Section 5.9
HYDROLOGY AND WATER QUALITY

5.9 HYDROLOGY AND WATER QUALITY

This section of the EIR evaluates the impacts of the proposed project on site drainage, stormwater hydrology, and surface water quality.

5.9.1 ENVIRONMENTAL SETTING

REGULATORY FRAMEWORK

Clean Water Act

In 1972, the Federal Water Pollution Control Act [later referred to as the Clean Water Act (CWA)] 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 CWA was amended to require that the United States Environmental Protection Agency (EPA) establish regulations for permitting of municipal and industrial stormwater discharges under the NPDES permit program. The EPA published final regulations regarding stormwater discharges on November 16, 1990. The regulations require that municipal separate storm sewer system (MS4) discharges to surface waters be regulated by a NPDES permit.

In addition, the CWA requires the states to adopt water quality standards for receiving water bodies and to have those standards approved by the EPA. 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 – such as lead, suspended sediment, and fecal coliform bacteria – or narrative statements which represent the quality of water that support a particular use. Because California had not established a complete list of acceptable water quality criteria, EPA 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).

CWA Section 303(d) – TMDLs

When designated beneficial uses of a particular receiving water body are being compromised by water quality, Section 303(d) of the CWA 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.

The project site discharges stormwater and runoff to Santa Clara River Reach 8_E. *Table 5.7-1, 2002 CWA Section 303(d) Listings for the Santa Clara River*, lists the water quality impairments for the Santa Clara River as reported on the 2002 CWA Section 303(d) List of Water Quality Limited Segments. Reach 8_E of the Santa Clara River is listed for chloride and coliform. The Regional Board has not yet adopted a TMDL for coliform in Reach 8_E, but has adopted a TMDL for chloride. Downstream segments of the river are listed for historical pesticides, chloride, coliform, Total Dissolved Solids

(TDS), and for nitrogen compounds, including nitrate-nitrogen (nitrate-N), nitrite-nitrogen (nitrite-N), and ammonia (NH_3).

California Toxics Rule

The California Toxics Rule (CTR) is a federal regulation issued by the USEPA 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. For example, the average storm duration in the 34-year Newhall gage rainfall record is 12 hours. 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.

Monitoring data in the Santa Clara River at Bouquet Junction were evaluated for hardness, as this is the closest and most representative monitoring station to the project site. The minimum hardness value of 280 milligrams per liter (mg/L) as calcium carbonate ($CaCO_3$) was used to approximate CTR criteria for metals. The CTR criteria are used as one type of benchmark to evaluate the potential ecological impacts of runoff on the receiving waters.

California Porter-Cologne Act

The federal CWA 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 it does establish certain guidelines for the states to follow in developing their programs and allows the EPA 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 (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Resource Control Board (SWRCB) and each of the Regional Water Quality Control Boards (RWQCBs) power to protect water quality, and is the primary vehicle for implementation of California's responsibilities under the federal CWA. 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.

Table 5.9-1
2002 CWA Section 303(d) Listings for the Santa Clara River

SCR Reach or Tributary	Geographic Description & Distance from project site to Upstream End of Reach	Pollutants	TMDL Priority	303(d) List Proposed TMDL Completion	Potential Sources	TMDL Status and Notes
8_E	West Pier Hwy 99 to Bouquet Cyn Rd (project site)	1) Chloride 2) High coliform count	1) High 2) Medium	1) 2002 2) None listed	Nonpoint and point sources	The Regional Board has adopted a Chloride TMDL into the Basin Plan. Note: Reach 8_E is on the 2002 State Monitoring List for impairment from organic enrichment/low dissolved oxygen. Inclusion on the Monitoring List suggests that standards are not being met, but available data are inconclusive.
7_E	Blue cut Gaging Station to West Pier Hwy 99 (5.2 miles)	1) Chloride 2) Ammonia 3) Nitrate and nitrite	1) High 2) High 3) Low	1) 2002 2) 2003 3) None listed	Nonpoint and point sources	The Regional Board has adopted a Nitrogen compound TMDL (including Ammonia) into the Basin Plan. The Regional Board has adopted a Chloride TMDL into the Basin Plan.
3_R	Freeman diversion dam to "A" street (33 miles)	1) Ammonia 2) Chloride 3) Total Dissolved Solids	1) High 2) High 3) Low	1) 2003 2) 2002 3) None listed	Nonpoint and point sources	The Regional Board has adopted a Nitrogen compound TMDL (including Ammonia) into the Basin Plan. The EPA promulgated Chloride TMDLs for Reach 3_R. The EPA recommended that the State defer implementation of the TMDL until after adoption of a proposed Basin Plan amendment of the chloride objective for Reach 3_R. The Regional Board has developed a tentative Basin Plan amendment to revise the Reach 3_R chloride objective from 80 to 100 mg/L. The EPA supports this increase in the water quality objective. The status of TMDL development for TDS is unknown.
—	Estuary (48 miles)	1) ChemA[1] 2) Coliform 3) Toxaphene	1) Medium 2) Medium 3) Medium	None listed	1) Unknown Source 2) Nonpoint source 3) Nonpoint source	Draft documents are available for the Total Maximum Daily Loads for Santa Clara River Estuary Beach/Surfers' Knoll, McGrath State Beach, and Mandalay Beach Coliform and Beach Closures (07/18/2003).

