4.6 WATER SUPPLY, UTILITIES, AND ENERGY

This section analyzes impacts of the Wharf's Master Plan's demand on municipal water supplies, wastewater treatment; and energy use -– electrical and natural gas utilities.

This section draws from the City of Santa Cruz *2015 Urban Water Management Plan* (UWMP), which was adopted in August 2016 in accordance with state law. The UWMP, which must be updated every five years, evaluates water supply and demand within the City's water service area over the next 20 years. The 2015 UWMP is incorporated by reference in accordance with section 15150 of the State CEQA Guidelines, and relevant discussions are summarized in section 4.8.1. The 2015 UWMP Plan is available for review at the City of Santa Cruz Water Department (212 Locust Street, Suite A, Santa Cruz, California) during business hours: Monday through Thursday, 8 AM to 12 PM and 1 PM to 5 PM. The plan also is available for review on the City's website at: http://www.cityofsantacruz.com/government/city-departments/water/2015-urban-water-mgmt-plan.

This section also draws from the City of Santa Cruz *General Plan 2030* EIR (SCH#2009032007), which was certified on June 26, 2012, regarding background information on the City's wastewater treatment facility. The General Plan EIR is incorporated by reference in accordance with section 15150 of the State CEQA Guidelines. Relevant discussions are summarized in subsection 4.3.1. The General Plan EIR is available for review at the City of Santa Cruz Planning and Community Development Department (809 Center Street, Room 101, Santa Cruz, California) during business hours: Monday through Friday, 7:30 AM to 12 PM and 1 PM to 3 PM. The General Plan EIR is also available online on the City's website at: http://www.cityofsantacruz.com/Home/Components/BusinessDirectory/BusinessDirectory/102/1775.

Public and agency comments related to water supply / water service were received during the public scoping period in response to the Notice of Preparation (NOP). Issues raised in these comments include:

- ❒ The project should consider opportunities for water recycling.

To the extent that issues identified in public comments involve potentially significant effects on the environment according to the California Environmental Quality Act (CEQA) and/or are raised by responsible agencies, they are identified and addressed within this EIR. Public comments received during the public scoping period are included in Appendix A. It is noted that the above comment received in response to the NOP addresses a general issue and does not provide a specific comment regarding the scope of review for the proposed project in this EIR. Background information on the City's water and wastewater systems are provided in this section.

4.6.1 Environmental Setting

Regulatory Setting

State Regulations

Water Supply Assessments. In 2001, Senate Bill (SB) 610 amended California law regarding review of water availability for large projects (Section 10910 et seq. of the Water Code; Section 21151.9 of the Public Resources Code [CEQA]; see also Section 15155 of the State CEQA Guidelines). Pursuant to SB 610, preparation of a "water supply assessment" (WSA) is required for projects subject to CEQA that meet specified criteria regarding project size: projects of 500 or more residential units, 500,000 square feet or more of retail commercial space, 250,000 square feet or more of office commercial space, 500 or more hotel rooms, specified industrial uses, or a project that would result in a water demand equal to or greater than the amount needed to serve a 500-unit residential project. These assessments, prepared by "public water systems" responsible for service, address whether there are adequate existing or projected water supplies available to serve proposed projects over a 20-year period, in addition to existing demand and other anticipated development in the service area. The proposed project does not meet the above size requirements that would trigger the preparation of a WSA.

Sustainable Groundwater Management. In 2014, California enacted the "Sustainable Groundwater Management Act" to bring the state's groundwater basins into a more sustainable regime of pumping and recharge. The legislation provides for the sustainable management of groundwater through the formation of local groundwater sustainability agencies (GSAs) and the development and implementation of groundwater sustainability plans (GSPs), and requires GSAs and GSPs for all groundwater basins identified by the California Department of Water Resources (DWR) as high or medium priority. The law also authorizes the intervention of the State Water Resources Control Board in the event that no GSA, or equivalent local authority, is formed for a high- or medium-priority basin, or if an adequate GSP is not submitted for those basins. Additionally, it establishes criteria for the sustainable management of groundwater and authorizes DWR to establish best management practices for groundwater (California Department of Water Resources, December 2016).

The City of Santa Cruz is a member of the Santa Cruz Mid-County Groundwater Basin formed pursuant to this legislation. The portion of the City's water service area not represented by the Agency is a remaining portion of the previously designated West Santa Cruz Terrace Basin and this basin is not currently managed by a GSA and may undergo further modification.

Wastewater Treatment. The Clean Water Act (CWA) regulates the discharge of pollutants to waters of the United States from any point source, enacted in 1972. The California State Water Resources Control Board (State Board) and the nine Regional Water Quality Control Boards (RWQCB) have the authority in California to protect and enhance water quality, including administration of the National Pollutant Discharge Elimination System (NPDES) permit program

for discharges, storm water and construction site runoff. The discharge of treated wastewater is included in the NPDES program. The RWQCB regulates operations and discharges from sewage systems through the NPDES permit. Further discussion is provided on pages 4.6-21 to 4.6-22 of the General Plan 2030 EIR (DEIR volume), which is incorporated by reference.

Local Regulations

Water Supply. Title 16 of the City's Municipal Code addresses water, sewers, and other public services. Title 16 chapters relevant to water service include:

- Chapter 16.01 Water Shortage Regulations and Restrictions
- Chapter 16.02 Water Conservation
- Chapter 16.03 Plumbing Fixture Retrofit Regulations
- Chapter 16.04 Water Services
- Chapter 16.05 Loch Lomond Recreation Area, Watershed Lands and Riparian Conservation Areas
- Chapter 16.06 Regulation of Water Wells
- Chapter 16.08 Sewer System: Graywater Systems (section 16.08.065)
- Chapter 16.09 Water System Improvements
- Chapter 16.10 Desalination Plant – Voter Approval
- Chapter 16.11 Water Service Accounts
- Chapter 16.13 Unified Utilities Billing System
- Chapter 16.14 System Development Charges
- Chapter 16.15 Water Use
- Chapter 16.16 Water –Efficient Landscaping
- Chapter 16.24 Utility Service Area Expansion

The City of Santa Cruz has enacted several ordinances regarding water conservation. Chapter 16.01 identifies regulations and restrictions during declared times of water shortages. Chapter 16.02 sets forth water conservation provisions to prevent the waste or unreasonable use or method of use of water. Chapter 16.16 sets forth requirements for water-efficient landscaping and also is intended to comply with the California Government Code section 65591 et seq., the Water Conservation in Landscaping Act. The regulations are applicable to applicants for new, increased, or modified water service within the City's water service area. Section 16.08.065 allows graywater use for irrigation. Graywater is wastewater that originates from showers, bathtubs, bathroom sinks, and clothes washing machines.

Wastewater Treatment. Chapter 16.08 ("Sewer System Ordinance") of the City of Santa Cruz Municipal Code regulates discharge to sanitary sewer and requires that all wastewater be discharged to public sewers, with the exception of graywater as allowed by Municipal Code Chapter 16.08. Septic tanks and cesspools are not allowed within city boundaries except as specified for limited conditions in Chapter 6.20 of the Municipal Code.

Study Area

The project area consists of the Santa Cruz Wharf. Service providers include the City of Santa Cruz for water supply and wastewater treatment.

City Water Service Area

The City of Santa Cruz Water Department serves approximately 24,535 connections in an approximate 20-square mile area. The service area includes the entire City of Santa Cruz, adjoining unincorporated areas of Santa Cruz County, a small part of the City of Capitola, and coastal agricultural lands north of the city. The current population residing in the Santa Cruz water service area is estimated to be 95,251 people. Approximately two thirds of the total population, almost 64,000, lives inside the City limits. Within the City, about 9,100 people including students, faculty, staff, and their families reside on the University of California Santa Cruz campus (City of Santa Cruz, August 2016).

City Wastewater Treatment Service Area

The City of Santa Cruz wastewater treatment facility (WWTF) serves the cities of Santa Cruz and Capitola and parts of unincorporated Santa Cruz County. In addition to the City of Santa Cruz, the WWTF serves the Santa Cruz County Sanitation District and Community Service Areas (CSA) 10 and 57; for further description, see pages 4.6-23 to 4.6-24 of the City's General Plan 2030 EIR (DEIR volume), which is incorporated by reference. The City also provides capacity for the City of Scotts Valley to discharge its treated wastewater into the Pacific Ocean via the City's discharge.

4.6.1.1 Water Service

City Water Service System

Water Supply Sources

The City's water system is comprised of four main sources of supply: San Lorenzo River diversions (including the Tait wells); North Coast spring and creeks; Loch Lomond Reservoir; and the Beltz well system. Over the past decade, the North Coast sources represented 26 percent of the total water supply, the San Lorenzo River represented 55 percent, Newell Creek (Loch Lomond Reservoir) represented 14 percent, and Beltz wells contributed the remaining 5 percent (City of Santa Cruz, August 2016).

