4.9 Hazards and Hazardous Materials

This section evaluates potential health, safety, and environmental impacts related to the use, storage, and transport of hazards and hazardous materials that may affect the UCR campus and off-site land uses with implementation of the proposed 2021 LRDP.

4.9.1 Environmental Setting

The term "hazardous material" is defined in different ways for different regulatory programs. This EIR uses the definition given in the California Health and Safety Code Sections 25501(n), which defines hazardous material as:

> Any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment, or a material specified in an ordinance adopted pursuant to the governing body of a unified program agency.

Hazardous materials include, but are not limited to, hazardous substances, hazardous wastes, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

Most hazardous materials are thought to be hazardous chemicals, but certain radioactive materials and biohazardous materials, as defined here, are also hazardous. A hazardous waste, for the purpose of this analysis, is any hazardous material that is abandoned, discarded, burned or incinerated, mislabeled (or inadequately labeled), packaged in deteriorating or damaged containers, and recycled. In addition, hazardous wastes occasionally may be generated by actions that change the composition of previously non-hazardous materials. The criteria that characterize a material as hazardous also characterize a waste as hazardous: toxicity, ignitability, corrosivity, or reactivity.

Potential water quality effects related to surface water runoff from construction sites and/or groundwater dewatering during construction and operation are discussed in Section 4.10, *Hydrology and Water Quality*. Potential impacts related to toxic air contaminants that could be emitted during campus operations are discussed in Section 4.3, *Air Quality*. Potential impacts related to hazards associated with wildfires are discussed in Section 4.18, *Wildfire*.

Hazardous Materials at UCR

The campus is a permitted large-quantity generator of hazardous waste, which includes chemical waste, universal waste, and radioactive and biohazardous (infectious) waste. The policies and procedures for the safe management of hazardous materials and wastes at UCR are approved and administered at the Vice Chancellor level. The UCR Vice Chancellor Administration organization includes Environmental Health & Safety (EH&S), which is the principal administrator for hazardous materials/waste management on the UCR campus.

EH&S is charged with issuing policies (approved by the Vice Chancellor Administration), evaluating departmental activities, and disseminating general information regarding the handling, storage, and disposal of hazardous materials and wastes, in part through discussions with the department heads, training of employees, and teaching assistants and also through distribution of various safety manuals, newsletters, and other publications. Most of the hazardous materials used on the campus

are associated with research and instruction. The primary users of hazardous materials include the following departments:

- Environmental Research
- The Arts and Photography
- Biochemistry
- Biology
- Biomedical Sciences and Research
- Botany
- Chemistry
- Entomology
- Geology
- Health Services
- Institute of Geophysics and Planetary Physics
- Nematology
- Facilities and Physical Plant
- Physics
- Plant Pathology
- Soil and Environmental Sciences

The hazardous materials that are used by these departments include flammables and combustibles, acids and bases, biohazards, pesticides and herbicides, explosive and blasting agents, compressed gases, cryogenic fluids, radioactive material, oxidizers, and poisonous gases and could include the following:

- Solvents used for cleaning, extraction, or other laboratory activities
- Reagents (chemical starting materials)
- Reaction products (products of chemical reactions), which may have unknown compositions
- Radioisotopes (radioactive elements used to stimulate or trace chemical reactions)
- Paints and paint thinners (both oil-based and latex) for fine arts
- Set design and construction materials used in theater arts classes and productions
- Test samples (e.g., specimens such as blood, tissue, soil, or water), prior to use in a testing procedure
- Infectious agents, including bacteria, viruses, and other materials encountered in biological studies and human health care or research

In addition to research and instruction facilities, maintenance and physical plant units on campus, including grounds, custodian services, fleet services, pest management, and craft shops, also use a wide variety of commercial products formulated with hazardous materials during the course of daily campus operations. These include fuels, oils and lubricants, cleaners, solvents, paints, pesticides, adhesives, sealers, refrigerants, and others. Ongoing facilities management activities also include the operation and maintenance of boilers and other central plant equipment, underground storage tanks, asbestos abatement projects, and the replacement of electrical equipment (e.g., transformers and capacitors) containing polychlorinated biphenyls (PCBs). PCBs are currently used in transformers and capacitors located in several campus buildings and facilities. Also, virtually all buildings on the UCR campus contain commercial products (e.g., cleaners, copier toners, etc.) that could be considered hazardous materials under regulatory definitions.

Certain locations on campus may also have been contaminated by various hazardous substances because of the former uses of the site, such as leaks from unidentified underground storage tanks, or unidentified buried debris that could contain hazardous substances or hazardous byproducts. If not managed safely, contaminated soil, groundwater, or building materials have the potential to pose hazards to construction workers and existing and future campus occupants and nearby land

uses. All identified contamination on the campus has either been remediated or has been identified for remediation. These sites are discussed below under *Building Site Contamination.*

Hazardous material profiles for campus users have been identified in the UCR Hazardous Materials Business Emergency Plan (UCR 2020a) prepared pursuant to the State Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Law), which contains information about the location of, and emergency procedures for, campus buildings in which hazardous materials are handled. The business plan satisfies federal and State Community Right-to-Know laws. The Business Plan Law requires periodic reporting of inventory changes at UCR to the local administering agency, which is the City of Riverside (City) Fire Department (RFD).

The California Environmental Reporting System (CERS) hazardous material business activities forms were submitted to the Riverside County Department of Environmental Health (RCDEH) on November 11, 2020 and accepted by the RCDEH on November 11, 2020. These forms indicate the following:

- Hazardous chemical materials are found on the UCR campus in quantities greater than 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases
- UCR is a hazardous waste generator
- UCR campus utilizes above-ground storage (AST) tanks to store greater than 1,320-gallons of petroleum hydrocarbons on-site
- The owner of the property, emergency contacts, and the environmental contact for the UCR campus

The forms also provide UCR campus plans regarding spills, fires and earthquakes, involving hazardous materials and hazardous wastes, as listed below:

- Internal response
- Emergency communications, phone numbers, and notifications information
- Emergency containment and cleanup procedures
- Facility evacuation
- Arrangements for emergency services – alarm signals, emergency assembly areas, and evacuation routes
- Emergency equipment – safety and first aid, firefighting, spill control and cleanup, and communications and alarm systems
- Earthquake vulnerability – vulnerable areas and vulnerable systems and/or equipment
- Employee training – type, frequency, and recordkeeping

Additionally, Hazardous Materials Business Emergency Plan facility maps are included as an attachment (Appendix H).

Compressed gases, fuels, and lab chemicals (e.g., solvents, acids, and bases) are examples of the kinds of chemicals that are subject to Business Plan Law reporting requirements. The 2020 UCR Hazardous Materials Business Plan (Business Plan), which was last updated in 2020, provides the most accurate and current data available regarding hazardous materials use on the campus. The RFD administers the Business Plan requirements for UCR and other private and public entities in the City that are subject to the Business Plan.

EH&S provides requirements to campus users of hazardous materials concerning proper disposal of the resulting hazardous wastes at UCR; included in these requirements are prohibitions against the discharge of any hazardous wastes into storm drains or the sanitary sewer system.

Chemical Hazardous Waste

There are many different types of chemical waste managed by EH&S including solvents, cleaners, paint/sludge, asbestos, mercury, photochemicals, formalin (formaldehyde solution), oil/lubricants, pesticides, adhesives/sealers, acids, explosives/reactives, and organic and inorganic laboratory chemicals. UCR does not treat, store (for longer than 90 days), or dispose of hazardous waste on-site. All waste is shipped off-site to licensed disposal facilities using a contracted licensed hazardous waste transporter.

The campus tracks waste as required by federal and State Law. UCR is required to use UC-approved and audited contractors, transporters, and disposal sites. The campus currently contracts with Clean Harbors Environmental Services, which is the transporter and treatment storage disposal facility responsible for most of UCR's hazardous waste disposal. Some waste profiles are incinerated for energy recovery. Stericycle Inc. transports and disposes of biohazardous waste.

In addition, UCR must file reports with the State detailing waste disposal and recycling activities in addition to paying annual hazardous waste taxes based on volumes of waste disposed. Before EH&S collects materials, the materials must be packaged and labeled properly, which includes placing them in appropriate sealed containers, segregating incompatible materials, and identifying all components with approximate concentrations. Wastes are stored in the EH&S Hazardous Materials Management Facility in the 90-day storage area prior to shipment to treatment, storage, and disposal facilities (UCR 2018a). Chemical wastes are segregated by type and consolidated, bulked, or compacted before removal from the campus by a licensed hauler to permitted off-campus facilities for incineration, treatment, recycling, or other means of disposal. Emergency response and spill cleanup equipment and supplies are maintained in the Hazardous Materials Management Facility (UCR 2018a).

Radioactive Waste

Exposure to ionizing radiation can result in adverse human health effects that range from short-term mild symptoms (such as sunburn) to serious illness or death, depending on the type of radiation and the amount of exposure. The extent to which exposure would result in any adverse effects depends on the radioisotope, the amount, and the length of time of exposure.

The UCR campus generates radioactive wastes from research and teaching activities. As is the case with hazardous chemical waste, the amount of radioactive waste generated by the campus varies depending upon changes in research projects, techniques, and methodologies. Radioactive substances contain atoms that spontaneously emit radiation from the transformation of unstable atomic nuclei, which result in chemically different substances that may or may not be radioactive. These radioactive atoms are called "radio-nuclides" or "radioisotopes." Because radioactive materials emit ionizing radiation, their presence can be detected easily. Researchers and health care professionals take advantage of this easy detectability by using radioactive materials to study various biochemical functions in animals and humans. Sealed sources are radioactive materials encased in containers designed to prevent release of radioactive materials to the environment. Limited types and quantities of radioisotopes are also used in research laboratories. All radioisotopes used on campus are listed in the campus Broadscope Radioactive Materials License issued by the State and must be authorized by EH&S (see *Regulatory Setting* below) (UCR 2020b).

UCR currently contracts with Thomas Gray & Associates, a radioactive-hazardous waste management group, as the transporter for the campus' radioactive waste. No radioactive waste is incinerated on campus. Like chemical wastes, low-level radioactive waste from campus teaching, research, and health sciences-related activities is collected and managed by EH&S staff. UCR collects dry and liquid low-level radioactive waste directly from its sources (research or clinical users). In accordance with strict regulatory guidelines and procedures, the EH&S staff transports the waste to the Hazardous Materials Management Facility designed to safely store and contain materials. As a mitigation measure from the EH&S Expansion EIR document[1], which has been and will continue to be implemented, EH&S staff shall provide all drivers removing hazardous materials or hazardous waste from the EH&S Expansion facility with printed directions clearly indicating the mandated haul route, exiting the EH&S Expansion facility left onto Watkins Drive, and proceeding northwest to Blaine Street, then west on Blaine Street to the I-215/SR 60 freeway entrance ramps.

Biohazardous Waste

Various biologically hazardous (biohazardous) substances are used for research on the UCR campus like recombinant DNA molecules, infectious agents, parasites, and other biological agents. The California Medical Waste Management Act (codified in California Health & Safety Code sections 117600-118360) defines medical waste as:

- Any biohazardous, pathology, pharmaceutical, or trace chemotherapy waste
- All sharps and any biohazardous waste from research involving the treatment, diagnosis, or immunization of humans or animals
- Waste generated in autopsy or necropsy
- Waste generated in research using human or animal pathogens
- Laboratory waste such as human or animal specimen cultures that are infected with pathogens that are also infectious to humans
- Laboratory wastes from the production of bacteria, viruses, spores, and discarded live and attenuated vaccines used in human health care or research

The UCR *Biosafety Manual* defines the responsibilities, procedures, and guidelines for the safe handling, use, and disposal of biohazardous materials in research and teaching activities performed at UCR. The *Biosafety Manual* compliments the UCR *Exposure Control Plan*, which contains additional policies and procedures for UCR personnel exposed to blood or other potentially infectious material. UCR laboratories with biohazards must be sufficiently decontaminated to eliminate the possibility of transmission of infectious materials to researchers, the public, and the environment. Disinfectant levels (high, medium, and low) are regulated by the Food and Drug Administration or United States Environmental Protection Agency (US EPA) and selected for use based on the type and amount of biohazardous materials present.

Heat sterilization is achieved by using an autoclave by applying wet heat (i.e. high-pressure steam) at temperatures above the normal boiling point of water and pressures above normal atmospheric pressure. Autoclaves are used to sterilize laboratory equipment or materials such as glassware, media, reagents, or waste. Vapors and gases are used in a closed system and under controlled conditions of temperature and humidity. Agents in this category include the aerosol, vapor, or gas phase of chlorine dioxide, glutaraldehyde, paraformaldehyde, ethylene oxide, peracetic acid, and

[1] Mitigation Measure MM 4.4-2 in the EH&S Expansion EIR; available at https://pdc.ucr.edu/sites/g/files/rcwecm2356/files/2019-04/ehs_expansion_and_related_projects_final_eir.pdf

hydrogen peroxide. Vapors and gases are primarily used to decontaminate biosafety cabinets, animal rooms, and their associated systems, bulky or stationary equipment not suited to liquid disinfectants, instruments or optics that might be damaged by other decontamination methods, and rooms, buildings, and associated air-handling systems.

Activities that create the potential for biohazardous aerosols are conducted in biosafety cabinets, which filter all released air to remove biohazardous materials. Biosafety cabinets and equipment with special filters to remove biological agents are disinfected at the end of the workday or whenever they are grossly contaminated. These cabinets must also be certified when installed, annually and whenever they are moved or undergo major servicing (e.g., HEPA filter replacement, motor repairs, etc.). Biosafety cabinets are designed to provide personnel, environmental and product protection when appropriate practices and procedures are followed. There are three classes of biosafety cabinets. At UCR, almost all biosafety cabinets approved for use of biohazards and human material are Class II (UCR 2021a).

