4.8.1 INTRODUCTION

This section addresses impacts to the Westside Community Planning Project (proposed project) related to hydrology, as well as short and long-term impacts to surface water quality. This section is based on information prepared by Hawks and Associates, as well as information generated from the City of San Buenaventura (Ventura). The hydrology and water quality information is included in **Appendix 4.8**.

4.8.2 ENVIRONMENTAL SETTING

a. Physical Setting

Hydrology

The Westside Community Planning Project Area is located within the Ventura River Watershed. Specifically, the Westside Planning Area is located within four drainage sub-areas in this watershed as shown in **Figure 4.8-1**, **West Ventura Sub-Watershed**. As shown in this figure, the Planning Area is located within these sub-areas:

- Lower Ventura River at Highway 101
- Dent Drain
- Canada de San Joaquin
- Lower Ventura River above Canada De San Joaquin

Table 4.8-1, Existing Watershed Discharge Rates, identifies the 10-year, 50-year, and 100-year frequency storm event discharge rates for the sub-watersheds in the Ventura River watershed.

Topography

The Westside Community Plan Area includes existing natural drainage features consisting of hillside drainages and the Ventura River. The majority of the Planning Area is located within the valley floor of the Ventura River, although the northeastern portion and the eastern periphery are located in upland areas. The elevation of the Planning Area increases gently in elevation from the southern boundary to the northern boundary. Quaternary alluvium of the Ventura River underlies the low-lying portions of the Planning Area while bedrock underlies the upland areas. The hills in the northeastern portion of the Planning Area rise to approximately 750 feet above mean sea level (msl). The Westside Planning Area is predominantly developed uses.

	Frequency Storm Events		
Watershed	Q10	Q50	Q100
Ventura River at Highway 101	15,720	52,500	78,600
Dent Drain	105	350	527
Canada de San Joaquin	480	1,600	2,420
Ventura River above Canada de San Joaquin	15,600	52,100	78,100

Table 4.8-1 Existing Watershed Discharge Rates

Note::

Q10 = 10 year storm event; Q50 = 50 year storm event; Q100 = 100 year storm event.

N/A = not available as there has been no data for this watershed.

Source: Hawks & Associates, Exhibit B, Watersheds and HSPF Discharges From Ventura River Watershed Design Storm Modeling, February 2010 (included in Appendix 4.8).

Storm Drain Infrastructure

The Westside Community Planning Project Area contains numerous existing storm drain facilities and catch basins which collect drainage for discharge into the Ventura River. A field review was conducted to verify the location of the existing drains and associated catch basins shown in **Figure 4.8-2**, **West Ventura Area Catch Basins**.

The City of Ventura prepared a Master Drainage Plan for the City in 1971. This plan assessed the existing hydrology conditions in the City and proposed storm drains based on 10-year and 50-year frequency storms. The Westside area extending from West Point Row Avenue northward to Canada de San Joaquin was addressed in this plan and maps of existing and proposed storm drain facilities in the Westside area were provided.

The City built many of the facilities identified in the 1971 Master Plan. In 2003, the City completed a "Master Drainage Needs Assessment Study" that evaluated and prioritized improvements needed for areas with frequent flooding or damaged from storm runoff. Drainage deficiencies identified in this 2003 study within the Westside Community Planning Project area include:

- Wall Street Storm Drain (sediment and debris);
- Barnett and Cameron Street Storm Drain (sediment and debris);
- Vince and Lewis Street Debris Basin Project (debris basin project);
- Sunnyway Drive (street flooding);
- James Drive (street flooding); and
- Stanley Avenue (street flooding)



SOURCE: Hawks & Associates - 2011

FIGURE 4.8-1





SOURCE: Hawks & Associates

FIGURE 4.8-2

In February 2010, Ventura County Watershed Protection District (VCWPD) completed the Ventura River Watershed Storm Modeling final report which included the latest data and technical procedures for estimating hydrological runoffs, storm drain design and floodplain analysis. The 2010 Ventura River Watershed Storm Modeling final report increases the estimated peak runoffs over previous estimates by a factor of two.

Flood Hazards

Flood zones are geographic areas that the Federal Emergency Management Agency (FEMA) has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area. According to the FIRM, the Westside Community Planning Area is located within Zone X, a 500-year floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.¹ The Ventura River, located adjacent to the west of the Planning Area, is located within Zone AE, a 100-year floodplain.

The Westside Community Planning Area is protected from flooding from the Ventura River by the existing Ventura River Levee (VR-1), located on the eastern bank of the river, extends north from the mouth of the river to Canada de San Joaquin. This levee system was designed to provide protection from the 1-percent-annual-chance discharge (base flood) in conformance with FEMA required freeboard and other regulations. The length of the levee along the Ventura River is approximately 2.65 miles, with an embankment height up to 10 feet above natural ground on the landward side.

For purposes of the National Flood Insurance Program, FEMA will only recognize in its flood hazard and risk mapping effort those levee systems that meet, and continue to meet, minimum design, operation, and maintenance standards that are consistent with the level of protection sought through the comprehensive floodplain management criteria. FEMA periodically reviews the ability of levees to meet applicable standards. It is important to note this FEMA review is conducted solely for the purpose of establishing appropriate risk zone determinations for NFIP maps and does not constitute a determination by FEMA as to how a structure or system will perform in a flood event.

The Ventura County Watershed Protection District completed review of levee structures in Ventura County as requested by FEMA in November 2009. The Levee Certification study of the VR-1 levee determined sufficient information could not be provided by November 2009 to support certification of

¹ Federal Emergency Management Agency (FEMA), "Definitions of FEMA Designations," http://msc.fema.gov/webapp/wcs/stores/servlet/info?storeId=10001&catalogId=10001&langId=-1&content=floodZones&title=FEMA%20Flood%20Zone%20Designations. 2011.

the levee. Based on the evaluation report, some of the necessary steps needed to achieve recertification include the following: Vegetation Removal, Maintenance Repairs, Geotechnical Analyses, Engineering Analysis and Design, Construction, and preparation of an updated Operation and Maintenance Manual and a Levee Certification Report. The cost of this program of actions is estimated to be approximately \$13.95 million. The District is currently engaged in preliminary design engineering work in support of levee retrofit and/or enhancement projects required to certify the VR-1 levee and seven other non-certified levees in full compliance with Federal Levee Certification Requirements. Should the levee not be recertified, preliminary analysis shows that property within the Westside Planning Area located along the river from West Harrison Street to just north of West Ramona Street and east of Sheridan Way would be required to purchase flood insurance as the levee would no longer be recognized for flood insurance mapping purposes as providing flood protection for these areas.

Dam Inundation

The Westside Community Planning Area is located within the area identified as potentially inundated in the event of a failure of the Matilija and Casitas Dams. The Matilija Dam, located on the west fork of Matilija Creek above Matilija Hot Springs, is made of concrete and has a capacity of 1,800 acre-feet (af). The Casitas Dam, located on Coyote Creek west of Casitas Springs, is constructed of earthen material and has a design capacity of 250,000 af.² The Westside Community Planning Area is located within the Casitas Dam inundation area and is located adjacent to the east of the Matilija Dam inundation area.

Tsunami/Seiche/Mudflow

Tsunamis are large ocean surges that are generated by submarine landslides, volcanic eruptions, or earthquakes. The Westside Planning Area is located outside of a tsunami risk area.³ The Ventura River has been designated as a tsunami risk area as far north as the City limits. The Westside Community Planning Area is located adjacent and to the east of the Ventura River.

A seiche is a wave, or series of waves, set up in an enclosed or partially enclosed body of water by wind, earthquake, or landslide. Seiches are similar to tsunamis, but the waves are generally smaller and of lower energy. The extent of most seiches is small, usually no more than 10 to 20 feet above water level, and the duration is short, usually only a few minutes. The threat to the City from seiches is considered remote. Only facilities in or very near enclosed bodies of water could be immediately affected.⁴

² City of San Buenaventura (Ventura), *Ventura General Plan EIR*, (2005) Table 4.8-1.

³ City of Ventura, *General Plan EIR*, (2005) Figure 4.6-6.

⁴ City of Ventura, *General Plan EIR*, (2005) 4.6-15.

A debris flow (sometimes called mudflow) is a flowing mixture of water-saturated debris that moves downslope under the force of gravity. When moving, they resemble masses of wet concrete and tend to flow downslope along channels or stream valleys. Debris flows are formed when loose masses of unconsolidated wet debris become unstable. Water may be supplied by rainfall, by melting of snow or ice, or by overflow of a crater lake. Debris-flow hazard decreases gradually downvalley from possible source volcanoes but more abruptly with increasing altitude above valley floors.⁵ There are no defined landslide morphological features within the Westside Community Planning Area.⁶

Groundwater

The Westside Community Planning Project Area is located within the Lower Ventura River sub-basin of the Ventura River Valley Basin. The Lower Ventura River sub-basin is bounded to the north by the Upper Ventura River sub-basin and on the south by the Pacific Ocean and Mound sub-basin of the Santa Clara River Basin.⁷ The eastern and western boundaries are defined by the impermeable bedrock of the Santa Ynez Mountains.⁸

Water-bearing formations within the sub-basin include Pleistocene and Holocene alluvium and the lower Pleistocene San Pedro Formation. The alluvium typically consists of silts and sands with lenses of coarser, more permeable material. The alluvium is between 60 and 100 feet thick in the basin. According to the Department of Water Resources, Bulletin 118 (2003) the San Pedro Formation underlies the Quaternary alluvium that comprises the valley floor. However, the Geologic Map of the Ventura and Pitas Point Quadrangles shows the Las Posas Sandstone and the Pico Formations as continuous across the Ventura River valley.⁹ The Pico Formation, the Las Posas Sandstone and the San Pedro Formation consist of fine to coarse sands and clays¹⁰ and likely have similar hydrologic properties.

Groundwater flows from northeast to southwest, generally along the direction of flow of the Ventura River (CGS, 2003a).

Historically, groundwater beneath the area has been as shallow as 10 feet below ground surface at the south end of the Planning Area and greater than 40 feet below ground surface at the northern end of the

⁵ Miller, Potential Hazards from Future Volcanic Eruptions in California: USGS Bulletin 1847, (1989).

⁶ City of Ventura, *General Plan EIR*, (2005) Figure 4.6-2.

⁷ California Department of Water Resources (DWR), *California Groundwater Bulletin 118: Lower Ventura River subbasin*, 2003.

⁸ DWR, Lower Ventura River sub-basin, 2003.

⁹ T.W., Dibblee, Jr, *Geologic map of the Ventura and Pitas Point quadrangles, Ventura County California*: Dibblee Geological Foundation, Map No. DF-2, 1988.

¹⁰ DWR, Lower Ventura River sub-basin, 2003; Dibblee, Geologic Map of Ventura and Pitas Point quadrangles, 1988.

Planning Area (CGS, 2003a) (Figure 3). Currently, groundwater is anticipated to be approximately 34 feet below ground surface near the middle of the Planning Area and approximately 54 feet below ground surface near the northern end of the Planning area (SWRCB, 2011).