The San Lorenzo River is the City's largest source of water supply. The main surface water diversion, known as the Tait Diversion or San Lorenzo River Intake, is located adjacent to the coast pump station on Highway 9 near the City limits just north of Highway 1. The Tait Diversion is supplemented by shallow, auxiliary wells located directly across the river, the Tait wells. The other diversion on the San Lorenzo River is Felton Diversion, which is an inflatable dam and intake

structure built in 1974, located about 6 miles upstream from the Tait Diversion. When the diversion is being operated, water is pumped from this diversion through the Felton Booster Station to Loch Lomond Reservoir. Loch Lomond Reservoir is located near the town of Ben Lomond in the Santa Cruz Mountains and has a maximum capacity of 2,810 million gallons (mg). In addition to the City, the San Lorenzo Valley Water District is entitled by contract to receive a 314.4 acre-feet per year (AFY) of the water stored in Loch Lomond Reservoir (City of Santa Cruz, August 2016).

The North Coast water sources consist of surface diversions from three coastal creeks and a natural spring located approximately 6 to 8 miles northwest of downtown Santa Cruz. These sources are: Liddell Spring, Laguna Creek, Reggiardo Creek, and Majors Creek. The use of these sources by the City dates back as far as 1890 (City of Santa Cruz, August 2016).

The Beltz well system consists of four production wells and two water treatment plants located in the eastern portion of the City water service area. The facilities were originally acquired by the City from the Beltz Water Company in 1964. The majority of the groundwater production of the City's Beltz well field is in a geographical area identified as the Santa Cruz Mid-County Groundwater Basin. Groundwater from this basin is used by the City, the Soquel Creek and Central Water Districts, several small water systems, and numerous private rural water wells. Even though groundwater constitutes only about five percent of the City's water supply, it is a crucial component of the water system for meeting peak season demands, maintaining pressure in the eastern portion of the distribution system, and weathering periods of drought (City of Santa Cruz, August 2016).

Water System Production and Operations

The Water Department follows a variety of policies, procedures and legal restrictions in operating the City's water supply system, and the amount of water produced from each of the City surface water sources is controlled by different water rights and operational agreements. A summary of water rights held by the City of Santa Cruz is provided on page 6-10 of the 2015 UWMP that is incorporated by reference. In general, the system is managed to use available flowing sources to meet daily demands as much as possible. Groundwater and stored water from Loch Lomond are used primarily in the summer and fall months when flows in the coast and river sources decline and additional supply is needed to meet higher daily water demands. In accordance with requirements of its water rights, the City releases a minimum flow of 1.0 cfs from storage in Loch Lomond Reservoir to support fishery resources beneath the dam (City of Santa Cruz, August 2016).

The UWMP reported that annual water production had fluctuated from a high of nearly 3,800 million gallons per year (MGY) in 2006 to a low of approximately 2,500 MGY in 2015 (City of Santa Cruz, August 2016). The 2015 water production rate represents production volumes experienced under severe drought conditions during a second year of rationing with emergency water shortage regulations and state-mandated local restrictions in effect.

The 2015 UWMP estimates a 20-year water supply at about 3,200 MGY in the year 2035 based on deliveries for average years, projected water demands, and available surface water flows consistent with ecosystem protection goals regarding fish habitat.

Water is treated at the City's Graham Hill Water Treatment Plant (GHWTP), except for groundwater, which is treated as part of the Beltz well system. The GHWTP complies with all drinking water standards set by the US Environmental Protection Agency and the State Water Resources Control Board Division of Drinking Water (DDW). GHWTP is a conventional surface water treatment plant that was commissioned in 1960 with a capacity of 12 million gallons per day (MGD) plant and has undergone an expansion and numerous plant improvements over the last 55 years. Currently the plant can process up to 16 MGD and a year-round average production of 10 MGD. The current operational capacity for production in the Beltz well system is approximately 1 MGD when the City draws groundwater (City of Santa Cruz, August 2016).

Water Demand

Water demand in the City's water service area has declined over the past 15 years. The 2015 UWMP indicates that water consumption in the service area ranged between nearly 3,800 MGY in 2006 to approximately 2,500 MGY in 2015 (City of Santa Cruz, August 2016). The 2015 water demand was during the second year of a severe drought with water use restrictions and rationing in place. In 2018, water demand in the service area totaled approximately 2,650 MGY, and recent reviews by the Water Department indicate that, in the near term, water demand is likely going to remain relatively flat (City of Santa Cruz Water Department, November 1, 2019).

The adopted 2015 UWMP forecasts a 20-year water demand forecast at approximately 3,200 MGY. This is slightly reduced from the estimated 3,500 MGY forecast in the 2010 UWMP due to continuing conservation efforts (City of Santa Cruz, August 2016). Until recently, the general trend in system demand was one in which water use rose roughly in parallel with account and population growth over time, except during two major drought periods in the late 1970s and the early 1990s. Around 2000, this pattern changed and system demand began a long period of decline, accelerated by pricing changes, drought, economic downturn, and other factors (Ibid.). The UWMP predicts a decrease in water use of approximately 100 MGY over the next 20 years despite regional population growth forecasts.

Water Supply Reliability and Constraints

There are several constraints and challenges that affect the long-term reliability of the City's water supplies. The primary constraint relates to potential water shortfalls during multi-year droughts. In addition, the City also faces other challenges that potentially could affect water supplies, including: potential flow releases associated with a Habitat Conservation Plan (HCP) currently under development, the outcome of water rights petitions, groundwater availability and climate change issues.

Supply Variability and Availability During Droughts

The City's primary water supply reliability issue relates to potential shortfalls during dry and critically dry years. The City Council-appointed Water Supply Advisory Committee (WSAC)[1] issued the following statement, which also is included in the 2015 UWMP, that summarizes the key water supply issues within the City's water service area:

> *Santa Cruz's water supply reliability issue is the result of having only a marginally adequate amount of storage to serve demand during dry and critically dry years when the system's reservoir doesn't fill completely. Both expected requirements for fish flow releases and anticipated impacts of climate change will turn a marginally adequate situation into a seriously inadequate one in the coming years. Santa Cruz's lack of storage makes it particularly vulnerable to multi-year droughts. The key management strategy currently available for dealing with this vulnerability is to very conservatively manage available storage. This strategy typically results in regular calls for annual curtailments of demand that may lead to modest, significant, or even critical requirements for reduction. In addition, the Santa Cruz supply lacks diversity, thereby further increasing the system's vulnerability to drought conditions and other risks. The projected worst-year gap between peak-season available supply and demand during an extended drought is about 1.2 billion gallons. While aggressive implementation of conservation programs will help reduce this gap, conservation alone cannot close this gap. The Committee's goal is to establish a reasonable level of reliability for Santa Cruz water customers by substantially decreasing this worst-year gap while also reducing the frequency of shortages in less extreme years.*

As described above, the City's water supply is almost exclusively from local surface water sources whose yield varies from year to year depending on the amount of rainfall received. The water system is capable of meeting demands during normal and wet years, but is vulnerable to shortage in extended dry periods or critically dry periods. The City predicts that future water demand will be met for 90 percent of all normal water years and that existing and planned sources of water available to the City over the next twenty years will meet the predicted service area total annual water demand of about 3,200 to 3,300 MGY (City of Santa Cruz, August 2016).

The UWMP's projections for the year 2035 show a shortfall of approximately 40 MGY during normal periods, 528 MGY during single dry year periods, and 1,250 to 1,639 MGY during multiple dry year periods. The City has not previously seen shortages in normal water years, but expected reductions in water production for ecosystem protection are likely to result in small shortages (1-3 percent) prior to 2020. However, operationally the City predicts sufficient water supplies in normal years to meet demand even though a slight deficit seems to exist in the modelled projections (City of Santa Cruz, August 2016).

[1] See discussion in the following subsection regarding WSAC.

In an extreme multi-year drought, available water supplies are estimated to be 25 to 50 percent less than what is available during normal years depending on the severity and duration of the dry years. In multi-year or critical drought conditions, the combination of very low surface flows in the coast and river sources and depleted storage in Loch Lomond Reservoir reduces available supply to a level which cannot support average dry season demands. Compounding the situation is the need to retain a certain amount of water in the reservoir to provide supply if drought conditions continue into the following year. The existing system is not able to provide a reliable supply during multi-year droughts or prolonged periods of drier than normal hydrologic conditions (City of Santa Cruz, August 2016). As the City chose to create a representative average year by using the historic record, the inclusion of the dry years and critically dry years within the average may explain the predicted small deficit. It is important to note that the City predicts the supply and demand volumes to be in balance for 90% of all normal water years for 2020-2035.

Ecosystem Protection

The amount of water supply available from the City's flowing sources may change in the future. Since 2001, the City of Santa Cruz has been working toward the development of an HCP that covers effects on anadromous fish incidental to operation and maintenance of the City's water system, which may result in "take" of threatened and/or endangered species. An HCP is an operational avoidance and minimization and mitigation plan prepared under Section 10 of the Federal Endangered Species Act (FESA) and Section 2081 of the California Fish and Game Code for incidental take of federally or state-listed threatened and endangered species. The City initiated the HCP process because the streams from which the City diverts water currently support Central California Coastal steelhead (*Oncorhynchus mykiss*), a federally-listed "threatened" species, and the San Lorenzo River and Laguna Creek support Central California Coastal coho salmon *(Oncorhynchus kisutch*), a federally and state listed "endangered" species.

