4.7 HYDROLOGY AND WATER QUALITY

This section provides an overview of the hydrology and water quality conditions at and near the project site and assesses potential impacts to hydrology and water quality that could result from implementation of the proposed project. Mitigation measures to reduce significant impacts are identified, where appropriate.

4.7.1 Setting

This section describes the existing conditions related to hydrology and water quality at and near the project area, as well as applicable regulatory agency framework and local policies.

4.7.1.1 Drainage and Surface Waters

The project site is located within the Gallinas Creek Watershed, which encompasses 5.6 square miles and includes two drainage areas: the North Fork and the South Fork. The North Fork is the larger of the two drainage areas and flows from the Terra Linda Valley area to the South Gallinas Slough near McInnis Park. The South Fork originates in the Los Ranchitos area and San Pedro Ridge and flows through the Civic Center and Santa Venetia areas into the Gallinas Slough. Gallinas Creek is tidally influenced and partially channelized east of United States Route 101 (US-101).[1]

Stormwater runoff from the project site is captured in catch basins and conveyed through underground storm drains located throughout the project site that discharge into larger diameter storm drains located around the perimeter of the project site including: (a) a storm drain along Northgate Drive that transitions from a 24-inch-diameter to a 48-inch-diameter pipe along its flow path from west to east, and then remains a 48-inch-diameter pipe after it turns to flow north along Los Ranchitos Road; and (b) a storm drain along Las Gallinas Avenue that transitions from an 18-inch-diameter to a 36-inch-diameter pipe along its flow path from the west to east, and then transitions to a 48-inch-diameter storm drain pipe where it turns towards the south.[2] The 48-inch-diameter storm drains along Los Ranchitos Road and Las Gallinas Avenue converge near Merrydale Road, discharge into a culvert that crosses beneath US-101, and then discharge into a drainage channel that connects to the South Fork of Gallinas Creek. Stormwater runoff from the project site is not currently treated to remove contaminants.

4.7.1.2 Groundwater

The northeast corner of the project site is located within the southern portion of the Novato Valley Groundwater Basin, and the remainder of the project site is not located within a designated groundwater basin.[3] Groundwater in the Novato Valley Basin occurs principally in alluvial deposits of Pleistocene to Holocene age that overlie non-water-bearing rocks of the Franciscan assemblage. Groundwater recharge within the Novato Valley Groundwater Basin occurs principally as infiltration from streambeds that exit the upland areas within the drainage basin and from direct percolation of

1 City of San Rafael. 2021. San Rafael General Plan 2040. August 2.

2 Merlone Geier Partners. 2022. Northgate Town Square, Redevelopment Plan, Resubmittal Application. March 9.

3 California Department of Water Resources (DWR). 2023a. Groundwater Basin Boundary Assessment Tool. Website: https://gis.water.ca.gov/app/bbat/ (accessed April 6).

precipitation that falls on the basin floor.[4] The Novato Valley Groundwater Basin is a very low priority basin according to the criteria established under the Sustainable Groundwater Management Act (SGMA); therefore, a groundwater sustainability plan has not been developed for that basin.[5]

Groundwater has been encountered at depths ranging between approximately 11 feet and 33 feet during past geotechnical investigations of the project site.[6] Groundwater was encountered at depths as shallow as approximately 7 to 10 feet in the southeast portion of the project site during groundwater sampling activities performed in June 2017.[7]

4.7.1.3 Surface Water and Groundwater Quality

The quality of surface water and groundwater in the vicinity of the project site is affected by past and current land uses within the project site and surrounding areas, and by the composition of geologic materials in the vicinity. The State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) regulate the quality of surface water and groundwater bodies throughout California. In San Rafael, including the project site vicinity, the San Francisco Bay RWQCB is responsible for implementing the Water Quality Control Plan (Basin Plan).[8] The Basin Plan establishes beneficial water uses for waterways, water bodies, and groundwater within the region and is a master policy document for managing water quality in the region.

Gallinas Creek is listed in the Basin Plan as providing the beneficial uses of cold and warm water habitat, preservation of rare and endangered species, wildlife habitat, and water contact and noncontact recreation. San Pablo Bay is listed in the Basin Plan as providing the beneficial uses of industrial service supply, commercial and sport fishing, shellfish harvesting, estuarine habitat, fish migration, preservation of rare and endangered species, fish spawning, wildlife habitat, water contact and noncontact recreation, and navigation. The Novato Valley Groundwater Basin is listed in the Basin Plan as providing the potential beneficial uses of municipal and domestic water supply, industrial process and service water supply, and agricultural water supply.

Section 303(d) of the federal Clean Water Act (described in Section 4.7.1.8 below) requires states to present the United States Environmental Protection Agency (EPA) with a list of "impaired water bodies," defined as those water bodies that do not meet water quality standards, which in some cases result in the development of a total maximum daily load (TMDL). On a broad level, the TMDL process leads to a "pollution budget" designed to restore the health of a polluted body of water.

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4 California Department of Water Resources (DWR). 2004. California Groundwater Bulletin 118, San Francisco Bay Hydrologic Region, Novato Valley Groundwater Basin. February 27.

5 California Department of Water Resources (DWR). 2023b. SGMA Basin Prioritization Dashboard. Website: https://gis.water.ca.gov/app/bp-dashboard/final/ (accessed April 6).

6 Langan Engineering and Environmental Services, Inc. 2021. Updated Geotechnical Investigation, Northgate Town Square, San Rafael, California. December 22.

7 TŌR Environmental, Inc. 2017. Limited Phase II Soil, Soil Gas, and Groundwater Assessment, Sears at Northgate Mall, 9000 Northgate Drive, San Rafael, California 94903. August 22.

8 San Francisco Bay Regional Water Quality Control Board. 2023. Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin, amendments adopted up through March 7, 2023. Website: https://www.waterboards.ca.gov/sanfranciscobay/basin_planning.html#basinplan (accessed April 25, 2023).

The TMDL process provides a quantitative assessment of the sources of pollution contributing to a violation of the water quality standards and identifies the pollutant load reductions or control actions needed to restore and protect the beneficial uses of the impaired waterbody. Gallinas Creek is listed as impaired by the pesticide diazinon, which has a TMDL established. San Pablo Bay is listed as an impaired water body for several pollutants, including multiple pesticides (dichlorodiphenyltrichloroethane [DDT], chlordane, dieldrin), mercury, polychlorinated biphenyls (PCBs), dioxin and furan compounds, invasive species, trash, and selenium. TMDLs have been established for mercury, PCBs, and selenium and will ultimately be prepared for other pollutants affecting San Pablo Bay.[9]

Groundwater in the Novato Valley Basin is high in calcium bicarbonate and has higher levels of sodium chloride and total minerals in tidal areas than in areas farther away from San Pablo Bay.[10] As discussed in Section 4.8, Hazards and Hazardous Materials, groundwater contamination from petroleum hydrocarbons has been identified in the southern portion of the project site due to hazardous materials releases at the former Sears Department Store (from hydraulic elevators) and at the former Sears Auto Center.[11]

4.7.1.4 Water Supply

San Rafael receives its municipal water supply from Marin Water, formerly known as Marin Municipal Water District (MMWD). Most of Marin Water's water supply comes from a network of seven local, rain-fed reservoirs. This supply is supplemented with water from Sonoma Water, which provides surface water from the Russian River and, to a lesser extent, groundwater from the Santa Rosa Plain Subbasin of the Santa Rosa Valley Basin. Groundwater is not currently used or planned to be used as a water supply source directly by Marin Water. Groundwater is used primarily by Sonoma Water as a drought period supply or when Russian River supplies are otherwise constrained. Groundwater is projected to make up 3 percent of Sonoma Water's supplies in normal year conditions through 2045. It cannot be discerned how much of the Sonoma Water water supply that is provided to Marin Water consists of groundwater; however, it is assumed to be proportionate to the overall percentage of groundwater used within the Sonoma Water system. Marin Water does not currently use, nor does it plan to use, water for saline water intrusion barriers, groundwater recharge, or conjunctive use. Marin Water provides recycled water to customers in the Terra Linda Valley area of San Rafael (where the project site is located) for non-potable uses, including irrigation, cooling towers, car washes, and toilet flushing.[12]

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9 State Water Resources Control Board (SWRCB). 2018. Final 2018 California Integrated Report (Clean Water Act Section 303(d) List/305(b) Report). Website: https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=e2def63ccef54eedbee4ad726ab1552c (accessed March 15, 2022).

10 California Department of Water Resources (DWR). 2023. SGMA Basin Prioritization Dashboard. Website: https://gis.water.ca.gov/app/bp-dashboard/final/ (accessed April 6).

11 TŌR Environmental, Inc. 2017. Limited Phase II Soil, Soil Gas, and Groundwater Assessment, Sears at Northgate Mall, 9000 Northgate Drive, San Rafael, California. August 22.