[1] ChemA suite of chlorinated legacy pesticides include: aldrin, chlordane, dieldrin, endosulfan I/II, endrin, gamma-BHC, heptachlor, heptachlor epoxide, and toxaphene.

Each RWQCB must formulate and adopt a water quality control 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.

Basin Plan

The Los Angeles RWQCB's Basin Plan provides quantitative and narrative criteria for a range of water quality constituents applicable to certain receiving water bodies and groundwater basins within the Los Angeles Region. Specific criteria are provided for the larger, designated water bodies within the region, as well as general criteria or guidelines for ocean waters, bays and estuaries, inland surface waters, and groundwater basins. In general, the narrative criteria require that degradation of water quality does not occur due to increases in pollutant loads that would adversely impact the designated beneficial uses of a water body. For example, the Los Angeles Basin Plan (Basin Plan) requires that *"Inland surface waters shall not contain suspended or settleable solids in amounts which cause a nuisance or adversely affect beneficial uses as a result of controllable water quality factors."* Water quality criteria apply within receiving waters as opposed to applying directly to runoff; therefore, water quality criteria from the Basin Plan are utilized as benchmarks as one method to evaluate the potential ecological impacts of runoff on receiving waters.

The Basin Plan also contains water quality criteria for groundwater basins. For example, the Basin Plan requires that *"Ground waters shall not contain taste or odor producing substances in concentrations that cause nuisance or adversely affect beneficial uses."*

MS4 Permit

In 2001, the Los Angeles Regional Water Quality Control Board issued an NPDES Permit and Waste Discharge Requirements (Order No. 01-182) under the CWA and the Porter-Cologne Act for discharges of urban runoff from public storm drains in Los Angeles County. The Permittees are Los Angeles County and incorporated cities within the County (collectively, "the co-permittees"). This permit regulates stormwater discharges from MS4s in the project area. The NPDES permit details requirements for new development and significant redevelopment, including specific sizing criteria for treatment Best Management Practices (BMPs) and flow control requirements.

To implement the requirements of the NPDES permit, the co-permittees have developed development planning guidance and control measures that control and mitigate stormwater quality and quantity impacts to receiving waters as a result of new development and redevelopment. They are also required to implement other municipal source detection and elimination programs, as well as maintenance measures.

Stormwater Quality Management Program

The MS4 Permit contains the following provisions for implementation of the Stormwater Quality Management Program (SQMP) by the co-permittees:

General Requirements – Each permittee is required to implement the SQMP to comply with applicable stormwater program requirements and implement additional controls where necessary to reduce the discharge of pollutants in stormwater to the maximum extent practicable (MEP).

BMP Implementation – Permittees are required to implement the most effective combination of BMPs for stormwater/urban runoff pollution control.

SQMP Revision – Permittees are required to revise the SQMP to comply with regional, watershed-specific requirements, and/or waste load allocations for implementation of TMDLs for impaired water bodies.

Responsibilities of the Principal Permittee – The responsibilities of the Los Angeles County Department of Public Works (as the Principal Permittee) include, but are not limited to, coordinating activities necessary to comply with the NPDES permit, providing personnel and fiscal resources for SQMP updates and annual reports and summaries of reports required under the SQMP, and implementing a County-wide Monitoring Program and evaluating results of the monitoring program.

Responsibilities of Permittees – Each permittee is required to comply with the requirements of the SQMP applicable to the discharges within its boundaries.

Watershed Management Committees (WMCs) – WMCs are comprised of a voting representative from each Permittee within the Watershed Management Areas (WMAs). WMCs are required to facilitate efforts and exchange of information between Permittees, establish additional goals for WMAs, prioritize pollution control efforts, monitor implementation of tasks designated for the WMA, and assess the effectiveness of and recommend revisions to the SQMP.

Legal Authority – Permittees are granted the necessary legal authority to prohibit non-stormwater discharges to the storm drain system.

The objective of the SQMP is to reduce pollutants in urban stormwater discharges to the "maximum extent practicable" in order to attain water quality objectives and to protect the beneficial uses of receiving waters in Los Angeles County. Special provisions are provided in the MS4 permit to facilitate implementation of the SQMP. These provisions include:

BMP Substitution – Substitution of site-specific BMPs is allowed provided the alternative BMP would meet or exceed pollutant reduction of the original BMP, the fiscal burden of the original BMP is substantially greater than the proposed alternative, and the alternative BMP would be implemented within a similar time period.

Public Information and Participation Program (PIPP) – This requires the permittee to identify how public education needs were determined, who is responsible for developing and implementing the program, and the method used to determine its effectiveness.

Industrial/Commercial Facilities Control Program – This requires the permittee to develop a plan for managing stormwater runoff from industrial and commercial facilities. This program would track, inspect, and ensure compliance at industrial and commercial facilities that are sources of pollutants in stormwater.

Development Planning Program – This requires the permittee to implement a development-planning program that requires new development and redevelopment projects to minimize impacts from stormwater and urban runoff.

Development Construction Program – This requires the permittee to implement a program to control runoff from construction activity to minimize erosion and transportation of sediment and prevent non-stormwater discharges from equipment and vehicle washing.

Public Agency Activities Program – This requires municipalities to evaluate existing public agency activities that have an impact on stormwater quality (such as vehicle maintenance, landscape maintenance and weed control, and construction and maintenance of streets, roads, and flood control systems) and to develop a program to reduce stormwater impacts with a schedule for implementation.