The City has been actively meeting with the federal and state agencies on HCP-related issues and has conducted numerous studies. These studies have evaluated what limiting factors may be affecting the threatened and endangered anadromous fish in these streams and measures that the City can take to avoid and minimize effects of its operations on these species. Because these studies indicate that habitat conditions in these streams could be improved with increased instream flows, the City began voluntarily diverting less flow in 2007 on an interim basis in connection with the pursuit of FESA and CESA take authorization as well Streambed Alteration Agreements for its diversion facilities. A final draft HCP and permit applications were submitted to the California Department of Fish and Wildlife (CDFW) and NOAA Fisheries in late spring of 2019. Initiation of environmental review for the HCP and associated permits is expected to commence in fiscal year 2019-2020 with the goal of permit process completion by late 2021 or early 2022. The City has also filed Lake and Streambed Alteration Notification with CDFW. Although permit negotiations are ongoing, the City forecasts that ultimate compliance will result in less water being available from the City's surface water sources for supply in future years compared to the past. This, in turn, will place greater reliance on water stored in Loch Lomond

Reservoir to meet the community's annual water needs and exacerbate the potential vulnerability to shortages described above (City of Santa Cruz, August 2016)), if other water supply solutions are not pursued, as further described below.

Water Rights Petitions

The City is addressing water rights issues that may affect the City's water supply. In 2008, the City submitted petitions to the State Water Resources Control Board (SWRCB) to address a historical oversight in the language of the City's water rights documents for Newell Creek and the San Lorenzo River at Felton (Felton Diversion) and to request a time extension for the full development of the 3,000 acre-feet permit to divert water from the San Lorenzo River at Felton and to add the rights of direct diversion at Newell Creek and the Felton Diversion. The City's intent is to eliminate technical constraints for operations of its water supplies (City of Santa Cruz, August 2016).

New change petitions were filed by the City with SWRCB in January 2019 and further refinements to these petitions are underway as part of the Santa Cruz Water Rights Project. The underlying purpose of this project is to improve City water system flexibility while enhancing stream flows for local anadromous fisheries. The project would include modifying City water rights to incorporate the minimum bypass flows the City negotiated with CDFW and NOAA Fisheries during development of the HCP to better protect federally listed coho and steelhead in all watersheds from which the City diverts water (called Agreed Flows). The Agreed Flows would be incorporated into both pre-1914 rights on the North Coast streams and post-1914 permits and licenses on the San Lorenzo River and Newell Creek to improve instream habitat and flow conditions for these fish species. While it is expected that Agreed Flows will be further codified through the HCP process and a Streambed Alteration Agreement with CDFW, the project would commit the City to these flows regardless of the outcomes of these processes.

Given that the implementation of the Agreed Flows in all City water rights will further constrain the City's limited surface water supply, the City is proposing to improve water system flexibility within existing allocations through water rights modifications to expand its authorized place of use (POU) to improve the potential for conjunctive use of the regions resources with adjoining water agencies, to better utilize existing diversions, to extend the City's time to put water to full beneficial use under the Felton Permits, to add underground storage to the City's water rights to allow for injection and extraction of groundwater from the City's Beltz well system and to include groundwater quality as a beneficial use. The project also includes aquifer storage and recovery facilities at the Beltz well system to allow for injection and extraction of groundwater from this system. An Environmental Impact Report is currently being prepared to evaluate this project and is expected to be released for public review in 2020.

Groundwater Availability and Management

The City has joined with the Soquel Creek and Central Water Districts, the County of Santa Cruz, and private well representatives to form the Santa Cruz Mid-County Groundwater Agency (MGA), the local GSA created pursuant to the requirements of the California Sustainable Groundwater

Management Act. The MGA has overseen the preparation of a cooperative groundwater sustainability plan (GSP) for the now redefined Santa Cruz Mid-County Groundwater Basin, which includes the former Soquel Valley Basin and portions of three adjacent basins – the West Santa Cruz Terrace Basin, the former Santa Cruz Purisima Formation Basin, and the original Pajaro Valley Basin. The Soquel Valley Basin was identified by the State as a groundwater basin subject to critical conditions of overdraft (California Department of Water Resources, December 2016). Over-pumping in the Soquel-Aptos Basin resulted in a groundwater overdraft condition and seawater intrusion along the coast. The portion of the Purisima aquifer from which the City pumps has been recognized locally as being threatened by potential over-pumping with an ongoing risk of seawater intrusion that could jeopardize the future production of the City's groundwater sources (City of Santa Cruz, August 2016).

A Draft GSP for the Santa Cruz Mid-County Groundwater Basin was released for public review in July of 2019 (Santa Cruz Mid-County Groundwater Agency, 2019). A final GSP was adopted in in November 2019 and submitted to the California Department of Water Resources on January 20, 2020. The Plan sets sustainability management criteria (SMC) for each of the five sustainability indicators applicable to the Basin and identifies projects and management actions to achieve and maintain Basin sustainability. Baseline projects and management actions and projects identified to reach sustainability include water conservation and demand management, installation and redistribution of municipal groundwater pumping, and near-term activities to include Pure Water Soquel, aquifer storage and recovery in the Beltz well system and elsewhere, water transfers/in lieu groundwater recharge and distributed stormwater managed aquifer recharge. Additional potential future projects and management actions may be evaluated in the future. The GSP will guide ongoing management of the groundwater basin with a goal to achieve and maintain Basin sustainability over a 50-year planning and implementation horizon (Santa Cruz Mid-County Groundwater Agency, 2019). Because the City of Santa Cruz water system relies heavily on surface water, an additional focus of several of the management actions is creation of a supplemental drought supply to improve reliability for the City's water service area (Ibid.).

Climate Change

As the City of Santa Cruz water supply consists of only local sources maintained and recharged by natural processes, the potential effects related to climate change could greatly impact the sources of supply. According to the 2015 UWMP, it is widely accepted that climate change may make the future hydrology drier than the historical record maintained in the region, and general forecasts describe deviation in the seasonal patterns of rainfall with longer and more severe droughts. Additionally, the annual average temperature in the region may increase leading to variability in the rate of evaporative processes that can greatly impact local sources and watersheds. Climate change impacts are likely to be a contributor to a less reliable supply and also a driver for strengthening demand management planning (City of Santa Cruz, August 2016).

Water Supply Planning and Water Shortage Contingency Plan

Given water supply reliability issues discussed in the previous section, the City of Santa Cruz has actively considered and pursued water supply and demand management projects over the past 20 years to enhance the reliability of the system. In October 2013, the City Council directed City staff to develop a detailed engagement program for a community examination of water supply issues. City staff developed a framework for a Water Supply Advisory Committee (WSAC), and the Council approved the 14-member WSAC in March 2014. The purpose of the WSAC, as established by Council-approved WSAC charter on June 24, 2014, was to "explore, through an interactive, fact-based process, the City's water profile, including supply, demand and future threats, and analyze potential solutions to deliver a safe, adequate, reliable and environmentally sustainable water supply, and develop strategy recommendations for City Council consideration". The WSAC completed their work in October 2015, and the City Council accepted their Final Report in late 2015 that included the following recommendations for water augmentation strategies:

- ❒ Additional water conservation with a goal of achieving an additional 200 to 250 million gallons of demand reduction by the year 2035.
- ❒ Passive recharge of regional aquifers by working to develop agreements for delivering surface water as an in lieu supply to the Soquel Creek Water District and/or Scotts Valley Water District so they can "rest their wells", help aquifers recover and store water that can become available to the City of Santa Cruz Water Department in drought years.
- ❒ Active recharge of regional aquifers by using existing and some potential new infrastructure in the regionally shared Purisima aquifer in the Soquel-Aptos basin and/or in the Santa Margarita/Lompico/Butano aquifers in the Scotts Valley area to store water that can be available for use by Santa Cruz in drought years.
- ❒ A potable water supply using advanced treated recycled water as its source, as a supplemental or replacement supply in the event the groundwater storage strategies described above prove insufficient to meet the Plan's goals of cost effectiveness, timeliness and yield. In the event advanced treated recycled water does not meet the needs, desalination would become the last element (City of Santa Cruz, August 2016).

Upon acceptance of the WSAC report by City Council, development began on the supply augmentation strategy work plan that further defines the components of the implementation plan and timeline included in the WSAC Final Report. The work plan is comprised of the following parts:

- ❒ Water Conservation or Demand Management (Element 0)
- ❒ In lieu water transfers with neighboring agencies (Element 1)
- ❒ Aquifer Storage and Recover (Element 2)
- ❒ Advanced Treated Recycled Water or Seawater Desalination (Element 3)

The initial phase of the supply augmentation strategy involves enhancement of the existing conservation programs as well as evaluation of the feasibility of alternative future supply projects

focused on solving the 1.2 billion gallon annual (or 1,200 MGY) shortfall identified in the WSAC report under multiple year droughts. An updated Water Conservation Master Plan was completed in 2016 to define the next generation of water conservation activities. The draft plan includes 35 measures for implementation by 2021, many of which are already underway. The projected per capita water use in gallons per person per day (gpcd) is expected to decline to about 92 gallons per person per day, far below the City's 2020 target of 110 gpcd, and continuing to decline to a level of about 78 gpcd by 2035 (City of Santa Cruz, August 2016).