UCR complies with regulations that specify that infectious wastes be stored in refrigerated (below freezing) facilities for no more than 90 days and that such wastes be properly packaged, labeled, and disposed. If biohazardous wastes are stored above freezing, then they may be stored for 7 days or less. For liquid biological waste with no chemical hazards, liquid waste (cultures, stocks, and other regulated liquid waste) can be decontaminated by a 10 percent final concentration household bleach solution for 30 minutes minimum contact-time prior to disposal down the sink with copious amounts of running water. Research plant and soil waste are disposed of in clear autoclavable bags and devitalized (most commonly by autoclave) before disposal in regular trash. At UCR, disposal of animal carcasses is handled through the Office of Campus Veterinarian. Animal carcasses should be double bagged in red biohazardous bags, transported in leak-proof containers, and held in the freezer located in the vivarium until the next scheduled pick up from an approved vendor under contract with UCR (UCR 2021b). Biohazard waste that is not autoclaved or deactivated in the lab are collected on a weekly basis and stored in a chiller by EH&S staff. The waste is stored at below freezing temperatures and collected by Stericycle Inc.

Laboratory Animal Use

Because UCR is a center for research and teaching in the biomedical sciences, the campus uses animals for both teaching and research activities. The use and care of animals in research is required to comply with protocols established by the National Institutes of Health and the Animal Welfare Act. Laboratory research involving research animals and animal care activities produce biohazardous wastes.

UCR has established an Institutional Animal Care and Use Committee (IACUC) to function as the review body responsible for approval and oversight of activities involving the use of vertebrate animals at UCR in accordance with federal requirements, including the Animal Welfare Act and the U.S. Public Health Service Policy. The IACUC members are appointed by the Vice Chancellor for Research and Economic Development and contain the experience and expertise to oversee the institution's animal program, facilities, and procedures in coordination with the UCR Office of the Campus Veterinarian. Additionally, the IACUC is committed to promoting open and cooperative relationships with investigators and educating the UCR community concerning the ethical and regulatory standards for the humane care of animals (UCR 2021c).

Building and Site Contamination

Because of materials commonly used in the construction and operation of buildings on the UCR campus, existing buildings or potential building sites may contain various hazardous substances as a result of former uses of the sites, leaks from unidentified underground storage tanks (UST), or unidentified buried debris that could contain hazardous substances or hazardous byproducts. Contaminated soils, building materials, or groundwater have the potential to pose hazards to construction workers, existing and future campus occupants, and nearby development if not managed and remediated safely.

As required by Public Resources Code Section 21092.6, lists compiled pursuant to Section 65962.5 of the Government Code (Cortese List), as well as additional databases maintained by federal and State agencies, were reviewed to determine whether the campus is included on any list pertaining to hazardous materials or hazardous wastes. These lists also identify known or suspected locations with soil or groundwater contamination. One of the most common sources in site contamination stems from petroleum hydrocarbons leaking from storage tanks that may have been in various areas of the UCR Campus.

Areas where petroleum hydrocarbon storage has formerly occurred include:

- One 6,000-gallon diesel, one 1,500-gallon gasoline, and one 300-gallon former Underground Storage Tanks (USTs) at the UCR Agricultural Operations (Ag Ops) facility at 1060 Martin Luther King Boulevard; USTs removed in 1999 – closed (2005) RCDEH Local Oversight Program (LOP) Case # 99-15484 (Root 2005).
- Four 6,000-gallon gasoline and one 550-gallon waste oil former USTs at the former Atlantic Richfield Oil Company service station at 1160 University Avenue; USTs removed in 1977 – closed (2018) Regional Water Quality Control Board Case (Smythe 2018).
- Five 20,000-gallon former diesel USTs at UCR Parking Lot #6 – closed (1998) RCDEH LOP Case # 91-353 (Tuntland 1998).
- Two 7,000-gallon gasoline, one 3,000-gallon gasoline, and one 550 waste oil former USTs at the former Chevron service station at 1011 University Avenue; USTs removed in 1991 – closed (1992) RCDEH LOP Case # 91-776 (Eckhardt and Gallagher 1991; Boltinghouse 1992).
- Four former 10,000-gallon #6 heating oil USTs at 3401 Watkins Drive (Steam Plant) – abandoned in place in October 1998 – closed in place (1998) RCDEH LOP Case # 95-454 (Hansen 1998).
- One 10,000-gallon gasoline, one 6,000-gallon gasoline, and one 500-waste oil former USTs at the UCR Fleet Service facility at 3401 Watkins Drive; USTs removed in 1997 – closed (2000) RCDEH LOP Case # 98-0244 (Tuntland 2000).

Areas where petroleum hydrocarbon or hazardous material and hazardous waste storage currently occurs include:

- UCR Fleet Services – RCDEH Permitted UST - 3401 Watkins Drive (Facility ID FA0014750) (GeoTracker 2021)
- UCR Steam Plant – RCDEH closed Leaking UST - 3401 Watkins Drive - four abandoned in-place USTs and residual fuel contamination remaining in place beneath the steam pipes (Site Number 95454) (Lee and Beckmann 1997, GeoTracker 2021)
- Agricultural research support operations areas on the West Campus (e.g., fuel storage and dispensing, maintenance oils, and hazardous waste) (UCR 2018a)
- Corporation Yard located north of West Linden Street on the East Campus (UCR 2005)

- An UST, previously located at the Grounds Maintenance Facility along East Campus Drive, was removed and the soil tested to confirm no contamination remained. Subsequently, an aboveground tank was installed, including proper containment facilities (UCR 2005)

An approximately 3.25-acre site on the UCR campus at 1060 Martin Luther King Boulevard is listed as a California Department of Toxic Substances Control (DTSC) Certified Operations and Maintenance Land Use Restrictions site as of December 15, 2010 (DTSC 2020a). The site was historically used for the disposal of pesticide and herbicide waste from previous research operations in laboratories, greenhouses, and field plots during the 1950s and 1960s. Investigation activities were conducted between 1988 and 1998. Cleanup activities were conducted between June 2000 and February 2002, and groundwater monitoring activities were conducted from 1991 until 2016 to assess groundwater quality before and after cleanup. As part of the cleanup activities, about 38,400 cubic yards of material were excavated from the site. Of the soil removed, about 21,200 cubic yards were treated on-site using a cleanup technology that uses heat to remove chemicals from soil called low temperature thermal desorption. The remaining soil either met the approved site cleanup levels without treatment or was disposed of at a licensed disposal facility, and all clean soil was used as backfill. An additional 2,074 cubic yards of clean soil was imported to the site and used for backfilling. Following cleanup, DTSC approved a soil management plan in August 2005 and entered into an Operations and Maintenance Agreement with UCR. The site was cleaned up so that remaining soil, including the backfilled soil, is safe for current and future use and is not adversely affecting groundwater quality. Groundwater monitoring data shows that groundwater quality at the site meets California drinking water criteria. After over 18 years of groundwater monitoring, DTSC concluded that the monitoring can be terminated. A Covenant to Restrict Use of Property was recorded with Riverside County in May 2006. Cleanup levels were established based on a human health risk assessment which focused primarily on potential exposures to University and construction workers. These cleanup levels were achieved and are protective of these types of workers. The Covenant to Restrict Use of Property prohibits the site from being used for residential, hospital for humans, indoor classroom for persons under 18 years of age, or as a daycare center for children. The covenant will remain in place unless additional evaluations are conducted to make sure the site is suitable for such uses (DTSC 2020b). In July 2020, DTSC issued a No Further Action Determination for Groundwater Monitoring and Operations and Maintenance Agreement after groundwater monitoring indicated groundwater appears to have not been impacted by site activities. The site is currently managed by the Covenant to Restrict Use of Property, a Soil Management, Implementation and Enforcement Plan dated July 2020 and Revised Erosion Control Plan dated September 2015.

Also located at 1060 Martin Luther King Boulevard is a site listed as a closed Riverside County LOP case for three leaking USTs. The diesel, gasoline, and waste oil USTs were removed in 1999, along with 187 tons of total petroleum hydrocarbon as gasoline impacted soil. A portable soil vapor extraction system was installed and operated for 52 days, during which an estimated 1,630 pounds (276 gal) of total petroleum hydrocarbon as gasoline vapor were removed (DTSC 2020a).

Fuel and Oil Storage

Based on a review of the 2018 Spill Prevention, Control, and Countermeasure (SPCC) Plan, fuels, maintenance and hydraulic oils, transmission fluids, and used vegetable cooking oils and animal fat are stored on campus. According to the facilities map included in the SPCC, the majority of fuel and oil storage sites are concentrated in the Academic Center and Corporation Yard in East Campus, and

the Ag Ops Headquarters in the eastern area of West Campus just south of Martin Luther King Boulevard.

FUEL STORAGE

According to the SPCC Plan, there are 39 emergency generator engine fuel bulk storage containers (100-4,900 gallons) on campus. The total amount of diesel fuel stored in these emergency generator engine fuel bulk storage containers is 29,774 gallons, 50 percent of the total fuel storage for the entire campus (UCR 2018a).

Grounds Maintenance, Refuse & Recycling operations (Grounds) is included in the Facilities Services organization. Grounds has its own building and shop areas located at the southern end of the campus, including fuel storage and dispensing equipment consisting of two 1,000-gallon aboveground bulk storage containers, one containing unleaded gasoline and one containing diesel.

Fuel storage at Ag Ops includes vehicle fuel storage and dispensing equipment near Ag Ops Headquarters consisting of one 1,500-gallon single compartment double wall aboveground bulk storage container containing gasoline, one 1,500-gallon single compartment double wall aboveground bulk storage container containing diesel fuel, and one 1,500-gallon dual compartment double wall aboveground bulk storage container containing 500 gallons of gasoline and 1,000 gallons of diesel fuel.

Other large fuel storage includes:

- A SPCC-exempt 6,000-gallon UST operated by Fleet Services located east of the Fleet Services office and contains unleaded gasoline for refueling fleet vehicles by three dispensers at the nearby fueling island
- A 4,000-gallon diesel tank at the School of Medicine Education Trailers
- A 3,600-gallon diesel tank at EH&S Expansion
- A 1,200-gallon diesel tank at Insectary and Quarantine
- A 1,400-gallon diesel tank at School of Medicine Research
- A 1,150-gallon diesel tank at the Steam Plant

MECHANICAL OIL AND TRANSMISSION FLUID STORAGE

According to the SPCC Plan, Facilities Services operations is responsible for campus oil storage in oil-filled operational equipment. Oil-filled operational equipment consists of 153-gallons capacity lubricating oil in the largest emergency generator engine on campus, 98-gallons capacity lubricating oil in the second largest emergency generator engine, and a total of 18,071 gallons hydraulic oil contained in 95 elevators ranging from 89 to 476 gallons in capacity (UCR 2018a).

Portable oil storage in the Ag Ops maintenance shop includes a total of nine 55-gallon drums of maintenance oils including engine oil, hydraulic oil, universal tractor fluid, and automatic transmission fluid. Portable oil storage also includes one 55-gallon drum of waste oil and one 55-gallon drum of drained used oil filters. All 55-gallon drums are stored on secondary containment drum pallets.

Fleet Services operates a light maintenance and repair shop for campus fleet vehicles at the Corporation Yard Building C. One 240-gallon double wall aboveground bulk storage container containing motor oil and one 120-gallon double wall aboveground bulk storage container with automatic transmission fluid are located at the southern end of the maintenance shop. Both

aboveground bulk storage containers reside in impervious concrete containment berms with bypass valves sealed closed. These bulk storage containers are piped to the maintenance bays. The lube bays contain small containers of grease, lube oils, antifreeze, and a small solvent tank. The perimeter of the maintenance shop has impervious concrete berms around the entrance doors. These berms would contain any potential spill or leak in the maintenance shop. There is a 360-gallon double wall aboveground bulk storage container containing waste oil located at the west side of the maintenance shop and another 360-gallon double wall aboveground bulk storage container with waste oil located at the north end of the shop. Both waste oil aboveground bulk storage containers are piped from the maintenance bays (UCR 2018a).

COOKING OIL/FATS STORAGE

Dining Services operates several residential dining and retail restaurant facilities throughout campus. Three of these facilities have 325-gallon double wall aboveground bulk storage containers containing used vegetable cooking oil and/or animal fat; these aboveground bulk storage containers are located one each at Highlander Union Building, Aberdeen-Inverness Residential Restaurant, and Lothian Residential Restaurant. The Dining Services facility located at the Market at Glen Mor has a smaller, 200-gallon double wall aboveground bulk storage container also containing used vegetable cooking oil and/or animal fat. These used cooking oil/fat aboveground bulk storage containers are equipped with automatic pumping systems to eliminate open container transfer and prevent spills. Spill kits are maintained at each used cooking oil/fat aboveground bulk storage container location. There are three 200-gallon portable single wall steel bins containing used vegetable cooking oil and/or animal fat located at three Dining Services restaurants: one at The Barn, one at the Alumni & Visitors Center, and one at the Highlander Union Building. A smaller, 82-gallon portable plastic single wall bin containing used cooking oil/fat is located at the Market at Glen Mor (UCR 2018a). These portable containers have been removed and replaced with 32-gallon plastic bins not covered by SPCC Plan requirements.

OTHER

Smaller containers of oil and petroleum-based products are stored throughout the campus. These products may be stored from time to time in the following general locations:

- Laboratories
- Corporation Yard Facilities Services Shops at Corporation Yard
- Grounds Landscape Maintenance, Refuse & Recycling facility
- Fleet Services Maintenance Shop
- Lothian Residence Hall Maintenance Shop and Residential Restaurant
- Aberdeen-Inverness Residence Hall Maintenance Shop and Residential Restaurant
- Bannockburn Residence Hall Maintenance Shop

Infrastructure

ASBESTOS

Asbestos, a naturally occurring fibrous material, was used for years in many building materials for its fireproofing and insulating properties. Loose insulation, ceiling panels, and brittle plaster are potential sources of friable (easily crumbled) asbestos. Buildings that were built prior to 1981 may contain asbestos materials in public access areas. These materials may include, but are not limited

to, vinyl asbestos floor tiles and/or linoleum sheet flooring, as well as the mastic used to secure them, sprayed on acoustical or "popcorn ceiling," gypsum wallboard, and joint compounds. In addition, some laboratory and machine shop areas have benches and/or fume hoods constructed of transite and other similar asbestos containing materials (ACM). Asbestos in these materials is bonded with vinyl, epoxy, cement or other materials and under normal conditions, does not pose any danger to the building occupant. In areas where the asbestos is not airborne when bonded or encapsulated, such as floor tiles or painted and properly maintained insulation materials, there is little or no risk to human health. However, if the material is drilled, sanded or otherwise disturbed, it could result in the release of asbestos fibers into the air that could pose a health risk, such as respiratory diseases, cancers, or other pulmonary complications (UCR 2021d).

