3.1.5 Hydrology/Water Quality

This section analyzes the potential hydrology and water quality impacts of the project. This analysis and summary relies on technical information from the *CEQA Preliminary Drainage Study for West Lilac Farms* prepared by Walsh Engineering & Surveying, Inc., dated August 7, 2009 (Appendix K); *Major Stormwater Management Plan, West Lilac Farms Tentative Map* prepared by Walsh Engineering & Surveying, Inc. dated August 13, 2010 (Appendix L); and *Nitrate Assessment, Nitrate Mass Balance Analysis of Proposed Development of West Lilac Farms,* San Diego County, CA dated 2003 (Appendix N). These studies follow the *County of San Diego Guidelines for Determining Significance Water Quality* (July 30, 2007) and applicable stormwater regulations. Additionally, this section incorporates information from the *Hydromodification Management Plan* prepared by Walsh Engineering & Surveying, Inc. (Appendix O).

The Initial Study (Appendix A) prepared for the project determined that the project would have no impact or a less than significant impact for the following issue areas: placement of housing or structures in a 100-year flood hazards area, risk to people or structure due to dam or levee failure and inundation by seiche, tsunami or mudflow. No 100-year floodways or floodplains exist on the project site. No dams or levees are located in the project area or on-site. The site's inland location prevents any potential impacts from ocean conditions such as a seiche or tsunami. No mudflows occur on the project site. Therefore, they are not further analyzed in this section of the EIR.

3.1.5.1 Existing Conditions

The project is located in the San Luis Rey watershed and includes the San Luis Rey Hydrologic Unit Lower San Luis Rey Hydrologic Area, and Moosa Hydrologic Sub-Area (HU #903.12). Approximately one-half of the project site drains northwesterly into an unnamed swale and ultimately to the San Luis Rey River, which is located approximately two miles from the project boundary. The remaining portion of the project site drains southwesterly in an unnamed swale and ultimately to Moosa Canyon Creek, which is located approximately 1.4 miles from the project boundary. Moosa Canyon Creek and the San Luis Rey River join together approximately 2.5 miles west of the project site.

The estimated total drainage area to the San Luis Rey River downstream of the confluence with Moosa Canyon is 355.6 square miles (227,584 acres) and the estimated 100-year storm peak discharge at this confluence is 38,000 cubic feet per second (cfs). The proposed project represents much less that 0.1 percent of the total contributing watershed area and the total 100-year storm peak discharged at this point in the San Luis Rey River.

The estimated total drainage to Moosa Canyon Creek at U.S. Highway 394 is 29.2 square miles (18,688 acres) and the 100-year estimated storm peak discharge at this point is 11,550 cfs. This project represents approximately 0.3 percent of the total drainage contributing watershed area at this point in Moosa Canyon Creek and less that 2 percent of the total 100-year storm peak discharge.

The San Diego Regional Water Quality Control Board Basin Plan lists the Lower San Luis Rey Hydrologic Unit (3.10) beneficial groundwater uses as: Agricultural (AGR) and Industrial Service Supply. Furthermore, the Basin Plan identifies this hydrologic unit with an exemption for Municipal and Domestic Use, under the terms and conditions of the State Board Resolution No. 88-63, Sources of Drinking Water Policy.

The San Luis Rey Valley Groundwater Basin underlies an east-west-trending alluvium-filled valley located along the western coast of San Diego County. The major hydrologic feature is the San Luis Rey River, which drains the valley overlying the basin. The basin is bounded on the east, northeast and southeast by the contact of alluvium with impermeable Mesozoic granitic and Pre-Cretaceous metamorphic rocks. In the northwest and southwest of the lower portion of the basin, alluvium is in contact with the semi-permeable Eocene marine deposits and Tertiary non-marine deposits. The basin is bounded on the west by the Pacific Ocean.

Alluvial aquifers exist along the San Luis Rey River valley (north of the project site), and within Moosa Canyon (south of the project site). Groundwater occurs in consolidated sediments (residuum) and fractured rock. Yields from wells that tap the residuum/fractured rock aquifer underlying the project site are highly variable, but tend to be several dozen gallons per minute or less.

There are five existing wells on the project site that are being used to provide water for the on-going agricultural operations. Four of these wells (Future Lots 2, 5, 15 and 16) have been in operation for a number of years and a fifth well (Future Lot 7) has recently been brought into operation. Well records for the four wells indicate they have consistently produced 161 acre-feet of water annually over the four year period from January 2005 through the end of December 2008. All five of these wells will be operated under a Maintenance Agreement between the County and the responsible party. The Agreement will specify that the wells will be used first to provide water for the 22.6-acre Agricultural Open Space on site. Approximately 80 acre-feet per year of water from the wells will be needed to water the 22.6-acre Agricultural Open Space easement. Remaining water available from the three wells located on the western West Lilac parcel will be used to water remaining agricultural uses outside the Agricultural Open Space easement for Lots 1-11 of the West Lilac tentative map. Remaining water available in the two wells located on the eastern West Lilac parcel will be used to water agricultural uses outside the Agricultural Open Space easement for lots 12-28 of the West Lilac tentative map. The Agricultural Open Space Maintenance Agreement is described in page 2.2-17 of the EIR. Water from the Rainbow Municipal Water District (RMWD) will be used for residential needs and for agricultural uses outside the reach or capacity of the five wells.