In April 2019, Water Department staff presented a comprehensive update on the outcomes of work on the WSAS work plan between 2015 and the end of 2018 to the Water Commission. The update included revisiting the WSAC's key assumptions about water demand and added new information about the Department's CIP program and its costs and implications related to supplemental supply development and broader system priorities for improving infrastructure resiliency as well as adapting to climate change. In November 19, 2019, the City Council approved the Water Commission's recommended changes to the work plan that are summarized below:

a. Retain the elements of the current WSAS relating to in-lieu water transfers to support ongoing regional discussions about the potential for working with regional entities on in-lieu water transfers or exchanges;

b. Continue exploring additional opportunities for developing Aquifer Storage and Recovery (ASR) in the Santa Margarita Basin as well as additional opportunities for further development of ASR facilities and infrastructure in the Mid-County Groundwater Basin;

c. Design and implement an approach to evaluating the sensitivity of the City's surface water resources to the impacts of climate change with a goal of providing the information necessary to appropriately compare the long-term viability of additional surface water development with other available alternative strategies identified by the WSAC;

d. Given the results of the climate change analyses, develop feasible supplemental water supply projects using surface water as the source of supply to be used in the WSAC recommended comparative analysis methodology;

e. Complete the planned Phase II Recycled Water Study, including developing feasible supplemental water supply projects using recycled water as the source of supply; and

f. Plan to make decisions about any additional supplemental supply project based on all the information developed in items a through e above, and by using the WSAC recommended comparative analysis methodology.

The City also is working with the Soquel Creek Water District (SqCWD) on an in-lieu transfer project. In-lieu transfers include short-term and long-term projects that would deliver excess City water to SqCWD and/or the neighboring water districts during winter that would reduce pumping from regional aquifers and assist with groundwater recharge and recovery. The short-term project utilizes existing infrastructure that connects the SqCWD and the City water system and uses surplus water from the City's North Coast sources. The City and District entered into a 5-year agreement, which sunsets at the end of 2020, under which the City will transfer available winter

supply from Majors Creek and Liddell Springs to the District under a resource management pilot program. The Project also considers potential future extension of the agreement beyond the 5-year pilot period. Under certain conditions, winter water would be directed from existing intakes on Liddell Spring and/or Majors Creek to the Graham Hill Water Treatment Plant for treatment. Water is then distributed through the City's system to existing metered interties with the District. No physical improvements to the City's or District's systems are required for this Project. Additionally, the source water is from the City's pre-1914 appropriative water rights, and the amount of water transferred would be within the range of what has been delivered to and used in the City in the past. A pilot program is in place to collect information related to physical operations, water quality, response of groundwater levels, and the potential to develop a larger and/or long-term project. The long-term project may include higher volumes of water transfers including those from the San Lorenzo River, which would require modifications to the City's water rights, as described above under Water Rights Petitions subsection.

An aquifer storage and recovery (ASR) study is also underway that is looking at regional options for groundwater injection, storage, and future extraction in order to actively recharge regional aquifers. ASR piloting is currently underway utilizing the City's existing Beltz wells. A portion of the water delivered using in-lieu transfers or ASR facilities would be effectively banked in the aquifers to be extracted and returned to the City when needed in future dry years. The City's current work plan includes continued piloting and implementation of in-lieu transfers and ASR at the Beltz wells and provides for a decision on pursuit of additional ASR and/or recycled water options in 2022.

A phase two recycled water study is being initiated to look further at recycled water alternatives. The phase one study provided a review of the beneficial uses of recycled water. The phase two study will develop several alternatives showing promise from phase one, add any new alternatives based on current activities by Soquel Creek and Scotts Valley, and develop the alternatives to a level of detail for a comparative analysis with ASR and in-lieu projects. As per the WSAC recommendations, advanced treated recycled water or desalinated water would be developed as a supplemental or replacement supply in the event the groundwater storage strategies described above prove insufficient to meet the plan's goals of cost-effectiveness, timeliness and yield. If it is determined that recycled water cannot meet the City's shortfall needs, desalinated seawater would be used. A recycled water feasibility study was completed in June 2018, and a desalination project feasibility update was completed in August 2018. In November of 2018, City Council accepted staff recommendations to prioritize recycled water over desalination, understanding that if the other alternative water supply augmentation strategies being considered are not able to meet the plan goal, then desalination would be reconsidered. Specifically, the City determined to continue to evaluate the opportunities and benefits of replacement and expansion of the existing tertiary treatment facility at the Wastewater Treatment Facility (WWTF) and to continue to evaluate treating wastewater to advanced treatment standards for potential groundwater replenishment and/or as surface water augmentation by sending to Loch Lomond Reservoir.

Additionally, in 2009, the City of Santa Cruz completed a comprehensive update of its Water Shortage Contingency Plan. Since then, the City has had to declare a water shortage in six of the past eleven years, including a Stage 3 Water Shortage Emergency in both 2014 and 2015. The City's

Water Shortage Contingency Plan describes the conditions which constitute a water shortage and provides guidelines, actions, and procedures for managing water supply and demands during a declared water shortage. The primary focus of the plan is on measures that reduce customer demand for water, but it also covers actions that can be implemented to stretch or increase the water supply (City of Santa Cruz, August 2016).

4.6.1.2 Wastewater Treatment

The City of Santa Cruz owns and operates a regional wastewater treatment facility (WWTF), located on California Street adjacent to Neary Lagoon that provides secondary level of treatment. The City treats sewage from domestic and industrial sources and discharges the treated effluent into the Pacific Ocean under the provisions of a waste discharge permit (NPDES No. CA0048194) issued by the California RWQCB, Central Coast Region (Order No. R3 - 2005 - 0003). Monterey Bay, into which the region's treated wastewater is disposed, was designated in 1992 as a National Marine Sanctuary. Wastewater influent and effluent characteristics are carefully monitored for compliance with state water quality requirements. The City also participates in a regional receiving water monitoring program with other dischargers in the Monterey Bay area (City of Santa Cruz Water, April 2012, DEIR volume).

Treatment Levels and Plant Capacity

The City's WWTF was upgraded in 1998 to provide secondary treatment in order to meet state and federal waste discharge requirements, and currently produces wastewater of a quality that would be classified as Disinfected Secondary-23. The treatment process consists of a series of steps, including screening, aerated grit removal, primary sedimentation, trickling filter treatment, solids contact, secondary clarification, and ultraviolet disinfection (City of Santa Cruz, April 2012, DEIR Volume).

The WWTF is not currently permitted for and does not now produce recycled water for offsite reuse. The current level of treatment is not sufficient for general irrigation without additional treatment and facility upgrades. In addition to the treatment upgrades, a distribution system, including pumps, meters, storage facilities, and separate piping would be required to convey the recycled water to customers (City of Santa Cruz, April 2012, DEIR volume). The City of Santa Cruz is actively investigating the feasibility of recycled water.

The WWTF has a permitted wastewater treatment capacity of 17.0 million gallons per day (mgd). In 2016, the WWTP treated 3.3 billion gallons of wastewater effluent at an average daily rate of 9.04 mgd (Ibid.). The Santa Cruz County Sanitation District has treatment capacity rights of 8 mgd at the City of Santa Cruz WWTF. The City contributes approximately 5.0 mgd with a remaining capacity of 4.0 mgd. The Sanitation District contributes 5.5 mgd with a remaining capacity of 2.5 mgd. Approximately 50% of the wastewater treated at the plant is generated within the City of Santa Cruz. The total remaining treatment plant capacity, therefore, is 7.5 mgd.

Treated Effluent Disposal

The treated effluent is disposed into the Monterey Bay via a deep ocean outfall constructed in 1987. The outfall extends 12,250 feet on the ocean bottom and terminates one mile offshore at a depth of approximately 110 feet below sea level. A 1,200-foot diffuser at the end of the pipe provides an initial dilution of greater than 139 parts seawater to one part wastewater (City of Santa Cruz, April 2012, DEIR volume). The City of Scotts Valley discharges its treated effluent via the City's ocean outfall. The Scotts Valley Wastewater Treatment Plant has a permitted capacity of 1.5 million gpd and treats water to secondary and tertiary levels. Secondarily treated effluent that is not used for recycled water is transmitted via a main to Santa Cruz and discharged to the ocean through the outfall shared with the City of Santa Cruz.

Wastewater Collection

The City of Santa Cruz wastewater collection system serves approximately 15,000 connections. The collection system includes 23 pump stations and over 160 miles of sewer pipeline ranging in size from 6 to 54 inches in diameter. The City has a hydraulic model for the sewer system, and continues to focus on collections system projects that reduce infiltration and inflow into the system (City of Santa Cruz, April 2012, DEIR Volume).

4.6.1.3 Electrical and Natural Gas Utilities

Electricity and Natural Gas

Pacific Gas and Electric Company (PG&E) provides electrical and natural gas service to the City. Incorporated in California in 1905, PG&E is one of the largest combination natural gas and electric utilities in the United States. PG&E and other utilities in the state are regulated by the California Public Utilities Commission (City of Santa Cruz, April 2012-DEIR volume). It currently provides service to approximately 16 million people throughout a 70,000-square-mile service area in northern and central California from Eureka in the north to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada in the east. The service area includes 106,681 circuit miles of electric distribution lines, 18,466 circuit miles of interconnected transmission lines. 42,141 miles of natural gas distribution pipelines and 6,438 miles of transportation pipelines. PG&E and other utilities in the state are regulated by the California Public Utilities Commission (Pacific Gas and Electric Company, 2018).

