4.17 Utilities and Service Systems

This section analyzes impacts associated with water supplies, wastewater conveyance, treatment, and disposal, solid waste disposal, stormwater management, and telecommunications facilities to accommodate the demands and generation associated with implementation of the proposed 2021 LRDP. For additional information related to electricity and natural gas infrastructure and supplies see Section 4.6, *Energy*.

4.17.1 Environmental Setting

Water Supply

UCR receives its water supply from the RPU, which provides most of the City's water service, delivering to more than 64,000 service connections and over 300,000 people. UCR campus receives its entire water supply from the RPU, and its water demands for UCR are accounted for in the RPU's Urban Water Management Plan (UWMP), which is discussed further below. The RPU UWMP and its appendices are incorporated by reference and include discussion of regional cumulative water demand, water supplies, water supply reliability, water shortage contingency planning, future water supply projects, and climate change effects.

Locally produced groundwater resources constitute approximately 80 percent of the annual supply delivered by RPU to its service connections and, notably, all the groundwater basins that provide supply to RPU are adjudicated. This means each basin is managed pursuant to an Adjudication Judgment which is administered by a Watermaster towards the goal of maintaining sustainable groundwater conditions. A copy of the Adjudication Judgment is included as Appendix I to the 2016 RPU UWMP. As a party to the Adjudication Judgement, RPU has an established annual allocation of groundwater that it may use from the adjudicated basins, any deviation in use from what is defined in the Adjudication Judgement requires review and approval by the Watermaster. Therefore, by nature of the basins being adjudicated, they are managed to maintain sustainable conditions. Adjudication is discussed further below as relevant to the proposed 2021 LRDP and RPU.

On May 10, 2021, the Governor of California declared a state of emergency related to drought conditions in California. As outlined in the regulatory setting discussion below, this initiates temporary drought contingency measures for water suppliers and public agencies (Governor of California 2021).

City of Riverside Public Utilities

The Water Division of RPU is comprised of four groups: Engineering, Water Resources, Water Field Operations, and Water System Operations (RPU 2017). The City's water comes from both groundwater and surface water resources. Local groundwater is produced from the Bunker Hill Basin, the Rialto-Colton Basin, and the Riverside North and South Basins. RPU also receives recycled water produced by the Riverside Water Quality Control Plant (RWQCP). In addition, when needed to meet peak demands, RPU can purchase imported State Water Project (SWP) water from Western Municipal Water District (WMWD) of Riverside County. WMWD is a member agency of the Metropolitan Water District of Southern California (Metropolitan) and has a direct connection to Metropolitan's Henry J. Mills Water Treatment Plant, which is one of Metropolitan's five treatment plants, and delivers treated SWP water via gravity flow to WMWD and other member agencies as needed (RPU 2017).

Table 4.17-1 summarizes RPU's current and projected water resources to 2040, which are discussed further in the following sections.

Table 4.17-1 Current and Projected Cumulative RPU Water Supplies

Water Supplies (AFY)	2015[1]	2020	2025	2030	2035	2040
Groundwater						
Bunker Hill Basin	53,793	55,263	55,263	55,263	55,263	55,263
Riverside North	6,357	10,902	10,902	10,902	10,902	10,902
Riverside South	13,571	16,880	16,880	16,880	16,880	16,880
Rialto-Colton	1,205	2,728	2,728	2,728	2,728	2,728
Future Groundwater Extraction/ Conjunctive Use Projects[2]	0	3,000	8,000	10,800	10,800	10,800
Groundwater Total	**74,926**	**88,773**	**93,773**	**96,573**	**96,573**	**96,573**
Other Sources						
Recycled Water from RWQCP	200	6,430	6,430	6,430	6,430	6,430
Imported/Purchased Water from WMWD[3]	0	21,700	21,700	21,700	21,700	21,700
Other Sources Total	**200**	**28,130**	**28,130**	**28,130**	**28,130**	**28,130**
Supply Total	**75,126**	**116,903**	**121,903**	**124,703**	**124,703**	**124,703**

[1]Actual supplies in 2015.

[2]Includes the Banking Bunker Hill Conjunctive Use; Seven Oaks Dam Conservation Phase II (Enhanced); Bunker Hill Active Recharge 2025; Riverside North Aquifer Storage and Recovery; Box Spring Local Stream Recharge and Direct Use; and Stormwater Recharge at Columbia, Marlborough, and Kansas Detention Basins projects. These projects are accounted for in RPU's most recent Integrated Water Management Plan. Projects have planned implementation years ranging from 2020 to 2030. The Riverside North Aquifer Storage and Recovery project and Banking Bunker Hill Conjunctive Use projects are currently listed as in planning/design phase, with the Riverside North Aquifer Storage and Recovery project having completed project-specific environmental review.

[3]Imported water from WMWD is shown as a supply available to RPU. RPU intends to use this supply only if needed.

RPU = Riverside Public Utilities; AFY = acre-feet per year; RWQCP = Riverside Water Quality Control Plant; WMWD = Western Municipal Water District

Source: RPU 2016 (adapted from Table 1-3)

GROUNDWATER

RPU has historically met most of its demand from groundwater sources. In 2020, RPU estimated supplies to include approximately 88,773 acre-feet per year (AFY) of groundwater resources, 6,430 AFY of recycled water, and 21,700 AFY of purchased or imported water. Therefore, groundwater currently constitutes nearly 80 percent of the RPU potable and non-potable water supply (RPU 2016). RPU owns and operates 201 wells across the Bunker Hill, Rialto-Colton, and Riverside Basins, 50 of which extract potable water, 14 extract non-potable water, and the remainder are either inactive or used for monitoring groundwater levels and quality.

As mentioned above, all the local groundwater basins that provide supply to RPU and therefore, also to UCR, are adjudicated. The 1969 Western-San Bernardino Judgement (Adjudication Judgement) established extraction rights and allocation amounts for all approved users of the adjudicated basins. The Adjudication Judgement provides a physical solution to achieving and maintaining sustainable groundwater conditions by establishing a safe yield and fixed export rights ("use it or lose it"), as well as establishing obligations for parties to the Adjudication Judgement to maintain the integrity of the groundwater basins. The Court-appointed Watermaster collects and analyzes data and ensures that parties to the Adjudication Judgement are functioning within the limits of their authorized rights to the groundwater resources. RPU is a party to the Adjudication

Judgement and as such, has annual extraction rights to produce groundwater from the adjudicated Bunker Hill, Rialto-Colton, and Riverside Basins.

SURFACE WATER

Surface water supplies are available to RPU by purchase from WMWD, which conveys imported SWP water through Metropolitan's Henry J. Mills Water Treatment Plant in Riverside. Historically, RPU has only purchased imported SWP water when needed to meet peak demand (RPU 2016). RPU has not purchased imported water from WMWD since 2009. RPU uses recycled water to meet some of its non-potable water needs, such as outdoor irrigation and commercial uses (RPU 2017). At the time of preparation of the proposed 2021 LRDP, UCR is using some reclaimed water use for landscape irrigation. Campus agricultural fields are irrigated with water from the Gage Canal.

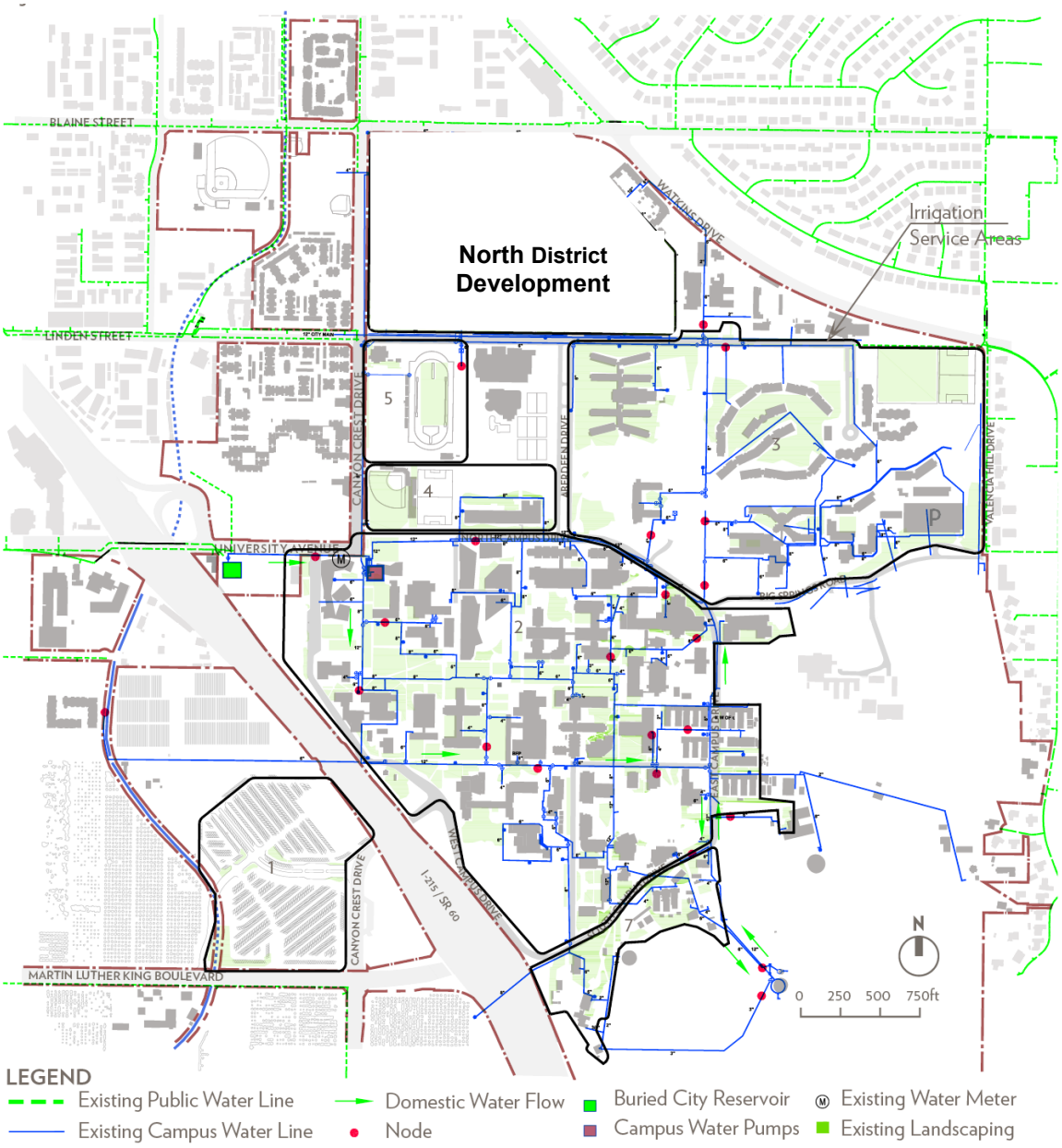
UCR Water System

UCR has a private on-campus water system that conveys water supply on campus as needed. All potable water, fire water, and irrigation water supplies are distributed through the campus-wide system (see Figure 4.17-1). UCR's water supplies (domestic, irrigation, and fire water) are conveyed to the UCR water system via a 15-inch concrete pipe connecting to a 5-million gallon City reservoir, which is buried just south of University Avenue and east of the I-215/SR 60 freeway. A pumping station for the reservoir is located east of the intersection of University Avenue and Canyon Crest Drive. This pumping station consists of a main 12-inch water meter, two reduced backflow preventers, and four 100-horsepower pumps per the East Campus Infrastructure Project Report.

A separate 12-inch City water line runs along West Linden Street and connects to the UCR water system along West Linden Street, across from Aberdeen-Inverness, through a City water meter and valve. This 12-inch water line serves as a backup supply to the campus main water network system. It also serves the off-site residential neighborhood just east of the campus. Several water laterals ranging in diameter from 4 to 8 inches branch out from the 12-inch transite (asbestos concrete) pipeline and convey water supply for the Academic Center of East Campus. The North District is mainly served by an 8-inch transite pipe running along the Canyon Crest Drive and provides the main point of connection to the 6-inch line along West Linden Street (UCR 2016). West Campus is served by existing 8-inch distribution mains in Everton Place and Iowa Avenue, an existing 16-inch transmission water main in Iowa Avenue, and an existing 20-inch transmission main in Cranford Avenue serve West Campus (CARB 2017). Several lateral pipes branching out from the main lines serve various parts of East and West Campus.

UCR has two domestic water storage tanks, with respective capacities of 1 million gallons and 50,000 gallons each. A 12-inch transite pipeline serves as the main water line for water distribution to the main campus and feeds the two campus storage tanks, located southeast of the campus. When the storage tanks are full, the pumps shut off and the tanks provide UCR's main water source. When water levels in the tanks drops below a pre-determined level, the pumps start again to fill the tanks and continue supplying water to the campus. UCR evaluated the campus' existing water system for the 2016 Physical Master Plan Study, which indicated that the existing conveyance infrastructure comprising the campus' water system adequately supports the campus water demands, including as related to water pressure and system integrity (UCR 2016).

Figure 4.17-1 Existing UCR Irrigation and Domestic Water System



Source: UCR 2016

FIRE FLOW

Fire flow is formally defined as the "flow rate of a water supply, measured at 20 pounds per square inch (psi) (138 kPa), that is available for firefighting" (IFC 200-2018 Appendix B Section B102). Water requirements for firefighting involve various factors including rate of flow, residual pressure required at that flow, flow duration, and total quantity of water required. UCR evaluated the campus's existing water system for the 2016 Physical Master Plan Study, which indicated that the existing conveyance infrastructure comprising the campus's water system adequately supports the campus water demands, including as related to water pressure and system integrity (UCR 2016). The study also determined the existing system provides sufficient pressure throughout the campus to meet the Riverside County Fire Department's minimum requirement of 20 psi (UCR 2016).

Water for fire protection on East Campus is provided by the City through two connections; the primary source is the 5 million gallon reservoir located adjacent to University Avenue east of the I-215/SR 60 freeway, and the secondary water source is a City water main located along West Linden Street. The secondary connection is only used for emergency fire protection and as a fail-safe backup to the five-MG reservoir connection. Additional storage capacity for both domestic supply and fire protection is provided by the two existing on-campus tanks. With the secondary connection to West Linden Street and the booster pumping station, all of the existing water lines currently serving the campus provide at least 1,500 gallons per minute (gpm) for a minimum duration of 2 hours and is adequate to serve the fire suppression needs for the campus (UCR 2005).

