

## 3.8 - Hydrology and Water Quality

### 3.8.1 - Introduction

This section describes the existing hydrology and water quality setting and potential effects from Project implementation on the Project Site and its surrounding area. Descriptions and analysis in this section are based on, among other things, the letter report prepared by Balance Hydrologics (Appendix G.1); Preliminary Stormwater Management Plan prepared by Carlson, Barbee & Gibson (CBG) (Appendix G.2); Preliminary Geotechnical Report (2015) and Geotechnical Exploration (2009), both prepared by ENGEO (Appendices E.1 and E.2); the 2015 and 2009 Phase I Environmental Site Assessments (ESAs) prepared by ENGEO (Appendices F.1 and F.2); and information provided by the Western Regional Climate Center, California Department of Water Resources, and Contra Costa County General Plan and Ordinance Code as well as the Project Applicant’s tentative subdivision map application materials.

### 3.8.2 - Environmental Setting

#### Climate and Meteorology

Contra Costa County is characterized by a Mediterranean climate, with mild winters and warm summers. Temperatures range from an average low of 36.7 degrees Fahrenheit (°F) in January to an average high of 89.0°F in July. Average rainfall is 14.18 inches. Table 3.8-1 summarizes local meteorology, as measured in Livermore, California (approximately 8.5 miles south of the Project Site) (Western Regional Climate Center 2015).

**Table 3.8-1: Dublin Meteorological Summary**

Month	Average Temperature (°F)		Precipitation (Inches)
	Low	High	
January	36.7	56.8	2.97
February	39.4	61.2	2.47
March	41.3	65.2	2.15
April	43.6	70.5	1.00
May	47.6	76.4	0.44
June	51.7	83.1	0.11
July	54.2	89.0	0.02
August	54.0	88.2	0.04
September	52.5	86.0	0.22
October	47.7	77.7	0.67
November	41.1	66.3	1.54
December	37.0	57.5	2.56
<b>Annual Average</b>	<b>45.6</b>	<b>73.2</b>	<b>14.18</b>
Note: Measurements taken at the Livermore Municipal Airport between January 1, 1903 and December 31, 2014. Source: Western Regional Climate Center, 2015.			

## Watershed

The Project Site is located within the Tassajara Creek watershed, which drains the Tassajara Valley area of Contra Costa County. Tassajara Creek runs in a general north to south alignment east of the Project Site. A small segment of Tassajara Creek is located within the far northeastern corner of the Northern Site. Near the Project Site, Tassajara Creek is located within a natural watercourse. South of Interstate 580 (I-580), it is located in an earthen-lined channel and flows south to Arroyo Mocho in Pleasanton. Arroyo Mocho, an earthen-lined flood channel, empties into South San Ramon Creek near I-680, which continues south to Arroyo De La Laguna. This drainage reverts to a natural watercourse and is tributary to Alameda Creek in Sunol, which ultimately outlets to San Francisco Bay in Fremont.

## Storm Drainage

The Contra Costa County Flood Control and Water Conservation District guides regional drainage plans throughout incorporated and unincorporated County areas. In the Project vicinity, urban areas to the west include drainage facilities consisting of inlets and underground piping that convey runoff to existing storm drains in Camino Tassajara.

There are no existing storm drain facilities on-site. Runoff that occurs on the Project Site either ponds on-site or sheet flows to existing natural drainages, ultimately flowing to Tassajara Creek. As indicated by the report prepared by Balance Hydrologics dated February 4, 2016, the Northern Site, inclusive of the Residential Development Area and Non-Urban Development Area, consists of three drainage areas with ephemeral drainages flowing to the south, combining and turning to the east along the north side of Camino Tassajara in a natural depression (Balance Hydrologics 2015). Drainage from Camino Tassajara also discharges into the depression (CBG 2015).

## Groundwater

Agricultural and rural residential land uses to the east and south of the Project Site rely on groundwater for domestic and irrigation purposes. According to the 2009 Phase I ESA (Appendix F), groundwater in the vicinity of the Project Site was observed between approximately 11.7 and 31.4 feet below ground surface. The 2009 Phase I ESA also reported that there are at least five groundwater wells on the Project Site, with several of those wells located on the Southern Site, which appear to be used primarily for cattle troughs. The 2015 Geotechnical Exploration and Preliminary Geotechnical Report indicated that groundwater was not generally encountered within exploration points in the upland areas of the Northern Site. Groundwater within alluvium in the southern portion of the Northern Site was measured at approximately 5 feet below ground surface (ENGEO 2015). The 2009 Geotechnical Exploration and 2015 Preliminary Geotechnical Report also found that groundwater occurs within alluvium soils at the southern end of the Northern Site at depths of approximately 5 to 10 feet below ground surface. Groundwater was also encountered within alluvium soils along low-lying areas of the Southern Site at depths of approximately 12 to 25 feet below ground surface. Groundwater was not generally encountered within upland areas (ENGEO 2009).

