6.0 CUMULATIVE EFFECTS

Cumulative environmental effects consider the combined effects on the environment of the Proposed Action in combination with past, present, and anticipated future actions. **Table 6.0-1, Cumulative Projects,** presents an inventory of recently completed, ongoing, planned, pending, and/or reasonably foreseeable proposed actions in the surrounding area and generally in the same timeframe as the Proposed Action (between 2010 and 2018). The listed projects, which include Department of Energy (DOE) projects at Lawrence Berkeley National Laboratory (LBNL), University of California (UC) projects at LBNL and on the adjacent UC Berkeley campus, and, for some analyses, UC projects in the adjacent City of Berkeley, were considered in the evaluation of cumulative effects. As appropriate, general growth in the City of Berkeley through 2018 was also considered in the analysis. Projects located at the LBNL site are shown in **Figure 6.0-1, Cumulative Projects**.

The University of California's Computational Research and Theory (CRT) Facility Final Environmental Impact Report, certified in 2008, considers cumulative impacts out to 2025, which is the planning horizon for the 2006 LBNL LRDP. The 2006 LRDP provides guidance for any future development at LBNL without the assurance that such development will occur. LRDP growth projections include projects that would only be executed if and when funding becomes available. Such funding has historically been very much open to question. Absent financing, the projections are not reasonably foreseeable. By contrast, this EA considers the cumulative effects of projects which have reached a "Critical Decision – 0" approval (or where funding is otherwise anticipated) and are therefore reasonably foreseeable. Accordingly, the timeline for cumulative effects has been set at 2018, which is the anticipated completion date of Seismic Phase 3, the latest project that has reached a Critical Decision – 0 approval. Any National Environmental Policy Act (NEPA) document prepared on Seismic Phase 3 would, of course, account for any projects, which are reasonably foreseeable at that time. The approximate planned time frame of each of the cumulative projects as known in August 2010 is presented in **Table 6.0-1.**

Table 6.0-1
Cumulative Projects

	2010	2011	2012	2013	2014	2015	2016	2017	2018
CRT Proposed Action									
Projects at LBNL									
User Support Building									
Building 25 Demolition									
General Purpose Lab									
Old Town Demolition									
Solar Energy Research Center									
Seismic Phase 1 Building 50									
Seismic Phase 2									
Seismic Phase 3									
Building 55 Demolition									
Building 51 and Bevatron									
Building 71 BELLA									
Building 71 Trailer Demolition									
User Test Bed Facility									
Building 74 Modernization									
Building 85 Seismic Strengthening									
Projects at UC Berkeley									
SCIP East – SAHPC									
SCIP East – Stadium Seismic Upgrade									
SCIP West – Law School Infill									
SCIP West – Utilities/ROW in Piedmont Avenue									
SCIP West – Gayley Road Storm and Sewer									
Campbell Hall Replacement									
Blum Center/Naval									

The table above does not include the Next Generation Light Source (NGLS). The Next Generation Light Source (NGLS), as envisioned, would be a linear accelerator "light source" capable of producing extraordinarily bright, short, soft x-ray pulses at rates of hundreds of thousands of times per second. Soft x-rays are ideal for studying solar cells, fuel cells, advanced electronics, biological systems, cleaner catalysts, and high-temperature superconductors. If located at the LBNL site, the NGLS could be a national user facility available not only to scientists at LBNL and UC Berkeley but to researchers around the nation and the world. While the idea of locating the NGLS at the LBNL site is being actively studied by Laboratory management, UC LBNL has not formally proposed this to the DOE, nor has it entered into the required DOE "Critical Decision" process for the NGLS. Consequently, the NGLS is not considered a reasonably foreseeable project at LBNL at this time. Because NGLS at LBNL is not a reasonably foreseeable project at this time, the NGLS is not considered further in this NEPA analysis.

Currently, there are no foreseeable development projects planned at the RFS[1] or in adjacent areas of the City of Richmond (DOE 2010). Therefore, the only cumulative impacts related to Alternative 2 at the RFS are greenhouse gas emissions and air quality. Discussions of these cumulative issues are located in this chapter.

6.1 CONSTRUCTION PROJECTS NEAR THE PROPOSED ACTION

6.1.1 DOE Projects at LBNL

User Support Building

The three-story, approximately 2,787-square-meter (30,000-gross-square-foot [gsf]) User Support Building will include assembly space, support laboratories, and offices. An existing 1,489-square-meter (16,038-gsf) structure, Building 10, which housed approximately 24 full-time LBNL staff, was demolished to create space for the User Support Building. A California Environmental Quality Act (CEQA) Initial Study/Mitigated Negative Declaration was prepared and circulated in fall 2006 and adopted by the UC Board of Regents (The Regents) in January 2007. A categorical exclusion was filed for the project under NEPA in December 2006. Demolition of Building 10 was completed in 2007. Construction of the User Support Building was initiated in June 2008 and is expected to be completed by late 2010.

Old Town Demolition

This project covers the demolition, decontamination, and environmental restoration of certain buildings in the LBNL "Old Town" area in the center of the LBNL site. Depending on funding, up to 14 buildings (approximately 5,100 square meters [55,000 gsf]) would be demolished, including Buildings 4, 5, 7, 7C, 14, 16, 25A, 40, 41, 44, 44A, 44B, 52, and 52A. In addition, any contaminated soil under these structures would be remediated, and groundwater treatment systems would be installed, if necessary, within the approximately 3-acre project area. A categorical exclusion was filed for the project under NEPA in December 2009. Based on an environmental checklist completed in December 2009, this project was determined to be within the scope of the LBNL 2006 LRDP EIR pursuant to *State CEQA Guidelines* Section 15168. The project was approved in December 2009. Work is expected to commence in mid-2010 and be completed in mid-2013.

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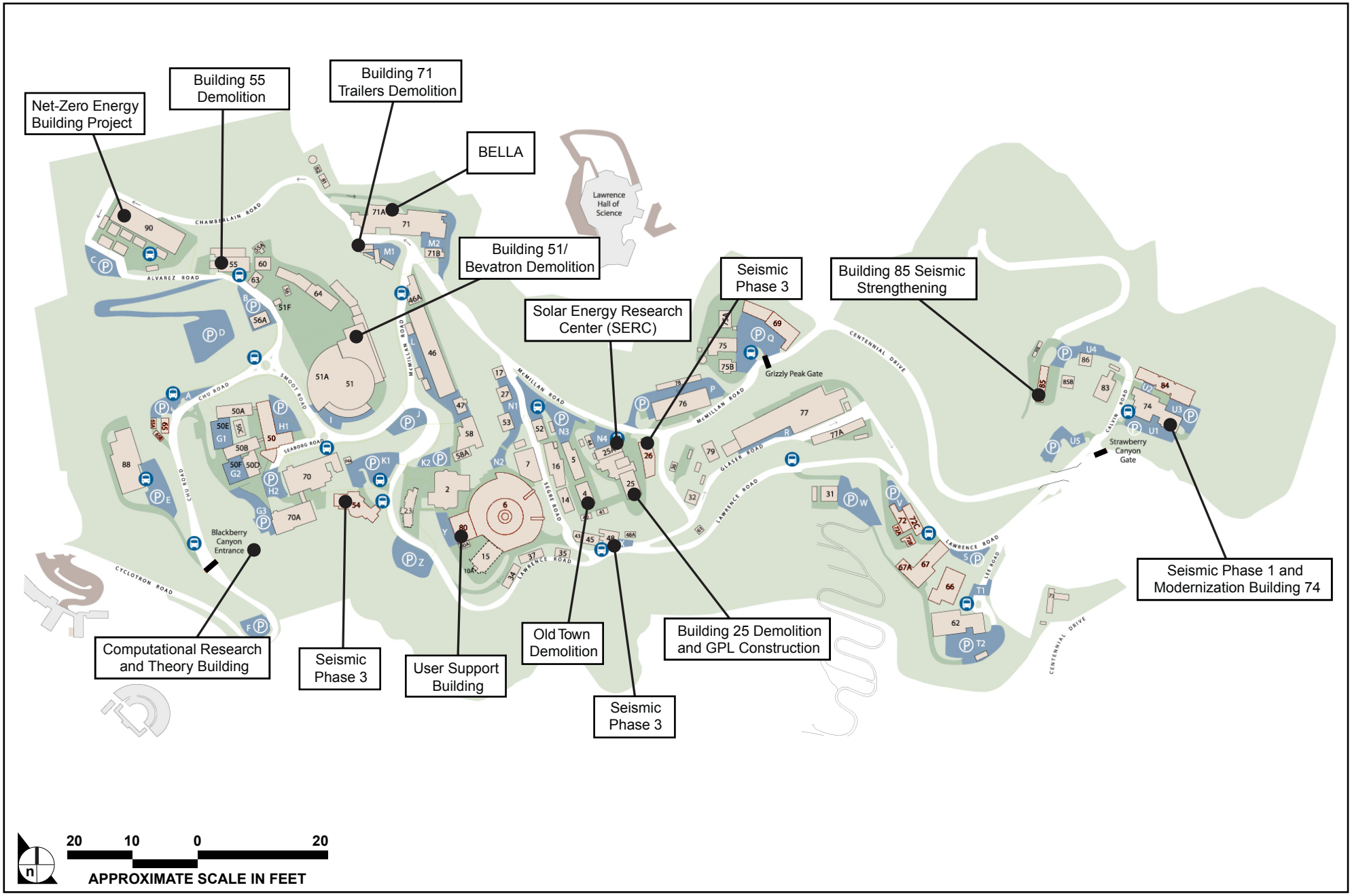
1 A specific plan for development of the RFS is expected to be prepared in the coming months.