Water Quality

The primary sources of pollution to surface and groundwater resources include stormwater runoff from paved areas, which can contain hydrocarbons, sediments, pesticides, herbicides, toxic metals, and coliform bacteria. Seepage from sewage treatment lagoons can further contribute to degraded water quality in the form of elevated nitrate levels. Improperly placed septic tank leach fields can cause similar types of contamination. Illegal waste dumping can introduce contaminants such as gasoline, pesticides, herbicides and other harmful chemicals. Septic tanks are also a source of pollution to some wells in both alluvial and granitic rocks. Septic tanks discharging into alluvium have a high potential to pollute wells producing from the same deposit because of high permeability and low gradient. In the winter, the rains raise the water table in these areas, which can exacerbate possible contamination.

Water quality is subject to seasonal variation. Sources of water quality degradation in the region include surface runoff from oil fields, agricultural areas, urban land uses and natural sedimentation. Pollutant loads are expected to correspond to tributary land uses.

b. Regulatory Framework

Federal

Clean Water Act

The Clean Water Act (CWA) was designed to restore and maintain the chemical, physical, and biological integrity of the nation's waters.¹¹ The CWA also directs states to establish water quality standards for all "waters of the United States" and to review and update such standards on a triennial basis. Other provisions of the CWA related to basin planning include Section 208, which authorizes the preparation of waste treatment management plans, and Section 319, which mandates specific actions for the control of pollution from nonpoint sources. The U.S. Environmental Protection Agency (U.S. EPA) has delegated responsibility for implementation of portions of the CWA to the State Water Resource Control Board (SWRCB) and the RWQCBs, including water quality control planning and control programs, such as the National Pollution Discharge Elimination System (NPDES) program.

¹¹ US Code, Title 42, Sec. 1251, The Clean Water Act.

The CWA requires states to adopt water quality standards for all surface waters of the United States. The CWA requires the U.S. EPA to publish water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric, although narrative criteria based upon biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. The CWA requires states to adopt numerical water quality standards for toxic pollutants for which the U.S. EPA has published water quality criteria that reasonably could be expected to interfere with designated uses in a water body.¹² Stormwater discharges to waters of the US are regulated under the CWA. The stormwater discharges for the Westside Community Planning Project area are collected by the multiple inlets to the storm drain system.

The NPDES permit system was established in the CWA to regulate both point-source discharges (a municipal or industrial discharge at a specific location or pipe) and non-point-source discharges (diffuse runoff of water from adjacent land uses) to surface waters of the United States. For point-source discharges, each NPDES Phase II permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. For non-point-source discharges, the NPDES program establishes a comprehensive stormwater quality program to manage urban stormwater and minimize pollution of the environment to the maximum extent practicable. The NPDES program consists of (1) characterizing receiving water quality, (2) identifying harmful constituents, (3) targeting potential sources of pollutants, and (4) implementing a comprehensive stormwater management program.

The VCWPD, County of Ventura, and Cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, Ventura, Santa Paula, Simi Valley, and Thousand Oaks have joined to form the Ventura Countywide Stormwater Quality Management Program and are named as co-permittees under a revised countywide municipal NPDES permit for stormwater discharges issued by the State Regional Water Quality Control Board in 2010 (Order R4-2010-0108). The program requires new development/redevelopment to control urban runoff pollution on site during and after construction.

Flood Disaster Protection Act of 1973

Congress acted to reduce the costs of disaster relief by passing the Flood Disaster Protection Act of 1973.¹³ The act's aim was to expand the National Flood Insurance Program (NFIP) by substantially increasing limits of coverage and the total amount of insurance authorized to be outstanding. The act also

¹² US Code, Title 42, Clean Water Act, Section 303(c)(2)(b).

¹³ US Code, Title 42, Section 4002, The Flood Disaster Protection Act of 1973.

required known flood-prone communities to participate in the program. Other purposes of the program were to (1) substantially increase the limits of coverage authorized under NFIP; (2) provide for the expeditious identification of, and the dissemination of information concerning, flood-prone areas; (3) require state or local communities, as a condition of future federal financial assistance, to participate in the flood insurance program and to adopt adequate flood plan ordinances with effective enforcement provisions consistent with federal standards to reduce or avoid future flood losses; (4) and require the purchase of flood insurance by property owners who are being assisted by federal programs or by federally supervised, regulated, or insured agencies or institutions in the acquisition or improvement of land or facilities located or to be located in identified areas having special flood hazards.

National Flood Insurance Act

Congress acted to reduce the costs of disaster relief by passing the National Flood Insurance Act of 1968.¹⁴ The intent of this act was to reduce the need for large, publicly funded flood control structures and disaster relief efforts by restricting development in floodplains.

The regulations of the NFIP,¹⁵ which is administered by FEMA, require that communities adopt land use restrictions for the 100-year floodplain in order to qualify for federally subsidized flood insurance. The type of restrictions that communities must adopt are listed in some detail in the regulations. Included is a requirement that residential structures be elevated above the level of the 100-year flood and that other types of structures be flood-proofed. Participation in the flood insurance program is virtually mandatory, since flood insurance (within identified "special flood hazard" areas) is a prerequisite for receiving mortgages or construction loans from federally regulated lending institutions. Disaster assistance is not available to public agencies in hazard areas if they do not participate in the program. FEMA issues FIRMs of communities participating in NFIP. These maps delineate flood hazard zones in each participating community.

State

California Water Code

All projects resulting in discharges, whether to land or water, are subject to the California Water Code¹⁶ and are required to obtain approval of Waste Discharge Requirements (WDRs) by the RWQCBs. Land- and groundwater-related WDRs (i.e., non-NPDES WDRs) regulate discharges of process and wash-

¹⁴ US Code, Title 42, Section 4001 et. seq., The National Flood Insurance Act of 1968.

¹⁵ National Flood Insurance Program, Federal Emergency and Management Agency, *Program Description*, 2002.

¹⁶ California Water Code, et seq.

down wastewater and privately or publicly treated domestic wastewater. WDRs for discharges to surface waters also serve as NPDES permits.¹⁷

Prior to the issuance of any construction/grading permit—and/or the commencement of any clearing, grading, or excavation—owners of projects with construction activities that require a grading permit must prepare and submit a stormwater pollution prevention plan (SWPPP). Landowners are responsible for obtaining and complying with the General Construction NPDES Permit, but may delegate specific duties to developers and contractors by mutual consent. The purpose of the SWPPP is to identify potential pollutant sources that may affect the quality of discharges and to design the use and placement of best management practices (BMPs) to effectively prohibit the entry of pollutants from the construction NPDES Permit describes the site, erosion and sediment controls, runoff water quality monitoring, means of waste disposal, implementation of approved local plans, control of post-construction stormwater management measures and maintenance responsibilities, training of staff, a list of contractors and subcontractors, and non-stormwater management controls. Dischargers are also required to inspect construction sites before and after storms to identify stormwater discharge from construction activity, and to identify and implement controls where necessary.

Colby-Alquist Flood Control Act

The Colby-Alquist Flood Control Act¹⁸ establishes how local governments are to develop and implement floodplain management plans. Among other things, the Colby-Alquist Flood Control Act makes a number of separate legislative findings and requires regulation as a condition for state assistance on federally authorized flood control projects.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act¹⁹ authorizes the SWRCB to adopt, review, and revise policies for all waters of the state (including both surface water and groundwater), and directs the RWQCB to develop regional basin plans. The California Water Code²⁰ also authorizes the SWRCB to adopt water quality control plans on its own initiative.

¹⁷ California Water Code, Section 13263.

¹⁸ California Water Code, Section 8590 et seq.

¹⁹ California Water Code, Division 7, Section 13000.

²⁰ California Water Code, Division 7, Section 13000, et seq.

State Water Quality Control Board

Responsibility for the protection of surface water quality in California rests with the State Water Resources Control Board (SWRCB) and nine RWQCBs. The City of Ventura lies within the jurisdiction of the Los Angeles RWQCB. The SWRCB establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and state water quality statutes and regulations. The RWQCBs develop and implement water quality control plans (basin plans) that consider regional beneficial uses, water quality characteristics, and water quality problems. The Los Angeles RWQCB Basin Plan also provides strategies and implementation plans for the control of point-source and nonpoint-source pollutants, the remediation of pollution, and the monitoring and assessment of a region's waters. The basin plan implements a number of federal and state laws, the most important of which are the state Porter-Cologne Water Quality Control Act and the federal Clean Water Act. The City of Ventura is responsible for ensuring that new developments are in compliance with the goals and policies contained in the Los Angeles RWQCB Basin Plan. The basin plan was prepared to conform to statewide policy set forth by the legislature and the SWRCB. Basin plans consist of designated beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives.

County

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures

The 2010 Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures (2010 TGM) provides the following principles of Integrated Water Resource Management (IWRM) and Low Impact Development (LID) to help mitigate the impacts of development.²¹

The 2010 TGM advises to design for the largest hydrologic controls (such as matching post development 100-year flows with pre-project 100-year flows for flood mitigation requirements), according to the appropriate City or County drainage requirements first. Second, the 2010 TGM advises to check if flood mitigation will reduce or satisfy the stormwater management requirements. If it does not, then add more controls as necessary. Flood mitigation may provide the necessary sediment and pollution control, thereby reducing maintenance requirements for the stormwater management BMPs. A sequence of hydrologic controls should be considered, such as site design, flood drainage mitigation, and retention BMPs. Bioinfiltration BMPs and treatment control measures can be considered when the use of retention

²¹ Ventura Countywide Stormwater Quality Management Program, *Technical Guidance Manual for Storm Quality Control Measures*, 2010.

BMPs is technically infeasible. Each of these controls will have an influence on stormwater runoff from the new development or redevelopment project.

LID falls under the concept of IWRM. IWRM is a process which promotes the coordinated development and management of water, land, and related resources. IWRM links land use, water supply, wastewater treatment/reclamation, flood control/drainage, water quality, and hydromodification management into a cohesive hydrologic system that recognizes their interdependencies and minimizes their potentially negative effects on the environment. IWRM includes recharging groundwater with reclaimed wastewater to support the water supply. It combines stormwater treatment, hydromodification control, and flood control in a single regional infiltration basin that recharges groundwater, incorporates recreation, and provides habitat. IWRM also uses smart growth principles to help reduce the environmental footprint while still accommodating growth.

Similar to source control measures, which prevent pollutant sources from contacting stormwater runoff, retention BMPs use techniques to infiltrate, store, use and evaporate runoff on site to mimic pre-development hydrology. The goal of LID is to increase groundwater recharge, enhance water quality, and prevent degradation of downstream natural drainage channels. This goal may be accomplished with creative site planning and incorporation of localized, naturally functioning BMPs into a project. Implementation of retention BMPs will reduce the size of additional hydromodification control measures that may be required for a new development or redevelopment project, and, in many circumstances, may be used to satisfy all stormwater management requirements.