12 EKI Environment & Water, Inc. 2021. 2020 Urban Water Management Plan for Marin Municipal Water District. June.

A Water Supply Assessment (WSA)[13] prepared for the project indicates that potable water use at the project site from 2017 through 2021 ranged between 17 and 32 acre-feet per year (AFY) and averaged 26 AFY, and recycled water use at the project site ranged between 9.7 AFY and 17 AFY and averaged 13 AFY during this period. Total Marin Water water demand has decreased by approximately 16 percent between 2015 and 2021 and averaged 35,830 AFY from 2017 through 2021. There was no recycled water demand in 2019 and 2020 due to the Las Gallinas Valley Sanitary District (LGVSD) recycled water plant being taken offline for upgrades. All demands by the recycled water system during this period were met by potable water, and with the plant upgrades completed in April 2021, potable water is not anticipated to be needed to supplement the recycled water system going forward. Taking into account historical water use, expected population increase, and other growth, climatic variability, and other assumptions, the potable and raw water demand[14] within the Marin Water service area is projected to increase to 37,458 AFY by 2045 and the recycled water demand to increase to 750 AFY. The 2045 projected potable and raw water demand is a 5.5 percent increase over the 2017–2021 average, and the 2045 recycled water demand is a 37 percent increase over the 2017–2021 average. [15]

4.7.1.5 Flooding

According to Federal Emergency Management Agency (FEMA) mapping, the project site is not located within or adjacent to any flood hazard zones. The nearest 100-year flood hazard zone to the project site is located approximately 1,500 feet east of the project site along the South Fork of Gallinas Creek and adjacent drainage channels on the east side of US-101. The Base Flood Elevation of this flood hazard zone is 10 feet referenced to the North American Vertical Datum of 1988 (NAVD 88).[16]

4.7.1.6 Sea Level Rise

The global sea level (including in San Francisco Bay) is rising and is expected to continue to rise even with existing efforts to mitigate global warming through reduction of greenhouse gas (GHG) emissions.[17] Rates of sea level rise may vary by location because local subsidence or uplift affects the relative change in sea level between land masses and the ocean. In the San Francisco Bay Area, the background rate of sea level rise has been estimated to be approximately 0.076 inch per year from

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13 EKI Environment & Water, Inc. 2022. Water Supply Assessment for Northgate Town Square, Marin Municipal Water District. November.

14 Potable and raw water demands are grouped together because the local surface water supply data in Marin Water's 2020 Urban Water Management Plan (UWMP) is a source for both potable and raw water demands. As described in the Marin Water 2020 UWMP, raw water is used for environmental releases from Kent Lake and Soulajule Reservoir and is sold to the Meadow Club for irrigation purposes.

15 EKI Environment & Water, Inc. 2022. Water Supply Assessment for Northgate Town Square, Marin Municipal Water District. November.

16 Federal Emergency Management Agency (FEMA). 2023. National Flood Hazard Layer (NFHL) Viewer, Map No. 06041C0293E, effective March 16, 2016. Website: https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd (accessed April 6).

17 San Francisco Bay Conservation and Development Commission. 2011. Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on its Shoreline. October 6.

1900 to 2008.[18] In 2018, the California Ocean Protection Council (OPC) released an update to the State of California Sea-Level Rise Guidance.[19] The Sea-Level Rise Guidance presents the following likely ranges (66 percent probability) of sea-level rise for the area of San Francisco:

- 0.3 to 0.5 feet by 2030
- 0.6 to 1.1 feet by 2050
- 1.0 to 2.4 feet by 2100 (with low future GHG emissions)
- 1.6 to 3.4 feet by 2100 (with high future GHG emissions)

The Sea-Level Rise Guidance also presents lower probability sea-level rise projections that could be considered for situations with medium to high risk aversion or extreme risk aversion. For San Francisco, the medium to high risk aversion projection (0.5 percent probability) is from 5.7 feet (low future emissions) to 6.9 feet (high future emissions) by 2100, and the extreme risk aversion projection is 10.2 feet by 2100.

The San Francisco Bay Conservation and Development Commission (BCDC) has completed sea level rise mapping for the San Francisco Bay Area. The mapping illustrates areas and levels of flooding anticipated based on estimated sea level rise, topographic features, King Tide events,[20] and storm surge events.[21] The mapping illustrates sea level rise above the Mean Higher High Water (MHHW)[22] tide elevation, which is approximately 6.16 feet NAVD 88 in the vicinity of the project site.[23] The mapping indicates that up to 9 feet of still water (i.e., no storm surge) sea level rise would not result in inundation on the project site. The most extreme sea level rise scenario that is available on BCDC's mapping is 9 feet of still water rise. The drainage channel on the east side of US-101 that receives runoff from the project site could become inundated by approximately 6.5 feet of still water sea level rise, or lower levels of sea level rise combined with storm surge events.[24] The existing ground surface elevation of the project site ranges from approximately 30 to 40 feet NAVD 88; therefore, the project would not be susceptible to inundation from sea level rise in the foreseeable future. However, the drainage channel on the east side of US-101 that receives runoff

18 National Research Council of the National Academies. 2012. Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future, Chapter 4.

19 California Ocean Protection Council (OPC). 2018. State of California Sea-Level Rise Guidance, 2018 Update.

20 King Tides are exceptionally high tides that occur occasionally throughout the year and currently impact roads and properties throughout the San Francisco Bay Area. As sea level rises, the extent of impact of the King Tides will increase.

21 Storm surge events are storm-driven wind events producing wave surges that would travel across San Francisco Bay toward the shore and are driven by wind and atmospheric pressure conditions. This is different from the 100-year storm event flooding mapped by FEMA, which estimates flooding due to peak runoff from the surrounding watershed traveling downstream toward the Bay. The BCDC sea level rise inundation estimates account for storm surge events but do not account for runoff that could be generated by precipitation events.

22 MHHW is the average of the higher of the two daily high-water elevations.

23 AECOM. 2016. San Francisco Bay Tidal Datums and Extreme Tides Study, Final Report. February.

24 San Francisco Bay Conservation and Development Commission (BCDC). 2023. Adapting to Rising Tides Bay Area Sea Level Rise and Shoreline Analysis Maps. Website: http://www.adaptingtorisingtides.org/project/regional-sea-level-rise-mapping-and-shoreline-analysis/ (accessed April 27).

from the project site could be affected by sea level rise, which in turn could affect future drainage conditions at the project site and surrounding areas.

4.7.1.7 Seiche and Tsunami

Seiches are waves that are created in an enclosed body of water (e.g., a bay, lake, or harbor), that go up and down or oscillate, and do not progress forward like standard ocean waves. Seiches are also referred to as standing waves and are triggered by strong winds, changes in atmospheric pressure, earthquakes, tsunamis, or tidal influence. The height and frequency of seiches are determined by the strength of the triggering factor(s) and the size of the basin. Triggering forces that set off a seiche are most effective if they operate at specific frequencies relative to the size of an enclosed basin. Based on the geometry and natural oscillations of San Francisco Bay, seiches are not considered a hazard in the Bay[25] and there are no other water bodies located near the project site that could generate a seiche that could impact the project site.

Tsunamis are long-period water waves caused by underwater seismic events, volcanic eruptions, or undersea landslides. A local tsunami event could be produced by a rupture of the Hayward Fault to the Rogers Creek Fault beneath San Pablo Bay; however, such a tsunami would be significantly smaller than tsunamis generated by large events on the Alaska-Aleutian subduction zone.[26] Areas that are highly susceptible to tsunami inundation tend to be low-lying coastal areas, such as tidal flats, marshlands, and former San Francisco Bay margins that have been artificially filled. Inundation or damage caused by a tsunami may disrupt highway traffic in those low-lying areas. According to mapping prepared by the California Geologic Survey and the California Governor's Office of Emergency Services, the project site is not located within a tsunami hazard area.[27]

4.7.1.8 Regulatory Framework

This section provides a brief description of the regulations affecting hydrology and water quality at the federal, State, regional, and local level.

Federal Regulations. Federal regulations governing hydrology and water quality include the Clean Water Act, National Pollutant Discharge Elimination System (NPDES) Permit Program, and Insurance Program.

> ***Federal Clean Water Act of 1972.*** The Federal Clean Water Act of 1972 is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. It is administered by the EPA. The Clean Water Act operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit. The EPA has delegated its authority to implement and enforce most of the applicable water quality

[25] Borrero, J., L. Dengler, B. Uslu, and C. Synolakis. 2006. *Numerical Modeling of Tsunami Effects at Marine Oil Terminals in San Francisco Bay*, June 8. Report prepared for the Marine Facilities Division of the California State Lands Commission.

[26] Ibid.

[27] California Geological Survey (CGS). 2022. Tsunami Hazard Area Map County of Marin. October 7.

provisions of this law to the individual states. In California, the provisions are enforced by nine RWQCBs under the auspices of the SWRCB.

National Pollutant Discharge Elimination System (NPDES) Permit Program. Under Section 402 of the Clean Water Act, the discharge of pollutants through a point source into waters of the United States is prohibited unless the discharge is in compliance with an NPDES permit. The NPDES program regulates the discharge of pollutants from municipal and industrial wastewater treatment plants and sewer collection systems, as well as stormwater discharges from industrial facilities, municipalities, and construction sites. In California, implementation and enforcement of the NPDES program is conducted through the SWRCB and the nine RWQCBs. The RWQCBs set standard conditions for each permittee in their region, which includes effluent limitations and monitoring programs.