Wastewater

Wastewater generated on the UCR campus is collected and treated by the City Wastewater Division, which is responsible for wastewater flows throughout the City, as well as the community services districts of Jurupa, Rubidoux, Edgemont, and the community of Highgrove. The City's collection system consists of over 800 miles of gravity sewers ranging from 4 to 51 inches in diameter, as well as 414 miles of City-owned sewer laterals, and 20 wastewater pump stations, which range in size from less than 100 gpm to over 11,000 gpm. Wastewater treatment is conducted at the RWQCP, located at 5950 Acorn Street, Riverside, California, just south of the Santa Ana River and approximately 6 miles west of West Campus (City of Riverside 2020). In 2020, the RWQCP treated approximately 9,629 MG of wastewater, for a daily average of 26.31 million gallons per day (MGD) (R. Eland 2021). The RWQCP has a rated capacity of 40 MGD and a plant-wide expansion was completed in December 2015 that increased treatment capacity to 46 MGD average dry weather flow. Future expansion (i.e., Phase 2) to increase the plant's rated treatment capacity from 46 MGD to 52 MGD has been identified as a potential option by the City. According to the City, expansion of the RWQCP was undertaken to accommodate City of Riverside General Plan buildout through 2037. Cumulative projections indicate a wastewater flow of 39 MGD by the year 2037 (City of Riverside 2020).The RWQCP receives influent from five lines, including the Arlanza trunk, the Riverside/Hillside trunk, the Acorn trunk, the Jurupa force main, and the Rubidoux force main. The nearest lift station, or facility to move flow from lower to higher elevations, to the UCR campus is located at Canyon Crest Drive east of West Campus (City of Riverside 2020). At the time of preparation of this proposed 2021 LRDP, there are existing local capacity constraints in the City's sanitary sewer system, including Canyon Crest Drive, which will need to be addressed.

UCR Campus Wastewater and Sewer System

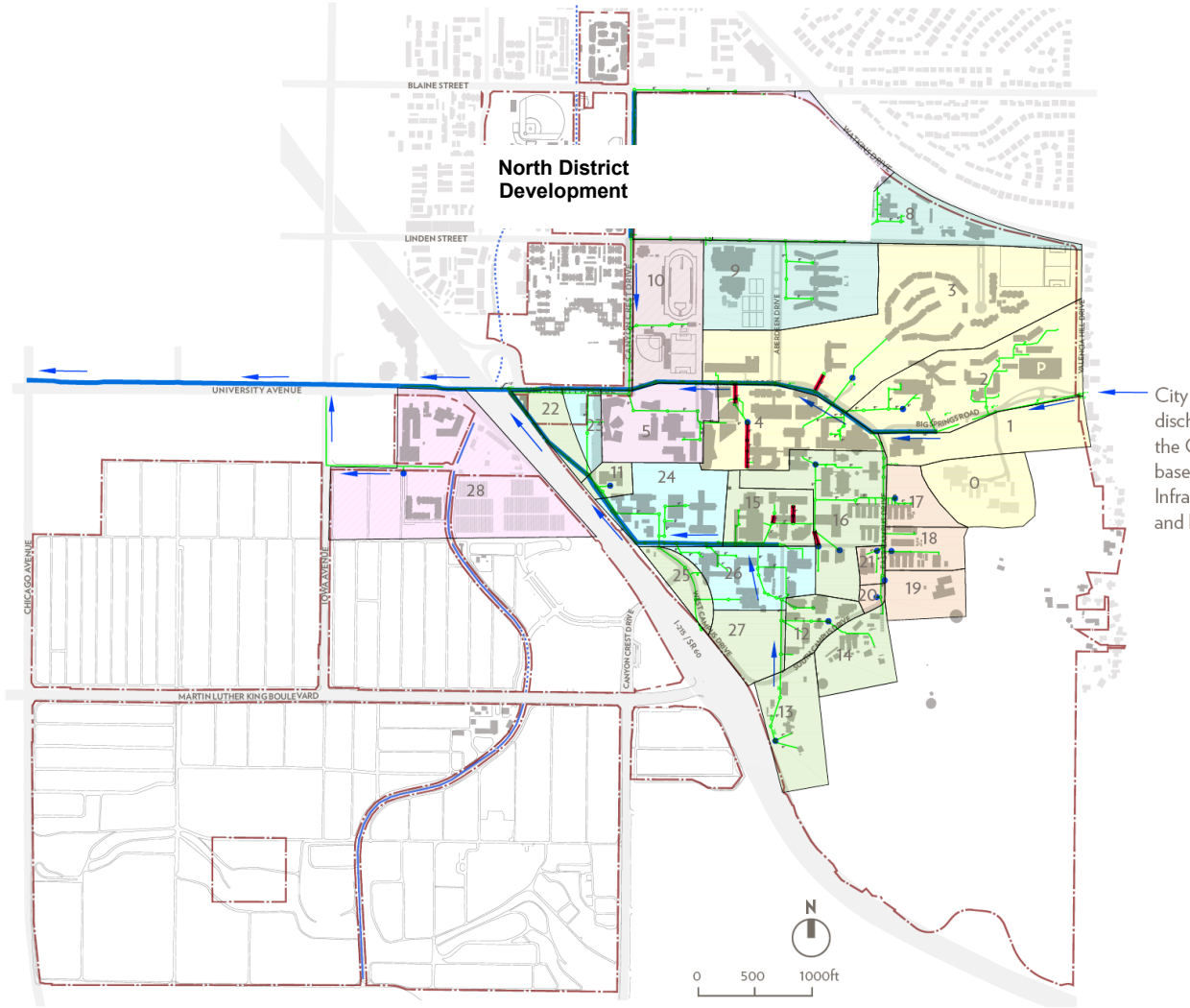
Wastewater flows and sewer flows are distinct from each other, in that wastewater flow includes any water that has been used by some domestic or industrial activity and contains waste products associated with that use, while sewer flow contains human waste. Wastewater and sewer flows are often conveyed together to a treatment and discharge location. On the UCR campus, wastewater flow is conveyed into the sanitary sewer system, which consists of a network of lines owned and maintained by UCR that connect to the City's sewer system for conveyance to the RWQCP, discussed above. The 2016 Physical Master Plan Study included an assessment of campus infrastructure systems, including the wastewater/sewer system. Based upon the population density analysis, the average daily flow rate on East Campus was calculated at approximately 1.7 MGD, which is equivalent to a peak flow rate of 2.632 cubic feet per second, and peak flow was calculated at approximately 5.6 MGD. The 2016 Physical Master Plan Study accounted for the Canyon Crest Family Student Housing facility, which was taken offline in 2017 and is therefore no longer contributing wastewater flows to the UCR system. Notably, the Canyon Crest Family Student

Housing was comprised of World War II-era buildings with comparably outdated infrastructure, including as related to the wastewater/sewer collection and conveyance system, such that the plumbing fixtures would not have been outfitted with modern efficiencies and conservation features. As a result, the inclusion of this structure in the 2016 analysis likely skewed the average daily and peak flow rates. Therefore, it is reasonably assumed that the average daily and peak flow rates currently present on the UCR campus are likely much lower than at the time of the study.

In 2019, UCR developed a Sewer System Management Plan (SSMP) to comply with State Water Resources Control Board (SWRCB) Order No. 2006-0003-DWQ, *Statewide General Waste Discharge Requirements for Sanitary Sewer Systems*. As described therein, the UCR sanitary sewer system has been in use since 1954 and comprises over 80,000 linear feet of collection pipe ranging from 4 to 15 inches in diameter. Original pipe has been replaced as upgrades or repairs have been required or new facilities have been constructed. The piping consists of a combination of vitrified clay, cast iron, polyvinyl chloride, and transite (asbestos concrete). The system is served by three major arteries: a 15-inch main located in North Campus Drive, an 8-inch main located in Canyon Crest Drive serving the North District and development along West Linden Street, and an 8-inch main branching out from the 15-inch main and serving the heart of the campus. There is an additional 8-inch sewer line that also branches out from the 15-inch main and serves some areas adjacent to West Campus Drive. Several lateral pipes branching out from the main lines serve various parts of the campus. The SSMP identified several strategic priorities, including upsizing the 8-inch main sewer line running along Canyon Crest Drive to a 15-inch pipe (UCR 2019a). The existing sanity sewer system is shown in Figure 4.17-2.

As mentioned above, the UCR wastewater/sewer system is owned and maintained by UCR. One exception to this is North Campus Drive which, although part of the UCR campus, is underlain by a City-owned 15-inch-diameter sewer line. The 15-inch sewer line serves as an interceptor for the whole campus and receives sewage flow from the residential neighborhood upstream of the campus. The 8-inch main along Canyon Crest Drive is also owned by the City. The City and UCR have a wastewater discharge agreement that allows UCR to discharge 1.55 cubic feet per second (approximately one MGD) from the campus into the portion of the City trunk line located in East Campus between Valencia Hills Drive and Canyon Crest Drive (UCR 2005).

Figure 4.17-2 Sanitary Sewer System



Source: UCR 2019a

SEWER SYSTEM OPERATION AND MAINTENANCE PROGRAM

The SSMP establishes Operation and Maintenance Program plans and activities to facilitate the proper management, operation, and maintenance of all parts of the sanitary sewer system to reduce and prevent sanitary sewer overflows. As required by the SWRCB's Order No. 2006-0003-DWQ, the SSMP includes the Operation and Maintenance Program elements and other major elements listed below.

- Maintenance of an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable storm water conveyance facilities.
- Description of routine preventive operation and maintenance activities by staff and contractors, including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known problem areas. The Preventative Maintenance program should have a system to document scheduled and conducted activities, such as work orders.
- A rehabilitation and replacement plan that identifies and prioritizes system deficiencies and implements short-term and long-term rehabilitation actions to address each deficiency. The program includes regular visual and video inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets, with a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan.
- References to established standards for installing new sewer systems, pump stations, and other appurtenances, and for rehabilitation and repair of existing sewer systems, and to standards for inspection and testing of new or rehabilitated facilities to ensure that facilities are built to construction specifications and to detect construction defects or other issues prior to final approval and acceptance.
- An Overflow Emergency Response Plan to identify measures to protect public health and the environment in case of a sanitary sewer overflow.
- Training provided on a regular basis for staff in sanitary sewer system operations and maintenance and requirement for contractors to be appropriately trained.
- Equipment and replacement part inventories are provided, including identification of critical replacement parts.

SEWER SYSTEM INSTALLATION AND REPAIR

UCR's Office of Planning, Design & Construction (PD&C) maintains current design and construction standards that include construction specifications for installing new sewer lines, pump stations, and other appurtenances, as well as for rehabilitation and repair of existing sewer systems. These design and construction standards include specifications for items such as pipe materials, minimum sizes, minimum cover, strength, minimum slope, trench and backfill, structure standards, and other factors. Any new construction, rehabilitation, or repair of the sanitary sewer system must adhere to these design and construction standards. PD&C requires established standards for inspection and testing of new or rehabilitated facilities to ensure that facilities are built to construction specifications and to detect construction defects or other issues prior to final approval and

acceptance. Acceptance testing for gravity sewers can include: low pressure air test or water test to identify leakage, mandrel test to identify deflection of flexible pipe, water or vacuum test of manholes to identify leakage, and video inspection to identify grade variations or other construction defects (UCR 2019a).

At a minimum of every 2 years, periodic internal audits of the SSMP are conducted, a report is prepared and kept on file, and a corrective action plan is developed and implemented. This audit, as required by the SWRCB's Order No. 2006-0003-DWQ, focuses on evaluating compliance with SSMP requirements, its effectiveness, identification of any deficiencies in the SSMP, and steps to correct any identified deficiencies. The biennial audit is required to be completed by EH&S and Facilities Services. The Environmental Programs Manager is responsible for coordinating the biennial audit and corrective action plan, and the Plumbing Shop Supervisor is responsible for providing the information required to complete the biennial audit (UCR 2019a).

OVERFLOW EMERGENCY RESPONSE PLAN

The UCR Facilities Services, EH&S, and Transportation & Parking Services (TAPS) are responsible for implementing the Overflow Emergency Response Plan, which identifies measures to protect public health and the environment in case of a sanitary sewer overflow. Facilities Services is responsible for acting as initial responder to overflows by managing and conducting operational aspects of the overflow response to immediately assess the overflow, determining the appropriate response and appropriate action to control, contain, and cleanup the overflow, and identifying and implementing preventive measures to prevent recurrence. EH&S is responsible for exposure/hazard assessment and control, monitoring, measurement, and modification of program elements in the SSMP, preparation and recordkeeping of regulatory related documents, external agency notification, and interface with regulatory agency staff. Facilities Services or EH&S may also call upon TAPS to provide services when additional equipment and assistance is needed to ensure public health and safety, such as site security, traffic control, and crowd control (UCR 2019a).

Stormwater Drainage

The existing storm drain network serving the UCR campus is comprised of UCR, City, and County of Riverside drainage facilities. On-site and off-site stormwater is collected and discharged through overland flow, underground storm drains, and natural arroyos that ultimately discharge to open channel arroyos (where water can partially infiltrate) and large-diameter county drainage facilities. Detention basins are also used to capture and infiltrate stormwater into the groundwater basin (see Figure 4.10-4).

The City municipal storm drain system receives runoff from the UCR campus that does not infiltrate into the basin and ultimately discharges to the Santa Ana River. UCR is located within the Riverside County Flood Control and Water Conservation District (RCFCWCD) Master Drainage Plan areas for the Box Springs and University areas. The West Campus drains into the Box Springs Storm Drain system, with an east-west storm drain line along Martin Luther King Boulevard and a north-south storm drain line in the center of the western portion of West Campus. The majority of stormwater runoff coming from the east is collected as surface runoff near Valencia Hill Drive and Big Springs Road by an inlet structure, which conveys and discharges flows to the Gage Detention Basin north of University Avenue at Canyon Crest Drive. Flows are conveyed through aboveground swales, a 72-inch-diameter pipe, and finally a 7-foot-diameter box culvert (UCR 2016).

City-owned storm drain lines are proposed east of East Campus at Blaine Street from West Campus View Drive to Mount Vernon Park, west of East Campus from Rustin Avenue to the I-215/SR 60

freeway, and the University Wash Channel west of the I-215/SR 60 freeway (RCFCWCD 2020). Existing and proposed storm drain facilities are further discussed on in Section 4.10, *Hydrology and Water Quality*, of this Draft EIR.

Solid Waste

Solid waste includes discarded garbage and refuse that will be disposed of at a landfill, recycling facility, or compost facility. UCR's landfill-bound waste is collected and hauled by UCR trucks to the CR&R Transfer Station and Material Recovery Facility (MRF) at 1706 Goetz Road in Perris. Some recyclable materials are recovered through a sort process of the landfill waste stream, and the remainder is used for energy and concrete production. UCR's recyclable materials are hauled to the UCR transfer station just north of Parking Lot 30. The compost/food waste and recyclable materials streams are collected from the UCR transfer station by the current contracted vendor, for recycling and/or compost, as applicable. Green waste is currently being blended into the soil at Agricultural Operations. The CR&R Transfer Station and MRF accepts construction and demolition debris (CR&R 2021).

In 2018-2019, UCR generated approximately 5,000 tons of solid waste, of which approximately 3,700 tons was diverted to recycling and composting facilities, resulting in approximately 1,420 tons of waste sent to the landfill. For this same year (2018-2019), UCR generated 0.85 ton of waste per capita, and had a Municipal Solid Waste diversion rate of approximately 70 percent and a total diversion rate (including construction and demolition) of approximately 73 percent (UCOP 2019).