Illicit Connections and Illicit Discharges Elimination Program – This requires each permittee to have a plan for finding and preventing illegal connections and discharges and a mechanism for enforcing against illegal connections and discharges.

Standard Urban Stormwater Mitigation Plan

On March 8, 2000, the development planning program requirements, including the Standard Urban Stormwater Mitigation Plan requirements (collectively, development planning program requirements, including Standard Urban Stormwater Mitigation Plan requirements, are referred to in this report as SUSMP requirements) were approved by the RWQCB as part of the MS4 program to address stormwater pollution from new construction and redevelopment. The SUSMP contains a list of minimum BMPs that must be employed to infiltrate or treat stormwater runoff, control peak flow discharge, and reduce the post-project discharge of pollutants from stormwater conveyance systems. The SUSMP defines, based upon land use type, the types of practices that must be included and issues that must be addressed, as appropriate, relative to the development type and size. Compliance with SUSMP requirements is used as one method to evaluate significance of development impacts on surface water runoff.

Finalized in May 2000, the County of Los Angeles' *Manual for the Standard Urban Stormwater Mitigation Plan* details the requirements for new development and significant redevelopment BMPs (the "Manual"). The Manual is a model guidance document for use by Permittees and individual project owners to select post-construction BMPs and otherwise comply with the SUSMP requirements. It addresses water quality and drainage issues by specifying design standards for structural or treatment control BMPs that infiltrate or treat stormwater runoff and control peak-flow discharge. BMPs are defined in the Manual and SUSMP requirements as any program, technology, process, sizing criteria, operational methods or measures, or engineered systems, which, when implemented, prevent, control, remove, or reduce pollution. Treatment BMP design criteria and guidance are also contained in the MS4 Permit, the Manual, and in the *Technical Manual for Stormwater Best Management Practices in the County of Los Angeles*, issued by the Department of Public Works in February 2004.

One of the most important requirements within the SUSMP is the specific sizing criteria for stormwater treatment BMPs for new development and significant redevelopment projects. The SUSMP includes sizing criteria for both volume-based and flow-based BMPs.

Also, the SUSMP includes general design specifications for individual priority project categories. These include:

- Single-family hillside homes
- 100,000 square foot commercial developments
- Restaurants
- Retail gasoline outlets
- Automotive repair shops
- Parking lots

For example, commercial developments must have properly designed loading and unloading dock areas, repair and maintenance bays, and vehicle equipment wash areas. Restaurants need to have properly designed equipment and accessory wash areas. Parking lots have to be properly designed to limit oil contamination and have regular maintenance of parking lot stormwater treatment systems (e.g., storm drain filters and biofilters).

EXISTING WATERSHED CONDITIONS

The project site encompasses approximately 30.4 acres of urbanized land generally located north of the intersection of McBean Parkway and Orchard Village Road. The project site is characterized by hospital and medical office uses, a heliport, central utility plant, and associated parking and landscaped areas. There are currently several drainage improvements throughout the site, including curbside catch basins, storm drain pipes, gutters, and in-street channels, mostly within parking areas, which convey runoff to the south and southeast to larger stormwater conveyance facilities. This runoff exits the site via overland sheet flow (in parking/paved areas) and within stormdrains in McBean Parkway along the southeast edge of the site. Numerous stormdrain pipes then convey flow from southeast portions of the site eastwards to the South Fork of the Santa Clara River.

Watershed Description

There currently is no Master Plan of Drainage for the project area. Per a field inspection and the 1996 Thomas Guide, the proposed project watershed is ultimately tributary to the South Fork of the Santa Clara River. The majority of on-site flow generally drains from west-northwest to east. Once off-site, as previously indicated, runoff from the project site flows eastwards into the South Fork of the Santa Clara River.

The maximum elevation differential of the project site is approximately 110 feet from an elevation of 1,325 feet along the northwest edge of the site to 1,215 feet at the easternmost end of the site. The site is characterized by a vegetated, relatively steep slope along its northwestern edge, which extends up to 85 feet in height above the urbanized portion of the site at a slope of approximately 2:1 (horizontal to vertical). The urbanized portion of the hospital site is relatively flat, generally sloping gently to the east toward the South Fork of the Santa Clara River.

Surface Water Hydrology – Existing Conditions

The project site comprises approximately 30.4 acres of urbanized land. In addition to the project site, the tributary watershed considered in this analysis includes additional undeveloped land to the northwest of the site within the adjacent slope areas. Currently, buildings and other structures cover approximately 26 percent of the site, while landscaping and other pervious areas (including the slope areas to the northwest of the urbanized portion of the site) represent approximately 43 percent of the site area. The remainder of the site is paved with either sidewalks or parking lots. The impervious portions of the site contribute the majority of surface runoff to on- and off-site stormwater conveyance infrastructure.

FLOODPLAIN MAPPING

The City of Santa Clarita is a participant in the National Flood Insurance Program (NFIP). Communities participating in the NFIP must adopt and enforce minimum floodplain management standards, including identification of flood hazards and flooding risks. Participation in the NFIP allows communities to purchase low-cost insurance protection against losses from flooding.

The published Flood Insurance Rate Map (FIRMs) for the project site is included in data contained in the City of Santa Clarita's Geographic Information System (GIS).[1] According to FIRM data, no portion of the project site is located within a mapped 100- or 500-year floodplain.

