

State of California, Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT

Project Title: Solar Energy Research Center
Lead Agency: University of California, Lawrence Berkeley National Laboratory
Project Location: One Cyclotron Road, Berkeley, CA 94720
Contact Person: Jeff Philliber, Environmental Planner. One Cyclotron Road, MS 76-234A, Berkeley, CA 94720

Project Description

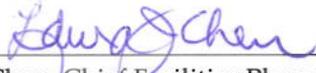
The University of California proposes to construct and operate the Solar Energy Research Center project (SERC project or proposed project) at its Lawrence Berkeley National Laboratory (LBNL) site in Berkeley, Alameda County, California. The proposed project would be located in the central area of the LBNL site known as "Old Town." The proposed project includes an approximately 40,000 gross square foot building, modification of a service road, reconfiguration of parking spaces, and minor improvements to utilities in order to serve the project. The proposed building would house research programs focused on developing fuels from sunlight.

Environmental Review Process

The University of California will be the Lead Agency and will prepare an Environmental Impact Report (EIR) for the proposed project. An Initial Study has been prepared in accordance with the California Environmental Quality Act (CEQA), the *CEQA Guidelines*, and the *University of California Procedures for Implementation of CEQA* to identify potential environmental impacts that will be addressed in the EIR. The attached Initial Study includes a description of the proposed project. It is anticipated that the EIR will address environmental impacts in the following resource areas: aesthetics, air quality, geology and soils, greenhouse gases, hazards and hazardous materials, hydrology and water quality, noise, transportation and traffic, and utilities.

A copy of this Notice of Preparation (NOP), Initial Study, and public scoping meeting announcement are available on the following website: <http://www.lbl.gov/community/env-rev-docs.html>. UC LBNL will hold a public scoping meeting for the EIR on May 26 at the North Berkeley Senior Center. More information regarding the scoping meeting is provided in Attachment A.

This notice is to solicit your views on the scope and contents of the forthcoming SERC project EIR. We request that any comments be received no later than 5:00 PM on June 11, 2010. Your name and a mailing address should be included with your comments. Please direct your comments to the attention of Jeff Philliber at the address noted above. Comments may also be submitted via email to the following address: planning@lbl.gov. If you have any questions regarding this NOP, please contact Jeff Philliber at the above address or via email at planning@lbl.gov.

Signature:  Date: 5/11/2010
Laura Chen, Chief Facilities Planner, Lawrence Berkeley National Laboratory

cc: LBNL CEQA Agency and Public Mailing List

State Agencies

State Clearinghouse
CA Air Resources Board, Executive Officer, James Goldstene; Engineering & Certification Branch Chief, George Law, et al
CA Department of Fish and Game, Director, Donald Koch
CA Department of Health Services, Director, Mark Horton; Center for Environmental Health, Director, Rufus Howell; Radiological Health Branch, Chief, Gary Butner, et al
CA Department of Parks & Recreation, Office of Historic Preservation, State Historic Preservation Officer, M. W. Donaldson, FAIA
CA Department of Water Resources, Director, Mark Corwin
CA Environmental Protection Agency, Secretary, Linda S. Adams, et al
CA EPA, Department of Toxic Substances Control, Northern California Cleanup Operations Branch, Unit Chief, Mark Piros, et al
CA Regional Water Quality Control Board, Executive Officer, Bruce H. Wolff; Groundwater Protection and Waste Containment Division, John Kaiser; Permits, Spills Response Section, Cecil Felix; et al
CA State Resources Agency, Secretary, Lester Snow
CA State Water Resources Control Board, Executive Director, Dorothy Rice, et al
Caltrans, Director, Will Kempton; Region 4 Director, Bijan Sartipi, et al