In reference to "Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures 2010," new development and redevelopment projects that are subject to conditioning and approval for the design and implementation of "post-construction" stormwater management control measure, prior to completion of the projects are as follows:

New Development Projects

- 1. All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.
- 2. Industrial parks with 10,000 square feet or more of total altered surface area.
- 3. Commercial strip malls with 10,000 square feet or more of impervious surface area.
- 4. Retail gasoline outlets with 5,000 square feet or more of total altered surface area.
- 5. Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of total of total altered surface area.

- 6. Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.
- 7. Streets, roads, highways, and freeway construction 10,000 square feet or more of impervious surface area.
- 8. Automotive service facilities (SIC of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) of 5,000 square feet or more of total altered surface area.
- 9. Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will
 - a. discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and
 - b. create 2,500 square feet or more of impervious surface area.
- 10. Single-family hillside homes.

Redevelopment Projects

Redevelopment projects in categories 1 through 10 above that meet the threshold identified below:

• Land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site.

Additionally:

- 1. Projects where redevelopment results in an alteration to more than 50 percent of impervious surfaces of a previously existing development, and the existing development was not subject to the post development stormwater quality control requirements of Board Order 00-108, shall mitigate the entire redevelopment project area.
- 2. Projects where redevelopment results in an alteration to more than 50 percent of impervious surfaces of a previously existing development, and the existing development was subject to the post development stormwater quality control requirements of Board Order 00-108, must mitigate only the altered portion of the redevelopment project area and not the entire project area.
- 3. Projects where redevelopment results in an alteration of less than 50 percent of impervious surfaces of a previously existing development must mitigate only the altered portion of the redevelopment project area and not the entire project area.

Land-disturbing activity that results in the creation or addition or replacement of less than 5,000 square feet of impervious surface area on an already developed site, or that results in a decrease in impervious area which was subject to the post-development stormwater quality control requirements of Board Order 00-108, is not subject to mitigation unless so directed by the local permitting agency.

Redevelopment does not include routine maintenance activities that are conducted to maintain the original line and grade, hydraulic capacity, or original purpose of the facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement (such as the reconstruction of parking lots and roadways) that does not disturb additional area and maintains the original grade and alignment is considered a routine maintenance activity. Agencies' flood control, drainage, and wet utilities projects that maintain original line and grade or hydraulic capacity are considered routine maintenance. Redevelopment also does not include the repaving of existing roads to maintain original line and grade.

Existing single-family dwelling and accessory structure projects are exempt from the redevelopment requirements unless the project creates, adds, or replaces 10,000 square feet of impervious surface area.

City

General Plan

The following hydrology and water quality policies and actions of the Ventura General Plan are applicable to the Westside Community Planning Area.

Policy 1B	Increase the area of open space protected from development impacts.
Action 1.8	Buffer barrancas and creeks that retain natural soil slopes from development according to State and Federal guidelines.
Action 1.9	Prohibit the placement of material in watercourses other than native plants and required flood control structures, and remove debris periodically.
Action 1.10	Remove concrete channel structures as funding allows, and where doing so will fit the context of the surrounding area and not create unacceptable flood or erosion potential.
Policy 5A	Follow an approach that contributes to resource conservation.
Action 5.2	Use natural features such as bioswales, wildlife ponds, and wetlands for flood control and water quality treatment when feasible.
Action 5.16	Require new developments to incorporate stormwater treatment practices that allow percolation to the underlying aquifer and minimize

off-site surface runoff utilizing methods such as pervious paving material for parking and other paved areas to facilitate rainwater percolation and retention/detention basins that limit runoff to pre-development levels.

Action 5.17 Require stormwater treatment measures within new development to reduce the amount of urban pollutant runoff in the Ventura and Santa Clara Rivers and other watercourses.

Policy 7B Minimize risks from geologic and flood hazards.

Action 7.10 Require proponents of any new developments within the 100-year floodplain to implement measures, as identified in the Flood Plain Ordinance, to protect structures from 100-year flood hazards (e.g., by raising the finished floor elevation outside the floodplain).

City of Ventura Municipal Code

Chapter 8.600 Stormwater Quality Management

The purpose of the Stormwater Quality Management chapter is to ensure the future health, safety, and general welfare of the citizens of the City of Ventura by:

- 1. Controlling non-stormwater discharges to the storm drain system.
- 2. Eliminating discharges to the stormwater drain system from spills, dumping, or disposal of materials other than stormwater.
- 3. Reducing pollutants in stormwater discharges, including those pollutants taken up by stormwater as it flows over urban areas, to the maximum extent practicable.
- 4. Reducing pollutants in stormwater discharges in order to achieve applicable water quality objectives for surface waters in Ventura County.

The intent of the Stormwater Quality Management chapter is to protect and enhance the water quality of the city's watercourses, water bodies, and wetlands in a manner consistent with the Clean Water Act and California Regional Water Quality Control Board NPDES Permit No. CAS063339, Order No. 94-082, and any amendment, revision, or reissuance thereof.

Chapter 12.410 Flood Plain Regulations

The purpose of the Flood Plain Ordinance is to promote public health, safety and welfare, and to minimize public and private losses due to flood conditions in areas particularly vulnerable to floods by:

- 1. Restricting or prohibiting uses of property within areas vulnerable to floods that are dangerous to health, safety and property due to water, erosion, or flood heights and velocities;
- 2. Requiring uses vulnerable to floods, including facilities that serve such uses, to be protected against flood damage at the time of construction;
- 3. Controlling the alteration of stream channels, natural flood plains, and natural protective barriers that help accommodate or channel flood waters;
- 4. Controlling filling, grading, dredging, and other development activities that may increase flood damage; and
- 5. Preventing or regulating the construction of flood barriers that are likely to unnaturally divert floodwaters or that may increase flood hazards in other areas.

The Flood Plain Ordinance is further intended to implement the National Flood Insurance Program set forth in federal law.²² This ordinance applies to construction and other development on all property within the Westside Community Planning Project Area that is located within a Special flood hazard area identified in the most current copies of the Flood Insurance Rate Maps and Flood Boundary and Floodway Maps.

4.8.3 IMPACT ANALYSIS

a. Thresholds of Significance

Based upon to Appendix G of the *State CEQA Guidelines* under Section IX, Hydrology and Water Quality, the following significance thresholds are used to evaluate project impacts related to Hydrology and Water Quality.

- HYD-1 Would the project violate any water quality standards or waste discharge requirements?
- HYD-2 Would the project 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

²² Title 44, Code of Federal Regulations, Sections 59 *et seq*.

would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

- HYD-3 Would the project 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?
- HYD-4 Would the project 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?
- HYD-5 Would the project 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?
- HYD-6 Would the project otherwise substantially degrade water quality?
- HYD-7 Would the project place housing within a 100-year flood plain as mapped on federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- HYD-8 Would the project place within a 100-year flood plain structures which would impede or redirect flood flows?
- HYD-9 Would the project expose people or structures to a significant risk of loss, inquiry or death involving flooding, including flooding as a result of the failure of a levee or dam?
- HYD-10 Would the project be subject to inundation by seiche, tsunami, or mudflow?

Based upon Appendix G of the *State CEQA Guidelines* under Section XVII, Utilities and Service Systems, the following significance threshold is used to evaluate project impacts related to Hydrology and Water Quality:

HYD-11 Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

b. Methodology

The information used to analyze potential hydrology and water quality impacts was provided by Hawks & Associates, Inc. Supplemental information obtained was also used including, the City's Capital Improvement Plan, the 1971 Master Drainage Plan, the 2003 Master Drainage Needs Assessment Study, the California DWR Groundwater: Bulletin 118 report as well as numerous federal, state, and local regulations.

c. Analysis, Mitigation Measures, and Residual Impacts

Westside Community Plan

The following hydrology and water quality policies and actions, as listed in the Westside Community Plan, are applicable to the Westside Community Plan Area.

Policy 12 C	Follow a development approach that contributes to resource conservation in the Westside Community.
Action 12.1.5	Provide bio-filtering and groundwater recharging through LID and other careful design of new development in the Westside Community.
Action 12.1.6	Require new development to install city approved trash excluders in stormwater inlets to reduce trash outflow to the Ventura River.
Policy 12 W	Incorporate green design and infrastructure solutions into the urban landscape using low impact development techniques to protect and preserve water resources.
Action 12.5.1	Require new development and redevelopment to implement Low Impact Development stormwater techniques as outlined in the Ventura County Technical Guidance Manual for Stormwater Quality Control Measures to retain, treat and infiltrate stormwater runoff.

Policy 12 X	Require new development in the Westside Community to provide necessary
	public infrastructure to sustain anticipated development and maintain current
	services.

- Action 12.5.2Promote a natural means of drainage from Westside to the Ventura River
in new development where feasible in existing developed areas.
- Policy 12 AA Minimize the Westside Community exposure to Floods, Landslides and Hazardous Substances.
 - Action 12.7.1 Require proponents of any new development within the Ventura River 100-year floodplain to implement measures, as identified in the Flood Plain Ordinance, to protect structures from 100-year flood hazards (e.g., by raising the finished floor elevation outside the floodplain).
 - Action 12.7.4 Monitor the use and storage of hazardous substances in the industrial areas to alleviate the risk of watercourse contamination along the Ventura River through development review and National Pollution Discharge Elimination System (NPDES) monitoring requirements.

Westside Development Code

The Westside Development Code is a subpart of the City of Ventura Municipal Code. The Westside Code carries out the policies of the Ventura General Plan by classifying and regulating the types and intensities of development and land uses within the Westside area consistent with, and in furtherance of, the policies and objectives of the General Plan.

24w.100.040(D)6. Flood Plain: Where design standards and the NFIP compliance conflict, the NFIP regulation will govern.

24w.100.045(I). Floodplain Overlay Zone Permit: Flood Plain Overlay Zone development permits are required for development or redevelopment within any area Flood Plain Insurance Rate Map as being within the special flood hazard area. Such permit shall be in addition to any other permits required by the Westside Development Code.

HYD-1 Would the project violate any water quality standards or waste discharge requirements? (Class IV, Beneficial Impact)

Analysis

Urban runoff includes all flows from urban land use into storm water conveyance facilities and receiving waters, both dry weather non-stormwater sources (i.e., irrigation waters, etc.) and wet weather storm water runoff.

Stormwater runoff naturally contains certain constituents. Urbanization and urban activities typically would increase constituent concentrations that adversely impact water quality. Stormwater pollutants consist of sediment, nutrients, bacteria and viruses, oil and grease, metals, organics, pesticides, and trash.²³

Water quality impacts from urbanization and urban activities are categorized as erosion and sedimentation and discharge of pollutants during construction, and long term impacts from completed development/redevelopment associated with land uses.

Potential Water quality impacts from completed development/redevelopment can include the following:

- Urban activities can potentially generate many pollutants for dry-weather runoffs,
- Increased impervious surfaces (streets, rooftops, parking lots, etc.) could increase downstream erosion and water quality degradation, and
- Urban activities and increased impervious surfaces can increase concentration and total pollutant loads in wet-weather storm runoffs.

Two areas are currently undeveloped but include sufficient acreage to provide on-site detention or retention facilities which would still incrementally increase runoff.