Federal Flood Insurance Program. In 1968, Congress created the National Flood Insurance Program in response to the rising cost of taxpayer-funded disaster relief for flood victims and the increasing amount of damage caused by floods. The National Flood Insurance Program makes federally-backed flood insurance available for communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage. FEMA manages the National Flood Insurance Program and creates Flood Insurance Rate Maps (FIRMs) that designate 100-year flood hazard zones and delineate other flood hazard areas. As described above, the project site is not located within a mapped 100-year flood hazard zone or other flood hazard area.

State Regulations. State regulations applicable to the proposed project include the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) and State Implementation of Clean Water Act Requirements, the NPDES Construction General Permit, the SGMA, and the NPDES General Permit for the Discharge of Storm Water from Small Municipal Separate Storm Sewer Systems (Small MS4 Permit).

Porter-Cologne Act and State Implementation of Clean Water Act Requirements. The Porter-Cologne Act (California Water Code, Division 7, Water Quality) was promulgated in 1969. It established the SWRCB and divided the State into nine hydrologic regions, each overseen by an RWQCB. The SWRCB is the primary State agency responsible for protecting the quality of the State's surface and groundwater supplies, but much of its daily implementation authority is delegated to the nine RWQCBs. The Porter-Cologne Act also provides for the development and tri-annual review of Water Quality Control Plans that designate beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters. San Rafael lies within the jurisdiction of the RWQCB, which enforces compliance with water quality objectives for beneficial uses of surface waters.

NPDES Construction General Permit. Construction projects disturbing more than 1 acre of land during construction are required to comply with the NPDES General Permit for Storm Water

Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit).[28]

To obtain coverage under the Construction General Permit, the project applicant must provide via electronic submittal a Notice of Intent, a Storm Water Pollution Prevention Plan (SWPPP), and other documents required by Attachment B of the Construction General Permit. Activities subject to the Construction General Permit include clearing, grading, and disturbances to the ground, such as grubbing or excavation. The permit also covers linear underground and overhead projects, such as pipeline installations. Construction General Permit activities are regulated at a local level by the RWQCB.

The Construction General Permit uses a risk-based permitting approach and mandates certain requirements based on the project risk level (i.e., Level 1, Level 2, or Level 3). The project risk level is based on the risk of sediment discharge and the receiving water risk. The sediment discharge risk depends on the project location and timing (i.e., wet season versus dry season activities). The receiving water risk depends on whether the project would discharge to a sediment-sensitive receiving water. The determination of the project risk level would be made by the project applicant when the Notice of Intent is filed (and more details of the timing of the construction activity are known).

The performance standard in the Construction General Permit is that dischargers shall minimize or prevent pollutants in stormwater discharges and authorized non-stormwater discharges through the use of controls, structures, and Best Management Practices (BMPs) that achieve Best Available Technology for treatment of toxic and non-conventional pollutants and Best Conventional Technology for treatment of conventional pollutants. A SWPPP must be prepared by a Qualified SWPPP Developer that meets the certification requirements in the Construction General Permit. The purpose of the SWPPP is to: (1) identify the sources of sediment and other pollutants that could affect the quality of stormwater discharges; and (2) describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in stormwater as well as non-stormwater discharges resulting from construction activity. Operation of BMPs must be overseen by a Qualified SWPPP Practitioner who meets the requirements outlined in the Construction General Permit.

The SWPPP must also include a construction site monitoring program. Depending on the project risk level, the monitoring program may include visual observations of site discharges, water quality monitoring of site discharges (pH, turbidity, and non-visible pollutants, if applicable), and receiving water monitoring (pH, turbidity, suspended sediment concentration, and bioassessment).

The Construction General Permit allows non-stormwater discharge of groundwater dewatering effluent if the water is properly filtered and treated to remove sediment and pollutants using

[28] The current Construction General Permit was issued under SWRCB Order No. 2009-0009-DWQ, NPDES No. CAS000002. A new Construction General Permit (Order No. WQ 2022-0057-DWQ, NPDES No. CAS000002) was adopted on September 8, 2022, which became effective on September 1, 2023. The current and new Construction General Permit include the same requirements discussed in this section.

appropriate technologies (e.g., filtration, settling, coagulant application with no residual coagulant discharge, minor odor or color removal with activated carbon, small-scale peroxide addition, or other minor treatment). Testing of receiving waters would also be required prior to and during the discharge. The discharge of dewatering effluent is authorized under the Construction General Permit if the following conditions are met:

- The discharge does not cause or contribute to a violation of any water quality standard.
- The discharge does not violate any other provision of the Construction General Permit.
- The discharge is not prohibited by the applicable Basin Plan.
- The discharger has included and implemented specific BMPs required by the Construction General Permit to prevent or reduce the contact of the non-stormwater discharge with construction materials or equipment.
- The discharge does not contain toxic constituents in toxic amounts or (other) significant quantities of pollutants.
- The discharge is monitored and meets the applicable numeric action levels.
- The discharger reports the sampling information in the annual report.

If any of the above conditions are not satisfied, the discharge of dewatering effluent is not authorized by the Construction General Permit. If the dewatering activity is deemed by the RWQCB not to be covered by the Construction General Permit or other NPDES permit, and discharge of groundwater to the storm drain system is planned, then the discharger would be required to prepare a Report of Waste Discharge, and if approved by the RWQCB, be issued site-specific Waste Discharge Requirements (WDRs) under NPDES regulations.

Sustainable Groundwater Management Act. The SGMA requires local agencies to form groundwater sustainability agencies (GSAs) for high- and medium-priority basins and develop and implement groundwater sustainability plans (GSPs) to avoid undesirable results, mitigate overdraft, and reach sustainability within 20 years of implementing their sustainability plans. The California Department of Water Resources (DWR) is charged with classifying groundwater basins in California as either high, medium, low, or very low priority. As mentioned above, the Novato Valley Groundwater Basin is classified as a very low priority basin by the DWR; therefore, preparation of a GSP is not required for the Novato Valley Groundwater Basin.[29] As discussed above under 4.7.1.4, Water Supply, Marin Water's water supply is supplemented with water from Sonoma Water, which includes some groundwater from the Santa Rosa Plain Subbasin. The DWR has designated the Santa Rosa Plain Subbasin as a medium-priority basin, which is therefore subject to the requirements of the SGMA.[30]

[29] California Department of Water Resources (DWR). 2020. Sustainable Groundwater Management Act, 2019 Basin Prioritization. May.

[30] EKI Environment & Water, Inc. 2021. 2020 Urban Water Management Plan for Marin Municipal Water District. June.

NPDES Small MS4 Permit. Pursuant to Section 402 of the Clean Water Act and the Porter-Cologne Act, municipal stormwater discharges at the project site are regulated under the statewide NPDES Small MS4 Permit. Locally, the NPDES program is overseen by the RWQCB. Development projects in San Rafael are subject to compliance with requirements of the current Small MS4 Permit, which became effective on January 1, 2019.[31] Section E.12 of the Small MS4 Permit addresses requirements for retention and treatment of stormwater generated by development projects. Projects that replace more than 5,000 square feet of impervious surface must comply with the post-construction stormwater management measures described in the Small MS4 Permit, such as Low Impact Development (LID) design standards. LID employs principles such as preserving and recreating natural landscape features and minimizing impervious surfaces to create functional and appealing site drainage that treats stormwater as a resource, rather than as a waste product. LID measures provide effective stormwater treatment by filtering pollutants and sequestering them within soils. Additionally, some pollutants may be rendered less toxic through biological action in the soil.[32]

Regional and Local Agencies and Regulations. Regional and local agency regulations include the Marin County Stormwater Pollution Prevention Program and Bay Area Stormwater Management Agencies Association Design Guidance, RWQCB Order No. R2-2017-0048, the Santa Rosa Plain GSA, and GSP for the Santa Rosa Plain Subbasin, the Marin Water 2020 Urban Water Management Plan (2020 UWMP) and Code, the Las Gallinas Valley Sanitation District Code, and the City of San Rafael General Plan.

Marin County Stormwater Pollution Prevention Program and Bay Area Stormwater Management Agencies Association. The Marin County Stormwater Pollution Prevention Program assists cities, towns, and Marin County with coordination and consistency of approaches across Marin County in implementing the Small MS4 Permit requirements. The Bay Area Stormwater Management Agencies Association (BASMAA), which includes the Marin County Stormwater Pollution Prevention Program, has developed *Design Guidance for Stormwater Treatment and Control for Projects in Marin, Sonoma, Napa, and Solano Counties*,[33] to assist in compliance with Section E.12 of the of the Small MS4 Permit.

