3.1.4 Hydrology and Water Quality

This section addresses the potential hydrology, water quality, and stormwater/flooding impacts associated with implementation of The Villages – Escondido Country Club Project (Project). Project-related analyses are based on the following technical reports prepared by Rick Engineering: *Drainage Study – Preliminary Engineering* and *Stormwater Quality Management Plan.* Copies of the reports are included as Appendices 3.1.4-1 and 3.1.4-2.

3.1.4.1 Existing Conditions

3.1.4.1.1 Environmental Setting

Hydrology

The Project site is located within the San Marcos Creek watershed, which is a part of the larger Carlsbad watershed. The site is located within the upper San Marcos Hydrologic Area (904.50), in the Carlsbad Hydrologic Unit (904.00). Beneficial Uses are listed as municipal water supply, agriculture, contact and non-contact recreation, warm freshwater habitat, cold freshwater habitat, and wildlife habitat (San Diego RWQCB 2016).

The 109-acre property ranges in elevation from 725 to 785 feet above mean sea level. The Project site encompasses a natural drainage, which is a tributary to San Marcos Creek. The Project site is mostly pervious, with only approximately 3.5 acres of impervious area, including and surrounding the existing clubhouse. Stormwater from the site is currently conveyed by a series of ditches into golf-related water features and toward four Project site discharge areas, from which runoff is ultimately conveyed into San Marcos Creek via off-site open channels, storm drains, and culverts (Appendix 3.1.4-1).

Surface Water Quality

The Clean Water Act requires states to identify waters that do not or are not expected to meet applicable water quality standards with current control technologies above. San Marcos Creek was included on the Clean Water Act Section 303(d) List of Water Quality Limited Segments, due to the presence of dichlorodiphenyldichloroethylene (DDE), phosphorus, sediment toxicity, and selenium. The source of these contaminants is unknown. San Marcos Creek is listed on the 303(d) List under Category 5 criteria, which is a water segment where standards are not met and a total maximum daily load (TMDL) is required, but not yet completed, for at least one of the pollutants listed for this segment (SWRCB 2012).

In addition, please refer to Environmental Impact Report (EIR) Section 3.1.9, Utilities and Service Systems, regarding water quality impacts to Escondido Creek in association with

discharges from the Hale Avenue Resource Recovery Facility (HARRF). Inclusion of Escondido Creek on the Clean Water Act Section 303(d) List of Water Quality Limited Segments resulted in more stringent effluent limitations on HARRF discharges.

Groundwater

The Project site overlies the San Marcos Valley Groundwater Basin of the South Coast Hydrologic Region, as established by the California Department of Water Resources (California DWR 2016). Semi-permeable marine and non-marine deposits and impermeable granitic and metamorphic rocks bound the basin. The principal water bearing materials are bedrock residuum and Quaternary age alluvium, consisting of sand, gravel, clay, and silt, which attains a thickness of 175 feet. Wells in the basin yield as much as 60 gallons per minute from alluvium. Groundwater likely flows southwestward following the course of San Marcos Creek. Groundwater is not used as potable water by the City of Escondido. Groundwater in the northern portion of the basin, in the vicinity of the Project site, is magnesium chloride in character; has TDS content of 500 to 750 parts per million; and is rated suitable for domestic use, but marginal for irrigation (California DWR 2016).

Shallow, perched groundwater is present at a depth of 4 to 24 feet below ground surface at the Project site (Appendix 3.1.4-2). Such shallow groundwater is partially replenished during precipitation events, as the permeable golf course allows rainwater to percolate into the subsurface. However, as discussed above, minimal groundwater sources are present beneath the City of Escondido. The City does not participate in any groundwater withdrawal, storage, or replenishment programs (City of Escondido 2016a).

Flooding and Dam Inundation

Flood zones are areas that the Federal Emergency Management Agency (FEMA) has defined as a geographic space that has varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map or Flood Hazard Boundary Map. Each respective map annotates different zones that reflect the severity or type of flooding in the area. Although portions of the City are within a FEMA 100-year flood zone, the Project site is not located in a 100-year flood hazard zone (Appendix 3.1.4-1; City of Escondido 2012, Figure VI-7).

Dam inundation areas are downstream areas subject to flooding as a result of an uncontrolled release from an upstream reservoir, such as from breaks in levees or dams. The Project site is not located within the Lake Wohlford or Dixon Lake Dam Inundation Areas (City of Escondido 2012, Figure VI-8). No other lakes or large reservoirs are located in the vicinity of the Project site.

Inundation by Seiche, Tsunami, or Mudflow

The Project site is located approximately 13 miles inland from the Pacific Ocean, at a minimum elevation of 725 feet above mean sea level; therefore, the Project site would not be subject to inundation by tsunami. Given that the Project site is not located near a large standing body of water (the nearest is Lake Hodges, approximately 6 miles from the site), it is not subject to inundation by seiche (or standing wave).