Solid waste that is not recycled, composted, or reused, would be disposed of at either the Badlands Landfill, El Sobrante Landfill, or the Lamb Canyon Landfill. These three landfills have a combined remaining capacity of 69.1 million tons, as shown in Table 4.17-2.

Table 4.17-2 Existing Landfills

Landfill	Location	Estimated Close Date	Maximum Permitted Daily Load (tons/day)	Maximum Permitted Capacity (tons)	Current Remaining Capacity (tons)
Badlands Landfill	31125 Ironwood Avenue Moreno Valley, California	2022	4,500	17.6M	5.7M (Jan 2016)
El Sobrante Landfill	10910 Dawson Canyon Road Corona, California	2045	16,054	209.9M	57.5M (April 2016)
Lamb Canyon Landfill	16411 Lamb Canyon Road (SR 79) San Jacinto, California	2029	5,000	15.7M	5.9M (Jan 2016)
Total			**25,554**	**243.2M**	**69.1M**

Source: CARB 2017

M = million

Telecommunications

UCR's Information Technology Solutions (ITS) department manages the core portion of the campus technology infrastructure, which includes the wireless and wired network operations, datacenters, information security, the use of technology in instruction, and enterprise software solutions to streamline day-to-day business needs (UCR 2017).

Communication Services is transitioning the campus telephone system from the traditional analog phone network to a digital VoIP (Voice over Internet Protocol) based solution. The hosted VoIP systems ensures high quality voice communications. The wireless network on campus supports most devices and is available to all Eduroam and UCR account holders. Eduroam (education roaming) is the secure, world-wide roaming wireless access service developed for the international research and education community. Eduroam, which is an encrypted (WPA2) wireless service, allows students, researchers, faculty, and staff from UCR to obtain internet connectivity across campus and when visiting other participating institutions. Members of the UCR campus can visit a campus offering Eduroam and log in using their UCR NetID and password. Similarly, visitors to UCR can log in to UCR's Eduroam network using their home campus credentials. Several software applications are available for faculty, staff, and students (UCR 2021).

4.17.2 Regulatory Setting

Federal

Clean Water Act

The CWA, enacted by Congress in 1972 and amended several times since, is the primary federal law regulating water quality in the U.S. and forms the basis for several State and local laws throughout the country. The CWA established the basic structure for regulating discharges of pollutants into the waters of the U.S. The CWA gave the US EPA the authority to implement federal pollution control programs, such as setting water quality standards for contaminants in surface water, establishing wastewater and effluent discharge limits for various industry contaminants in surface water, establishing wastewater and effluent discharge limits for various industry categories, and imposing requirements for controlling nonpoint-source pollution. At the federal level, the CWA is administered by the US EPA and USACE. At the State and regional levels in California, the CWA is administered and enforced by the SWRCB and the nine Regional Water Quality Control Boards (RWQCBs).

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) regulates public water systems that supply drinking water (42 USC Section 300(f) et seq.; 40 CFR Section 141 et seq). The SDWA authorizes the US EPA to set national standards for drinking water, called the National Primary Drinking Water Regulations, that set enforceable maximum contaminant levels in drinking water and require all water providers in the U.S. to treat water to remove contaminants. The principle objective of the SDWA is to ensure that water from the tap is potable (safe and satisfactory for drinking, cooking, and hygiene). The main components of the SDWA are to:

- Ensure that water from the tap is potable
- Prevent contamination of groundwater aquifers that are the main source of drinking water for a community
- Regulate the discharge of wastes into underground injection wells pursuant to the Underground Injection Control program (see 40 CFR Section 144)
- Regulate distribution systems

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act is the overarching water quality control law for California. It is implemented by the SWRCB and the nine RWQCBs. The SWRCB establishes statewide policy for water quality control and provides oversight of the regional boards' operations. The Porter-Cologne Act and the CWA overlap in many ways, as the entities established by the Porter-Cologne Act enforce and implement many federal laws and policies.

Water Conservation Act of 2009

Senate Bill (SB) X7-7, which became effective on February 3, 2010, is the water conservation component to the Delta legislative package (SB 1, Delta Governance/Delta Plan). It seeks to implement water use reduction goals established in 2008 to achieve a 20 percent statewide reduction in urban per capita water use by December 31, 2020. The bill required each urban retail water supplier to develop urban water use targets to help meet the 20 percent goal by 2020 and meet an interim 10 percent goal by 2015.

Senate Bill 610

SB 610 was signed into law in 2001. This law requires cities and counties to develop water supply assessments (WSAs) when considering approval of applicable development projects to determine whether projected water supplies can meet the project's anticipated water demand. Triggers requiring the preparation of a WSA include residential developments of more than 500 dwelling units, shopping centers or business establishments employing more than 1,000 persons or having more than 500,000 square feet of floor space, commercial office buildings employing more than 1,000 persons or having more than 250,000 square feet of floor space, and projects that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling-unit project. Because UCR is a State agency and not a City or County, it is not subject to the requirements of Section 19010 of the State Water Code, which implements SB 610, and therefore SB 610 is not applicable to the proposed 2021 LRDP. Furthermore, consistent with Water Code Section 10910(c)(2), UCR's projected water demand is less than what was assumed in the UWMP, as outlined below under Impact U-2.

Senate Bill 221

Whereas SB 610 requires a written assessment of water supply availability, SB 221 requires lead agencies to obtain written verification of sufficient water supply prior to approval of certain specified subdivision projects. For this purpose, water suppliers may rely on an UWMP (if a proposed project is accounted for within the UWMP), a WSA or other acceptable information that constitutes "substantial evidence." "Sufficient water supply" is defined in SB 221 as the total water supplies available during normal, single-dry and multiple-dry water years within the 20-year (or greater) projection period that are available to meet the projected demand associated with a proposed project, in addition to existing and planned future uses.

Water Conservation in Landscaping Act

The Water Conservation in Landscaping Act, enacted in 2006, required the California Department of Water Resources (DWR) to update the Model Water Efficient Landscape Ordinance (MWELO). In 2009, the Office of Administrative Law approved the updated MWELO, which required a retail water

supplier or a county to adopt the provisions of the MWELO by January 1, 2010, or enact its own provisions equal to or more restrictive than the MWELO provisions.

State Water Resources Control Board Drought Regulations

SWRCB adopted Resolution 2015-0032 in 2015 (SWRCB 2015), which created emergency drought regulations for statewide urban water conservation "not only for 2015, but also for another year of drought should it occur." Additional information on specific drought reduction measures taken by SWRCB in 2021 are available online at: https://www.waterboards.ca.gov/drought/.

Title 24, California Code of Regulations

California Code of Regulations (CCR), Title 24, Part 6, is California's Energy Efficiency Standards for Residential and Non-residential Buildings. The CEC established Title 24 in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and provide energy efficiency standards for residential and nonresidential buildings. The standards are updated on an approximately 3-year cycle to allow consideration and possible incorporation of new efficient technologies and methods.

In 2016, the CEC updated Title 24 standards with more stringent requirements that became effective January 1, 2017. The building efficiency standards are enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary due to local climatologic, geologic, or topographic conditions, provided these standards exceed those provided in Title 24.

The 2019 update to the Building Energy Efficiency Standards under Title 24 applies to buildings for which an application for a building permit is submitted on or after January 1, 2020. In non-residential buildings, the standards mainly updated indoor and outdoor lighting and use of light emitting diode (LED) technology as well as HVAC ventilation and filtration requirements.

California Green Building Standards Code (2016), CCR Title 24, Part 11

The California Green Building Standards Code, commonly referred to as "CALGreen" was brought into effect on August 1, 2009 to outline architectural design and engineering principles that are in synergy with environmental resources and public welfare. CALGreen sets minimum standards for buildings, and since 2016, applies to new building construction and some alterations/additions within certain parameters. CALGreen establishes planning and design standards for sustainable site development, including water conservation measures and requirements that new buildings reduce water consumption by 20 percent below a specified baseline. CALGreen requires installations of 1.28 gallons per flush toilets and 0.5 gallons per flush urinals for all commercial projects as part of the prescriptive method of reducing indoor water use by the required 20 percent.

CALGreen lays out the minimum requirements for newly constructed residential and nonresidential buildings to reduce GHG emissions through improved efficiency and process improvements. It also includes voluntary tiers to encourage building practices that improve public health, safety, and general welfare by promoting a more sustainable design. The 2019 update includes new requirements for construction and sustainable design, and inclusion of future EV charging stations, landscaping and irrigation such as shade trees, and air filtration systems.

Urban Water Management Plan Act

The California Urban Water Management Planning Act applies to municipal water suppliers that serve more than 3,000 customers or provide more than 3,000 AFY. The act requires these water suppliers to update their UWMP every 5 years to identify short-term and long-term water demand management measures to meet growing water demands during normal, dry and multiple-dry years. The UWMP should include a description of existing and planned water sources, alternative sources, conservation efforts, reliability and vulnerability assessments, and a water shortage contingency analysis. RPU updated its UWMP in 2016 (titled the 2015 UWMP) and is currently in the process of updating its UWMP.

Regional Water Management Planning Act

Adopted by the State legislature in 2002, the Regional Water Management Planning Act, or SB 1672, authorizes preparation of integrated regional water management plans. Such plans are developed by regional water management groups, defined as three or more local public agencies, at least two of which have statutory authority over water supply. Integrated regional water management plans address qualified programs and projects relating to water supply, water quality, flood protection, or other water-related topics undertaken by the participating public agencies. Qualified projects, as detailed in the legislation, include, but are not limited to, groundwater, urban, and agricultural water management planning efforts, levee or flood control infrastructure maintenance or construction, water recycling projects, and water conservation programs.

Phase II Stormwater Discharge Permit

Phase II of the NPDES Program regulates storm water discharges from MS4s (such as schools and universities). As part of Phase II, the SWRCB adopted a General Permit for the Discharge of Stormwater from Small MS4s (WQ Order No. 2003-0005-DWQ) to provide permit coverage for smaller municipalities, including non-traditional Small MS4s, which include public campuses. The Phase II Small MS4 General Permit covers Phase II permittees statewide. On February 5, 2013, the Phase II Small MS4 General Permit was adopted and became effective on July 1, 2013 (WQ Order No. 2013-0001-DWQ) (SWRCB 2013). UCR was approved for coverage under the Phase II MS4 permit program and is required to comply with the requirements of the MS4 permit including:

- Public education and outreach
- Staff training to prevent and eliminate illicit discharges and pollution
- Illicit discharge detection and elimination
- Construction site stormwater runoff control and pollution prevention
- Post-construction site stormwater runoff control program for new development and redevelopment (including on-site capture of 85th percentile 24-hour storm runoff event)
- Facilities mapping, inventory, and assessment for pollution prevention
- SWPPPs for high-priority facilities
- Inspections, visual monitoring, and remedial action
- Storm drain system assessment, prioritization, and maintenance
- Assessment of operations and maintenance activities to reduce runoff and pollution
- Stormwater program modifications
- Reporting and documentation

Projects developed at UCR would be subject to the requirements of the Statewide General NPDES Permits, including the requirement to obtain coverage under the Statewide General NPDES Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (NPDES No. CAS000002, California Water Resources Control Board Resolution No. 2001-046; Modification of Water Quality Order 99-08-DWQ, SWRCB, NPDES, General Permit for Stormwater Discharges Associated with Construction Activity). This permit was revised on September 2, 2009 (Construction General Permit Order 2009-0009-DWQ) and was subsequently amended by Order No. 2010-0014-DWQ and Order No. 2012-0006-DWQ. Order No. 2012-0006-DWQ became effective on July 17, 2012.

Projects require a Permit Registration Document with the SWRCB, including a SWPPP to identify, construct, implement, and maintain both source-control and treatment-control BMPs to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the construction site during construction.

BMPs include treatment controls; operating procedures; training and education; and practices to control site runoff, spill, leaks, and waste disposal. BMPs are required to be updated accordingly to comply with any additions and/or modifications to the NPDES permit requirement or site conditions. Projects that create or replace more than 2,500 square feet of impervious surface are also subject to Phase II Small MS4 (WQ Order No. 2013-0001-DWQ NPDES No. CAS 000004) LID measures, including runoff reduction, and postconstruction stormwater management requirements, including on-site stormwater capture and infiltration. Runoff reduction must be quantified through the State's water balance calculator and a Post-Construction Stormwater Management Checklist must also be completed.

California Safe Drinking Water Act

The California SDWA (Health & Safety Code Section 116270 et seq.; CCR Title 22 Section 64400 et seq.) regulates drinking water more rigorously than the federal law. Like the federal SDWA, California requires that primary and secondary maximum contaminant levels be established for pollutants in drinking water; however, some California maximum contaminant levels are more protective of health. The act also requires the SWRCB to issue domestic water supply permits to public water systems.

Implementation of the federal SDWA is delegated to California, and the SWRCB enforces the federal and State SDWAs and regulates more than 7,500 public water systems. The SWRCB's Division of Drinking Water oversees the State's comprehensive Drinking Water Program, which is authorized to issue public water system permits.

California Plumbing Code

The California Plumbing Code is codified in CCR Title 24, Part 5. The Plumbing Code contains regulations including, but not limited to, plumbing materials, fixtures, water heaters, water supply and distribution, ventilation, and drainage. More specifically, Part 5, Chapter 4, contains provisions requiring the installation of low-flow fixtures and toilets. Existing development will also be required to reduce its wastewater generation by retrofitting existing structures with water efficient fixtures (SB 407 [2009] Civil Code Sections 1101.1 et seq.).

Integrated Solid Waste Management Act of 1989 (Assembly Bill [AB] 939)

The California Integrated Waste Management Act of 1989 created the (former) California Integrated Waste Management Board, now CalRecycle. Responsible for oversight of waste management in California, CalRecycle assists cities, counties, businesses, and organizations with meeting State waste reduction, reuse, and recycling goals. AB 939 requires that local jurisdictions meet waste diversion goals and establish a framework for program implementation, solid waste planning, and solid waste facility and landfill compliance. The California Integrated Waste Management Act was primarily intended to encourage minimization of the volume of solid waste disposed of through "transformation" (including incineration, pyrolysis, distillation, and bioconversion) and land disposal through the establishment of solid waste diversion goals for all cities and counties.

Water Quality Control Plan for the Santa Ana River Basin (Basin Plan)

The City is under the jurisdiction of the RWQCB Region 8, the SARWQCB, which provides permits for projects that may affect surface waters and groundwater locally and is responsible to prepare the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan). The Basin Plan designates beneficial uses of water in the region and establishes narrative and numerical water quality objectives. Water quality objectives, as defined by the CWA Section 13050(h), are the "limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses or the prevention of nuisance within a specific area." The State has developed total maximum daily loads (TMDLs), which are a calculation of the maximum amount of a pollutant that a waterbody can have and still meet water quality objectives established by the region. The Basin Plan serves as the basis for the SARWQCB's regulatory programs and incorporates an implementation plan to ensure water quality objectives are met. Basin Plans undergo a triennial review process, with the SARWQCB's Basin Plan most recently updated in June 2019 (SARWQCB 2019).

