



**APPENDIX D**  
**APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS**  
**for**  
**Laboratory for Energy-related Health Research/  
Old Campus Landfill Superfund Site  
University of California, Davis**

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## ACRONYMS AND ABBREVIATIONS

|               |  |
|---------------|--|
| ARAR          | applicable or relevant and appropriate requirement   |
| CAMU          | corrective action management unit  |
| CCR           | California Code of Regulations   |
| CFR           | Code of Federal Regulations  |
| CGP           | Construction General Permit  |
| CNDDDB        | California Natural Diversity Database  |
| CVRWQCB       | Central Valley Regional Water Quality Control Board  |
| DTSC          | Department of Toxic Substances Control   |
| FRC           | Federal Radiation Council  |
| FS – Volume 1 | <i>Final Feasibility Study for the University of California, Davis Areas Volume 1: Soil/Solid Waste and Soil Gas</i> |
| LCRS          | leachate collection and recovery system  |
| LEHR          | Laboratory for Energy-related Health Research  |
| LLRW          | low-level radioactive waste  |
| MS4           | Municipal Separate Storm Water Sewer System  |
| OCL           | Old Campus Landfill  |
| PCG           | preliminary cleanup goal   |
| PHC           | principal hazardous constituent  |
| RCRA          | Resource Conservation and Recovery Act   |
| rem           | Roentgen equivalent man dosage   |
| RPG           | Radiation Protection Guide   |
| Site          | Laboratory for Energy-related Health Research/Old Campus Landfill Superfund Site                                     |
| SWMP          | storm water management plan  |
| SWRCB         | State Water Resources Control Board  |
| UC Davis      | University of California, Davis  |

|            |   |
|------------|---|
| UC Regents | Regents of the University of California       |
| US EPA     | United States Environmental Protection Agency |
| US FWS     | United States Fish and Wildlife Service       |
| VELB       | Valley Elderberry Longhorn Beetle             |
| VOC        | volatile organic compound                     |
| WDR        | Waste Discharge Requirements                  |

## APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

This appendix identifies regulations that are applicable or relevant and appropriate requirements (ARARs) to remedial alternatives being evaluated for the University of California, Davis (UC Davis) Laboratory for Energy-related Health Research (LEHR)/Old Campus Landfill (OCL) Superfund Site (Site). A complete list of ARARs for the Site and brief descriptions and applicability are provided in Tables D-1 through D-3. Additional information is provided below for selected ARARs.

### D1. Location-Specific ARARs

Information on selected location-specific ARARs is provided below. These ARARs apply to Alternatives SW-3 through SW-10.

#### D1.1. Levee Encroachment

In 1948, the U.S. Army Corps of Engineers constructed levees along the South Fork of Putah Creek. Around this time, the Regents of the University of California granted the Sacramento and San Joaquin Drainage District an easement to “construct, repair, and forever maintain the north levee of (the South Fork of) Putah Creek” (UC Regents, 1950). The South Fork of Putah Creek is a regulated stream under Title 23 of the California Code of Regulations (CCR) (23 CCR Section 112). Thus, any excavation or borrow activities within 10 feet of the landside toe of the levee must be performed according to 23 CCR Section 116.

In general, 23 CCR 116 allows excavation activities in non-floodway areas that do not negatively impact the area’s hydraulics, hydrology, or sediment transport. 23 CCR Section 115 allows the deposition of waste against the landside of the levee slope if it is not detrimental to the levee. 23 CCR 120 states that areas adjacent to the levee must drain away from the levee toes for a minimum distance of 10 feet, that pavement for roadways and similar uses is permitted within 10 feet of the levee toe, and that pavement within 10 feet of the landside levee toe must have appropriate features that intercept seepage and prevent particle migration.

#### D1.2. Proximity to Floodplain

In May 2009, the Federal Emergency Management Agency updated the potential area of inundation by a one-percent annual chance flood event near the Site to include the entire Site as a Zone A area (Figure D-1). Zone A areas are determined using estimated techniques, not detailed hydraulic analyses, and therefore do not include base flood elevations or flood depths. Previously, the inundation area for the one-percent annual chance flood was defined as being contained within the levees of the South Fork of Putah Creek.

While the regulations for siting units within a floodplain are not triggered under the proposed alternatives, the regulations outline important strategies regarding the proper care of waste management units within floodplains. Non-hazardous Resource Conservation and Recovery Act (RCRA) Subtitle D units located within floodplains must demonstrate that the unit will not: 1) restrict

the flow of the one-percent annual chance flood event; 2) reduce temporary water storage capacity of the floodplain; or 3) result in the washout of solid waste by waters of the base flood, so as to pose a hazard to human health or the environment (40 Code of Federal Regulations [CFR] 258.11). Existing waste disposal facilities classified as RCRA hazardous Subtitle C facilities that are located within the potential area of inundation by one-percent annual chance flood event must be designed, constructed, operated, and maintained to prevent washout of hazardous waste by a one-percent annual chance flood event or must demonstrate that no adverse effects on human health and the environment will result if washout were to occur (40 CFR 264.18(b)). Washout of disposal units is considered unlikely, due to excavation and capping activities included in proposed alternatives SW-3 through SW-10.

### **D1.3. Endangered Species**

In alternatives SW-3 through SW-10, remedial actions will disrupt plants and animals on Site. The California Natural Diversity Database (CNDDDB) and the United States Fish and Wildlife Service (US FWS) species lists were reviewed to evaluate the occurrence or potential occurrence of special status plants and wildlife species near the Site. LEHR/OCL spans two United States Geological Survey 7.5-minute quadrangles – Merritt and Davis. Table D-4 includes a list of the special status species in the vicinity of these quadrangles with scientific and common names, legal status, and the recorded or potential occurrence on the campus, according to the *2003 UC Davis Long-Range Development Plan, Final Environmental Impact Report* (UC Davis, 2003) and the *1997 Ecological Assessment of the Laboratory for Energy-related Health Research Facility and Vicinity* (Michael Wood and Associates, 1997).

The California Endangered Species Act prohibits state agencies from allowing projects that would endanger the survival of special status species or their habitats if other practical options are feasible (California Fish and Game Code Section 2053). The alternatives in this Feasibility Study (FS) have considered the well-being of these species; however, the human health and environmental risks associated with not remediating the Site by using one of the proposed alternatives prove greater than those associated with the limited detrimental effects of the remedial actions. The actions will be offset with “appropriate mitigation and enhancement measures,” according to California Fish and Game Code Section 2054. The mitigation activities will be approximately proportional to the damage caused to the particular species or habitat of concern (California Fish and Game Code Section 2052.1).

Prior to remediation activities, an updated biological assessment of the species listed in Table D-4 would be performed in the action area to determine which species may be impacted. After the assessment is complete, a plan would be developed to mitigate the effects of the chosen remedial alternative. The previous ecological assessment conducted in 1997 noted that 32 special status plant species, 72 special status wildlife species, and 18 special status animal species had been recorded in the region or may inhabit or occur within the Site. Of these, only four wildlife species (the burrowing owl, the Swainson’s hawk, the breeding white-tailed kite, and the Valley Elderberry Longhorn Beetle [VELB]) were recommended for pre-construction surveys (Michael Wood and Associates, 1997). Recent informal site assessments have determined that a number of elderberry shrubs are present on some land disposal units. Since the federally-listed threatened VELB is completely dependent upon the elderberry shrubs for the majority of its life cycle, mitigation efforts would need to take place to counterbalance the remedial actions (US FWS, 1999). Currently, destruction of elderberry stems greater than one inch in diameter is considered a “take” under the

Federal Endangered Species Act and requires mitigation pursuant to US FWS guidelines. Attachment D-1 provides the University's VELB mitigation analysis. Shrub clusters will be removed under Alternatives SW-3 through SW-10, and appropriate mitigation will be provided using the UC Davis VELB Habitat Conservation Plan (UC Davis, 2003). Similar mitigation efforts would be conducted under the low probability that additional affected special status species are identified during the pre-construction biological assessment. It should be noted that in September 2006, the US FWS recommended that the VELB be delisted as a threatened species based on the increased number of sightings throughout the Central Valley and the reduction of primary threats to the species (US FWS, 2006).

## **D2. Action-Specific ARARs**

Information on selected action-specific ARARs is provided below. These ARARs apply to Alternatives SW-3 through SW-10.

### **D2.1. Corrective Action Management Units**

Alternatives SW-3 through SW-9 include a corrective action management unit (CAMU) as a central component of the proposed remedy. Under the CAMU scenario, minimum design requirements are typically expected at an approved RCRA CAMU. These requirements include a composite liner and a leachate collection and recovery system (LCRS). However, the United States Environmental Protection Agency (US EPA) can approve alternate requirements if: 1) the alternate design prevents the migration of hazardous constituents into groundwater or surface water at least as effectively as the required liner and LCRS; or 2) the CAMU will be established in an area of existing contamination and the alternate design (including one that does not include a liner) prevents migration that would exceed long-term remedial goals (40 CFR 264.552(e)(3)). Consolidation or placement of cleanup wastes into a CAMU is not considered land disposal and does not trigger land disposal restrictions or create a unit subject to minimum technology requirements (40 CFR 264.552(a)(5)).

Minimum treatment of CAMU-eligible waste is required if principal hazardous constituents (PHCs) are identified in the waste media. PHCs are carcinogens that pose a direct risk from ingestion or inhalation at or above  $10^{-3}$ , or non-carcinogens that pose a potential direct hazard from ingestion or inhalation an order of magnitude or greater above the constituent-specific reference dose (40 CFR 264.552(e)(4)(i)(A)). PHCs of this type have not been identified at LEHR/OCL in soil or solid waste (Appendix C).

In addition, PHCs include constituents in waste that present a risk to human health or the environment when migration to groundwater results in concentrations "substantially higher" than remedial goals (40 CFR 264.552(e)(4)(i)(B)). At LEHR/OCL, the likelihood of migration to groundwater from waste material potentially occurs at the Eastern Trenches and Landfill Unit No. 2, where elevated concentrations of volatile organic compounds (VOCs) in soil vapor might migrate to groundwater. These VOC "hot spot" areas are proposed to be removed and disposed of off-Site, substantially reducing any potential for migration of VOCs in soil gas to groundwater, and therefore removing any potential PHCs that might result in migration concentrations "substantially higher" than remedial goals. However, groundwater monitoring may be required to provide information sufficient to:

1. Characterize the nature, extent, concentration, direction, and movement of existing releases of hazardous constituents from sources located within the CAMU; and
2. Characterize releases of hazardous constituents that may occur from areas in which wastes will remain in place after closure of the CAMU.

Groundwater monitoring and reporting frequencies will be provided in the sampling and analysis plan prepared during remedial design.

A review of ARARs related to shallow burial of low-level radioactive waste (LLRW), as well as LEHR Team discussions held on June 14, 2011, have supported that LLRW can be consolidated on-Site in a CAMU as part of the remedial alternatives (Attachments D-2 and D-3).

Site demolition waste (e.g., building demolition waste, construction debris, and non-impacted landfill waste associated with the remedial action) would be placed in the CAMU. Geographic subunits would be developed within the CAMU, including potential subunits for non-impacted waste.

## **D2.2. Post-Construction Storm Water Controls**

UC Davis is a non-traditional Phase II Municipal Separate Storm Water Sewer System (MS4) covered by the 2003 MS4 Permit (SWRCB, 2011). As such, UC Davis prepared a Storm Water Management Plan (SWMP) (Larry Walker Associates, 2010) that was approved by the Central Valley Regional Water Quality Control Board (CVRWQCB) in 2010. The SWMP specifies post-construction storm water controls for projects that disturb greater than one acre, which depend on the percentage of the surface that is impervious at the Site prior to disturbance. The Site is currently estimated to be less than 50 percent impervious. The SWMP design requirement<sup>1</sup> for this condition is that the project must incorporate “a storm water management plan that prevents the post-development peak discharge rate and quantity from exceeding the pre-development peak discharge rate and quantity for the one- and two-year 24-hour design storms.”

In September 2009, the California State Water Resources Control Board (SWRCB) adopted the 2009 Storm Water Construction General Permit (CGP), which applies to construction activity that results in land disturbance greater than one acre. The CGP contains post-construction standards (Section XIII.A) that require dischargers to “use non-structural and structural measures to replicate the pre-project water balance for the smallest storms up to the 85<sup>th</sup> percentile storm event.” The post-construction standards are not required in an area subject to post-construction standards of an active Phase I or II MS4 permit that has an approved SWMP. Construction activities at the Site will be subject to most CGP requirements, but since UC Davis is a permitted MS4 (see below), the post-construction standards are not applicable.