The Project site is generally gently sloping, with elevations ranging across the site from 725 to 785 feet above mean sea level. It was originally developed as a golf course and is surrounded by residential development. San Marcos Creek is the primary topographic feature. The topography locally undulates where the golf fairways and greens were graded for relief; however, no steep slopes, which could be subject to failure, are present at on site.

3.1.4.1.2 Regulatory Setting

Federal

Federal Emergency Management Agency

FEMA is the primary federal agency for coordination with communities to establish effective floodplain management standards. FEMA prepares Federal Insurance Rate Maps, which delineate the areas of special flood hazards and applicable risk premium zones. The Project site is not located within a mapped flood hazard area.

Under FEMA, the National Flood Insurance Program aims to reduce the impact of flooding on private and public structures by providing affordable insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects on flooding on new and improved structures. Overall, the program reduces the socio-economic impact of disasters by promoting the purchase and retention of general risk insurance, but also of flood insurance specifically.

Clean Water Act

The Clean Water Act is the principal federal law for the regulation of water quality. The Clean Water Act includes water quality standards, discharge limitations, and required permits. The fundamental purpose of the Clean Water Act is the protection of designated beneficial uses of water resources. The 1987 amendments to the Clean Water Act includes provisions prohibiting discharges of pollutants contained in stormwater runoff and requires many cities to obtain a National Pollutant Discharge Elimination System (NPDES) permit to control urban and stormwater runoff.

Section 303(d) of the Clean Water Act 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.

State

California Environmental Quality Act

Primary environmental legislation in California is found in the California Environmental Quality Act (CEQA) and its implementing guidelines (CEQA Guidelines), which require that projects with potential adverse effects (or impacts) on the environment undergo environmental review. Adverse environmental impacts are typically mitigated as a result of the environmental review process in accordance with existing laws and regulations.

California Porter-Cologne Water Quality Control Act

This legislation establishes the responsibilities and authorities of the state's nine Regional Water Quality Control Boards (RWQCBs) and the State Water Resources Control Board (SWRCB). In California, all surface waters and groundwater are considered to be "waters of the state" under this Act. The nine RWQCBs are semi-autonomous and are comprised of seven part-time Board members, appointed by the Governor and confirmed by the Senate. Regional boundaries are based on watersheds, and water quality requirements are based on the unique differences in climate, topography, geology, and hydrology for each watershed. Each RWQCB makes critical water quality decisions for its region, including setting standards, issuing permits (i.e., waste discharge requirements), determining compliance with those requirements, and taking appropriate enforcement actions. The Project site is located with RWQCB Region 9, which includes San Diego, Imperial, and Riverside counties. The SWRCB protects water quality by setting statewide policy, coordinating and supporting the RWQCB efforts, and reviewing petitions that contest RWQCB actions.

Sustainable Groundwater Management Act of 2014

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package 2014 (Assembly Bill 1739, Senate Bill 1168, and Senate Bill 1319) known as the Sustainable Groundwater Management Act of 2014. The legislation provides a framework for sustainable management of groundwater supplies by local authorities in high- and medium-priority alluvial basins, as designated by the SWRCB. The groundwater sustainability agency, which can be a county, city, or water district, must be formed by June 30, 2017, and prepare a groundwater sustainability plan by January 31, 2022 (or January 31, 2020, for critically overdrafted basins). Each plan requires implementation measures to bring each basin into sustainability within 20

years of implementation of the plan. In San Diego County, four basins require plans, specifically the San Diego River Valley Basin, the San Pasqual Valley Basin, the San Luis Rey River Basin, and the Borrego Valley Basin (all medium-priority basins). Minimal groundwater sources are present beneath the City of Escondido. The City does not participate in any groundwater withdrawal, storage, or replenishment programs (City of Escondido 2016a).

Construction General Permit

Runoff at significant construction sites in the City of Escondido are subject to the SWRCB, Division of Water Quality, NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2010-0014-DWQ, NPDES No. CAS000002. This General Permit authorizes discharges of stormwater associated with construction activity so long as the dischargers comply with all requirements, provisions, limitations, and prohibitions in the permit. This General Permit authorizes discharges of pollutants in stormwater associated with construction activity to waters of the United States from construction sites that disturb one or more acres of land surface, or are part of a common plan of development or sale that disturbs more than one acre of land surface. The NPDES permit must require implementation of Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology to reduce or eliminate pollutants in stormwater runoff (SWRCB 2010).

Local

San Diego Basin Plan

The Basin Plan for the San Diego RWQCB, most recently amended in 2016, sets forth water quality objectives. Specifically, the Basin Plan is designed to (1) designate beneficial uses for surface and groundwater, (2) set the narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy, (3) describe mitigation measures to protect the beneficial uses of all waters within the region, and (4) describe surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan. The Basin Plan incorporates by reference all applicable SWRCB and RWQCB plans and policies (San Diego RWQCB 2016).