AB 341 (Chesbro, 2011)

AB 341 builds from the goals and requirements of AB 939. It declared a State policy goal of 75 percent diversion of solid waste by the year 2020 and directed CalRecycle to develop and adopt regulations for mandatory commercial recycling.

CalGreen Construction Waste Management Requirements

CalGreen includes several requirements related to solid waste diversion. Importantly, new non-residential construction is required to achieve at least 65 percent construction and demolition waste diversion and provide recycling areas for paper, cardboard, glass, plastics, metal, and organic waste.

Updated Integrated Regional Water Management Plan Report

WMWD published the Updated Integrated Regional Water Management Plan (IRWMP) Report in May 2008 and includes the City as a designated stakeholder. While the IRWMP focuses on long-range water planning needs in WMWD's service area, the document includes a regional-scale assessment of water planning efforts, infrastructure, and pending studies and projects. The IRWMP also discusses regional water management efforts in the context of other applicable water and environmental regional plans, such as the Santa Ana Watershed Project Authority's One Water-One Watershed Program and the Multi-Species Habitat Conservation Plan (WMWD 2008).

Article IX of the California Constitution

The Regents is a Constitutional Corporation, organized under Article IX, Section 9 of the California Constitution, with full authority over governance and management of University operations. Under this authority, UCR has legal authority to prevent illicit discharges into its system, including control of inflow and infiltration sources such as storm water, chemical dumping, or debris.

University of California

UC Policy on Sustainable Practices

UCOP developed a Sustainable Practices Policy that establishes sustainability goals to be achieved by all campuses, medical centers, and the Lawrence Berkeley National Laboratory within the UC system. The UC Policy on Sustainable Practices, approved in 2003 by the Regents, and updated in July 2020, establishes goals in areas of sustainable practices for both individual building projects and overall facilities operations: green building design, clean energy, transportation, climate protection, sustainable building operations, waste reduction and recycling, environmentally preferable purchasing, sustainable foodservice, sustainable water systems, and general sustainability performance assessment (UC 2020). Most relevant to the discussion herein are the goals and policies related to energy use (i.e., green building design, clean energy, sustainable building operations), solid waste (i.e., waste reduction and recycling), and water supply (i.e., sustainable water systems). Examples of policies related to Utilities and Service Systems include the following:

GREEN BUILDING DESIGN

- Policy A.1: All new building projects, other than acute care facilities, shall be designed, constructed, and commissioned to outperform the California Building Code (CBC) energy-efficiency standards by at least 20 percent or meet the whole-building energy performance targets listed in Table 1 of Section V.A.3 of the *UC Policy on Sustainable Practices*. The University will strive to design, construct, and commission buildings that outperform CBC energy efficiency standards by 30 percent or more or meet the stretch whole-building energy performance targets listed in Table 1 of Section V.A.3 of the *UC Policy on Sustainable Practices*, whenever possible within the constraints of program needs and standard budget parameters.
- Policy A.3: No new building or major renovation that is approved after June 30, 2019 shall use onsite fossil fuel combustion (e.g., natural gas) for space and water heating (except those projects connected to an existing campus central thermal infrastructure). Projects unable to meet this requirement shall document the rationale for this decision as described in Section V.A.4 of the *UC Policy on Sustainable Practices*.
- Policy A.4: All new buildings will achieve a U.S. Green Building Council (USGBC) LEED “Silver” certification at a minimum. All new buildings will strive to achieve certification at a USGBC LEED “Gold” rating or higher, whenever possible within the constraints of program needs and standard budget parameters.

- Policy A.5: The University of California will design, construct, and commission new laboratory buildings to achieve a minimum of LEED "Silver" certification as well as meeting at least the prerequisites of the Laboratories for the 21st Century (Labs21) Environmental Performance Criteria (EPC).[1] Laboratory spaces in new buildings also shall meet at least the prerequisites of Labs21 EPC. Design, construction, and commissioning processes shall strive to optimize the energy efficiency of systems not addressed by the CBC energy efficiency standards.
- Policy A.6: All new building projects will achieve at least two points within the available credits in LEED-Building, Design, and Construction (BD+C)'s Water Efficiency category.

BUILDING RENOVATIONS

- Policy A.7: Major renovations of buildings are defined as projects that require 100 percent replacement of mechanical, electrical, and plumbing systems and replacement of over 50 percent of all non-shell areas (interior walls, doors, floor coverings, and ceiling systems) shall at a minimum achieve a USGBC LEED "Silver" certification as described above. Such projects shall outperform CBC Title 24, Part 6, currently in effect, by 20 percent. This does not apply to acute care facilities.
- Policy A.9: Renovation projects with a project cost of $5 million or greater that do not constitute a Major Renovation under Policy A.7 as defined above shall at a minimum achieve a LEED-ID+C Certified rating and register with the utilities' Savings by Design program, if eligible. This does not apply to acute care facilities.

CLEAN ENERGY

- Policy B.1: Each location will implement energy efficiency actions in buildings and infrastructure systems to reduce the location's energy use intensity by an average of least 2 percent annually.
- Policy B.2: Campuses and health locations will install additional on-site renewable electricity supplies and energy storage systems whenever cost-effective and/or supportive of the location's Climate Action Plan or other goals.
- Policy B.3: By 2025, each campus and health location will obtain 100 percent clean electricity. By 2018, the University's Wholesale Power Program will provide 100 percent clean electricity to participating locations.
- Policy B.4: By 2025, at least 40 percent of the natural gas combusted on-site at each campus and health location will be biogas.

SUSTAINABLE BUILDING AND LABORATORY OPERATIONS FOR CAMPUSES

- Policy E.1: Each campus will submit for certification one pilot building at a LEED-O+M "Certified" level or higher.
- Policy E.2: Each campus shall register a master site to certify campus-wide LEED-O+M credits and prerequisites to streamline the certification of multiple buildings through the LEED-O+M rating system by July 1, 2015. Each campus shall certify their campus-wide credits as soon as possible after the master site has been registered. Although the deadline of July 1, 2015 has

[1] Labs21 is a voluntary partnership program that offers training and resources to support the design and operation of high-performance laboratories. Labs21 is co-sponsored by the Department of Energy and the US EPA. The Labs21 EPC is a rating system that consists of prerequisites and credits in several laboratory-specific areas, including laboratory equipment water use, chemical management, and ventilation. Labs21 EPC is designed as a complement to LEED.

passed, this policy is still applicable to development in the project area, and the requirement for certifying campus-wide credits is continuous.

- Policy E.3: Each campus shall seek to certify as many buildings as possible through the LEED-O+M rating system, within budgetary constraints and eligibility limitations.
- Policy E.4: All campuses shall implement an ongoing Green Lab Assessment Program supported by a department on campus to assess the operational sustainability of research groups and the laboratories and other research spaces they use by Summer 2018. Although the deadline of Summer 2018 has passed, this policy is still applicable to development in the project area, and the requirements listed below are continuous.
  - At least one staff or faculty member from the campus must have the role of managing the Green Lab Assessment Program.
  - Any green lab assessment programs and related efforts will adhere to all relevant UC, State and national policies and laws. Safety will never be compromised to accommodate sustainability goals.
  - All campuses shall submit a UC Green Laboratories Action Plan by Summer 2018.

ZERO WASTE

- Policy F.1: The University will achieve zero waste through prioritizing waste reduction in the following order: reduce, reuse, and then recycle and compost (or other forms of organic recycling) as described in Section V.F.6 of the *UC Policy on Sustainable Practices*. Minimum compliance for zero waste, at all locations other than health locations, is as follows:
  - Reduce per capita total municipal solid waste generation by 25 percent per capita from FY2015/16 levels by 2025, and 50 percent per capita from FY2015/16 levels by 2030
  - Divert 90 percent of municipal solid waste from the landfill.
- Policy F.2: The University supports the integration of waste, climate and other sustainability goals, including the reduction of embodied carbon in the supply chain through the promotion of a circular economy and the management of organic waste to promote atmospheric carbon reduction. In support of this goal, waste reporting will include tracking estimated Scope 3 GHG emissions.
- Policy F.3: By 2020, the University will prohibit the sale, procurement, or distribution of packaging foam, such as food containers and packaging material, other than that utilized for laboratory supply or medical packaging and products. The University seeks to reduce, reuse, and find alternatives for packaging foam used for laboratory and medical packaging products.
  - No packaging foam or expanded polystyrene shall be used in foodservice facilities for takeaway containers.
- Policy F.4: The University is committed to the reduction and elimination of single-use items in line with the University's and the State of California's Zero Waste goals and in recognition of the severe environmental impact single-use products have globally. In recognition of this commitment, locations will reduce single-use products by taking the following actions:
  - Eliminate plastic bags in all retail and foodservice establishments in campus facilities or located on university-owned land no later than January 1, 2021
  - Replace disposable single-use plastic foodware accessory items in all foodservice facilities with reusables or locally compostable alternatives and provide only upon request no later than July 1, 2021

- Provide reusable foodware items for food consumed onsite at dine-in facilities and to-go facilities no later than July 1, 2022
- Replace single-use plastic foodware items with reusable or locally compostable alternatives at to-go facilities no later than July 1, 2022
- Phase out the procurement, sale, and distribution of single-use plastic beverage bottles. Non-plastic alternatives shall be locally recyclable or compostable.
  - Foodservice facilities will provide alternatives no later than January 1, 2023.
  - Locations are encouraged to prioritize the installation of water refill stations to support the transition from single-use plastics to reusables.
  - Locations will consider eliminating single-use plastic beverage bottles when contracting with suppliers, or upon contract renewal and/or extension if current contract terms prohibit (e.g., vending machines, departmental purchases, etc.).
- When selecting prepackaged, sealed food that is mass produced off-premises and resold at University locations (e.g., grab-and-go items, such as chips, candy, prepackaged sandwiches, etc.), preference should be given in contract award and negotiations to suppliers that utilize locally compostable or locally recyclable packaging options.

SUSTAINABLE WATER SYSTEMS

- Policy I.1: Locations will reduce growth-adjusted potable water consumption 20 percent by 2020, and 36 percent by 2025, when compared to a 3-year average baseline of FY2005/06, FY2006/07, and FY2007/08. Locations that achieve this target early are encouraged to set more stringent goals to further reduce potable water consumption. Each Campus shall strive to reduce potable water used for irrigation by converting to recycled water, implementing efficient irrigation systems, drought-tolerant planting selections, and/or by removing turf.
- Policy I.2: Each location will develop and maintain a Water Action Plan that identifies long-term strategies for achieving sustainable water systems. The next update of the plan shall be completed in December 2016.
  - Campuses will include in this update quantification of total square feet of used turf and under-used turf areas on campus as well as a plan for phasing out un-used turf irrigated with potable water.
- Policy I.3: Each location shall identify existing single-pass cooling systems and constant flow sterilizers and autoclaves in laboratories and develop a plan for replacement.
- Policy I.4: New equipment requiring liquid cooling shall be connected to an existing recirculated building cooling water system, new local chiller vented to building exhaust or outdoors, or to the campus chilled water system through an intervening heat exchange system if available.
  - Once-through or single-pass cooling systems shall not be allowed for soft-plumbed systems using flexible tubing and quick connect fittings for short term research settings.
  - If no alternative to single-pass cooling exists, water flow must be automated and controlled to avoid water waste.

GENERAL SUSTAINABILITY PERFORMANCE ASSESSMENT

- Policy K.1: All undergraduate campuses must maintain a certified Association for the Advancement of Sustainability in Higher Education Sustainability Tracking, Assessment and Rating System (STARS) report.

- Policy K.2: All campuses must achieve a Silver STARS rating and strive for Gold by 2023.

University of California, Riverside

Sewer System Management Plan

The SSMP was developed by UCR to comply with the SWRCB Order No. 2006-0003-DWQ. The SSMP directs prevention of pollution into the storm drain from sanitary sewer overflows and to prevent untreated or partially treated wastewater from discharging from storm drains into flood control channels or waters of the U.S.

Regional and Local (Binding)

Municipal Regional Stormwater NPDES Permit

On January 29, 2010, the RWQCB adopted Order R8-2010-0033, as amended by Order R8-2013-0024 (NPDES Permit and Waste Discharge Requirements for the RCFCWCD, the County of Riverside, and the incorporated cities of Riverside County in the Santa Ana Region) otherwise known as the MS4 permit. The City is a co-permittee under the Riverside County MS4 permit. One component of the MS4 permit requires the development of site-specific WQMPs for new development and significant redevelopment projects. WQMPs include site design, source control, and treatment elements to reduce stormwater pollution from urban runoff (SARWQCB 2010).

On April 7, 2015, the SARWQCB adopted Statewide Trash Provisions to address impacts of trash on surface waters in the region. The Trash Provisions outline additional requirements for co-permittees under the MS4 permit, including either installation of full capture systems for all storm drains capturing runoff from priority land uses, or a combination of full capture systems, multi-benefit projects, treatment controls, and/or institutional controls to reduce trash accumulation in surface waters (SWRCB 2021). UCR is bound by the Statewide Trash Provisions; UCR received a Water Code Section 13383 Order in June 2017 to comply with specific initial requirements.

Riverside County Drainage Area Management Plan

The Riverside County Drainage Area Management Plan (DAMP), developed by the RCFCWCD and other co-permittees to the MS4 permit, outlines programs and policies to manage urban runoff. The DAMP includes development review procedures for co-permittees, required construction BMPs and inspection frequency, annual reporting and evaluation framework, and TMDL implementation strategies. The DAMP is the primary document outlining compliance procedures for co-permittees to adhere to the requirements of the MS4 permit in Riverside County. The DAMP for the Santa Ana Region was last updated in 2017 (RCFCWCD 2017).

Riverside County Watershed Action Plan

The Riverside County Watershed Action Plan is intended to enable co-permittees under the Riverside County MS4 permit to address watershed-level water quality impacts associated with urbanization (County of Riverside 2017). The Watershed Action Plan describes the Santa Ana Watershed, applicable MS4 programs, and the development review process for new development and redevelopment projects.

Design Handbook for Low Impact Development Best Management Practices

Developed in 2011 by the RCFCWCD, the *Design Handbook for Low Impact Development Best Management Practices* describes LID guidelines for projects to reduce downstream erosion by more closely mimicking pre-project hydrology and minimizing pollutant runoff. The handbook details strategies for selecting appropriate LID BMPs, design capture volume requirements for BMPs, and sizing calculation methodology for BMP implementation in specific watersheds in the county.

City of Riverside Municipal Code Title 14, Chapter 14.12

Title 14, Chapter 14.12 regulates the discharge of wastes to the public sewer and pollutants into the storm drain systems. The City has its own publicly owned treatment works and therefore has jurisdiction under federal pretreatment standards for discharges to and from the treatment works. Section 14.12.315 of Chapter 14.12 prohibits the discharge of pollutants to the storm drainage system or any waterway, whether carrying water or not. Section 14.12.316 requires the preparation of a WQMP and installation of BMPs for new development and redevelopment projects in the City, and Section 14.12.319 outlines inspection and enforcement for post-construction requirements detailed in the project's WQMP.