Abatement projects are typically performed quickly and monitored by qualified individuals from Physical Plant, Housing, Dining, and Residential Services, EH&S, outside consultants/laboratories, and/or contractors.

Bannockburn Village has asbestos content in ceiling and wall materials. The health hazard is low unless this material is disturbed. Under UCR policy, non-certified UCR employees, students, or contractors shall not remove, disturb, or attempt to renovate (e.g., drill into or saw) or repair materials known or suspected to contain asbestos (UCR 2021e).

LEAD

Lead is a naturally occurring metallic element. Among its numerous uses and sources, lead can be found in paint, water pipes, solder in plumbing systems, and soils around buildings and structures painted with lead-based paint (LBP). In 1978, the federal government required the reduction of lead in house paint to less than 0.06 percent (600 parts per million). However, some paints manufactured after 1978 for industrial uses or marine uses legally contain more than 0.06 percent lead. Because many structures on the UCR campus were constructed prior to 1978, wall surfaces and other building materials may contain LBPs, which can pose a risk of exposure due to chipped or peeling paint, or from renovation or demolition of buildings or building materials that contain lead. Exposure to lead can cause adverse health effects, including disturbance of the gastrointestinal system, anemia, kidney disease, and neuromuscular and neurological dysfunction (in severe cases).

POLYCHLORINATED BIPHENYLS (PCBS)

PCBs are organic chemicals, usually in the form of oil, that were formerly used in electrical equipment, including transformers and capacitors, primarily as electrical insulators. Although the campus has an ongoing program to replace electrical equipment that contain PCBs, some PCB-containing electrical equipment (e.g., transformers and capacitors) are still present on the UCR campus. In addition, some fluorescent light ballasts that contain PCBs may be present in existing buildings that would be demolished or renovated. Nearly all ballasts manufactured prior to 1979 contain PCBs. PCB ballasts manufactured after July 1, 1978, which do not contain PCBs, are required to be clearly marked "No PCBs." PCBs, which are highly persistent in the environment, can cause various human health effects, including liver injury, irritation of the skin and mucous membranes, and adverse reproductive effects. PCBs are also suspected human carcinogens. In California, PCB-containing materials must be disposed as hazardous waste.

MERCURY

Elemental mercury is an insoluble, liquid, inorganic metal. It is commonly used in laboratory and medical equipment such as thermometers and manometers (used for measuring pressure). Other

uses include electrical equipment and some water pumps. Mercury liquid evaporates very slowly if exposed to air. At certain levels of exposure, mercury vapors are toxic and can cause kidney and liver damage. Due to accidental spills and historic disposal practices before the adoption of more stringent environmental regulations pertaining to hazardous waste disposal, it is possible that elemental mercury may be present in research laboratory sink traps, in cupboard floor spaces, or in sewer pipes that could be exposed in the event of building renovation or demolition.

Groundwater Conditions

As noted in Section 4.10, *Hydrology and Water Quality*, measured depth to groundwater on campus is anticipated to range from 73 to 175 feet below grade, with flow in a generally westerly direction. Most of the campus overlies the Riverside-Arlington sub-basin of the larger Upper Santa Ana River Groundwater Basin, which underlies the entire Riverside area. However, the southeastern portion of East Campus is not located in a groundwater sub-basin. Although UCR has no knowledge of groundwater contamination on campus, the extent to which groundwater quality may have been affected by historic activities is unknown. In addition, the campus is not identified as a significant groundwater recharge area.

Aircraft Accident Hazards

UCR is in Area E of the March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan (ALUCP) influence area, which is designated an area of concern for "hazards to flight." Area E defines the outer limits of the airport influence area, where the risk level is defined as "low." Hazards to flight include physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations. Land use development that may cause the attraction of birds to increase is also prohibited. Man-made features must be designed to avoid heightened attraction of birds. Additionally, certain farm crops and farming practices that tend to attract birds are strongly discouraged. These include certain crops, farming activities, confined livestock operations, and various farming practices involving livestock.

In Area E, there is no limit on residential or other use population density or requirement for open space. However, although there is no explicit upper limit on usage intensity, land uses of the types listed—uses that attract very high concentrations of people in confined areas—are discouraged in locations below or near the principal arrival and departure flight tracks. The UCR campus is not located near the principal arrival and departure flight tracks (Riverside County Airport Land Use Commission 2014).

4.9.2 Regulatory Setting

The management of hazardous materials and hazardous wastes is regulated at federal, State, and UCR Programs, including programs administered by the US EPA and agencies within the California Environmental Protection Agency (Cal/EPA), such as the DTSC, and federal and State occupational safety agencies.

Federal

United States Environmental Protection Agency

The US EPA is the main federal agency responsible for enforcing laws and regulations relating to hazardous materials and wastes, including evaluation and remediation of contamination and hazardous wastes. The US EPA works collaboratively with other agencies to enforce hazardous

materials handling and storage regulations and site cleanup requirements. The Occupational Safety and Health Administration (OSHA) and the United States Department of Transportation (USDOT) are authorized to regulate safe transport of hazardous materials. EPA Region 9 has jurisdiction over the southwestern United States (Arizona, California, Nevada, and Hawaii).

Resource Conservation and Recovery Act (RCRA)

Under RCRA, US EPA regulates the generation, treatment, and disposal of hazardous waste, and the investigation and remediation of hazardous waste sites. RCRA includes procedures and requirements for reporting releases of hazardous materials and for cleanup of such releases. RCRA also includes procedures and requirements for handling hazardous wastes or soil or groundwater contaminated with hazardous wastes. Individual states may apply to US EPA to authorize them to implement their own hazardous waste programs in lieu of RCRA, if the state program is at least as stringent as federal RCRA requirements. California has been authorized by US EPA to implement its own hazardous waste program, with certain exceptions. The California program is handled by the DTSC and further discussed below.

Hazardous and Solid Waste Amendments Act (HSWA) of 1984

The HSWA amended the Solid Waste Disposal Act of 1965, as amended by the RCRA. The HSWA placed greater responsibility on the US EPA to implement and enforce hazardous waste rules set in place by the RCRA. The HSWA affirmed and extended the "cradle to grave" system of regulating hazardous wastes and specifically prohibited the use of certain techniques for the disposal of some hazardous wastes. The HSWA includes more than 70 provisions, including the establishment of permitting deadlines for hazardous waste facilities, the regulation of small-quantity generators of hazardous waste, and the formation of RCRA Corrective Action requirements, which assist hazardous waste facilities in investigating and cleaning up any release of hazardous waste.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

CERCLA, also known as Superfund, establishes a cleanup liability regime and process for certain properties contaminated by hazardous substances that pose a threat to human health and the environment. CERCLA created a tax on chemical and petroleum industries, which generated a trust fund for cleaning abandoned or uncontrolled hazardous waste sites with no identified responsible party. It also authorized short-term and long-term removal and response actions to address hazardous substance releases and/or permanently reduce releases or threats of releases.

Superfund Amendments and Reauthorization Act (SARA)

In 1986, SARA amended CERCLA, reflecting the US EPA's experience in administering the Superfund program over 6 years. SARA provided new enforcement authorities and tools, increased the amount of funds available for hazardous waste site cleanups and increased the awareness of human health problems affiliated with hazardous waste sites. Another change generated by SARA was the revision of the US EPA's Hazard Ranking System, to accurately assess the risk posed to human health and the environment by uncontrolled hazardous waste sites.

Emergency Planning and Community Right-to-Know Act (SARA Title III)

The Emergency Planning and Community Right-to-Know Act was created under SARA Title III to help communities protect public health and safety from chemical hazards. The national legislation

requires each state to appoint a State Emergency Response Commission, which then divides each state into Emergency Planning Districts and nominates a Local Emergency Planning Committee for each district. The Emergency Planning and Community Right-to-Know Act provides compliance and reporting standards as well as waste, chemical, and cleanup enforcement, allowing each district to plan and prepare thoroughly, should a hazardous waste accident or release arise.

Hazardous Materials Transportation Act

The Hazardous Materials Transportation Act was developed in 1975 to create a uniform ruling on the transportation of hazardous materials in the U.S. The law was intended to coordinate existing regulations, which previously varied widely across state lines and led to mismanagement and illegal dumping of hazardous waste. The Hazardous Materials Transportation Act is administered by the USDOT via its issuance of inspections, training, and transportation requirements and information. The federal government delegates enforcement authority to the states.

Occupational Safety and Health Act

OSHA (29 CFR 1910) is intended to ensure that employers provide their workers with a work environment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, or unsanitary conditions. Operation of this program is delegated to the State and operated by the Division of Occupational Safety and Health, known as Cal/OSHA. Standards are created by the National Institute for Occupational Safety as the research institution for the federal Occupational Safety and Health Act (Fed/OSHA). These standards are adopted at the State and local level and are enforced on campus by Cal/OSHA and other agencies.

Public Health Security and Bioterrorism Preparedness and Response Act

Title 42, Part 73 of the CFR, published in December 2002, implements the provisions of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002, which sets forth the requirements for possession, use, and transfer of select agents and toxins. The biological agents and toxins listed in this part have the potential to pose a severe threat to public health and safety, to animal health, or to animal products. Overlap select agents and toxins are subject to regulation by both the Centers for Disease Control (CDC) and Animal and Plant Health Inspection Service.

Spill Prevention, Control, and Countermeasure

The SPCC Rule (40 CFR 112) was enacted to provide engineering, operational, maintenance, and management strategy that minimize the potential for a spill or release of oil products, such as fuel and petroleum/lubricating oil, from certain storage and operational equipment and activities and to prevent an oil spill from entering a waterway. The SPCC requirements in Title 40, Part 112 of the CFR apply to owners or operators of non-transportation-related onshore and offshore facilities engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, or consuming oil or oil products that store more than 1,320 gallons total in all aboveground containers of 55 gallons or greater storage capacity. Facilities subject to the rule must prepare and implement an SPCC Plan. UCR has an SPCC Plan for oil storage operations on campus.

Atomic Energy Act

The Atomic Energy Act (10 CFR) established the Atomic Energy Commission to promote the "utilization of atomic energy for peaceful purposes to the maximum extent consistent with the

common defense and security and with the health and safety of the public." Since the abolition of the Atomic Energy Commission, much of the Atomic Energy Act has been carried out by the Nuclear Regulatory Commission and the U.S. Department of Energy. When the US EPA was formed, however, the Atomic Energy Commission's authority to issue generally applicable environmental radiation standards was transferred to the US EPA. Other federal and State organizations must follow these standards when developing requirements for their areas of radiation protection.

Health Research Extension Act

The Health Research Extension Act of 1985 is implemented and supported by the U.S. Public Health Service Policy on the Humane Care and Use of Laboratory Animals and provides for the establishment of guidelines for the proper care and treatment of animals used in biomedical and behavioral research by the Director of the National Institutes of Health (NIH). The guidelines require animal care committees at each entity that conducts biomedical and behavioral research with funding from the NIH to ensure compliance with the guidelines.

Federal Plant Pest Act

The federal agencies primarily responsible for regulating transgenic materials in the U.S. are the U.S. Department of Agriculture (USDA), the US EPA, and the Food and Drug Administration. Transgenic materials include microorganisms, plants, and animals that have been genetically engineered or modified and generally do not meet the standard criteria for hazardous materials. Much research is performed using tissue cultures or benign bacteria grown under laboratory-controlled conditions. Except for transgenic bacteria that could be infectious (considered biohazardous waste), transgenic materials generally do not pose a threat to public health or the environment. Under the authority of the Federal Plant Pest Act (7 CFR 330), USDA Animal and Plant Health Inspection Service regulates importation, interstate movement, and environmental release of transgenic plants and organisms. The service licenses, through permits, the field testing of food crops before commercial release.

Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act (40 CFR 152-186), provided the US EPA with authority of pesticide labeling and establishing standards for certification of restricted pesticide application. The US EPA also has the authority to delegate pesticide enforcement authority to states by entering into cooperative agreements with State pesticide programs. Since 1975, California has had primary authority over pesticide enforcement in the State. The US EPA uses its authority under the Federal Insecticide, Fungicide, and Rodenticide Act to regulate the distribution, sale, use, and testing of plants and microbes producing pesticidal substances.

Food, Drug, and Cosmetic Act

The Food and Drug Administration, under authority provided by the Food, Drug, and Cosmetic Act (21 CFR), regulates food and feed derived from new plant varieties and sets tolerance limits for substances used as pesticides on and in food and feed and for residues of herbicides used on certain crops.

Agricultural Bioterrorism Protection Act

This law (7 CFR 331; 9 CFR 121) requires that entities that possess, use, or transfer agents or toxins deemed a severe threat to animal or plant health or products must notify and register with the

Secretary of the USDA. USDA's Animal and Plant Health Inspection Service has been designated by the Secretary as the agency for implementing the provisions of the law for USDA.

Centers for Disease Control and National Institute of Health Guidelines

The CDC and NIH have issued federal guidelines that address biological safety. Because research at UC campuses often involves federal funding, compliance with these guidelines becomes mandatory for most research. The CDC and the NIH have developed containment and handling guidelines for use in microbiological and biomedical laboratories.

The CDC Biosafety in Microbiological and Biomedical Laboratories manual has become the overarching guidance document for the practice of biosafety in the U.S.— the mechanism for addressing the safe handling and containment of infectious microorganisms and hazardous biological materials (CDC 2020). The manual focuses on two main principles: containment and risk assessment. The fundamentals of containment include the microbiological practices, safety equipment, and facility safeguards that protect laboratory workers, the environment, and the public from exposure to infectious microorganisms that are handled and stored in the laboratory. Risk assessment is the process that enables the appropriate selection of microbiological practices, safety equipment, and facility safeguards that can help prevent Laboratory-associated infections.

In the U.S., an Institutional Biosafety Committee (IBC) is required for institutions that receive federal funding from the NIH and/or are subject to a local ordinance that applies to work with recombinant or synthetic nucleic acid molecules. The institution must adhere to the requirements of the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH 2019).