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

The County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO), effective February 26, 2016, contains discharge prohibitions and requirements that vary depending on type of land use activity proposed and location within the County. The intent of the WPO is to protect water resources and improve water quality through

the uses of management practices aimed at reducing polluted runoff. The requirements of the WPO are specifically intended to implement a Jurisdictional Runoff Management Program in accordance with California RWQCB amended Order No. R9-2013-0001, NPDES No. CAS0109266 (San Diego County Department of Public Works 2017).

The WPO is generally only implemented in unincorporated areas of the County (San Diego County Department of Public Works 2017). However, because the WPO is intended to prevent surface water quality impacts to County stormwater conveyance systems, and Project runoff would flow downstream through such County conveyance systems, the WPO would be applicable to the Project. The Project meets the requirements of a WPO Priority Development Plan under WPO Section 67.8111, Additional Planning, Design and Post-Construction Requirements for Development Projects, Part (b) Additional Requirements for Priority Development Projects, due to the amount of proposed impervious surfaces relative to the amount of existing pervious surfaces.

Municipal Separate Storm Sewer Systems Permit

In an effort to protect and enhance local creeks, the City implements water quality improvement and runoff management in compliance with the RWQCB's Order No. R9-2013-0001 as amended (the Municipal Separate Storm Sewer Systems [MS4] Permit) (San Diego RWQCB 2015). The City enforces Chapter 22 of the Municipal Code in accordance with the MS4 permit and implementation of a Jurisdictional Runoff Management Program, and collaborates with other jurisdictions to implement and update Water Quality Improvement Plans on a watershed basis.

Chapter 22 of the City of Escondido Municipal Code

Chapter 22 of the Municipal Code establishes regulations related to stormwater management and discharge control, harmful waters and wastes, sewer service charges, private sewage disposal systems, sewer connection fees, sewer-connection laterals, and industrial wastewater. The purpose of the City's stormwater management and discharge control regulations (Article 2) is to ensure the health, safety, and general welfare of the citizens of the City by controlling non-stormwater discharges to the stormwater conveyance system; by eliminating discharges to the stormwater conveyance system from spills, dumping, or disposal of solid or liquid waste other than stormwater; and by preventing, eliminating, or reducing pollutants in urban stormwater discharges to the maximum extent practicable (City of Escondido 2016b).

The City has also adopted technical documents, such as the Escondido Storm Water Design Manual, to support the MS4 Permit requirements. The Storm Water Design Manual, effective February 16, 2016, provides direction on the water quality protection procedures the City expects

its businesses and municipal staff to follow. The City worked with the other municipal agencies in the San Diego region to update the Storm Water Design Manual for new development and redevelopment (City of Escondido 2016c).

Jurisdictional Runoff Management Program

The City has been implementing and updating the Jurisdictional Runoff Management Program since municipal stormwater requirements began in the early 2000s. The Jurisdictional Runoff Management Program, most recently updated in January 2017 and submitted to the RWQCB, is an update to previous plans incorporating new requirements of the MS4 Permit. The City's Environmental Programs Division works with a number of San Diego-region municipalities to manage programs that detect and eliminate non-stormwater discharges and reduce sources of pollutants in stormwater runoff. Programs include Construction Site Operations, Development Planning, Industrial and Commercial Facilities, Municipal (infrastructure and facility inspection and maintenance), Residential (areas), and Education (public participation) (City of Escondido 2017a). The Jurisdictional Runoff Management Program includes an Enforcement Response Plan, which describes the City's approach to compliance with its requirements, from education to higher-level enforcement measures (City of Escondido 2015).

Water Quality Improvement Plans

Water Quality Improvement Plans were developed for each of the City's urbanized watersheds through coordination with other hydrologically connected cities and a public consultation panel, including stakeholders from the business, environmental, and regulatory communities. Water Quality Improvement Plans describe activities and projects that will be implemented to improve water quality, based on the highest priority water quality conditions for each watershed and associated goals to address those conditions. The City is party to the Water Quality Improvement Plans developed for the Carlsbad Watershed Management Areas, and specifically the Carlsbad Water Quality Improvement Plan applies to the Project site (MOE 2016; City of Escondido 2017b).

City of Escondido General Plan

The following policies and goals from the *City of Escondido General Plan* (General Plan; City of Escondido 2012) are applicable to the Project.

Mobility and Infrastructure Element

3. Pedestrian Network

> **Pedestrian Network Policy 3.10:** Design and construct pedestrian-friendly streetscape improvements that reduce stormwater and pollutant runoff into the

drainage system, using techniques such as urban bio-swales for the filtering of pollutants and permeable hardscapes.

14. Storm Drainage

Goal 4: Provision of adequate and sustainable infrastructure that is environmentally sensitive to serve residents, businesses, and property.

Storm Drainage Policy 14.5: Require new development to prepare drainage studies and improvement plans that demonstrate no net increase in stormwater runoff and compliance with adopted stormwater plans.

Storm Drainage Policy 14.6: Require new development to minimize alterations to natural landforms and the amount of impervious surfaces to minimize erosion, while encouraging implementation of low impact development measures and the maximum use of natural drainage ways, consistent with sound engineering and best management practices.