Applicable Plans and Regulations

Clean Water Act Section 402(p) NPDES Permits

The federal Water Pollution Control Act (also known as the Clean Water Act [CWA]) was amended in 1972 to prohibit discharge of any pollutant into Waters of the United States unless the discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) Permit. Originally, the NPDES program focused on reducing pollutants from discharges from industrial process wastewater and municipal sewage treatment plants. In 1987, the CWA was amended to require the U.S. Environmental Protection Agency (USEPA) to regulate storm water discharges through use of NPDES storm water permits. Section 402(p) of the CWA established a framework for regulating discharges under the NPDES program.

In California, the EPA has delegated authority to issue NPDES permits to the State Water Resources Control Board (SWRCB). The SWRCB and nine California Regional Water Quality Control Boards (RWQCBs) carry out the regulation, protection, and administration of water quality. The state is divided into nine regions related to water quality and quantity characteristics. Each RWQCB is required to adopt a Water Quality Control Plan that recognizes and reflects the regional differences in existing water quality, the beneficial uses of the region's ground and surface water, and local water quality conditions

and problems. The project site is located with in the San Diego Regional Water District, which is addressed in the Water Quality Control panel for the San Luis Rey River watershed. This Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters.

Regional Water Quality Control Board

The SWRCB and the RWQCB are responsible for ensuring implementation and compliance with the provisions of the federal CWA and California's Porter-Cologne Water Quality Control Act. The project site is situated within the jurisdiction of the San Diego Region of the RWQCB (Region 9). The San Diego RWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within its jurisdiction.

Under Section 303(d) of the CWA, states are required to develop lists of water bodies that would not attain water quality objectives after implementation of required levels of treatment by point-source dischargers (municipalities and industries). Section 303(d) requires that the state develop a total maximum daily load (TMDL) for each of the listed pollutants. The TMDL is the amount of loading that the water body can receive and still be in compliance with water quality objectives. The TMDL can also act as a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. The TMDL prepared by the state must include an allocation of allowable loadings to point and non-point sources, with consideration of background loadings and a margin of safety. The TMDL must also include an analysis that shows the linkage between loading reductions and the attainment of water quality objectives. The USEPA must either approve a TMDL prepared by the state or, if it disapproves the state's TMDL, issue its own. NPDES permit limits for listed pollutants must be consistent with the waste load allocation prescribed in the TMDL. After implementation of the TMDL, it is anticipated that the problems that led to placement of a given pollutant on the Section 303(d) list would be remediated.

In January 2007, the RWQCB adopted Order 2007-0001, a municipal permit to all of the jurisdictions within San Diego County. This permit and the previous permit (Order 2001-01) have requirements of development projects to minimize or eliminate the impacts of development on water quality. This project is subject to the requirements of the municipal permit as it is implemented via the County's Urban Runoff Management Program. The specific requirements include the selection of appropriate Best Management Practices (BMPs) to avoid, prevent or reduce the pollutant loads info the storm drain system and the receiving waters.

California Water Code, Division 7 (Porter-Cologne Act)

The California Water Code contains provisions regulating water and its use. Division 7 establishes a program to protect water quality and beneficial uses of the state water resources including groundwater and surface water. The SWRCB and RWQCBs administer the program and are responsible for control of water quality. They establish waste discharge requirements, water quality control planning and monitoring, enforcement of discharge permits, and ground and surface water quality objectives.

Clean Water Act Section 303(d) Surface Water

Section 303(d) of the 1972 CWA defines water quality standards as consisting of both the uses of surface waters (beneficial uses) and the water quality criteria applied to protect those uses (water quality objectives). State and regional water quality control boards have been charged with ensuring that beneficial uses and water quality objectives are established for all waters of the state.

With respect to the San Luis Rey watershed, the following beneficial uses have been identified by the County of San Diego Watershed Protection Stormwater Management Discharge Control Ordinance:

Beneficial Use	Description
Agricultural Supply (AGR)	Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for ranch grazing.
Industrial Services Supply (IND)	Includes uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
Municipal and Domestic supply (MUN)	Includes uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
Water Contact Recreation (REC1)	Waters are used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and Scuba diving, surfing, white water activities, fishing and the use of natural hot springs.
Non-Contact Water Recreation (REC2)	Waters are used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
Preservation of Biological Habitats of Special Significance (BIOL)	Includes uses of water that support designated areas or habitats, such as established refuges, parks, sanctuaries, ecological reserves, or Areas of Special Biological Significance (ASBS), where the preservation or enhancement of natural resources requires special protection.
Warm Freshwater Habitat (WARM)	Waters support warm water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish and wildlife, including invertebrates.
Wildlife Habitat (WILD)	Waters support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.
Rare, Threatened, or Endangered Species (RARE)	Includes uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered.