New development and/or redevelopment typically results an increased impervious surfaces, which increases the amount of runoff and pollutants entering stormwater conveyance systems. These systems transport directly to receiving waters but are not treated, and therefore contribute to water pollution. Stormwater runoff over impervious surfaces (i.e., roadways, parking lots, rooftops) increases runoff flow rates and velocities; accumulates pollutants and sediments; and increases nutrients, bacteria, and other pollutant concentrations in receiving waters.

²³ California Stormwater BMP Handbook, New Development and Redevelopment, January 2033.

No specific development proposals are proposed at this time and analyzed in this EIR. Project-level review will be required for individual projects proposed within the Westside Community Planning Project Area. All new development projects within the project area would be served by the existing storm drain system.

The General Plan identifies policies and actions that would follow an approach that contributes to resource conservation (Policy 5A). The actions associated with General Plan Policy 5A (1) include the use of natural features such as bioswales, wildlife ponds, and wetlands for flood control and water quality treatment when feasible (Action 5.2); (2) require new development to incorporate stormwater treatment practices that allow percolation to the underlying aquifer and minimize off-site surface runoff utilizing methods such as pervious paving material for parking and other paved areas to facilitate rainwater percolation and retention/detention basins that limit runoff to pre-development levels (Action 5.16); and (3) require stormwater treatment measures within new development to reduce the amount of urban pollutant runoff in the Ventura River (Action 5.17).

The Westside Community Planning Project would be consistent with the General Plan Policy 5A because Policy 12C would follow a development approach that contributes to resource conservation in the Westside Community. The Westside Community Plan would provide bio-filtering and groundwater recharging through LID and other careful design of new development in the community (Action 12.1.5) and would require new development to install city approved trash excluders in stormwater inlets to reduce trash outflow to the Ventura River (Action 12.1.6).

Furthermore, the Westside Community Planning Project would be consistent with General Plan Action 5A because Policy 12W would implement green design and infrastructure solutions into the urban landscape using low impact development techniques to protect and preserve water resources. New development and redevelopment would be required to implement Low Impact Development stormwater techniques as outlined in the Ventura County Technical Guidance Manual for Stormwater Quality Control Measures to retain, treat, and infiltrate stormwater runoff (Action 12.5.1).

Policy 12 AA of the Westside Community Plan would minimize the Westside Community exposure to Floods, Landslides, and Hazardous Substances through the implementation of the Action 12.7.4 which would require the City to monitor the use and storage of hazardous substances in the industrial areas to alleviate the risk of watercourse contamination along the Ventura River through development review and National Pollution Discharge Elimination System (NPDES) monitoring requirements.

Federal and state programs require BMP's to be implemented by developers, property owners, and public agencies engaged in development and redevelopment activities. Site and facility planning and design for stormwater quality protection consists of multi-level strategy, which consists of

- Reducing or eliminating post-project runoff
- Controlling sources of pollutants, and if required
- Treating contaminated runoff prior to discharging into the storm water system or receiving waters

Two controls have been developed to minimize water quality impacts as a result of stormwater runoff: source controls and treatment control. Source control is intended to reduce or eliminate pollutants at their source and treatment control utilizes selected treatment mechanism(s) to remove/reduce pollutants from the storm water runoff.

The planning and design phases of development or redevelopment projects may be spread over period of months or even years. Water quality BMP's incorporated into the planning and design phases would be more cost-effective than retrofitting of BMP's.

Compliance with the County's 2010 TGM, implementation of the Westside Community Plan policies and actions, which are consistent with the General Plan policies and actions, would ensure that development under the Westside Community Plan would not violate any water quality standards or waste discharge requirements and would result in a beneficial (Class IV) impact.

Mitigation Measures

No mitigation is required.

Residual Impacts

Class IV, Beneficial impact.

HYD-2 Would the project 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)? (Class III, Not Significant)

Analysis

Section 4.14.1, Water, concluded that projected surface and groundwater supplies available to Western Ventura area would be approximately 10,200 acre-feet per year (afy) in 2015. The sources of water for the Westside Community Planning Project area include surface water from Lake Casitas and the Ventura River. As the Westside Community Planning Project would regulate new development in an already developed area, the proposed project would not overdraft the groundwater basin as the proposed project would not utilize groundwater.

The General Plan contains policy 5A which guides future development to contribute to resource conservation, namely in the use of water conservation techniques (Action 5.1) to minimize water demand. The Westside Community Plan would be consistent with General Plan Policy 5A with the implementation of Policy 12X which requires new development to provide necessary public infrastructure to sustain anticipated development and maintain current services.

In addition, while new development and/or redevelopment could result in an increase in impervious surfaces, which decrease infiltration and percolation surfaces for groundwater recharge, this development will be required to comply with regulations that will mitigate this potential impact. The current NPDES permit and the 2010 TGM require all development projects to control and/or treat runoff contaminant prior to discharging urban storm runoff into storm drain system as receiving waters, as well as reduce or eliminate post-project runoff. The latter requirement would typically utilize detention basin(s) to detain volume to reduce peak flows, and gradually release the runoff so as not to exceed the existing flow conditions.

Implementation of the proposed project would result in less than significant impacts to groundwater supplies or groundwater recharge. As discussed above, the Ventura County 2010 TGM would require that new development or redevelopment projects contain all runoff water on site. This would provide additional recharge to the groundwater aquifer. Impacts would be Class III, Not Significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Class III, Not Significant.

HYD-3 Would the project 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? (Class III, Not Significant)

Analysis

The Westside Community Planning Project area is largely built out with residential, commercial, industrial, and public infrastructure (e.g., roads). Few areas remain that are undeveloped. The Westside Community Planning Project area contains numerous storm drain facilities and catch basins which discharge into the Ventura River. The storm drain infrastructure for the Westside Community Planning Project area was assessed in 2003²⁴ to evaluate and prioritize needed improvements for areas with frequent flooding or have been damaged from storm runoff. The 2003 study identified sediment and debris deficiencies including the Wall Street storm drain, the Barnett and Cameron Street storm drain and the Vince and Lewis Street debris basin.

The future extension of Cedar Street would potentially result in alterations to the existing drainage pattern of the area in a manner which could result in erosion or siltation.

No specific development proposals are proposed at this time and analyzed at the project level in this EIR. Project-level review will be required for individual projects proposed within the Westside Community Planning Project Area.

The General Plan contains policy 1B, which (1) would increase the area of open space protected from development impacts, primarily to buffer barrancas and creeks that retain natural soil slopes from development according to state and federal guidelines (Action 1.8); (2) prohibits the placement of material in watercourses other than native plants and required flood controls structures, and requires removal of debris periodically (Action 1.9); and (3) promotes the removal of concrete channel structures as funding allows, where doing so will fit the context of the surrounding area and not create unacceptable flood or erosion potential (Action 1.10).

The Westside Community Plan would be consistent with General Plan Policy 1B with the implementation of Goal 12.5 which would minimize impacts of new development on Westside infrastructure and the

²⁴ City of Ventura, *Master Drainage Needs Assessment Study*, 2003.

Ventura River watershed through advancing sustainable planning and design practices. Furthermore, the Westside Community Plan and the General Plan include a variety of stormwater drainage actions that would increase infiltration, thereby reducing erosion within the Westside Community Planning Project area. These policies and actions are summarized above under Threshold of Significance HYD-1.

The proposed project would also be consistent with the City of Ventura Stormwater Quality Management Ordinance,²⁵ which contains regulations regarding construction, development, best management practices, notification of intent and compliance with general permits, illicit discharge and connections, and watercourse protection.

The future extension of Cedar Street north of Kellogg Street would have to comply with the City's Stormwater Quality Management Ordinance and the Hillside Management Program, discussed in further detail in **Section 4.5 Geology and Soils**, as well as policies and actions identified in the Westside Community Plan which would be consistent with the General Plan policies and actions, to reduce potential erosion or siltation off site.

As a result, the Westside Community Planning Project would be consistent with the policies of the General Plan, and would comply with the applicable regulations located within the Stormwater Quality Management section of the Municipal Code. In addition, the Westside Community Plan would implement various sustainable stormwater practices that would have a positive effect on erosion in the project area. Therefore, impacts regarding erosion would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Class III, Not Significant.

²⁵ City of Ventura, Municipal Code, Chapter 8.600, "Stormwater Quality Management."

HYD-4 Would the project 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?

Analysis

The Westside Community Planning Project area is largely built out with residential, commercial, industrial and public infrastructure (e.g., roads). Few undeveloped areas remain. The Westside Community Planning Project area contains numerous storm drain facilities and catch basins that discharge into the Ventura River. The storm drain infrastructure for the Westside Community Planning Project area was assessed in 2003²⁶ to evaluate and prioritize needed improvements for areas with frequent flooding or have been damaged from storm runoff. The 2003 study identified street flooding deficiencies along Sunnyway Drive, James Drive and Stanley Avenue. According to **Figure 4.8-2**, there are collectors, or catch basins located along Stanley Avenue near Ventura Avenue and Olive Street.

No specific development proposals are proposed at this time and analyzed at the project level in this EIR. Project-level review will be required for individual projects proposed within the Westside Community Planning Project Area. New development would ultimately connect to the existing storm drain system.

The proposed project would also be consistent with the City of Ventura Stormwater Quality Management Ordinance,²⁷ which contains regulations regarding construction, development, best management practices, notification of intent and compliance with general permits, illicit discharge and connections, and watercourse protection.

The General Plan identifies policies and actions that would follow an approach that contributes to resource conservation (Policy 5A). The actions associated with General Plan Policy 5A include the use of natural features such as bioswales, wildlife ponds, and wetlands for flood control and water quality treatment when feasible (Action 5.2), require new development to incorporate stormwater treatment practices that allow percolation to the underlying aquifer and minimize off-site surface runoff utilizing methods such as pervious paving material for parking and other paved areas to facilitate rainwater percolation and retention/detention basins that limit runoff to pre-development levels (Action 5.16), and require stormwater treatment measures within new development to reduce the amount of urban pollutant runoff in the Ventura River (Action 5.17).

²⁶ City of Ventura, *Master Drainage Needs Assessment Study*, 2003.

²⁷ City of Ventura, Municipal Code, Chapter 8.600, "Stormwater Quality Management."

The Westside Community Planning Project would be consistent with the General Plan Policy 5A because Policy 12C would follow a development approach that contributes to resource conservation in the Westside Community. The Westside Community Plan would provide bio-filtering and groundwater recharging through LID and other careful design of new development in the community (Action 12.1.5) and would require new development to install city approved trash excluders in stormwater inlets to reduce trash outflow to the Ventura River (Action 12.1.6). Furthermore, the Westside Community Plan would be consistent with General Plan Policy 1B with the implementation of Policy 12W and 12X which would require new development and redevelopment to implement LID stormwater techniques as outlined in the 2010 TGM to retain, treat and infiltrate stormwater runoff (Action 12.5.1), and promote a natural means of drainage from Westside to the Ventura River in new development where feasible in existing developed areas (Action 12.5.2).

The future extension of Cedar Street north of Kellogg Street would have to comply with the City's Stormwater Quality Management Ordinance, as well as policies and actions identified in the Westside Community Plan, which would be consistent with the General Plan policies and actions, to reduce potential on or off site flooding impacts.