RWQCB Order No. R2-2017-0048. If a dewatering activity is deemed by the RWQCB not to be covered by the Construction General Permit due to contamination from fuels or volatile organic compounds (VOCs), the discharge may be allowed under NPDES Permit No. CAG912002 that was

31 State Water Resources Control Board (SWRCB). 2018. Water Quality (WQ) Order 2013-0001-DWQ NPDES No. CAS000004 as Amended by Order WQ 2015-0133-EXEC, Order WQ 2016-0069-EXEC, WQ Order 2017-XXXX-DWQ, Order WQ 2018-0001-EXEC, and Order WQ 2018-0007-EXEC.

32 Ibid.

33 Bay Area Stormwater Management Agencies Association (BASMAA). 2019. *Design Guidance for Stormwater Treatment and Control for Projects in Marin, Sonoma, Napa, and Solano Counties*. January.

issued by the RWQCB under Order No. R2-2017-0048,[34] which covers the discharge or reclamation of extracted and treated groundwater resulting from the cleanup of groundwater polluted by VOCs, fuel leaks, fuel additives, and other related wastes.

Santa Rosa Plain GSA and GSP for the Santa Rosa Plain Subbasin. The Santa Rosa Plain GSA was formed in June 2017 through a Joint Powers Agreement entered into by Sonoma Water and several municipalities, water suppliers, and resource conservation districts. Because Marin Water does not directly pump groundwater, it does not coordinate with any GSAs. However, Sonoma Water is a member of the Santa Rosa Plain GSA, and Marin Water has coordinated with Sonoma Water on its demand projections through 2045.[35] The Santa Rosa Plain GSA developed the GSP for the Santa Rosa Plain Subbasin.[36] The goal of the GSP is to adaptively and sustainably manage, protect, and enhance groundwater resources while allowing for reasonable and managed growth through:

- Careful monitoring of groundwater conditions;
- Close coordination and collaboration with other entities and regulatory agencies that have a stake or role in groundwater management in the Subbasin; and
- A diverse portfolio of projects and management actions that ensure clean and plentiful groundwater for future uses and users in an environmentally sound and equitable manner.

The five sustainability indicators identified in the GSP for the Santa Rosa Plain Subbasin and that would be considered significant and unreasonable conditions for those indicators are listed below:

1. **Chronic Lowering of Groundwater Levels:** Chronic lowering of groundwater levels that significantly exceed historical levels or cause significant and unreasonable impacts to beneficial users.

2. **Reduction in Groundwater Storage:** Reduction of groundwater storage that causes significant and unreasonable impacts on the long-term sustainable beneficial use of groundwater in the basin, as caused by either long-term reductions in groundwater storage or pumping exceeding the sustainable yield.

3. **Degraded Groundwater Quality:** Significant and unreasonable water quality conditions occur if an increase in the concentration of constituents of concern (arsenic, nitrates, and salinity) in groundwater leads to adverse impacts on beneficial users or uses of

[34] San Francisco Bay Regional Water Quality Control Board. 2019. Order No. R2-2017-0048, NPDES Permit No. CAG912002, General Waste Discharge Requirements for Discharge or Reclamation of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds (VOCs), Fuel Leaks, Fuel Additives, and Other Related Wastes (VOC and Fuel General Permit). Effective January 1, 2019.

[35] EKI Environment & Water, Inc. 2021. 2020 Urban Water Management Plan for Marin Municipal Water District. June.

[36] Sonoma Water. 2021. Groundwater Sustainability Plan, Santa Rosa Plain Groundwater Subbasin. December.

groundwater, due to either direct actions by Santa Rosa Plain GSP projects or management activities or undesirable results occurring for other sustainability indicators.

4. **Land Surface Subsidence:** Any rate of inelastic land subsidence caused by groundwater pumping is a significant and unreasonable condition, everywhere in the Subbasin and regardless of beneficial uses and users.

5. **Depletion of Interconnected Surface Water:** Significant and unreasonable depletion of surface water from interconnected streams occurs when surface water depletion, caused by groundwater pumping within the Subbasin, exceeds historical depletion or adversely impacts the viability of groundwater-dependent ecosystems or other beneficial users of surface water.

Marin Water Urban Water Management Plan and Code. Marin Water developed the 2020 UWMP,[37] which is a foundational document and source of information about Marin Water's historical and projected water demands, water supplies, supply reliability and potential vulnerabilities, water shortage contingency planning, and demand management programs. Title 13 of the Marin Water Code, *Water Service Conditions and Water Conservation Measures*, includes a section on water waste prohibitions (Section 13.04.020). This section was updated in 2021 to explicitly state that the waste of water is to be prohibited. The section prohibits nonessential uses, places restrictions on irrigation watering times, limits days per week of allowed irrigation and reverse-osmosis units, and includes prohibitions on single-pass cooling systems and non-recirculating systems for conveyor carwash applications for new connections.[38]

Las Gallinas Valley Sanitation District Ordinance Code. The LGVSD manages and treats sanitary sewer discharges in the area of the project site. Title 2, Chapter 2 of the LGVSD's Ordinance Code[39] describes discharge prohibitions, standards and limitations, and permitting requirements, and includes specific requirements related to the discharge of contaminated groundwater.

San Rafael General Plan 2040. The Community Health and Safety Element of the City of San Rafael General Plan[40] contains policies and programs pertaining to hydrology and water that would be applicable to the proposed project, as listed below.

> **Policy C-1.9: Enhancement of Creeks and Drainageways.** Conserve or improve the habitat value and hydrologic function of creeks and drainageways so they may serve as wildlife corridors and green infrastructure to improve stormwater management, reduce flooding, and sequester carbon. Require creek enhancement and associated riparian habitat

37 EKI Environment & Water, Inc. 2021. 2020 Urban Water Management Plan for Marin Municipal Water District. June.

38 Ibid.

39 Las Gallinas Valley Sanitary District (LGVSD). 2023. Ordinance Code. Website: https://www.lgvsd.org/document-library/ordinance-code/ (accessed April 24).

40 City of San Rafael. 2021. San Rafael General Plan 2040. August 2.

restoration/creation for projects adjacent to creeks to reduce erosion, maintain storm flows, improve water quality, and improve habitat value where feasible.

> **Program C-1.9A: Watercourse Protection Regulations.** Maintain watercourse protection regulations in the San Rafael Municipal Code. These regulations should be periodically revisited to ensure that they adequately protect creeks and drainageways. Consider specific measures or guidelines to mitigate the destruction or damage of riparian habitat from roads, development, and other encroachments.

Policy C-3.1: Water Quality Standards. Continue to comply with local, state and federal water quality standards.

> **Program C-3.1A: Interagency Coordination.** Coordinate with the local, state, and federal agencies responsible for permitting discharges to San Rafael's creeks and surface waters, monitoring water quality, and enforcing adopted water quality standards and laws.

Policy C-3.2: Reduce Pollution from Urban Runoff. Require Best Management Practices (BMPs) to reduce pollutants discharged to storm drains and waterways. Typical BMPs include reducing impervious surface coverage, requiring site plans that minimize grading and disturbance of creeks and natural drainage patterns, and using vegetation and bioswales to absorb and filter runoff.

> **Program C-3.2A: Countywide Stormwater Program.** Continue to participate in the countywide stormwater pollution prevention program and comply with its performance standards.

> **Program C-3.2B: Reducing Pollutants in Runoff.** Continue to reduce the discharge of harmful materials to the storm drainage system through inspections, enforcement programs, reduced use of toxic materials, and public education.

> **Program C-3.2C: Construction Impacts.** Continue to incorporate measures for stormwater runoff control, management, and inspections in construction projects and require contractors to comply with accepted pollution prevention planning practices. Provisions for post-construction stormwater.

Policy C-3.5: Groundwater Protection. Protect San Rafael's groundwater from the adverse effects of urban uses and impacts from sea level rise. Encourage opportunities for groundwater recharge to reduce subsidence and water loss, and support water-dependent ecosystems.

> **Program C-3.5A: Underground Tank Remediation.** Continue efforts to remediate underground storage tanks and related groundwater hazards. Avoid siting new tanks in areas where they may pose hazards, including areas prone to sea level rise.

Policy C-3.8: Water Conservation. Encourage water conservation and increased use of recycled water in businesses, homes, and institutions. Local development and building standards shall require the efficient use of water.

Program C-3.8A: Water Conservation Programs. Work with Marin Municipal Water District and other organizations to promote water conservation programs and incentives and ensure compliance with state and MMWD regulations, including the provisions of the Urban Water Management Plan (see Policy CSI-4.8 for additional guidance).

Program C-3.8C: Reclaimed Water Use. Support the extension of recycled water distribution infrastructure by Las Gallinas Valley Sanitary and MMWD, along with programs to make the use of recycled water more feasible.

Program C-3.8D: Graywater and Rainwater. Encourage the installation of graywater and rainwater collection systems. Explore revisions to building codes that would facilitate such projects where obstacles currently exist.

Program C-3.8E: Reducing Municipal Water Use. Reduce water use for municipal operations through water-efficient landscaping, maintenance of irrigation equipment, replacement of inefficient plumbing fixtures, and using recycled water where available and practical.