Federal Agencies

U.S. Environmental Protection Agency, Region 9 Administrator, Jared Blumenfeld; Air Toxics, Radiation & Indoor Air, Michael Bandrowski, et al
U.S. Fish and Wildlife Service, Sacramento Field Office, Chief Supervisor, Susan Moore
U.S. Department of Energy, Berkeley Site Office, Aundra Richards, et al
U.S. Department of Energy, NEPA Compliance Officer – Oakridge Operations Office, Gary Hartman
U.S. Department of Energy, NEPA Representative - BSO, Kim Abbott
U.S. Department of Interior, National Park Service, Elaine Jackson-Retondo, Historian

Regional/County Agencies

Alameda County, Clerk-Recorder's Office, Patrick O'Connell
Alameda County, Supervisor District 5, Keith Carson
Alameda County, LAFCO, Executive Officer, Mona Palacios
Alameda County, County Administrator, Susan Muranishi
Alameda County, Health Care Agency, Public Health Officer, Dr. Mantu Davis, et al
Alameda County, Clerk to Board of Supervisors, Sandy Hou
Alameda County, Planning Department, Agency Director, James Sorenson

Regional/County Agencies (continued)

Metropolitan Transportation Commission, Executive Director, Steve Heminger
Association of Bay Area Governments, Executive Director-Secretary Treasurer, Henry Gardner, et al
Bay Area Air Quality Management District, Executive Officer/APCO, Jack Broadbent; Air Permits Section, Faye Bruno; Fuel Dispensing Section, Scott Owen; et al
Contra Costa County, Department of Health Services, Director of Public Health, Wendel Brunner
East Bay Municipal Utilities District, General Manager, Dennis Diemer; Wastewater Control Section, Audrey Comeaux, et al
East Bay Regional Park District, General Manager, Pat O'Brien, et al

Cities

City of Berkeley

City of Berkeley, City Clerk, Dianna Despam, Acting City Clerk
City of Berkeley, City Manager, Phil Kamlarz, and City Manager's Office et al
City of Berkeley, City Attorney, Zach Cowan
City of Berkeley, Mayor, Tom Bates
City of Berkeley, Council Members, Anderson, Capitelli, Maio, Moore, Olds, Worthington, Wozniak, Arreguin
City of Berkeley, Planning Department, Dan Marks, Director, et al
City of Berkeley, Toxics Management Division, Dr. Nabil Al-Hadithy
City of Berkeley, Energy Officer, Neal DeSnoo
City of Berkeley, Police Department, Chief, Michael Meehan
City of Berkeley, Fire Department, Chief, Deby Pryor, et al
City of Berkeley, Transportation Division Manager, Farid Javandel

City of Berkeley Commissions

City of Berkeley, Community Environmental Advisory Commission, Secretary, Nabil Al-Hadithy
City of Berkeley, Community Health Commission, Secretary, Zandta Lee
City of Berkeley, Landmarks Preservation Commission, Senior Planner, Terry Blount
City of Berkeley, Peace & Justice Commission, Secretary, Eric Brenman
City of Berkeley, Parks, Recreation & Waterfront Commission, Secretary, Virginia Aiello
City of Berkeley, Planning Commission, Secretary, Jordan Harrison
City of Berkeley, Public Works Commission, Secretary, Jeff Egeberg
City of Berkeley, Zero Waste Commission, Secretary, Tania Levy
City of Berkeley, Transportation Commission, Secretary, Farid Javandel

City of Oakland

City of Oakland, Mayor Ron Dellums
City of Oakland, Councilmember District 1, Jane Brunner
City of Oakland, City Attorney, John Russo
City of Oakland, Planning and Zoning Division , Strategic Planning Manager, Eric Angstadt, et al
City of Oakland, City Clerk’s Office, La Tonda Simmons, City Clerk
City of Oakland, City Administrator, Dan Lindheim
City of Oakland, Fire Department, Chief, Gerald Simon, et al

City of Albany

City of Albany, City Clerk, Jacqueline Bucholz
City of Albany, Administrator, Beth Pollard

El Cerrito and Kensington

El Cerrito Fire Department & Kensington Fire District, Lance Maples, Fire Chief

University of California Office of the President (UCOP)