In June 2011, the SWCRB published for comment the *Draft Waste Discharge Requirements (WDRs) for Storm Water Discharges From Small Municipal Separate Storm Sewer Systems (MS4s) (General Permit)* (“DRAFT 2011 MS4 Permit”) (SWRCB, 2011). This permit will ultimately replace the 2003 MS4 Permit and, when adopted, will establish new storm water requirements

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<sup>1</sup> This requirement derives from Leadership in Energy and Environmental Design Credit 6.1 from the U.S. Green Building Council, New Construction & Major Renovation, Version 2.2

applicable to UC Davis. As currently written and related to post-construction controls, it would require UC Davis to: 1) conduct watershed characterization and identify dominant watershed processes potentially affected by changes in storm water runoff caused by new and redevelopment projects; 2) develop sediment budgets for each sub-watershed; and 3) comply with numeric water quality runoff standards consistent with the Maximum Extent Practicable/Post-Construction Standards in Order WQ 2000-11 and in the CGP. The numeric water quality runoff standards are applicable to specific categories of projects and development projects that create 10,000 square feet of impervious area. The Draft 2011 MS4 Permit states that, for regulated new development projects (Section E.12.b.3., Water Quality Runoff Standards), the Permittee "... capture, infiltrate, and evapotranspire the runoff from the 85<sup>th</sup> percentile storm event to the maximum extent practicable. Runoff from the 85<sup>th</sup> percentile storm that cannot be captured, infiltrated, and evapotranspired must be treated via a flow-through device designed to treat runoff at a flow rate produced by a rain event equal to at least two times the 85<sup>th</sup> percentile hourly rainfall intensity for the applicable area, based on historical records of hourly rainfall depths." To comply with the Draft 2011 MS4 permit requirements, storm water detention basins will likely be required to control runoff flows for storm water that is not evapotranspired (see Appendix G – Post-Construction Storm Water Control Analysis).

### **D2.3. Control of Radioactive Contamination in the Environment**

California Health and Safety Code, Chapter 5, Containment of Radioactive Materials, Article 1, Control of Radioactive Contamination in the Environment Section 114710, defines the terms used in this Section. Under Subsection (h), "'significant' or 'significantly', as applied to radioactive contamination, means concentrations or amounts of radioactive material as are likely to expose persons to ionizing radiation equal to or greater than the guide levels published by the Federal Radiation Council."

The Federal Radiation Council (FRC) was established in 1959 to provide a Federal policy on human radiation exposure. The FRC first published the Radiation Protection Guide (RPG) in 1960 (FRC, 1960). This guide was designed to account for both "... biological risk and the benefits to be derived from radiation use" (FRC, 1960). The RPG was defined as "...the radiation dose which should not be exceeded without careful consideration of the reasons for doing so; every effort should be made to encourage the maintenance of radiation doses as far below this guide as practicable" (FRC, 1960). For an individual (i.e., non-radiation worker), the RPG was defined as 0.5 Roentgen equivalent man dosage (rem) per year (whole body). The FRC was dissolved in 1970 when the US EPA was established. Since that time, the US EPA has established several dose-based standards. Currently, the lowest US EPA dose-based standard is 10 millirem per year developed for public doses associated with radiological air emissions, as defined in 40 CFR 61.92, National Emissions Standards for Hazardous Air Pollutants.

Because Section 114710 references the FRC RPG, and because the RPG is expressed in terms of dose rather than risk, Table D-5 provides the preliminary cleanup goal (PCG) dose estimates corresponding to the PCG risk estimates. Note that the doses listed on Table D-5 are provided in units of mrem per year. Doses at the PCG, as well as the US EPA's lowest dose-based standard, are below the 0.5 rem (500 mrem) per year RPG defined by the FRC. California Health and Safety Code, Section 115261 allows the California Department of Public Health's Radiation Health Branch to issue a license to dispose of LLRW if it is determined "that the siting, design, operation, and closure of the facility will, at a minimum, comply with the performance requirements and objectives of the

Nuclear Regulatory Commission specified in Part 61 of Title 10 of the Code of Federal Regulations.” However, in the future, should the property be transferred from the University of California, Davis to another entity, the US EPA would need to certify that the remedy selected is sufficiently protective of human health and that any radioactive material remaining poses no significant hazard to life or property.

### D3. References

Federal Radiation Council (FRC), 1960. *Background Material for the Development of Radiation Protection Standards: Report No. 1*, Staff Report of the Federal Radiation Council, May 13, Reprinted May 1965.

Larry Walker Associates, 2010. *University of California, Davis Stormwater Management Plan (SWMP). Non-Traditional Phase II Municipal Separate Storm Sewer System*. WQ Order No. 2003-0005-DWQ. NPDES General Permit No. CAS000004. May.

Michael Wood and Associates, 1997. *Ecological Assessment of the Laboratory for Energy-related Health Research (LEHR) Facility and Vicinity*, Davis, Solano County, California, March.

Regents of the University of California (UC Regents), 1950. *Easement Indenture from the Regents of University of California to Sacramento and San Joaquin Drainage District*, Alameda County, California, Deed Book 586, page 114, December.

State Water Resources Control Board (SWRCB), 2011. *Draft Waste Discharge Requirements (WDRs) for Storm Water Discharges From Small Municipal Separate Storm Sewer Systems (MS4s) (General Permit)*, retrieved from [http://www.swrcb.ca.gov/water\\_issues/programs/stormwater/docs/phsii2011/draft\\_order.pdf](http://www.swrcb.ca.gov/water_issues/programs/stormwater/docs/phsii2011/draft_order.pdf), June.

University of California, Davis (UC Davis), 2003. *Long-Range Development Plan Final Environmental Impact Report*, Volume I, October.

US Fish and Wildlife Service (US FWS), 1999. *Conservation Guidelines for the Valley Elderberry Longhorn Beetle*, Sacramento Fish and Wildlife Office, Sacramento, California, July.

US FWS, 2006. *Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus) 5-Year Review: Summary and Evaluation*, Sacramento Fish and Wildlife Office, Sacramento, California. September.

**FIGURE**

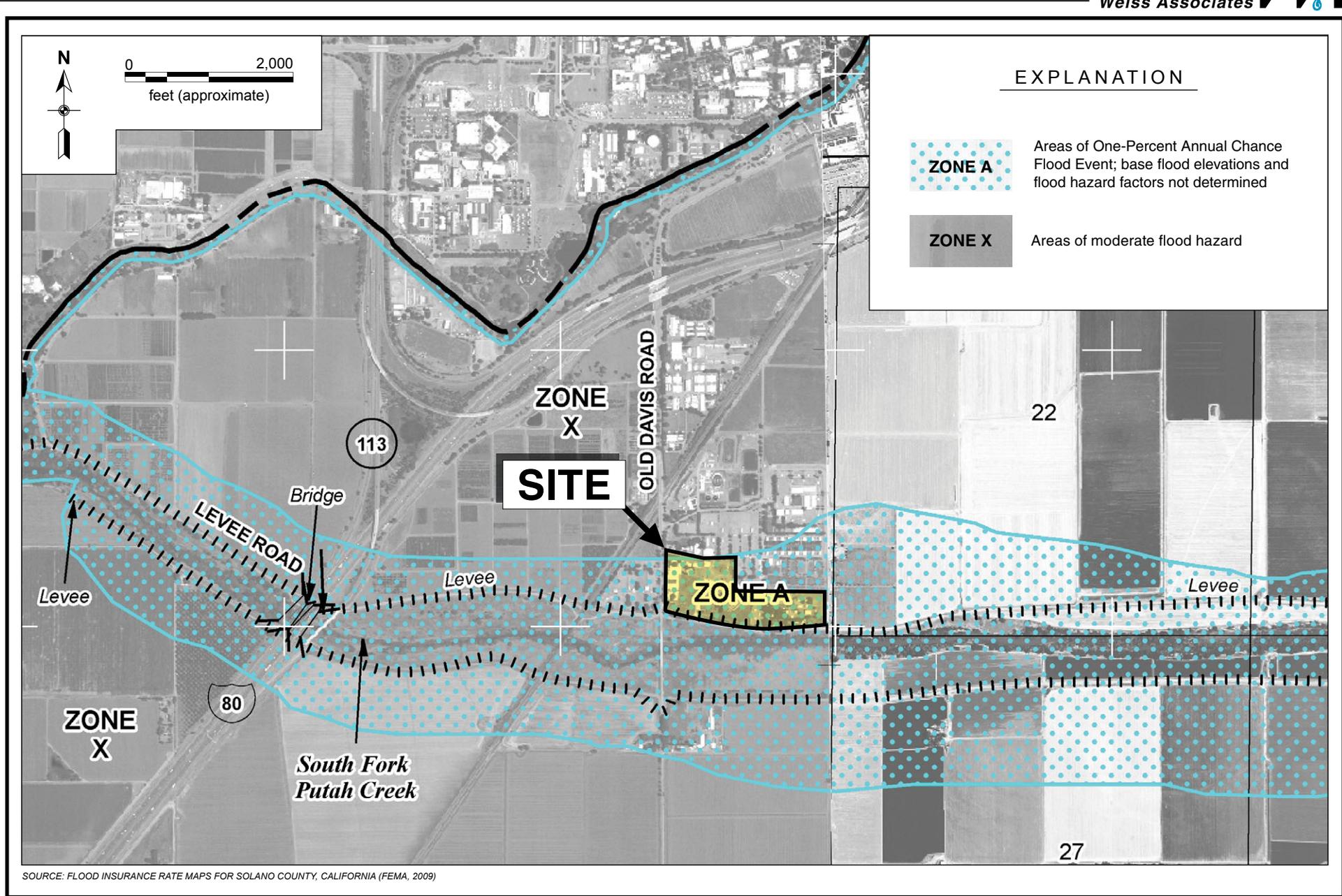


Figure D-1. Area of Inundation by One-Percent Annual Chance Flood Event, Laboratory for Energy-related Health Research/Old Campus Landfill, University of California, Davis

## TABLES

Table D-1. Chemical-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority  | Description  | Applicability  | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | Applicable or Relevant and Appropriate (ARAR) Category |
|--|--|--|---|---------------------------|--|
| <b>Federal</b>   |  |  |   |                           |  |
| Safe Drinking Water Act (42 USC 300 and 40 Code of Federal Regulations (CFR) 141.11-13, 141.23-24, 141.50-51, 55, and 141.61-62, 66) | Establishes Maximum Contaminant Levels (MCLs) as standards and Maximum Contaminant Level Goals (MCLGs) as goals for public water supply systems. | MCLs and MCLGs for drinking water are used as a reference for defining acceptable residual levels of some Feasibility Study (FS) – Volume 1 constituents of concern (COCs) in soil/solid waste that have the potential to impact groundwater in areas where migration of FS COCs from soil/solid waste to groundwater has occurred or may occur. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Relevant and Appropriate                               |

Table D-1. Chemical-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority  | Description   | Applicability   | Area <sup>i</sup>                                      | Alternative <sup>ii</sup> | Applicable or Relevant and Appropriate (ARAR) Category |
|--|---|---|--|---------------------------|--|
| 10 CFR 20, Subpart C, Occupational Dose Limits                                   | Establishes occupational radiological dose limits for facilities with a Nuclear Regulatory Commission (NRC) license.  | During soil disturbing activities, UC Davis Site employees and/or remediation workers may be exposed to solid waste, soil, soil gas, and dust that may contain licensed radioactive materials that were disposed in Site land disposal units. Worker doses resulting from this exposure must be maintained as low as reasonably achievable but not more than five rem/year. | LFU-1<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA  | SW-2 –<br>SW-10           | Relevant and Appropriate                               |
| 10 CFR 20, Subpart C, Radiation Dose Limits for Individual Members of the Public | Establishes dose limits for individual members of the public from the licensed operation, at 0.1 rem (one millisievert) (Roentgen equivalent man dosage) per year (rem/year).   | During soil disturbing activities, members of the public may be exposed to solid waste, soil, soil gas, and dust that may contain licensed radioactive materials that were disposed in Site land disposal units.  | LFU-1<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA  | SW-2 –<br>SW-10           | Relevant and Appropriate                               |
| Clean Water Act, California Toxics Rule 40 CFR 131.37                            | Establishes criteria applicable to waters specified in the Water Quality Control Plan for Salinity for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, adopted by the California State Water Resources Control Board in State Board Resolution No. 91-34 (May 1, 1991). | Applies to discharge of storm water to Putah Creek.   | LFU-1,<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA | SW-2 –<br>SW-10           | Applicable   |