The Project Site is not located in a delineated groundwater basin (California Department of Water Resources 2003). Groundwater of the San Francisco Hydrologic Region, in which the Project Site is

located, is generally described as relatively thin to moderately thick freshwater-bearing aquifers. Groundwater accounts for only about 5 percent (68,000 acre-feet) of the region's estimated average water supply for agricultural and urban uses (California Department of Water Resources 2003).

### **Flood Hazard Areas**

The majority of the Project Site is located outside the 100-year flood hazard area known as Zone X (Federal Emergency Management Agency 2009). Two small areas of the Project Site are located within the 100-year flood hazard area (Zone A). These areas are located in the far northeastern corner of the Northern Site adjacent to Tassajara Creek and far southeastern corner of the Southern Site, south of the existing vacant residence directly along Camino Tassajara. No portion of the Residential Development Area or Non-urban Development Area falls within the 100-year flood hazard area (Zone A).

### **3.8.3 - Regulatory Framework**

#### **Federal and State**

##### ***Clean Water Act and Porter-Cologne Water Quality Control Act***

Under the Clean Water Act of 1972 (CWA), the United States Environmental Protection Agency (EPA) is authorized to regulate the discharge of pollutants in the waters of the United States and to regulate water quality standards for surface waters. The EPA has delegated authority for implementing water quality regulations to the California State Water Resources Control Board (State Water Board), which has nine Regional Water Quality Control Boards. The State Water Board and Regional Water Quality Control Boards were established by the Porter-Cologne Water Quality Control Act. Contra Costa County is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (RWQCB), which is responsible for implementation of state and federal water quality protection statutes, regulations, and policies.

##### ***National Pollution Discharge Elimination System (NPDES)***

Point source discharges to surface waters are generally controlled through waste discharge requirements issued under the NPDES permits. Although the NPDES program was established by the CWA, the EPA has delegated management of California's NPDES permit program to the State Water Resources Control Board and the nine regional (RWQCB) offices. Issued in five-year terms, an NPDES permit usually contains components such as discharge prohibitions, effluent limitations, and necessary specifications and provisions to ensure proper treatment, storage, and disposal of the waste. The permit often contains a monitoring program that establishes monitoring stations at effluent outfall and receiving waters. The 1987 amendments to the CWA (Section 402[p]) provided for the EPA's regulation of non-point pollution sources from municipal, construction, and industrial activities.

##### ***Municipal***

In 1990, the RWQCB adopted the Phase 1 NPDES permits for urban runoff discharges from municipalities of over 100,000 people. In 2003, the RWQCB issued Phase 2 NPDES permits to cities with populations of 50,000 to 100,000. Contra Costa County's County Watershed Program (CWP) is responsible for ensuring the County complies with its municipal stormwater NPDES permits. The East County Municipal Regional Permit was adopted on September 23, 2010 and applies to the cities of

Antioch, Oakley, Brentwood, unincorporated Contra Costa County and the Contra Costa County Flood Control District.

#### *Construction*

In 1990, the EPA published regulations for construction sites that disturbed 5 acres or more of soil. In 1999, the EPA lowered the permitting threshold from 5 acres to one acre, or sites that are less than one acre but part of a larger common plan of development that in total disturbs one or more acres. These construction sites must obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 2009-0009-DWQ). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of a facility. The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Program (SWPPP). The SWPPP should contain a site map(s) that shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography (both before and after construction), and drainage patterns across the Project Site. The SWPPP must list best management practices (BMPs) that the discharger will use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program and a chemical monitoring program for “non-visible” pollutants to be implemented if there is a failure of BMPs.