Resource Conservation Element

4. Agricultural Resources

Agricultural Resources Policy 4.6: Permit the development of community gardens on vacant properties in commercial and industrial areas and multi-family neighborhoods, provided that they are managed and operated to prevent adverse impacts on adjoining uses. [See also Water Resources and Quality Policy 6.13.]

6. Water Resources and Quality

Goal 6: Preservation and protection of the City's surface water and groundwater quality and resources.

Water Resources and Quality Policy 6.1: Integrate water management programs that emphasize multiple benefits and balance the needs of urban, rural, and agricultural users.

Water Resources and Quality Policy 6.2: Protect the surface water resources in the City including Lake Wohlford, Dixon Lake, Lake Hodges, Escondido Creek, and other waterways.

Water Resources and Quality Policy 6.3: Protect the sustainability of groundwater resources.

Water Resources and Quality Policy 6.4: Require new development to preserve areas that provide opportunities for groundwater recharge (i.e., areas where substantial surface water infiltrates into the groundwater), stormwater management, and water quality benefits.

Water Resources and Quality Policy 6.5: Maintain natural and improved drainages as permanent open space.

Water Resources and Quality Policy 6.6: Control encroachments into wetlands and designated floodways to protect the community's water resources.

Water Resources and Quality Policy 6.8: Maintain Escondido's natural creek system in an undisturbed state with a minimum of a 50-foot buffer and setback for development, or as established by appropriate wildlife agencies, unless stream course alteration, channelization, and/or improvements are approved by necessary state and federal agencies and the City.

Water Resources and Quality Policy 6.9: Conserve and restore creeks to their natural states whenever possible, and allow areas where channelization has occurred for flood control purposes to serve as urban open space.

Water Resources and Quality Policy 6.10: Require that drainage channels be designed to accommodate riparian vegetation growth.

Water Resources and Quality Policy 6.11: Allow public access to the creeks in such a manner that will not impact habitat areas, consistent with sound resource management practices.

Water Resources and Quality Policy 6.12: Regulate construction and operational activities through the use of stormwater protection measures in accordance with the City's National Pollutant Discharge Elimination System (NPDES) permit.

Water Resources and Quality Policy 6.13: Regulate discharge from industrial users and use of agricultural chemicals (pesticides, herbicides, fertilizers, etc.) in accordance with local and state regulations to protect the City's natural water bodies. [See also Agricultural Resources Policy 4.6.]

Water Resources and Quality Policy 6.14: Protect new development to protect the quality of water resources and natural drainage systems through site design and use of source controls, stormwater treatment, runoff deduction measures, best management practices, and Low Impact Development measures.

Water Resources and Quality Policy 6.15: Protect Escondido's shallow groundwater basin from contamination by regulating stormwater collection and conveyance to ensure pollutants in runoff have been reduced to the maximum extent practicable.

Water Resources and Quality Policy 6.16: Monitor underground storage tanks containing hazardous materials and septic tank systems on a regular basis in accordance with all federal, state, and local regulations (City of Escondido 2012).

3.1.4.2 Analysis of Project Effects and Determination as to Significance

3.1.4.2.1 Guidelines for the Determination of Significance

For purposes of this EIR, Appendix G of the CEQA Guidelines will apply to the direct, indirect, and cumulative impact analyses. The City of Escondido generally uses Appendix G of the CEQA Guidelines when completing EIRs. However, because drainage from the Project site would flow off site to downstream San Diego County flood control facilities, County regulations have been included in the impact analyses, as applicable. A significant impact to hydrology and/or water quality would result if the Project would:

A. Violate any water quality standards or waste discharge requirements.

B. 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).

C. 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.

D. 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.

E. 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.

F. Otherwise substantially degrade water quality.

G. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.

H. Place within a 100-year flood hazard area structures which would impede or redirect flood flows.

I. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

J. Inundation by seiche, tsunami, or mudflow.

3.1.4.2.2 Analysis

A. Would the Project violate any water quality standards or waste discharge requirements?

F. Would the Project otherwise substantially degrade water quality?

The following discussion of water quality impacts is organized into two subsections: (1) short-term construction activities and (2) long-term post-construction use.

Short-Term Construction Activities

San Marcos Creek was included on the 2012 Clean Water Act, Section 303(d) List of Water Quality Limited Segments, due to the presence of DDE, phosphorus, sediment toxicity, and selenium. Proposed demolition, grading, excavation, and construction activities associated with the Project could create a substantial additional source of polluted runoff, which could have short-term impacts on surface water quality. Chapter 5 of the *Villages Specific Plan* provides a development program, which details Project phasing. Issuance of building permits for the housing units would be generally phased along with the necessary public improvements. The key aspect of the Specific Plan phasing plan is the provision of water, sewer, and road improvements to support the land uses. Required improvements would include water and wastewater pipelines, public and private roadways, drainage improvements, public trails, public park facilities, and a clubhouse facility. The majority of these facilities would be included in Phase I of the development for each respective residential village. The planned park facilities would be constructed in phases concurrent with the issuance of building permits.