Policy C-3.9: Water-Efficient Landscaping. Encourage—and where appropriate require—the use of vegetation and water-efficient landscaping that is naturalized to the San Francisco Bay region and compatible with water conservation, fire prevention and climate resilience goals.

Municipal Code. Chapter 9.30 of the San Rafael Municipal Code contains the City of San Rafael Urban Runoff Pollution Prevention Ordinance, which adopts requirements of the Clean Water Act, the Basin Plan, and the Small MS4 Permit. The purpose of this chapter is to ensure the future health, safety, and general welfare of the citizens of San Rafael and to protect and enhance watercourses, fish, and wildlife habitat by:

- Minimizing discharges other than stormwater runoff to storm drains or watercourses;
- Responding to the discharge of spills, preventing and controlling the discharge of spills to storm drains or watercourses, and prohibiting dumping or disposal of materials other than stormwater;
- Reducing pollutants in stormwater discharges to the maximum extent practicable;
- Requiring operators of construction sites, new or redeveloped land, and industrial and commercial facilities to install, implement, or maintain appropriate BMPs; and
- Maintaining pre-development stormwater runoff rates and preventing nonpoint source pollution whenever possible, through stormwater management controls and ensuring that these management controls are properly maintained.

The intent of this chapter is to protect and enhance the water quality of the State's and nation's watercourses, water bodies, and wetlands. BMPs are required for all construction within San Rafael. An Erosion and Sediment Control Plan is required for any construction subject to a grading permit or that may have the potential for significant erosion, and must follow the most recent version of the Marin County Stormwater Pollution Prevention Program Construction

Erosion and Sediment Control Plan Applicant Package. New development must comply with land development standards in the Small MS4 Permit and BASMAA Post-Construction Manual, and must develop, submit, and implement a Stormwater Control Plan (SCP). Discharges of uncontaminated pumped groundwater to the City's storm drain system are allowed under Section 9.30.070 of the Municipal Code. Section 9.30.070 of the Municipal Code also indicates that where recycled water is used for irrigation, holding ponds must be designed and managed such that no discharge occurs unless it is the result of the 25-year, 24-hour storm event. Any releases from holding ponds must be reported to the RWQCB and the County of Marin (County) within 24 hours of the discharge.

4.7.2 Impacts and Mitigation Measures

The following describes the potential impacts of the proposed project related to hydrology and water quality. This section begins with the criteria of significance that establish the thresholds for determining whether an impact is significant. The latter part of this section presents the impacts associated with the proposed project and identifies mitigation measures, as necessary.

4.7.2.1 Criteria of Significance

Implementation of the proposed project would have a significant impact related to hydrology and water quality if it would:

Threshold 4.7.1: Violate any water quality standards or waste discharge requirements, otherwise substantially degrade surface or groundwater quality or conflict with or obstruct implementation of a water quality control plan;

Threshold 4.7.2: Substantially decrease groundwater supplies or interfere with groundwater recharge such that the project may impede sustainable groundwater management of the basin or conflict with or obstruct implementation of a sustainable groundwater management plan;

Threshold 4.7.3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on or off site;

Threshold 4.7.4: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:

- 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; or
- Increase the rate or amount of surface runoff in a manner that would result in flooding on or off site or impeded or redirect flood flows; or

Threshold 4.7.5: Release any on-site pollutants into the environment as the result of flooding, tsunami, or seiche.

4.7.2.2 Project Impacts

The following section discusses potential impacts related to hydrology and water quality associated with development of the proposed project. Impacts that would occur with implementation of Phase 1 (2025 Master Plan) and Phase 2 (2040 Vision Plan) would not differ by phase and therefore are not differentiated in this section.

Threshold 4.7.1: Water Quality. The potential for the proposed project to result in a violation of water quality standards or waste discharge requirements exists during both the construction and operation periods, as discussed below.

Construction. The project would involve construction activities such as excavation and grading, which can increase the potential for erosion and sedimentation from stormwater runoff and for the leaching/transport of potential contaminants from disturbed soil. Construction activities would also involve the use of construction materials, equipment, and hazardous materials that can be sources of stormwater and groundwater pollution. If stormwater contacts disturbed soil and/or improperly stored hazardous materials, sediments and contaminants could be entrained in stormwater runoff that could reach waterways and degrade water quality, potentially resulting in a violation of water quality standards.

The project would disturb more than 1 acre of land and therefore would be required to comply with the requirements of the Construction General Permit. In accordance with the Construction General Permit requirements, a SWPPP would be developed and implemented to identify all potential pollutants and their sources, including a list of site-specific BMPs to reduce discharges of construction-related stormwater pollutants. The SWPPP would include a detailed description of controls to reduce pollutants and outline maintenance and inspection procedures. The SWPPP would be required to be kept on site and be made available to RWQCB inspectors. Typical sediment and erosion BMPs include protecting storm drain inlets, establishing and maintaining construction exits, and perimeter controls. The SWPPP would also define proper building material staging areas, paint and concrete washout areas, proper equipment/vehicle fueling and maintenance practices, controls for equipment/vehicle washing, and allowable non-stormwater discharges, and would include a spill prevention and response plan. Compliance with the Construction General Permit would ensure that stormwater runoff from the project site during construction would not result in erosion/siltation or create other sources of polluted runoff that could degrade groundwater or receiving water quality.

Groundwater dewatering would be required for subsurface construction activities. Dewatering effluent could have high turbidity (suspended sediment) and could contain other contaminants. Turbid or contaminated groundwater could cause degradation of the receiving water quality if discharged directly to storm drains without treatment. Any groundwater dewatering discharge would be subject to permits from the LGVSD or the RWQCB depending on whether the discharge would be to the sanitary sewer or storm drain system, respectively.

Under existing State law, it is illegal to allow unpermitted non-stormwater discharges to receiving waters. Chapter 9.030 of the City's Municipal Code also prohibits discharges to the City's storm drain systems other than rainfall runoff, except for discharges in compliance with an NPDES permit issued for the discharge, or discharges that are not prohibited as listed in Section 9.30.070 of the City's Municipal Code, which includes uncontaminated pumped groundwater.

As stated in the Construction General Permit, non-stormwater discharges directly to receiving waters or the storm drain system have the potential to negatively impact water quality. The discharger must implement measures to control all non-stormwater discharges during construction, including from dewatering activities associated with construction. Discharging any pollutant-laden water from a dewatering site or sediment basin into any receiving water or storm drain that would cause or contribute to an exceedance of water quality objectives is prohibited (i.e., illegal).[41]

The Construction General Permit allows the discharge of non-contaminated dewatering effluent if the water is properly filtered or treated using appropriate technology. These technologies include, but are not limited to, retention in settling tanks (where sediments settle out prior to the discharge of water) and filtration using gravel and sand filters (to mechanically remove the sediment). If the dewatering activity is deemed by the RWQCB not to be covered by the Construction General Permit due to contamination from fuels or VOCs, the discharge may be allowed under NPDES Permit No. CAG912002 (issued by the RWQCB under Order No. R2-2017-0048[42]), which covers the discharge or reclamation of extracted and treated groundwater resulting from the cleanup of groundwater polluted by VOCs, fuel leaks, fuel additives, and other related wastes. If the discharge is not covered by any existing general NPDES permits, then the discharger could potentially prepare a Report of Waste Discharge, and if approved by the RWQCB, be issued site-specific WDRs under the NPDES regulations. Site-specific WDRs contain rigorous monitoring requirements and performance standards that, when implemented, ensure that receiving water quality is not substantially degraded.

If the water is not suitable for discharge to the storm drain (receiving water), as discussed above, dewatering effluent may be discharged to the sanitary sewer system if the LGVSD's discharge criteria are met. These include, but are not limited to, application of pretreatment technologies that would result in achieving compliance with the wastewater discharge limits. Discharges to the sanitary sewer must occur under a permit. The LGVSD manages the water it accepts into its facilities so that it can ensure proper treatment of wastewater prior to discharge.

41 State Water Resources Control Board (SWRCB) Division of Water Quality. 2009. Construction General Permit Fact Sheet. 2009-0009-DWQ amended by 2010-0014-DWQ & 2012-0006-DWQ.

42 San Francisco Bay Regional Water Quality Control Board. 2019. Order No. R2-2017-0048, NPDES Permit No. CAG912002, General Waste Discharge Requirements for Discharge or Reclamation of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds (VOCs), Fuel Leaks, Fuel Additives, and Other Related Wastes (VOC and Fuel General Permit). Effective January 1, 2019.

If it is infeasible to meet the requirements of the Construction General Permit or other general NPDES permit, acquire site-specific WDRs, or meet the LGVSD's requirements, the construction contractor would be required to transport the dewatering effluent off site for treatment sufficient to meet discharge requirements.

Excavation dewatering activities can also affect groundwater quality by drawing contaminated groundwater towards previously uncontaminated areas. A substantial amount of excavation dewatering could be required for construction of proposed underground parking structures in the southeast and eastern portions of the project site. The amount of excavation dewatering required could vary significantly depending on the type of excavation shoring systems that would be utilized for the project. For example, soldier piles with timber lagging could require more extensive dewatering, while soil/cement cutoff walls would limit dewatering. The effects of dewatering on groundwater conditions on the project site and surrounding areas would depend on the characteristics of the water bearing zones encountered by excavations, the excavation shoring and dewatering system designs, and the duration of the dewatering.