The federal CWA further requires that a list of water quality limited segments be developed to identify those water bodies that do not meet water quality standards even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that action plans, referred to as TMDLs, be developed by regulatory agencies to improve water quality for these limited segments. On July 25, 2003, the USEPA gave final approval to California's 2002 Section 303(d) list of Water Quality Limited Segments and TMDLs priority schedule.

County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance

The stated purposes of these ordinances are to protect the health, safety and general welfare of San Diego County residents; to protect water resources and to improve water quality; to cause the use of

management practices by the County and its citizens that will reduce the adverse effects of polluted runoff discharges on waters of the state; to secure benefits from the use of stormwater as a resource; and to ensure the County is compliant with applicable state and federal law.

County of San Diego Groundwater Ordinance

The County of San Diego currently manages anticipated future groundwater demand through the County Groundwater Ordinance. This ordinance does not limit the number of wells or the amount of groundwater extraction of existing landowners. However, the ordinance does identify specific measures to mitigate potential groundwater impacts of projects requiring specified discretionary permits.

Hydromodification

Hydromodification refers to changes in the magnitude and frequency of stream flows as a result of urbanization and the resulting impacts on receiving channels in terms of erosion, sedimentation, and degradation of in-stream habitat. The need to address hydromodification and its influence on water quality is included in the San Diego Regional Water Board Order R9-2007-001, Provision D.1.g of California Regional Water Quality Control Board San Diego Region Order R9-2007-0001, which required the San Diego Stormwater Copermittees (i.e. County of San Diego) to implement a Hydromodification Management Plan (HMP) "*…to manage increases in runoff discharge rates and durations from all Priority Development Projects (PDPs), where such increased rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force*."

3.1.5.2 Analysis of Project Effects and Determination as to Significance

The following significance guidelines are used to evaluate of whether a significant impact to hydrology will occur as a result of project implementation according to *CEQA Guidelines* Appendix G and the *County of San Diego Guidelines for Determining Significance–Hydrology* (July 30, 2007).

A project will generally be considered to have a significant effect if it proposes any of the following, absent specific evidence to the contrary. Conversely, if a project does not propose any of the following, it will generally not be considered to have a significant effect on hydrology, absent specific evidence of such an effect:

Guidelines for the Determination of Significance

1. The project will 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.

2. The project will result in increased velocities and peak flow rates exiting the project site that would cause flooding downstream or exceed the stormwater drainage system capacity serving the site.

3. The project will result in placing housing, habitable structures, or unanchored impediments to flow in a 100-year floodplain area or other special flood hazard area, as shown on a Flood Insurance Rate Maps (FIRM), a County Flood Plain Map or County Alluvial Fan Map, which would subsequently endanger health, safety and property due to flooding.

4. The project will place structures within a 100-year flood hazard or alter the floodway in a manner that would redirect or impede flow resulting in any of the following:

    a. Alter the Lines of Inundation resulting in the placement of other housing in a 100-year flood hazard;

    OR

    b. Increase water surface elevation in a watercourse with a watershed equal to or greater than 1 square mile by 1 foot or more in height and in the case of the San Luis Rey River, San Dieguito River, San Diego River, Sweetwater River, and Otay River 2/10 of a foot or more in height.

5. The project would drain to a tributary of an impaired water body listed on the CWA Section 303(d) list, and will contribute substantial additional pollutant(s) for which the receiving water body is already impaired.

6. The project would drain to a tributary of a drinking water reservoir and will contribute substantially more pollutant(s) than would normally run off from the project site under natural conditions.

7. The project will contribute pollution in excess of that allowed by applicable State or local water quality objectives or will cause or contribute to the degradation of beneficial uses.

8. The project is a development project listed in County of San Diego, Code of Regulatory Ordinances (Regulatory Ordinances), Section 67.804(g), as amended and does not comply with the standards set forth in the County Stormwater Standards Manual, Regulatory Ordinances Section 67.813, as amended, or the Additional Requirements for Land Disturbance Activities set forth in Regulatory Ordinances, Section 67.

9. The project does not conform to applicable Federal, State or local "Clean Water" statutes or regulations including but not limited to the Federal Water Pollution Control Act, California Porter-Cologne Water Quality Control Act, and the County of San Diego Watershed Protection, Stormwater Management, and Discharge Control Ordinance.

10. 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?

Analysis (Guideline 1 – Alteration of Drainage Pattern)

The drainage study prepared for the project (Walsh 2009) determined that the project will not alter any existing drainage patterns on-site or off-site.

The project has been designed to drain impervious areas to the landscape areas to promote pollutant removal and to reduce the intensity of the runoff prior to discharging, thereby minimizing the directly connected impervious areas. The single-family residences included as part of the project will be set back from the impervious streets to drain rooftops into landscaped areas. Storm runoff from the streets and roads will surface flow to proposed spillways. Storm runoff will be conveyed under the access roads

through culvert under-crossings. Riprap energy dissipaters will be located at the outfalls of the proposed spillways and at the culvert under-crossings to provide runoff velocity reduction. Street runoff will then be routed overland through landscaped and vegetated areas prior to entering the existing vegetated swales. Using the Rational Method described in the County's hydrology manual (June 2003) existing site conditions result in a discharge of 32.0 cfs. The project as proposed will result in a discharge of 27.1 cfs, which is substantially below existing surface water discharge conditions. The project does not alter on-site drainage patterns and does not divert storm runoff from its existing watershed. Accordingly, the project does not result in any substantial erosion or siltation on or off site, and drainage impacts are less than significant.