Regional and Local (Non-Binding)

As noted in Section 4, "University of California Autonomy," UCR, a constitutionally-created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by UCR that are in furtherance of the university's educational purposes. However, UCR may consider, for coordination purposes, aspects of local plans and policies of the communities surrounding the campus, when it is appropriate and feasible but is not bound by those plans and policies in its planning efforts.

City of Riverside General Plan 2025

The City adopted the General Plan 2025 in November 2007 to outline a 20-year vision for the City. The Open Space and Conservation and Public Facilities and Infrastructure elements contain policies relevant to utilities and service systems, including the following:

OPEN SPACE AND CONSERVATION ELEMENT

The Open Space and Conservation Element contains policies to minimize impacts to groundwater and surface water resources, coordinate public and private entities, which affect the consumption and quality of water resources in Riverside, enforce RWQCB and NPDES regulations regarding urban runoff and water quality standards, and protect aquifer recharge features.

PUBLIC FACILITIES AND INFRASTRUCTURE ELEMENT

The Public Facilities and Infrastructure Element contains policies to protect local groundwater resources from localized and regional contamination, reduce stormwater flows into the wastewater

system and the Santa Ana River, cooperate in regional programs to implement the NPDES program, and routinely monitor and evaluate the effectiveness of the storm drain system.

City of Riverside Municipal Code

TITLE 17, SECTION 17.16.101

Title 17 describes regulations pertaining to grading, including those intended to minimize erosion and runoff. Section 17.16.010 outlines grading permit application requirements, including noticing requirements to the SWRCB for coverage under the Statewide Construction General Permit and preparation of a SWPPP.

TITLE 19, CHAPTER 19.570

Title 19, Chapter 19.570 of the Riverside Municipal Code contains the City's Water Efficient Landscaping and Irrigation Ordinance, which is intended to promote quality landscaping as well as efficient use of water in the City. The ordinance requires preparation and implementation of a planting plan that identifies the Maximum Applied Water Allowance and the Estimated Annual Water Use of the project's landscaping, as well as irrigation design and soil management plans.

TITLE 6, SECTION 6.04

Title 6, Section 6.04 is the City's Health and Sanitation Code, which specifies the requirements for handling solid waste and recycling materials.

4.17.3 Environmental Impacts and Mitigation Measures

Significance Criteria

UCR utilizes the following 2020 CEQA Guidelines Appendix G Environmental Checklist significance criteria questions related to Utilities and Service Systems.

Would the proposed 2021 LRDP:

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects which have not already been analyzed as part of the proposed LRDP?
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple-dry years?
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?
d) 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?
e) Comply with federal, State, and local management and reduction statutes and regulations related to solid waste?

Issues Not Evaluated Further

All issues applicable to utilities and service systems listed under the significance criteria above are addressed in this section.

Analysis Methodology

For each topic addressed in this impact analysis, including water supply, wastewater, stormwater, solid waste, energy and natural gas infrastructure, and telecommunications, the activities of the proposed 2021 LRDP are compared against the significance criteria listed above, with consideration to the current environmental setting, as discussed above in Section 4.17.1. The analyses of water supply, wastewater, and solid waste are informed by topic-specific generation rates that were estimated for the proposed 2021 LRDP using topic-specific approaches, as detailed in the impact discussions provided below.

As discussed below, for some topics, the outputs from the CalEEMod air quality emissions model were used to inform assumptions regarding generation rates for the proposed 2021 LRDP; CalEEMod output data is provided in Appendix C to this Draft EIR. As an example of how CalEEMod was used to inform this analysis, CalEEMod outputs include estimates of annual water use based on rates derived from statewide water consumption by sector as reported by the Pacific Institute's *Waste Not, Want Not: The Potential for Urban Water Conservation in California* report (CAPCOA 2017). CalEEMod outputs also calculate annual waste generation based on land use-based waste disposal rates reported by CalRecycle (CAPCOA 2017). These outputs include demolition debris and operational waste generation rates, which were used to inform solid waste generation analysis for the 2016 Physical Master Plan (UCR 2016). Wastewater generation rates were obtained from sewer flow calculations prepared in support of the 2016 Physical Master Plan, which was informed by land use-based generation factors from the City of Los Angeles *Sewerage Facilities Charge Sewage Generation Factor for Residential and Commercial Categories* (UCR 2016). These methodologies are further discussed in the impact analyses below, as applicable. Thresholds "d" and "e" are addressed through a consolidated analysis below under Impact U-4.

2021 LRDP Objectives and Policies

The proposed 2021 LRDP contains objectives and policies relevant to utilities and service systems:

Open Space (OS)

- Objective OS5: Demonstrate an increased commitment to preservation and enhancement of the natural environment through the design and placement of future campus landscapes.
  - Policy: Consider the ecological and potential stormwater management functions of proposed landscapes. Utilize climate-appropriate, native/drought-tolerant, and/or low-maintenance landscape materials outside of signature campus open spaces.
  - Policy: In Open Space Reserve areas where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat values.

Campus Utility Infrastructure – Potable Water and Wastewater and Irrigation (WWI)

- Objective WWI1: Commit to a multi-prong approach to conserving potable water use
  - Policy: Reduce potable water use in an existing building in the Academic Center by 20 percent

- Policy: Reduce potable water use in student residential buildings by 30 percent
- Policy: Reduce potable water use in new facilities by exceeding applicable codes by a minimum of 20 percent
- Policy: Retrofit existing urinals, toilets, showerheads, and faucets for existing buildings with higher water efficiency rated equipment

- Objective WWI2: Explore options to shift away from potable water use where feasible.
  - Policy: Design new building irrigation and efficient toilet flushing systems for use with future non-potable water sources
  - Policy: Achieve a further 20 percent reduction of potable water use for irrigation by extending Gage Canal water to also irrigate the UCR Botanic Gardens and reducing turf on campus and replacing with lower water use landscaping

Campus Utility Infrastructure – Stormwater (SW)

- Objective SW1: Transition the campus lands to manage stormwater in a manner that replicates natural drainage patterns and allow plants to filter pollutants out of runoff and promote infiltration over flowing into waterways, thus meeting regulatory requirements through innovative, attractive, and cost-efficient solutions.
  - Policy: Prepare and maintain an SWMP to account for the additional runoff from the projected new development to meet the requirements of the State of California's mandated Phase II Small Municipal Separate Storm Sewer System (MS4) Section F.5.g. (Post-Construction SWMP), including Section F.5.g.3. (Alternative Post-Construction SWMP) consistent with the Maximum Extent Practicable (MEP) standard.
  - Policy: To the extent feasible, integrate stormwater infrastructure within the open space framework of campus such that developable campus lands are minimally lost. The SWMP will include planning and design strategies to restore, enhance, and maintain hydrological function on campus and within the regional hydrological system in response to the projected development.

Impacts Analysis

Impact U-1 Relocation or Construction of New or Expanded Water, Wastewater Treatment or Stormwater Drainage, Electric Power, Natural Gas, or Telecommunications Facilities Resulting in Significant Environmental Effects.

The proposed 2021 LRDP may require the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities on the UCR Campus. Such relocation and construction would not result in significant environmental effects and impacts would be less than significant. No mitigation measures are required.

Development of projects under the proposed 2021 LRDP would be adjacent to existing campus development and would connect to existing utility facilities as feasible, including for water supply, wastewater treatment, stormwater drainage, electric power, natural gas, and telecommunications. Potential impacts associated with providing utility connections for projects under the proposed 2021 LRDP are discussed below under respective headings.

Water Supply Facilities

Please note, Impact U-1 is specific to impacts associated with infrastructure and facilities; water supply availability is addressed under Impact U-2, *Sufficient Water Supplies*. The UCR campus is served by existing City potable water facilities. As discussed in Section 4.17.1 under "UCR Water System," UCR has a private on-campus water system that conveys water supply on campus as needed; all potable water, fire water, and irrigation water supplies are distributed through the campus-wide system. UCR's private on-campus water facilities attach to City water facilities via a 12-inch water line that follows West Linden Street and connects to the UCR water system through a City water meter and valve. This 12-inch water line serves as a backup supply to the campus main water network system.

The proposed project would require the installation of additional water main lines, lateral connections, and hydrants on campus to serve planned facilities. The addition of new campus facilities would require additional pipes and water lines to service water for both fire and domestic uses. This infrastructure has been assessed as part of buildout of the proposed 2021 LRDP in this Draft EIR. Furthermore, such facilities would primarily be installed in the disturbance area of such projects or likely in previously disturbed areas, such as roadways. The construction of project-specific water infrastructure improvements would not further increase impacts of buildout of the proposed 2021 LRDP, the environmental impacts of which are characterized throughout this Draft EIR. Therefore, impacts with respect to new or expanded water facilities would be **less than significant**.

Wastewater Treatment Facilities

To service future development under implementation of the proposed 2021 LRDP may require the relocation and/or replacement of wastewater infrastructure on the UCR campus. Development of projects under the proposed 2021 LRDP would be adjacent to existing campus development and would connect to existing wastewater treatment or stormwater drainage infrastructure. The proposed project would require the installation of additional water main lines, lateral connections, and hydrants on campus to serve planned facilities. This infrastructure has been assessed as part of buildout of the proposed 2021 LRDP in this Draft EIR. At the time of preparation of this proposed 2021 LRDP, there are existing local capacity constraints in the City's sanitary sewer system, including West Linden Street and Canyon Crest Drive, that will likely require new pipes regardless of adoption of the LRDP.

The proposed 2021 LRDP would also result in an increase in wastewater generation relative to existing campus conditions. The 2016 Physical Master Plan Study assumed a per capita wastewater output rate of 20 gallons per on-campus individual per day. Using the same methodology as the 2016 Physical Master Plan Study, the wastewater output and sewage flow rates were calculated for the 2018/2019 baseline year and 2035/2036, as shown in Table 4.17-3. As discussed above in Section 4.17.1 under "UCR Campus Wastewater and Sewer System", wastewater flows and sewer flows are distinct from each other, in that wastewater flow includes any water that has been used by some domestic or industrial activity and contains waste products associated with that use, while sewer flow contains human waste. On the UCR campus, wastewater flow is conveyed into the sanitary sewer system, which consists of a network of lines owned and maintained by UCR that connect to the City's sewer system for conveyance to the RWQCP.

Table 4.17-3 Estimated Wastewater Flow

Scenario Year	Campus Population[1]	Wastewater Generated (gpd)[2]	Campus (gsf)	Wastewater Flow (gpd/1,000 gsf)[3]
2018/2019 Baseline Year	28,661	573,220	7,205,252	79.56
2021 LRDP Buildout Year 2035/2036	42,545	850,900	12,754,258	66.71
Difference	**+13,884**	**+277,680**	**+5,549,006**	**-12.85**

[1]Students and faculty/staff at Fall quarter headcount

[2]2016 Physical Master Plan Study (UCR 2016) assumption of per capita wastewater generation rate of 20 gallons per day

[3]Wastewater output (20) multiplied by population density

gpd = gallons per day; gsf = gross square footage

As mentioned above, the UCR campus conveys wastewater and sewage flow collectively into the City's sewer system for conveyance to the RWQCP. Table 4.17-3 indicates that with implementation of the proposed 2021 LRDP, wastewater/sewage generation on the UCR campus would increase with the campus population increase.

Wastewater generated on the UCR campus is and will continue to be treated at the City's RWQCP. As a City-owned and operated facility, City management of the RWQCP accounts for wastewater flows associated with the UCR campus. The RWQCP had a rated capacity of 40 MGD and a plant-wide expansion was completed in December 2015 that increased treatment capacity to 46 MGD average dry weather flow. Expansion of the RWQCP was undertaken to accommodate City of Riverside buildout through 2037. Cumulative projections indicate a wastewater flow of 39 MGD by the year 2037 (City of Riverside 2020).

As such, the RWQCP would have sufficient capacity to process the additional wastewater generated by the proposed 2021 LRDP under existing and cumulative conditions. Projects developed under the proposed 2021 LRDP would be connected to existing and future on-site wastewater treatment conveyance systems. UCR would perform an analysis of wastewater infrastructure needs as projects are planned and constructed and would conduct site specific infrastructure improvements as needed. For example, UCR has previously identified a potential need for upgrades to the campus's local wastewater/sewer system based on the analysis in the 2016 Physical Master Plan Study and 2019 EIR for UCR's North District Development Plan (NDD Plan), which is separate and distinct from the proposed 2021 LRDP. Specifically, the NDD Plan EIR determined that the existing sewer capacities at West Linden Street and Canyon Crest Drive would be sufficient to convey flows associated with the initial phase of the NDD Plan but that full buildout of the NDD Plan may require upgrades to the existing 8-inch-diameter sewer lines in West Linden Street and Canyon Crest Drive (both north and south of West Linden Street). Such upgrades could include upsizing (replacing the existing pipe with a wider-diameter pipe) or paralleling (installing a new pipe in parallel position to the existing pipe) (UCR 2019b).

Improvements to on-campus sewer lines and lateral connections would occur concurrently with future project implementation and primarily in the disturbance footprints of such projects and existing roadways/disturbed areas. As with water infrastructure and facilities, any sewer line extensions necessary to serve future facilities associated with the proposed 2021 LRDP would generally be installed in already-disturbed rights-of-way, such as existing roads, or in the disturbance footprint of proposed buildings. Furthermore, the construction of these infrastructure

improvements would not substantially increase the proposed 2021 LRDP disturbance area, associated emissions and would not otherwise cause additional significant environmental effects. Potential impacts associated with wastewater infrastructure expansion and relocation for projects developed under the proposed 2021 LRDP would be **less than significant**.

Stormwater Drainage Facilities

Stormwater conveyance through the UCR campus, as discussed in Section 4.17.1 under "Stormwater Drainage", includes drainage facilities managed by UCR, the City, and the County of Riverside. As discussed in Section 4.17.2 under "Phase II Stormwater Discharge Permit", stormwater discharges from the UCR campus are covered under WQ Order No. 2013-0001-DWQ, which provides NPDES coverage for non-traditional Small MS4s. Compliance with this permit requires the implementation of a SWPPP for construction projects larger than 1 acre and BMPs associated with stormwater management, including, but not limited to, measures to prevent water quality degradation, increased flooding on- or off-site, and increased erosion and sedimentation on- or off-site. The existing stormwater drainage system across the UCR campus includes a mixture overland flow, underground storm drains, and natural arroyos that partially infiltrate stormwater into the basin and ultimately discharge the remaining stormwater to open channel arroyos and large-diameter County drainage facilities, and detention basins which are used to infiltrate stormwater into the groundwater basin (see Figure 4.10-4).

All campus projects would occur pursuant to the provisions of the Statewide General Construction Activity Stormwater Permit that specifies the implementation of BMPs. As described in Section 4.10, *Hydrology and Water Quality*, all construction projects under the proposed 2021 LRDP would comply with WQ Order No. 2013-0001-DWQ through the implementation of BMPs to manage stormwater runoff. Such BMPs may include, but are not limited to, the use of straw wattles, silt fencing, and site-specific temporary detention basins to prevent stormwater runoff from leaving active construction sites, the application of cover materials over stockpiles to prevent material from washing off-site and contributing total dissolved solids to stormwater runoff, establishment of designated areas for re-fueling and handling potentially hazardous materials, and providing worker training on emergency response procedures, should a potentially hazardous material such as vehicle fuel be accidentally spilled or leaked during project construction activities. These construction BMPs would not result in significant physical environmental impacts, construction-related stormwater impacts would be **less than significant**.