As discussed in Section 4.8, Hazards and Hazardous Materials, groundwater contamination from petroleum hydrocarbons has been identified in the southern portion of the project site,[43] and investigations and remedial excavation were conducted in 2019 to remove VOC-impacted soil at a former drycleaner located at 412 Gallinas Avenue in the shopping center adjacent to the eastern perimeter of the project site.[44] Following remediation, residual perchloroethylene and its degradation products remained detectable in one groundwater sample at 406/412 Las Gallinas Avenue, but the RWQCB concluded that no human health risk was present under existing conditions and concurred with site closure.[45] Although the shopping center may be hydrologically downgradient from the project site with respect to groundwater flow based on local topography, historic aerial photos[46] indicate that creek beds were formerly present in the southern and eastern portions of the project site that connected to a drainage ditch formerly present on the eastern adjacent shopping center property. Buried creek beds/drainage ditches can have higher hydraulic conductivity than surrounding soils and can create preferential pathways for groundwater flow during dewatering activities. Based on the known groundwater contamination on the project site and the potential for off-site groundwater contamination relatively close to a proposed underground parking structure, dewatering activities at the project site could contribute to the migration of contaminated groundwater to previously uncontaminated areas.

Implementation of Mitigation Measure HAZ-2 requires the preparation and implementation of a Soil and Groundwater Management Plan (SGMP) to address known and potential unidentified

43 TŌR Environmental, Inc. 2017. Limited Phase II Soil, Soil Gas, and Groundwater Assessment, Sears at Northgate Mall, 9000 Northgate Drive, San Rafael, California. August 22.

44 Roux Associates, Inc. 2021. Phase I Environmental Site Assessment (ESA), Northgate Mall, 5800 Northgate Drive, San Rafael, California. November 8.

45 San Francisco Regional Water Quality Control Board. 2020. Water Board Staff Concurrence with the Closure Request Report, File No. 21S0068. October 20.

46 Roux Associates, Inc. 2021. Phase I Environmental Site Assessment (ESA), Northgate Mall, 5800 Northgate Drive, San Rafael, California. November 8.

subsurface contamination that may be encountered during construction of the project. Mitigation Measure HAZ-2 requires the project sponsor to engage with the appropriate regulatory agency to provide oversight of additional subsurface investigation at the project site, preparation and implementation of an SGMP, and implementation of remedial actions, as necessary, at the project site. The SGMP would also include guidelines for groundwater dewatering, treatment, and disposal to ensure compliance with applicable regulations/permit requirements.

While the requirements of Mitigation Measure HAZ-2 would address the potential for migration of contaminated groundwater from on-site sources, it would not address the migration of potential groundwater contamination from the eastern adjacent property due to project dewatering, which would be a **potentially significant** impact.

Impact HYD-1 Project dewatering could result in the migration of potential off-site groundwater contamination towards the project site. (S)

In order to control the risk of migration of potential off-site groundwater contamination due to project dewatering activities, the project shall implement Mitigation Measure HYD-1.

Mitigation Measure HYD-1 **Prevent Potential Groundwater Contamination Migration.** The project sponsor shall coordinate with the appropriate regulatory agency (most likely the Regional Water Quality Control Board ([RWQCB]) to evaluate whether groundwater beneath the shopping center adjacent to the eastern perimeter of the project site has been contaminated by a release of hazardous materials. If groundwater contamination is identified at this off-site property, the project sponsor shall evaluate whether proposed dewatering activities could result in migration of off-site groundwater contamination to areas that were not previously contaminated. This evaluation shall include the following:

- A detailed analysis of soil formations that would be affected by excavation and dewatering activities, including an analysis of hydraulic conductivity through potential preferential pathways, including the buried former creeks and drainage ditch on and adjacent to the project site;
- A detailed description of proposed excavation shoring and dewatering systems, including dewatering locations, flow rates, and durations that would be required based on the soil formations present; and
- Hydraulic modeling to demonstrate potential changes to groundwater conditions, including changes in groundwater levels and flow directions, and potential movement of contaminated groundwater.

If the evaluation indicates that project dewatering could result in migration of off-site groundwater contamination to previously uncontaminated areas, the proposed excavation shoring and dewatering system design shall be modified as necessary to ensure that project dewatering would not result in the migration of off-site groundwater contamination. Such modifications to the proposed shoring systems could include the use of interlocking sheet piles or soil-cement cut-off walls that can reduce dewatering requirements. The project sponsor shall submit the hydraulic evaluation and dewatering plans to the appropriate regulatory agency for review and approval. The project sponsor shall provide the City of San Rafael (City) with evidence of agency approval for the proposed dewatering activities prior to the City issuing permits for installation of excavation shoring or dewatering systems. (LTS)

Implementation of Mitigation Measure HAZ-2 would ensure that subsurface contamination on the project site would be properly investigated and remediated, and implementation of Mitigation Measure HYD-1 would ensure that the risk of project dewatering resulting in the migration of potential off-site groundwater contamination to previously uncontaminated areas would be reduced to less than significant. Therefore, compliance with State, regional, and local regulations and implementation of Mitigation Measures HAZ-2 and HYD-1 would ensure protection of surface and groundwater water quality during construction activities, and impacts would be **less than significant with mitigation.**

Operation. The project would result in the intensification of land uses on the project site compared to the existing shopping mall but would reduce daily vehicle trips to and from the project site. Pollutants of concern from vehicle traffic (e.g., leaks of fuels and lubricants, tire wear particulates, brake dust, and fallout from exhaust emissions) would continue to be generated on the project site and, under existing conditions, would be conveyed in runoff during storm events. Debris and particulates that gather on impervious surfaces such as paved areas and roofs of buildings could also add heavy metals and sediment to the pollutant load in the runoff. The proposed landscaping could contain residual pesticides and nutrients used for landscape maintenance, and the intensification of land uses could also result in increased trash generation over existing conditions. These pollutants could be transported in runoff from the project site and thereby degrade water quality in Gallinas Creek and San Pablo Bay. Pollutants in runoff can also impact shallow groundwater quality if untreated runoff infiltrates the ground surface in areas where groundwater is shallow.

The proposed project would replace more than 5,000 square feet of impervious surfaces and therefore would be required to implement post-construction stormwater management and treatment measures to reduce pollutant loads in runoff in accordance with Section E.12 of the Small MS4 Permit. The project must prepare an SCP that describes how runoff would be routed to LID stormwater treatment facilities that are sized and designed using either volumetric or flow-based criteria specified in the Small MS4 Permit, and the SCP must be approved by the City of San Rafael (City). The project would also be required to identify potential sources of

pollutants and implement source control measures and perform inspection and maintenance of stormwater treatment facilities. The project would include the use of municipal recycled water for all landscape irrigation; therefore, holding ponds must be designed and managed such that no discharge occurs unless it is the result of the 25-year, 24-hour storm event in accordance with the City's Municipal Code Section 9.30.070. The Preliminary SCP[47] for the project includes the use of bioretention areas that would accommodate 6 inches of ponding depth for retention of stormwater. The City's review of the project designs and SCP would ensure that the project complies with the stormwater control and treatment regulations discussed above. Because stormwater runoff from the project site is not currently treated and the project would include stormwater treatment, the project would result in less contamination of surface water than existing conditions.

As discussed in Section 4.8, Hazards and Hazardous Materials, construction of landscaping (and in particular stormwater treatment/infiltration features) over areas of contaminated soil or groundwater could increase the leaching of contaminants from soil into groundwater or the migration of contaminated groundwater; however, implementation of Mitigation Measure HAZ-2 would ensure that subsurface contamination on the project site would be properly investigated and remediated under regulatory agency oversight.

Required compliance with the Small MS4 Permit and the City's Municipal Code and implementation of Mitigation Measure HAZ-2 would ensure the protection of groundwater and surface water quality during operation of the project. Therefore, this impact would be **less than significant with mitigation**.

Threshold 4.7.2: Groundwater Supplies. The potential for the proposed project to result in adverse effects to groundwater during construction period dewatering, alteration of existing pervious surfaces, or through use of groundwater supply sources during project operations is discussed below.

Construction Dewatering. Construction of the project would require dewatering of groundwater from areas of excavation. A substantial amount of excavation dewatering could be required for construction of proposed underground parking structures in the southeast and eastern portions of the project site; however, these areas of the project site are not located within a designated groundwater basin and the dewatering would be temporary and localized; therefore, dewatering in these areas would not result in depletion of a significant groundwater supply resource. Limited excavation dewatering could be required for construction of foundation features or utilities in other areas of the project site, including in the northeast corner of the project site, which is within the Novato Valley Groundwater Basin;[48] however, such dewatering would be localized to smaller excavation areas and limited in duration. Groundwater recharge within the Novato Valley Groundwater Basin occurs principally as infiltration from streambeds that exit the upland areas within the drainage basin and from direct percolation of precipitation

47 Merlone Geier Partners. 2022. Northgate Town Square, Redevelopment Plan, Resubmittal Application. March 9.

48 California Department of Water Resources (DWR). 2023a. Groundwater Basin Boundary Assessment Tool, Website: https://gis.water.ca.gov/app/bbat/ (accessed April 6).

that falls on the basin floor.[49] Therefore, construction dewatering activities would result in **less than significant** impacts related to groundwater recharge or groundwater supplies.