Table D-1. Chemical-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority   | Description  | Applicability   | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | Applicable or Relevant and Appropriate (ARAR) Category |
|---|--|---|---|---------------------------|--|
| Clean Water Act, National Toxics Rule 40 CFR 131.36   | Establishes the appropriate aquatic and human health criteria for toxic pollutants in inland surface waters and enclosed bays and estuaries. Included in the National Rule were United States Environmental Protection Agency (US EPA) promulgated specific criteria for certain water bodies in California. | Applies to discharge of storm water to Putah Creek.   | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable   |
| Asbestos National Emission Standard for Hazardous Air Pollutants, 40 CFR, Subpart M, Section 61.145 implemented under the California Health and Safety Code Section 39658(b)(1) | Implemented by the Yolo Solano Air Quality Management District. Requires that demolition/renovation be in compliance with the Asbestos National Emission Standards for Hazardous Air Pollutants. Only substantive requirements apply.  | Demolition of Site structures, including several buildings and a concrete drainage liner, is required in some FS – Volume 1 alternatives. Asbestos-containing materials may be present in these structures. | LFU-1, LFU-2, LFU-3, ET                 | SW-3 – SW-10              | Applicable   |
| <b>State and Local</b>  |  |   |   |                           |  |
| Criteria for Identifying Hazardous Wastes (California Code of Regulations (CCR), Title 22, 66261. 21–33)  | Tests for identifying hazardous characteristics are set forth in these regulations. If a chemical is either listed or tested and found hazardous, then remedial actions must comply with the applicable CCR Title 22 requirements.   | Applies to contaminated soil, groundwater, or other material that may be generated and may contain hazardous waste.   | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable   |

Table D-1. Chemical-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority   | Description  | Applicability   | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | Applicable or Relevant and Appropriate (ARAR) Category |
|---|--|---|---|---------------------------|--|
| Yolo-Solano Air Quality Management District Rules and Regulations, Regulation II, Rule 2.5. Nuisance. | Prohibits discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or which endanger the comfort, repose, health, or safety of any such persons or the public; or which cause or have a natural tendency to cause an injury or damage to business or property. | Applies to air emissions during excavation, demolition, waste segregation, and treatment operations; applies to both mobile and stationary sources.   | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-3 – SW-10              | Applicable   |
| Yolo-Solano Air Quality Management District Rules 2.11, Particulate Matter Concentration              | Establishes a particulate matter emission standard that prohibits emissions of total particulate matter in excess of 0.1 grain per cubic foot of gas at dry standard conditions.   | This rule applies to any source operation (mobile or stationary) which emits, or may emit, dust, fumes, or total suspended particulate matter.  | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable   |
| Yolo-Solano Air Quality Management District Rules 2.19, Particulate Matter Process Emission Rate      | Prohibits discharge from any process unit of particulate matter of a weight in excess of the amount defined in the rule.   | This rule applies to any stationary process unit which emits, or may emit, particulate matter. During proposed soil sorting activities (i.e., for principle threat waste), this may include the use of a vibrating soil screening unit. Portable gasoline- and diesel-powered equipment may be used during construction activities. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-3 – SW-10              | Applicable   |

Table D-1. Chemical-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority   | Description   | Applicability  | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | Applicable or Relevant and Appropriate (ARAR) Category |
|---|---|--|---|---------------------------|--|
| Yolo-Solano Air Quality Management District Rules and Regulations, Regulation II, Rule 3.13, Toxics New Source Review | Applies to major new sources of hazardous air pollutants, unless specifically exempted. Requires risk assessment to determine if the potential to emit criteria pollutants or hazardous air pollutants is above established trigger levels. The project is considered <i>de minimis</i> if 1) the excess risk associated with the project does not exceed one theoretical lifetime cancer case per million individuals; and 2) the non-cancer Hazard Index is less than one. Carcinogenic and non-carcinogenic Screening Trigger Levels developed by the Bay Area Air Quality Management District may be used by district staff to determine whether the application is below the <i>de minimis</i> level.<br><br>Use of the Best Available Control Technology for Toxics is required if the cumulative risk results in a potential cancer risk of more than one in one million or a Hazard Index of more than one. | Applies to emissions of chloroform, chromium compounds, selenium compounds, polychlorinated biphenyls (Aroclors), hexachlorobenzene, radionuclides, and any other hazardous air pollutants; applies to stationary sources only.<br><br>During excavation activities, chloroform air emissions are possible in LFU-2 and ET areas. During excavation activities, radionuclides air emissions are possible in the LFU-1, LFU-2, LFU-3, WBH, ET, ST, and HFSDA areas. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-3 – SW-10              | Applicable   |
| Yolo-Solano Air Quality Management District Rules and Regulations, Rule 9.9 - Asbestos                                | Applies to all demolitions where the combined amount of Regulated Asbestos-Containing Material is equal to or greater than 260 linear feet, 160 square feet, or 35 cubic feet. Provides procedures to prevent emissions of particulate asbestos material to outside air, and requires surveys prior to demolition.  | Demolition of Site structures, including several buildings and a concrete drainage liner, is required in some FS – Volume 1 alternatives. Asbestos-containing materials may be present in these structures; applies to stationary sources only.  | LFU-1, LFU-2, LFU-3, ET                 | SW-3 – SW-10              | Applicable   |

Table D-1. Chemical-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority  | Description  | Applicability  | Area <sup>i</sup>                                      | Alternative <sup>ii</sup> | Applicable or Relevant and Appropriate (ARAR) Category |
|--|--|--|--|---------------------------|--|
| Central Valley Regional Water Quality Control Board Basin Plan, Chapter II | Describes water basins in the Central Valley Region, establishes beneficial uses of ground and surface waters, establishes water quality objectives and numerical standards, establishes implementation plans to meet water quality objectives and protect beneficial uses, and incorporates statewide water quality control plans and policies. | Water quality objectives and numerical standards apply to residual soil contamination in specific areas that may impact the beneficial use of groundwater in the future.<br><br>The substantive provisions of this plan dealing with the beneficial uses of water bodies and water quality objectives identified in the Basin Plan are applicable to the cleanup. Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the implementation requirements of this plan are not applicable. | LFU-1,<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA | SW-2 –<br>SW-10           | Applicable   |

Table D-1. Chemical-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority   | Description   | Applicability   | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | Applicable or Relevant and Appropriate (ARAR) Category |
|---|---|---|---|---------------------------|--|
| Central Valley Regional Water Quality Control Board Basin Plan, Chapter III   | Requires that groundwater not contain chemical constituents in concentrations that exceed beneficial uses. At a minimum, groundwater designated for use as municipal or domestic water supplies shall not contain chemical constituents in excess of the MCLs specified in Title 22. Groundwater shall be maintained free of toxic substances in concentrations that produce detrimental physiological response in human, plant, animal, or aquatic life associated with designated beneficial uses. Groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. | Applies to areas where residual soil contamination may impact the beneficial use of groundwater in the future. However, as no permits are required under CERCLA, the state has no authority to establish limits more stringent than the MCLs at the Site. Otherwise, the substantive provisions are required to be met. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Relevant and Appropriate                               |
| Policies and Procedures for Investigation, Cleanup and Abatement of Discharges under Water Code Section 13304, State Water Resources Control Board Resolution No. 92-49 Paragraph III G | The “Policy for Investigation and Cleanup of Contaminated Sites” establishes and describes policy for investigation and remediation of contaminated sites. Also includes implementation actions for setting groundwater and soil cleanup levels. Cleanup levels for soils should be equal to levels that would achieve background concentrations in groundwater, unless such levels are technically and economically infeasible to achieve. In such cases, soil cleanup levels are such that groundwater will not exceed applicable groundwater quality objectives.   | Applies to areas where residual soil contamination may impact the beneficial use of groundwater in the future.  | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable   |

Table D-1. Chemical-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority   | Description  | Applicability  | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | Applicable or Relevant and Appropriate (ARAR) Category |
|---|--|--|---|---------------------------|--|
| Statement of Policy with Respect to Maintaining High Quality Waters in California, State Water Resources Control Board Resolution No. 68-16 (Anti-Degradation Policy) | "Policy for Application of Water Quality Objectives" defines water quality objectives and explains how the Regional Water Quality Control Board (RWQCB) applies numerical and narrative water quality objectives to ensure the reasonable protection of beneficial uses of water, and how the RWQCB applies Resolution No. 68-16 to promote the maintenance of existing high quality waters. | Applies to areas where residual soil contamination may impact the beneficial use of groundwater in the future.   | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable   |
| State Water Resources Control Board Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, 2005         | Establishes implementation provisions for priority pollutant criteria promulgated through the National Toxics Rule, and through the California Toxics Rule, and for priority pollutant objectives established by RWQCBs in their water quality control plans (basin plans).  | Applies to discharges of toxic pollutants into the inland surface waters, enclosed bays, and estuaries of California, subject to regulation under the State's Porter-Cologne Water Quality Control Act (Division 7 of the Water Code) and the Federal Clean Water Act.<br><br>Applicable to all areas where waste has been discharged to land. | LFU-1, LFU-2, LFU-3, WBH, ET, HFSDA     | SW-2 – SW-10              | Applicable   |

Table D-1. Chemical-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority  | Description   | Applicability   | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | Applicable or Relevant and Appropriate (ARAR) Category |
|--|---|---|---|---------------------------|--|
| Sources of Drinking Water Policy, State Water Resources Control Board Resolution No. 88-63 | Specifies that, with certain exceptions, all groundwater and surface water have the beneficial use of municipal use or domestic supply. | Applies in determining beneficial uses for water that may be affected by discharges of waste. The State Water Resources Board Resolution 88-63 applies to all sites that may be affected by discharges of waste to groundwater or surface water. Applies to areas where residual soil contamination may impact the beneficial use of groundwater in the future. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable   |

Table D-1. Chemical-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority   | Description   | Applicability  | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | Applicable or Relevant and Appropriate (ARAR) Category |
|---|---|--|---|---------------------------|--|
| The Safe Drinking Water and Toxic Enforcement Act (California Health & Safety Code 25249.5-25249.13) Title 22 CCR, Sections 64431-64445 | Title 22 CCR Sections 64431-64445 provide primary MCLs that must be met by all public drinking water systems to which they apply.   | MCLs are used as a reference for defining acceptable residual levels of Site contaminants with potential to impact groundwater in areas of the Site where migration of contaminants from soil to groundwater has occurred or may occur. Groundwater beneath the Site is identified by the State of California as a potential source of drinking water. Although there is no public water supply system at the Site, contaminants released may impact the beneficial use of underlying groundwater. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Relevant and Appropriate                               |
| Title 27 CCR, Section 20390 and Title 23 CCR Section 2550.2   | Requires establishment of a water quality protection standard consisting of a list of constituents of concern, concentration limits, compliance monitoring, and all monitoring points.                                  | Applies to all waste units, other than Corrective Action Management Units (CAMUs), where residual soil contamination may impact water quality.   | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 and SW-6 thru SW-10  | Relevant and Appropriate                               |
| Title 27 CCR, Section 20395 and Title 23 CCR, Section 2550.3  | Requires development of a list of constituents of concern that includes all waste constituents that are reasonably expected to be present in the soil from discharges to land and could adversely affect water quality. | Applies to all waste units, other than CAMUs, where residual soil contamination may impact water quality.  | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 and SW-6 thru SW-10  | Relevant and Appropriate                               |

Table D-1. Chemical-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority   | Description  | Applicability  | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | Applicable or Relevant and Appropriate (ARAR) Category |
|---|--|--|---|---------------------------|--|
| Title 27 CCR, Section 20400(c-h) and Title 23 CCR, Section 2550.4(c-h)                    | Concentration limits for corrective actions must be established for each contaminant of concern based on either background or a value greater than background that is approved by the RWQCB. Specific factors must be considered in setting concentrations above background levels, including whether attainment of concentration limits is technologically and economically feasible. | Applies to all waste units, other than CAMUs, where residual soil contamination may impact water quality.      | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 and SW-6 thru SW-10  | Relevant and Appropriate                               |
| Title 22 CCR Division 4.5, Section 66261.21-33, Title 23, Sections 2520 and 2521          | Provides criteria for identifying and handling hazardous waste. Regulations include soluble threshold limit concentration and total threshold limit concentration analytical procedures.   | Applies to waste generated during remediation and monitoring activities.                                       | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable   |
| California Health and Safety Code, Division 20, Chapter 6.5, Section 25100 <i>et seq.</i> | Governs hazardous waste control.   | Applies to waste generated during remediation and monitoring activities.                                       | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable   |
| Title 22 CCR, Section 66268 <i>et seq.</i>  | Defines land disposal restrictions establishing specific treatment standards of hazardous wastes prior to disposal to land.  | Applies to waste generated during remediation and monitoring activities (excluding waste contained in a CAMU). | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 and SW-6 thru SW-10  | Applicable   |