Monterey Bay Community Power (MBCP) was formed in March 2017 as a joint powers authority to provide locally controlled, 100% carbon-free electricity to residents and businesses in Monterey, San Benito and Santa Cruz Counties through the Community Choice Energy (CCE) model established by the State of California. The CCE model enables communities to choose clean-source power at a cost equivalent to PG&E while retaining PG&E's role in maintaining power lines and providing customer service. The CCE model helps ensure local economic vitality because surplus revenues that would normally flow to PG&E will stay in the community. MBCP anticipates serving

electricity to customers beginning spring 2018. Current PG&E customers will be automatically enrolled in MBCP. All "exit fees" charged by PG&E will be absorbed by MBCP at the time of enrollment. Currently available PG&E programs, such as energy efficiency programs and CARE, will continue to be accessible by MBCP customers (Monterey Bay Community Power, 2017).

According to the U.S. Energy Information Administration (EIA), California used approximately 257,268 gigawatt hours (GWh) of electricity in 2017 (EIA 2019a). Electricity usage in California for differing land uses varies substantially by the type of uses in a building, type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building. Due to the state's energy efficiency building standards and efficiency and conservation programs, California's electricity use per capita in the residential sector is lower than any other state except Hawaii (U.S. Energy Information Administration [EIA], 2018).

PG&E customers consumed a total of 79,776 million of kilowatt hours (kWh) of electricity in 2018 (CEC 2018a). In Santa Cruz County, PG&E reported an annual electrical consumption of approximately 1,207 million kWh in 2018, with 657 million kWh for non-residential use and 550 million kWh for residential use (CEC 2018b).

According to the EIA, California used approximately 2,110,829 million cubic feet of natural gas in 2017 (EIA, 2019b). The majority of California's natural gas customers are residential and small commercial customers (core customers). These customers accounted for approximately 32% of the natural gas delivered by California utilities (CPUC, 2019). Large consumers, such as electric generators and industrial customers (noncore customers), accounted for approximately 68% of the natural gas delivered by California utilities (CPUC, 2019). CPUC regulates California natural gas rates and natural gas services, including in-state transportation over transmission and distribution pipeline systems, storage, procurement, metering, and billing. Most of the natural gas used in California comes from out-of-state natural gas basins. California gas utilities may soon also begin receiving biogas into their pipeline systems (CPU,C 2019).

PG&E customers consumed approximately 4,794 million therms of natural gas in 2018 (CEC, 2018c). PG&E had delivered approximately 52 million therms to Santa Cruz County, with 21 million therms for non-residential use and 31 million therms for residential use (CEC, 2018d).

Transportation-Related Energy Consumption

According to the EIA, California used approximately a total of 683 million barrels of petroleum in 2017, with the majority (585 million barrels) used for the transportation sector (EIA 2019c). This total annual consumption equates to a daily use of approximately 1.9 million barrels of petroleum. There are 42 U.S. gallons in a barrel, so California consumes approximately 78.6 million gallons of petroleum per day, adding up to an annual consumption of 28.7 billion gallons of petroleum. In California, petroleum fuels refined from crude oil are the dominant source of energy for transportation sources. Petroleum usage in California includes petroleum products such as motor gasoline, distillate fuel, liquefied petroleum gases, and jet fuel. California has implemented

policies to improve vehicle efficiency and to support use of alternative transportation. As such, the California Energy Commission (CEC) anticipates an overall decrease of gasoline demand in the state over the next decade.

Renewable Energy Resources

In 2014, California became the first state in the nation to get more than 5% of its utility-scale electricity generation from its solar resource (U.S. Energy Information Administration, 2017) and in 2015, California ranked second in the nation in net electricity generation from all renewable energy resources other than hydroelectric and wind, and first as a producer of electricity from biomass, geothermal, and solar energy (Ibid.).

There are also over 2,000 residential solar photovoltaic (PV) systems and about 60 commercial solar PV systems that provide renewable electricity within the City. All residential, commercial, and industrial PG&E electricity accounts will be opted into Monterey Bay Community Power's (MBCP) community choice energy program in Spring 2018. At that time, switching the City's overall electricity procurement to MBCP will increase the proportion of electricity supplied from renewable sources from 30% (with PG&E) to 50% and eventually consumers may elect to pay a premium for electricity from 100% renewable sources.

In 2015, the latest year for which data are available, the City of Santa Cruz's municipal operations consumed about 14 million kilowatt-hours of electricity (~5.7% of overall City use) and about 433,000 therms of natural gas (~3.7% of overall City use). The power mix for municipal operations includes 43% natural gas (from PG&E), 29% electricity (from PG&E), 23% from methane capture and conversion to electricity at the wastewater treatment facility, and 5% solar PV. Methane capture and conversion to electricity and solar PV are considered renewable energy sources. The City plans to install solar PV to increase the proportion of overall energy use met by solar PV from 5% in 2016 to 11% by 2018 and 16% by 2020.

The City, working with the University of California Santa Cruz (UCSC), has also piloted several renewable energy projects on the Wharf including solar and wind energy generation. The City will continue to explore opportunities for context sensitive renewable energy generation at the Wharf to reduce its carbon footprint.

Energy Efficiency and Conservation

Studies have demonstrated the value and cost-effectiveness of weather-stripping, replacing single pane windows, old appliances and lighting, and increasing insulation in reducing energy use and saving money. Significant energy and cost savings have already been achieved through the implementation of such measures throughout the City of Santa Cruz, although further savings could be achieved (City of Santa Cruz Climate Action Program, October 2012). Over the past 15 years, the combined influences of energy efficiency rebate programs, a public education campaign, and significant increases in energy prices have led to a 22% reduction in energy use

within Santa Cruz homes. While this drop in energy use is significant, home energy use in Santa Cruz is again on the rise, but still far below 1996 levels (Ibid.).

In 2007, Santa Cruz became one of the first municipalities in the nation to require new construction to include the adoption of environmentally superior building materials and designs. Builders in Santa Cruz now use best practices for their construction projects that enhance building energy efficiency and water conservation as well as to improve air quality, waste reduction and recycling, and erosion and runoff control. The Green Building Program currently includes residential and commercial development (City of Santa Cruz Climate Action Program, September 2010). Reviews conducted as part of the preparation of the City's Climate Action Plan (CAP) indicate that an "award-winning" home under the City's Green Building Program produces a home that is more efficient than standard homes built in 2008 and almost twice as efficient as homes built in 1990 (City of Santa Cruz, October 2012).

The Association of Monterey Bay Area Governments (AMBAG) Energy Watch Program is a partnership between AMBAG and PG&E, which seeks to reduce energy use in the Monterey Bay region by providing the resources listed below to eligible PG&E customers.

- energy assessments and audits
- direct installation of energy efficient equipment
- technical assistance and financial incentives for energy efficient retrofits in municipal buildings
- energy efficiency seminars and training courses in the region.
- information on other PG&E energy efficiency programs and services

AMBAG is the metropolitan planning organization (MPO) for the Project region, which includes Monterey, San Benito, and Santa Cruz counties. In 2008, AMBAG adopted the Monterey Bay Regional Energy Plan, which provides a framework that local cities and counties can adopt, or use as guidelines to reduce energy use (AMBAG 2008). Also, AMBAG adopted the Monterey Bay 2040 Moving Forward – 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy (2040 MTP/SCS), the implementation of which is anticipated to achieve a 4 percent per capita reduction and nearly 7 percent per capita reduction in GHG emissions from passenger vehicles by 2020 and 2035, respectively (AMBAG, 2018). The 2040 MTP/SCS outlines the region's proposed transportation network, emphasizing multimodal system enhancements, system preservation, and improved access to high quality transit, as well as land use development that complements this transportation network (AMBAG 2018). These transportation strategies would reduce vehicle miles traveled (VMT) and associated petroleum fuels.

4.4.2 Impacts and Mitigation Measures

Standards of Significance

In accordance with the California Environmental Quality Act (CEQA); State CEQA Guidelines (including Appendix G); City of Santa Cruz plans, policies, and/or guidelines; and agency and professional standards, a project impact would be considered significant if the project would:

UTIL-1 Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years;

UTIL-2 Require or result in the relocation or construction of new or expanded water, wastewater treatment facilities, storm drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects;

UTIL-3 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;

UTIL-4 Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments; or

UTIL-5 Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals;

UTIL-6 Comply with federal, state, and local management and reduction statutes and regulations related to solid waste;

UTIL-7 Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation, or

UTIL-8 Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Analytical Method

Project water demand is estimated based on water demand rates developed as part of the City's General Plan 2030 EIR and the 2015 Urban Water Management Plan update. The impact analysis is based on findings of the 2015 UWMP and consultation with City of Santa Cruz Water Department staff. Wastewater generation was reviewed based on review of existing data in the General Plan and review with City staff.

Energy demand was estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2, as well as electricity and natural gas usage data for the existing wharf scaled for expansion under the project.

Impacts and Mitigation Measures

The following analysis assesses impacts to the City of Santa Cruz water supplies as a result of water demand associated with development of the proposed project (UTIL-1), potential impacts to wastewater treatment (UTIL-4), solid waste (UTIL-5) and energy use (UTIL-7).