#### **California Water Code Section 10910 (b)**

According to California Water Code Section 10910(b), any city or county that determines a new development project is subject to the California Environmental Quality Act (CEQA) must prepare a water supply assessment (WSA) if the development qualifies as a “project” pursuant to Water Code Section 10912. A WSA applies to certain projects including planned non-residential buildings of at least 1,500,000 square feet, and projects with more than 1,000 residential units. If there is a “public water system” for the project, the water supplier shall prepare the water supply assessment. A public water system is defined as a system that has 3,000 or more service connections and provides piped water to the public for public consumption. A public water system does not currently serve the project site. Given the size of the Project, it does not constitute a “project” for purposes of triggering a WSA. Nevertheless, to ensure a thorough review of hydrology, water quality, and water supply issues, a water supply evaluation (WSE) has been prepared for the purposes of this R-DEIR. Refer to Section 3.13, Utilities and Utility Service Systems for a full discussion regarding water supply.

### **Local**

#### **Contra Costa County**

##### *General Plan*

The Contra Costa County General Plan establishes the following goals and policies associated with hydrology and water quality that are relevant to the Project:

##### **Water Resource Goals**

- **Goal 8-T:** To conserve, enhance, and manage water resources, protect their quality, and assure an adequate long-term supply of water for domestic, fishing, industrial and agricultural use.

- **Goal 8-U:** To maintain the ecology and hydrology of creeks and streams and provide an amenity to the public, while at the same time preventing flooding, erosion and danger to life and property.
- **Goal 8-W:** To employ alternative drainage system improvements which rely on increased retention capacity to lessen or eliminate the need for structural modifications to watercourses, whenever economically possible.
- **Goal 8-X:** To enhance opportunities for public accessibility and recreational use of creeks, streams, drainage channels and other drainage system improvements.
- **Policy 8-74:** Preserve watersheds and groundwater recharge areas by avoiding the placement of potential pollution sources in areas with high percolation rates.
- **Policy 8-77:** Ensure that land uses in rural areas be consistent with the availability of groundwater resources.
- **Policy 8-77:** Provide development standards in recharge areas to maintain and protect the quality of groundwater supplies.
- **Policy 8-85:** Natural watercourses shall be integrated into new development in such a way that they are accessible and provide a positive visual element.
- **Policy 8-86:** On-site water control shall be required of major new developments so that no increase in peak flows occurs relative to the site's pre-development condition, unless Planning Agency determines that off-site measures can be employed which are equally effective in preventing adverse downstream impacts.
- **Policy 8-89:** Setback areas shall be provided along natural creeks and streams in areas planned for urbanization. The setback areas shall be of a width adequate to allow maintenance and to prevent damage to adjacent structures, the natural channel and associated riparian vegetation. The setback area shall be a minimum of 100 feet; 50 feet on each side of the centerline of the creek.
- **Policy 8-91:** Grading, filling and construction activity near watercourses shall be conducted in such a manner as to minimize impacts from increased runoff, erosion, sedimentation, biochemical degradation, or thermal pollution.
- **Implementation Measure 8-cu:** Review all public and private projects adjacent to and within creeks and streams to determine their conformance with the policies of this General Plan.
- **Implementation Measure 8-cy:** Through the environmental review process, the likely effects of construction and other proposed activities on nearby natural watercourses and related open space shall be determined. Measures shall be identified that will mitigate these effects and encourage the preservation of natural waterways and related open space. Such measures may include, but are not limited to:
  - Clustering of buildings and other site design features;
  - Restoration or enhancement; or
  - Purchase of development rights for lands within other stream setback areas.

*Contra Costa County Flood Control and Water Conservation District (FCWCD)*

The FCWCD coordinates drainage master planning, financing and implementation; provides flood risk reduction planning; reviews land development plans, calculations, and studies; provides hydrology information and service; oversees the Contra Costa Clean Water Program staff; and oversees the County Watershed Program within the unincorporated county areas.

### *Contra Costa County Clean Water Program*

The Contra Costa County Clean Water Program consists of Contra Costa County, nineteen of its incorporated cities and the Contra Costa County FCWCD. The Clean Water Program reduces stormwater pollution through public education, inspection, and enforcement activities. The Clean Water Program is responsible for ensuring that the County complies with its municipal stormwater NPDES permits.

### *Contra Costa County Ordinance Code*

Section 414-4.201 requires that any development needing water for domestic purposes shall demonstrate an approved water supply and obtain approval from the applicable health officer for such development. Section 76-6.004 requires the provision of suitable drainage facilities. Section 76-6.012 requires the submittal of a drainage plan. Section 914-2.002 requires that all portions of a subdivision shall be protected from flood hazards and storm drainage facilities within the subdivision shall be designed and constructed in compliance with current specifications and design standards of the Public Works Department.