Table D-2. Location-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority  | Comments   | Applicability   | Area <sup>i</sup>                                      | Alternative <sup>ii</sup> | ARAR Category |
|--|--|---|--|---------------------------|---------------|
| <b>Federal</b>   |  |   |  |                           |               |
| Endangered Species Act of 1973 (16 United States Code (USC) Section 1536 (a); Section 1539 (a) (1), 50 CFR 402.14) | Facilities or practices shall not cause or contribute to the taking of any endangered or threatened species of plants, fish, or wildlife (16 USC Section 1538 (a) (1)). Activities must be evaluated to determine their impact on listed species and species proposed for listing and their habitat (16 USC Section 1536(a)). If jeopardy or adverse modification will result from any Site activities, mitigation measures and/or an incidental take statement may be required. Specific mitigation measures will be identified and implemented per United States Fish and Wildlife Service guidelines. | Applies to all remediation, well installation, monitoring, or maintenance activities that may impact listed species. Potential habitat (i.e., elderberry shrubs with stalk diameters greater than one inch) for the endangered Valley Elderberry Longhorn Beetle (VELB) has been identified at LFU-1, LFU-2 and LFU-3. Mitigation measures and/or an incidental take permit may be required for remediation activities requiring removal of this habitat. | LFU-1,<br>LFU-2,<br>LFU-3                              | SW-2 –<br>SW-10           | Applicable    |
| Fish and Wildlife Coordination Act (16 USC Section 661-666)  | Requires action to preserve endangered species or threatened species. Prior to conducting any ground-disturbing activities in areas with potential for presence of such species, surveys are to be conducted for species of concern.   | Applies to all remediation, well installation, monitoring or maintenance activities that may impact listed species.   | LFU-1,<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA | SW-2 –<br>SW-10           | Applicable    |
| <b>State And Local</b>   |  |   |  |                           |               |
| California Endangered Species Act (California Fish and Game Code Section 2050–2068 and 2080)                       | Requires action to preserve endangered species or threatened species. Prior to conducting any ground-disturbing activities in areas with potential for presence of such species, surveys are to be conducted for species of concern.   | Applies to all remediation, well installation, monitoring, or maintenance activities that may impact listed species.  | LFU-1,<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA | SW-2 –<br>SW-10           | Applicable    |

Table D-2. Location-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority  | Comments  | Applicability  | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | ARAR Category |
|--|---|--|---|---------------------------|---------------|
| Title 23 of the California Code of Regulations, Division 1, Chapter 1, Article 8, Section 112, Regulated Streams, Section 115 , Dredged, Spoil and Waste Material, and Section 116, Borrow and Excavation Activities, Land and Channel , Section 120, Levees | <p>Identifies South Fork of Putah creek as a regulated stream. Provides standards governing design and construction of encroachments which may impact flood control works and floodways. Identifies that suitable dredged, spoil, or waste material may be deposited on or against the landside levee slope if it is not detrimental to the safety of the levee.</p> <p>Provides an easement to the Sacramento and San Joaquin Drainage District and states that areas adjacent to the levee must drain away from the levee toes for a minimum distance of ten (10) feet , that pavement for roadways and similar uses is permitted within ten (10) feet of the levee toe, and that pavement within ten (10) feet of the landside levee toe must have appropriate features that intercept seepage and prevent particle migration.</p> <p>Excavation activities are not allowed if those activities may negatively impact the area's hydraulics, hydrology, or sediment transport.</p> | Applies to work on or near the South Fork of Putah Creek levee. No area within the Site is currently designated as a floodway. | LFU-1, LFU-2, LFU-3, ST, WBH            | SW-2– SW-10               | Applicable    |
| Title 27 CCR, Section 20405 and Title 23 CCR, Section 2550.5   | Requires identification of the point of compliance, hydraulically downgradient from the area where waste was discharged to land.  | Applies to all waste units, other than CAMUs, where residual soil contamination may impact water quality.                      | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 and SW-6 thru SW-10  | Applicable    |

Table D-3. Action-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority  | Description   | Applicability   | Area <sup>i</sup>            | Alternative <sup>ii</sup> | ARAR Category |
|--|---|---|------------------------------|---------------------------|---------------|
| <b>Federal</b>   |   |   |                              |                           |               |
| Corrective Action Management Units (CAMU), RCRA and Non-RCRA Hazardous Wastes, 40 CFR Section 264.552 (22 CCR Section 66264.551/552) | <p>Defines a CAMU as an area within a facility that is used to consolidate, treat, store and/or dispose of waste for implementing Site cleanup (CCR 66264.552(a)). CAMU-eligible wastes are solid and hazardous wastes and media (groundwater, surface water, soils, and sediments), and debris that are managed for implementing cleanup (40 CFR 264.552(a)(1)).</p> <p>Includes minimum design requirements for disposal units including a composite liner and a leachate collection system. However, US EPA can approve alternate requirements if: 1) the alternate design prevents the migration of hazardous constituents into groundwater or surface water at least as effectively as the required liner and leachate collection system; or 2) the CAMU will be established in an area of existing contamination and that the alternate design (including one that does not include a liner) prevents migration that would exceed long-term remedial goals (40 CFR 264.552(e)(3)). Consolidation or placement of cleanup wastes into a CAMU is not considered land disposal and does not trigger land disposal restrictions or create a unit subject to minimum technology requirements (40 CFR 264.552 (a)(5)).</p> <p>Minimum treatment of CAMU-eligible waste is</p> | <p>Potentially applies to management of remediation waste at the Site.</p> <p>PHCs have not been identified in Site soil or solid waste so treatment is not required.</p> | LFU-1, LFU-2, LFU-3, WBH, ET | SW-3 – SW-9               | Applicable    |

Table D-3. Action-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority   | Description   | Applicability  | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | ARAR Category |
|---|---|--|---|---------------------------|---------------|
|   | <p>required if principal hazardous constituents (PHCs) are identified in the waste media. PHCs are carcinogens that pose a direct risk from ingestion or inhalation at or above 10<sup>-3</sup> or noncarcinogens that pose a potential direct hazard from ingestion or inhalation an order of magnitude or greater above the constituent-specific reference dose (40 CFR 264.552(e)(4)(i)(A)).</p> <p>If waste remains in place, a cap based on performance standards (40 CFR 264.552 (e)(6)(D)) and monitoring and notification program 264.552 (e)(5) will be installed.</p> |  |   |                           |               |
| Clean Water Act Section 404 (33 USC 1344, 33 CFR 328, and 40 CFR 230) | Establishes a national program to control the discharge of dredged or fill materials into "waters of the United States." "Waters of the United States" is defined to include all tributaries of navigable waters and nearly all wetlands.   | These requirements apply if Site remediation activities, well installation, and monitoring cause turbid water to enter drainages, or if Site activities impact wetlands adjacent to Putah Creek. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable    |
| Pretreatment Standards under the Clean Water Act 40 CFR Part 403      | Discharges of treated waste to sanitary sewers may be proposed and would be regulated under the pretreatment program of the UC Davis publicly-owned treatment works. The RWQCB is involved in oversight of the pretreatment program.  | Applies to areas where discharges to sanitary sewer may occur.   | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable    |

Table D-3. Action-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority   | Description   | Applicability   | Area <sup>i</sup>                                      | Alternative <sup>ii</sup> | ARAR Category                           |
|---|---|---|--|---------------------------|---|
| Transportation of Hazardous Material, 49 USC 5101-5127, and 49 CFR 172.3 and 172.200-700 <i>et seq.</i> | Regulates transportation, including security, of hazardous material in intrastate, interstate, and foreign commerce to ensure the safe transportation of such material.   | Applies to any hazardous materials and wastes transported off-Site that are generated during remediation, well installation, monitoring, or future development and maintenance. | LFU-1,<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA | SW-2 –<br>SW-10           | Applicable                              |
| Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978 (40 CFR 204, 205, 211)       | Construction and transportation equipment noise levels (e.g., portable air compressors, and medium and heavy trucks), process equipment noise levels, and noise levels at the property boundaries of the project are regulated under this act. State or local agencies typically enforce these levels.  | Applies to areas where noise may occur during remediation, installation of monitoring wells, and groundwater sampling.  | LFU-1,<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA | SW-2 –<br>SW-10           | Applicable                              |
| <b>State and Local</b>  |   |   |  |                           |   |
| State Water Resources Control Board Resolution No. 92-49 (as amended April 21, 1994)                    | Establishes requirements for investigation, cleanup, and abatement of discharges. Among other requirements, dischargers must clean up and abate the effects of discharges in a manner that promotes the attainment of either background water quality, or the best water quality that is reasonable if background water quality cannot be restored. Requires the application of Title 23, CCR, Section 2550.4 requirements to cleanups. | Applies to all areas at the Site where residual soil contamination may impact water quality.  | LFU-1,<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA | SW-2 –<br>SW-10           | Relevant and Appropriate <sup>iii</sup> |

Table D-3. Action-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority   | Description   | Applicability  | Area <sup>i</sup>                                      | Alternative <sup>ii</sup>      | ARAR Category |
|---|---|--|--|--------------------------------|---------------|
| State Water Resources Control Board Order No. 2009-0009 DWQ, National Pollution Discharge Elimination System (NPDES) Permit for Storm Water Discharges Associated with Construction Activity (authorized by 40 CFR Parts 122, 123, 124) | Regulates pollutants in discharge to storm water associated with construction activities (clearing, grubbing, or excavation) involving the disturbance of one acre or more. Ensures storm water discharges do not contribute to a violation of surface water quality standards. Includes measures to minimize and/or eliminate pollutants in storm water discharges and monitoring to demonstrate compliance. | This requirement is applicable to activities that will disturb one or more acres of the Site.<br><br>The post-construction requirements (to be determined) of the UC Davis Storm Water Management Plan will apply. | LFU-1,<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA | SW-3 –<br>SW-10                | Applicable    |
| Yolo-Solano Air Quality Management District Rules and Regulations, Regulation II, Rule 2.3, Ringlemann Chart  | Establishes a permissible limit on dust emissions (Ringlemann Chart).   | Applies to all areas where dust emissions may be generated during remediation, well installation, monitoring, future development, or maintenance activities.   | LFU-1,<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA | SW-2 –<br>SW-10                | Applicable    |
| Prohibited Acts (Health and Safety Code Section 41700)  | Prevents discharge of pollutants into the air that will cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public.  | Applies to all areas where dust emissions may be generated during remediation, well installation, monitoring, future development, or maintenance activities.   | LFU-1,<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA | SW-2 –<br>SW-10                | Applicable    |
| Title 27 CCR, Section 20080 (g) and Title 23 CCR, Section 2510 (g)  | Landfill units that were closed, abandoned, or inactive on or before November 27, 1984 and found to impair water quality may be required to develop and implement a corrective action program. If water quality is threatened, corrective action consistent with Title 27 and Title 23 is required.   | Applies to all waste units, other than CAMUs, where residual soil contamination may impact water quality.  | LFU-1,<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA | SW-2 and<br>SW-6 thru<br>SW-10 | Applicable    |

Table D-3. Action-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority   | Description   | Applicability  | Area <sup>i</sup>                           | Alternative <sup>ii</sup> | ARAR Category            |
|---|---|--|---|---------------------------|--------------------------|
| Title 27 CCR, Section 20380(e)(2)(c) and Title 23 CCR, Section 2550.0 | Monitoring for corrective action programs.  | Applies to any areas where a corrective action has occurred and monitoring is part of the approved remedy. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA     | SW-2 – SW-10              | Relevant and Appropriate |
| Title 27 CCR, Section 20430(b) and Title 23 CCR, Section 2550.10      | Establishment of a corrective action program that complies with water quality standards.  | Applies to any areas where a corrective action has occurred and monitoring is part of the approved remedy. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA     | SW-2 – SW-10              | Relevant and Appropriate |
| Title 27 CCR, Section 20410 and Title 23 CCR, Section 2550.6          | Requires monitoring of all soil cleaning activities for compliance with remedial action objectives for three years from the date of achieving cleanup levels. | Applies to all waste units, other than CAMUs, where residual soil contamination may impact water quality.  | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA     | SW-2 and SW-6 thru SW-10  | Relevant and Appropriate |
| Title 27 CCR, Section 20415 and Title 23 CCR, Section 2550.7          | Requires general soil, surface water, and groundwater monitoring for all areas where waste has been discharged to land.                                       | Applies to all waste units, other than CAMUs, where residual soil contamination may impact water quality.  | LFU-1, LFU-2, LFU-3, WBH, ET, ST, and HFSDA | SW-2 and SW-6 thru SW-10  | Applicable               |