Areas of No Project Impact

No impacts were identified regarding existing or expanded water, wastewater treatment, or other infrastructure facilities (UTIL-2), or groundwater impacts (UTIL-3), or conflicts with solid waste regulations (UTIL-6)or energy plans (UTIL-8), as explained below.

UTIL-2**:** *New or Expanded Facilities – No Impact.* The City Water Department indicates that the future construction pursuant to the Wharf Master Plan would not result in the need to construct or expand its water treatment facility or other water infrastructure/facilities to accommodate future water demand resulting from the proposed project. The existing water line that serves the Wharf can accommodate the estimated increased demand (Goddard, City of Santa Cruz Water Department, personal communication, January 2020). No new or expanded wastewater treatment, storm drainage or electrical/natural gas infrastructure facilities have been identified as needed to serve development envisioned in the Wharf Master Plan. All sewage on Santa Cruz Wharf is collected by gravity pipes and conveyed to two pump stations on the Wharf that pump sewage to the municipal collection system that goes to the City's wastewater treatment plant. Existing sewer lines on the Wharf are constructed of corrosion-resistant PVC and ABS material and are in good condition according to the engineering review conducted as part of the Wharf Master Plan (Moffatt & Nichol, October 2014). Therefore the project would result in no impacts from the construction of new or expanded infrastructure facilities.

UTIL-3 *Groundwater – No Impact.* The project site (Santa Cruz Wharf) is located primarily within Monterey Bay and is not located in groundwater recharge area and would not interfere with groundwater recharge. The project area is served the City's surface water supplies, and any incremental increase in water demand would not affect groundwater supplies.

UTIL-6 *Conflict with Solid Waste Regulations – No Impact.* The proposed project consists of a Wharf Master Plan. Future improvements constructed as a result of the Master Plan would not conflict with any federal, state or local management or reduction statute or regulation.

UTIL-8 *Conflict with Energy Plan – No Impact.* The proposed project consists of a Master Plan for the Santa Cruz Wharf. Future improvements constructed as a result of the Master Plan would be of the type or size that would conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Project Impacts

Impact UTIL-1: **Water Supply.** Implementation of the Wharf Master Plan and construction of recommended structures and improvements would result in construction of new buildings and enhanced public access, which could result in increased water demand for which there are sufficient supplies available to serve the project and reasonably foreseeable future development (UTIL-1). Therefore, the impact is considered a *less-than-significant impact*.

Wharf Master Plan

Adoption and implementation of the Wharf Master Plan and future construction of planned improvements would expand the Wharf by approximately 2.5 acres with construction of the East Promenade, Westside Walkways walkway and two boat facilities. Implementation of the Plan would result in construction of three new buildings (Gateway, Events Pavilion and Landmark), totaling 15,000 square feet of publicly-oriented building space. The Master Plan identifies potential expansion of existing commercial buildings of approximately 4,000 square feet in two locations. Therefore, implementation of the Master Plan could result in development of approximately 19,000 square feet of new building space. The Master Plan also encourages the development of second floor uses. The Master Plan provides a preliminary estimate that potential remodels and intensification within the existing commercial building footprint could result in a 20-30% increase in building space separate from the three new buildings, which would be approximately 12,000-18,000 square feet based on the existing total square feet of buildings on the Wharf. The Master Plan does not propose specific locations for potential intensification other than the two locations identified above, and it is not known when such intensification and/or expansion may occur. Potential expansion of existing structures could occur under existing conditions with or without implementation of the Master Plan. Nonetheless, this Draft EIR considers potential intensification of existing buildings up to 18,000 square feet as part of the impact analyses. Thus, the Draft EIR considers a worst-case analysis with potential development of approximately 37,000 square of public use and commercial in new and expanded buildings that includes 15,000 square feet for public uses and 22,000 square feet for new commercial uses. The Master Plan also identifies new, expanded, and/or upgraded public restroom facilities at four locations. An outdoor shower is also identified as a potential amenity for kayakers and ocean swimmers.

Visitor use at the Wharf could increase, although there are no projections of future visitor use at the Wharf. The City estimates approximately 2.5 million people currently visit the Wharf annually. Implementation of the Wharf Master Plan could result in some increase in visitors to the Wharf due

to: 1) enhancement of existing public spaces, including expansion and increased public and private events at the Wharf; 2) expansion of opportunities for boat tours and small craft launches; and 3) potential increase in commercial uses and parking within the existing development footprint. However, a specific level of increased use cannot be accurately estimated.

The proposed project would not directly result in new development, but could lead to intensified development in the project study area, resulting in increased water demand in future at an unknown date. Based on water demand rates utilized for the General Plan analyses, and assuming a worst-case scenario in which all new buildings are commercial uses, new construction could result in a water demand of 2.4 MGY with 37,000 square feet of new building space. This demand represents less than one-hundredth of one percent of the total estimated future water demand within the City's service area. New restrooms and plumbing fixtures in new buildings would be required to utilize water conserving fixtures in accordance with City regulations. The City currently provides Wharf businesses and facilities with 7.6 MGY.

The 2015 UWMP documents a trend of declining water demand since the year 2000, and total water demand is projected to decline over the 20-year UWMP period due to continued implementation of conservation programs and other measures. However, as indicated above, the UWMP projections for the year 2035 estimate a shortfall of approximately 40 MGY during normal periods, 528 MGY during single dry year periods, and 1,639 MGY during multiple dry year periods (City of Santa Cruz, August 2016). Current water supplies are adequate during average and normal years to serve the project. During periods of dry years and drought, water customers would be subject to water curtailment as enacted by the City. A multiple dry year scenario would require more substantial curtailment of all water customers. However, the proposed project's minimal demand (less than one hundredth of one percent of the total water service area demand) would not have significant effects on the levels of water supply or curtailment that would be required throughout the service area. Additionally, water demand in the service area has continued to be lower than projected in the UWMP after three years after the end of the drought. Therefore, the impact of increased water demand on water supplies due to the proposed project is considered less than significant as there are sufficient supplies from existing sources to serve the project.

The City also considered availability of water supplies to serve the project and other "reasonably foreseeable future development" in accordance with the recently revised CEQA Guidelines (Appendix G). Reasonably foreseeable development was determined to be those projects that are under construction or approved within the City's service area.[2] Based on this review, approximately 1,107 residential units, 370 hotel rooms, and 291,000 square feet of commercial uses would be considerable reasonably foreseeable as projects have been approved or are under construction. Based on City water demand rates, reasonably foreseeable development could result in a water demand of approximately 46 MGY and approximately 49 MGY with the water demand associated with the proposed Project. Based on the water demand trends observed over

[2] Based on review of City cumulative projects; see http://www.cityofsantacruz.com/government/city-departments/planning-and-community-development/active-planning-applications-and-status, and review with Santa Cruz County Planning Department.

the last few years, total water demand in the service area has been about 2,400 MGY. Based on the UWMP supply projections, adequate supplies would be available to serve the project and reasonably foreseeable development in normal and single-year drought periods. Water supplies would be deficient during multiple dry years without implementation of the City's planned water augmentation strategies. However, the demand from the project and reasonably foreseeable development represents about two percent of total demand, which would not result in more stringent contingency measures than already anticipated for a multiple dry year period. Therefore, water supplies are sufficient to serve the project and reasonably foreseeable development, and the impact is less than significant.

As described above, the City continues to administer its water conservation program, has completed a Conservation Master Plan, and is implementing a water augmentation plan. The City has defined water supply augmentation strategies that are being studied in order to provide increased production between 2020 and 2035 to address potential drought shortages. The plan includes the pursuit of the following portfolio of options: continued and enhanced conservation programs; passive recharge of regional aquifers; active recharge of regional aquifers; and a potable supply using advanced treated recycled wastewater or desalinated water if recycled water did not meet City needs. These prospective sources are still under evaluation. A water transfer pilot program is underway for the passive recharge strategy.

Near-Term Projects

Entry Gate Relocation. The proposed relocation of the entrance gate further south onto the Wharf from its current location would not result in new structural development that would result in demand for potable water. The relocation will provide more efficient accessibility for vehicles entering but would not result in increased water demand. Therefore, this near-term project would have *no impact* related to water demand.

East Promenade. The proposed East Promenade would expand the Wharf surface area by approximately 1.5 acres and would be devoted to pedestrian use. The facility would not result in construction of buildings. Therefore, this near-term project would not result in increased water demand, and there would be *no impact* related to water demand.

Mitigation Measures

No mitigation measures are required as a significant impact has not been identified.

Impact UTIL-4: **Wastewater Treatment.** Implementation of the Wharf Master Plan and construction of recommended improvements would result in construction of new buildings and enhanced public access, which could result in generation of wastewater that could be accommodated by the existing wastewater treatment plant (UTIL-4). Therefore, the impact is considered a *less-than-significant impact*.

The proposed project would not directly result in new development, but could lead to intensified development in the project study area, resulting in increased water demand over the next 25 years. The City Public Works Department generally estimates wastewater flows as a percentage of water use (City of Santa Cruz, April 2012, DEIR volume). However, this is due to partial outdoor water use for most residential and commercial accounts. However, outdoor landscaping would be limited to container planters at the Wharf. Based on the water demand rates identified in in the Impact 4.6-1 discussion, it is estimated that development accommodated by the proposed project would equate to an average daily wastewater flow increase of approximately 0.070 mgd. This amount is well within the remaining treatment plant capacity – both the permitted capacity as well as the City's remaining portion (4.0 mgd).