SOURCE: Impact Sciences, Inc. – February 2010

FIGURE **6.0-1**

Cumulative Projects

924-006•08/10

Seismic Phase 1

Seismic Phase 1 is intended to correct structural deficiencies in LBNL Buildings 50 and 74 in order to improve their performance in a seismic event and upgrade the seismic rating of the buildings from "Poor" to "Good," in accordance with the UC Seismic Safety Policy. Seismic Phase 1 work for Building 74 was finished in late 2009 and the work for Building 50 is expected to finish in mid 2010. This work is covered under a categorical exemption under CEQA and a categorical exclusion under NEPA.

Seismic Phase 2

Seismic Phase 2 would involve the demolition of 3,995 square meters (43,000 gsf) of space contained in several older seismically poor and very poor buildings and replacement with a similar amount of space in a single new facility that would be built to higher seismic safety standards. UC LBNL has vacated the most seismically deficient buildings, which has created a need for suitable safe and modern replacement space. The project would demolish Buildings 25/25B, Building 55, and Building 71 trailers C, F, J, K, and P. Building 25/25B is located at the center of the LBNL site in the Old Town area. Buildings 55 and 71 are located in the northwest of the LBNL site. The new 3,995-square-meter (43,000-gsf) general purpose laboratory would be built on site where Buildings 25/25B are now located. Building 85 would be seismically strengthened. The project would not result in any population growth at the LBNL site. The University of California certified the Final EIR for this project in July 2010. In addition, DOE issued the Final Environmental Assessment/FONSI (Finding of No Significant Impact) for this project on August 4, 2010.

Seismic Phase 3

Seismic Phase 3 would involve construction of a new 4,645-square meter (500,000-gsf) general purpose laboratory (GPL) that would replace the existing seismically deficient buildings. The project would also upgrade and modernize, or replace four buildings on the LBNL site that are rated as seismically "Poor" based on the University of California Seismic Safety Policy Rating. The project would upgrade and modernize Building 26 (929 square meters [10,000 gsf]). The project would upgrade and modernize Building 54 (1,394 square meters [15,000 gsf]) or replace it with a new approximately 1,859-square-meter (20,000-gsf) conference and food service center. The existing fire station (Buildings 45 and 48) would be replaced with a new modern 464-square-meter (5,000-gsf) fire station. The project would demolish an equal amount of gross square footage of seismically "Poor" rated buildings to the amount of new building space that is built. The project has not yet undergone environmental review. Final details of the new GPL would be determined by DOE staff in order to meet cost targets and schedule deadlines. It is anticipated that no new population would be added to the LBNL site as a result of this project and that

the project would allow research programs that are currently in compressed and inadequate spaces to move into more appropriate spaces.

Building 51 and the Bevatron Demolition

An EIR was certified in July 2007 for the demolition and removal of the Building 51 complex, including the Bevatron (a retired particle accelerator), and the concrete blocks and building shell surrounding it. This EIR was tiered from the 1987 LRDP EIR, as amended. A NEPA EA/FONSI for the project was signed in April 2008. Demolition commenced in August 2008 and is expected to continue through early 2011.

Berkeley Lab Laser Accelerator

The Berkeley Lab Laser Accelerator (BELLA) will be housed almost entirely within Building 71, involving modifications to the internal structure to support a shielded experimental cave and support functions. The cave will house a new laser accelerator system. An additional utility room will be built on the roof. The project is covered under a CEQA categorical exemption and a NEPA EA/FONSI signed in September of 2009. Construction is scheduled to take approximately 18 months, ending approximately by 2012.

User Test Bed Facility

The User Test Bed Facility project would consist of a series of energy-efficient building "testbeds" in the new and existing buildings to allow researchers to conduct measurements of energy use with various prototype building systems such as windows, lights, heating, ventilation, and air conditioning (HVAC), roofs, and skylights. The project is in a very early stage of development and, at this time, it appears that the facility would be built primarily by renovating existing floor space in Building 90 and possibly adding a small building next to Building 90 on a parking lot. The anticipated project is assumed to include a 929-square-meter (10,000-gsf) building, but the building may not be built or may be less than 929 square meters (10,000 gsf). The project would add less than 10 new employees to the LBNL site. The project was awarded funding in December 2009, but has not yet undergone environmental review. Final details of the new facility will be determined by DOE staff in order to meet cost targets and schedule deadlines.

Building 74 Modernization

Building 74 modernization work includes a renovation of the entire building, including new mechanical, electrical, and plumbing systems; new interior partitions; finishes; and laboratory casework. The interior of the building would be remodeled. The work is due to be completed in mid-2012. The project was included in the 2006 LRDP EIR under CEQA and approved under a categorical exclusion under NEPA.

6.1.2 University of California Projects at LBNL

Solar Energy Research Center

The goal of the Solar Energy Research Center (SERC) project is to accelerate the development of sustainable solar energy sources through various initiatives, such as the development of new materials for use in collectors, efficient processing steps, and energy handling. SERC would be an approximately 3,530-square-meter (38,000-gsf) building devoted to research on new photovoltaic and electrochemical solar-energy systems. The site under consideration for this project is the Building 25A demolition site. Construction is currently anticipated to begin in mid 2011 and end in early 2013. Environmental review of this project has not been completed at this time.

6.1.3 University of California Projects on UC Berkeley Campus

Southeast Campus Integrated Projects

Southeast Campus Integrated Projects (SCIP) include seismic and program improvements to California Memorial Stadium, including a 14,679-square-meter (158,000-gsf) athletic training center, construction of a parking structure and sports field at the current site of Maxwell Family Field, construction of a 17,280-square-meter (186,000-gsf) building linking the Law and Business schools, landscape improvements for the Southeast Campus along Piedmont Avenue, interior improvements at selected buildings at the School of Law and the Haas Business School, and renovation and restoration of four historic houses on Piedmont Avenue. The Campus has committed in a recent settlement with Panoramic Hill Association that when it proposes the Maxwell Family Field parking structure, the total capacity would not exceed 546 parking spaces.