The Westside Community Planning Project would be consistent with the policies of the General Plan, and would comply with the applicable regulations located within the Stormwater Quality Management section of the Municipal Code. In addition, the Westside Community Plan would implement various actions which require sustainable stormwater practices that would have a positive effect on drainage in the project area. Therefore, impacts regarding flooding on or off site would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Class III, Not Significant.

HYD-5 Would the project 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? (Class III, Not Significant)

Analysis

The City's General Plan identifies policies and actions that would be applicable to the Westside Community Plan. Policy 5B of the General Plan would improve services in ways that respect and even benefit the environment. The Westside Community Plan includes Action 12.1.6, which requires new development to install city approved trash excluders in stormwater inlets to reduce trash outflow to the Ventura River. This action would be consistent with General Plan Action 5.14 in that the City would develop a financing program for the replacement of failing corrugated metal storm drainpipes in the City.

The proposed project would also be consistent with the City of Ventura Stormwater Quality Management Ordinance,²⁸ which contains regulations regarding construction, development, best management practices, notification of intent and compliance with general permits, illicit discharge and connections, and watercourse protection. In addition, new development would be required to design storm drains to conform with standards approved by the city engineer.²⁹

Impacts related to the creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would be less than significant with conformance to the City's Stormwater Quality Management Ordinance, the Design Criteria and Improvement Standards for storm drains and implementation of the policies and actions contained in the Westside Community Plan and applicable General Plan policies, and no mitigation measures are required. Impacts would be Class III, Not Significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Class III, Not Significant.

²⁸ City of Ventura, Municipal Code, Chapter 8.600, "Stormwater Quality Management."

²⁹ City of Ventura, Municipal Code, Chapter 16.200.140, "Storm drains."

HYD-6 Would the project otherwise substantially degrade water quality? (Class III, Not Significant)

Analysis

As analyzed above, implementation of the Westside Community Plan along with compliance with the General Plan policies and the 2010 TGM and the construction NPDES permit would ensure that development within the Westside Community Planning Project area would not substantially degrade water quality. Therefore, impacts regarding water quality would be less than significant (Class III).

Mitigation Measures

No mitigation is required.

Residual Impacts

Class III, Not Significant.

HYD-7 Would the project place housing within a 100-year flood plain as mapped on federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? (Class III, Not Significant)

Analysis

The Westside Community Planning Project is protected from flooding from the Ventura River by an existing levee. The VCWPD is in the process of recertifying the levee in accordance with FEMA requirements and no significant flood risk exists. As discussed above, if the levee is not recertified, a small portion of the Westside Community located along the along the river from approximately West Ramona Street to West Harrison Street would be required to purchase flood insurance as the levee would no longer be recognized for flood insurance mapping purposes as providing flood protection for these areas.

In addition, the General Plan contains policy 7B, which guide development to minimize risks from geologic and flood hazards. These actions would include minimizing the potential flooding impacts including project proponents of any new developments within the 100-year floodplain to implement measures as identified in the Flood Plain Ordinance, such as raising the finished floor elevation outside the floodplain (Action 7.10), to protect structures from 100-year flood hazards, .

The Westside Community Plan Policy 12AA would minimize the Westside Community Planning Project area exposure to floods, landslides, and hazardous substances. Policy 12.7.1 would require that new

development within the 100-year floodplain implement measures identified in the Flood Plain Ordinance, to protect structures from 100-year flood hazards. The proposed project would be consistent with the City's Municipal Code through the implementation of the Flood Plain Ordinance.

Impacts related to the placement of housing within an identified 100-year floodplain would be less than significant with conformance to the City's Flood Plain Ordinance, as well as the Westside Community Development Code, and implementation of the policies and actions contained in the Westside Community Plan and applicable General Plan policies, and no mitigation measures are required. Impacts would be Class III, Not Significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Class III, Not Significant.

HYD-8 Would the project place within a 100-year flood plain structures which would impede or redirect flood flows? (Class III, Not Significant)

Analysis

As analyzed in Threshold of Significance HYD-7, above, the Westside Community is protected from flooding from the Ventura River by an existing levee. The VCWPD is in the process of recertifying the levee in accordance with FEMA requirements. Implementation of the Westside Community Plan along with conformance to the City's Flood Plain Ordinance, as well as the Westside Community Development Code, and implementation of the policies and actions contained in the Westside Community Plan and applicable General Plan policies, and no mitigation measures are required. Impacts would be Class III, Not Significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Class III, Not Significant.

HYD-9 Would the project expose people or structures to a significant risk of loss, inquiry or death involving flooding, including flooding as a result of the failure of a levee or dam? (Class III, Not Significant)

Analysis

The Ventura River and its associated floodplain form a distinctive landmark along the western boundary of the Westside Community Planning Project area as it parallels the SR 33 for several miles.

Westside Community is protected from flooding impacts from the Ventura River by an existing levee. The VCWPD is in the process of recertifying the levee in accordance with FEMA requirements and no significant flood risk exists.

In the event of a dam failure or other flood event, the County would follow an emergency response and evacuation plan set forth in the Multi-hazard Functional Plan managed by the Ventura County Sheriff's Office of Emergency Services. The County bilingual alert system includes mobile emergency vehicle sirens and loudspeakers, and door-to-door notification. The City flood emergency warning systems also includes public alerts by television service providers.

Furthermore, implementation of the Westside Community Plan along with conformance to the City's Flood Plain Ordinance, as well as the Westside Community Development Code, and implementation of the policies and actions contained in the Westside Community Plan and applicable General Plan policies, would result in no significant impacts, and no mitigation measures are required. Impacts would be Class III, Not Significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Class III, Not Significant.

HYD-10 Would the project be subject to inundation by seiche, tsunami, or mudflow? (Class III, Not Significant)

Analysis

Tsunamis are large ocean surges that are generated by submarine landslides, volcanic eruptions, or earthquakes. The Ventura River has been designated as a tsunami risk area as far north as the City limits.

The Westside Planning Area is located adjacent and to the east of the Ventura River and is located outside of the tsunami risk area.³⁰ The threat to the City from seiches is considered remote. Only facilities in or very near enclosed bodies of water could be immediately affected.³¹

A debris flow (sometimes called mudflow) is a flowing mixture of water-saturated debris that moves downslope under the force of gravity. There are no defined landslide morphological features within the Westside Community Planning Area that would create a mudflow hazard.³²

Mitigation Measures

No mitigation is required.

Residual Impacts

Class III, Not significant.

HYD-11 Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? (Class III, Not Significant)

Analysis

Some deficiencies exist with respect to existing storm drain infrastructure in the Westside Community Planning Project area. Failure or insufficient capacity of existing storm drains would require the construction of new storm water drainage facilities or the expansion of existing facilities.

No specific development proposals are proposed at this time and analyzed at the project level in this EIR. Project-level review will be required for individual projects proposed within the Westside Community Planning Project Area. All new development projects within the project area would connect to the existing storm drain system which conveys runoff to the Ventura River. Storm drain facilities will be improved as needed over time as new development occurs.

The General Plan identifies policies and actions that would follow an approach that contributes to resource conservation (Policy 5A). The actions associated with General Plan Policy 5A (1) include the use of natural features such as bioswales, wildlife ponds, and wetlands for flood control and water quality

³⁰ City of Ventura, *General Plan EIR*, (2005) Figure 4.6-6.

³¹ City of Ventura, General Plan EIR, (2005) 4.6-15.

³² City of Ventura, General Plan EIR, (2005) Figure 4.6-2.

treatment when feasible (Action 5.2); (2) require new development to incorporate stormwater treatment practices that allow percolation to the underlying aquifer and minimize off-site surface runoff by utilizing methods such as pervious paving material for parking and other paved areas to facilitate rainwater percolation and retention/detention basins that limit the amount of runoff to pre-development levels (Action 5.16); and (3) require stormwater treatment measures within new development to reduce the amount of urban pollutant runoff in the Ventura River (Action 5.17).

The Westside Community Planning Project would be consistent with the General Plan Policy 5A because Policy 12X would require new development in the Westside Community to provide necessary public infrastructure to sustain anticipated development and maintain current services. The Westside Community Plan would promote a natural means of drainage from Westside to the Ventura River in new development where feasible in existing developed areas (Action 12.5.2).

Potential air quality, traffic, noise and biological impacts as a result of the construction of new storm drain facilities have been analyzed in Section 4.2, Air Quality, Section 4.3 Biological Resources, Section 4.10, Noise and Section 4.13 Transportation and Circulation. Impacts related to the construction of new facilities would result in less than significant air quality, traffic, noise, and biological impacts with implementation of policies and actions identified in the Westside Community Plan, applicable General Plan policies and actions, and implementation of identified mitigation measures in Sections 4.2, 4.3 and 4.13. Impacts would be Class III, Not significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Class III, Not Significant.

d. Cumulative Impacts

The Westside Community Planning Project will not result in the development of undeveloped or hillside areas and, for this reason, will not contribute substantially to erosion and flooding impacts in the Ventura River Watershed.

Potential increases in sedimentation and concentration of contaminants such as oil, grease, and solvents in surface runoff discharged to local waterways could result from changes in land uses within the Westside Community Planning Area and other areas in the Ventura River Watershed. However, all development on sites of over 1 acre would be subject to NPDES permit requirements pertaining to construction activity, while all development in the City would be subject to various City requirements pertaining to controlling erosion and preserving water quality. Furthermore, new development and redevelopment would be required to comply with the 2010 TGM, which requires projects to control runoff on site.

In addition, the Westside Community Plan includes numerous actions and policies which promote sustainable stormwater drainage design measures that would increase infiltration in the Westside Community Planning Project Area and reduce pollutants entering waterways. These actions and policies, as well as applicable General Plan policies and actions, would be expected to reduce cumulative impacts to water quality to a less than significant level.

Future projects that have been identified in the City's Capital Improvement Program (CIP) for the Westside Planning Area include the construction of hillside debris basins that would abut the hillside east of the North Ventura Avenue area and the installation of a new storm drain at James Drive.³³

All development would have the potential to result in an increase in impervious surface area, thereby increasing peak storm runoff in the area. The proposed project may incrementally contribute to this increase. However, the proposed project includes numerous actions and policies related to sustainable stormwater drainage design measures that would increase infiltration in the specific plan area and reduce surface runoff. These design features would be implemented by each development project over time. All development proposals would be required to implement appropriate measures for sustainable stormwater management.

Specific projects proposed within the Westside Community Planning Project Area would be required to undergo additional review. Further, each individual development proposal within the Westside Community Planning area and the City would be required to comply with applicable goals, policies and actions contained in the Westside Community Plan and General Plan to assure that potential impacts are mitigated to the extent feasible. With implementation of the Westside Community Plan goal, policy and action, and applicable General Plan policies and actions, cumulative impacts would be Class III, Not Significant. Therefore, the Westside Community Planning Project's contribution to cumulative impacts would not be cumulatively considerable, and cumulative impacts would be Class III, Not Significant.

³³ City of Ventura, 2011-2017 Adopted Capital Improvement Plan (CIP), (2011) 3-16 and 3-20.