Section 402 of the Clean Water Act – National Pollutant Discharge Elimination System

Section 402 of the Clean Water Act (CWA) regulates point-source discharges to surface waters (other than dredge or fill material) through the National Pollutant Discharge Elimination System (NPDES), administered by the US EPA. The primary regulatory control relevant to the protection of water quality is the NPDES permit administered by the State Water Resources Control Board (SWRCB). The SWRCB establishes requirements prescribing the quality of point sources of discharge and water quality objectives. These objectives are established based on the designated beneficial uses (e.g., water supply, recreation, and habitat) for a particular surface water body. The NPDES permits are issued to point source dischargers of pollutants to surface waters pursuant to Water Code Chapter 5.5, which implements the federal CWA. Examples include, but are not limited to, public wastewater treatment facilities, industries, power plants, and groundwater cleanup programs discharging to surface waters (SWRCB, Title 23, Chapter 9, Section 2200). The Regional Water Quality Control Boards (RWQCBs) establish and regulate discharge limits under the NPDES permits.

State

At the State level, agencies such as Cal/OSHA, the Office of Emergency Services (OES), and the California Department of Public Health (CDPH) have rules governing the use of hazardous materials that parallel federal regulations and are sometimes more stringent. DTSC is the primary State agency governing the storage, transportation, and disposal of hazardous wastes. DTSC is authorized by the US EPA to enforce and implement federal hazardous materials laws and regulations.

Department of Toxic Substances Control

DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste, and the investigation and remediation of hazardous waste sites. DTSC implements the Hazardous Waste Control Law (HWCL), which provides regulations for existing hazardous waste facilities, such as "any structure, other appurtenances, and improvements on the land, used for treatment, transfer, storage, resource recovery, disposal, or recycling of hazardous wastes." The HWCL requires permits for, and inspections of, facilities involved in generation and/or treatment, storage, and disposal of hazardous wastes. DTSC has oversight of Annual Work Plan sites (commonly known as State Superfund sites), sites designated as having the greatest potential to affect human health and the environment. Lead responsibility for remediation depends on the proposed use of a parcel, the character of waste contaminants, and the need for site monitoring.

California Emergency Plan

California has developed an Emergency Plan to coordinate emergency services provided by federal, State, local government, and private agencies. The Emergency Plan is administered by the OES and includes response to hazardous materials incidents. The OES coordinates the response of other agencies, including the Cal/EPA, the California Highway Patrol (CHP), the California Department of Fish and Wildlife, the RWQCB, and Air Pollution Control Districts. UCR's Emergency Operations Plan is consistent with the policies and procedures set forth in California's Emergency Plan.

California Environmental Protection Agency

Cal/EPA has broad jurisdiction over hazardous materials management in California. Within Cal/EPA, the DTSC has primary regulatory responsibility for hazardous waste management and cleanup. Enforcement of regulations has been delegated to local jurisdictions that enter into agreements with DTSC for the generation, transport, and disposal of hazardous materials under the authority of the HWCL.

Cal/EPA and the DTSC regulate the generation, transportation, treatment, storage, and disposal of hazardous waste under the RCRA and the California HWCL. Both laws impose "cradle to grave" regulatory systems for handling hazardous waste in a manner that protects human health and the environment.

Hazardous Waste and Substance Site List – Site Cleanup

Government Code Section 65962.5 requires the DTSC to develop, update, and submit to Cal/EPA the Cortese List. The Cortese List is updated at least annually by Cal/EPA to provide the public with the hazardous sites' location and status. The DTSC is responsible for a portion of the reporting of the Cortese List, which is made available via the EnviroStor database. The Cortese List is a planning document used by State and local agencies and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites.

Environmental Health Standards for the Management of Hazardous Waste Law

Title 22, Division 4.5, Chapter 11, Sections 66261.20-24 of the CCR contain technical descriptions of characteristics that would classify wasted material, including soil, as hazardous waste. Specifically, waste is considered hazardous if it is toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases) pursuant to the criteria established in Article 3. Article 4 lists specific

hazardous wastes, and Article 5 identifies specific waste categories, including RCRA hazardous wastes, non-RCRA hazardous wastes, extremely hazardous wastes, and special wastes. When excavated, soils with concentrations of contaminants higher than certain acceptable levels must be handled and disposed of as hazardous waste. When demolished, structural features containing LBP also can be considered hazardous waste, depending on concentrations, and must be handled and disposed of as hazardous waste.

General Industry Safety Orders – Control of Hazardous Substances Law

The Occupational Safety and Health Act of 1970 (Title 8 CCR) is implemented by Cal/OSHA, which is responsible for ensuring worker safety in the handling and use of chemicals in the workplace. Cal/OSHA has primary responsibility to develop and enforce workplace safety regulations concerning the use of hazardous materials in the workplace, including requirements for employee safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation.

For example, under Title 8 CCR 5194 (Hazard Communication Standard), construction workers must be informed about hazardous substances that may be encountered. Compliance with Injury Illness Prevention Program (IIPP) requirements (Title 8 CCR 3203) would ensure that workers are properly trained to recognize workplace hazards and to take appropriate steps to reduce potential risks due to such hazards. This would be relevant if previously unidentified contamination or buried hazards are encountered. If additional investigation or remediation is determined to be necessary, compliance with Cal/OSHA standards for hazardous waste operations (Title 8 CCR 5192) would be required for those individuals involved in the investigation or cleanup work. A Site Health and Safety Plan must be prepared prior to commencing any work at a contaminated site or involving disturbance of building materials containing hazardous substances, to protect workers from exposure to potential hazards. Cal/OSHA also enforces hazard communication program regulations, including procedures for identifying and labeling hazardous substances and requires Material Safety Data Sheets to be available for employee information and training programs.

State Water Resources Control Board

The SWRCB is responsible for implementing regulations pertaining to management of soil and groundwater investigation and cleanup. SWRCB regulations are contained in Title 27 of the CCR. Additional State regulations applicable to hazardous materials are contained in Title 22 of the CCR. Title 26 of the CCR is a compilation of those sections or titles of the CCR that are applicable to hazardous materials.

The SWRCB and the nine RWQCBs, collectively known as the California Water Boards, are dedicated to a single vision: abundant clean water for human uses and environmental protection to sustain California's future. Under the federal CWA and the State's pioneering Porter-Cologne Water Quality Control Act, the State and Regional Water Boards have regulatory responsibility for protecting the water quality in California.

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 Riverside County Flood Control and Water Conservation District [RCFCWCD], the County of Riverside, and the incorporated cities of Riverside County in the Santa Ana Region) otherwise known as the municipal separate storm sewer

system (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).

Statewide General Storm Water NPDES Permit

On February 5, 2013, the SWRCB adopted WQ Order 2013-0001-DWQ NPDES NO. CAS000004 General Permit for Waste Discharge Requirements for Storm Water Discharges from Small MS4s designating the UCR campus a Non-traditional Small MS4 permittee. Small MS4s include systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares but do not include separate storm sewers in very discrete areas, such as individual buildings (40 C.F.R. §122.26(b)(16(iii).) The Small MS4 General Permit WQ Order 2013-0001-DWQ refers to MS4s that operate throughout a community as "Traditional MS4s" and MS4s that are similar to traditional MS4s but operate at a separate campus or facility as "Non-traditional MS4s." This order regulates storm water runoff from small municipalities and other facilities, including federal and State operated facilities that can include universities, prisons, hospitals, and military bases. Small MS4 General Permit elements include post construction storm water management to effectively reduce runoff and pollutants associated with runoff from new development and redevelopment projects. Post-construction management includes site design measures, low impact development design standards, source control, and baseline hydromodification management measures.

California Toxics Rule and State Implementation Policy

The California Toxics Rule, presented in 2000 in response to requirements of the US EPA's National Toxics Rule, establishes numeric water quality criteria for approximately 130 priority pollutant trace metals and organic compounds. The California Toxics Rule criteria are regulatory criteria adopted for inland surface waters, enclosed bays, and estuaries in California that are on the CWA Section 303(c) list for contaminants. The California Toxics Rule includes criteria for the protection of aquatic life and human health. Human health criteria (water- and organism-based) apply to all waters with a Municipal and Domestic Water Supply beneficial use designation as indicated in the basin plans. The Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, also known as the State Implementation Policy, was adopted by the State Water Board in 2000. It establishes provisions for translating the California Toxics Rule criteria, National Toxics Rule criteria, and basin plan water quality objectives for toxic pollutants into:

- NPDES permit effluent limits
- Effluent compliance determinations
- Monitoring for 2,3,7,8-tcdd (dioxin) and its toxic equivalents
- Chronic (long-term) toxicity control provisions
- Site-specific water quality objectives
- Granting of effluent compliance exceptions

The goal of the State Implementation Plan is to establish a standardized approach for permitting discharges of toxic effluent to inland surface waters, enclosed bays, and estuaries throughout the State.

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 stormwater, chemical dumping, or debris.

California Accidental Release Prevention Program

The California Accidental Release Prevention Program (CCR Title 19, Division 2, Chapter 4.5) covers certain businesses that store or handle more than a certain volume of specific regulated substances at their facilities. The list of regulated substances is found in Article 8, Section 2770.5 of the California Accidental Release Prevention Program regulations. The businesses that use a regulated substance above the noted threshold quantity must implement an accidental release prevention program, and some may be required to complete a Risk Management Plan (RMP). An RMP is a detailed engineering analysis of the potential accident factors present at a business and the mitigation measures that can be implemented to reduce this accident potential. The purpose of an RMP is to decrease the risk of an off-site release of a regulated substance that might harm the surrounding environment and community. An RMP includes the following components: safety information, hazard review, operating procedures, training, maintenance, compliance audits, and incident investigation. The RMP must consider the proximity to sensitive populations located in schools, residential areas, general acute care hospitals, long-term health care facilities, and child day-care facilities and must also consider external events such as seismic activity.

California Hazardous Materials Release Response Plans and Inventory Law

The California Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act) requires preparation of Hazardous Materials Business Plans (HMBPs) and disclosure of hazardous materials inventories, an emergency response plan, and provisions for employee training in safety and emergency response procedures (see Health and Safety Code, Division 20, Chapter 6.95, Article 1 and Title 19 Division 2, Chapter 4, Article 4 of the CCR).

United States Department of Transportation

Caltrans manages more than 50,000 miles of California's highway and freeway lanes, provides inter-city rail services, permits more than 400 public-use airports and special-use hospital heliports and works with local agencies. Caltrans is also the first responder for hazardous material spills and releases that occur on those highway and freeway lanes and inter-city rail services.

California adopted the USDOT regulations for the movement of hazardous materials by motor vehicle; State regulations are contained in Title 13, Division 2, Chapter 6 of the CCR. In addition, the State of California regulates the transportation of hazardous waste originating in the State and passing through the State (26 CCR). Both regulatory programs apply in California. The State agency with primary responsibility for enforcing State hazardous materials transportation regulations and responding to hazardous materials transportation emergencies is the CHP.

State Office of Emergency Services

California has developed an Emergency Plan to coordinate emergency services provided by federal, State, local government, and private entities. Response to hazardous materials incidents is one component of this plan. The OES administers the plan, which coordinates the responses of other

agencies, including Cal/EPA, the CHP, the California Department of Fish and Wildlife, the RWQCB, and the Radiologic Health Branch of the CDPH.

California Occupational Safety and Health Administration

The Cal/OSHA and the Fed/OSHA are the agencies responsible for assuring worker safety in the handling and use of chemicals in the workplace. Cal/OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices.

Medical Waste Management Act

In 1990, the California legislature adopted the Medical Waste Management Act (Health and Safety Code Sections 117600-118360), which provides for the regulation of medical waste generators, transporters, and treatment facilities. The California Department of Health Care Services has adopted statewide regulations covering medical waste treatment permits and shares regulatory authority with local programs that choose to enforce the requirements.

California Radiation Law

California is an "agreement state" with respect to federal radiation law. The agreement is that the State will administer the Nuclear Regulatory Commission federal regulations found in Title 10 of the CFR. CDPH is the agency responsible for administering the agreement. Under the agreement, the rules for California must be adequate to protect public health and safety and compatible with those of the Nuclear Regulatory Commission. The California rules are codified under Title 17 of the CCR and Division 20 of the Health and Safety Code. Under the California Radiation Control Law, the Radiologic Health Branch of the CDPH administers these rules. The State's rules govern the receipt, storage, use, transportation, and disposal of sources of ionizing radiation and provide for the protection of users of these materials and the general public from radiation hazards. The CDPH controls the use of radioactive materials in California by issuing Radioactive Material Licenses to California users of radioactive materials and radiation-producing machines.

Underground Storage Tank Act

The UST monitoring and response program is required under Chapter 6.7 of the California Health and Safety Code and Title 23 of the CCR. The program was developed to ensure that the facilities meet regulatory requirements for monitoring, maintenance, and emergency response in operating USTs. The County of Riverside DEH is the local administering agency for this program. UCR operates one UST subject to this program.

Aboveground Petroleum Storage Act

The Aboveground Petroleum Storage Act (Health and Safety Code, Chapter 6.67, Sections 25270-25270.13) requires registration and spill prevention programs for ASTs that store petroleum. In some cases, ASTs for petroleum may be subject to groundwater monitoring programs that are implemented by the RWQCBs and the SWRCB. UCR operates several ASTs containing diesel, oil, or gasoline, which are subject to this regulation and SPCC Plan requirements.

Lead Regulations

Because of its toxic properties, lead is regulated as a hazardous material. Lead is also regulated as a toxic air contaminant. State-certified contractors must perform inspection, testing, and removal (abatement) of lead-containing building materials in compliance with applicable health and safety

and hazardous materials regulations. The Residential Lead-Based Paint Hazard Reduction Act of 1992 (Title X) requires disclosures of the presence of lead paint in residential structures.

Regulations for LBP are also contained in the Lead-Based Paint Elimination Final Rule, 24 CFR 33, governed by the U.S. Housing and Urban Development, which requires sellers and lessors to disclose known LBP and LBP hazards to perspective purchasers and lessees. Additionally, all LBP abatement activities must be in compliance with Cal/OSHA, Fed/OSHA, and with the State of California Department of Health Services requirements. Only LBP-trained and certified abatement personnel are allowed to perform abatement activities. All LBP removed from structures must be hauled and disposed of by a transportation company licensed to transport this type of material at a landfill or receiving facility licensed to accept the waste.