Construction of the athletic training center, School of Law facilities, and retrofit of the Piedmont Avenue houses is currently underway. Construction of all SCIP projects is expected to end in late 2012 with completion of improvements to California Memorial Stadium.

Various Construction Projects

The University has planned several projects to correct seismic and other deficiencies, through renovation or replacement, at the UC Berkeley campus. These projects would replace the space that is demolished or add generally small amounts of new space at these existing building sites.

- **Law School Infill:** 4,838-square-meter (52,072-gsf) demolition/construction, 2011 through 2013.

- **Northeast Quadrant Science and Safety Projects**: demolition of 9,290 square meters (100,000 gsf) and construction of 39,948 square meters (430,000 gsf) of laboratory and classroom space, currently under construction.
- **Campbell Hall Replacement:** 5,946-square-meter (64,000-gsf) demolition and 7,618-square-meter (82,000-gsf) construction, 2011 through 2013.
- **Naval Architecture Restoration and Blum Center:** 1,208 square meters (13,000 gsf) construction, completion in fall 2010.
- **Warren Hall Replacement/Li Ka Shing Center:** 7,339-square-meter (79,000-gsf) demolition and 18,581-square-meter (200,000-gsf) construction, completion 2011.
- **Community Health Campus, Phases 1 and 2:** 300,000 gsf construction, 2011-2012 (14,865 square meters [160,000 gsf]), 2015-2016 (13,006 square meters [140,000 gsf])
- **Tolman Hall Seismic Renovation:** 22,947-square-meter (247,000-gsf) demolition/construction, 2012 through 2013.
- **Lewis Hall Seismic Renovation:** 6,327-square-meter (68,100-gsf) demolition/construction, 2015 through 2016.
- **Mulford Hall Seismic Renovation:** 8,686-square-meter (93,500-gsf) demolition/construction, 2012 through 2013.
- **Dwinelle Annex Renovation:** 817-square-meter (8,800-gsf) demolition/construction, 2016 through 2017.
- **Hearst Gym Seismic and Program Renovation and Expansion:** 11,520-square-meter (124,000-gsf) demolition/construction, 2017 through 2018.

Vegetation Management Projects

The University has applied, through the State of California Governor's Office of Emergency Services, to the Federal Emergency Management Agency (FEMA) for funding under the Pre-Disaster Mitigation (PDM) Program to conduct vegetation management activities in Strawberry Canyon, Claremont Canyon, and Frowning Ridge. The vegetation management activities would involve removal of non-native trees, including approximately 10,000 stems of eucalyptus trees from Strawberry Canyon, approximately 12,000 stems of eucalyptus trees from the Claremont Canyon area, and approximately 24,000 stems of eucalyptus and pine trees from the Frowning Ridge location. Each project would take place over a three-year period. Environmental review of the projects has not been completed.

6.1.4 University of California Projects in the City of Berkeley

Anna Head West Student Housing Project

The student housing project would be constructed on the site of a campus surface parking lot. The project would construct 13,285-square-meter (143,000-gsf) new building space, and would add 424 beds to the campus vicinity. The project would also include spaces for study, computing, and fitness; apartments for a resident director and resident faculty member; and offices for academic advising. Construction would take place from late 2010 to mid-2012.

Ellsworth Student Housing Project

The project would be constructed on the site of a campus surface parking lot roofed with a tennis deck, and would include spaces for study, computing, and fitness; apartments for a resident director and resident faculty member; and offices for academic advising. The project would add 466 new bed spaces to the campus vicinity. Construction would occur in 2016 through 2017.

Helios Project

As part of the approved Helios Energy Research Facility project, the University demolished the approximately 19,500-square meter (210,000 GSF) of built space at 2151 Berkeley Way (the former California Department of Health Services, or DHS). The project will develop the initial elements of a site-wide circulation and open space plan, and construct a new laboratory and office building of approximately 10,500-square-meters (112,800 GSF). Construction is expected to be completed in late 2012.

Other UC Berkeley Projects

The following projects are relevant to the evaluation of cumulative effects due to air emissions and traffic associated with construction activities:

- **Berkeley Art Museum/Pacific Film Archive:** 13,192-square-meter (142,000-gsf) renovation/ construction, mid-2011 to late 2014.
- **Bowles Hall Renovation:** 6,780-square-meter (73,000-gsf) demolition/construction, 2012-2013
- **Stern Residence Hall Renovation:** 8,802-square-meter (87,000-gsf) demolition/construction, 2014-2015

6.2 TOPICAL EFFECTS

6.2.1 Geology and Soils

Proposed Action

The study area for consideration of the cumulative effects of geological and seismic hazards consists of the locations where UC LBNL personnel work and are exposed to these geological and seismic hazards during their working day.

The Proposed Action in conjunction with the other projects proposed at LBNL and UC Berkeley would increase the average daily populations of the LBNL and UC hill campuses, an area that would be subject to strong ground shaking in a major earthquake on the Hayward Fault. The new buildings associated with the cumulative projects would also be subject to hazards associated with seismically induced landslides and instable soil conditions. It is not possible to eliminate the risk for facilities built in earthquake-prone areas, nor is it possible to fully avoid all geologic hazards. However, these hazards would be reduced to the extent practicable through implementation of and compliance with adopted building codes and regulations. Building codes and local construction requirements have been established to protect against building collapse and major injury during a seismic event. The Proposed Action would implement state seismic construction regulations, and erosion control measures as described in **Section 5.1, Geology and Soils**. Construction in conformance with the California Building Code, local building codes, where applicable, and other pertinent regulations and guidelines would reduce the risks of injury and structural damage from ground shaking, earthquake-induced landslides, and other seismic and geologic hazards to a minimal level.

Alternative 1: Cafeteria Parking Lot Site

Cumulative effects related to geology and soils under this alternative would be similar to the effects of the Proposed Action

Alternative 2: RFS Site

Cumulative effects related to geology and soils under this alternative would be similar to the effects of the Proposed Action.

Alternative 3: Former DHS Site

The Alternative 3 site is not located in an area subject to liquefaction or landslides and would not contribute to a cumulative effect related to geology and soils.

Alternative 4: Leased Facility on San Pablo Avenue

The Alternative 4 site is not located in an area subject to liquefaction or landslides and would not contribute to a cumulative effect related to geology and soils.

Alternative 5: No Action

There would be no cumulative effects related to geology and soils under this alternative.

6.2.2 Water Resources

Proposed Action

The LBNL site is located above the East Bay Plain aquifer. The local aquifer is not a source of drinking water. The LBNL site and surrounding communities receive their water from the East Bay Municipal Utility District (EBMUD) and do not obtain water from the groundwater aquifer (LBNL 2007). Therefore, no water from the aquifer would be withdrawn as a result of the past, present and future development at the LBNL site. Furthermore, the Proposed Action does not involve any activities that could contaminate groundwater.

The study area for consideration of cumulative effects to surface water resources is the Blackberry Canyon watershed affected by the Proposed Action. This watershed is a small area at the northwestern end of the LBNL site. For potential cumulative effects on water resources, only those projects that would include grading, excavation, new exterior construction, and/or intensified land use that are in the same watershed would be expected to be capable of adding to cumulative water resources effects.

With the exception of the Proposed Action, none of the other projects proposed at LBNL would be located within the Blackberry Canyon watershed. None of the UC Berkeley projects to be developed through 2018 would be located in this watershed. The CRT facility includes design features to ensure that pre-development flows are not exceeded by post-development flows. These measures would help avoid substantial hydromodification in the Blackberry Canyon, and therefore substantial erosion of the creek system would be avoided. The cumulative effect of the Proposed Action in conjunction with past development in this watershed on surface water quality in terms of erosion and sedimentation would therefore be minimal.