APPENDIX 4.8

Hydrology and Water Quality

HYDROLOGY

Hydrology is that branch of physical geography which is concerned with the origin, distribution and properties of the waters on earth. Engineering hydrology are those segments pertinent to the design and operation of engineering projects for the control and use of water.

The hydrologic cycle (see Exhibit A) is a useful concept to begin the study of hydrology. The cycle serves to emphasize the four basic phases of interest in hydrology analysis i.e. precipitation, evaporation and transportation, surface runoff and groundwater.

Hydrology is used in engineering mainly in connection with data collection and methods of analysis and application. It is necessary to start with a mass of observed data, analyze these data and establish the systematic pattern that governs these events. Generally, each hydrologic problem is unique in that it deals with a distinct set of physical conditions within a specific watershed or basin. Hence, the quantitative conclusions of one analysis often is <u>not</u> directly transferable to another problem. However, the general solution for most problems can be developed from the application of a few relatively standard procedures.

<u>Rational Equation⁽¹⁾</u>

The rational equation has been widely accepted in Ventura County for use in the design of flood protection measures. When used with adequate input parameters on small drainage areas, it provides reasonable results for use in project design. The basic equation is as follows:

Q=CIA

Where Q = Peak discharge in cubic feet per second (cfs)

C = Coefficient of runoff (dimensionless)

- I = Average rainfall intensity for a duration equal to the time of concentration of the watershed (inches/hour)
- A = Drainage area of the watershed (acres)

The rational equation represents the peak rate of runoff (Q) at the point of concentration of flow generated from the most hydrologically remote part of the drainage area.

<u>Coefficient of Runoff⁽¹⁾</u>

Runoff coefficients used in the equation represent the ratio of runoff to rainfall. It is the percentage of rainfall on a watershed that runs off with values from zero for very porous soils to 1.0 for impervious surfaces, and includes the composite effect of such watershed variables as

¹ Ventura County Hydrology Manual

infiltration, ground slope, ground cover, surface and depression storage, antecedent precipitation and soil moisture, and shape of the watershed or basin. Runoff is not a constant percentage of rainfall, but is the residual of rainfall remaining after losses. The ratio of runoff to rainfall increases as storm intensity increases, hence the runoff coefficient is becomes a function of intensity.

Rainfall Intensity Duration⁽¹⁾

Most precipitation in the Ventura County area results from general winter storms associated with extra tropical cyclones that develop in the North Pacific during the months of November through April. Precipitation during these storms may occur over large areas and major storms normally last four days or more. The first several days of the storm normally contain light, persistent rainfall of moderate intensities. Rainfall during this period satisfies the soil moisture deficiency. The latter portion of the storm is characterized by short periods of extremely high intensities falling on saturated soils.

Utilizing techniques proposed by the California Department of Water Resources, intensityduration-frequency relationships were computed for all long-term recording rain gage data in Ventura County.

Time of Concentration⁽¹⁾

Time of concentration is the time required for runoff to travel from the hydraulically most distant point of a watershed to its outlet or point of concentration. It is a summation of the travel times associated with overland flow and concentrated flow in streets, pipes and stream channels.

To determine time of concentration, the watershed is divided into contributing sub-areas using topographic barriers as well as streets, known improvement plans, and projected ultimate development.

Travel times are based on normal flow velocities associated with overland flow and flow in various watershed conveyance facilities modified by wave velocity considerations. Overland flow on a canyon side slope or undeveloped hillside is dependent upon slope, topography, cover conditions, and travel distance.

Rational Equation for Hydrograph Synthesis⁽¹⁾

The rational equation computes an instantaneous flow rate based upon an average rainfall intensity over a period equal to the time of concentration of a watershed. When the intensity is the maximum for a given storm, the associated flow rate represents the peak for that storm. When storm intensities less than the peak period intensity are used in the rational equation, resulting flow rates represent some point on the storm hydrograph.

(1) Ditto

Every design storm is made up of a series of intensities that change more or less uniformly throughout. A mass curve of rainfall represents a cumulation of storm totals at any point in a storm and its slope at any point represents the rainfall intensity at that point. By determining an intensity at representative times through a design storm, a runoff hydrograph can be computed using the ration equation.

Each of the intensity-duration curves have an associated mass curve. The mass curves are used to define intensities for all hydrographs.

Westside Community Plan

The Westside Community Development Plan and Westside Redevelopment Area Plan are a part of the Ventura River Watershed and include the following sub-watershed areas.

- 1) Lower Ventura River at Highway 101
- 2) Dent Drain
- 3) Canada de San Joaquin
- 4) Lower Ventura River above Canada de San Joaquin
- 5) Manuel Canyon
- 6) Ventura River above Weldon Canyon
- 7) Weedon Canyon
- 8) Canada Larga Canyon at Ventura Ave.
- 9) Canada de Aliso
- 10) Leon Canyon
- 11) Canada Larga Canyon above Coche Canyon
- 12) Coche Canyon

These sub-watersheds are shown on Exhibit "B" West Ventura EIR sub-watersheds.

Field review was conducted to verify existence of most of the storm drains and their associated catch basins. This information is include on Exhibit "C".

In 1971 Koebig and Koebig prepared a "Master Drainage Plan" for the City of San Buenaventura. The plan provided the hydrology and associated proposed storm drains based on a 10-year and 50-year frequency storms. Said plan included the Westside area extending from West Point Row Avenue northward to Canada de San Joaquin with listing and maps of existing and proposed storm drain facilities in the Westside area.

The City has implemented many of the 1971 studies. However, increased development coupled with changing regulatory requirements resulted in additional drainage deficiencies since completion of the 1971 plan. In 2003 the City completed a "Master Drainage Needs Assessment Study" that evaluated, and prioritized needed improvements for areas with frequent flooding or

damaged from storm runoff. Drainage deficiencies identified within the Westside Communities area are as follows:

- Wall Street Storm Drain (Sediment & Debris)
- Barnett and Cavier Street Storm Drain (Sediment & Debris)
- Vince and Lewis Street Debris Basin Project (Debris Basin Project)
- Sunnyway Drive (Street Flooding)
- James Drive (Street Flooding)
- Stanley Avenue (Street Flooding)
- •

In February 2010, Ventura County Watershed Protection District (VCWPD) completed the Ventura River Watershed Storm Modeling final report which included the latest data and technical procedures for estimating hydrological runoffs, storm drain design and floodplain analysis, which included the Westside area watershed. The 2010 hydrology increases the estimated peak runoffs by a significant amount – in some cases by factor of two (2). Exhibit "B" lists the peak flows for these sub-watersheds.

In view of the fact that the 1971 peak flows are superceded by the current hydrology due to the many larger storms that have occurred and were recorded since 1971, this would indicate that the existing drainage facilities proposed and subsequently constructed from Koebig and Koebig study are conceivably under capacity under present conditions, and would be further over-taxed with additional development and/or re-development. Following are examples of increase in pipe sizes with peak flows increased by a factor of two.

Koebig & Koebig 1971 Study		Current Hydrology (with Q ₁₀ Doubled)		
Pipe Size (Diameter)	Estimated Capacity (Q10)	Q ₁₀ x 2 (New Q's)	Estimated Required Pipe Size (Ref ITTE)	
24"	27 cfs	54 cfs	36"	
30"	36 cfs	72 cfs	42"	
36"	46 cfs	92 cfs	54"	
48"	61 cfs	122 cfs	60"	
78"	250 cfs	500 cfs	96"	

Implementing the latest National Pollution Discharge Elimination Standards (NPDES) requirements of onsite detention for all new development along with upgrading the existing storm drain systems could help to mitigate the increased runoff and storm drain deficiency. The

Technical Guidance Manual for Stormwater Quality Measures as required by NPDES are covered in the following Water Quality Section.

The Ventura River Levee which extends along Freeway 101 upstream to about Potawatomi Street is determined to be "uncertified" under Federal Emergency Management Agency (FEMA) current criteria. This determination is presently under investigation. In any case, should FEMA determine that this "uncertified designation" is to be conclusive, the entire southerly portion of the Westside area would be subject to major flooding. This would be a significant impact to the existing, new and redevelopment of the Westside area.

EXHIBIT A

WATER QUALITY

Regulatory Background

Water quality issues began in 1948 when Federal Water Pollution Control Act was enacted for states to construct wastewater treatment facilities. In 1972 the federal government subsequently took charge of regulating the quality of the Nation's Water suppliers by amending the Federal Water Pollution Control also referred to as The Clean Water Act (CWA). CWA was passed providing financial assistance for construction of local sewage treatment plants requiring that all industrial and municipal wastewater discharges shall meet secondary treatment of wastewater (at least 85% removal of conventional wastes) to meet water quality standards. The CWA initial strategies primarily focused on controlling water pollution from industrial processed wastewater and municipal sewage known as "<u>POINT SOURCE</u>" water pollution, has experienced success as evidenced by clean water ways in comparison to the years preceding the 1972 amendment.

As industrial and municipal sources have abated pollution, uncontrolled <u>"NON-POINT SOURCE"</u> water pollution (also known as "wet-weather", "stormwater and urhan runoff" pollution"), "dry-weather", snow melt, surface runoffs and drainage. The EPA and state water quality authorities have identified wet weather flows as the largest remaining threat to water quality. The 1992 National Water Quality Inventory Report to Congress concluded "that stormwater runoff from . . . diffuse sources including . . . urban runoff is a leading cause of water quality impairment."

In February 1987 Congress responded to public concern that, despite much progress, significant water quality problems persist. After six years of congressional efforts, Congress overwhelmingly passed the 1987 amendment to the CWA known as the "Water Quality Act of 1987" with increasing attention to mitigate non-point sources of water pollutants. In view of the fact that remedies for non-point source pollutants are more complicated than the point source in 1990, EPA established final regulations requiring stormwater discharges shall he regulated by NPDES permits.

Ventura County Watershed Protection District, County of Ventura, and Cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, San Buenaventura, Santa Paula, Simi Valley and Thousand Oaks have joined to form the Ventura Countywide Stormwater Quality Management Program and are named as co-permittees under a revised countywide municipal NPDES permit for stormwater discharges issued by the State Regional Water Quality Control Board in 2010 (Order R4-2010-0108). Controlling urban runoff pollution from new development/redevelopment during and after construction is critical to the success of the program.

<u>Hydrology</u>

The Westside Community Plan area consists of existing natural drainage features, the Ventura River, hillside drainage, Canada Larga areas and existing drainage facilities in North Avenue portion of the planning area, all of which are factors in water quality analysis.

Urbanization, land use changes, development of impervious area which changes the land form and changes the runoff hydrograph. Alteration of the runoff hydrograph change the downstream hydrology since new development and/or redevelopment typically results in more runoff volume and higher rates of

runoff. BMP's such as detention basins, which detain volume and reduce peak flows, but the increased duration could cause adverse impacts including \ldots "washing out habitat \ldots erosions \ldots and changing downstream ecosystems \ldots in addition \ldots it affects the downstream energy in the water and peak flow conditions." ⁽¹⁾

Understanding of these factors is necessary for development of storm water management plans. Ideally, the hydrograph after development would parallel the pre-development hydrograph. The "stream balance equation" can be used to make qualitative guidelines relative to channel impacts from changes in watershed runoff/sediment loads. Refer to the attached Appendix A. "Channel Impacts from Watershed Changes"⁽²⁾ for the concept and equation.