UCOP, External Relations, Senior Vice President, Dan Dooley
UCOP, Facilities Management, Director, George Getyen et al
UCOP, State Government Relations, Associate Vice President & Director, Steve Juarez
UCOP, Federal Government Relations, Associate Vice President, Gary Falle
UCOP, Office of General Counsel, Chief Campus Counsel, Elisabeth Gunther,
UCOP, FacAdm-Planning, Design & Const., Coordinator - Environmental Planning, Charlotte Strem
UCOP, FacAdm-Planning, Design & Const., Senior Planner, Mary O’Keefe

UC Berkeley

UC Berkeley, Chancellor, Robert Birgeneau
UC Berkeley, Executive Vice Chancellor & Provost, George Breslauer
UC Berkeley, Vice Chancellor for Research, Graham Fleming
UC Berkeley, Associate Chancellor, Government, Community & Campus Liaison, Linda Williams
UC Berkeley, Vice Chancellor-Facilities Services, Edward Denton,

UC Berkeley (continued)

UC Berkeley, Assistant Vice Chancellor-Physical and Environmental Planning, Emily Marthinsen, et al
UC Berkeley, EH&S Director, Mark Freiberg, et al
UC Berkeley, Community Relations, Director, Caleb Dardick
UC Berkeley, Lawrence Hall of Science, Director, Elizabeth Stage, et al
UC Berkeley, Botanical Garden, Paul Licht, Director, et al
UC Berkeley, Police Department, Chief, Mitchell Celaya
UC Berkeley, Campus Landscape Architect, Jim Horner
UC Berkeley, Emergency Services Manager, Tom Klatt
UC Berkeley, Residence Hall Assembly, Oriana Madrigal Zamora, President

Organizations

Berkeley Association of Realtors, Association Executive, Sally Dunker,
Berkeley Chamber of Commerce, Chief Executive Officer, Mark Berson, et al
Campus Parnassus Neighborhood Association, President, Eric Arens
Committee to Minimize Toxic Waste, Co-Chair, Pam Sihvola, et al
Council of Neighborhood Associations/BANA, Secretary, Julie Dickinson
Downtown Berkeley Association, Executive Director, John Caner
Euclid-LeConte Neighbors, Jim Sharp et al
League of Women Voters BAE, President, et al
Nyingma Institute, Program Director, Abbe Blum
Oakland Metropolitan Chamber of Commerce, President & CEO, Joseph Haraburda
Panoramic Neighborhood Association, President, Jerry Wachtel
Sierra Club, Group Chair, Kent Lewandowski
Urban Creeks Council, UCC Vice Chair, Carole Schemmerling
Friends of Strawberry Creek, Work Programs, Jennifer Pearson
Save Strawberry Canyon, Janice Thomas