Table D-3. Action-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority                       | Description  | Applicability   | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | ARAR Category |
|---|--|---|---|---------------------------|---------------|
| Health and Safety Code Section 25202.5      | Allows the Department of Toxic Substances Control (DTSC) to enter into agreements with property owners to restrict the use of the property.  | Applies to all areas where land use restrictions are required for protection of human health and the environment due to contaminants left in place at concentrations exceeding clean up levels. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable    |
| Health and Safety Code 25222.1 and 25233(c) | Regulates the use of property with institutional controls (land use covenant).   | Applies to all areas where land use restrictions are required for protection of human health and the environment due to contaminants left in place at concentrations exceeding clean up levels. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable    |
| Health and Safety Code 25232(b)(1)(A)-(E)   | Prohibits construction of residences, hospitals for humans, schools for persons under 21 years of age, day care centers, or any permanently occupied human habitation on hazardous waste property. Restrictions apply to areas zoned for open space, maritime/industrial, and educational/cultural reuses. | Applies to all areas where land use restrictions are required for protection of human health and the environment due to contaminants left in place at concentrations exceeding clean up levels. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable    |
| Health and Safety Code 25234                | Provides criteria for removing land use restrictions.  | Applies to all areas where land use restrictions are required for protection of human health and the environment due to contaminants left in place at concentrations exceeding clean up levels. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable    |

Table D-3. Action-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority  | Description   | Applicability   | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | ARAR Category |
|--|---|---|---|---------------------------|---------------|
| Health and Safety Code 25355.5(a)(1)(c)  | Allows DTSC to enter into agreements with property owners to restrict the use of the property.  | Applies to all areas where land use restrictions are required for protection of human health and the environment due to contaminants left in place at concentrations exceeding clean up levels.   | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable    |
| Title 22 CCR, Division 4.5, Chapter 39, Section 67391.1  | Provides requirements for land-use covenants.   | Applies to all areas where residual contamination requires additional controls based on land use.   | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable    |
| Control of Radioactive Contamination in the Environment (California Health and Safety Code, Section 114705, <i>et seq.</i> ) | Establishes state surveillance and control programs for activities that could lead to the introduction of radioactive materials into the environment. | Applies to remediation, well installation, monitoring, future development, or maintenance activities if radioactive materials are present at levels that could result in a significant release to the environment. If these conditions are encountered, state surveillance, monitoring, or other controls may be required to ensure that there are no significant releases of radioactive materials to the environment. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable    |

Table D-3. Action-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority  | Description   | Applicability   | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | ARAR Category            |
|--|---|---|---|---------------------------|--------------------------|
| Radiation Control Law (California Health and Safety Code, Section 114960, <i>et seq.</i> ) | Institutes and maintains a regulatory program for sources of ionizing radiation to provide for compatibility with standards and regulatory programs of the federal government and an integrated system within the state.  | Applies to all actions that would leave radionuclides in place at levels above natural background, and to actions such as remediation, well installation, monitoring, future development, or maintenance activities, where low-level radioactive waste may be removed and disposed of off-Site. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable               |
| Disposal of Radioactive Waste (California Health and Safety Code, Section 115261)          | Allows shallow burial of low-level radioactive waste (LLRW) if it is determined “that the siting, design, operation, and closure of the facility will, at a minimum, comply with the performance requirements and objectives of the Nuclear Regulatory Commission specified in Part 61 of Title 10 of the Code of Federal Regulations.” States that the facility must be sited, designed, constructed, and operated to consist of multiple, engineered barriers to provide for the retention of the radioactive waste within the engineered barriers. Exemptions to these requirements are established by the state on a case-by-case basis if it is demonstrated that land disposal is protective and does not pose a threat to groundwater. | Applies to all areas where radionuclides are disposed of at levels above natural background. Does not apply to undisturbed waste currently buried at the Site. Does not apply to remediation sites overseen by the US EPA (i.e., a listed CERCLA site).   | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Relevant and Appropriate |

Table D-3. Action-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority  | Description   | Applicability  | Area <sup>i</sup>                       | Alternative <sup>ii</sup> | ARAR Category            |
|--|---|--|---|---------------------------|--------------------------|
| State Department of Health Service Radiation Regulations (17 CCR, Chapter 5, Subchapter 4 Section 30100, <i>et seq.</i> )                | Presents regulations of the Department of Health Services pertaining to radiation, such as standards for protection against radiation, LLRW disposal, and transportation regulations.   | Applies to all areas where radionuclides may remain at levels above natural background. Also applies to all areas where waste containing radionuclides above natural background may be generated during remediation, well installation, monitoring, future development, or maintenance activities. | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable               |
| Executive Order D-62-02 by the Governor of the State of California   | Restricts the disposal of decommissioned waste in Class III landfills and unclassified waste management units, as described in 27 CCR, Sections 20260 and 20230.  | Applies to all areas where waste containing radionuclides above background may be generated during remediation, well installation, monitoring, future development, or maintenance activities.  | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Applicable               |
| California Water Code Section 13243  | Authorizes that a regional board, through a water quality control plan or through waste discharge requirements, may specify certain conditions or areas where the discharge of waste, or certain types of waste, will not be permitted.                                 | As no permits are required under CERCLA, the state has no authority to establish waste discharge requirements at the Site. The substantive provisions are required to be met.  | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Relevant and Appropriate |
| Porter-Cologne Water Quality Control Act (California Water Code, Div. 7 13000, <i>et seq.</i> and 23 CCR Chap. 15, 2510-2559, 2580-2601) | Establishes authority for state and regional water boards to determine site-specific waste discharge requirements and to regulate disposal of waste to land. Authorizes regional boards to protect existing and probable future beneficial uses of waters of the state. | As no permits are required under CERCLA, the state has no authority to establish waste discharge requirements at the Site. The substantive provisions are required to be met.  | LFU-1, LFU-2, LFU-3, WBH, ET, ST, HFSDA | SW-2 – SW-10              | Relevant and Appropriate |

Table D-3. Action-Specific Requirements for the Potential Remedies for the UC Davis Areas at LEHR/OCL - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Requirement/Authority                      | Description   | Applicability   | Area <sup>i</sup>                                      | Alternative <sup>ii</sup>      | ARAR Category |
|--|---|---|--|--------------------------------|---------------|
| Title 27 CCR, Sections 20200 (c) and 20210 | Requires that designated waste be discharged to Class I or Class II waste management units.   | Applies to discharges of designated waste (non-hazardous waste that could cause degradation of surface water or groundwater) to land for treatment, storage, or disposal.<br><br>Applies to waste generated during remediation and monitoring activities that is not managed in a CAMU. | LFU-1,<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA | SW-2 and<br>SW-7 thru<br>SW-10 | Applicable    |
| Title 27 CCR, Section 20230                | Requires that inert waste does not need to be discharged at classified units. Applies to discharges of inert waste to land for treatment, storage, or disposal. | Applies to waste generated during remediation and monitoring activities.  | LFU-1,<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA | SW-2 –<br>SW-10                | Applicable    |
| Title 27 CCR, Sections 20200 (c) and 20220 | Requires that non-hazardous solid waste be discharged to a classified waste management unit.  | Applies to discharges of non-hazardous solid waste to land for treatment, storage, or disposal.<br><br>Applies to waste generated during remediation and monitoring activities.   | LFU-1,<br>LFU-2,<br>LFU-3,<br>WBH, ET,<br>ST,<br>HFSDA | SW-2 –<br>SW-10                | Applicable    |

**Acronyms/Abbreviations:**

ARAR - applicable or relevant and appropriate requirement  
 CAMU - corrective action management unit  
 CCR - California Code of Regulations  
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act of 1980  
 CFR - Code of Federal Regulations  
 COC - constituent of concern  
 DTSC – Department of Toxic Substances Control

**Acronyms/Abbreviations (continued):**

FS - Feasibility Study  
LLRW – low-level radioactive waste  
MCL - Maximum Contaminant Level  
MCLG - Maximum Contaminant Level Goal  
NPDES - National Pollution Discharge Elimination System  
NRC - Nuclear Regulatory Commission  
PHC - principal hazardous constituent  
rem – Roentgen equivalent man  
RWQCB - Regional Water Quality Control Board  
USC - United States Code  
US EPA - United States Environmental Protection Agency  
VELB - Valley Elderberry Longhorn Beetle

**Note:**

The California Environmental Quality Act was listed as an ARAR in the Feasibility Study but has been determined to be functionally addressed by the CERCLA process, and therefore it is not required to be listed as a separate ARAR.

**i AREAS**

|       |                                     |
|-------|-------------------------------------|
| ET    | Eastern Trenches                    |
| HFSDA | Hopland Field Station Disposal Area |
| LFU-1 | Landfill Unit No. 1                 |
| LFU-2 | Landfill Unit No. 2                 |
| LFU-3 | Landfill Unit No. 3                 |
| ST    | Southern Trenches                   |
| WBH   | Waste Burial Holes                  |

**ii ALTERNATIVES**

**Soil and Solid Waste Alternatives:**

- SW-1 – No Action/No Further Action;
- SW-2 – Institutional Controls and Groundwater Monitoring;
- SW-3 – VOC “Hot Spot” Removal, Three On-Site Corrective Action Management Units with Graded Covers, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring;
- SW-4 – VOC “Hot Spot” Removal, Three On-Site Corrective Action Management Units with Evapotranspiration Caps, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring;
- SW-5 – VOC “Hot Spot” Removal, Three On-Site Corrective Action Management Units with Asphalt Caps, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring;

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- SW-6 – VOC “Hot Spot” Removal, Three On-Site Corrective Action Management Units with Multiple-Layer Caps, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring;
  - SW-7 - VOC “Hot Spot” Removal, Two On-Site Corrective Action Management Units with Multiple-Layer Caps, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring;
  - SW-8 - VOC “Hot Spot” Removal, One On-Site Lined Corrective Action Management Unit with Multiple-Layer Cap, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring;
  - SW-9 – Excavate and Dispose of Waste Off-Site, Waste Burial Holes Corrective Action Management Unit with Multiple-Layer Cap, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring; and
  - SW-10 – Excavate and Dispose of Waste Off-Site, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring

Table D-4. Special Status Species for Merritt and Davis Quadrangles - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Quadrangle           | Scientific Name                          | Common Name                                 | Federal Status          | California Status | DFG Status | CNPS List | Potential to Occur in Action Area   | Status Source | Occurrence Source |
|----------------------|--|---|-------------------------|-------------------|------------|-----------|---|---------------|-------------------|
| <b>Amphibians</b>    |  |   |                         |                   |            |           |   |               |                   |
| Merritt/Davis        | <i>Ambystoma californiense</i>           | California tiger salamander                 | Threatened <sup>1</sup> | Threatened        | SSC        | NA        | Low   | CNDDDB/US FWS | EIR               |
| Davis                | <i>Rana draytonii</i>                    | California red-legged frog                  | Threatened <sup>1</sup> | None              | SSC        | NA        | Low   | US FWS        | EIR               |
| <b>Birds</b>         |  |   |                         |                   |            |           |   |               |                   |
| Merritt/Davis        | <i>Elanus leucurus</i>                   | white-tailed kite                           | None                    | None              | FP         | NA        | Known to occur; nesting and foraging observed   | CNDDDB        | EIR               |
| Merritt/Davis        | <i>Buteo swainsoni</i>                   | Swainson's hawk                             | None                    | Threatened        | None       | NA        | Nests observed on-Site  | CNDDDB        | EIR               |
| Merritt/Davis        | <i>Athene cucularia</i>                  | burrowing owl                               | None                    | None              | SSC        | NA        | Have not been observed since UC Davis Raptor Center breeding program abandoned                            | CNDDDB        | SWERA             |
| Merritt/Davis        | <i>Agelaius tricolor</i>                 | tricolored blackbird                        | None                    | None              | SSC        | NA        | No suitable nesting habitats; observed foraging   | CNDDDB        | EIR               |
| Davis                | <i>Charadrius alexandrinus nivosus</i>   | western snowy plover                        | Threatened <sup>1</sup> | None              | SSC        | NA        | Not evaluated   | CNDDDB        | NA                |
| Davis                | <i>Ixobrychus exilis</i>                 | least bittern                               | None                    | None              | SSC        | NA        | Not evaluated   | CNDDDB        | NA                |
| Davis                | <i>Progne subis</i>                      | purple martin                               | None                    | None              | SSC        | NA        | Not evaluated   | CNDDDB        | NA                |
| <b>Fish</b>          |  |   |                         |                   |            |           |   |               |                   |
| Merritt/Davis        | <i>Hypomesus transpacificus</i>          | delta smelt                                 | Threatened <sup>1</sup> | Endangered        | None       | NA        | Low   | US FWS        | EIR               |
| Merritt/Davis        | <i>Oncorhynchus mykiss</i>               | Central Valley steelhead                    | Threatened <sup>1</sup> | None              | None       | NA        | Low   | US FWS        | EIR               |
| Merritt/Davis        | <i>Oncorhynchus tshawytscha</i>          | Central Valley spring-run chinook salmon    | Threatened <sup>1</sup> | None              | None       | NA        | Low   | US FWS        | EIR               |
| Merritt/Davis        | <i>Oncorhynchus tshawytscha</i>          | winter-run chinook salmon, Sacramento River | Endangered <sup>1</sup> | Endangered        | None       | NA        | Low   | US FWS        | EIR               |
| <b>Invertebrates</b> |  |   |                         |                   |            |           |   |               |                   |
| Merritt/Davis        | <i>Branchinecta lynchi</i>               | vernal pool fairy shrimp                    | Threatened <sup>1</sup> | None              | None       | NA        | None  | CNDDDB/US FWS | EIR               |
| Merritt/Davis        | <i>Lepidurus packardii</i>               | vernal pool tadpole shrimp                  | Endangered <sup>1</sup> | None              | None       | NA        | None  | CNDDDB/US FWS | EIR               |
| Merritt/Davis        | <i>Desmocerus californicus dimorphus</i> | Valley Elderberry Longhorn Beetle           | Threatened <sup>1</sup> | None              | None       | NA        | Moderate, has not been identified, but elderberry trees are known to occur on-Site                        | CNDDDB        | EIR               |
| Davis                | <i>Branchinecta conservatio</i>          | Conservancy fairy shrimp                    | Endangered <sup>1</sup> | None              | None       | NA        | None  | US FWS        | EIR               |
| <b>Mammals</b>       |  |   |                         |                   |            |           |   |               |                   |
| Merritt/Davis        | <i>Antrozous pallidus</i>                | pallid bat                                  | None                    | None              | SSC        | NA        | Low on-Site, moderate off-Site, suitable foraging and roosting habitat along Putah Creek                  | CNDDDB        | EA                |
| Merritt/Davis        | <i>Taxidea taxus</i>                     | American badger                             | None                    | None              | SSC        | NA        | Moderate - one was seen by UC Davis personnel in 1996   | CNDDDB        | EA                |
| <b>Plants</b>        |  |   |                         |                   |            |           |   |               |                   |
| Merritt/Davis        | <i>Atriplex cordulata</i>                | heartscale                                  | None                    | None              | NA         | 1B.2      | None  | CNDDDB        | EIR               |
| Davis                | <i>Atriplex joaquiniana</i>              | San Joaquin spearscale                      | None                    | None              | NA         | 1B.2      | None  | CNDDDB        | EIR               |
| Davis                | <i>Atriplex depressa</i>                 | brittlescale                                | None                    | None              | NA         | 1B.2      | None  | CNDDDB        | EIR               |
| Davis                | <i>Astragalus tener var. tener</i>       | alkali milk-vetch                           | None                    | None              | NA         | 1B.2      | None  | CNDDDB        | EIR               |
| Davis                | <i>Neostapfia colusana</i>               | Colusa grass                                | Threatened <sup>1</sup> | Endangered        | NA         | None      | None  | US FWS        | EIR               |
| Davis                | <i>Tuctoria muchronata</i>               | Solano grass                                | Endangered <sup>1</sup> | Endangered        | NA         | None      | None  | US FWS        | EIR               |
| Davis                | <i>Lepidium latipes var. heckardii</i>   | Heckard's pepper-grass                      | None                    | None              | NA         | 1B.2      | None  | CNDDDB        | EIR               |
| <b>Reptiles</b>      |  |   |                         |                   |            |           |   |               |                   |
| Merritt/Davis        | <i>Thamnophis gigas</i>                  | giant garter snake                          | Threatened              | Threatened        | None       | NA        | Low   | CNDDDB        | EIR               |
| Merritt/Davis        | <i>Emys marmorata</i>                    | western pond turtle                         | None                    | None              | SSC        | NA        | None on-Site; high off-Site - recorded in project vicinity; suitable habitat in South Fork of Putah Creek | CNDDDB        | EA                |

**Note:**  
<sup>1</sup>Critical habitat also designated for this species

**Acronyms/Abbreviations:**

1B.2 - plants rare, threatened, or endangered in California, but more common elsewhere

CNDDDB - California Natural Diversity Database (<http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp>)

Table D-4. Special Status Species for Merritt and Davis Quadrangles - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

**Acronyms/Abbreviations (continued):**

- CNPS - California Native Plant Society
- DFG - California Department of Fish and Game
- EA - Ecological Assessment (Michael Wood and Associates, 1997)
- EIR - Environmental Impact Report - whole campus evaluation (UC Davis, 2003)
- FP - fully protected
- NA - not applicable
- SSC - species of special concern
- SWERA - Site-Wide Ecological Risk Assessment (Blasland, Bouck, and Lee, Inc., 2006)
- UC Davis - University of California, Davis
- US FWS - United States Fish and Wildlife Service ([www.fws.gov/sacramento](http://www.fws.gov/sacramento))

**Sources:**

- Blasland, Bouck, and Lee, Incorporated, 2006. *Site-Wide Ecological Risk Assessment*, LEHR/SCDS, Prepared for the University of California, Davis, July.
- California Natural Diversity Database, <http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/spanimals.pdf> and <http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp>.
- Michael Wood and Associates, 1997. *Ecological Assessment of the Laboratory for Energy-related Health Research (LEHR) Facility and Vicinity*, Davis, Solano County, California, March.
- United States Fish and Wildlife Service (US FWS), Sacramento Fish and Wildlife Office, Pacific Southwest Region, [www.fws.gov/sacramento](http://www.fws.gov/sacramento).
- UC Davis, 2003. *Long-Range Development Plan Final Environmental Impact Report*, Volume I, October.

Table D-5. Radiation Doses at Preliminary Cleanup Goals - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Landfill Disposal Unit               | Preliminary Cleanup Goal <sup>1</sup><br>(pCi/g) | Screening Value <sup>2</sup><br>(pCi/g) | Risk at Preliminary Cleanup <sup>3</sup><br>Goal | Dose at Preliminary Cleanup Goal <sup>4</sup><br>(mrem/yr) |
|--------------------------------------|--|---|--|--|
| <b><u>Eastern Trenches</u></b>       |  |   |  |  |
| <b>0-10 feet bgs</b>                 |  |   |  |  |
| Tritium (Hydrogen-3)                 | 1.2  | 0.88                                    | 1.4E-06  | 0.32   |
| Carbon-14                            | 0.13   | 0.48                                    | 2.7E-07  | 0.18   |
| <b>Total Risk/Dose</b>               |  |   | <b>1.6E-06</b>                                   | <b>0.49</b>  |
| <b>10-20 feet bgs</b>                |  |   |  |  |
| Carbon-14                            | 0.13   | 0.48                                    | 2.7E-07  | 0.18   |
| <b>Total Risk/Dose</b>               |  |   | <b>2.7E-07</b>                                   | <b>0.18</b>  |
| <b>Total Risk/Dose 0-20 feet bgs</b> |  |   | <b>1.9E-06</b>                                   | <b>0.67</b>  |
| <b><u>Landfill Unit No. 1</u></b>    |  |   |  |  |
| <b>0-10 feet bgs</b>                 |  |   |  |  |
| Carbon-14                            | 0.13   | 0.48                                    | 2.7E-07  | 0.18   |
| <b>Total Risk/Dose</b>               |  |   | <b>2.7E-07</b>                                   | <b>0.18</b>  |
| <b>10-20 feet bgs</b>                |  |   |  |  |
| Carbon-14                            | 0.13   | 0.48                                    | 2.7E-07  | 0.18   |
| <b>Total Risk/Dose</b>               |  |   | <b>2.7E-07</b>                                   | <b>0.18</b>  |
| <b>Total Risk/Dose 0-20 feet bgs</b> |  |   | <b>5.5E-07</b>                                   | <b>0.35</b>  |
| <b><u>Landfill Unit No. 2</u></b>    |  |   |  |  |
| <b>0-10 feet bgs</b>                 |  |   |  |  |
| Carbon-14                            | 0.13   | 0.48                                    | 2.7E-07  | 0.18   |
| Cesium-137                           | 0.062  | 0.062                                   | 1.0E-06  | 0.062  |
| <b>Total Risk/Dose</b>               |  |   | <b>1.3E-06</b>                                   | <b>0.24</b>  |
| <b>10-20 feet bgs</b>                |  |   |  |  |
| Potassium-40                         | 14   | 0.12                                    | 1.2E-04  | 4.7  |
| Carbon-14                            | 0.13   | 0.48                                    | 2.7E-07  | 0.18   |
| Strontium-90                         | 0.24   | 0.24                                    | 1.0E-06  | 0.079  |
| <b>Total Risk/Dose</b>               |  |   | <b>1.2E-04</b>                                   | <b>5.0</b>   |
| <b>Total Risk/Dose 0-20 feet bgs</b> |  |   | <b>1.2E-04</b>                                   | <b>5.22</b>  |
| <b><u>Landfill Unit No. 3</u></b>    |  |   |  |  |
| <b>0-10 feet bgs</b>                 |  |   |  |  |
| Carbon-14                            | 0.13   | 0.48                                    | 2.7E-07  | 0.18   |
| Cesium-137                           | 0.062  | 0.062                                   | 1.0E-06  | 0.062  |
| Strontium-90                         | 0.24   | 0.24                                    | 1.0E-06  | 0.079  |
| <b>Total Risk/Dose</b>               |  |   | <b>2.3E-06</b>                                   | <b>0.32</b>  |
| <b>10-20 feet bgs</b>                |  |   |  |  |
| Carbon-14                            | 0.13   | 0.48                                    | 2.7E-07  | 0.18   |
| <b>Total Risk/Dose</b>               |  |   | <b>2.7E-07</b>                                   | <b>0.18</b>  |
| <b>Total Risk/Dose 0-20 feet bgs</b> |  |   | <b>2.5E-06</b>                                   | <b>0.49</b>  |

Table D-5. Radiation Doses at Preliminary Cleanup Goals - Applicable or Relevant and Appropriate Requirements, UC Davis LEHR/OCL

| Landfill Disposal Unit               | Preliminary Cleanup Goal <sup>1</sup><br>(pCi/g) | Screening Value <sup>2</sup><br>(pCi/g) | Risk at Preliminary Cleanup <sup>3</sup><br>Goal | Dose at Preliminary Cleanup Goal <sup>4</sup><br>(mrem/yr) |
|--------------------------------------|--|---|--|--|
| <b>Southern Trenches</b>             |  |   |  |  |
| <b>0-10 feet bgs</b>                 |  |   |  |  |
| Carbon-14                            | 0.48   | 0.48                                    | 1.0E-06  | 0.65   |
| <b>Total Risk/Dose</b>               |  |   | <b>1.0E-06</b>                                   | <b>0.65</b>  |
| <b>Total Risk/Dose 0-20 feet bgs</b> |  |   | <b>1.0E-06</b>                                   | <b>0.65</b>  |
| <b>Waste Burial Holes</b>            |  |   |  |  |
| <b>0-10 feet bgs</b>                 |  |   |  |  |
| Carbon-14                            | 0.32   | 0.48                                    | 6.7E-07  | 0.43   |
| Tritium (Hydrogen-3)                 | 1.2  | 0.88                                    | 1.4E-06  | 0.32   |
| Strontium-90                         | 0.24   | 0.24                                    | 1.0E-06  | 0.079  |
| Cesium-137                           | 0.062  | 0.062                                   | 1.0E-06  | 0.062  |
| <b>Total Risk/Dose</b>               |  |   | <b>4.0E-06</b>                                   | <b>0.89</b>  |
| <b>10-20 feet bgs</b>                |  |   |  |  |
| Carbon-14                            | 0.32   | 0.48                                    | 6.7E-07  | 0.43   |
| Tritium (Hydrogen-3)                 | 1.2  | 0.88                                    | 1.4E-06  | 0.32   |
| Strontium-90                         | 0.24   | 0.24                                    | 1.0E-06  | 0.079  |
| <b>Total Risk/Dose</b>               |  |   | <b>3.0E-06</b>                                   | <b>0.83</b>  |
| <b>Total Risk/Dose 0-20 feet bgs</b> |  |   | <b>7.1E-06</b>                                   | <b>1.72</b>  |

**Notes:**

- <sup>1</sup> FS - Volume 1 preliminary cleanup goal
- <sup>2</sup> Screening values for radiologic constituents are US EPA PRGs updated in August 2010, accessed January 2012 (<http://epa-prgs.ornl.gov/radionuclides/download.shtml>).
- <sup>3</sup> Risks presented are those for radiological constituents only.
- <sup>4</sup> Conversion of risk to dose calculated using RESRAD version 6.5 (ANL, 2001)

**Acronyms/Abbreviations:**

- ANL - Argonne National Laboratory
- bgs - below ground surface
- FS - Feasibility Study
- mrem/yr - 1/1000<sup>th</sup> of a Roentgen equivalent man dosage per year
- pCi/g - picocuries per gram
- PRG - Preliminary Remediation Goal
- US EPA - United States Environmental Protection Agency

**Reference:**

Argonne National Laboratory (ANL), 2001. *User's Manual for RESRAD Version 6*, Environmental Assessment Division, Argonne National Laboratory, July.