To resolve the watershed stability and balance analysis is necessary through the comprehensive Drainage Master Plan. Therefore, a drainage master plan should consider a) project area location in the larger watershed, b) topography, c) soil and vegetation conditions, d) percent impervious area, e) natural and infrastructure drainage facilities/features, and f) other relevant hydrologic and environmental factors. Finally the master plan drainage report should include:

- Field reconnaissance of downstream conditions,
- Calculated rainfall and runoff characteristics such as peak flow rate, velocity, volumes, time of concentration, retention volume and capacities of existing facilities, and
- Establishment of proposed site design, source control and treatment control measures to be incorporated and maintained to address concern(s) of downstream conditions.

Stormwater Runoff

Stormwater runoff is part of the hydrologic cycle. However, urbanization, agriculture and human activities can affect and alter natural drainage patterns and add pollutants to streams, rivers, lakes, coastal bays and estuaries and ultimately to the ocean. Urban runoff includes all flows from urban land use into storm water conveyance facilities and receiving waters, both dry weather non-stormwater sources, i.e. irrigation waters, etc. and wet weather storm water runoff. "Numerous studies have shown urban runoff to be significant source of water pollution, causing decline in fisheries, restriction on "water sports."⁽¹⁾ Stormwater runoff naturally contains certain constituents. Urbanization and urban activities typically would increase constituent concentrations that adversely impact water quality. Stormwater pollutants consist of "...sediment, nutrients, bacteria and viruses, oil and grease, metals, organics, pesticides, and trash (floatables). ...nutrients rich storm water is an attractive medium for vector production when it accumulates and stand more than 72 hours."⁽¹⁾ Refer to the attached Table 1-1, "Pollutant Impacts on Water Quality"⁽¹⁾

Water quality impacts from urbanization and urban activities are categorized as follows.

- a) Erosion and sedimentation and discharge of pollutants during construction, and
- b) Long Term Impacts from completed development/redevelopment associated with land uses.

¹ California Stormwater BMP Handbook, January 2003, New Development and Redevelopment

² Appendix A, "Channel Impacts from Watershed Changes" California Stormwater BMP Handbook, January 2003

Potential Water quality impacts from completed development/redevelopment can include the following.

- Urban activities can potentially generate many pollutants for dry-weather runoffs,
- Increased impervious surfaces (streets, rooftops, parking lots, etc.) could increase downstream erosion and water quality degradation,
- Urban activities and increased impervious surfaces can increase concentration and total pollutant loads in wet-weather storm runoffs.

Groundwater

Exhibit D is a schematic cross section depicting the occurrence of groundwater. Near the surface, pore spaces contain both air and water (known as zone of acration), and water in this zone is known as soil moisture. Below this zone is the "groundwater" and the surface separating these zones is the water table. Occasionally local zones of saturation exist as "perched groundwater" over a locally impervious stratum to form confined or artesian water. Confined groundwater is usually under pressure because of the weight of the overlaying soil and the hydrostatic head.

Almost all groundwater derived from precipitation. Water from precipitation reaches the groundwater by the process of infiltration and percolation from streams and lakes. Direct percolation <u>cannot</u> yield large quantities of groundwater except where the soil is highly permeable or the water table is close to the surface.

New development/redevelopment would result in increase impervious surfaces which decrease infiltration and percolation surfaces for groundwater recharge. However, in conformance with the NPDES permit, in addition to controlling and/or treating runoff contaminant prior to discharging urban storm runoff into storm drain system as receiving waters, as well as reducing or eliminating post-project runoff is required. The latter requirement would typically utilize detention basin(s) to detain volume to reduce peak flows, and gradually release the runoff so as not to exceed the existing flow conditions. Consequently, groundwater recharge from direct percolation will be reduced by the additional impervious area. However, groundwater recharge will eventually be restored through the evapotranspiration, precipitation and infiltration and percolation from streams and lakes. In essence, the groundwater recharge will simply be delayed after the peak storm events.

Impacts of New Development/Redevelopment

New development/redevelopment typically creates and/or results an increase in impervious surfaces which increases the amount of runoff and pollutants entering stormwater conveyance systems, transported directly to receiving waters but are not treated, therefore contribute to water pollution. Stormwater runoff over impervious surfaces (i.e. roadways, parking lots, rooftops), neither infiltrate nor evapotranspire, which increases runoff flow rates, velocities and accumulates pollutants and sediments, increase nutrients bacteria and other pollutant concentrations in receiving waters. Furthermore, impacts of these alterations may also include potential flooding, decreased groundwater recharge, degradation of water quality, increase stream and channel erosions, increase stream temperature due to loss of riparian vegetation, as well as water impervious surfaces, resulting in decreases in dissolved oxygen levels which adversely affecting aquatic life dependent in cooler temperature.

Impact Mitigations

Federal and State programs require BMP's to be implemented by developers, property owners, and public agencies engaged in development and redevelopment activities. Site and facility planning and design for stormwater quality protection consists of multi-level strategy, which consists of

- a) Reducing or eliminating post-project runoff,
- b) Controlling sources of pollutants, and if required
- c) Treating contaminated runoff prior to discharging into the storm water system or receiving waters.

Category a) and b) are referred to as "Source controls" since they are intended to reduce or eliminate pollutants at their source. Category c) is referred to as "Treatment Control" whereby it utilizes selected treatment mechanism(s) to remove/reduce pollutants from the storm water runoff.

In reference to "California Stormwater BMP Handbook – January 2003", Table 4-1 are BMP's suggested for source control design.

Table 4-1 Source Control BMPs for Design		
Design		
SD-10	Site Design and Landscape Planning	
SD-11	Roof Runoff Controls	
SD-12	Efficient Irrigation	
SD-13	Storm Drain System Signs	
Materials		
SD-20	Pervious Pavements	
SD-21	Alternative Building Materials	
Areas		
SD-30	Fueling Areas	
SD-31	Maintenance Bays and Docks	
SD-32	Trash Enclosures	
SD-33	Vehicle Washing Areas	
SD-34	Outdoor Material Storage Areas	
SD-35	Outdoor Work Areas	
SD-36	Outdoor Processing Areas	

and Table 5-1 for Treatment Control BMP's Design

Table 5-1 Treatment Control BMPs			
Public Domain	Manufactured (Proprietary)		
Infiltration	Infiltration		
TC-10 Infiltration Trench	_		
TC-11 Infiltration Basin			
TC-12 Retention/Irrigation			
Detention and Setting	Detention and Setting		
TC-20 Wet Pond	MP-20 Wetland		
TC-21 Constructed Wetland			
TC-22 Extended Detention Basin			
Biofiltration	Biofiltration		

TC-30 Vegetated Swale	
TC-31 Vegetated Buffer Strip	
TC-32 Bioretention	
Filtration	Filtration
TC-40 Media Filter	MP-40 Media Filter
Flow Through Separation	Flow Through Separation
TC-50 Water Quality Inlet	MP-50 Wet Vault
	MP-51 Vortex Separator
	MP-52 Drain Inserts
Other	Other
TC-60 Multiple Systems	

The planning and design phases of development or redevelopment projects may be spread over period of months or even years. Water Quality BMP's incorporated into the planning and design phases would be more cost-effective than retrofitting of BMP's.

The "Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures 2010" provides the following principles of Integrated Water Resource Management (IWRM) and Low Impact Development (LID) to help mitigate the impacts of development.⁽³⁾

The 2010 TGM advises to <u>first</u> design for the largest hydrologic controls (such as matching post development 100-year flows with pre-project 100-year flows for flood mitigation requirements), according to the appropriate City or County drainage requirements. <u>Secondly</u>, the 2010 TGM advises to check if flood mitigation will reduce or satisfy the stormwater management requirements. If it does not, then add more controls as necessary. Flood mitigation may provide the necessary sediment and pollution control, thereby reducing maintenance requirements for the stormwater management BMPs. A sequence of hydrologic controls should be considered such as site design, flood drainage mitigation, and Retention BMPs. Bioinfiltration BMPs and Treatment Control Measures can be considered when the use of Retention BMPs is technically infeasible. Each of these controls will have an influence on stormwater runoff from the new development or redevelopment project.

LID falls under the concept of IWRM. IWRM is a process which promotes the coordinated development and management of water, land, and related resources. IWRM links land use, water supply, wastewater treatment/reclamation, flood control/drainage, water quality, and hydro modification management into a cohesive hydrologic system that recognizes their interdependencies and minimizes their potentially negative effects on the environment. IWRM includes recharging groundwater with reclaimed wastewater to support the water supply. Combining stormwater treatment, hydromodification control, and flood control in a single regional infiltration basin that recharges groundwater, incorporates recreation, and provides habitat. TWRM also uses Sinart Growth principles to help reduce the environmental footprint while still accommodating growth.

Similar to Source Control Measures, which prevent pollutant sources from contacting stormwater runoff, Retention BMPs use techniques to infiltrate, store, use and evaporate runoff onsite to mimic predevelopment hydrology. The goal of LID is to increase groundwater recharge, enhance water quality, and prevent degradation of downstream natural drainage channels. This goal may be accomplished with creative site planning and incorporation of localized, naturally functioning BMPs into the project. Implementation of Retention BMPs will reduce the size of additional Hydromodification Control Measures that may be required for a new development or redevelopment project, and, in many circumstances, may be used to satisfy all stormwater management requirements.

In reference to "Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures 2010", New Development and Redevelopment Projects that are subject to conditioning and approval for the design and implementation of "post-construction" stormwater management control measure, prior to completion of the projects are as follows: ⁽³⁾

New Development Projects

- 1) All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.
- 2) Industrial parks with 10,000 square feet or more of total altered surface area.
- 3) Commercial strip malls with 10,000 square feet or more of impervious surface area.
- 4) Retail gasoline outlets with 5,000 square feet or more of total altered surface area.
- 5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of total of total altered surface area.
- 6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.
- 7) Streets, roads, highways, and freeway construction 10,000 square feet or more of impervious surface area (see Section 2 for specific requirements).
- 8) Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) of 5,000 square feet or more of total altered surface area.
- 9) Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:
 - a. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and
 - b. Create 2,500 square feet or more of impervious surface area.
- 10) Single-family hillside homes (See Section 2 for specific requirements).

(3) Ventura Countywide Technical Guidance Manual for Storm Quality Control Measures 2010

Redevelopment Projects

Redevelopment projects in categories 1) through 10) above that meet the threshold identified below:

• Land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site.

Additionally:

- Projects where redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development <u>was not</u> subject to the post development stormwater quality control requirements of Board Order 00-108, shall mitigate the entire redevelopment project area.
- 2) Projects where redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was subject to the post development stormwater quality control requirements of Board Order 00-108, must mitigate only the altered portion of the redevelopment project area and not the entire project area.
- 3) Projects where redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development must mitigate only the altered portion of the redevelopment project area and not the entire project area.

