recharge (GWR) waters are used for natural or artificial recharge of groundwater for purposes that may include, but are not limited to, future extraction, maintaining water quality or halting saltwater intrusion into freshwater aquifers.
- Navigation (NAV) waters are used for shipping, travel or other transportation by private, commercial or military vessels.
- Hydropower Generation (POW) waters are used for hydroelectric power generation.
- Water Contact Recreation (REC1) waters are used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, and use of natural hot springs.
- Non-Contact Water Recreation (REC2) waters are used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the above activities.
- Commercial and Sport fishing (COMM) waters are used for commercial or recreational collection of fish and other organisms, including those collected for bait. These uses may include, but are not limited to, uses involving organisms intended for human consumption.
- Warm Freshwater Habitat (WARM) waters support warm water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
- Limited Warm Freshwater Habitat (LWRM) waters support warm water ecosystems that are severely limited in diversity and abundance as the result of concrete-lined

watercourses and low, shallow dry weather flows which result in extreme temperature, pH, and/or dissolved oxygen conditions. Naturally reproducing fish populations are not expected to occur in LWRM waters.

- Cold Freshwater Habitat (COLD) waters support cold-water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
- Preservation of Biological Habitats of Special Significance (BIOL) waters support designated areas or habitats, including, but not limited to, established refuges, parks, sanctuaries, ecological reserves or preserves, and Areas of Special Biological Significance (ASBS), where the preservation and enhancement of natural resources requires special protection.
- Wildlife Habitat (WILD) waters support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.
- Rare, Threatened or Endangered Species (RARE) waters support habitats necessary for the survival and successful maintenance of plant or animal species designated under state or Federal law as rare, threatened or endangered.
- Spawning, Reproduction, and Development (SPWN) waters support high quality aquatic habitats necessary for reproduction and early development of fish and wildlife.
- Marine Habitat (MAR) waters support marine ecosystems that include, but are not limited to, preservation and enhancement of marine habitats, vegetation (e.g., kelp), fish and shellfish, and wildlife (e.g., marine mammals and shorebirds).
- Shellfish Harvesting (SHEL) waters support habitats necessary for shellfish (e.g., clams, oysters, limpets, abalone, shrimp crab, lobster, sea urchins, and mussels) collected for human consumption, commercial or sports purposes.
- Estuarine Habitat (EST) waters support estuarine ecosystems that may include, but are not limited to, preservation and enhancement of estuarine habitats, vegetation, fish and shellfish, and wildlife, such as waterfowl, shorebirds, and marine mammals.

9) Implementation

The RWQCB's principal means of achieving the water quality objectives and protecting the beneficial uses specified in the Basin Plan is the development, adoption, issuance, and enforcement of waste discharge requirements. By regulating the quality of wastewater discharged, and in other ways controlling the discharge of wastes which may impact surface and groundwater quality, the RWQCB works to protect the Region's water resources. The RWQCB's regulatory tools include National Pollutant Discharge Elimination System permits, Waste Discharge Permits, Water Reclamation Requirements, Water Quality Certification, and Waste Discharge Prohibitions.

National Pollutant Discharge Elimination System (NPDES)

National Pollutant Discharge Elimination System (NPDES) permits are required for discharges of pollutants to navigable waters of the United States, which includes any discharge to surface waters, including lakes, rivers, streams, bays, the ocean, dry streambeds, wetlands, and storm sewers that are tributary to any surface water body. NPDES permits are issued under the Federal Clean Water Act, Title IV, Permits and Licenses, Section 402 (33 USC 466 et seq.).

The RWQCB issues these permits in lieu of direct issuance by the Environmental Protection Agency, subject to review and approval by the Environmental Protection Agency Regional Administrator (EPA Region IX). The terms of these NPDES permits implement pertinent provisions of the Federal Clean Water Act and the Act's implementing regulations, including pre-treatment, sludge management, effluent limitations for specific industries, and anti-degradation. In general, the discharge of pollutants is to be eliminated or reduced as much as practicable so as to achieve the Clean Water Act's goal of "fishable and swimmable" navigable (surface) waters. Technically, all NPDES permits issued by the RWQCB are also Waste Discharge Requirements issued under the authority of the CWC.

NPDES permits regulate discharges from publicly owned treatment works, industrial discharges, stormwater runoff, dewatering operations, and groundwater cleanup discharges. NPDES permits are issued for five years or less, and are therefore to be updated regularly. The rapid and dramatic population and urban growth in the Santa Ana Region has caused a significant increase in NPDES permit applications for new waste discharges. Because of staff resource limitations, the Board generally focuses its permitting efforts on the issuance of permits for these new discharges. NPDES permit updates are done to the extent feasible, particularly for the more significant discharges. To expedite the permit issuance process, the RWQCB has adopted several general NPDES permits, each of which regulates numerous discharges of similar types of wastes. The SWRCB has issued general permits for stormwater runoff from construction sites statewide. Stormwater discharges from industrial and construction activities in the Santa Ana Region can be covered under these general permits, which are administered jointly by the SWRCB and RWQCB.

Stormwater Program

The 1987 Clean Water Act amendments required the Environmental Protection Agency to establish regulations to control stormwater discharges associated with industrial activity, and discharges from large and medium municipal separate storm sewer systems. Large municipal separate storm sewer systems serve a population of 250,000 or more and medium municipal separate storm sewer systems serve a population of more than 100,000 but less than 250,000. On November 16, 1990, the Environmental Protection Agency published the final regulations that established the NPDES permit requirements for discharges of stormwater from large and medium municipal separate storm sewer systems and stormwater discharges associated with industrial activities, including construction activities. The stormwater NPDES permitting program is administered by the SWRCB and the RWQCBS.

Municipal Stormwater Discharge Permits

Prior to the announcement of the Environmental Protection Agency's final regulations, the Santa Ana Regional Water Quality Control Board adopted area-wide urban NPDES stormwater permits for each of the three counties in the Region. As part of the areawide urban permits, the counties are named as the principal permittee and the incorporated cities are named as co-permittees. These permits require the following:

- The development and implementation of programs to identify and eliminate illegal/illicit discharges to municipal stormwater conveyance systems;
- The development and implementation of best management practices (BMPs) to reduce pollutants in stormwater and urban runoff; and
- The development and implementation of monitoring programs.

Industrial and Construction Stormwater Discharge Permits

The Federal regulations identify 11 industrial categories which are subject to stormwater discharge permitting, one of which is construction activities. These activities are covered by a separate permit in the State of California. To satisfy the Federal requirements, the SWRCB issued two general permits:

The General Industrial Activities Stormwater Permit (State Board Order No. 91-13-DWQ as amended by State Board Order No. 92-12-DWQ); and

The General Construction Activity Stormwater Permit (State Board Order No. 92-08-DWQ).