Alternative 1: Cafeteria Parking Lot Site

Cumulative effects related to water resources would be similar to the Proposed Action under this alternative.

Alternative 2: RFS Site

Development of Alternative 2 would increase storm water runoff at the RFS site; however, it would not contribute to a substantial cumulative effect as implementation of relevant standard project features (SPFs) from the 2006 LRDP EIR and compliance with NPDES requirements would minimize all water quality effects.

Alternative 3: Former DHS Site

Development of Alternative 3 would not contribute to a cumulative effect related to water resources as it would not increase storm water runoff.

Alternative 4: Leased Facility on San Pablo Avenue

Development of Alternative 4 would not contribute to a cumulative effect related to water resources as it would not increase storm water runoff.

Alternative 5: No Action

There would be no cumulative effects related to water resources under this alternative.

6.2.3 Hazards, Human Health, and Accidents

Proposed Action

The immediate vicinity of the Proposed Action is the study area for consideration of the cumulative effects of hazards and risks to human health. These locations include areas where LBNL personnel work and are exposed to hazards, and land around the buildings that could be affected by the release of contaminants to soil and groundwater.

Implementation of the Proposed Action and other proposed projects at LBNL through 2018 would not substantially increase storage of hazardous materials and generation of hazardous wastes at LBNL and in the vicinity of LBNL because most projects at the LBNL site involve removal of outdated buildings and remediation of existing contamination. To the extent that the demolition activities generate hazardous waste, the projects would be required to comply with applicable federal, state, and local regulations governing the handling of hazardous materials and hazardous wastes. Compliance with applicable regulations would result in a minimal cumulative effect related to risk of accidents involving hazardous materials. The Proposed Action would not contribute to this impact.

Development of the LBNL projects listed in **Table 6.0-1** would incrementally increase both laboratory and other facility space at the LBNL site, potentially increasing the population at risk from wildland fires. Although any development at LBNL, including the Proposed Action, would meet required safety standards and fire codes at the time of individual facility construction, wildland fire hazards would continue to threaten the LBNL site. However, continued implementation of LBNL's vegetation management program would limit damage to assets from these fires and would reduce potential cumulative wildland fire hazards effects. The Proposed Action would be subject to LBNL's vegetation management requirements, as well as LBNL and building code requirements for fire resistance. The cumulative effect related to wildland fire hazards resulting from the Proposed Action and other considered projects would be minimal.

Alternative 1: Cafeteria Parking Lot Site

Cumulative effects related to hazards, human health, and accidents under this alternative would be similar to those under the Proposed Action.

Alternative 2: RFS Site

Development of Alternative 2 would incrementally increase handling of hazardous materials and wastes at the RFS site. However, compliance with applicable regulations would result in a minimal cumulative effect related to risk of accidents involving hazardous materials.

Alternative 3: Former DHS Site

Development of Alternative 3 would not contribute to the risk of exposing people or structures to wildland fires given the location in an urban setting. As with the Proposed Action, compliance with applicable regulations would result in a minimal cumulative effect related to risk of accidents involving hazardous materials.

Alternative 4: Leased Facility on San Pablo Avenue

Development of Alternative 4 would not contribute to the risk of exposing people or structures to wildland fires given the location in an urban setting. As with the Proposed Action, compliance with applicable regulations would result in a minimal cumulative effect related to risk of accidents involving hazardous materials.

Alternative 5: No Action

There would be no cumulative effects related to hazards, human health, and accidents under this alternative.

6.2.4 Biological Resources

Proposed Action

The affected environment for consideration of cumulative effects to biological resources under the Proposed Action is the East Bay hills.

With the exception of the CRT facility, most of the other projects proposed at the LBNL site involve existing buildings and would not affect sensitive biological resources because the site of each project is already disturbed. All LBNL projects would implement SPFs to avoid or minimize short-term construction-phase effects on biological resources. With the exception of the three UC Berkeley-proposed fire fuel reduction projects, projects proposed on the UC Berkeley campus would also be located in developed areas where sensitive biological resources would generally not be present. In compliance with the campus's 2020 LRDP, all UC Berkeley projects would be required to implement continuing best management practices that would avoid or minimize impacts on sensitive biological resources. The fuel management projects would involve the removal of approximately 44,000 resprouted eucalyptus stems, other non-native trees, and some pine trees over an area of approximately 170 acres located in Strawberry and Claremont canyons. The projects would be implemented generally outside the nesting season and would comply with the UC Berkeley 2020 LRDP that requires nesting bird surveys before tree removal, replacement of specimen trees, and precautions to avoid discharge of sediment and other pollutants into surface water during ground disturbing activities. As these fire fuel reduction projects would be federally funded, they would also implement conservation measures for the protection of Alameda whipsnake (and other federally listed species) as required by the U.S. Fish and Wildlife Service. The fire fuel reduction projects would be beneficial for wildlife species as they would remove non-native species and promote native forests and scrub habitats. New development occurring under the Berkeley or Oakland general plans in the area would primarily be considered infill in areas zoned as residential and there are no large developments pending in the area under these plans. The East Bay Regional Park District currently has no plans for large facilities development or reductions in open space at Tilden Park. Implementation of LBNL projects proposed through 2018 would result in the development of less than 5 acres of available open space and habitat at the site, which includes the loss of open space associated with the Proposed Action. UC Berkeley projects developed during the Proposed Action time frame would not

occur on existing open space in the Hill Campus. Therefore, LBNL and UC Berkeley growth through 2018 would not result in a substantial reduction in open space or wildlife habitat

Alternative 1: Cafeteria Parking Lot Site

Cumulative effects related to biological resources would be similar to the Proposed Action under this alternative, although it would result in the removal of fewer trees.

Alternative 2: RFS Site

Development of Alternative 2 could contribute to the loss of California Oatgrass Bunchgrass Grassland (*Danthonia californica*) and purple needlegrass (*Nassella pulchra*), which are sensitive natural communities that are present on the site. Alternative 2 also has a greater potential to affect wetland habitat than the Proposed Action. The effects of both of these potential impacts would be reduced by the implementation of LBNL SPFs. Therefore, Alternative 2 would not have a substantial cumulative effect on biological resources.

Alternative 3: Former DHS Site

Due to the extent of past development, the Alternative 3 site and its immediate surroundings do not provide suitable habitat for special-status plant or animal species. No sensitive natural communities, special status species, wetlands or important wildlife movement corridors occur in the vicinity (UC Berkeley 2009). Therefore, development of Alternative 3 would not contribute to cumulative effects to biological resources.

Alternative 4: Leased Facility on San Pablo Avenue

The Alternative 4 site consists of leasing and renovating an existing building in a densely developed urban area. The site is fully developed with a building, parking lot and driveways and contains no natural vegetation that could support wildlife or special status plant species. The surrounding area is also similarly developed with urban uses and no natural habitat is present in the areas adjoining the site. Development of Alternative 4 would therefore not contribute to cumulative effects to biological resources.

Alternative 5: No Action

There would be no cumulative effects related to biological resources under this alternative.

6.2.5 Cultural Resources

Proposed Action

The affected environment for consideration of cumulative effects to historic and archaeological resources under the Proposed Action is the LBNL site and UC Berkeley.

Concerning potential cumulative effects on known or unknown archaeological resources, the vast majority of the LBNL and UC Berkeley projects involve sites that have been developed or disturbed in the past. Furthermore, in compliance with LBNL SPFs, all projects would be required to halt construction in the event that previously unknown archaeological resources are encountered during ground-disturbing activities. Therefore, cumulative effects on archaeological resources would be minimal.

Based on an evaluation of the age and other characteristics for determination of the significance of a historic structure, some buildings on the LBNL site and at the UC Berkeley campus are considered historic. A few of the projects could include alterations to or demolition of historic structures, including the SCIP and the Building 51 and Bevatron projects. However, construction activities related to the Proposed Action would not affect any buildings or structures that qualify as historic resources.