Demolition of the existing clubhouse building and associated structures would occur initially. Following demolition, preparation of the Project site (i.e., grading, soil import, trenching for dry and wet utilities, and surface improvements) for vertical building construction would commence. It is assumed that site-preparation activities would occur in four phases. These activities would include demolition, clearing and grading, excavation, stockpiling of soils and materials, and

other typical construction activities. Pollutants associated with construction would degrade water quality if those pollutants are washed into surface waters. Sediment is often the most common pollutant associated with construction sites because of the associated earth-moving activities and areas of exposed soil. Hydrocarbons such as fuels, asphalt materials, oils, and hazardous materials such as paints and concrete discharged from construction sites could also result in impacts downstream. Debris and trash could be washed into existing storm drainage channels to downstream surface waters. These activities could impact aquatic habitat, upland wildlife, and aesthetic land values.

Under the NPDES permit program, BMPs are mandated for construction sites greater than 1 acre, through preparation of Stormwater Pollution Prevention Plans (SWPPP) in order to reduce the occurrence of pollutants in surface water. SWPPPs are submitted to the RWQCB prior to ground-disturbing activities and set forth the measures that will be employed during construction to avoid runoff into surface waters. Project temporary construction BMPs would typically include the following: street sweeping, waste disposal, vehicle and equipment maintenance, concrete washout area, materials storage, minimization of hazardous materials, and proper handling and storage of hazardous materials. Typical erosion and sediment control BMPs include silt fences, fiber rolls, gravel bags, temporary desilting basins, velocity check dams, temporary ditches or swales, stormwater inlet protection, and soil stabilization measures. Implementation of these state-mandated measures would ensure that short-term impacts from construction-related activities would not violate any water quality standards or waste discharge requirements and not further contribute to water quality impacts identified in the Clean Water Act Section 303(d) List of Water Quality Limited Segments. With implementation of a SWPPP and compliance with water quality requirements, construction runoff from the site that will adversely affect surface waters and water quality will be avoided such that impacts would be **less than significant**.

Long-Term Post-Construction Use

The Project would include removal of existing concrete drainage channels that currently convey runoff through the Project site, as well as the construction of channels that would provide biofiltration for the stormwater runoff from the Project, the existing surrounding development, and all of the existing tributary drainage flowing through the Project site into San Marcos Creek. Stormwater would be collected in treatment basins where it would flow through a biofiltration treatment system to remove pollutants. These components, which more closely resemble natural drainage conditions than the existing concrete-lined channels, are shown on Figure 3.1.4-1, Proposed Site Drainage. Based on Table 3-1, Land Use Acres, of the Project Specific Plan, the greenbelts and environmental channels/basins would comprise 48 acres of the 109-acre development. The proposed professionally managed community farm would be 1.1 acres in size. Therefore, approximately 44% of the Project would consist of pervious ground that would allow filtration of pollutants from surface waters.

Although much of the precipitation that falls on the community farm would soak into the permeable soils, a portion of the precipitation would run off the farm, potentially resulting in adverse downstream water quality impacts related to potential use of pesticides and herbicides. However, as previously discussed, stormwater would be collected in treatment basins where it would flow through a biofiltration treatment system to remove pollutants. In addition, the Project includes the following project design features (PDFs) to reduce water quality impacts:

PDF-HY-1 Low Impact Development (LID) strategies have been incorporated into the Project design, including:

- Minimize impervious areas.
- Avoid compaction in planned landscape spaces.
- Till and amend soil for improved infiltration capacity.
- Drain rooftops, roads, or sidewalks into adjacent landscape areas.
- Drain impervious surfaces through pervious areas.
- Replace pervious drainage ditches with open, vegetated swales.
- Collect runoff.
- Landscape with native or drought-tolerant species.
- Manage stormwater within proposed biofiltration BMPs.

The Project site drains to San Marcos Creek, which is is an impaired water body, listed on the Clean Water Act Section 303(d) List. Beneficial uses of San Marcos Creek have not been specifically established by the San Diego RWQCB. Existing recreation uses, as much as they do exist, would be walking or hiking along San Marcos Creek, and/or observing birds and other wildlife attracted to the riparian habitats. This would not change with the Project, as vegetated channels would be created as part of the Project.

As discussed in Section 3.1.4.1.2, Regulatory Setting, the San Diego County WPO is generally only implemented in unincorporated areas of the County (San Diego County DPW 2017). However, because the WPO is intended to prevent surface water quality impacts to County stormwater conveyance systems, and Project runoff would flow downstream through such County conveyance systems, the WPO would be applicable to the Project.