Division 1014 of the Ordinance Code, Stormwater Management and Discharge Control, carries out the conditions in the County's NPDES permit issued by the San Francisco Bay Regional Water Quality Control Board that require implementation of appropriate source control and site design measures and stormwater treatment measures for projects that create or replace one acre or more of impervious surface.

## **3.8.4 - Methodology**

FirstCarbon Solutions evaluated hydrology and water quality impacts through review of, among other materials, the Contra Costa County General Plan; Project utility plans; Federal Emergency Management Agency Flood Insurance Rate Maps; the letter report prepared by Balance Hydrologics (Appendix G.2); the Preliminary Stormwater Management Plan prepared by Carlson, Barbee & Gibson (CBG) (Appendix G.1); and the Preliminary Geotechnical Report and Geotechnical Exploration prepared by ENGEO in 2009 and 2015, respectively (Appendices E.1 and E.2).

## **3.8.5 - Thresholds of Significance**

According to Appendix G, Environmental Checklist, of the CEQA Guidelines, hydrology and water quality impacts resulting from the implementation of the Project would be considered significant 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 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? (Refer to Section 7, Effects Found not to be Significant.)
- 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? (Refer to Section 7, Effects Found not to be Significant.)
- j) Inundation by seiche, tsunami, or mudflow? (Refer to Section 7, Effects Found not to be Significant.)

### 3.8.6 - Project Impacts and Mitigation Measures

This section discusses potential environmental impacts associated with the development and operation of the Project and provides feasible mitigation measures where appropriate. As described in Section 2 of this R-DEIR, a Memorandum of Understanding (MOU) is currently being considered to preserve certain land in the county for agriculture and open space, wetlands, or parks. The effect of the MOU would be to continue existing policy, and the MOU would not result in a substantial adverse change to existing conditions with respect to hydrology and water quality. The range of actions to be considered pursuant to the MOU were it to be adopted would include promoting agriculture through the purchase of land or easements from willing sellers, through continuing the Williamson Act program and its related tax benefits, as well as through technical support to better manage weeds and water. To the extent that any specific projects that could be considered for funding pursuant to the MOU—such as land conservation, weed management, or groundwater improvements—could have adverse environmental effects, such projects would be subject to separate project-level CEQA review as proposed actions are defined and funding for them is identified. As the precise location and scope of such projects is not known at this time, further consideration of potential impacts would be speculative.

#### Water Quality

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**Impact HYD-1: Construction and operation activities associated with the Project may have the potential to degrade surface water quality in downstream water bodies.**

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#### *Impact Analysis*

This impact assesses the potential for the Project to degrade surface water quality in downstream water bodies or otherwise substantially degrade water quality.

The Project would involve the development of 125 single-family homes, related stormwater and other infrastructure, a public trail, and two staging areas on the Northern Site. Construction on the Southern Site would be limited to the proposed creation of wetlands (which would involve approximately 1.18 acres, including minor grading) as required by Mitigation Measure (MM) BIO-3. Grading activities could result in erosion and sedimentation. The accumulation of sediment could result in the blockage of flows, potentially causing increased localized ponding or flooding.

Construction activities would require the use of gasoline and diesel-powered heavy equipment, such as bulldozers, backhoes, water pumps, and air compressors. Chemicals such as gasoline, diesel fuel, lubricating oil, hydraulic oil, lubricating grease, automatic transmission fluid, paints, solvents, glues, and other substances could be used during construction. An accidental release of any of these substances could degrade the quality of the surface water runoff and adversely affect receiving waters. The Project would be required to comply with all applicable laws and regulations governing water quality during construction. To further ensure all water quality impacts are less than significant, MM HYD-1 is proposed, requiring the implementation of stormwater quality control measures during construction activities to prevent pollutants from entering downstream waterways. With implementation of this mitigation, impacts would be less than significant.

Operational activities would involve vehicle use, landscape maintenance, and routine maintenance of structures. Leaks of fuel or lubricants, tire wear, brake dust, and fallout from exhaust contribute petroleum hydrocarbons, heavy metals, and sediment may result in the pollutant load in runoff being transported to receiving waters. Runoff from landscaped areas may contain residual pesticides and nutrients. Consequently, the long-term degradation of runoff water quality in downstream waterways could result from the implementation of the Project. However, the Project would be required to comply with Division 1014 of the Ordinance Code, Stormwater Management and Discharge Control, requiring implementation of appropriate source control and site design measures and stormwater treatment measures, consistent with the County's current NPDES permit and Clean Water Program Stormwater C.3 Guidebook. Compliance with the Stormwater Management and Discharge Ordinance would ensure the implementation of stormwater quality control measures during operational activities to prevent pollutants from entering downstream waterways. As such, operational impacts would be less than significant.