Regulations to manage and control exposure to LBP are also described in CFR Title 29, Section 1926.62 and CCR Title 8 Section 1532.1. These regulations cover the demolition, removal, cleanup, transportation, storage, and disposal of lead-containing material. The regulations outline the permissible exposure limit, protective measures, monitoring, and compliance to ensure the safety of construction workers exposed to lead-based materials. Cal/OSHA's Lead in Construction Standard requires project proponents to develop and implement a lead compliance plan when LBP would be disturbed during construction. The plan must describe activities that could emit lead, methods for complying with the standard, safe work practices, and a plan to protect workers from exposure to lead during construction activities. Cal/OSHA requires 24-hour notification if more than 100 sf of LBP would be disturbed.

UCR also maintains a Lead Compliance Plan which establishes a plan to minimize occupational exposure to lead and management of construction activities involving lead. The main components of the program include:

- Lead identification from bulk samples or analysis
- Exposure monitoring
- Determination of surface contamination levels

The Lead Compliance Plan also provides control measures for implementing when construction work involves lead contamination or potential lead contamination. For example, the Lead Compliance Plan requires personal protection equipment be worn where there is potential for construction workers to be exposed to lead containing materials.

Asbestos Regulations

The following asbestos related regulations apply to asbestos activities at UCR:

- UCR Asbestos Management Plan (see discussion under UCR Regulations in subsequent subsection)
- Cal/OSHA (8 CCR section 1529)
- Cal/OSHA (8 CCR section 8358)
- Cal/OSHA (8 CCR section 5208)
- OSHA Asbestos Construction Standard (29 CFR 1926.1101)
- OSHA Asbestos General Industry Standard (29 CFR 1910.1001)
- EPA National Emission Standards of Hazardous Air Pollutants Asbestos Standard (UCR 2019a)

- SCAQMD Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities) (SCAQMD 1989)

Pursuant to Sections 25915 through 25916 of the California Health and Safety Code, EH&S maintains a campus-wide inventory of locations of asbestos-containing building materials and provides annual campus-wide notification of locations containing asbestos. Appropriate signs are posted when ACMs are disturbed during construction or renovation at campus locations, pursuant to State and South Coast Air Quality Management District (SCAQMD) regulations. These regulations require testing of any facility being demolished or renovated for the presence of all friable and Class I and II non-friable ACM. They also establish notification procedures, removal procedures, handling operations, and warning label requirements. Approved procedures for ACM removal to protect surrounding uses include HEPA filtration, the glovebag method, wetting, and some methods of dry removal.

California Fire Code

The 2019 California Fire Code (24 CCR 9) contains regulations consistent with nationally recognized accepted practices for safeguarding, to a reasonable degree, life and property from the hazards of the following: fire and explosion, hazardous conditions in the use or occupancy of buildings or premises, and, dangerous conditions arising from the storage, handling, and use of hazardous materials and devices. It also contains provisions to assist emergency response personnel. The California Fire Code and the California Building Code use a hazard classification system to determine what protective measures are required to protect fire and life safety. These measures may include construction standards, separations from property lines, and specialized equipment.

The provisions of this code apply to the construction, alteration, movement enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout the State.

More specifically, California Fire Code Title 24, part 9, Chapter 7 addresses Fire-Resistances-Rated Construction, California Building Code (Part 2), Chapter 7A addresses Materials and Construction Methods for Exterior Wildfire Exposure, Fire Code Chapter 8 addresses fire related Interior Finishes, and Fire Code Chapter 9 addresses Fire Protection Systems, and Fire Code Chapter 10 addresses fire related Means of Egress, including Fire Apparatus Access Road width requirements. Fire Code Section 4906 also contains existing regulations for vegetation and fuel management to maintain clearances around structures.

Fire Code Chapter 33, *Fire Safety During Construction and Demolition*, also includes requirements for a construction pre-fire plan, training, fire protection devices, regulations for refueling, fire clearances, precautions against fire, including prohibitions on smoking, on-site firewatch, and regulations for welding and electrical wiring.

University of California, Riverside

Main Campus Emergency Action Plan (EAP)

As required by CCR Title 8, UCR prepared and implemented an EAP in July 2012. The latest revision to the plan occurred in 2016. The document is intended to guide the emergency response actions of all campus personnel during an emergency event, as well as provide standard actions in the case of a safety-threatening emergency. The plan includes procedures relevant to address hazards such as: evacuation procedures and emergency escape routes, procedures for employees who remain to

operate critical plan operations before they evacuate, procedures to account for all employees after an emergency evacuation is completed, rescue and medical duties for those employees able to perform them, the preferred means of reporting fires and other emergencies, the names, job titles, and departments of persons who can be contacted for further information or explanation of duties under the plan; alerting, notification, and contacts related to emergencies; and emergency procedures.

Operational fundamentals to manage response activities for several types of emergencies, including blood and body fluid exposure, hazardous material exposure/spills, and radioactive contamination/spills are available online at the UCR Office of Emergency Management website.[2]

EH&S Program

The campus EH&S program has the primary responsibility of providing technical assistance, consulting, and regulatory compliance support in a variety of areas. The goal of EH&S is to protect the health and safety of University faculty, staff, students, and visitors through safe handling, collection, and disposal of hazardous chemical, biological, radioactive, and universal waste. EH&S oversees the following programs and services:

Biosafety – Prevents against infectious agents and biohazardous materials. Regulation of bloodborne pathogens, Biological Use Authorization, Exposure Control Plans, Biosafety Cabinets, High Containment Labs and more.

Chemical Safety – Protects against chemicals that pose risk to people or property. Oversight of chemical hygiene plans, chemical inventory, placards, hazardous materials, Material Safety Data Sheets and more.

Controlled Substances – Regulates federal Drug Enforcement Agency scheduled or listed controlled substances and California precursor chemicals. Oversight of orders, Controlled Substance Use Authorization, storage requirements, use logs, and disposal.

Environmental Programs – Management of compliance with environmental regulations, including outdoor air quality, surface water quality, including UCR Clean Water Phase II MS4 stormwater program, and remediation.

Industrial Hygiene – Protects worker health and safety and implementation of the IIPP. Oversight of asbestos, fume hoods, hearing conservation, indoor air quality, mold remediation, personal protective equipment (i.e., respirators), and more.

Laboratory and Research - Provides safety guidelines for hazards found in the laboratory and research setting. Oversight of Laboratory Manual, Standard Operating Procedures, Laboratory Evaluations, field safety, Laboratory Safety Officers program, personal protective equipment and more.

Public Health – Prevents human health and diseases caused by environmental factors. Oversight of Food Permits, swimming pool inspections, communicable diseases, vector control, and drinking water quality.

Radiation and Laser – Regulates ionizing and non-ionizing radiation such that exposure is as low as reasonably achievable. Facilitates safe use, design, and implementation of lasers. Oversight of campus Laser Safety Manual, Radiation Use Authorization (RUA), and the *Radiation Safety*

[2] https://emergency.ucr.edu/emergency-procedures

Manual. It is the policy of UCR to implement a Radiation Safety program that maintains the level of exposure to students, faculty, staff and the public "as low as reasonably achievable." The purpose of the radiation safety program is to protect health and minimize the risk to life, property, and the environment in the use of ionizing radiation.

Safety – Protects worker health and safety and implementation of the IIPP. Oversight of ergonomics, compressed gas, drones, fall control, hearing conservation, heat stress prevention, personal protective equipment, safety engineering, shop safety, and more.

Training – Delivers classes, records, and resources for learning about health and safety responsibilities. Oversight of schedule of classes, transcripts, online training courses, needs assessment, publications, and videos.

Waste Management – Servicing of hazardous chemical, radioactive, and biohazardous waste. Oversight of hazardous and biohazardous waste using the online Waste Accumulation Storage Tracking electronically (WASTe) program, which is a web-based system that facilitates regulatory compliant labeling, tracking, collection and shipping of hazardous chemical, radioactive, and biohazardous wastes. WASTe supports creation of tags for five types of waste: chemical, mixed, radiological, biological, and universal, which notifies EH&S staff when waste is ready for pickup (UCR 2021d). The ChemCycle Program recycles unused and used (good condition) chemicals that would otherwise be disposed of as hazardous waste.

Detailed information regarding these programs are provided in the campus's EH&S website[3], which provides each program's elements, contact personnel, applicable manuals and policy, and web links to other pertinent government agencies and information sources.

Lab Safety Design Manual

UCR also follows a *Lab Safety Design Manual* for the construction of new lab space.[4] This includes standards related to safety lab space, electrical safety and power systems, lab ventilation and fume hoods, emergency equipment, pressure vessel and compressed gas planning, hazardous materials storage and use areas, biosafety, and radiation.

Spill Prevention, Control, & Countermeasures Plan

Pursuant to the regulatory requirements of Title 40 of the CFR Part 112, a 2018 SPCC Plan was prepared for UCR. The objectives of the plan are to define the spill prevention, control, and countermeasures implemented by UCR. The SPCC Plan also provides a series of three facility maps and associated tables that include hazardous material storage information for bulk storage tanks, portable storage tanks, and exempt USTs. The SPCC Plan addresses inspection and record keeping, facility drainage, bulk storage tanks, personnel training and spill prevention procedures, bulk liquid transfer operations, and security.

The plan requires an annual review and update by a SPCC "Designated Person" to ensure that all the requirements in the plan are achieved. The designated person is the Director of the EH&S Office. The EH&S building contains an emergency hazardous material response truck equipped with appropriate personal protective equipment, self-contained breathing apparatus, hazardous material

[3] https://ehs.ucr.edu/about/who-do-i-call
[4] *UC Lab Safety Design Manual*: https://lsdm.ucop.edu/

storage receptacles, absorbent booms, pads, and vermiculite (an absorbent powder) that could be deployed during spillage incidents (UCR 2018a).

Chemical Hygiene Plan

The Chemical Hygiene Plan establishes a formal written program for protecting laboratory personnel against adverse health and safety hazards associated with exposure to potentially hazardous chemicals and must be made available to all employees working with hazardous chemicals. The Chemical Hygiene Plan describes the proper use and handling practices and procedures to be followed by faculty, staff, students, visiting scholars, and all other personnel working with potentially hazardous chemicals in laboratory settings. It was created to conform to CCR regulations concerning occupational exposure to hazardous materials, carcinogens, and ventilation requirements for laboratories. The plan is based on best practices identified in, among other sources, "Prudent Practices for Handling Hazardous Chemicals in Laboratories," published by the National Research Council, and the American Chemical Society's "Safety in Academic Chemistry Laboratories"[5] (UCR 2019b).

Asbestos Management Plan

UCR EH&S has the primary authority for ACM at all UCR facilities. An Asbestos Management Plan is to be implemented for the purpose of minimizing and/or eliminating the possibility of exposure to airborne asbestos fibers for UCR building tenants, the public using UCR buildings, and employees and maintenance workers. The UCR Asbestos Management Plan will remain in effect until all ACM have been completely removed from all UCR facilities. The UCR Asbestos Management Plan includes the following items:

- A written plan
- An asbestos survey request system
- An abatement notification system to control activities that might disturb ACM
- A periodic, routine in-house monitoring or inspection system
- A provision for training campus employees who encounter the materials and, if necessary
- A medical screening program for campus custodial and maintenance employees who work around the materials
- A thorough documentation and recordkeeping system (UCR 2020c)

Regional and Local

South Coast Air Quality Management District

The SCAQMD establishes Rules that regulate or control various air pollutant emissions and emissions sources, including hazardous emissions sources, within the South Coast Air Basin. The SCAQMD coordinates its actions with local, State, and federal government agencies, the business community, and private citizens to achieve and maintain healthy air quality. This includes, but is not limited to, regulations related to asbestos (Rule 1403), described above under Asbestos regulations.

[5] www.acs.org

Riverside County Department of Environmental Health

Under the California Unified Hazardous Waste and Hazardous Material Management Regulatory Program, (Chapter 6.11, Division 20, Section 25404 of the Health and Safety Code), hazards/hazardous materials management is addressed locally through the Certified Unified Program Agency (CUPA). The CUPA for Riverside County is the RCDEH, Hazardous Materials Branch.

The RCDEH is responsible for overseeing the six hazardous materials programs in the county. The RCDEH is responsible for inspecting facilities that handle hazardous materials, generate hazardous waste, treat hazardous waste, own/operate USTs, own/operate aboveground petroleum storage tanks, or handle other materials subject to the California Accidental Release Program. In addition, RCDEH maintains an emergency response team that responds to hazardous materials and other environmental health emergencies 24 hours a day, 7 days a week. The RCDEH also oversees the two Participating Agencies (Corona Fire and Riverside Fire) that implement hazardous materials programs in the county (County of Riverside 2021).

Certified Unified Program Agency

The primary local agency, known as the CUPA, with responsibility for implementing federal and State laws and regulations pertaining to hazardous materials management is Riverside County Environmental Health Department, Hazardous Materials Unit.

The Unified Program is the consolidation of six State environmental regulatory programs into one program under the authority of a CUPA. A CUPA is a local agency that has been certified by Cal/EPA to implement the six State environmental programs within the local agency's jurisdiction. A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs in their jurisdiction on behalf of the CUPA. The RFD maintains a special program that regulates hazardous materials through disclosure and risk management plans as well as AST referral in cooperation with the County of Riverside. Thus, the RFD is a PA with the RCDEH, Hazardous Materials Unit as the CUPA.

Regional and Local (Non-Binding)

As a State entity, the UC system, of which UCR is a part, is not subject to regional or local plans and policies that regulate development. Although UCR is not subject to local plans, those plans and policies are of interest or concern, because it is UC policy to seek consistency with regional and local plans and policies, where feasible. Information pertinent to hazards and hazardous materials from the City and/or County general plans is included here for informational purposes.

The City and County of Riverside are required to comply with federal and State laws and regulations pertaining to hazardous materials management, including, but not limited to, Articles 79 and 80 of the Uniform Fire Code and applicable hazardous materials management requirements set forth in the Uniform Building Code (with California Amendments). Various departments and divisions in the City and County are responsible for monitoring and enforcement of such activities as the Business Plan, hazardous waste management, UST operation and removal, and fire prevention and emergency response.

The California Health and Safety Code grants discretionary authority to the local agency—typically the local Certified Uniform Program Agency—with oversight responsibilities to determine the need for preparation of an RMP pursuant to Health and Safety Code Section 25534(a). For facilities not previously subject to RMP requirements, but for which an RMP must be prepared, the RMP must be

submitted in accordance with a schedule established by the administering agency after consultation with the stationary source.