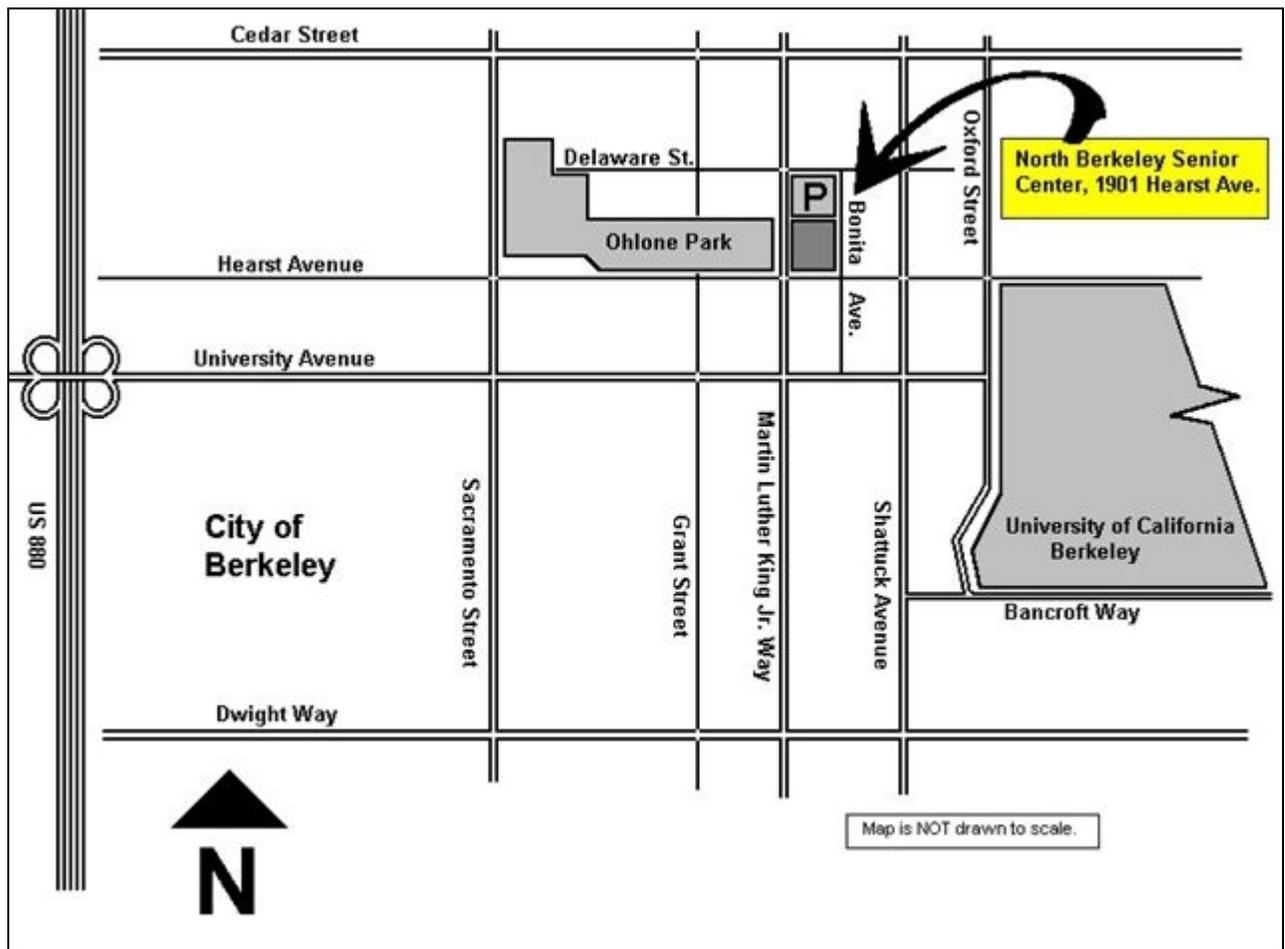
Individuals and Neighbors

(Various)

ATTACHMENT A: PUBLIC SCOPING MEETING

UC LBNL will hold a public scoping meeting open to all interested agencies and members of the public. The meeting is intended to present a brief overview of the Solar Energy Research Center project, to identify environmental resource areas to be analyzed in the Draft EIR, and to invite public comments on the scope of the EIR analyses.

- What:** Scoping Meeting for the Solar Energy Research Center project EIR
- When:** May 26, 2010 from 6:30 PM to 8:30 PM
- Where:** North Berkeley Senior Center, Rooms A and B upstairs, 1901 Hearst Street, Berkeley
- Parking:** Parking is available at the Senior Center and on surrounding streets (see map below)



1. ENVIRONMENTAL CHECKLIST/INITIAL STUDY

Project Title:	Solar Energy Research Center (SERC)
Lead Agency:	The University of California, Lawrence Berkeley National Laboratory
Location:	Lawrence Berkeley National Laboratory hill site One Cyclotron Road Berkeley, California 94720
Applicant:	See Lead Agency above
Existing LRDP Designation:	Research and Academic
Existing On-site Land Use:	The project site is currently occupied by Buildings 25A, 44, 44A, and 44B, which are expected to be decontaminated and demolished as part of the Old Town Demolition and Environmental Restoration project (reviewed under CEQA and NEPA and approved) prior to the start of construction of the SERC project.
Surrounding Land Uses:	The project site is surrounded by existing LBNL facilities such as the Advanced Light Source and the LBNL Health Center. Other surrounding buildings, specifically "Old Town" Buildings 4, 5, 14, 16, 40, 41, and 52, are included in the approved Old Town Demolition and Environmental Restoration Project.
Description of Project:	See attached Project Description in Section 3 of this Initial Study.
Interested and Responsible Agencies:	<ul style="list-style-type: none">• Bay Area Air Quality Management District; and• San Francisco Bay Regional Water Quality Board.