STORMWATER QUALITY

Stormwater quality is a significant concern in California. The project's major downstream watercourse, Reach 8 of the Santa Clara River, is listed on the 303(d) list of the Los Angeles Regional Water Quality Control Board for coliform and chloride, among other constituents, as previously indicated. This 303(d) listing raises a significant concern for certain pollutant runoff from the site.

The following discusses typical pollutants found in stormwater runoff and discusses the types of contaminants that could be found in existing stormwater runoff from the project site.

Significant Pollutants From 303(d) Listing

As discussed above, under Section 303(d) of the 1972 Clean Water Act, areas are required to declare a list of water quality-limited segments. Watercourses on this list do not meet water quality standards, even after installing the minimum level of pollutant control technology on point sources, and must develop action plans to improve water quality.

The project site is tributary to the South Fork of the Santa Clara River, which is tributary to Reach 8_E of the Santa Clara River (West Pier Highway 99 to Bouquet Canyon Road Bridge). Because Reach 8_E of the Santa Clara River is on the 303(d) list of the Los Angeles Regional Water Quality Control Board, the project site is within a watershed that does not meet water quality standards for certain pollutants. The Los Angeles Regional Water Quality Control Board indicates that the

[1] City of Santa Clarita. *City of Santa Clarita Interactive Maps – GIS*. http://arcims.santa-clarita.com/santaclarita/asp.htm?Title=City%20of%20Santa%20Clarita%20Map%20Viewer. Accessed July 11, 2005.

current pollutants in this watershed include chloride and coliform, both coming from point and non-point sources.

Non-Point Source Pollutants

A net effect of urbanization can be to increase pollutant export. However, an important consideration in evaluating stormwater quality from a project is to assess if it impairs the beneficial use of the receiving waters. Non-point source pollutants have been characterized by the following major categories, discussed below, in order to assist in determining the pertinent data and their use. 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 effect on water quality. Background of these standard water quality categories provides an understanding of typical urbanization 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 typically the largest source of sediment for urban areas under development. Another major source of sediment is streambank erosion, which may be accelerated by increases in peak rates and volumes of runoff due to urbanization.

Nutrients

Nutrients are a major concern for surface water quality. Phosphorous and nitrogen are of special concern because they 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 ground water. Orthophosphate from auto emissions also contributes phosphorus in areas with heavy automobile traffic. As a general rule of thumb, nutrient export is greatest from development sites with the most impervious area. Other problems resulting from excess nutrients are surface algal scums; water discolorations; odors; toxic releases; and overgrowth of plants. Common measures for nutrients are total nitrogen, organic nitrogen, total Kjeldahl nitrogen (TKN), nitrate, ammonia, total phosphate, and total organic carbon (TOC).

Trace Metals

Trace metals are primarily a concern because of their toxic effects on aquatic life and their potential to contaminate drinking water supplies. The most common trace metals found in urban 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 are attached to sediment; this effectively reduces the level that is immediately available for biological uptake and subsequent bioaccumulation.

Metals associated with the sediment settle out rapidly and accumulate in the soils. Also, urban runoff events typically occur over a shorter duration, thereby reducing the amount of 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 increases.

Oxygen-Demanding Substances

Aquatic life is dependent on the dissolved oxygen (DO) in the water, and when organic matter is consumed by microorganisms, DO is consumed in the process. A rainfall event can deposit large quantities of oxygen-demanding substance in lakes and streams. The biochemical oxygen demand of typical urban runoff is on the same order of magnitude as the effluent from an effective secondary wastewater treatment plant. A problem resulting from low DO occurs when the rate of oxygen-demanding material exceeds the rate of replenishment. 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).

Bacteria

Bacteria levels in undiluted urban runoff exceed public health standards for water contact recreation almost without exception. Studies have found that total coliform counts exceeded EPA water quality criteria at almost every site, and almost every time it has rained. The coliform bacteria that are detected may not be 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 quickly become absorbed by it. The major source of hydrocarbons in urban runoff is through leakage of crankcase oil and other lubricating agents from automobiles. Hydrocarbon levels are highest in the runoff from parking lots, roads, and service stations. Residential land uses generate less hydrocarbons export, although illegal disposal of waste oil into stormwaters can be a local problem.

Other Toxic Chemicals

Priority pollutants are generally related to hazardous wastes or toxic chemicals and sometimes can be detected in stormwater. Priority pollutant scans have been conducted in previous studies of urban runoff, which evaluated the presence of over 120 toxic chemicals and compounds. The scans rarely revealed toxins that exceeded the current safety criteria. The urban runoff scans were primarily conducted in suburban areas not expected to have many sources of toxic pollutants (with the possible exception of illegally disposed or applied household hazardous wastes). Measures of priority pollutants in stormwater include 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 assess the quality of stormwater provide a method of measuring 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 as a pollutant in surface runoff. In an urban environment, the quantity of certain pollutants in a given area is a function of the intensity of the land use. For instance, a high volume 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 ground water.

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 an urban pollutant, rather that the annual load of that pollutant, is needed to assess a water quality problem. Some of the physical, chemical, or biological characteristics that evaluate the quality of the surface runoff are described below.

Dissolved Oxygen

Dissolved oxygen in the water has a pronounced effect on the aquatic organisms and the chemical reactions that occur. It is one of the most important biological water quality characteristics in the aquatic environment. The dissolved oxygen concentration of a water body is determined by the solubility of oxygen, which is inversely related to water temperature, pressure, and biological activity. Dissolved oxygen is a transient property that can fluctuate rapidly in time and space. Dissolved oxygen 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 also. The oxygen demand is an indication of the pollutant load and includes measurements 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 degrees Celsius, after which the residual dissolved oxygen is measured. The BOD value commonly referenced is the standard 5-day values. These values 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 it does not rely on bacteriological actions as with BOD. COD does not necessarily provide a good index of oxygen demanding properties in natural waters.