## **ATTACHMENT D-1**

### **LEHR/OLD LANDFILL VELB MITIGATION COST ESTIMATE**

# Memo

**To:** James Aborn, Sue Fields  
**From:** Andrew Fulks  
**CC:** Sid England  
**Date:** 12/7/2010  
**Re:** LEHR/Old Landfill VELB Mitigation Cost Estimate

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This memo outlines the stem counts and cost estimates associated with Valley Elderberry Longhorn Beetle (VELB) mitigation for the LEHR/Old Landfill project.

Thirty elderberry shrubs (host plant for the federally threatened VELB) were located in or adjacent to the project area (Attachment - Figure 1). An additional 3 shrubs were also noted to the west of the project area, on a previously remediated area. The additional 3 shrubs are not included in the stem counts and tables below, as they were located for reference only. Surveyed shrubs had stem diameters 1 inch or greater at ground level, which according to the U.S. Fish and Wildlife Service's Conservation Guidelines for the Valley Elderberry Longhorn Beetle (U.S. Fish and Wildlife Service 1999), is considered potential VELB habitat. None of the shrubs located within the survey area had potential VELB exit holes.

The elderberry shrubs occur within a non-riparian former research facility located on South Campus. Though non-riparian, the site is near Putah Creek. The survey area land uses include abandoned facilities and fields. It is unlikely that VELB occurs in the project area due to the presence of Argentine ants. Table 1 represents the results of the survey.

**Table 1**

| Location   | Stems (dia. at ground level) | Exit Holes on Shrubs | Elderberry Seedling Ratio | Associated Native Plant Ratio | Existing Stems | No. Elderberry Plantings Required | No. Associated Plantings Required |
|--|------------------------------|----------------------|---------------------------|-------------------------------|----------------|-----------------------------------|-----------------------------------|
| Non-riparian   | Stems 1"-3"                  | N                    | 1:1                       | 1:1                           | 89             | 89                                | 89                                |
| Non-riparian   | Stems 3"-5"                  | N                    | 2:1                       | 1:1                           | 39             | 78                                | 78                                |
| Non-riparian   | Stems >5"                    | N                    | 3:1                       | 1:1                           | 54             | 162                               | 162                               |
| <b>Number of Elderberry and Associate Species to be Installed:</b> |                              |                      |                           |                               |                | <b>329</b>                        | <b>329</b>                        |

### Cost Estimate

|                                |                  |
|--------------------------------|------------------|
| Planning and Permitting        | \$100,000        |
| Implementation – East Landfill | \$57,000         |
| Implementation - LEHR          | \$34,000         |
| Maintenance and Monitoring     | \$78,000         |
| <b>Total Estimated Cost:</b>   | <b>\$269,000</b> |

The amount includes for planning and permitting is an allocation and not a refined budget estimate. The cost cannot be determined accurately until the permitting process is started.

For comparison, in 2007 a UC Davis Medical Center project which impacted elderberry shrubs, chose to purchase mitigation credits from a privately-owned mitigation bank for a cost of \$3,500/credit. One credit is required per 5 stems. If UC Davis were to choose this option for the LEHR/Old Landfill project, the cost would be \$230,300, plus the costs of permitting and shrub re-location. The cost estimate for the LEHR/Old Landfill project includes permitting and moving the existing shrubs.



Figure 1

## **ATTACHMENT D-2**

### **DEPARTMENT OF TOXIC SUBSTANCES CONTROL MEMO CONCERNING RADIOLOGICAL ISSUES**



**Linda S. Adams**  
Acting Secretary for  
Environmental Protection



## Department of Toxic Substances Control

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Deborah O. Raphael  
Director  
8800 Cal Center Drive  
Sacramento, California 95826-3200



**Edmund G. Brown Jr.**  
Governor

### MEMORANDUM

**TO:** Kathy Setian  
Superfund Remedial Project Manager  
U.S. Environmental Protection Agency, Region 9

**FROM:** John Bystra  
Hazardous Substances Engineer  
Department of Toxic Substances Control

**DATE:** Jun 14, 2011

**SUBJECT:** Laboratory for Energy Related Health Research, Davis, California:  
radiological issues in reference to waste left in place and Corrective Action  
Management Units (CAMUs)

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### DOCUMENTS REVIEWED

California Department of Public Health (CDPH) Memorandum: Dispute of the Focused Strategic Sites (FSS) Record of Decision (ROD), (DSR# 1442-3) for the former McClellan Air Force Base (AFB)

Envirostor site documents uploaded: McClellan Business Park, Envirostor ID: 80001223

### INTRODUCTION

John Bystra of the California Department of Toxic Substances Control (DTSC) has reviewed the above CDPH Memorandum and Envirostor documents and presents his comments and recommendations in this memorandum. His review of the above included consulting with Charlie Ridenour and Stephen Pay of DTSC for their input. DTSC's review focused on the Memorandum and associated Envirostor documents for purposes of comparison with the LEHR site conditions and present issues of pertinence concerning radiologic materials moving forward. If you have any questions or comments regarding this memorandum, please contact John Bystra at (916) 255-3669.

## **REVIEW SUMMARY**

The CDPH Memorandum summarizes discussions and conclusions arrived at for the former McClellan Air Force Base (AFB) with respect to Low Level Radioactive Waste (LLRW), and is included as an attachment. The Memorandum discussed leaving waste in place, as well as inclusion of such waste into a Corrective Action Management Unit (CAMU), with additional discussion focusing on restrictions to future transferees of the land.

CDPH proposed four basic thoughts:

1. That the Health and Safety Code (H&SC), Section 115261, prohibits the disposal of LLRW by “shallow land burial” without the use of additional confinement by engineered barriers, and that utilizing a CAMU would violate this Section (thus creating an unlicensed de facto LLRW disposal site).
2. For the scenario of leaving LLRW in the ground and ‘capping in place’, California Code of Regulations (CCR), Title 17, Section 30104 provides for an exemption to licensure requirements: any exemption would require the U.S. Environmental Protection Agency’s (EPA) certification that the remedy selected is sufficiently health protective and that any radioactive material on site poses no significant hazard to life and property. Several characteristics are listed as to the expectations of the submitted license-exemption package. Any covenants of record governing future use would need to be specifically set forth in the EPA certification letter to CDPH.
3. That once this property is transferred to a non-federal entity, that transferee would have to secure a radioactive materials license or license exemption if radioactive materials remain onsite.
4. For purposes of CDPH to agree with the Record of Decision (ROD) for this site, several Applicable or Relevant and Appropriate Requirements (ARARs) addressing radioactive materials must be included in the ROD (which are listed specifically in the Memorandum).

## **COMMENTS**

John Bystra, Stephen Pay, and Charlie Ridenour had the following comments concerning the CDPH Memorandum:

1. The discussion of using a CAMU came up several times, and H&SC Section 115261, while being restrictive, does allow CDPH to issue a license to dispose of LLRW, if CDPH determines “that the siting, design, operation, and closure of the facility will, at a minimum, comply with the performance requirements and objectives of the Nuclear Regulatory Commission specified in Part 61 of Title 10 of the Code of Federal Regulations.”

2. "Shallow land burial", as defined in Section 115261 of the H&SC, "means the disposal of low-level radioactive waste in or within the upper 30 meters of the earth's surface without the use of additional confinement by engineered barriers. Shallow land burial does not include the disposal of low-level radioactive waste if the disposal facility meets the requirement of subdivisions (b) and (c)." This might allow for LLRW to not be considered as "shallow land burial" if "additional confinement by engineered barriers" is in place that meets the requirements of subdivisions (b) and (c) of H&SC 115261.
3. The purposes of a CAMU were discussed, and the language of CCR which deals with CAMUs as pertains to this discussion is as follows (CCR, Title 22, Subsection 66264.551) : "Corrective action management unit means an area within a facility that is used only for managing remediation wastes for implementing corrective action or cleanup at the facility. A corrective action management unit shall be located within the contiguous property under the control of the owner or operator where the wastes to be managed in the corrective action management unit originated. One or more corrective action management units may be designated at a facility.

(1) Placement of remediation wastes into or within a corrective action management unit does not constitute land disposal of hazardous wastes.

(2) Consolidation or placement of remediation wastes into or within a corrective action management unit does not constitute creation of a unit subject to minimum technology requirements."

As we discussed, and the regulation describe, the whole purpose of a CAMU was to allow for situations in which consolidation or placement of remediation wastes could be done so as not to impose additional requirements upon the owner or operator above and beyond the regulatory requirements ensuring both short and long-term safety of receptors and the environment from the wastes.

4. CCA, Title 17, Subsection 30256 and 30256 (k)(2) state the following : " Specific licenses shall be terminated by written notice to the licensee when the Department determines that: Reasonable effort has been made to eliminate residual radioactive contamination, if present; and..."

From the above, it reads that if "reasonable effort has been made to eliminate residual radioactive contamination" that a license from CDPH would be unnecessary to regulate any residual contamination, as long as it would also abide by 30256 (k)(1) and 30256 (k)(3), which discuss proper disposal and performing a radiation survey showing unrestricted use for the site, respectively. 'Reasonable effort' would then need to be defined as a group to whether the LEHR site has already achieved this requirement as part of previous activities.

## **RECOMMENDATIONS**

It appears that one of the chief differences between the McClellan AFB site and the LEHR site is the final disposition of the property concerning eventual land transfer. The McClellan site will be transferring property to private or county entities, whereas the LEHR site property will unlikely change hands, and remain in the custody of UC Davis, a state entity. Also, any existing licensing owned by UC Davis may allow for LLRW to be treated as part of site activities, as long as the material is 'capped in place', and remains the property of the same state entity.

## **ATTACHMENTS**

California Department of Public Health Memorandum – Dispute of the Focused Strategies Sites (FSS) Record of Decision (ROD), (DSR# 1442-3) for the former McClellan Air Force Base (AFB), dated May 18, 2011.