Altering Pervious Surfaces. Infiltration of stormwater into the subsurface of the project site under existing conditions is limited by the existing impervious surfaces and by the shallow bedrock and/or near-surface clayey soils underlying the project site, which are not conducive to infiltration.[50]

The proposed project would result in an increase in the pervious area of the project site by increasing the amount of landscaping and adding stormwater bioretention areas. Pervious area would increase from 3.7 acres under existing conditions to 4.5 acres with the proposed project. Bioretention areas not only allow for infiltration of precipitation that falls directly on the bioretention area, but they can also serve to promote infiltration of runoff from impervious areas. The Preliminary SCP for the project indicates that the proposed bioretention areas would be lined with concrete on their sides; however, the bottoms of the planters would not be lined.[51] As discussed in Section 4.6, Geology and Soils, this bioretention planter design could conflict with a recommendation from the Geotechnical Investigation[52] that runoff should be collected in lined ditches or drainage swales due to expansive soil conditions. Mitigation Measure GEO-1 requires the project geotechnical engineer to review the proposed bioretention designs to determine whether they meet the geotechnical recommendations, and bioretention planter designs may be modified, if necessary, according to geotechnical recommendations. Although lining the bottoms of bioretention planters would decrease the infiltration potential for the project, the project site would still include more landscaped pervious area compared to the existing conditions and therefore would still increase groundwater recharge potential compared to the existing condition. In addition, the project site is not conducive to infiltration under existing conditions as discussed above. Therefore, potential impacts related to groundwater recharge and subsidence due to changes in pervious surfaces would be **less than significant**.

Water Supply. As discussed under Section 4.7.1, Setting, the majority of the potable water supply for the project would come from surface water sources managed by Marin Water and Sonoma Water, and a small portion of the potable water supply would include groundwater from the Santa Rosa Plain Subbasin (up to 3 percent in normal years) of Sonoma Water's water supply. Marin Water does not currently use, nor does it plan to use, its surface water sources for groundwater recharge; however, Marin Water's 2040 Water Resources Plan recommended that Marin Water explore groundwater partnering opportunities with a Sonoma Water customer that also uses groundwater supplies to implement an in-lieu groundwater recharge program in

[49] California Department of Water Resources (DWR). 2004. California Groundwater Bulletin 118, San Francisco Bay Hydrologic Region, Novato Valley Groundwater Basin. February 27.

[50] Langan Engineering and Environmental Services, Inc. 2021. Updated Geotechnical Investigation, Northgate Town Square, San Rafael, California. December 22.

[51] Merlone Geier Partners. 2022. Northgate Town Square, Redevelopment Plan, Resubmittal Application. March 9.

[52] Langan Engineering and Environmental Services, Inc. 2021. Updated Geotechnical Investigation, Northgate Town Square, San Rafael, California. December 22.

order to improve water supply resiliency. Under such a program, Marin Water would allow a portion of its Sonoma Water supply to be used by a partner agency in normal and wet years to offset local groundwater pumping, thereby allowing the basin to recharge and store additional water on those years. The partner agency would then rely on this replenished groundwater supply in dry years, sending some or all of its Sonoma Water supply to Marin Water. This would allow Marin Water to functionally "store" water in the groundwater basin for use during dry years.[53]

While the project would increase the demand on Marin Water's water supply, it would limit the increase in demand by using water-efficient interior plumbing fixtures, appliances, and equipment. In addition, recycled water would be used for all landscape irrigation, and dual plumbing would be installed in residential buildings to allow for the use of recycled water for domestic toilet flushing.[54] The use of recycled water for irrigation would also be limited by using drought-tolerant landscaping and through low water use practices such as drip irrigation and smart controllers that track weather patterns and adjust irrigation run times accordingly.

The WSA[55] evaluated the projected use of municipal water by the project as discussed in Section 4.14, Utilities and Service Systems. The WSA estimated that the project would increase the demand on Marin Water's potable and recycled water supplies by 228 AFY and 51 AFY, respectively. While Marin Water's water demand projections in the 2020 Urban Water Management Plan account for growth within the Marin Water service area, the project was not explicitly included in these projections, and the projected demand for water use associated with the project is higher than the projected demand growth anticipated by the 2020 UWMP. [56]

The WSA concluded that Marin Water expects to be able to meet all future demands within its existing service area, inclusive of the project, in normal, dry, and multiple dry hydrologic years; however, under an extreme drought scenario, water supply shortfalls of up to 65 percent are possible. The WSA indicates that the shortfalls that are currently projected during an extreme drought scenario are not materially different from the shortfalls that would be experienced without the project and would be addressed through planned implementation of Marin Water's Water Shortage Contingency Plan. In addition, Marin Water is currently preparing a Strategic WSA that will identify ways in which its water supply portfolio can be augmented to serve all users, which would include the project, in such an extreme drought scenario.[57] The project-specific WSA was approved by the Marin Water Board on December 13, 2022. [58]

53 EKI Environment & Water, Inc. 2021. 2020 Urban Water Management Plan for Marin Municipal Water District. June.

54 EKI Environment & Water, Inc. 2022. Water Supply Assessment for Northgate Town Square, Marin Municipal Water District. November.

55 Ibid.

56 Ibid.

57 Ibid.

58 Marin Water. 2022. Review and Refer for Board Approval, Water Supply Assessment for Proposed Northgate Town Square Redevelopment. November 18.

The increase in water supply demand due to the project could result in an increase in groundwater use from the Santa Rosa Plain Subbasin, particularly during drought conditions. The water demand from the project was not accounted for in Marin Water's water demand projections provided to Sonoma Water during development of the 2020 UWMP; therefore, the project could interfere with sustainable management of groundwater in the Santa Rosa Plain Subbasin if not included in future water supply planning efforts. This would be a **potentially significant** impact.

Impact HYD-2 The increase in water supply demand due to the project could potentially interfere with sustainable management of groundwater in the Santa Rosa Plain Subbasin. (S)

Although no groundwater was pumped in 2020 to make up Sonoma Water's supplies and Marin Water does not pump groundwater and does not plan to use groundwater as a supply source in the future, groundwater is supplied by Sonoma Water during drought conditions. In order to ensure that the proposed project would not interfere with sustainable management of groundwater recharge in the Santa Rosa Plain Subbasin, Sonoma Water should include the proposed project in its future water management plan projections, as required by Mitigation Measure HYD-2.

Mitigation Measure HYD-2 **Water Supply Coordination.** The Water Supply Assessment (WSA) prepared for the project shall be provided to Sonoma Water for review so that Sonoma Water can account for the increased water supply demand that would be generated by the project in their groundwater management efforts to maintain sustainable management of the Santa Rosa Plain Subbasin. (LTS)

Implementation of Mitigation Measure HYD-2 would ensure Sonoma Water accounts for future demand from the proposed project in its planning efforts and updates to the Urban Water Management Plan (which are required every 5 years) and that impacts of the project related to sustainable management of a groundwater basin would be **less than significant with mitigation**.

Threshold 4.7.3: Erosion and Siltation. Construction activities would involve excavation and grading, which would temporarily expose soil to potential erosion and increase the risk of siltation in storm drainage systems and receiving waters. As described under Threshold 4.7.1 above, compliance with the Construction General Permit would ensure that potential impacts related to erosion of exposed soil or sedimentation of receiving waters or the storm drain system during construction of the proposed project would be less than significant.

During operation of the project, the project site would be covered by structures, pavement, and landscaped areas, with no ongoing soil exposure or disturbance that could result in erosion and siltation. Stormwater runoff from the project would be treated in bioretention areas in accordance with the requirements of the Small MS4 Permit, which would minimize the amount of silt in stormwater runoff and reduce the rate of stormwater runoff from the project site compared to the existing condition, which in turn would decrease the potential for erosion in downstream drainage courses. Operation of the project would therefore have **less than significant** impacts related to erosion and siltation.

Threshold 4.7.4: Altering Drainage. The project would alter the surface water drainage patterns on the project site by altering impervious/pervious surfaces and installing new stormwater treatment and drainage facilities. As described under Threshold 4.7.1 above, required compliance with the Construction General Permit, Small MS4 Permit, and the City's Municipal Code would ensure the project would not result in substantial additional sources of polluted runoff. As described under Threshold 4.7.2 above, the project would increase pervious surfaces by 0.8 acre compared to the existing conditions and convey stormwater runoff to bioretention areas, which would decrease the rate of stormwater runoff from the project site compared to the existing conditions. Therefore, the project would not create additional runoff that could contribute to exceeding the capacity of stormwater drainage systems. As described under Threshold 4.7.1 above, because the project would include the use of municipal recycled water for all landscape irrigation, the project must be designed and managed such that no untreated stormwater discharge occurs unless it is the result of the 25-year, 24-hour storm event, in accordance with the City's Municipal Code. Therefore, the project would result in **less than significant** impacts related to not accommodating the peak flow rate for up to a 25-year storm event.