Total Dissolved Solids (TDS)

Total dissolved solids (TDS) concentration is determined by evaporation of a filtered sample to obtain residue whose weight is divided by the sample volume. The TDS of natural waters varies widely. There are several reasons why TDS is an important indicator of water quality. Dissolved solids affect the ionic bonding strength related to other pollutants such as metals in the water. TDS are also a major determinant of aquatic habitat. TDS affects saturation concentration of dissolved

oxygen and influences the ability of a water body to assimilate wastes. Eutrophication rates depend on total dissolved solids.

pH

The pH of water is the negative log, base 10, of the hydrogen ion (H^+) activity. A pH of 7 is neutral; a pH greater than 7 indicates alkaline water; a pH 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, representing 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 less than 200 mg/l and ranges of alkalinity of 100-200mg/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 project waters can develop a 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 ohms/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 ability 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 since 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 milligrams per liter (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; nitrite plus nitrate; nitrite; and nitrogen in plants. The principal water quality criteria for nitrogen focus on nitrate and ammonia.

Phosphorus (P)

Phosphorus 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 urban stormwater discharge is generally from fertilizers and other industrial products. Orthophosphate is soluble and is considered to be the only biologically available form of phosphorus. Since 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 include detecting orthophosphate and total phosphorus.

Existing Stormwater Quality

The project site is currently developed with urban uses and associated landscaping. Because the major downstream watercourse for the site, the South Fork Santa Clara River, is listed on the 303(d) list, the site is included in a watershed that does not meet water quality standards for chloride and coliform. Pollutants in stormwater flows generated at the site are those associated with parking areas, including vehicle fluids, oil and grease, and trash and debris. Currently, the only on-site stormwater quality mitigation systems are those designed to address trash and debris, such as screens and grates over storm drain inlets.

5.9.2 SIGNIFICANCE THRESHOLD CRITERIA

Appendix G of the *CEQA Guidelines* contains the Initial Study Environmental Checklist form used during preparation of the project Initial Study, which is contained in Appendix A of this EIR. The Initial Study includes questions relating to hydrology, drainage, flooding, and water quality. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this section. Accordingly, a project may create a significant environmental impact if the project results in one or more of the following:

- 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 (refer to Section 9.0, Effects Found Not To Be Significant);
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows (refer to Section 9.0, Effects Found Not To Be Significant);
- 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 (refer to Section 9.0, Effects Found Not To Be Significant);
- Inundation by seiche, tsunami, or mudflow (refer to Section 9.0, Effects Found Not To Be Significant);
- Changes in the rate of flow, currents, or the course and direction of surface water and/or groundwater;
- Other modification of a wash, channel, creek, or river (refer to Section 9.0, Effects Found Not To Be Significant);
- Impact stormwater management in any of the following ways:
  - Potential impact of project construction and project post-construction activity on storm water runoff;
  - Potential discharges from areas for materials storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas or loading docks, or other outdoor work areas;
  - Significant environmentally harmful increase in the flow velocity or volume of storm water runoff;
  - Significant and environmentally harmful increases in erosion of the project site or surrounding areas;
  - Storm water discharges that would significantly impair or contribute to the impairment of the beneficial uses of receiving waters or areas that provide water quality benefits (e.g. riparian corridors, wetlands, etc.);
  - Cause harm to the biological integrity of drainage systems, watersheds, and/or water bodies; or
  - The proposed project does not include provisions for the separation, recycling, and reuse of materials both during construction and after project occupancy.

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 unavoidable impact.

The purpose of the evaluation presented in this section is to determine the impact the proposed development has on surface water drainage and stormwater quality within the City of Santa Clarita and the watershed tributary to the South Fork of the Santa Clara River. Standard practice dictates that should the analysis determine that the proposed project would significantly impact surface water drainage or stormwater quality, appropriate mitigation would be identified to minimize the project impacts to a level less than significant.

The Clean Water Act amendments of 1987 established a framework for regulating stormwater discharges from municipal, industrial, and construction activities under the Federal Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) program. The primary objectives of the municipal stormwater program requirements are to:

1. Effectively prohibit non-stormwater discharges, and
2. Reduce the discharge of pollutants from the stormwater conveyance system to the "Maximum Extent Practicable."

For the purposes of this analysis, impacts to stormwater quality would be considered significant if the project did not address stormwater pollution to the maximum extent practicable. Currently, however, there are no definitive water quality standards for individual pollutants. Therefore, impacts to stormwater quality would be considered significant if the project failed to meet the requirements of the Los Angeles Regional Water Quality Control Board and the City of Santa Clarita.

Such requirements for institutional developments include the following:

1. Post-development peak storm discharge rates shall not exceed the estimated pre-development rate for developments where increased peak stormwater discharge rates would result in increased potential for downstream erosion.
2. Conserve natural areas by using cluster development, limiting clearing and grading of native vegetation, maximize trees and other vegetation, promote natural vegetation, and preserve riparian area and wetlands.
3. Minimize stormwater pollutants of concern by incorporating Best Management Practices (BMPs) or combinations of BMPs best suited to maximize the reduction of pollutant loadings in runoff to the maximum extent practicable.
4. Protect slopes and channels to decrease the potential for erosion and the subsequent impacts to stormwater runoff.
5. Provide storm drain system stenciling and signage.
6. Properly design outdoor material storage areas.
7. Properly design trash storage areas.
8. Provide proof of ongoing BMP maintenance.
9. Comply with SUSMP standards for design of structural or treatment control BMPs.
10. Properly design loading/unloading dock areas.
11. Properly design repair/maintenance bays.