Land-disturbing activity that results in the creation or addition or replacement of less than 5,000 square feet of impervious surface area on an already developed site, or that results in a decrease in impervious area which was subject to the post-development stormwater quality control requirements of Board Order 00-108, is not subject to mitigation unless so directed by the local permitting agency.

Redevelopment does not include routine maintenance activities that are conducted to maintain the original line and grade, hydraulic capacity, or original purpose of the facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways, that does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Agencies' flood control, drainage, and wet utilities projects that maintain original line and grade or hydraulic capacity are considered routine maintenance. Redevelopment also does not include the repaving of existing roads to maintain original line and grade.

Existing single-family dwelling and accessory structure projects are exempt from the redevelopment requirements unless the project creates, adds, or replaces 10,000 square feet of impervious surface area.

Brownfields

There are 30 Brownfield sites within the Study Area which are identified with presence or potential presence of toxic/hazardous substance, possible contamination presence are shown in the attached Figure 2-15 and Table 2-2, courtesy of Impact Sciences, Inc.

Under California and Federal law, anyone who stores, treats or disposes waste as described in the Hazardous Waste Control Law (Health and Safety Code, Division 20, Chapter 6.5), and must obtain a permit or grant authorization from the Department of Toxic Substances Central.

Any reuse as redevelopment of the Brownfield sites could pose a challenge in permitting requirements, time and mitigation costs, depending on the type of toxic/hazardous substances.

Implementing the National Pollution Discharge Elimination Standards (NPDES) along with upgrading the existing storm drain systems would help mitigate runoff and storm drain deficiencies, as well as remove/reduce pollutants from urban storm water runoffs thereby mitigating water quality degradation. New development/redevelopment would <u>delay</u> groundwater recharge but will have no significant impact on groundwater supplies.

Drainage master plan is designed to preserve/maintain the existing drainage tributaries within the watershed and its sub-watersheds, including their flow paths throughout its course to their tributary stream or river. With development, local flow or drainage pattern of the site area may vary from existing within the sub-watershed, except <u>no diversion</u> will be permitted without drainage acceptance deed.

In general, City requires building structures to be protected from a 100-year storm event without impeding or redirecting flood flows from one watershed/sub-watershed to another.

Specific development proposal will be required to perform a site-specific view, and will adhere to all the coded and regulations cited, as well as other requirements of the City, County and other State and Federal Agencies. The State CEQA Guidelines under Section IX, "Hydrology and Water Quality" Significance thresholds HYD-1 three HYD-11 will be used to evaluate project impacts related to Hydrology and Water Quality.

Appendix A Channel Impacts from Watershed Changes

Channels are formed, maintained, and altered by the water and sediment they carry.

Channel equilibrium involves the interplay of four basic factors:

- Sediment discharge (Q_s)
- Sediment particle size (D_{50})
- Streamflow (Q_W)
- Stream slope (S)

Lane (1955) showed this relationship qualitatively as:

 $Q_s \bullet D_{5^0} \propto Q_w \bullet S$

This equation is shown here as a balance with sediment load on one weighing pan and streamflow on the other.

The hook holding the sediment pan can slide along the horizontal arm to adjust according to sediment size. The hook holding the streamflow side can adjust according to stream slope.

Channel equilibrium occurs when all four variables are in balance. If a change occurs, the balance will temporarily be tipped and equilibrium lost. If one variable changes, one or more of the other variables must increase or decrease proportionally if equilibrium is to be maintained. For example, if channel slope is increased (e.g., by channel straightening) and streamflow remains the same, either the sediment load or the size of the particles must also increase. Likewise, if flow is increased (e.g., by an inter-basin transfer) and the slope stays the same, sediment load or sediment particle size has to increase to maintain channel equilibrium. Under these examples' conditions, a stream seeking a new equilibrium will tend to erode more of its banks and bed, transporting larger particle sizes and a greater sediment load.

Alluvial streams that are free to adjust to changes in these four variables generally do so and reestablish new equilibrium conditions. Non-alluvial streams such as bedrock or artificial, concrete channels are unable to follow Lane's relationship because of their inability to adjust the sediment size and quantity variables.

The stream balance equation is useful for making qualitative predictions concerning channel impacts due to changes in runoff or sediment loads from the watershed. Quantitative

Table 1-1	Pollutant Impacts on Water Quality
Soft <u>men</u>	Sediment is a common component of stormwater, and can be a pollutant. Sediment can be detrimental to aquatic life (primary producers, benthic invertebrates, and fish) by interfering with photosynthesis, respiration, growth, reproduction, and oxygen exchange in water bodies. Sediment can transport other pollutants that are attached to it including nutrients, trace metals, and hydrocarbons. Sediment is the primary component of total suspended solids (TSS), a common water quality analytical parameter.
Sintenies	Nutrients including nitrogen and phosphorous are the major plant nutrients used for fertilizing landscapes, and are often found in stormwater. These nutrients can result in excessive or accelerated growth of vegetation, such as algae, resulting in impaired use of water in lakes and other sources of water supply. For example, nutrients have led to a loss of water clarity in Lake Tahoe. In addition, un-ionized ammonia (one of the nitrogen forms) can be toxic to fish.
18acûênîa amîl Wîruses	Bacteria and viruses are common contaminants of stormwater. For separate storm drain systems, sources of these contaminants include animal excrement and sanitary sewer overflow. High levels of indicator bacteria in stormwater have led to the closure of beaches, lakes, and rivers to contact recreation such as swimming.
Qill and Greake	Oil and grease includes a wide array of hydrocarbon compounds, some of which are toxic to aquatic organisms at low concentrations. Sources of oil and grease include leakage, spills, cleaning and sloughing associated with vehicle and equipment engines and suspensions, leaking and breaks in hydraulic systems, restaurants, and waste oil disposal.
	Metals including lead, zinc, cadmium, copper, chromium, and nickel are commonly found in stormwater. Many of the artificial surfaces of the urban environment (e.g., galvanized metal, paint, automobiles, or preserved wood) contain metals, which enter stormwater as the surfaces corrode, flake, dissolve, decay, or leach. Over half the trace metal load carried in stormwater is associated with sedments. Metals are of concern because they are toxic to aquatic organisms, can bioaccumulate (accumulate to toxic levels in aquatic animals such as fish), and have the potential to contaminate drinking water supplies.
Oiganies	Organics may be found in stormwater in low concentrations. Often synthetic organic compounds (adhesives; cleaners, sealants, solvents, etc.) are widely applied and may be improperly stored and disposed. In addition, deliberate dumping of these chemicals into storm drains and inlets causes environmental harm to waterways.
Resinailles	Pesticides (including herbicides, fungicides, rodenticides, and insecticides) have beeu repeatedly detected in stormwater at toxic levels, even when pesticides have been applied in accordance with label instructions. As pesticide use has increased, so too have concerns about adverse effects of pesticides on the environment and human health. Accumulation of these compounds in simple aquatic organisms, such as plankton, provides an avenue for biomagnification through the food web, potentially resulting in elevated levels of toxins in organisms that feed on them, such as fish and birds.
Grics Palloenis	Gross Pollutants (trash, debris, and floatables) may include heavy metals, pesticides, and bacteria in stormwater. Typically resulting from an urban environment, industrial sites and construction sites, trash and floatables may create an aesthetic "eye sore" in waterways. Gross pollutants also include plant dehris (such as leaves and lawn-clippings from landscape maintenance), animal excrement, street litter, and other organic matter. Such substances may harbor bacteria, viruses, vectors, and depress the dissolved oxygen levels in streams, lakes, and estuaries sometimes causing fish kills.
Tosho Bo nililongo 1	Vector production (e.g., mosquitoes, flies, and rodents) is frequently associated with sheltered habitats and standing water. Unless designed and maintained properly, standing water may occur in treatment coutrol BMPs for 72 hours or more, thus providing a source for vector habitat and reproduction (Metzger, 2002).

- National

BROWNFIELDS

Within the Study Area there are 30 brownfield sites. They are scattered throughout the Westside and North Avenue areas. Figure 2-15 shows the location of brownfields within the Study Area. Brownfields through the EPA are defined as "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant." Not all brownfield sites in the Study Area have been identified or labeled as brownfields because of the EPA's strict restrictions on funding for brownfields containing petroleum. For example, old gas stations have been left out of the Westside Brownfield Project. These brownfield sites pose a big hindrance to the revitalization of the project area.

Figure 2-15: Brownfield Locations within the Study Area

Table 2-2: Possible Contaminates by Industry Site

Industry Type	Potential Contaminants	Typical Operations
Oilfield and Oilfield Services	Toxic metals, petroleum solvents, chlorinated solvents, semivolatile hydrocarbons, polychlorinated biphenyls (PCBs)	Oil production and handling, oil tool, welding, and machine shops, vacuum truck services, equipment storage yards, waste disposal, wireline, perforation
Scrap Metal and Salvage Yards	Toxic metals, petroleum solvents, chlorinated solvents, semivolatile hydrocarbons, PCBs)	Meal recycling, equipment scrapping, waste disposal, auto salvage, vehl clé scrapping
Chemical Facilities	Toxic metals, petroleum solvents, chlorinated solvents, semivolatile hydrocarbons, caustics & acids, PCBs.	Chemical supply, refineries, natural gas processing/compression plants, bulk fuel storage/sales.
Quarry Sites	Toxic metals, petroleum solvents, chlorinated solvents, semivolatile hydrocarbons, explosive charges.	Rock quarries, mining, processing, mixing

From the Sanborn Fire Insurance maps, the city has been able to conclude which areas would be most likely to contain brownfield sites. These areas have been identified as locating:

- · Along the north and south side of Stanley Avenue
- Along Ventura Ave. at various location and near the inter section of Franklin Ln.
- · West of Ventura Avenue north of Barry Lane
- · On both sides of Rocklite Road
- · Between Olive Street and Highway 33, north of West Lewis Street
- North of Main Street along Julian and Peking Streets
- Along West Park Row and Dubbers Street
- Along Olive Street immediately north and south of Main Street
- Along Ventura Ave, north of Thompson Boulevard

EXHIBIT "B"

WATERSHEDS AND HSPF DISCHARGES FROM VENTURA RIVER WATERSHED DESIGN STORM MODELING FEBRUARY 2010

WATERSHED NAME	<u>Q 10</u>	<u>Q 50</u>	<u>Q 100</u>	MODEL NUMBER
Ventura River at Highway 101	15,720	52,500	78,600	876
Dent Drain	105	350	527	877
Canada de San Juaquin	480	1,600	2,420	874
Ventura River above Canada de San Juaq	uin 15,600	52,100	78,100	875
Manuel Canyon	390	1,300	1,970	873
Ventura River above Weldon Canyon	14,180	47,270	70,900	962
Weldon Canyon	No Data	No Data	No Data	961
Canada Larga at Ventura Avenue	4,100	13,670	20,500	288
Canada de Aliso	630	2,100	3,150	286
Leon Canyon	642	2,140	3,210	287
Canada Larga above Coche Canyon	2,560	8,530	12,800	284
Coche Canyon	1,340	4,470	6,700	285