Riverside County Airport Land Use Commission

The Riverside County Airport Land Use Compatibility Plan (ALUCP) establishes various policies and compatibility maps for individual ALUCP airports, including the March Air Reserve Base/Inland Port Airport. Riverside County Airport Land Use Commission (Riverside County ALUC) review is required when a project is located within the boundaries of an Airport Influence Area and the project proposes a legislative action like a General Plan Amendment, Specific Plan Amendment, Zone Change, or Zoning Ordinance.

City of Riverside General Plan

The City's General Plan contains objectives, policies, and tools that aim to reduce potential hazards and protect individuals from injuries caused by hazards and hazardous materials. Through implementation of the General Plan policies, the City will continue to ensure that hazardous materials are handled properly in business and industry, work with responsible federal, State, and County agencies to identify and regulate the disposal of toxic materials, reduce the risks associated with air and ground transportation hazards, and minimize groundwater contamination.

4.9.3 Environmental Impacts and Mitigation Measures

Significance Criteria

UCR utilizes the following 2020 CEQA Guidelines Appendix G significance criteria questions related to Hazards and Hazardous Materials.

Would the proposed 2021 LRDP:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Section 65962.5 and, as a result, create a significant hazard to the public or the environment?
e) Result in a safety hazard or excessive noise for people residing or working in the project area (or a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport?
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Issues Not Evaluated Further

Construction Hazards from Routine Transport, Use, or Disposal of Materials (Criterion a)

The Initial Study for the 2021 LRDP (Appendix A) concluded that with continued implementation of UCR EH&S and compliance with the federal and State regulations described above, impacts during construction of 2021 LRDP projects would be less than significant. No further evaluation is required.

Emergency Response Plan (Criterion f)

Impacts to emergency response plans are discussed under Impact T-4 and Impact WF-1 in Section 4.15, *Transportation* and Section 4.18, *Wildfire*, respectively. This topic is not evaluated further in this section.

Wildland Fire (Criterion g)

Impacts related to wildland fires are discussed under Impact WF-2 and Impact WF-4 in Section 4.18, *Wildfire*. This topic is not evaluated further in this section.

Analysis Methodology

The impact analysis examines the hazards and hazardous materials impacts that would result from the development under the proposed 2021 LRDP. Conditions that could pose a risk to the populations on and off campus were identified through review of documents pertaining to hazards and hazardous materials, including: the SPCC, UCR webpages, the UCR Emergency Operations Plan, previous UCR EIRs, background reports prepared for nearby plans and projects, and published literature. The information obtained from these sources was reviewed and summarized to establish the existing conditions (described above) and identify potential impacts from hazards and hazardous material associated with development of the proposed 2021 LRDP. In determining level of significance, the analysis assumes that the proposed 2021 LRDP would comply with relevant laws, regulations, and guidelines.

2021 LRDP Objectives and Policies

There are no objectives or policies in the proposed 2021 LRDP related to hazards and hazardous materials.

Impact Analysis

Impact HAZ-1 Create a Significant Hazard Through the Routine Transport, Use, or Disposal of Hazardous Materials.

The proposed 2021 LRDP could result in an increased use, transport, or disposal of hazardous materials during facility operations, which would be subject to federal, State, and UCR policies designed to minimize risk of endangerment to the campus population, the public, and the environment. Therefore, the routine use, transport, or disposal of hazardous materials would not create a significant hazard to the public or the environment and impacts would be less than significant.

Operation

Hazardous Chemical Use

The proposed 2021 LRDP would add approximately 300,000 gsf of new laboratory facilities, as well as additional dining, housing, and other facilities that may use, store, and transport hazardous materials. UCR is currently a licensed generator of hazardous waste, which includes chemical, radioactive, and biohazardous (infectious) waste. Implementation of the proposed 2021 LRDP would lead to an increase in the number of laboratories, medical/research facilities, academic activities, and the expansion of other facilities such as building and vehicle maintenance that involve the use of hazardous materials, which would increase the amount of hazardous chemicals used and stored at UCR as well as the number of people working with such materials, and the number of people in proximity to such materials. Various chemicals that may be used may pose different levels of hazards in their use. Some substances, such as acetone, are flammable, while others, like cyanide and mercuric chloride, are toxic. Some nonradioactive chemicals have the potential for causing cancer or acute and chronic illnesses. The properties and health effects of chemical substances are unique to the individual materials, although they often can be grouped by chemical types. No classifications exist to rate the level of hazard posed by all substances under all circumstances. While some substances may present little hazard, others may be capable, in certain situations, of causing severe health effects. However, the types of hazardous chemicals generated at UCR are not expected to change because of implementation of the proposed 2021 LRDP.

Potential hazardous materials may be used and/or stored on-site at facilities developed under the proposed 2021 LRDP. Laboratories and other facilities constructed because of implementation of the proposed 2021 LRDP would continue to comply with all hazardous materials standards for UCR described in the preceding sections. To minimize exposure to chemicals in the air, researchers and other workers would continue to take standard procedural precautions, such as working under fume hoods when using chemicals likely to present exposure hazards. Fume hoods and other engineering controls would be required to meet Cal/OSHA requirements and fume hood ventilation rates are checked annually by EH&S. Proper use of the fume hoods and other engineering controls would keep indoor laboratory air toxics concentrations below the suggested guidelines of the American Conference of Governmental Industrial Hygienist Threshold Limit Values and the legal limits of the OSHA Permissible Exposure Levels.

Maintenance and upkeep of facilities, including cleaning of workspaces and on-campus residences, parking areas, restroom facilities, and maintenance of landscaping would require the applicable use of various solvents, cleaners, paints, oils/fuels, lubricants, and/or pesticides/herbicides. Facilities Services has small maintenance shops at each of the residence halls that store small containers of

maintenance lubricants, solvents and other maintenance-related liquid materials. Since the proposed 2021 LRDP would increase the number of student housing facilities, the amount of such materials would increase.

The increase in development under the proposed 2021 LRDP could result in additional dining facilities, emergency generators, and campus fleet vehicles, which may result in the need for an increase in the use and storage of diesel and non-diesel fuel, mechanical and cooking oils, automatic transmission fluid, and other materials associated with vehicle maintenance, which are managed by Fleet Services in the Corporation Yard. Oils, fluids, and fuel would be used, stored, and maintained similar to current conditions and pursuant to applicable regulations and policies, and stored in containers designed to prevent leaks and spills. The perimeter of the maintenance shop has impervious concrete berms around the entrance doors. Fleet Services operates an SPCC-exempt 6,000-gallon UST located east of the Fleet Services office. This UST contains unleaded gasoline for refueling fleet vehicles by three dispensers at the nearby fueling island. The dispensers have containment boxes below them and two spill kits are maintained at the fueling island (UCR 2018a).

As required by existing UCR policies and programs, the hazardous materials would be stored in locations according to compatibility and in storage enclosures or in areas or rooms specially designed, protected, and contained for such storage, in accordance with applicable regulations. Flammable liquids would continue to be stored in flammable liquid safety storage cabinets with leakproof door sills.

Campus departments are primarily responsible for ensuring that safe work practices are followed; EH&S supports departments with this responsibility. EH&S also reviews proposed laboratory designs for nonstructural seismic safety concerns and compliance with Cal/OSHA requirements to provide appropriate protection for the workers. Similarly, new laboratories are constructed in compliance with the *UC Lab Safety Design Manual* which includes design standards for safety lab space, electrical safety and power systems, lab ventilation and fume hoods, emergency equipment, pressure vessel and compressed gas planning, hazardous materials storage and use areas, biosafety, and radiation. Chemical handling training programs that are being used to educate existing staff would be extended to new staff working within newly developed or modified facilities. EH&S is required to evaluate developments where activities include the handling of hazardous materials and to disseminate general information about the handling, storing, and disposing of hazardous materials. This includes training all individuals who may handle hazardous materials through the circulation of various safety guidance documents and other publications. Hazardous materials are managed throughout campus ranging from the Art Department to the Biomedical Sciences Department and can include flammable, corrosive, and reactive materials used in a variety of ways. The UCR HMBP, the SPCC Plan, the EAP, and Office of Emergency Management procedures are regularly updated to be in line with current regulatory requirements. The campus would continue to implement the programs under the proposed 2021 LRDP as mandated by State and federal laws and regulations. Therefore, the impact of the proposed 2021 LRDP related to use, and disposal of hazardous chemicals would be **less than significant**.

RADIOACTIVE AND LASER MATERIALS USE

The Radiation Safety Program is responsible for ensuring that all users of ionizing radiation and radiation producing machines follow existing regulatory requirements. All radioactive materials at UCR are licensed by the State of California under a Broad Scope License. This license grants authority to the UCR Radiation Safety Committee to authorize the use of radioactive materials at

any of its facilities. Radiation producing machines are registered by the California Radiologic Health Branch and must also be authorized by the UCR Radiation Safety Committee (UCR 2021e).

The Broad Scope Radioactive Materials License requires sealed sources to be tested for leakage and contamination as required by Title 17, CCR Section 30275(c). In accordance with the license, prior to obtaining radioactive materials, each principal investigator must apply for a RUA from the Radiation Safety Committee. The RUA specifies the particular radioisotopes to be used and maximum limits on the quantities possessed (UCR 2020b). The UCR radiation safety program, which is required by the Radiation Control Law and documented in the *Radiation Safety Manual*, is designed to provide adequate protective measures against exposure for visitors, students, faculty, staff, and the community at large. The radiation safety program requires UCR to perform documented surveys to detect surface contamination in areas where radioactive materials are used, including storage and waste facilities, and contains detailed information regarding radioactive waste storage guidelines and disposal methods. Additionally, new laboratories are constructed in compliance with the *UC Lab Safety Design Manual* which includes standards for safe lab space, including express design requirements for radiation safety.

All lasers and laser systems (whether purchased, borrowed, fabricated, or brought in for use by others) must be operated in accordance with the requirements established by the latest American National Standards Institute Z136.1 document, *Standards for the Safe Use of Lasers and the Laser Safety Manual*. Custom-built and modified lasers are verified by EH&S Radiation Safety (UCR 2018b).

EH&S's current maintenance processes for radioactive equipment would apply to newly constructed facilities that would operate radioactive equipment, and the *Radiation Safety Manual* and *Laser Safety Manual* would be implemented and updated, as necessary, to reflect changes to the types, quantities, and locations of radioactive materials. Therefore, the impact of the proposed 2021 LRDP related to use and disposal of radioactive and laser materials would be **less than significant**.

BIOHAZARDOUS MATERIALS USE

Federal law requires the establishment of an IBC at institutions that receive federal funding for research involving recombinant or synthetic nucleic acid molecules, potentially infectious organisms (human, plant, arthropod, toxins), and human-derived materials. At UCR, the IBC is appointed by the Vice Chancellor for Research and Economic Development under the auspices of the Office of Research Integrity (ORI). Administrative support for the IBC is provided by the Office of Vice Chancellor for Research and Economic Development. The IBC consists of at least five individuals: two community members who are not affiliated with UCR, an appropriate recombinant or synthetic DNA expert, a plant and animal expert, and the Biosafety Officer. The IBC membership represents collective expertise and research experience in recombinant DNA, infectious agents, biological toxins, and animal research which are applied to the evaluation of appropriate safety measures needed for experiments that may pose potential risks to health or the environment.

The IBC is responsible for:

- Ensuring that research conducted at UCR complies with the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (hereinafter as "NIH Guidelines")
- Drafting and establishing campus biosafety policies and procedures for proper handling of biohazardous materials
- Reviewing individual research proposals for biosafety concerns

All UCR Principal Investigators and laboratory workers must adhere to the biological safety policies and procedures of the *UCR Biosafety Manual* in the conduct of their research and in the management of their laboratories. For new facilities that would be developed under the proposed 2021 LRDP, EH&S would continue to monitor compliance with university policies, CDC, NIH, OSHA, and State criteria regarding the use of potentially infectious materials. New laboratories are constructed in compliance with the *UC Lab Safety Design Manual* which includes standards for safe lab space, including express design requirements for biosafety. All labs which contain biohazardous materials would also adhere to standard microbiological practices outlined in the *CDC Biosafety in Microbiological and Biomedical Laboratories Manual*, including the use of biosafety cabinets for personnel, environmental, and product protection (UCR 2021f). EH&S would continue to review and approve the use and transfer of biohazardous materials by Principal Investigators and setting safety criteria for the use of these agents, provide training; advise on appropriate safe work practices and procedures, containment controls, personal protective equipment, investigate accidents, and develop emergency plans for handling accidental spills and personnel contamination (UCR 2017). Therefore, the impact of the proposed 2021 LRDP related to use and disposal of biohazardous materials would be **less than significant**.

HAZARDOUS WASTE DISPOSAL

Implementation of the proposed 2021 LRDP may increase the number of laboratories, medical research facilities, and academic activities, which may result in an increase in the overall use and subsequent disposal of hazardous, biohazardous, and radioactive waste. Oversight of hazardous and biohazardous waste would continue to be overseen by EH&S using the online WASTe program, ChemCycle Program, and radioactive waste pickups using UC Radiation. Storage and disposal of radioactive waste is strictly regulated at UCR, and all radioactive waste must be labeled per EH&S mandated storage guidelines and transferred to EH&S for disposal. Therefore, the impact of the proposed 2021 LRDP related to use, and disposal of hazardous waste would be **less than significant**.

TRANSPORT OF HAZARDOUS MATERIALS AND WASTE

As discussed above, implementation of the proposed 2021 LRDP would increase hazardous materials use and hazardous waste generation on campus. Consequently, the transport of hazardous materials to and from campus, and between campus departments, would also increase. UCR policy requires that packaging of chemicals to be transported on public roads conforms with all legal requirements, including those of the USDOT, CHP, CDPH, and RCDEH and to the guidelines of the International Civil Aeronautics Organization and the International Air Transport Association. All hazardous waste is picked up from generators by EH&S or a licensed hazardous waste contractor, and generators must package and label all hazardous wastes in compliance with policies and regulations. As a mitigation measure from the EH&S Expansion EIR document which has been and will continue to be implemented, EH&S staff shall provide all drivers removing hazardous materials or hazardous waste from the EH&S Expansion facility with printed directions clearly indicating the mandated haul route, exiting the EH&S Expansion facility left onto Watkins Drive and proceeding northwest to Blaine Street, then west on Blaine Street to the I-215/SR 60 freeway entrance ramps.