### ***Level of Significance Before Mitigation***

Potentially significant impact.

### ***Mitigation Measures***

**MM HYD-1** Prior to issuance of any grading permits for the Project, the Contra Costa County Department of Conservation and Development shall verify that the applicant has prepared a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the requirements of the statewide Construction General Permit. The SWPPP shall be designed to address the following objectives: (1) all pollutants and their sources, including sources of sediment associated with construction, construction site erosion, and all other activities associated with construction activity are controlled; (2) where not otherwise required to be under a Regional Water Quality Control Board permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated;



(3) site Best Management Practices (BMPs) are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity; and (4) stabilization BMPs installed to reduce or eliminate pollutants after construction are completed. The SWPPP shall be prepared by a qualified SWPPP developer. The SWPPP shall include the minimum BMPs required for the identified Risk Level. BMP implementation shall be consistent with the BMP requirements in the then most recent version of the California Stormwater Quality Association Stormwater Best Management Handbook-Construction or the Caltrans Stormwater Quality Handbook Construction Site BMPs Manual.

### ***Level of Significance After Mitigation***

Less than significant impact.

### **Groundwater**

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**Impact HYD-2:       The Project would not deplete groundwater supplies or interfere substantially with groundwater recharge.**

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### ***Impact Analysis***

There are no existing on-site groundwater recharge basins within the Project Site. According to the Phase I ESAs (Appendix F), groundwater in the vicinity of the Project Site was observed between approximately 11.7 and 31.4 feet below ground surface. The Geotechnical Exploration and Preliminary Geotechnical Report indicated that groundwater was not generally encountered within exploration points in the upland areas of the Northern Site. The deepest areas of soil grading would occur within the upland areas of the Northern Site and, therefore, would not be expected to impact groundwater. Groundwater within alluvium in the southern portion of the Northern Site was measured at approximately 5 feet below ground surface (ENGEO 2015). The Geotechnical Exploration also found that groundwater occurs within alluvium soils at the southern end of the Northern Site at depths of 5 to 10 feet below ground surface.

The Phase I ESA reported that there are at least five wells on the Project Site, several of which are located on the Southern Site, which appear to be used primarily for cattle troughs. No changes to these groundwater wells on the Southern Site are proposed as part of the Project. Wells on the Northern Site would not be utilized as part of the Project. Future abandonment of the wells on the Project Site would be required to occur in compliance with Contra Costa County Ordinance Code Section 414-4.809 requiring compliance with Part II, Section 23 of the State of California Department of Water Resources Bulletin Number 74 and Contra Costa Environmental Health Division requirements. . No new on-site groundwater wells would be drilled as part of the Project.

The majority of the 771-acre Project Site would remain undeveloped. Storm drainage from impervious surfaces proposed on the Residential Development Area and Non-urban Development Area of the Northern Site would be directed to an on-site detention basin where infiltration could occur. As such, the Project would not substantially interfere with groundwater recharge.

The Project would demand up to approximately 47 acre-feet of potable water annually; refer to Section 3.11, Public Services and Recreation for further discussion. The Residential Development Area of the

Project would be served by one of two water sources: Mokelumne River water purchased from the Calaveras Public Utility District, or East Bay Municipal Utility District water (as made available by accelerating currently planned conservation and/or expanding conservation beyond currently planned levels approved in the Water Supply Management Program 2040 (WSMP) within EBMUD’s service area by an amount that offsets the Proposed Project’s water demand). Both sources of water originate primarily from surface water, and, therefore, the Project would not deplete groundwater supplies. Impacts would be less than significant.

### ***Level of Significance Before Mitigation***

Less than significant impact.

### ***Mitigation Measures***

No mitigation is necessary.

### ***Level of Significance After Mitigation***

Less than significant impact.