Mitigation Measures

No mitigation measures are required as a significant impact has not been identified.

Impact UTIL-5: **Solid Waste Generation.** Implementation of the Wharf Master Plan and construction of recommended improvements would result in construction of new buildings and enhanced public access, which could result in an increase in generation of solid waste that could be accommodated by the existing landfill (UTIL-5). Therefore, the impact is considered a *less-than-significant impact*.

The proposed project would not directly result in new development but could lead to future development. The incremental increased demand associated with future visitor uses at the Wharf would not require expansion or construction of new facilities to serve the project. The proposed project is an existing use that is currently provided solid waste disposal services provided by the City. Solid waste services are adequate to serve continued growth and buildout accommodated by the City's General Plan (City of Santa Cruz, April 2012-DEIR volume). The City's *General Plan 2030* EIR considered development of approximately 1,090,000 square feet of commercial uses, as well as 310 approved hotel rooms, 3,350 residential units, 1,274,000 square feet of office space, and 775,000 square feet of industrial uses throughout the City. Since 2009 (the General Plan EIR "baseline" year), approximately 550,000 square feet of commercial space have been developed or is under construction throughout the City, which is within the buildout estimate that was evaluated in the General Plan EIR. Thus, the project size of potentially 19,000 square feet of new structural development, as well as potential future expansion of existing uses by another 18,000 square feet, would be within the potential General Plan buildout evaluated in the EIR. The EIR analyses concluded that impacts of potential development and buildout accommodated by the General Plan would be less than significant for solid waste disposal. Since the size of the proposed project would fall within the total amount of potential development analyzed in the General Plan EIR.

The Wharf Master Plan recommends improvements to the existing trash collection system for the Wharf to eliminate the use of centralized garbage and reliance on large garbage trucks that are currently the greatest source of damage and incur the greatest amount of maintenance costs to the City. The Master Plan suggests that consideration be given to the use of an automated vacuum collection system that has been used extensively in Scandinavian countries and more recently in some areas in the United States. Collection of trash and recyclables could occur directly from individual businesses and staff-loaded stations on the Wharf with horizontal transport in a 20-inch stainless steel pipe under the Wharf to an off-site collection center that has not yet been identified. Alternative approaches include the use of smaller collection trucks and more frequent pick-ups combined with smaller refuse and recycling compactor locations on the Wharf or with a close-by offsite collection center to which refuse and recyclables can be delivered by electric or other alternatively powered vehicles. At this time, there is no proposal to install such a system, nor are there any details regarding system design and off-site collection locations. If this system is proposed in the future, additional project-level environmental review would be required.

Mitigation Measures

No mitigation measures are required as a significant impact has not been identified.

Impact UTIL-7: **Energy Use.** Adoption and implementation of the Wharf Master Plan and future improvements could result in indirect increased energy demands, which would not be wasteful or an inefficient use of resources (UTIL-7). This is considered is a *less-than-significan*t impact.

Future development that would be accommodated by the Wharf Master Plan could result in increased consumption of petroleum for off-road construction equipment and on-road vehicles during construction and operations, as well as electricity and natural gas for lighting, heating and cooling of new buildings and expanded businesses.

Energy Consumption

Electricity

Construction Use. Temporary electric power for as-necessary lighting and electronic equipment (such as computers inside temporary construction trailers and heating, ventilation, and air conditioning) would be provided by PG&E. Electrically powered hand-tools would also be used during construction. The vast majority of the energy used during construction would be from petroleum. The electricity used for such activities would be temporary and negligible; therefore, impacts would be *less than significant*.

Operational Use. The project's operational phase will require electricity for operating wharf lighting and the various buildings. The annual estimated electricity demand (kWh per year) associated with building electricity and lighting for the project was calculated based on applying

existing usage information for the wharf and buildings (kWh per square-foot factors) to project development. Additionally, electricity demand associated with water and wastewater conveyance and treatment was estimated using CalEEMod default assumptions for the restaurant and retail/commercial uses. Notably, estimating energy demand by scaling existing wharf usage is conservative, since the usage factors are based on existing buildings, whereas future buildings would be required to comply with specifications contained in Title 24 of the California Code of Regulations at the time of development, which require greater energy efficiency standards as the code is updated. Total electricity demand for the project would be approximately 1,416,897 kWh per year, which is shown in Table 4.6-1.

Table 4.6-1: Estimated Electrical Demand – Operation

Project Component	Estimated Electrical Demand (kWh per year)
Building and Lighting Electricity Demand	1,384,312
Water and Wastewater Conveyance/Treatment	32,585
Total	1,416,897

Source: Appendix H.
Notes: kWh = kilowatt-hour.

As discussed previously, residential, commercial and industrial energy users in the City of Santa Cruz consumed about 245 million kWh of electricity in 2015. The project's demand on the local utility would be 1,416,897 kWh annually. The project's annual electricity demand on the utility would account for 0.6% of PG&E's total demand within the City. Therefore, the project is not expected to have an impact on the local utility and would not result in a wasteful use of energy. Impacts related to operational electricity use would be *less than significant*.

Natural Gas

Construction Use. Natural gas is not anticipated to be required during construction of the project. Fuels used for construction would primarily consist of diesel and gasoline, which are discussed under "Petroleum." Any minor amounts of natural gas that may be consumed as a result of Project construction would be temporary and negligible and would not have an adverse effect; therefore, impacts would be *less than significant*.

Operational Use. Natural gas would be directly consumed throughout operations of the project, primarily through building heating and use in the restaurant for cooking. The annual estimated natural gas demand (therms per year) for the project was calculated based on applying usage information for the existing buildings on the wharf (therms per square-foot) to project development. As with electricity, estimating natural gas demand by scaling existing building usage is conservative, since the usage factors are based on existing buildings, whereas future buildings would be required to comply with specifications contained in Title 24 of the California Code of Regulations at the time of development, which require greater energy efficiency standards as the code is updated. Total natural gas demand for the project would be approximately 39,699 therms per year, which is shown in Table 4.6-2.

As discussed previously, residential, commercial and industrial energy users in the City of Santa Cruz consumed about 12 million therms of natural gas in 2015. The project's estimated natural gas use would account for 0.3% of the total supplied. Therefore, the project is not expected to have an impact on the local utility and would not result in a wasteful use of energy. Therefore, natural gas consumption impacts would be *less than significant*.

Table 4.6-2: Estimated Natural Gas Demand – Operation

Project Use	Estimated Natural Gas Demand (Therms per Year)
Quality Restaurants	15,343
Other Retail/Commercial	24,356
Total	**39,699**

Source: Appendix H.

Petroleum

Construction Use. Petroleum would be consumed throughout construction of the project. Fuel consumed by construction equipment would be the primary energy resource expended over the course of construction, and vehicle-miles travelled (VMT) associated with the transportation of construction materials and construction worker commutes would also result in petroleum consumption. Heavy-duty construction equipment associated with construction activities would rely on diesel fuel, as would vendor trucks involved in transporting construction materials to the project site. Construction workers would travel to and from the project site throughout the duration of construction. It is assumed in this analysis that construction workers' vehicles would be gasoline-powered.

There are no unusual project characteristics or construction processes that would require the use of equipment that would be more energy intensive than that used for comparable activities, or equipment that would not conform to current emissions standards (and related fuel efficiencies).

Heavy-duty construction equipment of various types would be used during each phase of construction. CalEEMod was used to estimate construction equipment usage based primarily on model default assumptions, and results are included in Appendix H. Based on that analysis, over all phases of construction, diesel-fueled construction equipment would run for an estimated 136,360 hours, as summarized in Table 4.6-3.

Fuel consumption from construction equipment was estimated by converting the total CO_2 emissions from each construction phase to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. Construction is estimated to occur in phases from 2019–2039 based on the anticipated project buildout horizon. The conversion factor for gasoline is 9.13 kilograms per metric ton CO_2 per gallon (kg/MT CO_2/gallon) and the conversion factor for diesel is 10.35 kg/MT CO_2/gallon (The Climate Registry, 2017). The estimated diesel fuel usage from construction equipment is shown in Table 4.6-4.

Table 4.6-3: Hours of Operation for Construction Equipment

Construction Phase	Equipment	Hours of Equipment Use
Building Construction Phase 1 - Entry Gate Relocation	Cranes, forklifts, generator sets, tractors/loaders/backhoes, welders, pile driver	19,500
Paving Phase 1 - Deck Surfacing	Pavers, paving equipment, rollers	3,168
Building Construction Phase 2 - East Promenade	Cranes, forklifts, generator sets, tractors/loaders/backhoes, welders, pile driver	54,416
Paving Phase 2 - Deck Surfacing	Pavers, paving equipment, rollers	3,168
Building Construction Phase 3 - All Other	Cranes, forklifts, generator sets, tractors/loaders/backhoes, welders, pile driver	52,820
Building Coatings	Air compressors	120
Paving Phase 3 - Deck Surfacing	Pavers, paving equipment, rollers	3,168
	Total	**136,360**

Source: Appendix H.