Federal, State, and international law strictly regulate shipping, transport, and import of biological materials. During intra-campus transfers of biohazardous agents, the materials are placed in securely closed and labeled primary containers. The exterior of the primary container must be decontaminated prior to transportation. Federal (USDOT, 49 CFR §171-175) and international agencies have in place regulations for shipping of dangerous goods by surface or air.

Under the proposed 2021 LRDP, UCR would continue to require compliance with these safety regulations, guidelines, and policies. Furthermore, the types of hazardous materials that would be transported are not expected to change as a result of the implementation of the proposed 2021 LRDP. Therefore, the impact of the proposed 2021 LRDP related to transport of hazardous materials to and from campus would be **less than significant**.

OVERALL OPERATION IMPACTS

The use, storage, transport, and disposal of hazardous materials in facilities developed under the proposed 2021 LRDP would be guided by existing and future UCR, County, State, and federal regulations designed to maximize the safety of UCR personnel, students, the public, and the environment. Therefore, operational impacts related to the routine transport, use, or disposal of hazardous materials would be **less than significant**.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Impact HAZ-2 CREATE A SIGNIFICANT HAZARD TO THE PUBLIC OR THE ENVIRONMENT THROUGH ACCIDENTAL RELEASE OF HAZARDOUS MATERIALS INTO THE ENVIRONMENT.

OPERATION OF FACILITIES AND MATERIALS WOULD BE SUBJECT TO FEDERAL, STATE, COUNTY, AND UCR POLICIES DESIGNED TO MINIMIZE UPSET AND ACCIDENT CONDITIONS AND WOULD RESULT IN LESS THAN SIGNIFICANT IMPACTS RELATED TO SIGNIFICANT HAZARDS TO THE PUBLIC OR THE ENVIRONMENT. FACILITY CONSTRUCTION AND RENOVATION UNDER THE PROPOSED 2021 LRDP COULD DISTURB OR EMIT HAZARDOUS MATERIAL FROM IMPACTED SOIL, SOIL VAPOR, OR GROUNDWATER, WHICH COULD EMIT HAZARDOUS EMISSIONS OR HANDLE HAZARDOUS OR ACUTELY HAZARDOUS MATERIALS, SUBSTANCES, OR WASTE DURING REASONABLY FORESEEABLE UPSET AND ACCIDENT CONDITIONS. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH THE IMPLEMENTATION OF MITIGATION AND MANDATORY COMPLIANCE WITH EXISTING REGULATIONS PERTAINING TO THE IDENTIFICATION, HANDLING, AND DISPOSING OF HAZARDOUS MATERIALS.

Construction

FACILITY DEMOLITION AND RENOVATION

Due to their age, numerous campus buildings are assumed to contain some form of ACM or LBP. An unknown number of fluorescent light ballasts containing PCBs are also present in some campus buildings. Building materials may also be contaminated because of radioactive or chemical hazardous materials use in the building, resulting in spills or aerosol releases that may deposit contaminants on the floors or walls. It is also possible that elemental mercury may be present in research laboratory sink traps, in cupboard floor spaces, or in sewer pipes.

If contamination is present during renovation and/or demolition of existing campus buildings under the proposed 2021 LRDP, exposure would be minimized through required worker training and appropriate engineering and administrative controls and protective equipment in accordance with existing campus health and safety practices such as the Asbestos Management Plan, as well as with federal and State regulations. LBP and other lead-containing materials associated with proposed projects would be handled pursuant to Cal/OSHA regulations regarding LBPs and lead-containing

materials. CCR Title 8, Section 1532.1, requires testing, monitoring, containment, and disposal of LBPs and lead-containing materials in a manner that exposure levels do not exceed Cal/OSHA standards. If potentially hazardous materials are encountered during construction or redevelopment, EH&S would conduct a comprehensive assessment of the situation in coordination with the appropriate regulatory authority, such as the RCDEH. Compliance with existing plans and regulations, such as the Asbestos Management Plan and CCR Title 8, Section 1532.1, would ensure impacts related to asbestos containing materials and lead would be **less than significant**.

Under Title 8 CCR 5194 (Hazard Communication Standard), construction workers must be informed about hazardous substances that may be encountered. Compliance with IIPP requirements (Title 8 CCR 3203) would ensure that workers are properly trained to recognize workplace hazards and to take appropriate steps to reduce potential risks due to such hazards, such as contaminated soils. This would be relevant if previously unidentified contamination or buried hazards are encountered. If additional investigation or remediation is determined to be necessary, compliance with Cal/OSHA standards for hazardous waste operations (Title 8 CCR 5192) would be required for those individuals involved in the investigation or cleanup work. A Site Health and Safety Plan must be prepared prior to commencing any work at a contaminated site or involving disturbance of building materials containing hazardous substances, to protect workers from exposure to potential hazards. Cal/OSHA also enforces hazard communication program regulations, including procedures for identifying and labeling hazardous substances that require Material Safety Data Sheets to be available for employee information and training programs. Mandatory compliance with regulatory requirements, such as Title 8 CCR 5192 and 5194 would reduce the potential for workers to be exposed to hazardous materials. Impacts would be **less than significant**.

The UCR campus includes abandoned in-place USTs and the potential for other unidentified hazardous material features to be present. Although there are no remaining open release cases on campus, residual hazardous materials may be present in soil, soil vapor, and/or groundwater at the following locations: former USTs, current ASTs, closed in-place UST, former agricultural land use areas, and near the Land Use Covenant, although the potential is considered low. Unanticipated hazardous materials may also be encountered during demolition or redevelopment of previously developed sites. Disturbance of soil containing existing hazardous materials, soil vapor, or contaminated groundwater during construction could create a significant hazard to the public or the environment. Impacts would be **significant**.

Given this potential, Mitigation Measures **MM HAZ-1 through MM HAZ-4** would be required to reduce impacts to less-than-significant levels.

CONSTRUCTION-SITE STORMWATER DISCHARGE

As described in Section 4.10, *Hydrology and Water Quality*, the UCR campus is a non-traditional permittee under the Phase II municipal separate storm sewer systems (MS4) Small statewide general storm water permit, which requires UCR to prevent construction site discharges of pollutants through the installation, implementation, and maintenance of BMPs and ensure compliance with Construction General Permit (State Water Resources Control Board Order 2009-0009-DWQ, as amended). As part of the compliance with the Construction General Permit, a Stormwater Pollution Prevention Plan (SWPPP) would be prepared for specific construction projects. Among other things, the SWPPP requires that hazardous materials be properly stored, contained, and disposed of to prevent polluted stormwater discharged from construction sites, which would prevent substantial spills of hazardous materials during reasonably foreseeable upset and accident conditions and prevent or reduce the release hazardous materials into the environment.

The UCR HMBP and the EAP address emergency and spill response procedures that include, but are not limited to, specific emergency response instructions, locations of personnel and equipment resources, specialty hazard instructions, and appropriate training. Therefore, impacts related to potential hazards to the public or the environment through reasonably foreseeable upset and accident conditions due to construction-site stormwater discharge would be **less than significant**.

Operation

As discussed in Impact HAZ-1, the use, storage, transport, and disposal of hazardous materials in facilities developed under the proposed 2021 LRDP would be guided by existing and future federal, State, and UCR regulations designed to maximize the safety of UCR personnel, students, the public, and the environment. Adherence to these regulations would ensure hazards impacts associated with reasonably foreseeable upset and accident conditions involving hazardous materials would be **less than significant**.

Mitigation Measures

MM HAZ-1 Property Assessment – Phase I and II ESAs

During the pre-planning stage of campus projects on previously developed sites or on agricultural lands (current or historic), and in coordination with EH&S, UCR shall obtain documentation from EH&S or prepare a Phase I Environmental Site Assessment (ESA) assessing the land use history of the proposed project site and identify potential hazardous materials concerns, including, but not limited to, fuel tanks, chemical storage, elevator pistons and associated hydraulic oil reservoirs and piping, heating-oil USTs, or agricultural uses. If the Phase I ESAs, or similar documentation, identify recognized environmental conditions or potential concern areas, a Phase II ESA would be conducted in coordination with EH&S to determine whether the soil, groundwater, and/or soil vapor has been impacted at concentrations exceeding regulatory screening levels for residential or commercial/industrial type land uses (as applicable). If the Phase II ESA concludes that the site is or may be impacted and could affect the planned development, assessment, remediation, or corrective action (e.g., removal of contaminated soil, in-situ treatment, capping, engineering controls) would be conducted prior to or during construction under the oversight of federal, State, and/or local agencies (e.g., US EPA, DTSC, RWQCB, RFD, RCDEH) and in full compliance with current and applicable federal and State laws and regulations. Additionally, Voluntary Cleanup Agreements may be used for parcels where remediation or long-term monitoring is necessary.

MM HAZ-2 Regulatory Agency UST Involvement

Because the UCR campus includes abandoned in-place USTs and the potential for other unidentified hazardous material features to be present, UCR shall notify the RCDEH and RFD if the following situations occur:

- Soil disturbance, grading, or excavation are planned for areas where current USTs are present or former USTs were present, including:
  - One 6,000-gallon UST operated by Fleet Services located east of the Fleet Services office
  - One 6,000-gallon diesel, one 1,500-gallon gasoline, and one 300-gallon former USTs at the Ag Ops facility at 1060 Martin Luther King Boulevard
  - Four 6,000-gallon gasoline and one 550-gallon waste oil former USTs at the former Atlantic Richfield Oil Company service station at 1160 University Avenue

  - Five 20,000-gallon former diesel USTs at UCR Parking Lot #6
  - Two 7,000-gallon gasoline, one 3,000-gallon gasoline, and one 550 waste oil former USTs at the former Chevron service station at 1011 University Avenue
  - Four former 10,000-gallon #6 heating-oil USTs at 3401 Watkins Drive – Abandoned in place in October 1998
  - One 10,000-gallon gasoline, one 6,000-gallon gasoline, and one 500-waste oil former USTs at the UCR Fleet Service facility at 3401 Watkins Drive
  - UCR Fleet Services – RCDEH Permitted UST - 3401 Watkins Drive
  - UCR Steam Plant – RCDEH Closed Leaking UST - 3401 Watkins Drive
  - Agricultural research support operations areas on the West Campus (e.g., fuel storage and dispensing, maintenance oils, and hazardous waste)
  - Corporation Yard located north of West Linden Street on the East Campus
  - UST, previously located at the Grounds Maintenance Facility along East Campus Drive
  - 3.25-acre site on the UCR campus at 1060 Martin Luther King Boulevard, listed as a DTSC Certified Operations and Maintenance Land Use Restrictions site as of December 15, 2010 (DTSC 2020a)
  - 1060 Martin Luther King Boulevard, a site listed as a closed Riverside County LOP case for three leaking USTs
- Identification of additional underground storage tanks and associated piping, or other underground features such as railroad spurs or ties, elevator pistons, stained or odorous soils, unknown piping, cisterns, wells, waste/burn pits, etc., if encountered

Additionally, all UST removals and associated assessment work shall be completed under the direction of RCDEH and RFD.

Upon identification of stained soil, odorous soil, USTs, or other underground features onsite, RCDEH or RFD could require actions such as: development of removal action workplans, obtaining permits for removal of USTs or other underground features, soil excavation and offsite disposal, assessment of soil and/or groundwater beneath the excavation, and/or completion of UST removal reports or case closure documents.

MM HAZ-3 Regulatory Agency Subsurface Involvement – DTSC

Because UCR includes one DTSC Certified Land Use Restrictions case on-site (Envirostor, Site ID 33890001, 2020), DTSC shall be notified of redevelopment or soil disturbance work that is planned in the Land Use Covenant area involving excavation of 4 feet or more below ground surface. Additionally, UCR shall notify the DTSC if the following situations occur:

- LRDP is modified to include soil disturbance in the Land Use Covenant area.
- Stained or odorous soils, chemical substances, or debris from an unidentified source are identified during excavation of 4 feet or more below ground surface and/or within 100 feet of the Land Use Restriction area.

Upon notification of the information above, DTSC could require actions such as: development of subsurface investigation workplans, completion of soil, soil vapor, and/or groundwater subsurface investigations, installation of soil vapor or groundwater monitoring wells, soil excavation and off-site

disposal, completion of human health risk assessments, and/or completion of remediation reports or case closure documents.

MM HAZ-4 Construction Site Management Plan

If impacted soils are identified pursuant to activities conducted through Mitigation Measures MM HAZ-1, MM HAZ-2, or MM HAZ-3; or encountered during construction (soil disturbance), UCR shall prepare a Construction Site Management Plan (SMP) for the proposed redevelopment project area to address potential issues that may be encountered during redevelopment activities involving subsurface work. The Construction SMP objectives shall include:

- Communicating information to proposed project construction workers about environmental conditions
- Presenting measures to mitigate potential risks to the environment, construction workers, and other nearby receptors from potential exposure to hazardous substances that may be associated with unknown conditions or unexpected underground structures
- Presenting protocols for management of known contaminated soil or groundwater encountered during construction activities

The Construction SMP shall identify the proposed project contacts, responsibilities, and notification requirements and outline the procedures for health and safety, soil management, contingency measures for discovery of unexpected underground structures, erosion, dust, and odor management, groundwater management, waste management, stormwater management, and written records and reporting. The Construction SMP shall be reviewed and approved by UCR prior to issuance of grading permits.

Significance After Mitigation

Impacts related to potential hazards to the public or the environment through reasonably foreseeable upset and accident conditions during facility construction and renovation would be less than significant with mitigation incorporated.

Impact HAZ-3 Result in Handling of Hazardous or Acutely Hazardous Materials Within 0.25 Mile of an Existing or Proposed School.

Operation of facilities and materials would be subject to federal, State, and UCR policies designed to minimize hazardous emissions and spills and would result in less than significant impacts related to significant hazards to the public or the environment. Facility construction and renovation under the proposed 2021 LRDP could disturb or emit hazardous material from impacted soil, soil vapor, or groundwater, which could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. Impacts would be less than significant with the implementation of mitigation measures and mandatory compliance with existing regulations pertaining to hazardous wastes and materials.