Industrial facilities and proponents of construction projects must file a Notice of Intent (NOI) with the SWRCB to be covered under the applicable general permit. The General Construction Activity Stormwater Permit addresses stormwater discharges associated with a construction activity where grading, clearing, and excavation results in a land disturbance of five acres or more. A stormwater discharge from a construction activity resulting in a land disturbance of less than five acres also requires a permit if the construction is a part of a larger common plan of development or sale.

Federal Emergency Management Agency (FEMA)

The project site is located with the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), FIRM No. 06071C9375H (last updated August 28, 2008).). As a participant in the National Flood Insurance Program (NFIP), communities must adopt and enforce minimum floodplain management standards, including identification of flood hazards and flooding risks as defined by the Federal Emergency Management Agency (FEMA).

City of Ontario Stormwater Ordinance

Chapter 6 of the City Municipal Code, Storm Water Drainage System, of Municipal Code Title 6, Drainage and Health, provides standards, conditions, and Best Management Practices for the development and operation of buildings and facilities to limit the effects of stormwater pollution, erosion, and flooding. These are enforced through the City's Engineering Department inspection activities.

10) Optimum Basin Management Program

The Chino Groundwater Basin is an adjudicated basin whereby water rights are administered by the Chino Basin Water master (CBW). The CBW, created in 1978 by a San Bernardino County Superior Court judgment (County Case No. RCV 51010), began preparation of the Optimum Basin Management Program (OBMP) in 1998 as required by the judgment. The OBMP is intended to formulate and implement a groundwater management program that will preserve and enhance the safe yield and the water quality of the basin. The OBMP for the Chino Basin is comprised of nine Program Elements that collectively will enhance basin water supplies, protect and enhance water quality, and enhance management of the basin. The OBMP components that are related to water quality are the following:

- Program Element No. 1 - Develop and Implement Comprehensive Monitoring Program. This program includes a groundwater quality-monitoring program, a surface water discharge and quality-monitoring program, and a program related to domestic water well construction, abandonment, and destruction monitoring.
- Program Element No. 6 - Develop and Implement Cooperative Programs. This program element relates to development of cooperative programs with the Santa Ana Regional Water Quality Control Board and other agencies. This program element relates to verification that the OBMP will improve groundwater quality.
- Program Element No. 7 - Develop and Implement Salt Management Program. This program relates to minimizing total dissolved solids (TDS) and nitrogen, and desalting of the groundwater.

11) Other Stormwater Permits

Area-Wide Urban Storm Water Runoff Permit. On January 29, 2010, the Santa Ana Regional Water Quality Control Board reissued NPDES Permit No. CAS618036 (Waste Discharge Requirement Order No. R8-2010-0036) for San Bernardino County and its incorporated cities. The San Bernardino County Flood Control District is the principal permittee and the City is a co-permittee under this permit.

Confined Animal Feeding Operation Permit. In August 1999, the Santa Ana Regional Water Quality Control Board issued NPDES Permit No. CAGO18001 (Waste Discharge Requirement Order No. 99-11) for dairy operations within the jurisdiction of the Santa Ana Regional Water Quality Control Board. The purpose of this permit is to regulate dairy wash water, off-site stormwater runoff, and application rates of land application of manure for the

purpose of controlling wastes generated at these facilities such as bacteria, ammonia, nitrates, phosphorous, and salts.

b) Overview of Stormwater Quality

Stormwater quality is a significant concern in California. The following describes typical pollutants found in stormwater runoff and discusses the types of contaminants that may be found in existing stormwater runoff from the Grand Park Specific Plan area.

1) Nonpoint Source Pollutants

A net effect of development can be to increase pollutant export over naturally occurring conditions. The impact of the higher export can be on the adjacent streams and also on the downstream receiving waters. However, an important consideration in evaluating stormwater quality from the project is to assess whether it impairs the beneficial use to the receiving waters. Receiving waters can assimilate a limited quantity of various constituent elements; however, there are thresholds beyond which the measured amount becomes a pollutant and results in an undesirable impact. A background of these standard water quality categories provides an understanding of typical impacts.

Sediment. Sediment is made up of tiny soil particles that are washed or blown into surface waters. It is the major pollutant by volume in surface water. Suspended soil particles can cause the water to look cloudy or turbid. The fine sediment particles also act as a vehicle to transport other pollutants including nutrients, trace metals, and hydrocarbons. Construction sites are the largest source of sediment for areas under development. Another major source of sediment is stream bank erosion, which may be accelerated by increases in peak rates and volumes of runoff due to an increase in impervious areas.

Nutrients. Nutrients are a major concern for surface water quality, especially phosphorous and nitrogen, which can cause algal blooms and excessive vegetative growth. Of the two, phosphorus is usually the limiting nutrient that controls the growth of algae in lakes. The orthophosphorous form of phosphorus is readily available for plant growth. The ammonium form of nitrogen can also have severe effects on surface water quality. The ammonium is converted to nitrate and nitrite forms of nitrogen in a process called nitrification. This process consumes large amounts of oxygen, which can impair the dissolved oxygen levels in water.

The nitrate form of nitrogen is very soluble and is found naturally at low levels in water. When nitrogen fertilizer is applied to lawns or other areas in excess of plant needs, nitrates can leach below the root zone, eventually reaching groundwater. Orthophosphate from auto emissions also contribute phosphorus in areas with heavy automobile traffic.

Other problems resulting from excess nutrients are (1) surface algal scums, (2) water discolorations, (3) odors, (4) toxic releases, and (5) overgrowth of plants. Common measures of nutrients are total nitrogen, organic nitrogen, total Kjeldahl nitrogen (TKN), nitrate,

ammonia, total phosphate, and total organic carbon (TOC). As a general rule, nutrient export is greater from development sites with a higher proportion of impervious area.

Trace Metals. Trace metals are a concern primarily because of their toxic effects on aquatic life and their potential to contaminate drinking water supplies. The most common trace metals found in runoff are lead, zinc, and copper. Fallout from automobile emissions is also a major source of lead in urban areas. A large fraction of the trace metals in urban runoff is attached to sediment, which effectively reduces its level and causes its immediate availability for biological uptake and subsequent bioaccumulation. Metals associated with the sediment settle out rapidly and accumulate in the soils. Shorter-duration storms have limited exposure, which could be toxic to the aquatic environment. The toxicity of trace metals in runoff varies with the hardness of the receiving water; as total hardness of the water increases, the threshold concentration levels for adverse effects increase.

Oxygen-Demanding Substances. Aquatic life depends on the dissolved oxygen (DO) in the water, and, when organic matter is consumed by microorganisms, then DO is consumed in the process. A problem from low DO results when the rate of oxygen-demanding material exceeds the rate of replenishment. A rainfall event can deposit large quantities of oxygen-demanding substances in lakes and streams. Oxygen demand is estimated by direct measure of DO and indirect measures such as biochemical oxygen demand (BOD), chemical oxygen demand (COD), oils and greases, and total organic carbon (TOC). The BOD of typical urban runoff is of the same magnitude as effluent from an effective secondary wastewater treatment plant.