Compliance with the NPDES program would also include implementation of post-construction stormwater runoff controls for new development and redevelopment activities. Development under the proposed 2021 LRDP could increase stormwater runoff by introducing new impervious areas for previously undeveloped parcels. However, stormwater runoff from LRDP implementation would include localized stormwater capture and treatment facilities at the location of individual projects, and the expansion and development of additional on-campus aboveground and belowground stormwater drainage improvements in compliance with existing regulations discussed in Section 4.17.2.

More specifically, the Phase II MS4 permit requires all regulated projects – defined as projects creating and/or replacing 5,000 square feet or more of impervious area – to implement a SWMP that incorporates LID measures, including stormwater retention and treatment features. Such stormwater retention features must capture runoff from the 85th percentile, 24-hour storm event, 80 percent of the annual runoff, or flow from either 0.20 inch per hour rainfall intensity or twice the 85th percentile hourly rainfall intensity as determined by local rainfall records. Potential retention

features that may be incorporated into individual project designs include detention basins, biofiltration/catchment basins, or constructed wetland features. Given the size of proposed facilities, most individual projects constructed under the proposed 2021 LRDP would constitute regulated projects under the Phase II MS4 Permit and, therefore, would be required to demonstrate compliance with the stormwater capture requirements described in the permit. This would include development and implementation of a SWMP to account for potential runoff from the projected new development and to comply with the requirements of the Phase II Small MS4 permit.

The proposed 2021 LRDP is informed by the planning principles in the 2016 Physical Master Plan Study, which guides future decision-making regarding campus development, in support of the Strategic Plan's academic vision and proposed 2021 LRDP. Under the proposed 2021 LRDP, the existing arroyos and detention basins that currently convey stormwater flows through the UCR campus would be maintained and protected. The proposed 2021 LRDP includes a policy to integrate stormwater infrastructure in the open space framework of campus and to develop a SWMP that emphasizes strategies to restore, enhance, and maintain hydrological function on campus and the regional hydrological system. Existing features that convey stormwater flows and would be maintained and protected under the proposed 2021 LRDP include the Great Glen Basin and the Glade Basin, which are discussed further below.

The Great Glen Basin at the northeast intersection of East Campus Road and Big Springs Road currently receives flows from a natural arroyo which serves a portion of the campus as well as an off-site residential area to the northeast (UCR 2016). The 85th percentile treatment storm from development in the East Campus around East Campus Drive would be collected and conveyed by various drainage systems, including underground storm drains and surface conveyance through the proposed Science Walk Extension pedestrian mall. Stormwater runoff which exceeds the capacity of the treatment detention basins would overflow to existing and future storm drain conveyance systems which serve the existing sites and maintain existing drainage patterns (UCR 2016).

The Glade Basin at the northeastern corner of North Campus Drive and Aberdeen Drive currently receives flows from a 40-acre portion of the campus to its north and manages the 85th percentile treatment storm from development near Aberdeen Drive and north of North Campus Drive (UCR 2016). The Glade Basin would continue to manage the 85th percentile storm under the proposed 2021 LRDP, by conveying runoff in existing underground storm drains via a vegetated swale along Aberdeen Drive to the existing detention basin. Under existing conditions, stormwater runoff which exceeds the capacity of the vegetated swale or detention basin overflows to existing stormwater conveyance systems.

Stormwater flows occur in direct response to precipitation events and dissipate after such events, as flows remaining in the existing stormwater conveyance system infiltrate to the subsurface through gravel at the bottom of the basins. The proposed 2021 LRDP would maintain existing drainage patterns, including the existing capacity of the Great Glen Basin and the Glade Basin. As such, stormwater flows exceeding the capacity of existing drainage and detention features would overflow to the stormwater conveyance system. Additionally, as projects under the proposed 2021 LRDP are implemented, future project-specific stormwater drainage, conveyance, and detention improvements would be developed to manage project-specific alterations. However, as discussed above, the existing drainage patterns would be maintained under the proposed 2021 LRDP.

As currently envisioned, most of the future campus development that would occur under the proposed 2021 LRDP would be located on previously disturbed lands, such as parking lots and previously developed sites which are characterized by impervious surfaces. Future projects under the proposed 2021 LRDP would be sited to minimize potential alterations to existing drainage

patterns, such as on previously developed sites that are already characterized as impervious and have stormwater conveyance features in place in and/or surrounding the site, to guide stormwater flows into the existing conveyance system. It is also anticipated that not all future proposed 2021 LRDP projects may be sited as such, and that implementation of the proposed 2021 LRDP may introduce some new areas of impervious surfaces on the UCR campus, including land use designations for Agricultural/Campus Research, Student Neighborhood, Campus Support, and University Avenue Gateway, and the UCR Botanic Gardens interpretative center. Increasing impervious surfaces may subsequently increase stormwater runoff, if drainage features are not implemented to guide such flows to existing detention basins and conveyance systems on campus. However, future projects under the proposed 2021 LRDP would be implemented with project-specific SWPPPs for construction and SWMPs for operation and maintenance. The project-specific SWPPPs and SWMPs would include BMPs selected specifically for the subject site and proposed activities, and may include, but would not be limited to, the implementation of site-specific drainage features to reduce or avoid potential impacts. The purpose of such features would be to maintain existing drainage patterns and minimize alterations associated with individual projects, including potential increases in impervious surfaces. Potential impacts associated with site-specific drainage improvements would be limited to the footprint areas of future development projects and already-existing rights-of-way associated with roadways and drainage facilities. Potential operational impacts would be **less than significant**.

Electric Power and Natural Gas Facilities

Please note, Impact U-1 is specific to impacts associated with infrastructure and facilities; electric power and natural gas use is addressed in Section 4.6, *Energy*, under Impact E-1, *Result in Wasteful, Inefficient, and Unnecessary Use of Energy*.

No major electric power or natural gas facility improvements are proposed as part of the proposed 2021 LRDP. Individual projects occurring under the proposed 2021 LRDP may require minor electric power or natural gas facility improvements, such as rewiring buildings during renovation, and installing new electric wiring or natural gas connections for new construction projects. The installation of project-specific electric power and natural gas facilities would generally occur in the respective project's footprint, and would be temporary, limited to the respective project's construction period. Potential impacts associated with electric power and natural gas improvements would not have a significant impact during construction or operation and maintenance. Additionally, pursuant to UC Policy A.3, new buildings or renovations must, if feasible, not use natural gas for space and water heating unless connected to an existing campus central thermal infrastructure. Due to the potential for temporary construction-related impacts during installation of electric power or natural gas facilities, potential impacts would be **less than significant**.

Telecommunications Facilities

No major telecommunications improvements are proposed as part of the proposed 2021 LRDP. Individual projects occurring under the proposed 2021 LRDP may require minor telecommunications improvements, such as undergrounding telephone lines or rewiring buildings during renovation. The installation of project-specific telecommunications infrastructure would be temporary, and generally localized to each respective project's footprint. Potential impacts associated with telecommunications improvements would not have a significant impact during operation and maintenance. Therefore, due to the potential for temporary construction-related impacts during installation of telecommunications facilities, potential impacts would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Impact U-2 SUFFICIENT WATER SUPPLIES.

IMPLEMENTATION OF THE PROPOSED 2021 LRDP WOULD RESULT IN A NET INCREASE IN WATER DEMAND ON THE UCR CAMPUS OF APPROXIMATELY 579 AFY THROUGH YEAR 2035/2036. THIS INCREASE IS ACCOUNTED FOR IN THE RPU'S 2015 UWMP, AND THERE IS SUFFICIENT WATER SUPPLY AVAILABLE UNDER ALL DROUGHT SCENARIOS. IMPACTS WOULD BE LESS THAN SIGNIFICANT. NO MITIGATION MEASURES ARE REQUIRED.

As discussed in Section 4.17.1 under "Water Supply", UCR receives its entire water supply from the RPU, which delivers water throughout the City in accordance with an UWMP that accounts for the UCR campus water demands and cumulative demands. Water delivered by the RPU is primarily sourced from locally produced groundwater resources. Notably, the local groundwater basins are adjudicated and managed in accordance with an Adjudication Judgement that is administered by a Court-appointed Watermaster. As discussed in the Environmental Setting, in addition to locally produced groundwater which is distributed in accordance with the Adjudication Judgement, the RPU also delivers recycled water and when needed, such as during dry years and heavy demand periods, the RPU also delivers imported surface water supplies purchased from Metropolitan via the WMWD.

The UCR campus water demand rates are accounted for in the RPU's UWMP, which also accounts for projected growth that would occur with the proposed 2021 LRDP. UCR has consulted with RPU, which has provided a future water demand letter dated April 16, 2021, noting that it anticipates RPU will have adequate water supplies to meet UCR's proposed 2021 LRDP increased demand, which will be reflected in the City's 2020 UWMP. The RPU's current UWMP[2] details water demand by sector, including retail customers and wholesale potable and raw water deliveries to other water districts, as shown in Table 4.17-4 (RPU 2016).

Table 4.17-4 RPU's 2015 UWMP's Projected Cumulative Demands for Potable and Raw Water

Use Type	2020	2025	2030	2035	2040
Potable					
Single Family Residential	29,931	31,064	32,241	33,462	34,730
Multi-Family Residential	5,365	5,568	5,779	5,998	6,225
Commercial/Institutional	9,959	10,337	10,728	11,135	11,556
Industrial	9,845	10,218	10,605	11,006	11,423
Landscape	1,050	100	150	200	250

[2] At the time of preparation of this Draft EIR, the RPU is currently updating its UWMP for 2020 but has not yet released the 2020 UWMP; this analysis therefore relies upon information provided in the 2015 UWMP.

Use Type	2020	2025	2030	2035	2040
Agricultural Irrigation	1,707	1,772	1,839	1,908	1,981
Other	371	385	399	414	430
Deliveries to WMWD	4,300	4,300	4,300	4,300	4,300
Additional UCR Demand	3,300	3,300	3,300	3,300	3,300
California Baptist University Added Demand	150	150	150	150	150
Gage Canal Company (Upper)	6,000	6,000	6,000	6,000	6,000
Potable Water Loss	5,278	5,375	5,559	5,750	5,948
Potable Water Total	**77,256**	**78,569**	**81,050**	**83,623**	**86,293**
Raw Water					
Gage Canal Company (Lower)	7,000	7,000	7,000	7,000	7,000
Overlying Uses	1,200	1,200	1,200	1,200	1,200
WMWD	2,500	2,500	2,500	2,500	2,500
Irrigation Water Loss	835	835	835	835	835
Raw Water Total	**11,535**	**11,535**	**11,535**	**11,535**	**11,535**
Recycled Water Demand	6,430	6,430	6,430	6,430	6,430
Demand (Potable and Raw Water) Total	95,221	96,534	99,015	101,588	104,258

WMWD = Western Municipal Water District
Units in acre feet per year
Source: RPU 2016

The RPU estimates that population in its service territory will increase to about 66,000 individuals by the year 2040, which equates to approximately 20 percent above the 2015 population. As shown in Table 4.17-4 above, the RPU's actual 2015 total water demand (potable and raw water) was 95,221 AFY and is estimated to increase to 104,258 AFY in 2040.

Construction Water Demands

Water would be required for temporary construction activities associated with implementation of the proposed 2021 LRDP. Temporary construction water uses would primarily be for dust suppression associated with grading, grubbing, and compaction, as well as for stormwater control BMPs including construction equipment wheel washing. However, during times of drought, the SCAQMD's *Drought Management and Water Conservation Plan* limits potable water dust suppression by increasing reliance on non-toxic chemical dust suppressants to stabilize soils, paving unpaved roadways and using vacuum sweepers instead of water to remove dust from paved areas, and increasing use of physical/mechanical barriers to contain or limit transport of fugitive dust (SCAQMD 2014); please see Section 4.10.2 for further discussion of SCAQMD requirements. Water would also be required for concrete mixing and casting; however, it is assumed that concrete mixing and casting would be conducted by contractors implementing specific LRDP projects. Of these

temporary construction-related water uses, dust suppression would demand the most water during construction. Pursuant to the requirements of SCAQMD Rule 403 as described in Section 4.2, *Air Quality*, all disturbed unpaved roads and disturbed areas on campus would be watered to reduce fugitive dust generation from construction activities. Demolition, site preparation, and grading are the activities anticipated to result in the greatest dust generation and, therefore, the greatest construction-related water demand. Water demand for dust suppression is highly dependent on site-specific variables such as soil properties, antecedent moisture conditions, and other climatic factors and can be performed with non-potable reclaimed water. A 2017 analysis prepared by SCAQMD estimated water demand associated with Rule 403 dust suppression requirements for construction sites in SCAQMD jurisdiction at approximately 1,000 gallons per acre per day (SCAQMD 2017). Additionally, where redevelopment of campus facilities would replace existing structures, construction water use would be significantly less than operational demand, which would generally halt during construction activities (e.g. landscaping water demands for these areas would halt). Furthermore, UCR Campus water demand would be less than the amount assumed in the UWMP, even with additional construction related water demand (see subsequent operational analysis for additional information).

Therefore, construction water demands would not result in a long-term strain on water supplies. Potential impacts related to construction water consumption would be **less than significant**.

Operational Water Demands

This analysis was informed by the water usage analysis included in the 2016 Physical Master Plan Study. As reported therein, operational water demands would be approximately 1,125 AFY with the 2014 campus space inventory at 7,360,521 gsf. Complete buildout of the proposed 2021 LRDP would provide a campus space inventory of approximately 12,750,000 gsf, representing an increase of approximately 73 percent. Applying the same increase factor of 73 percent to the estimated annual water usage, the approximate water usage with implementation of the proposed 2021 LRDP would be 1,950 AFY. This calculation is likely conservative, given the increasing effectiveness of water conservation measures discussed in Section 4.17.2 above which have not been considered in this calculation.

A comparison of the results of the calculations provided above is shown below, in Table 4.17-5.

Table 4.17-5 UCR Potable Water Consumption

Scenario Year	Campus Space (gsf)	Approximate Annual Potable Water Consumption (mg)	Approximate Annual Potable Water Consumption (afy)
2016 Physical Master Plan Study (based off 2014 data)	7,360,521	489	1,125
Buildout Year 2035/2036	12,750,000	846	1,950
Difference	**+5,389,479**	**+216.4357**	**+825**

gsf = gross square feet; mg = million gallons; afy = acre feet per year

Source: 2016 Physical Master Plan Study and input from UCR Planning, Design & Construction staff

As shown above, full buildout of the proposed 2021 LRDP would increase the baseline UCR population by 13,884 individuals, or approximately 48.44 percent. Total annual potable water consumption, based on a per capita use rate of 15,591 gallons per year, would increase by a commensurate 48.44 percent. As a result, total annual potable water demand for full buildout of the proposed 2021 LRDP would be approximately 1,950 AFY, which is approximately 579 AFY more than under baseline (year 2018/2019) conditions. As discussed above, the methodology used to estimate future water demands for buildout of the proposed 2021 LRDP is conservative in that it relies on a measured per capita water demand rate and does not account for increased per capita water use efficiencies which are expected to be achieved with implementation of the UC Policy on Sustainable Practices.