The drainage study prepared for the project (Walsh 2009) (Appendix K) examined off-site runoff in light of the proposed improvements to Aqueduct Road and Via Ararat Drive which access the project site. Via Ararat will be widened from approximately 20 feet to 22.5 feet of paved surface and Aqueduct Road will be widened from approximately 20 feet to 24 feet paved surface. Both roads will include a 2-foot decomposed granite shoulder. Twelve drainage basins associated with these two roadways were studied with existing and proposed flow rates, intensity, and velocity. In the existing condition, there is 46,000 square feet (sf) of pavement on Via Ararat Drive and 44,000 sf on Aqueduct Road. An additional 5,200 sf of pavement is proposed on Via Ararat Drive (an 11% increase) and 13,900 sf on Aqueduct Road (a 32% increase). On average, the increase in runoff is 0.2 cfs per drainage basin (an increase of 4%) on Via Ararat Drive and 0.3 cfs per drainage basin (an increase of 7%) on Aqueduct Road. The increase in runoff is considered less than significant since the increase in velocity and depth of flow are indistinguishable.

Analysis (Guideline 2 – Increase Velocities and Flows)

The project does not create or contribute stormwater runoff that would exceed the capacity of existing or planned storm water drainage systems, nor divert storm runoff from its existing watershed. Storm runoff from the streets and roads will surface flow to proposed spillways. Runoff will be conveyed under the access roads through culvert under-crossings. Rip rap energy dissipaters will be located at the outfalls of the proposed spillways and at the culvert under-crossings to provide runoff velocity reduction. Street runoff will then be routed overland through landscaped and vegetated areas prior to entering the existing vegetated swales.

As noted in the Preliminary Drainage Report (Walsh 2009) prepared for the project, the increase in impervious areas attributed to the construction of the homes will be offset by the increase in time of concentration from the landscaped areas located adjacent to the homes. Runoff rate decreases range from 5 percent for Basin 3B to up to a 27 percent reduction for Basin 3A. This slower rate of stormwater runoff will enhance opportunities for filtration and infiltration (Walsh 2009).

Disturbance of land on-site will be to grade the streets and residential pads and install septic systems. Approximately 58.5 acres of land will remain in its existing vegetated condition. Pollutants from runoff will be adequately filtered through the landscape and the natural swales, which are included as part of the project design. Roof drains on all homes will deposit into landscaped areas and the runoff will be required. Provision of these design features will be ensured through subsequent site plan reviews and/or building permits. Off-site improvements will result in widening existing roads approximately 2 to 4 feet. This disturbance is minimal and stormwater will flow to a 2-foot wide decomposed granite shoulder to accommodate runoff. In addition, the on-site and off-site soils are of a type that will accept infiltration of runoff. Therefore, potential pollutants will be minimal and applicable regulations will be met.

The calculated peak rates of runoff for the project both in the existing condition were calculated for the project using the Rational Method described in the County of San Diego's Hydrology Manual dated June 2003 for a 100-year storm event. Peak discharge from the site in its existing condition is 32.0 cfs. The proposed project will result in a discharge rate of 27.1 cfs which is a 15 percent reduction over the existing condition. Therefore, the runoff would not exceed the capacity of existing or planned drainage systems.

Additionally, as outlined in the Stormwater Management Plan prepared for the project (Walsh 2009) (Appendix L) the project will implement site design measure, source control, and/or treatment of BMPs to minimize runoff velocities, as summarized in Table 1-1. Vegetated swales have been incorporated into the project to avoid pollutant impacts from surface runoff. Roof drains on all homes to be constructed will deposit into landscaped areas and runoff will be required to flow overland through the landscaping prior to entering the swales. Storm runoff will be filtered through landscape areas and vegetated swales. The two existing swales located within the project boundary will be dedicated as an Agricultural Open Space easement and will not be graded, though agricultural uses and crops are permitted. Runoff velocities within the swales will not be significantly impacted by the proposed project because their primary function will continue to be to serve the agricultural uses of the property. As a result of these BMPs proposed as part of the project, the agricultural and large lot design of the project, and compliance with existing regulations, impacts from polluted runoff would be less than significant.

Hydromodification Analysis

The project includes bioretention basins to maintain or reduce pre-project downstream erosion conditions and protect stream habitat. A high susceptibility of the downstream channels has been assumed for the hydromodification analysis for the project.

The proposed development area was divided into Drainage Management Areas (DMAs) that fit into separate categories (building pad area or private roads). The building pad area was further divided into separate DMAs consisting of impervious areas (roofs, driveways, walkways, patios, and misc. areas) and pervious areas (landscaped areas) (Figure 3.1.5-1).