In compliance with the San Diego County WPO, a Priority Development Project SWQMP has been developed for the Project to identify a preliminary list of BMPs, which would be implemented as PDFs, to minimize disturbance, protect slopes, reduce erosion, and limit or prevent various pollutants from entering surface water runoff (Appendix 3.1.4-2). The Project

meets the requirements of a WPO Priority Development Plan due to the amount of proposed impervious surfaces relative to the amount of existing pervious surfaces (San Diego County Department of Public Works 2017).

All of the Project's proposed biofiltration BMPs would be designed for water quality requirements, per City specifications and the Project Drainage Study (see Appendix 3.1.4-1). Stormwater runoff analyses and ensuing design are tied to San Marcos Creek. In addition, BMP requirements would be fulfilled through components of the Project design. Hydromodification BMPs must be sized and designed such that post-Project runoff conditions, including flow rates and durations, will not exceed pre-development runoff conditions by more than 10%, for the range of flows that result in increased potential for erosion or degraded instream habitat downstream of the Project. As indicated in the Project-specific drainage study (Appendix 3.1.4-1), this requirement would be met. The proposed biofiltration detention basins and channels would minimize off-site discharge of surface water pollutants while simultaneously preventing downstream flooding-related impacts.

The Project includes the following PDFs, which are included in the SWQMP (Appendix 3.1.4-2):

PDF-HY-2 The Project design includes 10 proposed biofiltration BMPs, which would discharge runoff into proposed vegetated channels that ultimately would convey stormwater off site. All of the proposed biofiltration BMPs would be designed for water quality and hydromodification management plan requirements, per County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO) specifications. Eight of the 10 BMPs would be designed to provide 100-year detention in order to route post-Project peak discharges back to pre-Project conditions for the Project site as a whole.

PDF-HY-3 The Project includes an area that, due to site constraints, cannot be conveyed into one of the 10 biofiltration BMPs; therefore, this area will include modular wetlands systems to treat stormwater.

PDF-HY-4 Anticipated frontage and off-site street improvements will be addressed using green street elements outlined in the City of Escondido BMP Design Manual. Green Street components will be addressed during final engineering.

These drainage components are shown on Figure 3.1.4-1. Post-Project stormwater runoff would be managed per the City's Storm Water Design Manual, dated February 2016 (City of Escondido 2016c).

Based on the Project design and applicable requirements, and in particular with the inclusion of the proposed biofiltration detention basins, vegetated channels, and other LID strategies, long-term

water quality impacts associated with the Project would be minimal. Implementation of **PDF-HY-1** through **PDF-HY-4**, completion of the existing Project-specific drainage study (Appendix 3.1.4-1), and implementation of the existing Priority Development Project SWQMP (Appendix 3.1.4-2) ensure that the Project would comply with regulatory ordinances and with the standards set forth in the County Stormwater Standards manual. In addition, implementation of these PDFs would prevent the Project from violating any water quality standards, violating any waste discharge requirements, or otherwise substantially degrading water quality, such that long-term impacts related to water quality from Project-related pollution would be **less than significant**.

B. 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?

Shallow, perched groundwater is present at a depth of 4 to 24 feet below ground surface at the Project site. However, minimal groundwater sources are present beneath the City of Escondido. The City does not participate in any groundwater withdrawal, storage, or replenishment programs. Groundwater beneath the site would not be used for Project-related water demands. As discussed in Section 3.1.9, Utilities and Service Systems, of this EIR, two water purveyors serve the Project site. The western portion of the site is located within the City of Escondido Water Service Area, or Escondido Exchange Area, and the eastern portion is located within the Rincon del Diablo Municipal Water District (see Appendix 3.1.9-1, Water Report). These agencies are members of the San Diego County Water Authority, the region's wholesale water provider, which in turn is a member of the Metropolitan Water District of Southern California. These agencies do not use groundwater beneath the site as part of their water sources.

The Project would include conversion of a former golf course into three residential neighborhoods, with greenbelts meandering throughout the developments. Residential development would increase the amount of impervious surfaces as compared to existing conditions and would prevent infiltration of surface water and associated recharge of the shallow aquifer beneath the Project site. Although groundwater beneath the site is not used by regional water agencies as a water source, maintaining existing groundwater resources is important because private wells likely use this aquifer, and riparian habitat relies on shallow groundwater for survival.

Based on Table 3-1, Land Use Acres, of the Project Specific Plan, the greenbelts and environmental channels/basins would comprise 48 acres of the 109-acre development. The proposed professionally managed community farm would be 1.1 acres in size. Therefore, approximately 44% of the Project would consist of pervious ground that would allow infiltration of surface water for recharge of the shallow groundwater aquifer. Residential lawns and gardens would provide additional sources of groundwater recharge. In addition, the 10 proposed vegetated detention basins and associated channels would substantially diminish runoff volume

and velocity, allowing surface waters to infiltrate into the subsurface. The result would be minimal impacts to existing groundwater levels. Therefore, the Project would not 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. Impacts would be **less than significant**.