Bacteria. Bacteria levels in undiluted runoff exceed public health standards for water contact recreation almost without exception. Studies have found that total coliform bacteria counts exceed EPA water quality criteria at almost every monitoring site and with almost every rain event. The coliform bacteria that are detected may not represent a health risk on their own, but are often associated with human pathogens.

Oil and Grease. Oil and grease contain a wide variety of hydrocarbons, some of which could be toxic to aquatic life in low concentrations. These materials initially float on water and create the familiar rainbow-colored film. Hydrocarbons have a strong affinity for sediment and are quickly absorbed by it. The major sources of hydrocarbons are leakage of crankcase oil and other lubricating agents from automobiles. Hydrocarbon levels are highest in runoff from parking lots, roads, and service stations. Residential land uses generate less hydrocarbon export, although illegal disposal of waste oil into stormwater can be a local problem.

Other Toxic Chemicals. Priority pollutants are generally related to hazardous wastes or toxic chemicals and can be sometimes detected in stormwater. Priority pollutant scans have been conducted in previous studies, which evaluated the presence of over 120 toxic chemicals and compounds. The scans rarely revealed toxins that exceeded the current safety criteria. The runoff scans were primarily conducted in small residential areas not expected to

have many sources of toxic pollutants (with the possible exception of illegally disposed of or applied household hazardous wastes). Measures of priority pollutants in stormwater include the following:

- Phthalate (plasticizer compound),
- Phenols and creosols (wood preservatives),
- Pesticides and herbicides,
- Oils and greases, and
- Metals.

Physical Characteristics of Surface Water Quality

Standard parameters that can assess the quality of stormwater provide a method of measuring water quality impairment. A background of these typical characteristics assists in understanding water quality requirements. The quantity of a material in the environment and its characteristics determine the degree of availability of a pollutant in surface runoff. In an urban environment, the quantity of certain pollutants in the environment is a function of the intensity of the land use. For instance, a high density of automobile traffic makes a number of potential pollutants (such as lead and hydrocarbons) more available. The availability of a material, such as a fertilizer, is a function of the quantity and the manner in which it is applied. Applying fertilizer in quantities that exceed plant needs leaves the excess nutrients available for loss to surface or groundwater.

The physical properties and chemical constituents of water traditionally have served as the primary means for monitoring and evaluating water quality. Evaluating the condition of water through a water quality standard refers to its physical, chemical, or biological characteristics. Water quality parameters for stormwater comprise a long list and are classified in many ways. In many cases, the concentration of pollutant is needed to assess a water quality problem, instead of the annual pollutant loads. The physical, chemical or biological characteristics that are commonly used to evaluate the quality of the surface runoff are described in the following discussion.

Dissolved Oxygen (DO). Dissolved oxygen (DO) in the water has a pronounced effect on aquatic organisms and the chemical reactions that occur. It is one of the most important biological water quality characteristics in the aquatic environment. The DO concentration of a water body is determined by the solubility of oxygen, which is inversely related to water temperature, pressure, and biological activity. DO is a transient property that can fluctuate rapidly in time and space. DO represents the status of the water system at a particular point and time of sampling. The decomposition of organic debris in water is a slow process and the resulting changes in oxygen status respond slowly as well. The oxygen demand indicates the pollutant load and is measured of biochemical oxygen demand or chemical oxygen demand.

Biochemical Oxygen Demand (BOD). The biochemical oxygen demand (BOD) is an index of the oxygen-demanding properties of the biodegradable material in the water. Samples are taken from the field and incubated in the laboratory at 20^{o}C, after which the residual dissolved oxygen is measured. The BOD value commonly referenced is the standard 5-day values, which are useful in assessing stream pollution loads and for comparison purposes.

Chemical Oxygen Demand (COD). The chemical oxygen demand (COD) is a measure of the pollutant loading in terms of complete chemical oxidation using strong oxidizing agents. It can be determined quickly because, unlike BOD, it does not rely on bacteriological actions. COD does not necessarily provide a good index of oxygen-demanding properties in natural waters.

Total Dissolved Solids (TDS). The total dissolved solids (TDS) concentration is determined by evaporating a filtered sample to obtain residue, then dividing its weight by the sample volume. The TDS of natural waters varies widely. TDS is an important indicator of water quality, because their dissolved solids:

- Affect the ionic bonding strength related to other pollutants, such as metals, in the water;
- Are a major determinant of aquatic habitat;
- Affect the saturation concentration of DO;
- Influence the ability of a water body to assimilate wastes; and
- Affect eutrophication rates.

pH. The pH of water is a measure of the hydrogen ion (H^{+}) activity. A pH of 7 is neutral; a pH of greater than 7 indicates alkaline water; and a pH of less than 7 represents acidic water. In natural water, carbon dioxide reactions are some of the most important in establishing pH. The pH at any one time is an indication of the balance of chemical equilibrium in water and affects the availability of certain chemicals or nutrients in water for uptake by plants. The pH of water directly affects fish and other aquatic life; generally toxic limits are pH values less than 4.8 and greater than 9.2.

Alkalinity. Alkalinity is the opposite of acidity and represents the capacity of water to neutralize acid. Alkalinity is also linked to pH and is caused by the presence of carbonate, bicarbonate, and hydroxide, which are formed when carbon dioxide is dissolved. A high alkalinity is associated with a high pH and excessive solids. Most streams have alkalinities of less than 200 milligrams per liter (mg/l) and ranges of alkalinity of 100-200 mg/l seem to support well-diversified aquatic life.

Specific Conductance. The specific conductivity of water (or its ability to conduct an electric current) is related to the total dissolved ionic solids. Long-term monitoring of a project's waters can show the relationship between specific conductivity and TDS. Its

measurement is quick and inexpensive and can be used to approximate TDS. Specific conductivities in excess of 2000 micro ohms per centimeter (μohms/cm) indicate a TDS level too high for most freshwater fish.

Turbidity. The clarity of water is an important indicator of water quality that relates to the alkalinity of photosynthetic light to penetrate. Turbidity is an indicator of the property of water that causes light to become scattered or absorbed. Suspended clays and other organic particles cause turbidity. It can be used as an indicator of certain water quality constituents, such as predicting the sediment concentrations.

Nitrogen (N). Sources of nitrogen in stormwater are from the additions of organic matter to water bodies or chemical additions. Ammonia and nitrate are important nutrients for the growth of algae and other plants. Excessive nitrogen can lead to eutrophication because nitrification consumes dissolved oxygen in the water. Nitrogen occurs in many forms. Organic nitrogen breaks down into ammonia, which eventually becomes oxidized to nitrate-nitrogen, a form available for plants. High concentrations of nitrate-nitrogen (N/N) in water can stimulate growth of algae and other aquatic plants, but if phosphorus (P) is present, only about 0.30 mg/l of nitrate-nitrogen is needed for algal blooms. Some fish life can be affected when nitrate-nitrogen exceeds 4.2 mg/l. There are a number of ways to measure the various forms of aquatic nitrogen. Typical measurements of nitrogen include Kjeldahl nitrogen (organic nitrogen plus ammonia), ammonia, nitrate plus nitrate, nitrite, and nitrogen in plants. The principal water quality criteria for nitrogen focus on nitrate and ammonia.