12. Properly design vehicle/equipment wash areas.
13. Design parking areas to reduce impervious land coverage in order to encourage the infiltration and treatment of runoff before it enters the storm drain system.

5.9.3 IMPACTS AND MITIGATION MEASURES

The following is an analysis of the proposed project conditions, which is compared to the existing conditions analysis, to determine impacts associated with development of the property. Impacts to drainage, hydrology, and water quality are discussed separately relative to the Phase 1 development program, Phase 2 development program, and the Master Plan buildout scenario.

DRAINAGE

- **DEVELOPMENT ASSOCIATED WITH PHASE 1 OF THE PROPOSED MASTER PLAN COULD ALTER THE DRAINAGE PATTERN OF THE PROJECT SITE.**

Level of Significance Prior to Mitigation: Less Than Significant Impact.

Impact Analysis: Under the Phase 1 development scenario, almost all on-site flows from the project site would ultimately be conveyed to the east through existing storm drains that run under McBean Parkway. Numerous storm drain pipes would then convey these flows to the South Fork of the Santa Clara River.

There is currently no Master Plan of Drainage for the City of Santa Clarita. As previously indicated, the entire project site is ultimately tributary to the South Fork of the Santa Clara River, and all runoff from the project site is eventually routed east into this fork, which flows northeast and joins the main reach of the Santa Clara River.

The proposed project would alter drainage patterns due to on-site grading and construction activities, any proposed new storm drains, and minor increases in the amount of impervious area relative to existing drainage patterns. This could result in increased local erosion and runoff. However, given that the project site is currently completely urbanized in areas proposed for Phase 1 improvements, it is anticipated that any changes in impervious surface area would be minor, if even notable, and the resultant changes in surface drainage would not be substantial. It is expected that the net change in impervious area and associated runoff flow volumes resulting from implementation of Phase 1 improvements would not result in significant surface drainage impacts on- or off-site.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Not applicable.

- **DEVELOPMENT ASSOCIATED WITH PHASE 2 OF THE PROPOSED MASTER PLAN COULD ALTER THE DRAINAGE PATTERN OF THE PROJECT SITE.**

Level of Significance Prior to Mitigation: Less Than Significant Impact.

Impact Analysis: Under the Phase 2 development scenario, a net addition of approximately 112,000 square feet of medical office uses, and two parking structures totaling 857 spaces would occur between 2008 and 2015. As with Phase 1, almost all on-site flows from the project site would ultimately be conveyed to the east through existing storm drains that run under McBean Parkway and ultimately to the South Fork of the Santa Clara River.

Phase 2 could result in increased local erosion and runoff and altered drainage patterns due to on-site grading and construction activities, new storm drains, and minor increases in the amount of impervious area relative to existing drainage patterns. However, given that the project site is currently completely urbanized in areas proposed for Phase 2 improvements, it is anticipated that any changes in impervious surface area would be minor, if even notable, and the resultant changes in surface drainage would not be substantial. It is expected that the net change in impervious area and associated runoff flow volumes resulting from implementation of Phase 2 improvements would not result in significant surface drainage impacts on- or off-site.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Not applicable.

- **DEVELOPMENT ASSOCIATED WITH BUILDOUT OF THE PROPOSED MASTER PLAN COULD ALTER THE DRAINAGE PATTERN OF THE PROJECT SITE.**

Level of Significance Prior to Mitigation: Less Than Significant Impact.

Impact Analysis: As is the case under the Phase 1 and Phase 2 development program, buildout of the proposed Master Plan would not notably change the project site drainage patterns, since the net change in impervious surface area would be limited, if even notable. Site characteristics relative to surface water drainage would not vary substantially from current conditions, and existing drainage facilities in the project area are anticipated to be adequate for the proposed Master Plan buildout. Impacts to surface drainage from implementation of the proposed Master Plan would be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Not applicable.

HYDROLOGY

- **DEVELOPMENT ASSOCIATED WITH PHASE 1 OF THE PROPOSED MASTER PLAN COULD INCREASE STORMWATER FLOW RATES IN ON- AND OFF-SITE STORMWATER CONVEYANCE FACILITIES.**

Level of Significance Prior to Mitigation: Less Than Significant Impact.

Impact Analysis: Project hydrology (based on assumed flow paths, proposed structures, and proposed storm drain locations) was evaluated in order to determine the local impacts that the proposed development would have on runoff. Given the urbanized nature of the site and proposed improvements under the Phase 1 development program, it is expected, as previously discussed, that the site drainage patterns and associated flow rates would not notably change.

The proposed project includes approximately 30.4 acres of urbanized and undeveloped vacant land (slope areas not proposed for development under the proposed project), with approximately 40 percent of the site area dedicated to landscaping and other pervious surfaces. Because the site would be improved with structures on existing urbanized land, stormwater flow rates would not appreciably increase; therefore, existing stormwater conveyance infrastructure is considered adequate for projected runoff flows. Although various on-site stormwater conveyance improvements would be constructed as part of the Phase 1 scenario, in addition to relocation of existing facilities, as required for construction, the impacts to on- and off-site stormwater infrastructure would be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Not applicable.