## **Drainage**

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**Impact HYD-3:      The Project would not alter the existing drainage pattern in a manner which would result in erosion or create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems.**

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### ***Impact Analysis***

Runoff that occurs on the Project Site either ponds on-site or sheet flows to existing natural drainages, ultimately flowing to Tassajara Creek. As indicated in the report prepared by Balance Hydrologics dated February 4, 2016, the Northern Site—inclusive of the Residential Development Area—and the Non-urban Development Area consist of three small drainage areas with ephemeral drainages flowing to the south, combining and turning to the east along the north side of Camino Tassajara (Balance Hydrologics 2016).

The vast majority of the 771-acre Project Site would be left undeveloped and existing drainage would not be modified. No impervious surfaces would be constructed at the Future Potential Equestrian Staging Area (the parking surface would consist of an aggregate base), and drainage would continue to be directed to existing natural drainages. Similarly, the proposed trail on the Northern Site would not include impervious surfaces, and drainage would continue to be directed to existing natural drainages.

Development of the 125 residential units, Pedestrian Staging Area, and associated infrastructure in the Residential Development Area and Non-urban Development Area in the Northern Site would require the installation of new on-site storm drainage infrastructure. The on-site storm drainage system would consist of a network of street gutters, inlets, basins, and underground piping that would ultimately convey runoff to the proposed 7.6 acre-foot detention basin. A concrete V-ditch would also run along the northern side of the Residential Development Area to convey stormwater from the hills to the northeast to the detention basin. The detention basin would conform to all Contra Costa County Flood Control and Water Conservation District detention basin guidelines. The

detention basin outfall would drain to an existing swale area along Camino Tassajara and would be metered to pre-Project levels. All storm drainage infrastructure, including the detention basin, would be required to comply with all Contra Costa County Flood Control and Water Conservation District engineering and design standards and any erosion protection outlined in the Project's conditions of approval. As indicated in the report prepared by Balance Hydrologics, the proposed detention basin would effectively reduce post-Project peak flow rates for large storm events. The provision of the on-site stormwater infrastructure would ensure that the Project would not result in substantial erosion. Because the stormwater infrastructure has been specifically designed for the proposed development, it would not create or contribute runoff water that would exceed the capacity of the drainage system.

The proposed creation of wetland areas on the Southern Site, in response to requirements of MM BIO-3, would implement Best Management practices to ensure proper drainage and protection of preserved wetlands and other waters. In addition, any development on the Potential Future Fire District Parcel proposed by the San Ramon Valley Fire Protection District (SRVFPD) would be required to include applicable hydrologic analyses to determine and mitigate any potential drainage impacts on surrounding hydrologic features, including Tassajara Creek. Note that no development of the Potential Future Fire District Parcel is proposed as part of the Project, and the SRVFPD has not formally indicated its intention to accept the offer.

Impacts would be less than significant.

#### ***Level of Significance Before Mitigation***

Less than significant impact.

#### ***Mitigation Measures***

No mitigation is necessary.

#### ***Level of Significance After Mitigation***

Less than significant impact.

### **Flooding**

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<b>Impact HYD-4:</b>	<b>The Project would not alter the existing drainage pattern in a manner that would result in flooding on- or off-site and would not locate structures within a 100-year flood hazard area.</b>
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#### ***Impact Analysis***

As discussed in Impact HYD-3, the report prepared by Balance Hydrologics indicates that the proposed detention basin would effectively reduce post-Project peak flow rates for large storm events. Therefore, the Project would include on-site stormwater infrastructure that would ensure on- or off-site flooding would not occur.

The majority of the Project Site is located outside the 100-year flood hazard area known as Zone X (Federal Emergency Management Agency 2009). Two small areas of the Project Site are located within the 100-year flood hazard area (Zone A). These areas are located in the far northeastern corner of the Northern Site adjacent to Tassajara Creek (approximately 2 acres) and the far

southeastern corner of the Southern Site, south of the existing vacant residence and related outbuildings directly along Camino Tassajara (approximately 0.5 acre). These areas are not located within or near the Residential Development Area.

Development is not proposed in the on-site 100-year flood hazard areas, with the exception of the Future Potential Equestrian Staging Area in the far northeastern corner of the Northern Site. However, the staging area improvements are limited to an aggregate base roadway and parking area. No changes would be made to the existing Tassajara Creek crossing. No structures capable of impeding or redirecting flood flows would be constructed. As such, impacts would be less than significant.

***Level of Significance Before Mitigation***

Less than significant impact.

***Mitigation Measures***

No mitigation is necessary.

***Level of Significance After Mitigation***

Less than significant impact.