Multiple schools are located within 0.25 mile of the boundaries of the UCR campus, and one child development center is located on campus (UCR Child Development Center). As discussed in greater detail in Section 4.13, *Public Services*, several schools are in proximity to UCR, including Riverside STEAM Academy (approximately 0.25 mile from UCR's southeast boundary), Highland Elementary (approximately 0.14 mile from UCR's northernmost parcels, which contain the Stonehaven Apartment Community), Longfellow Elementary (approximately 0.76 mile from UCR's western

boundary), University Heights Middle School (approximately 0.25 mile from UCR's northernmost parcels which contain the Stonehaven Apartment Community), and John W. North High School (approximately 0.39 mile north of West Campus). Additionally, the Canyon Crest Gateway land use designation allows non-affiliated educational facilities.

Construction

Construction and redevelopment of facilities associated with implementation of the 2021 LRDP would comply with existing federal, State, and UC requirements for the transport, use, or disposal of hazardous materials. Removal of LBPs, ACMs, PCBs, and other hazardous materials would be performed in compliance with existing regulations. As discussed in Impact HAZ-2, mandatory compliance with existing federal and State regulations would apply during construction activities. However, there is the potential for disturbance of unknown hazardous materials from impacted soil, soil vapor, or groundwater during construction which could create a hazard to the public or the environment. Therefore, construction and redevelopment of facilities associated with implementation of the proposed 2021 LRDP could emit hazardous emissions or handle hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. Impacts would be **significant.** Mitigation Measures **MM HAZ-1 through MM HAZ-4** would be required to reduce impacts to less than significant levels.

Operation

While hazardous materials and waste could continue to be handled within 0.25 mile of an existing or proposed school as a result of implementation of the proposed 2021 LRDP, and overall quantities may increase, these materials would still not exist in quantities significant enough to pose a risk to occupants of the school or the campus community. As explained in the discussion under Impact HAZ-1 above, hazardous materials in laboratories are typically handled in small quantities. The potential consequences of accidental releases would be limited to a single building and in most cases are limited to the individual laboratory where the spill would occur, and people outside the buildings would not be exposed.

The UCR Child Development Center comprises two adjacent facilities on the northeastern corner of East Campus. It is surrounded by a surface parking lot, Blaine Street and Watkins Drive to the east, Facilities Services to the southeast, and the future North District Development (Phase I currently under construction) to the southwest. Under the proposed 2021 LRDP, the UCR Child Development Center would be in the future Student Neighborhood land use area, which would accommodate student residences and residential support services and not research laboratories or other facilities that may handle hazardous materials. Additionally, the UCR Child Development Center would be located outside of areas likely to redevelop under the proposed 2021 LRDP. It is unlikely there would be substantial impacts to Student Neighborhood areas associated with the emission of hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste related to the operation of facilities developed under the proposed 2021 LRDP.

Additionally, the Canyon Crest Gateway land use designation allows non-affiliated educational facilities. The land area designated as Canyon Crest Gateway would not be located adjacent to laboratory uses or other land uses where substantial quantities or emissions of hazardous materials would occur from development under the proposed 2021 LRDP.

While the amount and type of hazardous materials may vary over time with changes in research and additions to hazardous materials lists, the general range and type of hazardous materials used on campus is not expected to substantially change upon implementation of the proposed 2021 LRDP.

UCR will continue to use materials, some of which are considered hazardous, during daily operations. While hazardous materials and waste could be handled within 0.25 mile of an existing or proposed school as a result of implementation of the proposed 2021 LRDP, these materials would not exist in quantities significant enough to pose a risk to occupants of the school or the campus community. Furthermore, compliance with federal, State, and local regulations and UCR policies and programs would reduce the risk of substantial spill and harm to the public, campus personnel, and the environment during the transport, use, storage, and disposal of hazardous materials and wastes. Adherence to these regulations would ensure significant hazards associated with operational use of hazardous materials would be **less than significant**.

Mitigation Measures

Mitigation Measures MM HAZ-1 *Property Assessment – Phase I and II ESAs*, MM HAZ-2 *Regulatory Agency UST Involvement*, MM HAZ-3 *Regulatory Agency Subsurface Involvement – DTSC*, and MM HAZ-4 *Construction Site Management Plan* would ensure potential unknown hazardous materials were determined and addressed properly prior to construction near area schools.

Significance After Mitigation

Implementation of the above mitigation measures would reduce impacts related to hazardous emissions or the handling of hazardous materials within 0.25 mile of a school to less-than-significant levels.

Impact HAZ-4 LOCATED ON A SITE WHICH IS INCLUDED ON A LIST OF HAZARDOUS MATERIALS SITES COMPILED PURSUANT TO SECTION 65962.5.

THE UCR CAMPUS INCLUDES SEVERAL CLOSED UST RELEASE SITES (LISTED) AND IS LOCATED ADJACENT TO A SITE WITH A RESTRICTED LAND USE COVENANT. AS A RESULT, SOIL, SOIL VAPOR, AND/OR GROUNDWATER DISTURBANCE DURING CONSTRUCTION COULD CREATE A SIGNIFICANT HAZARD TO THE PUBLIC OR THE ENVIRONMENT. GIVEN THE OPPORTUNITY FOR CONTAMINATED SOILS TO OCCUR ON THE PROJECT SITE, PROJECT CONSTRUCTION WOULD POTENTIALLY CREATE A SIGNIFICANT HAZARD TO THE PUBLIC OR THE ENVIRONMENT. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH THE IMPLEMENTATION OF MITIGATION MEASURES.

Construction

As remediation has already been completed in the former pesticide disposal pits located in the agricultural teaching and research fields on the West Campus, that land is under a restricted land use covenant, and no construction is planned in that area under the proposed 2021 LRDP; no risk of exposure to hazardous materials in that area would be present. Furthermore, as discussed in Impact HAZ-2, mandatory compliance with existing federal and State regulations would apply during construction activities. However, the UCR campus includes several closed UST release sites, and construction of facilities could occur in areas located adjacent to the former pesticide disposal pits. Disturbance of hazardous material impacted soil, soil vapor, or groundwater during construction could create a **significant hazard** to the public or the environment. Mitigation Measures **MM HAZ-1 through MM HAZ-4** would be required to reduce impacts to less-than-significant levels.

Operation

All non-UST hazardous waste storage locations on campus are managed in accordance with all applicable federal and State laws, such as RCRA and California HWCL, as well as all existing campus

programs and policies as discussed in Impact HAZ-1. Operational impacts would be **less than significant**.

Mitigation Measures

Mitigation Measures MM HAZ-1 *Property Assessment – Phase I and II ESAs*, MM HAZ-2 *Regulatory Agency UST Involvement*, MM HAZ-3 *Regulatory Agency Subsurface Involvement – DTSC*, and MM HAZ-4 *Construction Site Management Plan* would ensure potential soil, soil vapor, and/or groundwater disturbance is determined and addressed properly prior to construction.

Significance After Mitigation

Implementation of the above mitigation measures would reduce impacts related to hazardous materials sites to less-than-significant levels.

Impact HAZ-5 IMPACTS RELATED TO CONSTRUCTION AND OPERATION AT HAZARDOUS MATERIAL RELEASE LISTED SITES WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. LOCATED WITHIN AN AIRPORT LAND USE PLAN OR 2 MILES OF AN AIRPORT RESULTING IN A SAFETY HAZARD OR EXCESSIVE NOISE FOR PEOPLE RESIDING OR WORKING ON THE UCR CAMPUS.

THE UCR CAMPUS IS IN THE MARCH AIR RESERVE BASE/INLAND PORT ALUCP INFLUENCE AREA, ALTHOUGH IN AN AREA WITH LOW LEVELS OF NOISE AND SAFETY RISK. THEREFORE, THE PROPOSED 2021 LRDP WOULD NOT RESULT IN AIRPORT-RELATED SAFETY HAZARDS AND EXCESSIVE NOISE IMPACTS TO PEOPLE RESIDING OR WORKING ON THE UCR CAMPUS, AND IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Construction and Operation

The UCR campus is in Area E of the March Air Reserve Base/Inland Port ALUCP influence area. As analyzed in Section 4.11, *Noise,* noise levels in Area E of the March Air Reserve Base/Inland Port ALUCP are low and beyond the 55-CNEL corridor; safety risk level is also considered low. In Area E, there is no limit on residential or other use population density or requirement for open space. However, although there is no explicit upper limit on usage intensity, land uses of the types listed—uses that attract very high concentrations of people in confined areas—are discouraged in locations below or near the principal arrival and departure flight tracks. The UCR campus is not located near the principal arrival and departure flight tracks (Riverside County Airport Land Use Commission 2014). Therefore, the proposed 2021 LRDP would not result in airport-related safety hazards and excessive noise impacts to construction workers, faculty/staff, students, and visitors, and impacts would be **less than significant**.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

4.9.4 Cumulative Impacts

Although some hazardous materials releases can cover a large area and interact with other releases (e.g., atmospheric contamination, contamination of groundwater aquifers), incidents of hazardous materials contamination due to leaking UST sites or release at individual businesses are more

typically confined to a limited area. These relatively limited areas of contamination typically do not interact in a cumulative manner with other sites of hazardous materials contamination. However, if construction would create a new site of contamination, or contribute substantially to a hazardous condition, it could be considered to contribute to a cumulative impact. This cumulative analysis assesses development on and proximate to the UCR campus and includes buildout of the cities of Riverside and Moreno Valley General Plans as discussed in Table 4-2 and projects in unincorporated Riverside County, the closest of which is approximately 1.9 miles northeast of the East Campus boundary as described in Table 4-1.

It is anticipated that future growth in the cumulative project area, would result in an incremental increase in the amount of hazardous materials used, treated, transported, and disposed area-wide. Cumulative projects and associated activities listed in Tables 4-2 and 4-1 would be required to comply with safety procedures mandated by applicable federal, State, and local laws and regulations related the transport, use, and disposal hazardous materials. Nonradioactive hazardous waste materials would be disposed of into permitted hazardous waste facilities, and radioactive waste would be decayed on-site or disposed of in facilities specifically approved for radioactive waste pursuant to federal and State regulations.

As described under Impact HAZ-1, operation of development under the proposed 2021 LRDP would involve the transport, use, and disposal of hazardous materials. However, the use, storage, transport, and disposal of hazardous materials in facilities developed under the proposed 2021 LRDP would be guided by existing and future federal, State, and UCR regulations designed to maximize the safety of UCR personnel, students, the public, and the environment. Consequently, the contribution of the proposed 2021 LRDP to cumulative impacts **would not be cumulatively considerable**.

It is anticipated that future growth in the cumulative project area would result in an incremental increase in reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials, particularly during redevelopment of older buildings that may contain ACMs and/or LBPs, or encounter unknown USTs and at construction sites where there may be occurrences of stormwater discharge.

Cumulative projects and associated activities in the cumulative area would be required to comply with safety procedures mandated by applicable federal, State, and local laws and regulations related to the release of hazardous materials. LBPs and other lead-containing materials associated with proposed projects would be handled in compliance with Cal/OSHA regulations regarding LBPs and lead-containing materials. CCR Title 8, Section 1532.1, requires testing, monitoring, containment, and disposal of LBPs and lead-containing materials in a manner that exposure levels do not exceed Cal/OSHA standards. Additionally, all new development and redevelopment would be subject to the water quality requirements of the SARWQCB, the Small MS4 General Permit, and other applicable federal, State, and local regulations. Adherence to such regulations would reduce the potential for impacts of the proposed 2021 LRDP to combine with similar impacts of other projects to result in cumulative impacts.

As discussed in Impact HAZ-2, proposed 2021 LRDP, impacts related to potential unknown hazards to the public or the environment through reasonably foreseeable upset and accident conditions during facility construction and renovation would be significant without mitigation. Impacts would be reduced would be less than significant Mitigation Measures **MM HAZ-1 through HAZ-4** incorporated. Consequently, the contribution of the proposed 2021 LRDP to cumulative impacts **would not be cumulatively considerable with mitigation**.

Future development in the cumulative area may involve hazardous emissions or the handling of acutely hazardous materials, substances, or wastes within 0.25 mile of an existing or proposed school. Under the proposed 2021 LRDP, UCR would continue to comply with applicable hazardous materials and disclosure requirements for the handling, use, storage, and disposal of hazardous materials. Future development off campus would also be required to comply with applicable laws and regulations pertaining to hazardous wastes, and risks associated with hazardous emissions or materials to existing or proposed schools located within 0.25 mile of future development would be eliminated or reduced through proper handling, disposal practices, and/or cleanup procedures. Furthermore, the materials would not be anticipated to occur in quantities significant enough to pose a risk to occupants of nearby schools or the campus community. As discussed in Impact HAZ-3, impacts related to hazardous emissions or the handling of hazardous materials within 0.25 mile of a school would be significant without mitigation, and therefore cumulatively considerable. Impacts would be reduced to less than significant with Mitigation Measures **MM HAZ-1 through MM HAZ-4** incorporated. Therefore, the proposed 2021 LRDP contribution to cumulative impacts associated with hazardous emissions or handling of hazardous materials within 0.25 mile of an existing or proposed school **would not be cumulatively considerable with mitigation**.

Future development on the UCR campus and in the cumulative area could potentially expose residents and construction workers to contaminated soil or groundwater, including on or near sites included on a list of hazardous materials sites compiled pursuant to government code Section 65962.5. As discussed in Impact HAZ-4, the UCR campus includes several closed UST release sites (listed) and construction of facilities could occur in areas located adjacent to the former pesticide disposal pits. Disturbance of hazardous material impacted soil, soil vapor, or groundwater during construction could create a significant hazard to the public or the environment and impacts are considered cumulatively considerable without mitigation. However, impacts related to construction and operation at hazardous material release listed sites would be less than significant with mitigation **MM HAZ-1 through MM HAZ-4** incorporated. Therefore, the proposed 2021 LRDP's contribution to cumulative impacts associated with exposure to contaminated soil or groundwater, including development on or near hazardous materials sites, **would not be cumulatively considerable**.

As discussed in Impact HAZ-5, the proposed 2021 LRDP would not result in airport-related safety hazards and excessive noise impacts to construction workers for projects developed under the proposed 2021 LRDP. Therefore, the proposed 2021 LRDP's contribution to cumulative impacts associated with airport-related safety hazards and excessive noise impacts **would not be cumulatively considerable**.

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