- **DEVELOPMENT ASSOCIATED WITH PHASE 2 OF THE PROPOSED MASTER PLAN COULD INCREASE STORMWATER FLOW RATES IN ON- AND OFF-SITE STORMWATER CONVEYANCE FACILITIES.**

Level of Significance Prior to Mitigation: Less Than Significant Impact.

Impact Analysis: Given the urbanized nature of the project site, the proposed improvements under the Phase 2 development program would not increase impervious surfaces. Similar to the Phase 1 development program, Phase 2 of the proposed development would not notably change the site drainage patterns and associated flow rates. Additionally, the project site includes a slope area to the northwest, and involves landscaping and other pervious surfaces that would reduce stormwater flow rates. As a result, impacts would be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Not applicable.

- **DEVELOPMENT ASSOCIATED WITH BUILDOUT OF THE PROPOSED MASTER PLAN COULD INCREASE STORMWATER FLOW RATES IN ON- AND OFF-SITE STORMWATER CONVEYANCE FACILITIES.**

Level of Significance Prior to Mitigation: Less Than Significant Impact.

Impact Analysis: As previously indicated, the project site is urbanized with structures, parking areas, and other impervious surfaces. The slope area to the northwest of the hospital facility, which is almost entirely characterized by pervious surfaces, as is the case with the Phase 1 and Phase 2 development scenario, would not be affected by proposed development under the Master Plan buildout scenario. The balance of the site, including impervious surfaces and landscaping, would not substantially change in terms of drainage patterns and surface runoff flow volumes, given the urbanized nature of the facility. As such, implementation of the proposed Master Plan would not contribute stormwater flows substantially greater than existing flow rates, and therefore existing stormwater conveyance infrastructure would be considered adequate. Impacts would be less than significant in this regard.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

WATER QUALITY

- **DEVELOPMENT ASSOCIATED WITH PHASE 1 OF THE PROPOSED MASTER PLAN WOULD INCREASE POLLUTANT LOADS IN THE LOCAL STORM DRAIN SYSTEM AND RECEIVING WATER BODIES.**

Level of Significance Prior to Mitigation: Potentially Significant Impact.

Impact Analysis: The site's major downstream watercourse is on the 303(d) list of the Los Angeles Regional Water Quality Control Board. This 303(d) listing raises a significant concern for chloride and coliform runoff from the site.

The general water quality of the project site is not expected to substantially change as a result of proposed Phase 1 improvements. Expected pollutants include trash, debris, nutrients, pesticides, herbicides, and oil and grease. Although the proposed project would not notably increase impervious areas, proposed development could affect pollutant loading immediately off-site, since the intensity of use on-site would result in increased vehicle activity and generation of trash and debris. Mitigation measures that address water quality impacts, listed below, reduce impacts to a less than significant level.

Construction

There would be additional impacts to stormwater quality due to construction and associated earth moving under the Phase 1 development program. Construction of the proposed project has the potential to produce typical pollutants such as nutrients, heavy metals, pesticides and herbicides, toxic chemicals related to construction and cleaning, and waste materials (including wash water,

paints, wood, paper, concrete, food containers, sanitary wastes, fuel, and lubricants). Prior to construction, a Notice of Intent (NOI) and Stormwater Pollution Prevention Plan (SWPPP) would be required to reduce pollutant loadings. Impacts to water quality due to construction are considered potentially significant if not mitigated. However, adherence to the requirements and recommendations of the SWPPP required under the NPDES General Construction Permit, including implementation of applicable BMPs, would reduce the potential for adverse water quality impacts to receiving waters from construction activities to less than significant. Examples of BMPs that would address construction-related water quality include, but are not limited to, the following measures:

- Preservation of existing vegetation
- Hydraulic mulch
- Hydroseeding
- Soil binders
- Straw mulch
- Geotextiles and mats
- Wood mulching
- Earth dikes and drainage swales
- Velocity dissipation devices
- Slope drains
- Streambank stabilization
- Polyacrylamide

Post-Construction

Operation of Phase 1 improvements, once construction is completed, would likely increase trash, nutrients, bacteria, pesticides and herbicides, and oil and grease from the increased intensity of uses on-site. Water quality impacts due to the development of Phase 1 improvements are considered potentially significant if not mitigated. However, development of and adherence to a Water Quality Management Plan (WQMP) for project operation, required for compliance with the NPDES MS4 permit, would effectively preclude substantial adverse impacts to water quality in receiving water bodies. Implementation of applicable mitigation measures, including adherence to requirements and recommended BMPs included in the project's WQMP, would reduce impacts to less than significant. Examples of BMPs that would address post-construction operational water quality include, but are not limited to, the following measures:

- Bioretention basins
- Bioswales
- Catch basin filters
- Regular street and parking lot sweeping
- Porous pavement
- Roof runoff controls
- Efficient irrigation
- Alternative building materials
- Stormdrain signage
- Trash enclosures

Mitigation Measures:

HWQ1 The Project Applicant shall prepare and submit a Notice of Intent (NOI) to comply with the Construction General Permit to the State Water Resources Control Board.

HWQ2 The Project Applicant shall prepare a Stormwater Pollution Prevention Plan (SWPPP) per requirements of the NPDES Construction General Permit.