Table 4.6-4: Construction Equipment Diesel Demand

Phase	Pieces of Equipment	Equipment CO_2 (MT)	kg/CO_2/Gallon	Gallons
Building Construction Phase 1 - Entry Gate Relocation	10	368.80	10.21	36,121.81
Paving Phase 1 - Deck Surfacing	6	66.09	10.21	6,473.37
Building Construction Phase 2 - East Promenade	10	1,024.69	10.21	100,361.24
Paving Phase 2 - Deck Surfacing	6	66.06	10.21	6,470.47
Building Construction Phase 3 - All Other	10	1,141.70	10.21	111,821.92
Building Coatings	1	2.55	10.21	250.08
Paving Phase 3 - Deck Surfacing	6	79.53	10.21	7,789.27
			Total	**269,288.16**

Sources: Appendix H (pieces of equipment and equipment CO_2);The Climate Registry 2017 (kg/CO_2/gallon).
Notes: CO_2 = carbon dioxide; MT = metric ton; kg = kilogram.

Fuel consumption from worker and vendor trips are estimated by converting the total CO_2 emissions from each construction phase to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. Worker vehicles are assumed to be gasoline fueled, and vendor/hauling vehicles are assumed to be diesel fueled. Calculations for total worker and vendor fuel consumption are provided in Tables 4.6-5 and 4.6-6, respectively.

As shown in Tables 4.6-4 through 4.6-6, the project is estimated to consume 470,553 gallons of petroleum during overall project construction. By comparison, California's consumption of

petroleum is approximately 52.9 million gallons per day (California Energy Commission, 2018). Therefore, because petroleum use during construction would be temporary and negligible compared to statewide consumption and would not be wasteful or inefficient, impacts would be *less than significant*. Furthermore, Mitigation Measure 4.4-1 calls for use of non-petroleum based fuel for some equipment used for pile installation.

Table 4.6-5: Construction Worker Vehicle Gasoline Demand

Phase	Trips	Vehicle CO_2 (MT)	kg/CO_2/Gallon	Gallons
Building Construction 1 - Entry Gate Relocation	39,520	148.50	8.78	16,912.97
Paving 1 - Deck Surfacing	990	3.61	8.78	411.25
Building Construction 2 - East Promenade	108,832	299.92	8.78	34,158.97
Paving 2 - Deck Surfacing	990	2.64	8.78	300.25
Building Construction 3 - All Other	105,640	247.13	8.78	28,146.47
Building Coatings	600	1.40	8.78	159.86
Paving 3 - Deck Surfacing	990	2.32	8.78	263.77
			Total	**80,089.78**

Sources: Appendix H (construction worker CO_2); The Climate Registry 2017 (kg/CO_2/gallon).
Notes: CO_2 = carbon dioxide; MT = metric ton; kg = kilogram.

Table 4.6-6: Construction Vendor Truck Diesel Demand

Phase	Trips	Vehicle CO_2 (MT)	kg/CO_2/Gallon	Gallons
Building Construction 1 - Entry Gate Relocation	15,600	204.14	10.21	19,994.12
Paving 1 - Deck Surfacing	0	0.00	10.21	0.00
Building Construction 2 - East Promenade	42,960	528.80	10.21	51,792.83
Paving 2 - Deck Surfacing	0	0.00	10.21	0.00
Building Construction 3 - All Other	41,700	504.25	10.21	49,388.16
Building Coatings	0	0.00	10.21	0.00
Paving 3 - Deck Surfacing	0	0.00	10.21	0.00
			Total	**121,175.11**

Sources: Appendix H (construction vendor CO_2); The Climate Registry 2017 (kg/CO_2/gallon).
Notes: CO_2 = carbon dioxide; MT = metric ton; kg = kilogram.

Operational Use. During operations, the majority of fuel consumption resulting from the project would involve the use of visitor motor vehicles traveling to and from the project site, as well as fuels used for alternative modes of transportation that may be used by employees, visitors, and guests. Petroleum fuel consumption associated with motor vehicles traveling to and from the project site is a function of the VMT as a result of project operation. As shown in the CalEEMod outputs included in Appendix H, the annual VMT attributable to the project is expected to be 2,440,284 VMT. Similar to the construction worker and vendor trips, fuel consumption is

estimated by converting the total CO_2 emissions from each land use type to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. Calculations for annual mobile source fuel consumption are provided in Table 4.6-7.

Table 4.6-7: Mobile Source Fuel Consumption – Operation

Fuel	Vehicle MT CO_2	kg/CO_2/Gallon	Gallons
Gasoline	544.22	8.78	61,983.67
Diesel	151.95	10.21	14,882.35
		Total	**76,866.02**

Sources: Appendix H (mobile source CO_2); The Climate Registry 2017 (kg/CO_2/gallon).
Notes: CO_2 = carbon dioxide; MT = metric ton; kg = kilogram.

Mobile sources from the project would result in approximately 61,984 gallons of gasoline per year and 14,882 gallons of diesel consumed per year at buildout. By comparison, California as a whole consumes approximately 19.3 billion gallons of petroleum per year (CEC 2018). It should be noted that over the lifetime of the project, the fuel efficiency of the vehicles being used by the visitors, employees, and guests is expected to increase. As such, the amount of petroleum consumed as a result of vehicular trips to and from the project site during operation would decrease over time. There are numerous regulations in place that require and encourage increased fuel efficiency. For example, the California Air Resources Board has adopted a new approach to passenger vehicles by combining the control of smog-causing pollutants and greenhouse gas (GHG) emissions into a single coordinated package of standards. The new approach also includes efforts to support and accelerate the numbers of plug-in hybrids and zero-emissions vehicles in California (California Air Resources Board, 2017).

In summary, although the project would see an increase in petroleum use during operation, the use is a small fraction of the statewide use and due to efficiency increases will diminish over time. Given these considerations, the petroleum consumption associated with the project would not be considered inefficient or wasteful and therefore would result in a *less than significant* impact.

Project Energy Conservation

The estimated increase in energy related to construction, operations and vehicular use would not be substantial or considered to be an inefficient or wasteful use of resources. Furthermore, the Wharf Master Plan includes objectives, policies and actions to promote sustainable and energy efficient development and practices. One of the Plan's objectives is to "promote sustainable development and sound green building practices." The Master Plan recognizes that the City has established policies that promote sustainability and green building practices. This objective recognizes that the City must lead by example on city-owned property and thus provide leadership in green building for all new and remodeling construction on the Wharf as well as consideration of energy conservation and renewable sources of energy. One of the actions supporting Policy 5

in the Wharf Master Plan calls for the City to provide opportunities for research and demonstration projects including but not limited to those related to energy, and a pilot wind energy program currently exists on the Wharf. The Master Plan also promotes alternative use of alternative transportation and includes improvements to pedestrian and bicycle access. In particular, the East Promenade will substantially expand and enhance pedestrian access and the Plan recommends addition of up to 150 bicycle parking spaces, both of which would encourage greater pedestrian and bicycle use to the Wharf.

Overall, the future consumption of electrical and natural gas resources would not represent unnecessary, inefficient, or wasteful use of resources given recommendations in the Wharf Master Plan and the ongoing implementation of the City's adopted CAP and General Plan 2030 policies that address lighting and energy conservation measures. Specifically, General Plan Goal NRC7 seeks to reduce energy use with a significant production and use of renewable energy. Its four policies and accompanying actions would promote reduction of electricity and natural gas consumption, use of renewable energy sources, and use of energy-efficient lighting, vehicles, and water fixtures and appliances. Additionally, the City's Local Coastal Program (LCP) includes a policy to meet or exceed all local and state standards for energy conservation and use in all City operations providing on-going energy management of City operations, including monitoring energy use, rate analysis, energy accounting and reports, technical support for energy-related departmental purchases, replacement of lights with high-efficiency tubes and ballasts and also replacement of older, inefficient (ozone-depleting) heating, lighting, ventilation and air conditioning systems (EQ 5.1).

The City also is activity implementing measures recommended in the City's CAP that identifies energy reduction targets for the City's municipal sector. One of the goals of the CAP is to significantly reduce energy use in municipal, residential and commercial buildings. The CAP indicates that municipal conservation and efficiency efforts have led to an estimated 16% reduction in greenhouse gas emissions compared to what would have been emitted without these programs. Because of the City's past efforts, overall municipal energy emissions have remained constant since 1993. Consistent levels of municipal emissions seen since 1996 are the result of energy efficiency and conservation measures completed in unison with upgraded City services and enhanced environmental protections (City of Santa Cruz, October 2012). Specifically, the Plan calls for implementation of Energy Efficiency Conservation Strategy (EECS) to reduce energy use in municipal buildings by an additional 40% by 2020.

In addition, new structures will be required to be constructed in accordance with specifications contained in Title 24 of the California Code of Regulations and the City's Green Building Regulations. Anticipated changes in state building and energy efficiency requirements to help reduce greenhouse gas emissions will also reduce the rate of energy consumption increases. Such measures have been factored into California energy forecasts which predict an overall reduction in per capita use of electricity due to energy efficiency standards and conservation.

Mitigation Measures

No mitigation measures are required as a significant impact has not been identified.