Based on the Preliminary Grading Plan and Drainage Plan and Preliminary SCP,[59] it is not clear whether the proposed on-site stormwater infrastructure could accommodate the peak flow rate from a 100-year storm event such that the finished floor elevation of the proposed or existing buildings on the project site would have more than 1 foot of freeboard above the 100-year storm event hydraulic grade line water elevation. As discussed under Section 4.7.1 above, the project would not be susceptible to direct inundation from sea level rise in the foreseeable future based on the elevation of the project site; however, the drainage channel on the east side of US-101 that receives runoff from the project site could be affected by sea level rise that could affect future drainage conditions at the project site and surrounding areas. If 100-year storm runoff would exceed the capacity of proposed on-site stormwater infrastructure, flooding potentially could occur on the project site or runoff from the project site could contribute to flooding of surrounding roadways, which could impede evacuation along key roadways such as Los Ranchitos Road, Las Gallinas Avenue, and Merrydale Road, which would be a **significant impact.**

Impact HYD-3 The 100-year storm runoff from the project site could exceed the capacity of proposed stormwater infrastructure and result in flooding on the project site and surrounding roadways. (S)

In order to control the risk of 100-year storm runoff exceeding the capacity of proposed stormwater infrastructure, the project shall implement Mitigation Measure HYD-3.

Mitigation Measure HYD-3 **Hydraulic Modeling.** The project sponsor shall hire a qualified Civil Engineer to perform hydraulic modeling to evaluate the 100-year storm event hydraulic grade line water elevations on the project site under proposed project conditions. The qualified Civil Engineer shall coordinate with the City to determine the estimated sea level rise amount that shall be used in the hydraulic modeling. The evaluation

[59] Merlone Geier Partners. 2022. Northgate Town Square, Redevelopment Plan, Resubmittal Application. March 9.

shall account for contribution of runoff from the project site and surrounding properties (including reasonably foreseeable projects identified by the City) into public roadways. If the evaluation demonstrates that the 100-year storm event could result in on-site flooding above the minimum of 1 foot of freeboard from the finished floor elevations on the project site or that runoff from the project site could contribute to increased flooding in off-site areas (including roadways), the project shall incorporate additional stormwater retention systems (e.g., swales, retention ponds, or cisterns with metered outlets) and/or additional stormwater conveyance systems into the project design to ensure that stormwater runoff from the project would not result in on-site flooding or contribute to increased off-site flooding. The results of the hydraulic modeling and any changes to the project's stormwater management system designs shall be submitted to the City for review and approval prior to the issuance of grading or building permits. (LTS)

Implementation of Mitigation Measure HYD-3 would ensure that potential impacts related to on-site or off-site flooding would be **less than significant with mitigation**.

Threshold 4.7.5: Release of Pollutants Due to Project Inundation. The project site is not located within a flood hazard zone[60] or a tsunami hazard area.[61] Seiches are not considered a hazard in San Francisco Bay based on the natural oscillations of the Bay,[62] and there are no other water bodies located near the project site that could generate a seiche that could impact the project site. Therefore, potential impacts related to the release of pollutants as a result of flooding, tsunami, or seiche would be **less than significant**.

4.7.2.3 Cumulative Impacts

The geographic areas of concern for cumulative hydrology and surface water quality impacts are the streets, storm drains, and surface waters that could receive runoff from the project site and cumulative projects. It should be noted that there are no current or probable future projects under City review within the vicinity of the project site. The geographic areas of concern for cumulative groundwater quality and supply impacts are Novato Valley Groundwater Basin and the Santa Rosa Plain Subbasin.

Stormwater runoff and groundwater dewatering from the project site and cumulative projects occurring under buildout of the General Plan could result in degradation of surface water and

60 Federal Emergency Management Agency (FEMA). 2023. National Flood Hazard Layer (NFHL) Viewer, Map No. 06041C0293E, effective March 16, 2016. Website: https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd (accessed April 6).

61 California Geological Survey. 2022. Tsunami Hazard Area Map County of Marin. October 7.

62 Borrero, J., L. Dengler, B. Uslu, C. Synolakis. 2006. *Numerical Modeling of Tsunami Effects at Marine Oil Terminals in San Francisco Bay*. June 8. Report prepared for the Marine Facilities Division of the California State Lands Commission.

groundwater quality if appropriate management of stormwater runoff and groundwater dewatering are not performed. Stormwater discharges from past and existing projects within the project vicinity have contained pollutants that have contributed to impairment of the water quality of Gallinas Creek and San Pablo Bay, which is a cumulative impact. Stormwater regulations have become progressively more stringent since the passing of the federal Clean Water Act, and current regulations require new developments to manage and treat all significant sources of stormwater pollutants, which includes potential erosion and siltation. Compliance with the Construction General Permit would ensure that stormwater runoff during project construction would not result in significant erosion/siltation or degradation of receiving water quality. During operation, the project site would not be susceptible to erosion and stormwater runoff would be treated in accordance with the Small MS4 Permit and the City's Municipal Code. Stormwater runoff from the project site is not currently treated; therefore, the project would reduce the operational pollutant loads in stormwater runoff from the project site compared to the existing conditions. Therefore, the project's contribution to cumulative erosion, siltation, and other surface water quality degradation would be **less than significant**. Cumulative projects would also be subject to existing regulations that protect surface water quality and prevent erosion and siltation during construction and operation. Compliance with existing regulations that protect stormwater runoff quality would also serve to protect groundwater quality during construction and operation of the project and cumulative projects. In addition, the project would implement Mitigation Measures HAZ-2 and HYD-1 to further ensure the protection of groundwater quality as described under Threshold 4.7.1 above. Therefore, the project's contribution to the cumulative degradation of groundwater quality would be **less than significant with mitigation**.

The project would increase the amount of pervious surface compared to the existing condition; therefore, the project would not contribute to a decrease in infiltration and groundwater recharge that could contribute to subsidence. As described under Threshold 4.7.2 above, the project would increase infiltration of stormwater at the project site compared to existing conditions; therefore, the project would have a beneficial effect related to groundwater recharge and would not contribute to cumulative impacts related to decreased groundwater recharge and subsidence due to increasing impervious surfaces.

As described under Threshold 4.7.2 above, the increase in water supply demand due to the project could result in an increase in groundwater use from the Santa Rosa Plain Subbasin, particularly during drought conditions. If the projected demand for water use associated with cumulative projects would be higher than the projected demand growth anticipated by the 2020 UWMP, then cumulative projects could also result in increased groundwater use from the Santa Rosa Plain Subbasin. Implementation of Mitigation Measure HYD-2 would ensure that the project's contribution to cumulative impacts related to sustainable management of a groundwater basin would be **less than significant with mitigation**.

The proposed project and cumulative projects would alter existing drainage patterns (e.g., by altering impervious surfaces), which could alter stormwater runoff patterns and impact the capacity of existing storm drain systems. As described under Threshold 4.7.4 above, the project would decrease the rate of stormwater runoff from the project site compared to the existing conditions. Therefore, the project would not create additional runoff that could contribute to a cumulative

impact of exceeding the capacity of stormwater drainage systems. Because the project would include the use of municipal recycled water for all landscape irrigation, the project must be designed and managed such that no untreated stormwater discharge occurs unless it is the result of the 25-year, 24-hour storm event in accordance with the City's Municipal Code. Therefore, the project would accommodate the peak flow rate for up to a 25-year storm event.

As described under Threshold 4.7.4 above, it is not clear whether the proposed on-site stormwater infrastructure could accommodate the peak flow rate from a 100-year storm event such that the finished floor elevation of the proposed or existing buildings on the project site would have more than 1 foot of freeboard above the 100-year storm event hydraulic grade line water elevation. If 100-year storm runoff would exceed the capacity of the proposed on-site stormwater infrastructure, flooding could potentially occur on the project site, or runoff from the project site could contribute to flooding of surrounding roadways that could impede evacuation along key roadways**.** Implementation of Mitigation Measure HYD-3 would ensure that the project's contribution to cumulative impacts related to on-site or off-site flooding would be **less than significant with mitigation**.

As described under Threshold 4.7.5 above, the project site is not located within a flood hazard zone[63] or a tsunami hazard area,[64] and there are no other water bodies located near the project site that could generate a seiche that could impact the project site. Therefore, the project's contribution to cumulative impacts related to the release of pollutants as a result of flooding, tsunami, or seiche would be **less than significant.**

[63] Federal Emergency Management Agency (FEMA). 2023. National Flood Hazard Layer (NFHL) Viewer, Map No. 06041C0293E, effective March 16, 2016. Website: https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd (accessed April 6).

[64] California Geological Survey. 2022. Tsunami Hazard Area Map, County of Marin. October 7.