Realistically, these conservative estimations would be reduced through compliance with State-mandated water conservation measures. For example, the proposed 2021 LRDP would comply with all requirements of CalGreen pertaining to maximum flow rates for plumbing fixtures in both residential and non-residential buildings. CalGreen requirements are continuously updated and typically require more stringent conservation requirements with each iteration. The proposed 2021 LRDP also includes the redevelopment of existing uses pursuant to mandated water conservation measures and buildout would therefore replace or lessen existing water demand from redeveloped structures. Furthermore, pursuant to the UC Policy on Sustainable Practices, all UC campuses are to phase out un-used turf irrigated with potable water and reduce growth-adjusted potable water consumption (UCOP 2020).

Additionally, per capita water use would decrease during the lifetime of the proposed 2021 LRDP due to its policies to reduce potable water use, as listed below.

- Reduce potable water use in existing building in the Academic Center by 20 percent
- Reduce potable water use in student residential buildings by 30 percent
- Reduce potable water use in new facilities by exceeding applicable codes by a minimum of 20 percent
- Retrofit existing urinals, toilets, showerheads, and faucets for existing buildings with higher water efficiency rated equipment
- Design new building irrigation and efficient toilet flushing systems for use with future non-potable water sources.

Compliance with CalGreen and the UC Policy on Sustainable Practices, as well as the continued implementation of water conservation efforts already in place at UCR, and the additional water conservation efforts included in the proposed 2021 LRDP, would further decrease the indoor and outdoor water demand beyond the rates presented in Table 4.17-5.

Non-potable water demand for irrigation of agricultural teaching and research fields would not increase as a result of the proposed 2021 LRDP. As discussed in Section 4.2, *Agricultural Resources*, implementation of the proposed 2021 LRDP would halt agricultural cultivation on a portion of agricultural land. Thus, the area subject to irrigation by non-potable water would decrease.

Water Supply Availability

RPU's current UWMP indicates that UCR expansion will account for approximately 3,300 AFY of water, which would remain constant from 2020 through 2040 (RPU 2016, Tables 1-1 and 5-2). As shown in Table 4.17-5 above, buildout of the proposed 2021 LRDP is anticipated to require approximately 1,950 AFY of water. This is approximately 1,179 AFY less than the demand accounted

for on the UCR campus in the RPU UWMP. Therefore, the proposed 2021 LRDP's projected gross increase in water demand is fully accounted for in RPU's 2015 UWMP, for cumulative projections through year 2040. As previously mentioned, at the time of preparation of this Draft EIR, the RPU is currently updating its 2020 UWMP. The 2020 UWMP will project water supply and demand for the RPU service area, including UCR, through year 2045. The RPU has indicated that anticipated potable water supplies can accommodate UCR needs with anticipated supplies for normal, dry, and multiple dry years during the lifespan of the proposed 2021 LRDP (RPU 2021).

DRY YEAR WATER AVAILABILITY PROJECTIONS

As required by the Urban Water Management Act, the RPU's UWMP includes estimates of future groundwater availability under single-dry-year and multiple-dry-year scenarios, with locally produced groundwater constituting approximately 80 percent of the total water supply delivered by the RPU throughout its service area. Given the adjudication of the groundwater basins upon which it depends and the dependability of recycled water as a supply, RPU assumes 100 percent of its groundwater and recycled water supplies would remain available during both single- and multiple-dry-year scenarios. Table 4.17-6 summarizes RPU's normal, single, and multiple dry year supply through 2040.

Table 4.17-6 RPU's 2015 UWMP Water Supply in Single and Multiple Dry Years

Drought Condition	2020	2025	2030	2035	2040
Normal Year	116,903	121,903	124,703	124,703	124,703
Single Dry Year	96,288	101,288	104,088	104,088	104,088
Multiple Dry Year 1st, 2nd, and 3rd Year Supply[1]	102,364	107,364	110,164	110,164	110,164
RPU Projected Demand (afy)	**2020**	**2025**	**2030**	**2035**	**2040**
As presented in Table 4.17-4:	95,221	96,534	99,015	101,588	104,258[2]

RPU = Riverside Public Utilities; UWMP = Urban Water Management Plan

[1]Expected supplies for a period of multiple dry years are slightly higher than a single dry year due to higher average availability of SWP water.

[2]The projected demand in year 2040 of 104,258 acre-feet is greater than the projected supply under the single-dry-year drought condition by a projected 170 acre-feet.

Units in acre feet per year

Source: RPU 2016

As shown above, under nearly all considered drought conditions, the projected available water supply exceeds the projected demand as presented in Table 4.17-4, and shown above for comparison. One exception is the single-dry-year drought condition, wherein the projected supply is approximately 170 acre-feet less than the projected demand. This projected supply shortage would be managed through implementation of per capita water conservation measures and administration of the Adjudication Judgement for use of local groundwater resources, and through the UWMP Water Shortage Contingency Plan. The UWMP Contingency Plan, includes different stages depending upon the severity of the drought conditions, which include education programs, halting issuance of water meters, rebate programs for landscaping and fixture replacements, limits on potable water use for dust suppression, prohibitions of certain uses identified under Riverside

Municipal Code Chapter 14.22, and penalties and charges to enforce compliance. As discussed previously, the RPU also purchases imported SWP water supply during peak demand and drought conditions.

In addition to implementing conservation measures, complying with the Adjudication Judgement, and purchasing imported SWP water, the RPU also plans to implement several water supply projects between 2020 and 2030 that are designed to increase available water supplies. Specifically, the RPU plans to expand the availability of recycled water supply, as well as groundwater recharge and storage operations. Specific projects include the Riverside North Aquifer Storage and Recovery (Rubber Dam) project, designed to redirect overland storm flows into nearby groundwater recharge basins; infiltration of entrained water will augment the underlying groundwater supply to bolster drought-year water supply availability. Additional recharge basins in Grand Terrace and North Riverside will also help to ensure water supply availability. Furthermore, recycled water which is currently only available in the immediate vicinity of the treatment plant, is planned to be expanded to several parks, schools, and other businesses through construction of the Jackson Street Pipeline Project. The RPU also plans to modernize the Gage Canal's well fields and delivery system to improve reliability and expand service to a broader population in the Gage Canal's territory (RPU 2017). Collectively, these projects are anticipated to increase water supply availability to the RPU by approximately 15,000 AFY. Over a single or multi-year dry period the quantity of supply from these projects will only be slightly reduced, because in those dry years, supplemental water can be pulled from storage (RPU 2016).

Although the supply availability calculations provided above indicate a supply shortage of approximately 170 acre-feet under single-dry-year drought conditions, this shortage would be compensated through the continued development of water supply projects and programs that are accounted for in the RPU's UWMP. Potential impacts to water supply associated with construction and operation of the proposed 2021 LRDP would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Impact U-3 Adequate Capacity from a Wastewater Treatment Provider.

Wastewater generated by development under the proposed 2021 LRDP would be treated at the Riverside Water Quality Control Plant. The plant would have adequate capacity to serve the proposed 2021 LRDP's anticipated wastewater generation in addition to its existing wastewater treatment commitments. Impacts would be less than significant. No mitigation measures are required.

As discussed under Impact U-1 related to wastewater facilities and infrastructure, project-generated wastewater would be treated at the RWQCP facility. In addition, as discussed in Section 4.17.1 under "Wastewater", in 2020, the RWQCP treated approximately 9,629 MG of wastewater, for a daily average of 26.31 MGD (R. Eland 2021). Cumulative projections indicate a wastewater flow of 39 MGD by the year 2037 (City of Riverside 2020). In comparison, the RWQCP's design capacity is for treatment of up to 46 MGD average dry weather flow. Also as discussed under Impact U-1,

consistent with the 2016 Physical Master Plan Study, this analysis assumes a per-capita wastewater generation rate for the UCR campus of approximately 20 gallons per person per day. With the projected increase in campus population of up to 13,884 additional individuals, the increased wastewater generation would be an additional approximately 277,680 GPD, which is within the 19.69 MG available treatment capacity at the RWQCP facility under existing conditions and within the available capacity under cumulative conditions.

As buildout under the proposed 2021 LRDP is implemented, the proposed 2021 LRDP would not result in a determination by the wastewater treatment provider that it does not have adequate capacity to serve the proposed 2021 LRDP's anticipated demand in addition to the provider's existing commitments. Impacts would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Impact U-4 IMPACTS TO SOLID WASTE FACILITIES AND COMPLIANCE WITH REGULATIONS RELATED TO SOLID WASTE.

THE PROPOSED 2021 LRDP WOULD NOT GENERATE SOLID WASTE IN EXCESS OF STATE OR LOCAL STANDARDS, OR IN EXCESS OF THE CAPACITY OF LOCAL INFRASTRUCTURE. THE PROPOSED 2021 LRDP WOULD NOT IMPAIR THE ATTAINMENT OF SOLID WASTE REDUCTION GOALS AND WOULD COMPLY WITH FEDERAL, STATE, AND APPLICABLE LOCAL STATUTES AND REGULATIONS RELATED TO SOLID WASTE. IMPACTS WOULD BE LESS THAN SIGNIFICANT. NO MITIGATION MEASURES ARE REQUIRED.

As described in Section 4.17.1 under "Solid Waste", recyclable materials are partially recovered out of the landfill waste stream and the remainder is used for energy and concrete production. The CR&R Perris Transfer Station and MRF is a large volume transfer/processing facility that has a maximum permitted daily capacity of approximately 3,287 tons per day (CalRecycle 2019). This equates to an annual maximum capacity of approximately 1,199,755 tons per year.

Construction

Demolition of existing facilities and export of soil generated during development of future LRDP projects would result in the generation of construction/demolition debris. CalEEMod, which was used to determine emissions from all project construction activities including demolition, employs a conversion factor of 0.046 ton per square foot for building demolition debris, based on an analysis of commercial brick, concrete, and steel building demolition (CAPCOA 2017). Under the proposed 2021 LRDP, approximately 885,279 square feet of existing building area would be demolished. Using the CalEEMod conversion factor of 0.046 ton per square foot of demolition debris, demolition conducted for the 2021 LRDP would generate approximately 40,722.8 tons of debris. It is important to note that this is a highly conservative estimate, as it does not account for any recovery of material for recycling or reuse; as stated above, recyclable materials are partially recovered from the landfill waste stream prior to off-site disposal. For the purposes of this analysis, however, it is conservatively assumed that buildout of the proposed 2021 LRDP would generate approximately

40,722.8 tons per year of debris for off-site landfill disposal; this equates to approximately 111.57 tons per day of debris for off-site landfill disposal.

Because the campus consists of a largely developed campus, grading for individual projects developed under the proposed 2021 LRDP is not anticipated to result in major export of soil. Nevertheless, grading activities may result in export of some soil from individual project construction sites. As described above, the CR&R Transfer and MRF accepts construction/demolition waste. Grading activities associated with the proposed 2021 LRDP would not occur all at once, but rather would be spread across multiple projects implemented over the life of the proposed 2021 LRDP. Furthermore, exported soil could be transported to other area landfills that accept soil and construction debris in Riverside County to further reduce impacts at any single solid waste disposal facility, and is typically reused beneficially as landfill cover or imported fill material at other construction sites. Therefore, disposal of soils from grading of the campus would not exceed the capacity of local solid waste disposal facilities.

The handling of all debris and waste generated during construction of the proposed 2021 LRDP would be subject to 2016 CalGreen requirements and the California Integrated Waste Management Act of 1989 (AB 939) requirements for salvaging, recycling, and reuse of materials from construction activity on the campus. Further reduction in solid waste generation would occur with implementation of the UC Policy on Sustainable Practices. UCR has been implementing its construction waste diversion program, as discussed in Section 4.17.2 and in 2019 had a total diversion rate of 73 percent (UCOP 2019). As mentioned above, the demolition debris calculations of 40,722.8 tons per year or 111.57 tons per day for the proposed 2021 LRDP does not account for any reuse or recycling efforts. If the same diversion rate of 73 percent from 2019 is applied to the proposed 2021 LRDP, the resulting amount of demolition debris to be hauled off-site for landfill disposal would be approximately 10,995.16 tons per year, or approximately 30.13 tons per day. As such, sufficient solid waste landfill disposal capacity is available to meet the needs of the proposed 2021 LRDP, and impacts related to solid waste generated during construction would be **less than significant**.

Operation

In 2018/2019, UCR generated approximately 0.85 ton of waste per capita. With implementation of the proposed 2021 LRDP, the campus population would increase by approximately 13,884 individuals by year 2035/2036, for a total population of approximately 42,545. Assuming the UCR 2018/2019 per capita waste generation rate of 0.85 ton remains constant through 2035/2036, buildout of the proposed 2021 LRDP would increase annual solid waste generation by approximately 11,801.4 tons, or approximately 32.33 tons per day. However, most of this solid waste would be diverted away from the landfill. As discussed below, in 2018/2019, UCR had a Municipal Solid Waste diversion rate of approximately 70 percent, as well as a total diversion rate (including construction and demolition) of approximately 73 percent (UCOP 2019).

In addition, the UC Sustainability Practices Policy directs UCR to reduce per capita total municipal solid waste generation by 25 percent per capita from fiscal year 2015/2016 levels by 2025 and by 50 percent per capita from fiscal year 2015/2016 levels by 2030. The UC Sustainability Practices Policy also directs UCR to divert 90 percent of municipal solid waste from the landfill. However, the analysis provided herein considers a reasonable worst-case scenario, under which UCR would not meet the policy goal of reducing waste per capita by 50 percent by 2030 or diverting 90 percent of municipal waste from the landfill; rather, under the reasonable worst-case scenario, this analysis assumes a continuation of business-as-usual for waste diversion and does not factor in waste

reduction associated with additional campus conservation and diversion programs. Therefore, the reasonable worst-case scenario assessed herein assumes that the year 2018/2019 diversion rate of 70 percent would remain constant through year 2035/2036. As such, UCR would divert approximately 22.63 tons of waste per day away from the landfill, resulting in approximately 9.7 tons of waste per day being processed through the CR&R Perris Transfer Station and MRF.

As discussed above, daily permitted capacity of the CR&R Perris Transfer Station and MRF is approximately 3,287 tons per day. As shown in Table 4.17-2, there are three viable landfills that receive waste from UCR, which collectively have a maximum permitted daily load of 25,554 tons per day, and a collective total remaining capacity of approximately 69.1 million tons. The estimated 9.7 tons per day of solid waste that would be generated under the proposed 2021 LRDP (under the worst-case scenario not accounting for diversion) would not result in a substantial increase in solid waste disposal at the viable landfills, and disposal of solid waste generated under the proposed 2021 LRDP could be accommodated by existing viable landfills without creating a need for additional solid waste disposal facilities. The amount of solid waste generated and disposed of in nearby landfills would not constitute an unplanned increase in waste not envisioned by the regional waste planning process and would therefore does exceed solid waste capacity.