Phosphorus (P). Phosphorus (P) is an important component of organic matter. In many water bodies, phosphorus is the limiting nutrient that prevents additional biological activity from occurring. The origin of this constituent in stormwater discharge is generally fertilizers and other industrial products. Orthophosphate is soluble and is considered to be the only biologically available form of phosphorus. Because phosphorus strongly associates with solid particles and is a significant part of organic material, sediments influence concentration in water and are an important component of the phosphorus cycle in streams. The primary methods of measurement are detecting orthophosphate and total phosphorus.

c) Existing Conditions

1) Regional Conditions

The project site is located in the central portion of the Chino Groundwater Basin, according to Figure 5.9-3 in TOP EIR. Bedrock in the area consists of Tertiary sedimentary and igneous rock. Extensive dairy operations in the region have resulted in the degradation of surface and groundwater quality. This historic agricultural development pattern does not result in high-levels of stormwater runoff that are typically associated with urban types of land uses, due to the extensive amounts of pervious surfaces.

Groundwater Quality

The water served in Ontario meets all the State and Federal drinking water requirements, and Ontario is committed to continue to deliver high quality drinking water, according to the

City's 2010 Water Quality Report. Quality of water related to total dissolved solids and nitrates in the Chino Basin transitions from generally excellent in the northern portion of the City to generally poor in the southern portion. In addition, variations occur in water quality underlying the City regarding these two constituents.

The groundwater quality in Chino Basin is generally very good, with better groundwater quality found in the northern portion of Chino Basin where recharge occurs. Salinity (TDS) and nitrate-nitrogen concentrations increase in the southern portion of Chino Basin. Between July 2003 and June 2008, 32 percent of the wells south of Highway 60 had TDS concentrations below the secondary MCL, an improvement from the 20 percent reported in the 2006 State of the Basin Report (period of July 2001 through June 2006). Between July 2003 and June 2008, about 69 percent of the wells sampled south of Highway 60 had nitrate-nitrogen concentrations greater than the MCL, an improvement from the 80 percent reported in the 2006 State of the Basin Report (period of July 2001 through June 2006) prepared by the Chino Basin Watermaster.

Other constituents that have the potential to impact groundwater quality from a regulatory or Basin Plan standpoint include certain volatile organic compounds (VOCs), arsenic, and perchlorate. As discussed in the 2008 Final State of the Basin Report, there are a number of point source releases of VOCs in Chino Basin. These are in various stages of investigation or cleanup. There are also known point source releases of perchlorate as well as what appears to be non-point source related perchlorate contamination that appears to have resulted from natural and anthropogenic sources. Arsenic at levels above the water quality standard appears to be limited to the deeper aquifer zone near the City of Chino Hills. Hexavalent chromium, while currently not a groundwater issue for Chino Basin, may become so, depending on the promulgation of future standards.

As shown in Figure 4-18 in the 2008 Final State of the Basin Report, a VOC plume, containing trichloroethylene (TCE), exists south of the Ontario Airport. This plume extends approximately from State Route 60 on the north and Haven Avenue on the east to Cloverdale Road on the south and South Grove Avenue on the west. The plume is up to 11,300 feet wide and 20,500 feet long, and has been shown to be present under the westernmost portion of the project site.

In July 2005, Draft Cleanup and Abatement Orders (CAOs) were issued by the RWQCB and presented the companies named in said CAOs in August 2005. The companies (Boeing, Aerojet, Northrop Grumman, General Electric, and the Department of Defense) formed a group and retained a common consultant. The plume is currently being investigated by the potentially responsible parties on a voluntary basis. Final Investigative or Cleanup and Abatement Orders will likely be issued in the future. The Watermaster has been working closely with the RWQCB and the companies to provide any available information to assist in the companies' investigation. The remediation of the plume will likely be accomplished through existing Chino Basin Desalter I facilities, owned by the Chino Desalter Authority.

According to the 2008 Final State of the Basin Report, the maximum TCE concentration detected at an individual well within this plume was 38 micrograms per liter (µg/L) during the July 2003 to June 2008 period.

Surface Water Quality

Stormwater runoff from the agricultural and dairy lands, due to extensive pervious surfaces, is not as extensive as from urban type uses. The Ontario Plan EIR lists four surface water bodies within the Chino Watershed on the EPA's list of Water Quality Limited Segments pursuant to Section 303(d) of the Clean Water Act (USEPA 2007). One of these water bodies passes through the City: the Valley Reach of Cucamonga Creek is included on the Section 303(d) list for coliform bacteria from an unknown nonpoint source.

Quality of Domestic Groundwater Supplies

The City domestic water supply production facilities are currently in compliance with applicable standards and regulations. According to the City's 2010 Water Quality Report, to ensure safe drinking water, public water systems must comply with Federal and State drinking water standards. Trained personnel of the City collected thousands of water samples that were delivered to a State certified laboratory for analysis. There were no water quality violations during 2010.

Groundwater Recharge Facilities

According to Figure 3-2 of the 2008 Final State of the Basin Report, the closest groundwater recharge basins to the project site are the Lower Cucamonga and Chris Recharge Basins located on either side of the Cucamonga Creek channel approximately one mile northwest of the project site. The surface water on the site may contribute to ground water recharge through the large area of permeable surfaces existing on the site.

Drainage Facilities

The major drainage facilities in the Chino Basin include limited natural drainages and major man-made stormwater conveyance channels and detention basins. Major drainage facilities in the area include Cucamonga Creek, Day Creek, Deer Creek, County Line Channel, and the Santa Ana River. In the vicinity of the project site, stormwater runoff is conveyed southward via Cucamonga Creek, where it joins the County Line Channel, and ultimately drains to the Santa Ana River in the northeast portion of Prado Basin.

Groundwater Elevation

As discussed in the Preliminary Geotechnical Investigation report prepared by Petra Geotechnical, Inc., the project area is located in the Chino Basin, which is regulated by the Chino Basin Watermaster. Historic groundwater data for the Chino Basin dating back to 1933 is provided in Bulletin No. 104-3 that was prepared by the California Department of Water Resources in 1970. Historic groundwater elevation maps in Bulletin 104-3, and those prepared by the Chino Basin Watermaster in 2002 indicated that since 1933, the regional water table in the project area has dropped approximately 65 feet. According to the 2000

water level map prepared by the Watermaster, the regional groundwater level is at an elevation of about 580 feet above mean sea level, which is approximately 120 feet below ground surface (bgs) at the project site.