Alternative 1: Cafeteria Parking Lot Site

Cumulative effects related to cultural resources under this alternative would be similar to those under the Proposed Action.

Alternative 2: RFS Site

The Alternative 2 site does not contain any historic structures. Due to its proximity to the San Francisco Bay margins, there is potential to encounter archaeological resources in the portion of the Alternative 2 site that has not been previously excavated. However, adequate protections are provided as part of the alternative and by LBNL SPFs to minimize the potential effects of this alternative on archaeological resources. Therefore, cumulative effects on archaeological resources would be minimal.

Alternative 3: Former DHS Site

The potential to encounter archaeological resources at the Alternative 3 site is low given that the site is developed with an existing building and parking lots. Furthermore, UC Berkeley has evaluated the existing DHS building, to be removed by the Helios Energy Research Facility project, and determined that it is not a historic resource. Therefore, Alternative 3 would not contribute to the cumulative loss of cultural resources.

Alternative 4: Leased Facility on San Pablo Avenue

The building that would be altered under Alternative 4 is a potential historic resource at the state or federal level. Additional properties – both identified and unidentified – within this alternative's area of potential effect have been recommended by the Northwest Information Center for further exploration with the State Historic Preservation Office. Accordingly, there are additional resources in the vicinity that have the potential to pose cumulative indirect effects in concert with Alternative 4's proposed alterations to the potential historic resource at the San Pablo site. This alternative would not involve ground disturbance is previously undisturbed areas and, therefore, would not contribute to the cumulative loss of archaeological resources.

Alternative 5: No Action

There would be no cumulative effects related to cultural resources under this alternative.

6.2.6 Visual Resources

Proposed Action

The study area for consideration of cumulative effects to visual resources is the LBNL site, including lower-elevation viewsheds of the site.

Construction of cumulative projects would involve building sites on the LBNL site, UC Berkeley lands, and in the City of Berkeley. While there are no officially designated scenic vistas for the City of Berkeley, the City of Oakland, UC Berkeley, or LBNL, the Berkeley-Oakland hillside areas offer extensive views of the San Francisco Bay and present a scenic landscape from lower elevations. As discussed in **Section 5.6, Visual Resources**, the CRT facility would not be prominently visible from off-site locations and would appear as an incremental addition to the currently developed hillside. This potential impact of the Proposed Action would not cumulate with the impacts from other projects because the other projects currently proposed at LBNL, UC Berkeley, and in the City of Berkeley would not form part of the scenic views that contain the project site. Implementation of LBNL SPFs would minimize effects associated with light and glare. Therefore, cumulative effects to visual resources would be minimal under the Proposed Action.

Alternative 1: Cafeteria Parking Lot Site

As with the Proposed Action, development of the Alternative 1 site would be largely screened from off-site viewpoints by existing buildings, topography, and vegetation. Implementation of LBNL SPFs

would minimize effects associated with light and glare. Therefore, cumulative effects to visual resources would be minimal under Alternative 1.

Alternative 2: RFS Site

Views of the proposed facility at the Alternative 2 site would be largely screened from public views from the Bay Trail and housing by intervening buildings and vegetation. The building would be adjacent to existing structures and would therefore appear as an incremental addition to the existing development at the RFS site. Therefore, cumulative effects to visual resources would be minimal under Alternative 2.

Alternative 3: Former DHS Site

The proposed facility would be constructed on a small portion of the existing DHS site footprint. Alternative 3 would likely improve the existing visual character of the site and the current visual conditions are poor. In addition, requirements under the UC Berkeley LRDP that include lighting design and visual character requirements would be implemented as part of this alternative. Therefore, Alternative 2 would not contribute to adverse cumulative effects to visual resources.

Alternative 4: Leased Facility on San Pablo Avenue

The construction of the additional computer floor at the Alternative 4 site would appear as an incremental addition to the industrial urban setting of the site. The addition would be small in comparison to the existing facility and the facility is in a largely industrial area; thus, construction would have a very minimal contribution to cumulative effects on the visual environment.

Alternative 5: No Action

There would be no cumulative effects related to aesthetics under this alternative.

6.2.7 Air Quality

Proposed Action

The study area for consideration of cumulative effects to air quality is the San Francisco Bay Area Air Basin (SFBAAB). However, various pollutants have different areas of spatial effect depending on their nature and sources. Bay Area Air Quality Management District (BAAQMD) guidelines have taken these factors into account in developing the criteria used as thresholds for cumulative impacts; projects that result in emissions or human health risks below these thresholds would not result in substantial adverse human health effects. Consistent with the BAAQMD guidelines, the study area for cumulative cancer and

non-cancer risk effects is the proposed CRT facility, and the zone within the 1,000-foot radius from the Proposed Action site boundary. The only projects within 1,000 feet of the proposed CRT facility site would be within the LBNL site fence line. According to the BAAQMD, a project would have a cumulative considerable impact if the aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius from the fence line of a source, or from the location of a receptor, plus the contribution from the project, exceeds the following:

- Non-compliance with a qualified risk reduction plan; or,
- An excess cancer risk levels of more than 100 in 1 million or a chronic or a non-cancer (i.e., chronic or acute) hazard index (from all local sources) greater than 1.0; or
- 0.8 $\mu g/m^3$ annual average fine particulate mater ($PM_{2.5}$)

Cumulative Construction Effects

Cumulative air quality impacts from construction/demolition activities associated with LBNL projects occurring over the same period, including the Proposed Action, were evaluated by Golder Associates consistent with the BAAQMD thresholds. This included:

- Cumulative lifetime excess cancer risk (LECR) and chronic hazard effect to off-site sensitive receptors from truck traffic associated with LBNL and UC Berkeley construction/demolition activities over the project period.
- Cumulative LECR and chronic hazard effect to on- and off-site sensitive receptors from on-site, off-road equipment emissions associated with LBNL and UC Berkeley construction/demolition activities over the project period.
- Cumulative $PM_{2.5}$ effect to off-site ambient air from truck traffic associated with LBNL and UC Berkeley construction/demolition activities over the project period.
- Cumulative $PM_{2.5}$ effect to off-site ambient air from on-site, off-road equipment emissions associated with LBNL and UC Berkeley construction/demolition activities over the project period.

For this assessment, diesel particulate matter (DPM) and $PM_{2.5}$ emissions from trucks and off-road equipment associated with all identified construction and demolition projects occurring over the Proposed Action period were estimated using methods and models identical to those used to estimate DPM and $PM_{2.5}$ emissions from these sources for the Proposed Action as described in **Section 5.7, Air Quality**. Identical dispersion modeling methods were then used to estimate maximum average DPM concentrations at potential sensitive receptor locations on and off site, and maximum average $PM_{2.5}$ concentrations in ambient air (defined as any off-site location).

LECR and chronic hazard for the hypothetical maximally exposed individual (MEI) were calculated using the same methods used to estimate these effects resulting from on-road truck and off-road equipment emissions from the Proposed Action alone. These results are provided in **Tables 6.0-2** and **6.0-3**.

Table 6.0-2
Cumulative MEI LECR and Chronic Hazard Estimates for On-Site, Off-Road Construction/Demolition Equipment DPM Emissions

Assessment	MEI Result	Significance Threshold
Cumulative On-Site LECR	15-in-a-million	100-in-a-million
Cumulative On-Site Chronic Hazard	0.3	1.0
Cumulative Off-Site LECR	25-in-a-million	100-in-a-million
Cumulative Off-Site Chronic Hazard	0.06	1.0

Source: Golder Associates, January 2010

Table 6.0-3
Cumulative MEI LECR and Chronic Hazard Estimates for Construction/Demolition Truck Traffic

Assessment	MEI Result	Significance Threshold
Cumulative Off-Site LECR	9-in-a-million	100-in-a-million
Cumulative Off-Site Chronic Hazard	0.02	1.0

Source: Golder Associates, January 2010

Maximum cumulative $PM_{2.5}$ concentrations in ambient air (i.e., any off-site location) were also determined using dispersion modeling methods identical to those used to determine $PM_{2.5}$ effects from the Proposed Action. These results are provided in **Table 6.0-4**. Based on these estimates, the cumulative LECR, chronic hazard, and $PM_{2.5}$ impacts would not exceed the recommended BAAQMD thresholds.