The San Diego HMP Sizing Calculator was used to size Low Impact Development (LID) facilities that meet both HMP and treatment-control requirements. Using a conservative approach, a variety of bioretention area sizes were calculated based upon the anticipated development of small and large houses and associated driveways, walkways, patios, and miscellaneous paved or impervious areas as well as small and large DMAs for the private roads. Bioretention basins were selected to manage increases in runoff discharge rates and durations in order to avoid the potential for hydromodification impacts due to the proposed development. All stormwater runoff from the proposed development will be routed to bioretention basins[1]. Bioretention basins consist of a surface ponding layer, an 18-inch growing medium, and a storage layer. Each of the bioretention basins will have an overflow catchment for purposes of routing flows from larger storm events. The bioretention areas for both the building pads and private roads included as part of the project are shown on Figure 3.1.5-1. The biofiltration basins being proposed

[1] Maintenance of the LIDs on the building pads will be the responsibility of the individual property owners. Maintenance of the LIDs for the private roads will be the responsibility of the HOA, if in effect. The HOA will be given the authority to ensure the long-term preservation and maintenance of the homeowners' on-site LIDs via the Covenants, Conditions, and Restrictions (CC&Rs). If an HOA is not in effect, then the individual property owners will be responsible for maintaining the LIDs on their properties. A plan addressing the design, and maintenance of the LIDs for the private roads will be implemented during the final engineering phase of the development. A plan addressing the design, and maintenance of the LIDs for the building pad area will be implemented during the Building Permit Phase of the development. These requirements are identified as project design considerations in Table 1-1.

as part of the project reduce flows offsite thereby reducing off-site erosion by retaining some of the flow on-site and allowing it to infiltrate on-site. With implementation of the bioretention basins shown on Figure 3.1.5-1, the project fully complies with the hydromodification requirements contained in the San Diego Regional Water Board Order R9-2007-001 and hydromodification impacts from the project have been reduced to a level of insignificance. Inclusion of the bioretention basins in the project has reduced off-site flow impacts associated with the project when compared to the impacts previously analyzed in the Draft EIR.

Analysis (Guidelines 3 and 4 – Floodplains and Flood Hazards)

No 100-year flood hazard areas were identified on the project site; therefore, the project does not have the potential to place housing, habitable structures, or unanchored impediments to flow in a 100-year floodplain area or other special flood hazard area, as shown on a FEMA, County Flood Plain Map or County Alluvial Fan Map, which would subsequently endanger health, safety and property due to flooding. The project would not place structures within a 100-year flood hazard or alter any floodway in a manner that would redirect or impede flows. Therefore, no impact is identified for this issue area.

Analysis (Guideline 5 – Impaired Water Bodies)

The project lies in the Bonsall hydrologic subarea, within the San Luis Rey hydrologic unit. According to CWA Section 303(d) list, July 2003, although the mouth of the San Luis Rey is impaired for coli form bacteria, no portion of the San Luis Rey River, which is tributary to the Pacific Ocean, is impaired. The project will not, therefore, impact a Section 303(d) listed water body. Therefore, no impact is identified for this issue area.

Analysis (Guideline 6 – Drainage to Drinking Water Supply)

The project drains into Moosa Canyon Creek and the San Luis Rey River. Moosa Canyon Creek is a tributary to the San Luis Rey River. The San Luis Rey River does not serve as a drinking water supply for the area. Thus the project would not have the potential to drain to a tributary of a drinking water reservoir that will contribute substantially more pollutant(s) than would normally runoff from the project site under natural conditions. Thus no impact is identified for this issue area.

Analysis (Guideline 7 – Degradation of Beneficial Uses)

The project lies in the Bonsall hydrologic subarea, within the San Luis Rey hydrologic unit that has the following existing and potential beneficial uses for inland surface waters, coastal waters, reservoirs and lakes, and ground water: municipal and domestic supply; agricultural supply; industrial process supply; industrial service supply; freshwater replenishment; hydropower generation; contact water recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; wildlife habitat; marine habitat; migration of aquatic organisms; and, rare, threatened, or endangered species habitat.

The project proposes the following potential sources of polluted runoff: sediments, nutrients, and organic compounds from residential and agricultural uses. However, existing regulations require site design measures, source control BMPs, and treatment control BMPs be employed to reduce potential pollutants in runoff to a less than significant level so that the proposed project will not cause or contribute to an exceedance of applicable surface or groundwater receiving water quality objectives or degradation of beneficial uses. The project will employ silt fencing, fiber rolls, energy dissipaters, gravel bags, and

bonded fiber matrix during construction to prevent erosion. Site design includes minimizing impervious surfaces. Treatment control includes placement of bio filters and energy dissipaters.

In addition, the proposed BMP's are consistent with regional surface water, storm water and groundwater planning and permitting process that has been established to improve overall water quality in County watershed. As a result the project will not contribute to a cumulatively considerable exceedence of applicable surface or groundwater receiving quality objectives or degradation of beneficial uses and impacts are less than significant.