According to the State of the Basin Report prepared in 2005, the Watermaster implemented a Hydraulic Control Monitoring Program (HCMP) that includes installation of desalter well fields within the Basin. One of the main objectives of this program is to maintain groundwater levels at their current elevations. Taking into account the implementation and continuation of this program and current demands on groundwater, it is expected that groundwater levels beneath the project area will remain near their current levels or may continue to drop slowly over time. Per the Final State of the Basin Report prepared in 2008, Since 2003, Watermaster has been installing pressure transducers/data loggers in many of the wells it monitors for water levels to improve data quality. In addition, nine nested sets of monitoring wells have been installed in the southern Chino Basin for the HCMP to provide highly detailed, depth-specific piezometric (and water quality) data.

2) New Model Colony Stormwater Conditions

The Ontario Plan EIR addresses potential impacts to water resources, which include hydrology, drainage, and water quality. The Ontario Plan EIR states that several drainage improvements within the NMC area are planned and that such improvements will add storm drainage capacity in the NMC area and surroundings, and thus help reduce impacts of additional development. Projects considered for approval under the Ontario Plan (such as the proposed Grand Park Specific Plan) would be required to prepare project-specific hydrology studies as prescribed in the San Bernardino County Hydrology Manual, which provides techniques and criteria for estimating runoff, discharges, and volumes, for hydrology studies submitted to San Bernardino County. Planned uses have the potential to contribute contaminants related to urban development from both the short-term construction-related activities and the long-term operation of proposed uses.

The EIR for The Ontario Plan states that projects considered for approval under the Ontario Plan would be mandated to comply with Best Management Practices for compliance with NPDES requirements and such projects would also be mandated to comply with San Bernardino County Stormwater Program requirements that they either not increase stormwater flows from 1-, 2-, and 5- year storms; or conduct additional analysis to determine impacts regarding erosion, sedimentation, or stream habitat, and must incorporate BMPs to mitigate such impacts. Furthermore, the City, under Ontario Plan Policy ER1-6, would encourage the use of low impact development strategies to intercept runoff, slow the discharge rate, increase infiltration and ultimately reduce discharge volumes to traditional storm drain systems. The City, through Policy S2-5, would maintain and improve the storm drain system to minimize flooding, thus reducing the impacts of any increases in surface water flows that did reach drainage systems. New development in the City would be required by the City to upsize stormwater lines in order to prevent flooding during peak 100-, 25-, or 10-year storms in accordance with the San Bernardino County Hydrology Manual.

The City is currently constructing the regional stormwater runoff treatment facility (Mill Creek Wetland) for the sub-watershed area that the project site is located within. The Mill Creek Wetland will serve 2,000 acres of the eastern portion of the NMC. Other treatment facilities could be developed in the future, which would be designed and constructed as development occurs, otherwise on-site retention and infiltration measures will be required by each development to meet the requirements of the San Bernardino County Water Quality Management Plan.

3) Project Site Conditions

Existing Site Surface Hydrology and Drainage

The project site is approximately 320 acres in size and is characterized by gently sloping topography towards the southwest, with a high elevation of approximately 723 feet above mean sea level (msl) at the northeast corner and a low elevation of approximately 683 feet above msl at the southwest corner. The existing site drainage pattern consists of overland flow or conveyance through channels in a generally southerly direction to on-site retention ponds, or dairy ponds. The site's existing watershed is characterized by six sub-watersheds, which generally correspond to the various dairy properties historically operating on-site. Table IV.H-1 summarizes the watershed sub-areas and associated 100-year storm runoff flow rates. According to the hydrology model performed for the project site, as shown in Table IV.H-1, under existing conditions the project site generates a 100-year storm runoff rate of approximately 482 cubic feet per second (cfs). However, as previously discussed, all stormwater flows must be contained on-site in detention/dairy ponds per the applicable Waste Discharge Permits issued for the various dairy properties within the Specific Plan area. As such, no notable off-site stormwater flows, aside from incidental releases, currently occur. The existing hydrology of the project site, including associated stormwater runoff rates for each sub-area, is shown in Figure IV.H-1.

Table IV.H-1: Existing Condition Site Hydrology

Watershed Sub-Area	Area (acres)	100-Year Storm Runoff Flow Rate (cfs)
A	80.2	133.7
B	80.2	104.6
C	54.2	86.0
D	25.6	36.9
E	56.4	88.9
F	23.5	31.6
Total	320.1[a]	481.7

Notes:
[a] Total is more than 320.0 acres due to rounding

There are currently no stormwater drainage improvements in the project area, though the City's Master Plan of Drainage identifies several planned improvements in the area. Master Plan storm drain improvements include a storm drain in Turner Avenue bisecting the project area, a storm drain in Archibald Avenue along the project's western boundary, and a storm drain in Eucalyptus (future Merrill) Avenue. The Turner Avenue storm drain will be 78-inches in diameter from Edison Avenue southward to Bellgrave Avenue, and 84-inches in diameter from Bellgrave Avenue to its connection with the County Line Channel. The Archibald Avenue storm drain will be 60-inches diameter between Edison Avenue and Eucalyptus (future Merrill) Avenue, 78-inches in diameter between Merrill Avenue and Bellgrave Avenue, and 90-inches in diameter between Bellgrave Avenue and the County Line Channel. The Merrill Avenue storm drain will be 60-inches in diameter from Archibald Avenue to approximately 1,200 feet east of Archibald Avenue.

4) Groundwater

As discussed in the Preliminary Geotechnical Investigation report prepared by Petra Geotechnical, Inc. for the proposed project, according to the 2000 water level map prepared by the Watermaster, the regional groundwater level is currently at an elevation of about 580 feet above mean sea level, which is approximately 120 below ground surface (bgs) at the project site. Based on the nature of historic long-term agricultural and dairy activities on-site, it is likely that groundwater beneath the site has been affected by dairy-related pollutants, including nitrates and total dissolved solids. Additionally, as discussed previously, a large plume of VOCs from the south side of the Ontario International Airport has migrated southward and is currently present under the westernmost portion of the project site, which could have the potential to further affect groundwater beneath the remaining portion of the project area. However, no active domestic water supply wells currently exist within the Specific Plan area.

5) Floodplain Mapping

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the project area, FIRM No. 06071C9375H (last updated August 28, 2008), the western portion of the project site is located within an area designated as Zone X (refer to Figure IV.H-2). Zone X refers to areas of 0.2 percent annual chance flood; areas of 1 percent annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1 percent annual chance flood (FEMA Map Service Center Map Search 2012).