Table 6.0-4
Cumulative Maximum Estimated Annual $PM_{2.5}$ Concentration in Ambient Air from Construction/Demolition Emissions

Pollutant	Assessment	Maximum Ambient Concentration	Significance Threshold
$PM_{2.5}$	On-Site, Off-Road Equipment Emissions	0.31 μg/m^3	0.8 μg/m^3
$PM_{2.5}$	Off-Site, On-Road Truck Emissions	0.07 μg/m^3	0.8 μg/m^3

Source: Golder Associates, January 2010

Cumulative Operational Effects

As described in **Section 5.7, Air Quality**, the maximum LECR effects from Proposed Action operation would be relatively small (0.4 in 1 million within the LBNL site property boundary and 0.4-in-a-million outside of the boundary). The LBNL 2006 LRDP EIR found that cumulative emissions of toxic air contaminants associated with the 2006 LRDP (including the Proposed Action) combined with toxic air contaminant emissions from sources on the UC Berkeley campus under the UC Berkeley 2020 LRDP over the LRDP period out to 2025, would result in a maximum LECR of 22 in 1 million. Although the Proposed Action is part of the growth projected under the 2006 LRDP and is therefore already accounted for in the LBNL sitewide LECR assessment, conservatively adding the maximum LECR for the proposed project (0.4 in 1 million) to the maximum cumulative LECR from the LRDP cumulative analysis (22 in 1 million) would provide a result of no more than 22.4 in 1 million. This is less than the BAAQMD threshold of 100 in 1 million (for either construction or operation) for assessing cumulative LECR, and adopted for use in this EA. Note that a risk of 22 in 1 million is estimated under 2025 conditions. It would be lower in 2018 as only a fraction of the LBNL growth would be in place by that year.

Alternative 1: Cafeteria Parking Lot Site

Cumulative effects related to air quality would be similar to the Proposed Action under this alternative.

Alternative 2: RFS Site

Cumulative effects related to air quality would be similar to the Proposed Action under this alternative as it would result in the same emissions from construction traffic and equipment and from operational stationary and area sources. There are no cumulative projects in the vicinity of the RFS site.

Alternative 3: Former DHS Site

Construction of four UC Berkeley projects (Warren Hall Replacement/Li Ka Shing Center, Community Health Campus Phase 1, DHS Demolition/Helios, and Berkeley Art Museum/PFA) would occur within 300 meters (approximately 1,000 feet) of and concurrently with the CRT facility at the former DHS site. Cumulative effects related to air quality would be similar to the Proposed Action under this alternative as construction activities would be comparable and operation would result in the same stationary and area source emissions.

Alternative 4: Leased Facility on San Pablo Avenue

Cumulative effects related to air quality would be less than the Proposed Action under this alternative as construction activities would be limited to expansion of an existing building. However, operation of Alternative 4 would result in the same contribution to stationary and area source emissions as the Proposed Action.

Alternative 5: No Action

There would be no cumulative effects related to air quality under this alternative.

6.2.8 Greenhouse Gases

The discussion of greenhouse gas (GHG) emissions presented in **Section 5.8, Greenhouse Gases**, is already a cumulative-level discussion because project-related emissions are considered in relation to other existing emissions to evaluate the contribution to global climate change.

6.2.9 Noise

Proposed Action

The study area for consideration of the cumulative effects of noise is the areas immediately surrounding the Proposed Action site that would be affected by noise from project construction and operation and along the truck route through the city of Berkeley that would experience Proposed Action-related construction truck traffic.

Cumulative Construction Noise

Based on the construction schedules of the cumulative projects listed in **Table 6.0-1**, it is anticipated that construction will be underway on numerous other projects at the LBNL site, UC Berkeley, and in the city of Berkeley at the same time, the CRT facility is under construction. As discussed in **Section 5.9, Noise**,

construction noise levels would not substantially exceed existing hourly average noise levels for the nearest sensitive receptors and would fall within the range of existing traffic noise levels in the area. Due to the distance between the project site and the sites of most of the other LBNL projects, noise from CRT construction activities would not cumulate with noise resulting at the nearest receptors from the construction at other project sites.

Cumulative construction truck traffic associated with the projects listed in **Table 6.0-1** was analyzed to determine whether or not it would cause a substantial temporary increase in noise along the major arterials—namely, Hearst Avenue, Oxford Street, and University Avenue—that would be used by the construction trucks associated with the Proposed Action. To demonstrate a worst-case scenario, assuming all projects were under construction concurrently and all construction truck traffic traveled along the same arterials, calculations indicate that on an average day the noise level would increase by less than 1 dB(A) day/night noise (L_{dn}). On a peak day, the noise level is calculated to increase from about 1 to 2 dB(A) L_{dn}. A noise level increase of 3 dB(A) is generally regarded as the minimum increase that is perceptible to the average human and has been used as a standard in this EA to evaluate impacts in areas where the ambient or background noise levels without the project are close to or exceed the California Office of Planning and Research noise/land use compatibility standard for affected land uses. As an increase of less than 3 dB(A) L_{dn} would not be considered substantial, the cumulative noise effect from construction truck traffic to, from, or within the LBNL site would be minimal (US Department of Transportation 1980). Even if vehicle trips associated with CRT project construction workers traveling to and from the site were added to the cumulative construction truck traffic, the resultant noise from this traffic would not exceed 3 dB(A) L_{dn}.

Cumulative Operational Noise

Operational noise from the CRT facility and other LBNL and UC Berkeley projects would not have a substantial effect on community noise levels because other projects in the vicinity listed under **Table 6.0-1** would be sufficiently far from the CRT facility and the nearest off-site sensitive receptors so as not to cumulate substantially. As discussed in **Section 5.10**, the calculated noise level from the cooling towers is 43 to 44 dB(A) at the nearest sensitive receptors.

With respect to CRT-related daily vehicle trips, the analysis in **Section 5.9** showed that the CRT traffic when combined with 2018 background traffic (which includes traffic from other cumulative projects) would not make a noticeable change (less than 0.5 dB(A) L_{dn}) at any of the roadway segments studied.

Alternative 1: Cafeteria Parking Lot Site

Noise generated by development of Alternative 1 would be similar to the Proposed Action but would result in a lesser cumulative noise effect compared to the Proposed Action as it would be located further from off-site sensitive receptors.

Alternative 2: RFS Site

Noise generated by development of Alternative 2 would be similar to the Proposed Action but would result in a lesser cumulative noise effect compared to the Proposed Action as it would be located further from off-site sensitive receptors.

Alternative 3: Former DHS Site

Despite implementation of construction-period noise controls, construction of Alternative 3 would generate noise at a level that would exceed the threshold set by the local ordinance at the 1901 Oxford Street apartments, which are on the same city block as the CRT facility. Alternative 3 would therefore have an adverse effect on cumulative noise levels.

Alternative 4: Leased Facility on San Pablo Avenue

Construction-period noise controls would reduce the noise levels for Alternative 4 but would not necessarily bring them below the 65 dB(A) level, which is the maximum allowable receiving noise level for residential uses according to the City of Oakland's noise ordinance, at the nearest residential receptor. The contribution of operational noise from Alternative 4 would not exceed thresholds in the vicinity of the facility as mechanical equipment would be shielded and the small increase in traffic would not result in a perceptible increase in noise as it takes a doubling of traffic to result in a 3 dB(A) increase, which is generally regarded as the minimum increase that is perceptible to the average human. Therefore, Alternative 4 would have a minor effect on cumulative noise levels.