C. 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?

D. 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?

E. 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?

Project drainage would be changed from a series of drainages ditches to a combination of storm drains, open channels, vegetated detention basins, and vegetated channels. All drainage components have been designed using the peak discharge of the 50-year and 100-year storm event. Storm drain pipes and open channels would be included in the design to convey runoff to proposed detention basins. To ensure that adjacent properties would not be negatively impacted by the Project, U.S. Army Corps of Engineers Hydrologic Engineering Center – River Analysis System (HEC-RAS) models were run for anticipated water surface elevations and velocities for supercritical, subcritical, and mix flow regimes in the open channels. These channels have been designed to maintain 1 foot of freeboard at the 50-year and 100-year storm event, and to ensure that no existing or proposed structures are negatively impacted by the creeks if more vegetation is established than anticipated (Appendix 3.1.4-1).

Hydrologic calculations were computed in accordance with the *City of Escondido Design Standards and Standard Drawings* dated April 2014. The Advanced Engineering Software 2012 Rational Method Analysis (Version 19.0) program was used to perform the hydrologic analysis in this study (Appendix 3.1.4-1).

Similarly, 100-year storm flow detention volumes were calculated to reduce the Project peak discharge rate back to the pre-Project peak discharge rate. Eight of the 10 BMPs (except for BMPs 1D and 1E) would be designed to provide 100-year, 6-hour (peak flow) detention in order to route post-Project peak discharges back to pre-Project conditions at the four points of compliance

(Figure 3.1.4-1) (Appendices 3.1.4-1, 3.1.4-2). Therefore, the Project would not increase surface water elevations in the downstream portions of San Marcos Creek. Similarly, the Project would not result in increased velocities and peak flow rates exiting the site that would cause flooding downstream or exceed the stormwater drainage capacity. Flows exiting the property to San Marcos Creek would be equal to existing conditions with installation of detention basins.

Incorporation of Project-related surface drains, greenbelts, vegetated swales, and vegetated stormwater detention basins, as detailed in **PDF-HY-1** through **PDF-HY-4**, would prevent excessive, concentrated surface flows on site, which in turn could result in erosion induced siltation of downstream water bodies. In addition, these Project features would prevent increased downstream flow volumes, runoff rates, and surface water pollution. As a result, the Project would not (1) result in substantial erosion or siltation on or off site, (2) result in flooding on or off site, or (3) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Therefore, impacts would be **less than significant**.

G. Would the Project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

H. Would the Project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

The Project site is not located within a 100-year flood hazard area. The Project would not involve placement of housing, habitable structures, or unanchored impediments to flow in a 100-year floodplain area or 100-year flood hazard area or other special flood hazard area. Therefore, **no impacts** would occur with respect to flood hazard areas.

I. Would the Project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

The Project site is not located in either the Lake Wohlford Dam Inundation Area or the Dixon Lake Dam Inundation Area. Because those are the only two lakes in proximity to the Project site, the Project would not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam, and **no impacts** would occur.

J. Would the Project result in inundation by seiche, tsunami, or mudflow?

The Project site is located approximately 13 miles inland from the Pacific Ocean and would not be subject to inundation by tsunami. Given that the Project site is not located near a large

standing body of water (the nearest is Lake Hodges, approximately 6 miles from the site), inundation by seiche (or standing wave) is considered negligible. Therefore, **no impacts** would occur with respect to potential inundation by seiche or tsunami.

The Project site is generally gently sloping, with elevations ranging across the site from 725 to 785 feet above mean sea level. No steep slopes would be created that would be susceptible to mudflows. Proposed channel and detention basin slopes would be constructed at maximum gradients of 2:1 (horizontal to vertical) for fill slopes and 1.5:1 for cut slopes. All manufactured slopes would be landscaped for erosion control. Therefore, impacts associated with mudflow would be **less than significant**.

3.1.4.3 Cumulative Impact Analysis

The cumulative study area for hydrology and water quality would be the boundaries of the San Marcos Creek watershed. The Project would replace portions of an existing golf course with residences. As a result, the Project would increase the amount of impermeable surfaces, which in turn would reduce the ability of the ground surface to absorb potential high intensity surface runoff and surface water pollutants. This increase in impermeable surfaces would be incrementally greater than under existing conditions and could contribute to downstream impacts to San Marcos Creek. However, the Project would retain 44% permeable surfaces, consisting of greenbelt parkways, a community farm, vegetated swales, and vegetated stormwater detention basins. The proposed drainage system, in combination with LID features and BMPs incorporated in **PDF-HY-1** through **PDF-HY-4**, would reduce downstream runoff volumes and flow rates to levels less than or equal to existing conditions. In addition, these vegetated drainage features would filter out erosion-induced siltation and urban-related pollutants. As a result, these Project-related features would reduce flooding and surface water quality impacts such that the Project's contribution to cumulative environmental impacts would be **less than significant**.