3. Analysis of Project Impacts

a) Methodology

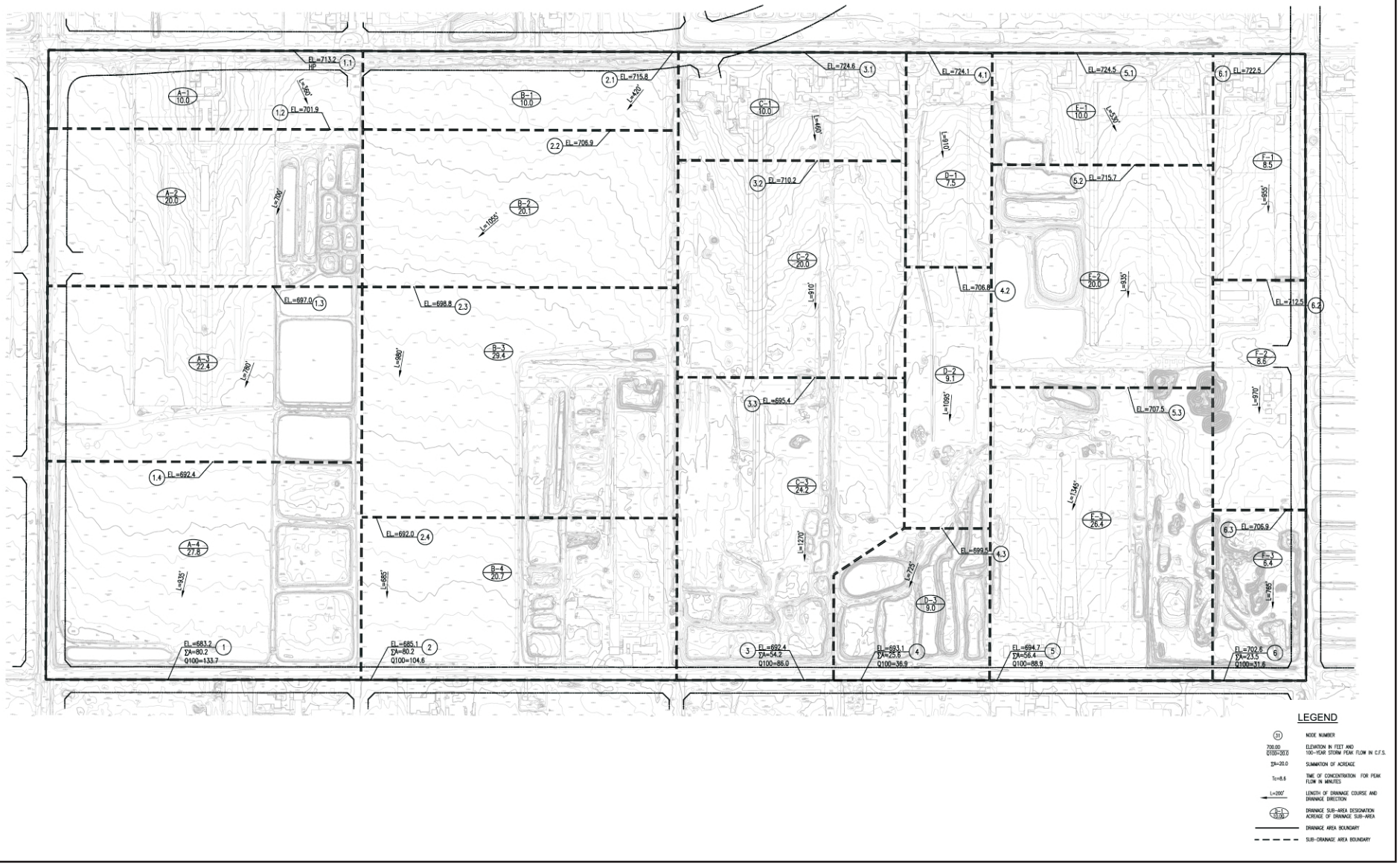
For the analysis of wastewater impacts associated with project operation, the wastewater generation of the project was estimated using wastewater generation factors provided by CDWP. The project's estimated wastewater generation was then compared with the

available capacity within the City's sewer collection system and at the wastewater treatment plants.

b) Significance Thresholds

Appendix G of the CEQA Guidelines provides a checklist of questions to assist in determining whether a proposed project would have a significant impact related to various environmental issues including hydrology and water quality. Based on the following issue areas identified in Appendix G of the CEQA Guidelines, a significant impact to hydrology and water quality would occur if the project would:

- 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 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?
- Cause inundation by seiche, tsunami, or mudflow?



Source: LDKING Engineers/Planners/Surveyors, 2007.

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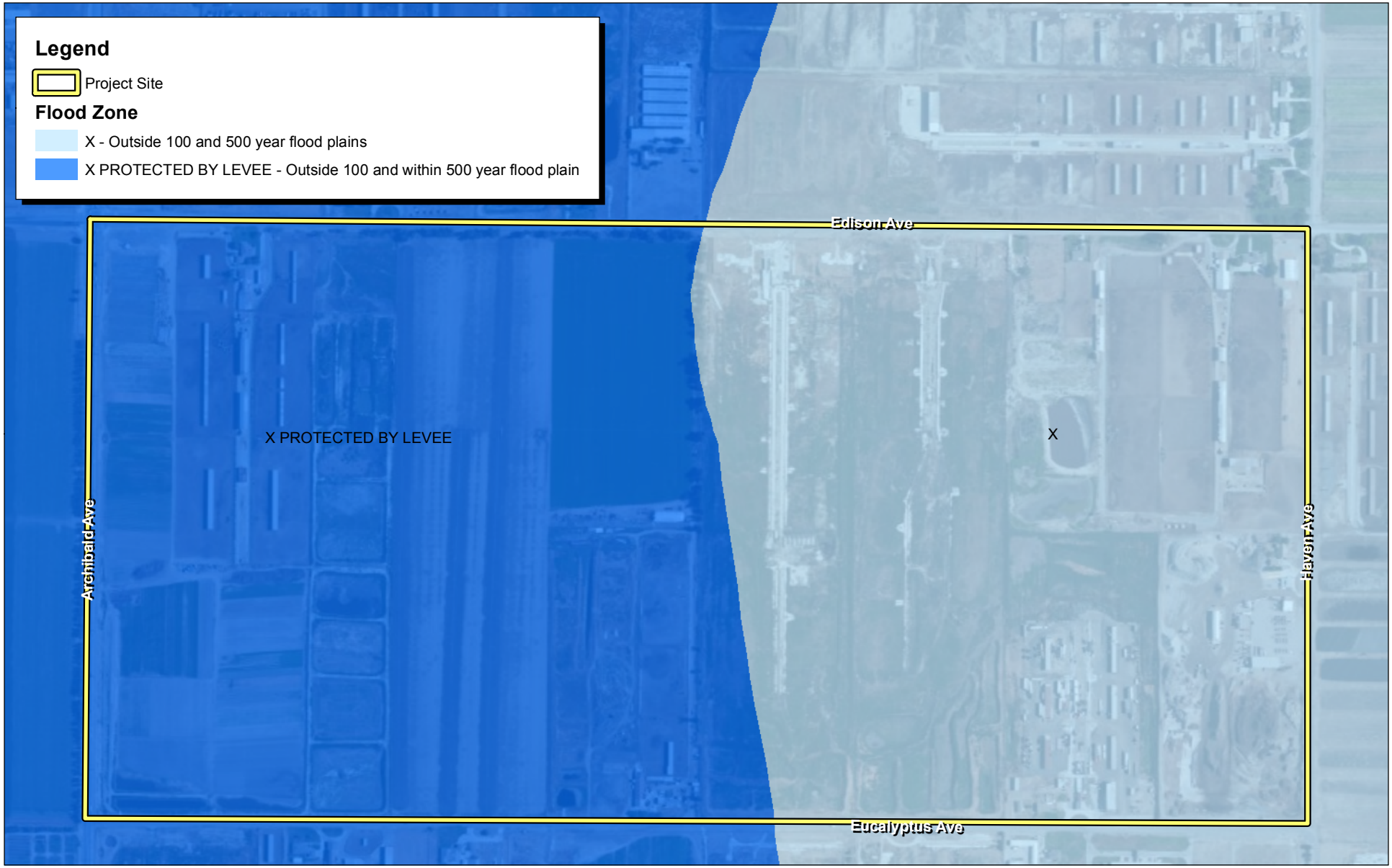
Figure IV.H-1
Existing Conditions Hydrology Map



Source: ESRI World Imagery, FEMA Flood Data June 2011.