The calculations of solid waste disposal rates for the proposed 2021 LRDP do not account for UCR's waste/source reduction and recycling program, which includes sorting and separating wastes to simplify the removal of recyclable materials and the expansion of composting procedures associated with landscaping and agriculture to reduce the solid waste flow. The campus has constructed a transfer station on the West Campus at Parking Lot 30, where UCR collects the recyclables and waste on campus and delivers these materials to the transfer station for hauling. A third-party vendor picks up the recyclable material for recycling. UCR delivers waste in UCR haul trucks to the Nelson Transfer Station from which Burrtec Waste Industries then transports 100 percent of the non-recyclable material to a waste-to-energy facility. UCR composts all green wastes on campus. In addition, UCR is carrying out a shift in its procurement practices toward recyclable, second generation, or reusable products to the extent feasible.

The proposed 2021 LRDP would comply with federal, State, and UC statutes and regulations related to solid waste, including implementation of the *UC Policy on Sustainable Practices*. Therefore, because the proposed 2021 LRDP would be served by landfills with sufficient capacity and would comply with applicable regulations related to solid waste, impacts would **be less than significant**.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

4.17.4 Cumulative Impacts

The geographic scope of the cumulative analysis for utilities varies depending on the topic addressed, as discussed below. Cumulative projects considered as part of this cumulative analysis include those assumed under buildout of the proposed 2021 LRDP, plus the cumulative projects listed in Table 4-1. Cumulative impacts could occur if impacts of the proposed 2021 LRDP would combine with similar impacts of other projects in the cumulative scenario, including with respect to temporal and geographic context.

The potential impacts to utilities and service systems to occur is partly informed by cumulative growth projections, which are indicative of the extent of additional utility and service system connections and associated facilities that will be required. Several of the analyses above are inherently cumulative in nature, including the assumptions and growth projections, for example Impact U-2 (Water Supply) and Impact U-3 (Wastewater). These analyses rely upon projections from the Urban Water Management Plan and the Update of the Integrated Master Plan for the Wastewater Collection and Treatment Facilities and related documents described below.

As shown in Table 4.12-2 in Section 4.12, *Population and Housing*, based on SCAG projections, the population of the Riverside-San Bernardino-Ontario metropolitan area is forecasted to increase by approximately 356,839 by 2035. Population growth of 356,839 people would represent an approximately 16 percent increase above the 2020 service area population. A correlating amount of utility and service system connections will be necessary to support the projected population increase, as discussed below.

Relocation or Construction of Utility Facilities

Development of projects under the proposed 2021 LRDP would be adjacent to existing campus development and would connect to existing utility facilities as feasible, including for water supply, wastewater treatment, stormwater drainage, electric power, natural gas, and telecommunications.

Water Supply Facilities

The geographic scope of cumulative analysis for water supply facilities is the UCR campus, as all potable water, fire water, and irrigation water supplies are distributed through the campus-wide system. Projects under the proposed 2021 LRDP would require the installation of additional water main lines, lateral connections, and hydrants on campus to serve planned facilities, which would occur during individual project construction and in project footprint areas. Impacts associated with water supply facility improvements for cumulative projects under the proposed 2021 LRDP would have limited potential to result in cumulative impacts due to the site-specific nature of such improvements, as well as the siting of such improvements in previously disturbed areas and project footprints. Therefore, potential cumulative impacts associated with water supply facilities (Impact U-1) would be **less than significant, and the project's contribution would not be cumulatively considerable**.

Wastewater Treatment Facilities

The geographic scope of cumulative analysis for wastewater treatment facilities is the UCR campus's wastewater conveyance pipeline system, as well as the RWQCP, which provides treatment of wastewater generated on the UCR campus. As with water supply facilities, discussed above, impacts associated with wastewater conveyance facilities for cumulative projects under the proposed 2021 LRDP would have limited potential to result in cumulative impacts due to the site-specific nature of such improvements, as well as the siting of such improvements in previously disturbed areas and project footprints. As discussed under Impact U-1, the RWQCP has sufficient capacity to treat the increased wastewater generated by cumulative projects constructed under the proposed 2021 LRDP, such that expansion of wastewater treatment facilities would not be necessary. Potential cumulative impacts associated with wastewater conveyance and treatment facilities (Impact U-1) would be **less than significant, and the project's contribution would not be cumulatively considerable**.

Stormwater Drainage Facilities

The geographic scope of cumulative analysis for stormwater drainage facilities includes the City of Riverside and the RCFCWCD service areas. This area is appropriate for analysis of cumulative impacts to stormwater drainage facilities due to the regional nature of such facilities. Individual cumulative projects in this scope of analysis would be subject to the stormwater capture and treatment requirements of the applicable MS4 permit; as such, project-specific stormwater drainage features and BMPs to control stormwater runoff would be managed through the implementation of project-specific SWPPPs during construction and project-specific SWMPs during operation and maintenance. Where cumulative projects redevelop existing impervious sites, such redevelopment may result in benefits in comparison to existing conditions due to increased on-site stormwater capture. The implementation of project-specific SWPPPs and SWMPs would occur in the disturbance footprint of the respective projects. Through compliance of future projects with the applicable stormwater laws and regulations, cumulative impacts associated with stormwater (Impact U-1) are **less than significant, and the project's contribution would not be cumulatively considerable**.

Electric Power and Natural Gas Facilities

The geographic scope of cumulative analysis for electric power and natural gas facilities is limited to the UCR campus. This is an appropriate area of cumulative analysis because electric power and natural gas connections would be project-specific and largely limited to the temporary disturbance footprint of respective projects under the 2021 LRDP. The sufficiency of electricity and natural gas supply is addressed in Section 4.6, *Energy*, under Impact E-1, *Result in Wasteful, Inefficient, and Unnecessary Use of Energy*. The analysis provided herein is specific to potential impacts associated with construction of the physical connections to existing electric power and natural gas supply. Because project-specific connections to electric power and natural gas would be site-specific and limited to future projects' construction footprint, the potential for cumulative impacts to occur is considered minimal, and potential impacts (Impact U-1) would be **less than significant, and the project's contribution would not be cumulatively considerable**.

Telecommunications Facilities

The geographic scope of cumulative analysis for telecommunications facilities is the City, which is an appropriate scope due to the service area of existing service providers. The proposed 2021 LRDP would include telecommunications connections to existing lines and systems, as service providers exist for the project site and vicinity. Telecommunication facilities associated with future projects in this geographic scope of analysis would be implemented in the disturbance area of the respective project footprints and would be designed to meet project-specific needs. As such, the telecommunication facilities associated with other projects in the scope of this analysis would have minimal potential to combine and result in cumulatively considerable impacts. Therefore, potential cumulative impacts related to the implementation of service connections to telecommunications infrastructure (Impact U-1) would be **less than significant, and the project's contribution would not be cumulatively considerable**.

Water Supply Availability

The geographic scope of analysis for cumulative water supply impacts is the RPU service boundary. This geographic scope is appropriate because RPU is responsible for providing the water supply for all residential, commercial, industrial, and fire protection uses on the UCR campus. Cumulative

development in the RPU service area would increase demands on water supplies. The RPU anticipates a total demand of 104,258 AFY by 2040, which would result in an increase of 9,037 AFY from the anticipated 2020 demands of 95,221 (RPU 2016). This anticipated increase in demand is based on planned and pending future development as identified on the existing and planned zoning and land use specifications in the City's General Plan Housing Element. Cumulative water demand associated with planned development in the RPU service area, including the proposed 2021 LRDP, would be accounted for in the water supply demand projections in the current UWMP and will be accounted for in the water supply demand projections in the City's 2020 UWMP.

As discussed under Impact U-2, water demands of the proposed 2021 LRDP are fully accounted for by the RPU's anticipated water supply availability, except for a 170-acre-foot deficit during the single-dry-year drought condition. However, as discussed under Impact U-2, with continued implementation of UCR water conservation efforts, anticipated completion of future RPU water supply augmentation projects, and the UWMP Water Contingency Planning, sufficient water supply would be available to the UCR campus under all considered drought conditions, including normal-year (no drought), single-dry-year, and multiple-dry-year scenarios through year 2040. Future projects in RPU's service territory would be required to obtain service commitments from RPU prior to construction.

Due to the management of groundwater resources by an Adjudication Judgement, as administered by a Court-appointed Watermaster, cumulative projects in the RPU's service territory that would require a water supply would only be allowed to use water determined by the Watermaster to be available for future development. Additionally, the RPU will consider the water demands of individual projects proposed in its service territory, with respect to the RPU's ability to provide their required supply through available means, including recycled water and imported SWP water. Due to the existing and project water supply availability in the RPU's service territory, and compliance with existing laws and regulations for water supply, including, but not limited to, the Adjudication Judgement, cumulative impacts related to water supply (Impact U-2) are **less than significant, and the project's contribution would not be cumulatively considerable.**

Wastewater Treatment Capacity

The geographic scope of analysis for cumulative impacts to wastewater facilities is the UCR campus and the service area for the RWQCP, which includes the City as well as the community services districts of Jurupa, Rubidoux, Edgemont, and the community of Highgrove (City of Riverside 2020). This geographic scope is appropriate because all wastewater flows from the UCR campus would be directed to the RWQCP plant, and no other wastewater treatment facilities would have potential to be affected by implementation of the proposed 2021 LRDP.

Individual projects occurring under the proposed 2021 LRDP would require wastewater connections, to provide conveyance of wastewater generated at individual project sites to the regional conveyance and treatment system. Such connections would be project-specific and would be implemented during construction of future projects under the proposed 2021 LRDP. The installation of project-specific wastewater connections would occur in the respective project's footprint and would be temporary, limited to the respective project's construction period. Potential impacts associated with the construction of wastewater connections would not have a significant impact during construction or operation and maintenance.

Impacts associated with wastewater treatment capacity would be cumulatively considerable if cumulative development in the service area would exceed the capacity of the RWQCP plant. Population projections for the 2020 Integrated Master Plan for the Wastewater Collection and

Treatment Facilities for the City Public Works Department (2020 Integrated Master Plan) were developed through the year 2037 based on Geographic Information System (GIS) data provided by the SCAG for the 2016-2040 RTP/SSC Report, clipped to the City's service area boundary and limited by buildout projections (City of Riverside 2020). SCAG's population projections are based on the data collected from individual municipalities' general plans and community plans. The GIS data predict a population increase to approximately 390,200 people by the year 2037, although land use classifications and wastewater flow projections indicate actual buildout will occur in 2032. This means population growth will be limited to approximately 379,300 people in the year 2032 and beyond. As mentioned in the introduction to this cumulative analysis, SCAG forecasts a population increase of approximately 356,839 people by the year 2035. Therefore, the GIS data used in the 2020 Integrated Master Plan uses a larger future service population than is forecast by SCAG. Nonetheless, based on the results of the flow monitoring study and the population and hydraulic models, it is estimated that the City's service area could generate a total flow of approximately 39 MGD by 2037. The 2020 Integrated Master Plan recommends a Capital Improvement Program to increase the capacity of the overall wastewater system to handle anticipated increases in volume (City of Riverside 2020).

As discussed under Impact U-3, the increase in wastewater generation expected to occur with implementation of the proposed 2021 LRDP is approximately 277,680 GPD, which is within the 19.69 MGD available treatment capacity at the RWQCP facility. Planned, pending, and reasonably foreseeable development would continue to increase demands on the existing wastewater treatment and conveyance facilities in the RWQCP service area. However, future projects in the City and communities in the RWQCP service area would be required to obtain commitments to provide wastewater treatment services prior to construction, which would be dependent on remaining treatment capacity at RWQCP. Development of the proposed 2021 LRDP in combination with regional growth would be within the remaining wastewater capacity. The proposed 2021 LRDP would not combine with other area sources to result in a substantial increase in cumulative wastewater treatment capacity beyond the RWQCP's available treatment capacity; cumulative impacts associated with wastewater (Impact U-3) are **less than significant, and the project's contribution would not be cumulatively considerable.**

Solid Waste Disposal Capacity and Compliance with Regulations

The geographic scope of analysis for cumulative solid waste impacts encompasses all areas in the region that contribute solid waste to the Perris Transfer Station and MRF. This geographic scope is appropriate because the Perris Transfer Station and MRF would receive all solid waste generated on the UCR campus under the proposed 2021 LRDP. As shown in Table 4.17-2, there are three viable landfills that receive waste from UCR, which collectively have a maximum permitted daily load of 25,554 tons per day, and a collective total remaining capacity of approximately 69.1 million tons. The estimated 9.7 tons per day of solid waste that would be generated under the proposed 2021 LRDP (under the worst-case scenario not accounting for diversion) represents approximately 0.04 percent of the permitted daily throughput of available landfills. As such, the proposed 2021 LRDP would not result in a substantial increase in solid waste disposal at the viable landfills, and disposal of solid waste generated under the proposed 2021 LRDP could be accommodated by existing viable landfills without creating a need for additional solid waste disposal facilities.

Furthermore, the landfills have sufficient capacity to accommodate the cumulative land uses envisioned by the Riverside General Plan. Pursuant to the Public Facilities and Infrastructure Element of the City's General Plan, the solid waste generated by development at City's General Plan

buildout is not anticipated to exceed capacity at the three local area landfills identified in Table 4.17-2 (City of Riverside 2012). Because the project would be developed with a less intense land use than what was envisioned by the City's General Plan, as mentioned in the introduction to this analysis of cumulative impacts, the amount of solid waste generated and disposed of in nearby landfills would not constitute an unplanned increase in waste not envisioned by the regional waste planning process under existing and cumulative conditions.

In addition to this small contribution to available waste processing capacity, UCR is committed to the UC Initiative of reducing solid waste disposal needs in the future, ultimately achieving a zero-waste goal. Students, faculty, and staff at UCR campus would continue to participate actively in the waste reduction and diversion efforts and programs established on campus. Waste diversion would be expected to increase both on campus and regionally as more LEED-certified structures are built and more waste reduction programs are introduced, while landfill disposal rates would correspondingly decrease during the planning horizon of the proposed 2021 LRDP. In addition, as disposal rates decrease, UCR would help facilitate extending the lifespan on the local landfill systems and not impair the region's solid waste reduction goals. In addition, cities in the geographic scope of this analysis are subject to solid waste diversion requirements and implementation of waste diversion programs and policies to meet State-mandated solid waste diversion rates. For example, AB 939 requires cities to divert 50 percent of solid waste from landfills. Each individual project would be required to comply with State and local waste diversion and/or reduction programs. Due to the proposed 2021 LRDP's small contribution to available waste processing capacity, as well as the continued implementation of waste diversion programs and requirements, cumulative impacts associated with solid waste (Impact U-4) are **less than significant, and the project's contribution would not be cumulatively considerable.**

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