HWQ3 The Project Applicant shall comply with post-construction Best Management Practice (BMP) requirements as detailed in the Los Angeles County Standard Urban Stormwater Mitigation Plan (SUSMP).

Level of Significance After Mitigation: Less Than Significant Impact.

- **DEVELOPMENT ASSOCIATED WITH PHASE 2 OF THE PROPOSED MASTER PLAN WOULD INCREASE POLLUTANT LOADS IN THE LOCAL STORM DRAIN SYSTEM AND RECEIVING WATER BODIES.**

Level of Significance Prior to Mitigation: Potentially Significant Impact.

Impact Analysis: The general water quality of the project site is not expected to substantially change as a result of the implementation of the Phase 2 development program. The Phase 2 improvements involve the net addition of 112,000 square feet of medical office uses, and 857 parking spaces. As with the Phase 1 improvements, expected pollutants for the Phase 2 improvements include trash, debris, nutrients, pesticides, herbicides, and oil and grease. Although the proposed project would not notably increase impervious areas, proposed development could affect pollutant loading immediately off-site, since the intensity of use on-site would result in increased vehicle activity and generation of trash and debris. Mitigation measures that address water quality impacts, reduce impacts to a less than significant level.

Construction

There would be additional impacts to stormwater quality due to construction and associated earth moving under the Phase 2 development program. Construction of the proposed project has the potential to produce typical pollutants such as nutrients, heavy metals, pesticides and herbicides, toxic chemicals related to construction and cleaning, and waste materials (including wash water, paints, wood, paper, concrete, food containers, sanitary wastes, fuel, and lubricants). Prior to construction, a Notice of Intent (NOI) and Stormwater Pollution Prevention Plan (SWPPP) would be required to reduce pollutant loadings. Impacts to water quality due to construction are considered potentially significant if not mitigated. However, adherence to the requirements and recommendations of the SWPPP required under the NPDES General Construction Permit, including implementation of applicable BMPs, would reduce the potential for adverse water quality impacts to receiving waters from construction activities to less than significant.

Post-Construction

The increase intensity of uses resultant from the operation of Phase 2 improvements would likely increase the amounts of trash, nutrients, bacteria, pesticides and herbicides, and oil and grease generated on-site. These impacts are considered potentially significant if not mitigated. However, as with Phase 1, development of and adherence to a WQMP for project operation, required for compliance with the NPDES MS4 permit, would effectively preclude substantial adverse impacts to water quality in receiving water bodies. Implementation of applicable mitigation measures, including adherence to requirements and recommended BMPs included in the project's WQMP, would reduce impacts to less than significant.

Mitigation Measures: Refer to Mitigation Measures HWQ1 through HWQ3. No additional mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

- **DEVELOPMENT ASSOCIATED WITH BUILDOUT OF THE PROPOSED MASTER PLAN WOULD INCREASE POLLUTANT LOADS IN THE LOCAL STORM DRAIN SYSTEM AND RECEIVING WATER BODIES.**

Level of Significance Prior to Mitigation: Potentially Significant Impact.

Impact Analysis: As is the case with the Phase 1 and Phase 2 development programs discussed above, buildout of the proposed Master Plan would not result in substantial changes to water quality from construction and operation of proposed uses. The general water quality of the project site would not vary from existing conditions, despite potential increases in on-site pollutant loads from increased intensity of uses. Expected pollutants would include trash, debris, nutrients, pesticides, herbicides, and oil and grease. Construction activities and project operation would not result in adverse impacts to receiving water bodies assuming compliance with the project's SWPPP and WQMP, as required by the NPDES General Construction Permit and MS4 Permit. Subsequent development of planned phases of improvements under the proposed Master Plan would be required to develop such plans to address potential water quality impacts, which would serve to mitigate any significant impacts. As such, with implementation of applicable mitigation measures, impacts to water quality from the buildout of the proposed Master Plan would be less than significant.

Mitigation Measures: Refer to Mitigation Measures HWQ1 through HWQ3. No additional mitigation measures are required.

Level of Significance After Mitigation: Less Than Significant Impact.

5.9.4 CUMULATIVE IMPACTS AND MITIGATION MEASURES

- **DEVELOPMENT ASSOCIATED WITH THE PROPOSED PROJECT, IN CONJUNCTION WITH OTHER CUMULATIVE PROJECTS IN THE SANTA CLARITA VALLEY, WOULD CONTRIBUTE TO CUMULATIVE HYDROLOGY AND WATER QUALITY IMPACTS.**

Level of Significance Prior to Mitigation: Less Than Significant Impact.

Impact Analysis: The development projects in the same watershed as the proposed project may impact watershed drainage, hydrology, and water quality. However, as part of the future environmental process associated with the development of each of the individual projects, the impacts would be mitigated on-site in a manner similar to mitigation measures presented in this section to address project-specific impacts. Generally speaking, each individual project would be required to comply with the County SUSMP, City Design Standards, and City stormwater quality requirements for construction and post-construction BMPs. As such, impacts due to cumulative project development are considered less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: Not applicable.

5.9.5 SIGNIFICANT UNAVOIDABLE IMPACTS

Implementation of the proposed project (Phase 1, Phase 2, and buildout) would not result in any significant unavoidable drainage, hydrology, or water quality impacts with the imposition of the recommended mitigation measures. As such, no significant unavoidable impacts would result from implementation of the Henry Mayo Newhall Memorial Hospital Master Plan.

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