Alternative 5: No Action

There would be no cumulative effects related to noise under this alternative.

6.2.10 Transportation and Traffic

Proposed Action

The study area for consideration of the cumulative effects to transportation and traffic is the truck route between the construction site and the freeway that would be used by construction trucks, and the major

arterials leading to the LBNL site that would be affected by the Proposed Action-related operational traffic.

Cumulative Construction Traffic

The construction of the CRT facility could coincide with construction of other LBNL and UC Berkeley projects as listed in **Table 6.0-1.** The cumulative traffic volumes with and without construction of the CRT facility are shown in **Figure 6.0-2, Cumulative No CRT Conditions – Peak Hour Traffic Volumes** and **Figure 6.0-3, Cumulative with CRT Conditions – Peak Hour Traffic Volumes.** Typically, each project would generate the greatest number of truck trips during the excavation phase of construction. It is extremely unlikely that all these projects would be under construction and in the excavation phase simultaneously. However, there may be temporary peaks of excavation-related activity and other truck activity that would affect vehicle circulation near the project sites and on truck routes within the city, and the cumulative effect during those periods could be potentially substantial. Pursuant to LRDP Best Practice TRANS-6a, which is also included in the Proposed Action, UC LBNL will meet and coordinate with UC Berkeley and City of Berkeley to schedule the construction of various projects to minimize roadway closures, overlap of excavation, and other heavy truck activity periods, plus minimize the combined effects of construction activity on vehicle, bicycle, and pedestrian circulation and parking. Furthermore, pursuant to LBNL 2006 LRDP Best Practice TRANS-6c, which requires LBNL to manage project construction schedules to minimize the combined effects of project construction within LBNL, UC LBNL has established a program to limit the total construction truck movement to 98 one-way trips. Under this program, the UC LBNL Site Construction Coordinator oversees and controls all construction activities, including traffic. Through the development, implementation and coordination of project-specific traffic control plans as well as the management of concurrent project schedules so as to minimize the overlap of excavation or other heavy truck activity, the Site Construction Coordinator regulates and maintains construction traffic below a daily average of 98 one-way trips. By itself, construction under the Proposed Action is not expected to generate more than a maximum daily average of 13 one-way truck trips at any time, and in combination with other projects at LBNL construction under the Proposed Action would not generate a daily average of more than 98 one-way trips even at the peak of construction activities in June through October 2012. Nonetheless, the Site Construction Coordinator will ensure that the total construction truck traffic associated with the Proposed Action combined with trucks associated with other ongoing construction projects at the LBNL site does not exceed the volumes established to avoid a substantial traffic impact along the truck route.

Cumulative Operational Traffic

The analysis of near-term (2018) impacts presented in **Section 5.10, Transportation and Traffic**, represents a cumulative analysis as it takes into account operational traffic that would be generated by the Proposed Action as well as other reasonably foreseeable projects through 2018. As that analysis shows, the Proposed Action's traffic when combined with other existing and projected traffic would not cause the study intersection levels of service to exceed the City's significance thresholds.

Other Traffic Effects

Parking demand generated by the CRT facility combined with parking demand generated by other planned LBNL projects could potentially exceed the parking supply at LBNL. However, the ongoing transportation demand management program proposed as part of LBNL SPFs (SPF TRANS-1d, which would be implemented as part of the project), would reduce the cumulative effect on parking within the LBNL site.

Alternative 1: Cafeteria Parking Lot Site

The cumulative traffic effects of Alternative 1 would be similar to those for the Proposed Action.

Alternative 2: RFS Site

The discussion of transportation and traffic for Alternative 2 presented in **Section 5.10, Transportation and Traffic**, is a cumulative-level discussion because project-related vehicle trips are considered in relation to traffic at area roadways and intersections.

Alternative 3: Former DHS Site

The discussion of transportation and traffic for Alternative 3 presented in **Section 5.10, Transportation and Traffic**, is a cumulative-level discussion because project-related vehicle trips are considered in relation to traffic at area roadways and intersections.

Alternative 4: Leased Facility on San Pablo Avenue

The discussion of transportation and traffic for Alternative 4 presented in **Section 5.10, Transportation and Traffic**, is a cumulative-level discussion because project-related vehicle trips are considered in relation to traffic at area roadways and intersections.

LEGEND

1	Study Intersections	- - - - - - -	Lawrence Berkeley National Laboratory Boundary
XX (YY)	AM (PM) Peak Hour		

NOT TO SCALE

SOURCE: Fehr & Peers Transportation Consultants – January 2010

FIGURE **6.0-2**

Cumulative No CRT Conditions – Peak Hour Traffic Volumes

924-006•02/10

LEGEND

1	Study Intersections	- - - - - - -	Lawrence Berkeley National Laboratory Boundary
XX (YY)	AM (PM) Peak Hour		

NOT TO SCALE

SOURCE: Fehr & Peers Transportation Consultants – January 2010

FIGURE **6.0-3**

Cumulative with CRT Conditions – Peak Hour Traffic Volumes

924-006•02/10

Alternative 5: No Action

There would be no cumulative effects related to traffic and transportation under this alternative.

6.2.11 Utilities and Waste Management

Proposed Action

The study area for consideration of the cumulative effects to utilities and waste management is the existing utility infrastructure that serves the Proposed Action.

Development of the CRT facility would not result in substantial effects on utilities and waste management as discussed in **Section 5.11, Utilities and Waste Management**. However, the Proposed Action, in conjunction with other LBNL and UC Berkeley projects listed in **Table 6.0-1**, could result in increases in demand for utilities.

EBMUD provides water and wastewater treatment services to LBNL, UC Berkeley, and the cities of Berkeley and Oakland. As discussed in **Section 5.11,** there is sufficient treatment capacity at EBMUD's wastewater treatment plant to accommodate the wastewater associated with the Proposed Action. EBMUD has also indicated that it can provide the additional volume of water needed to serve the incremental growth at LBNL from its existing supply sources (LBNL 2008). Therefore, the Proposed Action, in conjunction with other projects at the LBNL site, would not result in a demand for water that would require EBMUD to develop new water supply sources. Furthermore, no improvements to water supply mains are necessary to serve the CRT facility or the cumulative projects at LBNL.

Other LBNL and UC Berkeley projects through 2018 could incrementally increase the demand for utilities, including gas and electricity. However, these projects would occur within a largely built-out urban area where utility systems generally are provided. Additionally, the increases in demand attributed to other development projects are addressed on a site-by-site basis by the service providers prior to approval of new development.

Alternative 1: Cafeteria Parking Lot Site

Cumulative effects related to utilities and waste management would be similar to the Proposed Action under this alternative.

Alternative 2: RFS Site

Similar to the Proposed Action, Alternative 2 would be located in a largely developed area currently served by sufficient utilities and service systems to accommodate projects through 2018. This alternative would contribute to the need for improvements to the electrical distribution system and a substation; however, as discussed in **Section 5.0**, improvements would occur in previously disturbed portions of the RFS site where sensitive biological or intact cultural resources are unlikely to occur. Therefore the development of the proposed building or related infrastructure under this alternative would not contribute to cumulative environmental effects.

Alternative 3: Former DHS Site

Similar to the Proposed Action, Alternative 3 would be located in a largely developed area currently served by sufficient utilities and service systems to accommodate projects through 2018, as documented in the UC Berkeley 2020 LRDP EIR. This alternative would contribute to the need for improvements to the electrical distribution system and a substation; however, improvements would occur in previously disturbed portions of the former DHS site where sensitive biological or intact cultural resources are unlikely to occur. Therefore the development of the proposed building or related infrastructure under this alternative would not contribute to cumulative environmental effects.