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600 300 0 600

Feet

Figure IV.H-2
FEMA Flood Map

The Initial Study concluded that no impacts were related to placing housing or structures within a 100-year flood hazard zone or exposure from dam or levee failure. The potential to substantially deplete groundwater supplies or interfere with groundwater recharge were less than significant. Refer to Appendix A-2 for a discussion related to these thresholds.

c) Analysis of Project Impacts

1) Hydrology and Drainage Impacts

The City's 2012 Storm Drain Master Plan divides the City, including the NMC, into 14 drainage areas with each a tributary to either a regional or backbone storm drain facility. The project site is located within Drainage Area X, which contains approximately 2,903 acres. This drainage area is generally bounded by Riverside Drive to the north, Archibald Avenue to the west, Milliken Avenue to the east, and Bellgrave Avenue to the south. Drainage Area X is tributary to the County Line Channel, which is owned and maintained by the San Bernardino County Flood Control District.

The City's 2012 Storm Drain Master Plan identifies storm drain improvements to serve the project site. Completion of these Master Plan improvements will provide permanent storm drain service to the project. That portion of the Master Plan storm drain system that lies within the project site would be constructed as part of the development of the project (refer to Figure II-11). The exact size and location of the proposed Master Plan storm lines may change based on final design.

On-site storm drains would convey the on-site flows to the proposed Master Plan system. No interim detention basins are proposed. The developer is required to construct the ultimate storm Drain improvements as identified on the Master Plan of Drainage, including the connection to the County Line Channel.

Under proposed conditions, the project site overlies two drainage system boundaries and, in whole or in part, nine minor drainage boundaries. Refer to Figure IV.H-3 for the project site hydrology map under proposed conditions.

The Grand Park Specific Plan proposes to tie-in to the County Line Stormwater Channel via the NMC Master Plan storm drains in Archibald Avenue and Turner Avenue. This facility is a regional facility that would serve the NMC and portions of Riverside County east of the project site. The facility has a drainage area of approximately 3,000 acres with a peak 100-year frequency storm flow rate of 3,400 cubic feet-per-second. This drain is an outlet and will carry storm flows for all major north-south systems east of the Cucamonga Creek Channel, which includes the Grand Park Specific Plan.

Overall, given compliance with City and RWQCB permit requirements for the provision of necessary onsite stormwater conveyance infrastructure, impacts would be less than significant with implementation of applicable mitigation measures.

2) Short-Term Construction Period Water Quality

The Construction General Permit authorizes and regulates stormwater discharge into surface waters if construction activities disturb one or more acres of land. It also prohibits non-stormwater discharges that contain hazardous substances, whether or not the non-stormwater discharges are authorized by a General Permit. For projects less than 1.0 acres in size, the General Permit requires land developers and construction contractors to apply for coverage under the Construction General Permit, obtain a Waste Discharge Identification Number, and to develop and implement a Stormwater Pollution Prevention Plan (SWPPP) containing appropriate Best Management Practices (BMPs) to control erosion and prevent pollution.

Adverse impacts on stormwater quality would occur due to construction and associated earthmoving activities. Construction of the proposed development projects within the Specific Plan area would have the potential to produce typical pollutants, such as: nutrients; heavy metals; pesticides and herbicides; toxic chemicals related to construction and cleaning; waste materials, including wash water, paints, wood, paper, concrete, food containers, and sanitary wastes; fuel; and lubricants. Prior to construction, a Notice of Intent (NOI) and SWPPP would be required to reduce pollutant loadings. Impacts on water quality due to construction would be less than significant with implementation of applicable mitigation measures identified below.