Only one past, present, or reasonably foreseeable cumulative project is located within the San Marcos Creek watershed. Champine Manor, located on Tobacco Road (Table 1-3 and Figure 1-10, Cumulative Projects), could contribute to cumulative flooding and water quality impacts. However, this project would similarly be subject to regulations, policies, and plans established by the City of Escondido, San Diego County, and the RWQCB. Regulations and plans that cumulative projects would comply with include NPDES permitting and associated SWPPPs and BMPs; *Water Quality Objectives for Inland Surface Waters*, established in the RWQCB San Diego Basin Plan; the County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO); Chapter 22 of the Escondido Municipal Code, regarding stormwater discharges; and applicable General Plan goals and policies (see Section 3.1.4.1.2). In addition, this cumulative project would be subject to limitations established in FEMA-derived Flood Insurance

Rate Maps. Therefore, the Project, in combination with one identified cumulative project in the San Marcos Creek watershed, would result in **less than significant** cumulative hydrology, water quality, and stormwater/flooding impacts.

3.1.4.4 Conclusion

Based on the above analysis, impacts related to hydrology, water quality, and stormwater/ flooding would be less than significant, and no mitigation is required.

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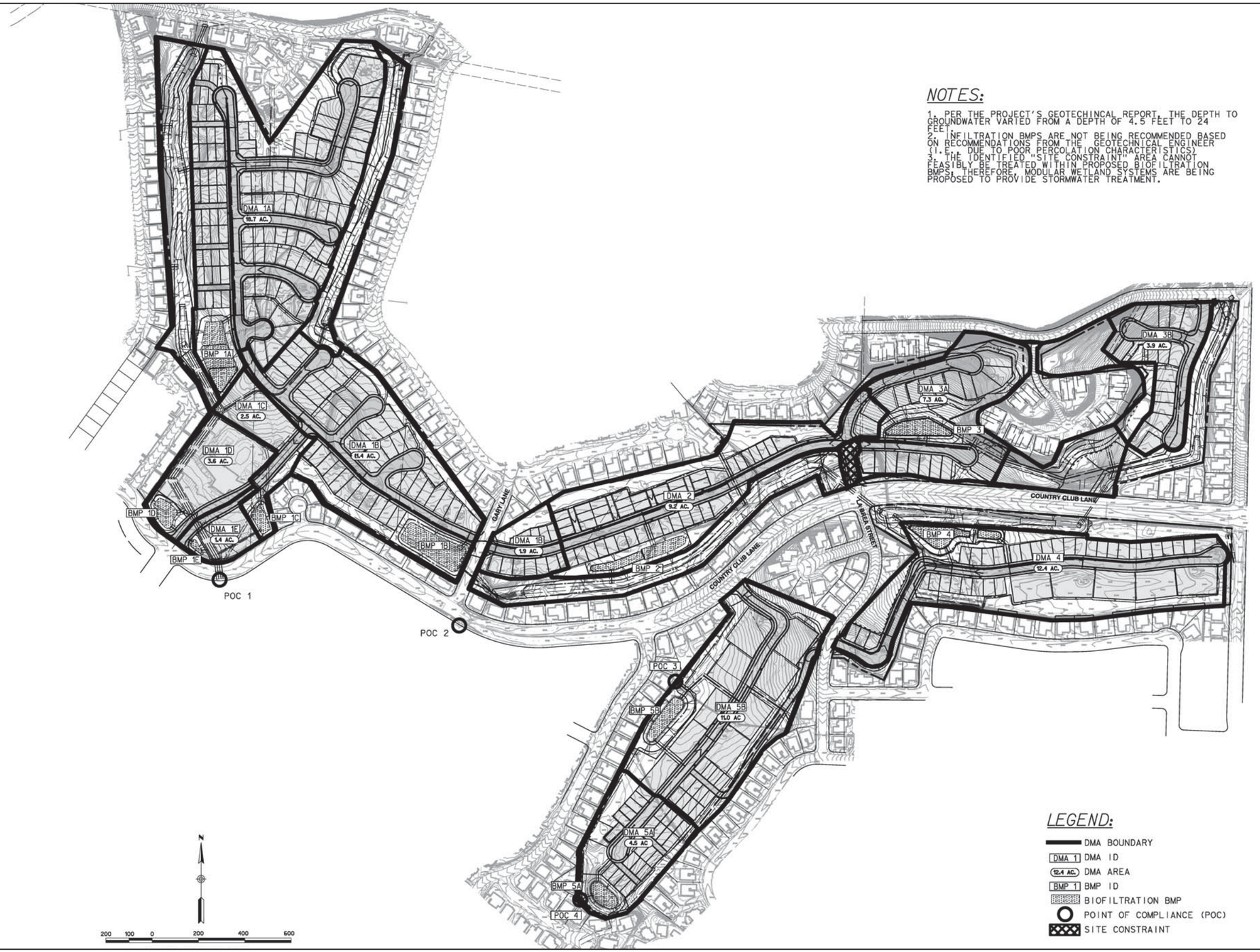

SOURCE: Rick Engineering Company (2017)

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FIGURE 3.1.4-1
Proposed Site Drainage

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