## **ATTACHMENT D-3**

### **LEHR TEAM MEETING MINUTES FOR JUNE 14, 2011**

**Laboratory for Energy-Related Health Research/South Campus Disposal Site (LEHR/SCDS)**  
**University of California, Davis**  
**Environmental Restoration Program**  
**LEHR Team Meeting Summary**  
*Final*  
**June 14, 2011**  
**Recorded by: Christine Judal**

Meeting Participants:

James Aborn, UC Davis  
 Karla Brasaemle, TechLaw, Inc.  
 Mike Butherus, S.M. Stoller  
 John Bystra, DTSC

Bob Devany, Weiss Associates  
 Sue Fields, UC Davis  
 Tony Garvin, UCOP

Christine Judal, UC Davis  
 Markus Pierce, RWQCB  
 Kathy Setian, USEPA

Lynne Srinivasan, Weiss Associates  
 Mary Stallard, Weiss Associates  
 Jeff Wong, DPH/RHB

The major items discussed, decisions made, and actions recommended are summarized below:

| SUBJECT   | DISCUSSION   | ACTIONS/<br>DECISIONS   |
|---|--|---|
| <b>GENERAL</b>                                  |  |   |
| <b>Announcements</b>                            | <ol style="list-style-type: none"> <li>1. Marcus Pierce has replaced Katherine Dominic as the RWQCB representative for the Site.</li> <li>2. The “LEHR 101” update session is planned be held at LEHR and will include a site tour prior in the morning. [Post meeting note: the LEHR 101 Site tour and presentation will be held at 10:30 AM on July 22, 2011.]</li> </ol>  |   |
| <b>Approval of May 10, 2011 Meeting Minutes</b> | <ol style="list-style-type: none"> <li>1. John Bystra has previously provided his comments by email.</li> <li>2. Setian requested that her statement in the minutes be modified to say “The RCRA CAMU rule that applies to hazardous waste does not apply to radiological waste.”</li> <li>3. The minutes were approved with these changes.</li> </ol>   | Weiss to send out indexed CD with final meeting minutes through May 2011. |
| <b>Review of Previous Meeting Action Items</b>  | <ol style="list-style-type: none"> <li>1. <b>Bystra will send a synopsis of issues at another site dealing with radiologic land disposal.</b> Complete.</li> <li>2. <b>Wong will provide additional clarification on California radiologic land disposal requirements as they relate to UC’s Soil/Solid Waste (SW) FS alternatives.</b> Meeting discussion and resolution: Setian explained that CAMU’s generally involve consolidation of waste onsite and can afford better long term protection and frees up land for other use. However, for the LEHR site, the question has narrowed to what should be done if we encounter radiological waste, since the CAMU regulations only address hazardous waste. Setian emphasized that EPA will never release a site if waste is left in place. There will always be a 5-year review, which provides a process for the ROD to be reopened. During the LEHR FS review, Setian plans to have individual or collective discussions with the California state agencies to enter into the administrative record each agency’s assessment of the nine alternatives, and how they rank in terms of protectiveness.</li> </ol> |   |

| SUBJECT | DISCUSSION  | ACTIONS/<br>DECISIONS   |
|---------|---|---|
|         | <p>Therefore, she asked Jeff Wong to provide the RHB view of leaving radiological waste in place.</p> <p>Wong responded that the position of RHB is that they will rely on EPA to ensure that the selected remedy is sufficiently protective. He indicated that RHB would require a license exemption if radioactive waste remained onsite and if the site was released by EPA and UC transferred the property. It was agreed that Health and Safety Code Section 115261 will be included as an ARAR in the FS Report.</p> <p>Wong mentioned that there is a recent document that defines twelve items that the state needs to grant an exemption under Health and Safety Code Section 115261. Bystra added that this document is a memo from DPH to the DTSC project manager at the McClellan site, identifying twelve items or characteristics as well as ARARs. Bystra forwarded the memo to meeting participants.</p> <p>Bystra added that the CAMU options make the most sense in terms of protectiveness, because this puts all the material in one area. Sending the radiological waste offsite may also be protective but moving all waste offsite may be excessive.</p> <p>Setian said that EPA would like to have further discussion with the state agencies regarding the protectiveness of the various alternatives. Garvin indicated that UC would like letters from the agencies down the road indicating their acceptance of the ARARs and alternatives so there would be no confusion in the future about the cleanup decision. He asked whether EPA will ask for a formal letter from the state agencies. Setian responded that she wasn't sure if a letter would be requested, but noted that the state agency positions will be documented in the Proposed Plan as well as the ROD.</p> <p>Garvin said that UC considered Alternatives 2 through 9 to be protective. He added that the UC system is suffering from the state's budget cuts and may have great difficulty funding an expensive cleanup of the LEHR site.</p> <p><b>3. UC Davis and Weiss will search project records to see if EPA had made a formal request to the state agencies for ARARs for the UC Davis FS.</b> Outstanding. [Post meeting note: Completed: Bob Devany sent an email on June 28, 2011 stating that team meeting minutes and available project files were searched back to at least 2006 without finding direct or indirect documentation indicating that EPA had made a formal ARAR request for the UC Davis FS. The state agencies did submit comments on certain ARARs that were included in the initial Screening of Alternatives FS that was submitted by UC Davis in the 2007 time frame. ]</p> <p><b>4. UC Davis will prepare statistical analysis of site HSU-1 background well representativeness.</b> Complete—analysis will be provided in a technical memorandum.</p> <p><b>5. UC Davis will request a meeting with EPA to coordinate Valley Elderberry Longhorn Beetle (VELB) concerns.</b> Completed: UC Davis, EPA and USFWS met on June 7 and developed a potential path forward to deal with VELB concerns.</p> | <p>Health and Safety Code Section 115261 will be included as an ARAR in the FS Report</p> |

| SUBJECT   | DISCUSSION   | ACTIONS/<br>DECISIONS  |
|---|--|--|
| <b>UC Davis Items</b>   |  |  |
| <b>Remediation Update for Third and Fourth Quarter 2010 and First Quarter of 2011</b> | <p><b><u>IRA System Update</u></b></p> <p>Rate of Operation by Quarter:</p> <ul style="list-style-type: none"> <li>• Q3 2010: ~ 63% (System was shut down on Aug 27 for sewer line repairs. Not restarted until Oct 26.)</li> <li>• Q4 2010: ~ 48% (System electrical problems discovered on Nov 15; system was down until Dec 1 when main fuel panel fuses were replaced. Additional work was performed on main panel Dec 23.)</li> <li>• Q1 2011: ~ 95% (System intermittently shut down during rain events.)</li> </ul> <p>Total Groundwater Extracted by Quarter (with operational flow rate between 58-83 gallons per minute):</p> <ul style="list-style-type: none"> <li>• Q3 2010: 4.7 million gallons</li> <li>• Q4 2010: 4.3 million gallons</li> <li>• Q1 2011: 10 million gallons</li> </ul> <p>Chloroform in extracted water (sewer discharge limit is 420 µg/L):</p> <ul style="list-style-type: none"> <li>• Q3 2010: 15 micrograms per liter (µg/L) sampled on 10/21/10</li> <li>• Q4 2010: 14 µg/L sampled on 12/23/10</li> <li>• Q1 2011: 11 µg/L sampled on 3/22/11</li> </ul> <p>Graphs were presented showing chloroform and chromium trends in EW2-1 and in wells UCD2-29, 2-30, and 2-31:</p> <ul style="list-style-type: none"> <li>• Chloroform: A site-wide trend showing declining chloroform concentrations suggests that the source may be becoming depleted.</li> <li>• Chromium: During the years 2007-2009, there was an increase in chromium concentrations in UCD2-29. However, the trend in UCD 2-29 for total chromium has been declining following the Chromium Pilot Test that was initiated in January 2010. Chromium concentrations in other nearby wells (UCD2-30 and -31) should not be altered by the pilot test due to their locations, yet they also show reduced concentrations in 2010 and 2011 samples.</li> </ul> <p><b><u>DDC System Update:</u></b></p> <p>Rates of Operation:</p> <ul style="list-style-type: none"> <li>• Q3 2010: System shutdown on July 2 due to low water levels; restarted in Q4 (Oct 21, 2010)</li> <li>• Q4 2010: DDC-1 was operational 78% (off during first 3 weeks of quarter); DDC-5 was operational 17% (operational starting on Dec 15, 2010)</li> <li>• Q1 2011: both DDC-1 and DDC-5 operational 100%</li> <li>• DDC-1 and DDC-5 are responsible for all mass removed. Other DDC wells 0% operational.</li> </ul> <p>A trend graph was presented showing chloroform concentrations in DDC-1C since it began operating in December</p> | <p>Setian requested a presentation on the 2010 Annual Water Monitoring Report during the next LEHR Team meeting.</p> <p>Brasaemle requested an update on the Pilot Test rebound during next meeting.</p> |

| SUBJECT                                   | DISCUSSION   | ACTIONS/<br>DECISIONS  |
|---|--|--|
|   | <p>2000. This graph shows that the DDC has been very effective in reducing the mass chloroform concentrations. The graph shows that concentrations in DDC-1C have declined from a high of 8,000 µg/L in 2003 to about 100 µg/L in 2011.</p> <p>A trend graph was presented showing groundwater elevations during the years 2002-2011 in the DDC system monitoring well UCD1-51. During the summer months of 2009 and 2010, water levels dropped significantly and this well was dry. Whenever the water table drops below 5 feet below mean sea level, the DDC system must be shut down until the agricultural pumping season is over and the groundwater levels recharge. There is more water this year, but the water table has not fully recovered. Therefore, UC Davis may need to shut down the system again in August 2011.</p>  |  |
| <b>Solid Waste FS Update</b>              | <ul style="list-style-type: none"> <li>• UC Davis met with the California Department of Public Health - Radiologic Health Branch on June 1, 2011. UC Davis presented the proposed SW FS alternatives to DPH-RHB staff. Per the earlier discussion in the meeting, the DPH-RHB said that it would rely on EPA evaluation of the SW remedy protectiveness, but would require that Health and Safety Code Section 115261 be included in the FS as an ARAR.</li> <li>• UC Davis is currently working on a response to comments on the draft UC Davis Solid Waste FS. Possible modification to some of the alternatives may happen in order to resolve agency comments. Additional comments were received from EPA on May 27, 2011. After today's meeting, UC Davis is planning a breakout meeting with EPA to discuss their comments.</li> </ul>   |  |
| <b>UC Davis Project Schedule</b>          | <p>The Overall UC Davis project schedule was presented in timeline format. Devany noted that all the agencies are seeing this schedule for the first time. The schedule is in calendar days (not workdays) and has been broken into four blocks: Solid Waste Feasibility Study and Groundwater Feasibility Study, Proposed Plan, ROD, and the Remediation Stage. Garvin noted that the schedule may need to accommodate the movement of Elderberry shrubs during the dormant season.</p> <p>A separate timeline schedule presented upcoming Report Deliverables. This timeline shows that the Chromium Pilot Test Report and the 2010 Annual Water Monitoring Report are both expected to be provided in late July. The Regional Chromium Background Technical Memorandum is expected to be provided in September 2011. Devany added that although the draft Groundwater Feasibility Study Report is planned to begin in August 2011, EPA must first determine the clean-up goals.</p> | Setian requested that the schedule include a Five Year Review in 2020.                               |
| <b>DOE Items</b>                          |  |  |
| <b>Remedial Action Progress</b>           | <ul style="list-style-type: none"> <li>• The second round of baseline groundwater samples for the six new DOE site wells was completed in May. The results for this sampling will be presented at the next LEHR Team meeting.</li> <li>• UC Davis Office of Real Estate is currently reviewing the draft legal descriptions for site areas subject to land use restrictions. This review is expected to be complete in about two weeks.</li> <li>• An update of the Quality Assurance Project Plan is being finalized. This document is currently in review in the Denver office.</li> </ul>   | DOE will present a summary of results for the first two rounds of sampling at the next team meeting. |
| <b>Draft DTSC Land Use Covenant (LUC)</b> | DTSC issued draft Covenant to Restrict Use of Property on June 1 for team review. Bystra noted that, after completing this draft, he was unable to reach the DTSC attorney. Therefore, they have not completed the DTSC internal review, but Bystra expects it to be complete by June 29. EPA said that they will not submit it for legal review until DTSC completes their legal review. EPA said that they should be able to complete their legal review by August 1 assuming  |  |

| SUBJECT | DISCUSSION   | ACTIONS/<br>DECISIONS |
|---------|--|-----------------------|
|         | <p>that DTSC meets its June 29 target date. Devany noted that DOE has a milestone to record the Covenant by September 30. Bystra also mentioned that Bonnie Wolstoncroft would like to know whether it is expected that the final UC Davis ROD will change the LUCs or require additional LUCs. Both Setian and Garvin responded that there will be different deed restrictions defined in the UC Davis ROD, so there is no need to delay current progress on the DOE area LUCs. The DOE schedule milestones are:</p> <ul style="list-style-type: none"> <li>• Finalize LUC areas legal descriptions and survey map (UC Davis and DOE – June 30)</li> <li>• Review draft covenant (DOE, EPA, UC Davis, RWQCB, DTSC Attorney and DPH-RHB—August 1)</li> <li>• Sign covenant (UC Davis and DTSC—September 15)</li> <li>• Record against the property with the Recorder Division of the Solano County Department of the Assessor/Recorder and DTSC (UC Davis, Solano County and DTSC—September 30)</li> </ul> |                       |

Next LEHR Team Meeting is scheduled for August 12, 2011. A site tour and project background/update for LEHR Team members who wish to attend is also scheduled for July 22, 2011.