Analysis (Guideline 8 and 9 – Conformance to Water Quality Regulations)

Potential sources of polluted runoff associated with the project could include: sediments, nutrients, and organic compounds from residential use. However, site design measures and source control and treatment control BMPs will be employed to reduce potential pollutants in runoff to a less than significant level so that the proposed project will not cause or contribute to an exceedance of applicable surface or groundwater receiving water quality objectives or degradation of beneficial uses. The project will employ silt fencing, energy dissipaters, gravel bags, and bonded fiber matrix during construction to prevent erosion. Site design includes minimizing impervious surfaces. Treatment control includes placement of bio filters and energy dissipaters. See Table 1-1 for a complete list of the proposed BMPs.

In addition, the proposed BMPs are consistent with regional surface water, storm water and groundwater planning and permitting process that has been established to improve the overall water quality in County watersheds. As a result, impact on surface or groundwater receiving water quality objectives or degradation of beneficial uses would be less than significant.

A Nitrate Assessment study was conducted by Michael R. Welch (2003) (Appendix N) to assess and compare pre-project and post-project nitrate mass emissions, and to determine if the proposed project will result in positive or negative impacts to groundwater nitrate concentrations.

Groundwater nitrate concentrations within the three existing project wells are less than state and federal primary drinking water Maximum Contaminant Levels (MCLs). Existing groundwater nitrate concentrations are also less than designated Basin Plan groundwater quality objectives for the Bonsall Hydrographic Subarea. Estimated nitrate concentrations in the unsaturated zone above ground water (vadose zone) for pre-project conditions are projected to be approximately the same as post-project conditions. Existing groundwater quality is significantly better in quality than computed pre-project unsaturated zone concentrations, indicating the other hydrologic factors act to dampen water quality effects associated with nitrate mass emissions from the project area.

Despite nitrate loading, existing groundwater nitrate quality is within the State of California Department of Health Services (DHS) drinking water standards and Regional Board Basin Plan objectives. Development of the proposed project will result in less annual nitrate mass recharged to groundwater and a greater annual volume of net groundwater recharge within which to dilute the nitrate mass. Development of the proposed project will not result in a significant change in regards to nitrate concentrations. Additionally vegetated swales have been incorporated into the project to avoid pollutant impacts from surface runoff. Storm runoff will be filtered through the landscape areas and vegetated swales. On the basis of these factors, the project does not result in any deterioration in the nitrate quality of local groundwater and therefore the project's impact to nitrate concentration levels are considered less than significant.

As a matter of regulatory requirement, the project will be required to comply with the standards set forth in the County Stormwater Standards Manual, Regulatory Ordinances Section 67.813, as amended, or the Additional Requirements for Land Disturbance Activities set forth in Regulatory Ordinances, Section 67. Additionally, the project will be required to conform to applicable Federal, State or local "Clean Water" statutes or regulations including but not limited to the Federal Water Pollution Control Act, California Porter-Cologne Water Quality Control Act, and the County of San Diego Watershed Protection, Stormwater Management, and Discharge Control Ordinance.

Analysis (Guideline 10 – Groundwater Supplies)

There are five existing wells on the project site that have been used to provide water for the on-going agricultural operations. Four of these wells (on future Lots 2, 5 15 and 16) have been in operation for a number of years to serve the on-site agricultural uses and a fifth well has recently been completed on Lot 7. Figure 3.1.9-1 depicts the five wells. All five of these wells will be owned by the HOA and will be used to water the 22.6-acre Agricultural Open Space easement on site. Approximately 80 acre-feet of water will be needed annually to water the Agricultural Open Space easement areas. Remaining available well water from the three wells located on the western West Lilac parcel will be used to water agricultural uses outside the Agricultural Open Space easement for future Lots 1-11. Remaining water available from the two wells located on the eastern West Lilac property will be used to water agricultural uses outside the Agricultural Open Space easement for future Lots 12-28 of the West Lilac tentative map. The Agricultural Open Space Maintenance Agreement as described in page 2.2-17 of the EIR, will require the wells to be used first to water the 22.6-acre Agricultural Open Space Easement area and then for other agricultural uses on site. CC&Rs, if in force, will also contain these requirements. Potable water for the home sites, landscaping, and for water needed for the agricultural areas not provided by the wells, will be supplied by RMWD.

An examination of well records on-site indicates that approximately 161 acre-feet of well water have been used per year for the period from 2005 through December 2008. This historic well water usage on-site reflects the production capability of the wells. The fifth well recently completed on future Lot 7 is also producing well water used currently to irrigate agricultural uses on-site. Collectively, the five wells are producing approximately 201 acre-feet of water per year. With implementation of the project, approximately 201 acre-feet of water generated by the five wells will be used first to irrigate the Agricultural Open Space easement areas, with the balance used to irrigate agricultural uses that remain on the West Lilac lots outside the Agricultural Open Space easement. Water usage from the wells is not expected to increase after implementation of the project which will develop approximately 34.3 acres of existing agriculture with residential uses that will rely on imported water.