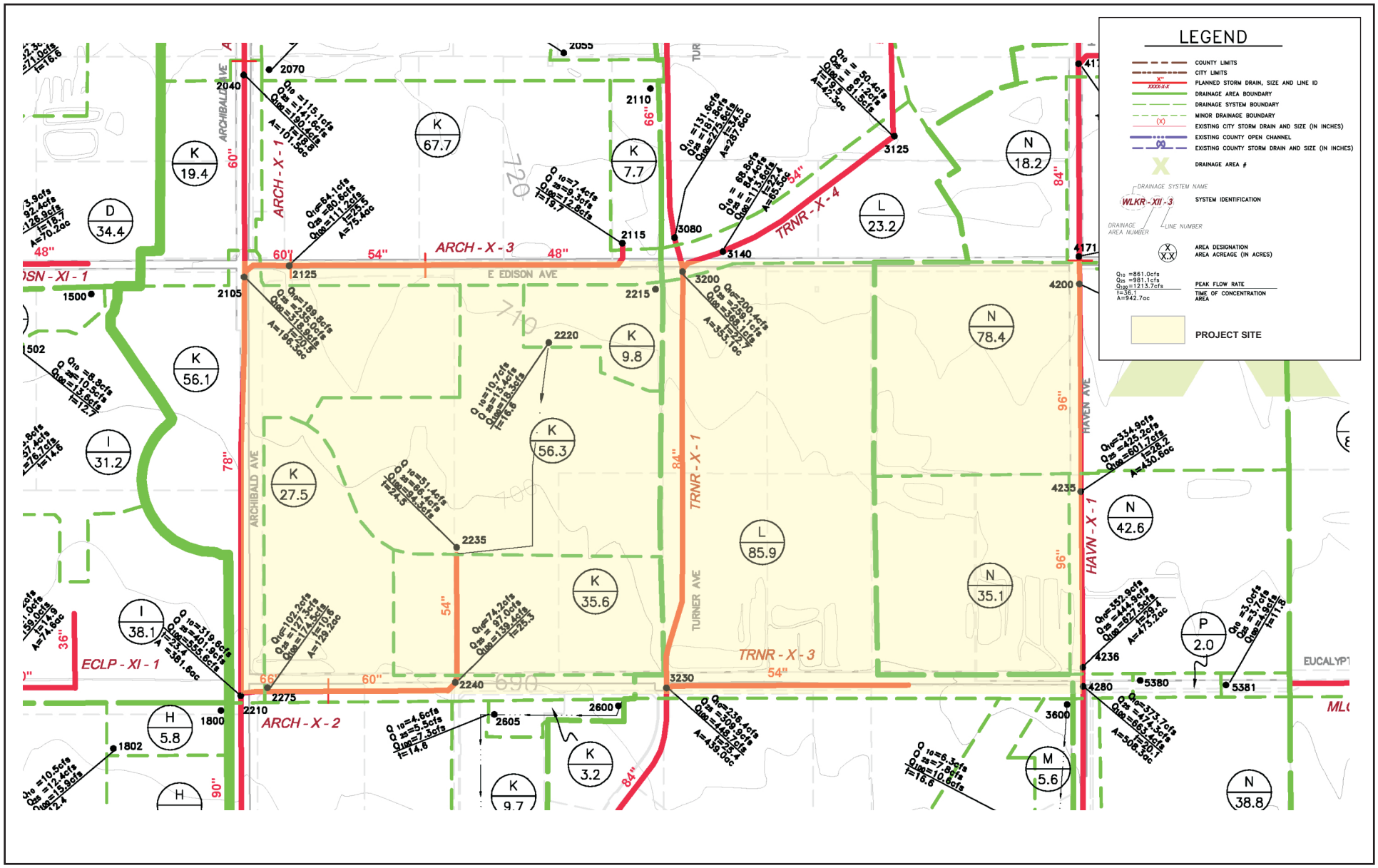
3) Long-Term Operational Water Quality

The evaluation of impacts on stormwater quality is of growing concern throughout the County of San Bernardino. In response to the growing concerns and to implement the Clean Water Act, the Santa Ana Regional Water Quality Control Board (RWQCB) has issued a National Pollution Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for San Bernardino County.

The following are guidelines recommended by the RWQCB to reduce the stormwater discharge pollutants to a less then significant level in the post-construction stage:

Effectively prohibit non-stormwater discharges; and

Reduce the discharge of pollutants from the stormwater conveyance system to the maximum extent practicable.



Source: Hunsaker & Associates, March 2012.

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Figure IV.H-3
Proposed Conditions Hydrology Map

Impacts on stormwater quality would generally be considered significant if the project did not attempt to address stormwater pollution to the maximum extent practicable. Currently, there are no definitive water quality standards that require stormwater quality leaving a project site to meet standards for individual pollutants. Therefore, impacts on stormwater quality would be considered less than significant if they meet the requirements of the project's Water Quality Management Plan (WQMP).

A WQMP, which outlines the proposed BMPs the developer is required to implement following construction activities, must be implemented for each future on-site development project per requirements of the RWQCB and the San Bernardino County Stormwater Program. Installation of required BMPs included in the WQMP would greatly reduce the pollutant loads from the project site. Development and operation of proposed uses on-site would be expected to increase loadings of trash, nutrients, bacteria, pesticides and herbicides, oil and grease, and household hazardous wastes into the local stormdrain system, Cucamonga Creek, and downstream receiving waters, because of the increased intensity of use at the sites. However, implementation of BMPs, per the approved WQMP, would reduce pollutant loadings. Therefore, water quality impacts due to operation of proposed development within the Specific Plan area would be less than significant with implementation of applicable mitigation measures listed below.

The development of uses proposed under the Grand Park Specific Plan would increase impervious areas and the intensity of on-site activities, which would impact both pre- and post-construction stormwater quality. Increased pollutant loading would occur immediately off-site. However, implementation of construction and post-construction BMPs, and the preparation and implementation of a WQMP, SWPPP, and a NOI, included as mitigation below, would reduce impacts on water quality to a less than significant level.

4. Cumulative Impacts

Development of the proposed project and other related projects could result in flooding, erosion, and sedimentation, and overall water quality impacts. Nonetheless, as is the case with the proposed project, all of the identified related projects located throughout the City, and particularly within the NMC area, would be required to comply with the applicable regulations and requirements of affected public agencies, including the engineering standards of local agencies, RWQCB requirements and permit conditions, and flood control district requirements. It is anticipated that future development in the area would be designed in such a manner that downstream flooding, erosion, and sedimentation do not occur, per applicable permit requirements for construction and operation of development projects. Additionally, all future development would be required to complete and implement a SWPPP for construction activities and a WQMP for post-construction operations, to prevent adverse impacts on water quality. The particular BMPs to be employed for each project would be determined as part of the NPDES permitting process, subject to review and approval by the RWQCB.

Given compliance with applicable regulations and requirements of affected public agencies, it is anticipated that the proposed project and related projects would not result in adverse cumulative effects related to flooding, erosion and sedimentation, or water quality. Cumulative hydrology and water quality impacts would be less than significant.

5. Mitigation Measures

a) Hydrology and Drainage

HWQ-1 Local storm drain facilities shall be sized to convey the 10- and/or 100-year storm event per a final drainage plan reviewed and approved by the City Engineer, or per the requirements of other applicable agencies.

HWQ-2 The project applicant(s) shall obtain approval from affected public agencies for the storm drain connection from the on-site collection system to NMC Master Plan storm drain facilities.

b) Construction Water Quality

HWQ-3 The project applicant(s) for future development projects shall prepare and submit a Notice of Intent to comply with the Construction General Permit to the California State Water Resources Board.

HWQ-4 The project applicant(s) shall prepare a Stormwater Pollution Prevention Plan (SWPPP) per requirements of the Construction General National Pollutant Discharge Elimination System (NPDES) Permit.

HWQ-5 Project-related construction activities shall implement stormwater quality BMPs, as required by the project's SWPPP, which may include, but are not limited to, any of the following: Employee and Subcontractor Training – Have a training session for employees and subcontractors to understand the need for implementation and usage of BMPs.

c) Operational Water Quality

HWQ-6 The project applicant(s) shall prepare a WQMP addressing post-construction water quality BMPs.

6. Level of Significance After Mitigation

All of the mitigation measures require implementation prior to permit issuance. This eliminates the potential for construction-related activities to commence without the benefit of the recommended mitigation measures.

Mitigation measures would require compliance with the NPDES permit and include Best Management Practices (BMPs) for the short-term construction activities and the long-term operations associated with the various land uses that are proposed. For construction activities, BMPs will be selected from the California Stormwater Quality Association's

Construction Handbook and would include BMPs, source-control BMPs within the following six categories: erosion control; sediment control; wind erosion; offsite tracking control; non-stormwater management; and waste management and materials pollution control. Mitigation measures for post-construction would also require future development projects to retain and infilter 2-year, 24-hour storm event runoff or utilize a regional, off-site wetland facility for treatment of same With incorporation of standard project design features, project-level hydrology studies, NPDES permit program requirements, Best Management Practices (BMPs) for point and non-point source pollution control, and other mitigation measures identified above, the flooding, hydrology and water quality impacts of the proposed project would be in compliance with all regulatory requirements and therefore would be reduced to a level that is considered less than significant.