Alternative 4: Leased Facility on San Pablo Avenue

Similar to the Proposed Action, Alternative 3 would be located in a largely developed area currently served by sufficient utilities and service systems to accommodate projects through 2018. This alternative would contribute to the need for improvements to the electrical distribution system and a substation; however, improvements would be constructed within city streets and on the 6701 San Pablo Avenue site – environments that have been previously disturbed where sensitive biological or intact cultural resources are unlikely to occur. Therefore, the development of the proposed building or related infrastructure under this alternative would not contribute to cumulative environmental effects.

Alternative 5: No Action

There would be no cumulative effects related to utilities and waste management under this alternative.

6.2.12 Public Services

Proposed Action

The study area for consideration of the cumulative effects to public services is the service area of the local police and fire protection services serving the Proposed Action.

Implementation of the Proposed Action would contribute to an increase in demand for fire protection services and police services. However, as discussed in **Section 5.12, Public Services**, this increased demand would not result in the need for new or physically altered facilities.

Other LBNL and UC Berkeley projects would incrementally increase demand for fire protection and police services, which could contribute to the need for new or altered fire protection or police facilities in the region. The City of Berkeley General Plan indicates the need for additional fire protection facilities, and the City of Oakland General Plan indicates the need for expanded facilities or the seismic retrofit of existing facilities. However, implementation of the Proposed Action and other projects through 2018 would add approximately 300 people to the LBNL site on a daily basis. This increase in population would not result in the need for new facilities, staff, or equipment to provide adequate fire protection or police services.

Alternative 1: Cafeteria Parking Lot Site

Cumulative effects related to public services would be similar to the Proposed Action under this alternative.

Alternative 2: RFS Site

Implementation of Alternative 2 would contribute to an increase in demand for fire protection services and police services. However, as discussed in **Section 5.12, Public Services**, this increased demand would not result in the need for new or physically altered facilities.

Alternative 3: Former DHS Site

Implementation of Alternative 3 would contribute to an increase in demand for fire protection services and police services. However, as discussed in **Section 5.12, Public Services**, this increased demand would not result in the need for new or physically altered facilities.

Alternative 4: Leased Facility on San Pablo Avenue

The facility to be leased on San Pablo Avenue under Alternative 4 is already served by existing public service providers and would not contribute to a cumulative effect on public services.

Alternative 5: No Action

There would be no cumulative effects related to public services under this alternative.

6.2.13 Population and Housing, Socioeconomic and Environmental Justice

Proposed Action

LBNL is one of the largest employers in Berkeley, and most LBNL employees live in Berkeley or the immediate vicinity. Accordingly, growth in Berkeley (including at UC Berkeley) is the focus of the cumulative analysis for the Proposed Action.

Increases in population growth and housing demand associated with the implementation of the Proposed Action would be minimal, as operation of the CRT facility would involve hiring or relocating only 15 new staff and the relocation of 70 staff from the OSF in Oakland. The remainder of the CRT population already works at LBNL or at UC Berkeley. In addition to the population growth assumed for the Proposed Action, other LBNL projects through 2018 would contribute to existing population and housing totals, although several LBNL projects would just demolish old buildings and not construct new building space. However, the growth would be accommodated throughout the San Francisco Bay Area through new development and through changes in the occupancy rates and use of existing residential and other building space.

Implementation of the UC Berkeley projects proposed during the Proposed Action time frame could result in an increase in faculty and staff working in the Campus Park area and adjacent blocks and an increase in students. Many students, faculty, and staff prefer to live close to the campus and within the City of Berkeley. The Anna Head Housing project, scheduled to be completed in mid-2012, and the Ellsworth Student Housing project, scheduled to be completed in 2017, would add approximately 890 beds within 1 mile of the center of the campus.

Therefore, the employment and enrollment growth associated with the UC Berkeley and LBNL projects through 2018, including the Proposed Action, would not represent substantial population growth. This increase represents a minimal cumulative effect for population and housing.

As discussed in **Section 5.13, Population and Housing, Socioeconomics, and Environmental Justice**, the Proposed Action would not result in environmental effects or human health risks that could affect minority and low-income populations in the surrounding area. Therefore, it would not contribute to a cumulative effect.

Alternative 1: Cafeteria Parking Lot Site

Cumulative effects related to population and housing and socioeconomic and environmental justice under this alternative would be similar to the Proposed Action.

Alternative 2: RFS Site

As discussed in **Section 5.13, Population and Housing, Socioeconomics, and Environmental Justice,** development of Alternative 2 would be similar to the Proposed Action and would not result in environmental effects or human health risks that could affect minority and low-income populations in the surrounding area. Therefore, it would not contribute to a cumulative effect.

Alternative 3: Former DHS Site

Construction activities in the vicinity of the Alternative 3 site would take place in the same timeframe as the Proposed Action. As discussed in **Section 5.13, Population and Housing, Socioeconomics, and Environmental Justice,** the development of Alternative 3 would be similar to the Proposed Action and would not result in environmental effects or human health risks that could affect minority and low-income populations in the surrounding area. Therefore, it would not contribute to a cumulative effect.

Alternative 4: Leased Facility on San Pablo Avenue

As indicated in the City of Berkeley and City of Oakland cumulative project lists, there are no projects proposed in the vicinity of the Alternative 4 site that would be constructed in the same timeframe as the Proposed Action. As discussed in **Section 5.13, Population and Housing, Socioeconomics, and Environmental Justice,** the development of Alternative 3 would be similar to the Proposed Action and would not result in environmental effects or human health risks that could affect minority and low-income populations in the surrounding area. Therefore, it would not contribute to a cumulative effect.

Alternative 5: No Action

There would be no cumulative effects related to population and housing and socioeconomic and environmental justice under this alternative.

6.2.14 Construction Traffic Accidents

Proposed Action

As discussed in **Section 6.2.10, Transportation and Traffic,** construction traffic to the LBNL site is controlled and overseen by the UC LBNL Site Construction Coordinator. The coordinator ensures that truck movement for construction within the lab is limited to 98 one-way trips. Although background traffic is expected to increase on city streets, construction of the Proposed Action in combination with other construction projects at the LBNL site would not result in a considerable increase in construction truck traffic as truck trips would be controlled and therefore no corresponding increase in potential for traffic accidents compared to existing conditions as a result of LBNL projects. The project's contribution to the potential for increased traffic accidents would be minimized.

Alternative 1, Cafeteria Parking Lot Site

The potential for truck collisions during construction of Alternative 1 in addition to other construction projects at the LBNL site would be similar to those described above for the Proposed Action.

Alternative 2, RFS Site

Construction traffic associated with construction at the RFS site would not elevate the risk for traffic accidents because the freeway is close by and the affected intersection currently operates at an acceptable level. There would be no other construction projects in the vicinity of the Alternative 2 site. Therefore, the cumulative risk of traffic accidents related to construction traffic would be minimal.

Alternative 3, Former DHS Site

Trucks from the Alternative 3 site and surrounding development would follow the same route as the Proposed Action. Therefore, the potential for collisions from construction trucks would be similar. As explained in **Section 6.2.14,** this potential cumulative risk would be minimal.

Alternative 4, Leased Facility on San Pablo Avenue

Construction at the Alternative 4 site, in combination with other construction projects in the vicinity of the site in the Cities of Berkeley, Oakland, and Emeryville would add truck traffic to San Pablo Avenue

and Ashby. The increase of construction traffic on these streets could increase the potential for construction truck accidents. However, given the limited number of trucks needed for construction of this alternative, the contribution to the total cumulative risk would be minimal.

Alternative 5, No Action

There would be no construction associated with the No Action alternative. Therefore, there would be no cumulative effects related construction traffic accidents under this alternative.