Since prior well usage on-site has not resulted in any adverse impacts to the groundwater basin, or any wells within the groundwater basin, the impact on the groundwater supply would be less than significant. In addition, the project does not involve operations that would interfere with groundwater recharge, since the project does not involve any diversion of water to another groundwater basin or diversion or channelization of any stream, course or waterway with impervious layers. Therefore, impacts to groundwater recharge would also be less than significant.

3.1.5.3 Cumulative Impact Analysis

The proposed project is located in within the San Luis Rey watershed. Water runoff from the project site travels via swales directly into the San Luis Rey River or via Moosa Canyon Creek, which ultimately

joins the San Luis Rey River. The cumulative study area for hydrology and water quality would be the San Luis Rey watershed, which would include all the projects on the cumulative project list (Table 1-2).

Urbanization and the associated increase in impervious surfaces typically result in an increase in stormwater runoff, decreased infiltration, and an increase in certain pollutants. Without proper controls, these changes can in turn erode stream banks, degrade aquatic habitat, and adversely affect water quality. Factors such as traffic, runoff, and pollution increase incrementally with the addition of multiple projects within a watershed and can adversely impact water resources.

Individual projects are required to address the construction and post-construction runoff that they generate in order to comply with the federal CWA, the state's Porter-Cologne Water Quality Control Act, and the County of San Diego's Watershed Protection, Stormwater Management, and Discharge Control Ordinance. Adherence to the regulations governed by jurisdictional agencies substantially reduces the cumulative impacts of multiple projects on water quality.

Increased impervious surfaces would also result in the loss of water being recharged into the groundwater basin. However, each cumulative project would individually be required to implement BMPs and SWPPPs in accordance with the Municipal Storm Water National Pollutant Discharge Elimination System (NPDES) Permit, to reduce potential water quality impacts. Adherence with regional standards requires that runoff not exceed that of the existing conditions. In addition, each project is subject to the requirements of the County to provide drainage systems to capture project-generated runoff. These drainage systems are required to be approved by the County prior to project approval.

All projects are inspected and are required to be constructed and managed in accordance with regional BMPs and discharge requirements, in compliance with the County's Watershed Protection, Storm Water Management, and Discharge Control Ordinance. Adherence with regional standards would eliminate unlawful discharge quantities or water quality management practices from occurring on a cumulatively considerable scale. In summary, given current regulations, each of the cumulative projects would be constructed and managed in accordance with regional requirements, which typically require acquisition of discharge permits and the use of BMPs to limit erosion and control sedimentation. Therefore, cumulative impacts to hydrology and water quality would be less than significant.

3.1.5.4 Significance of Impacts Prior to Mitigation

Based upon the analysis presented in Sections 3.1.5.2 and 3.1.5.3, impacts are less than significant related to hydrology or water quality individually or cumulatively were identified for the project.

3.1.5.5 Conclusion

Based upon the analysis presented in Sections 3.1.5.2 and 3.1.5.3, the impacts are less than significant at the project- and cumulative-level related to hydrology and water quality.

PRELIMINARY HYDROMODIFICATION PLAN

TM 5276 - WEST LILAC FARMS

LEGEND:

DMA 2290 — DRAINAGE MANAGEMENT AREA ID #

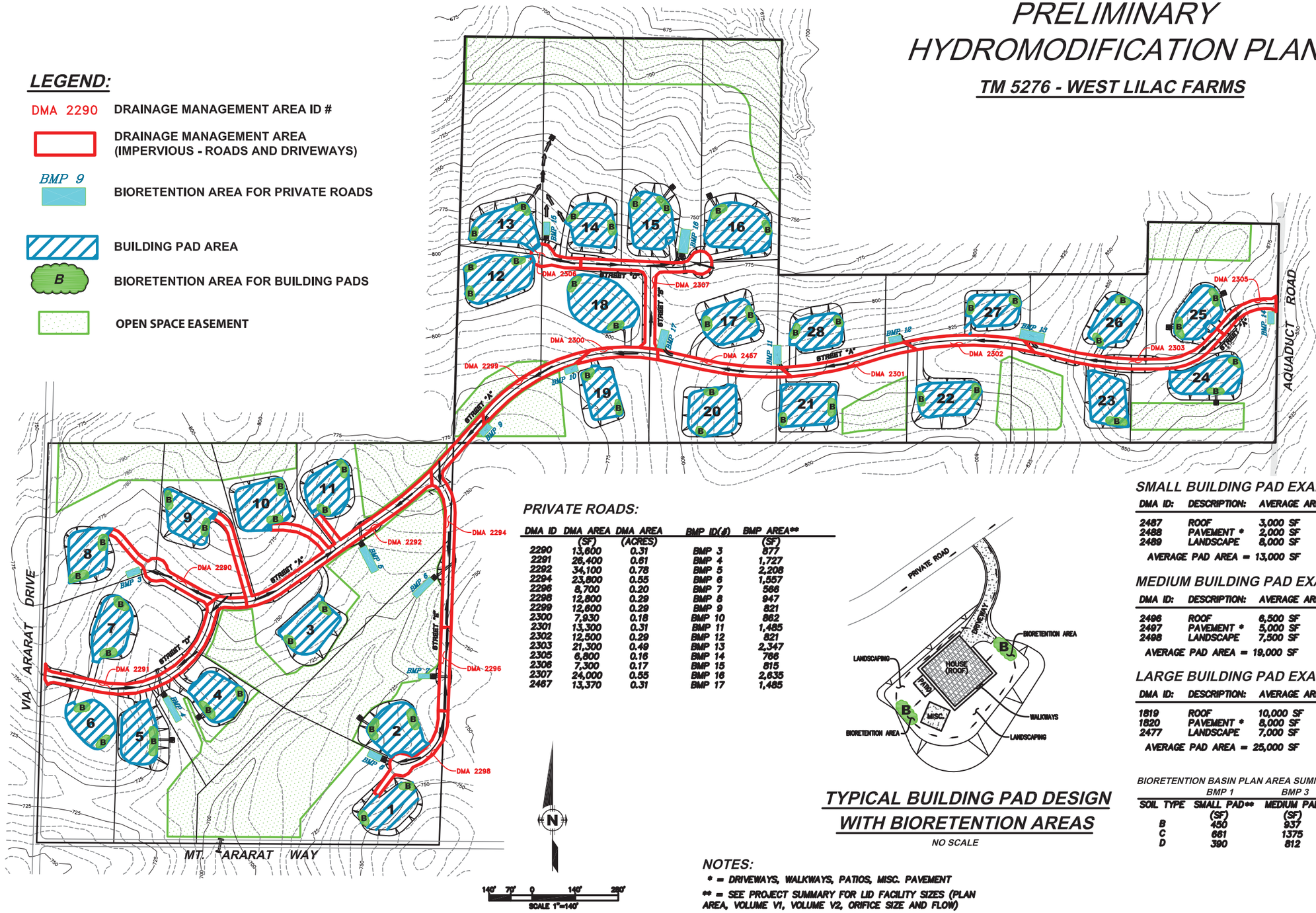
DRAINAGE MANAGEMENT AREA (IMPERVIOUS - ROADS AND DRIVEWAYS)

BMP 9 — BIORETENTION AREA FOR PRIVATE ROADS

BUILDING PAD AREA

B — BIORETENTION AREA FOR BUILDING PADS

OPEN SPACE EASEMENT



PRIVATE ROADS:

DMA ID	DMA AREA (SF)	DMA AREA (ACRES)	BMP ID(#)	BMP AREA** (SF)
2290	13,600	0.31	BMP 3	877
2291	26,400	0.61	BMP 4	1,727
2292	34,100	0.78	BMP 5	2,208
2294	23,800	0.55	BMP 6	1,557
2296	8,700	0.20	BMP 7	566
2298	12,800	0.29	BMP 8	947
2299	12,600	0.29	BMP 9	821
2300	7,930	0.18	BMP 10	862
2301	13,300	0.31	BMP 11	1,485
2302	12,500	0.29	BMP 12	821
2303	21,300	0.49	BMP 13	2,347
2305	6,800	0.16	BMP 14	766
2306	7,300	0.17	BMP 15	815
2307	24,000	0.55	BMP 16	2,635
2457	13,370	0.31	BMP 17	1,485

TYPICAL BUILDING PAD DESIGN WITH BIORETENTION AREAS

NO SCALE

SMALL BUILDING PAD EXAMPLE:

DMA ID:	DESCRIPTION:	AVERAGE AREA:	
2487	ROOF	3,000 SF	
2488	PAVEMENT *	2,000 SF	
2489	LANDSCAPE	8,000 SF	BMP 1

AVERAGE PAD AREA = 13,000 SF

MEDIUM BUILDING PAD EXAMPLE:

DMA ID:	DESCRIPTION:	AVERAGE AREA:	
2496	ROOF	6,500 SF	
2497	PAVEMENT *	5,000 SF	
2498	LANDSCAPE	7,500 SF	BMP 3

AVERAGE PAD AREA = 19,000 SF

LARGE BUILDING PAD EXAMPLE:

DMA ID:	DESCRIPTION:	AVERAGE AREA:	
1819	ROOF	10,000 SF	
1820	PAVEMENT *	8,000 SF	
2477	LANDSCAPE	7,000 SF	BMP 2

AVERAGE PAD AREA = 25,000 SF

BIORETENTION BASIN PLAN AREA SUMMARY FOR PADS:

SOIL TYPE	BMP 1 SMALL PAD** (SF)	BMP 3 MEDIUM PAD** (SF)	BMP 2 LARGE PAD** (SF)
B	450	937	1208
C	661	1375	2041
D	390	812	1391

NOTES:

* = DRIVEWAYS, WALKWAYS, PATIOS, MISC. PAVEMENT

** = SEE PROJECT SUMMARY FOR LID FACILITY SIZES (PLAN AREA, VOLUME V1, VOLUME V2, ORIFICE SIZE AND FLOW)

Source: Walsh Engineering & Surveying, 2011 | G:\443161 - WestLilac\84814_WestLilacSubdivision\graphics\docs\2010_hydromodification | Last Updated : 03-07-11