2. INTRODUCTION

2.1 Initial Study

Pursuant to Section 15063 of the California Environmental Quality Act (CEQA) Guidelines (Title 14, California Code of Regulations, Sections 15000 et seq.), an Initial Study is a preliminary environmental analysis that is used by the lead agency as a basis for determining whether an EIR, a Mitigated Negative Declaration, or a Negative Declaration is required for a project. The *CEQA Guidelines* require that an Initial Study contain a project description; a description of environmental setting; an identification of environmental effects by checklist or other similar form; an explanation of environmental effects; a discussion of mitigation for significant environmental effects; an evaluation of the project's consistency with existing, applicable land use controls; and the names of persons who prepared the study.

2.2 EIR Process

This environmental analysis is an Initial Study for the proposed Solar Energy Research Center (SERC) project (referred to as the "proposed project" or the "SERC project" throughout this document). The purpose of this Initial Study is to evaluate the potential environmental impacts of the proposed project to determine what level of additional environmental review, if any, is appropriate.

This environmental analysis incorporates by reference the Lawrence Berkeley National Laboratory (LBNL) 2006 Long Range Development Plan (LRDP) EIR in accordance with Section 15150 of the *CEQA Guidelines*. The 2006 LRDP EIR anticipated development of a new building in the area where the proposed project is located, and it evaluated the potential environmental impacts from that development. Therefore, the program-level analyses contained in the 2006 LRDP EIR was used in this Initial Study to support certain conclusions related to potential environmental impacts of the proposed project and to determine which potential environmental impacts will be examined further.

The analysis contained in this Initial Study concludes that the proposed project would result in the following categories of impacts, depending on the environmental issue involved: no impact; less-than-significant impact; or a potentially significant impact. As shown in the Determination form in Section 6 of this document and based on the analysis contained in this Initial Study, it has been determined that the proposed project may result in potentially significant impacts. Therefore, an EIR will be prepared after circulation of this Initial Study and Notice of Preparation (NOP). The EIR will be a stand alone project EIR and will not be tiered from the 2006 LRDP EIR.

2.3 Public and Agency Review

This Initial Study and NOP are being circulated for public and agency review from May 12, 2010 to June 11, 2010. Copies of this document are available for review at the following locations and online at <http://www.lbl.gov/community/env-rev-docs.html>. Copies of the 2006 LRDP and the 2006 LRDP EIR are also available for review online at <http://www.lbl.gov/Community/env-rev-docs.html> or at the following locations:

- Berkeley Public Library, 2090 Kittredge Street, 2nd Floor Reference Desk, Berkeley, CA 94704
- Berkeley Lab Main Library, One Cyclotron Road, Building 50, Room 4034, Berkeley, CA 94720

Comments on this Initial Study/NOP must be received by 5:00 PM on June 11, 2010 and should be sent to:

Jeff Philliber, Environmental Planner
Lawrence Berkeley National Laboratory
One Cyclotron Road, MS 76-234A
Berkeley, CA 94720

2.4 Project Approvals

As a public agency principally responsible for approving or carrying out the proposed project, the University of California is the Lead Agency under CEQA and is responsible for certifying the adequacy of the environmental document and approving the proposed project. It is anticipated that the Board of Regents of the University of California (The Regents) will consider approval of the proposed project in late 2010.

2.5 Organization of the Initial Study

This Initial Study is organized into the following sections:

Section 1 - Project Information: provides summary background information about the proposed project, including project location, lead agency, and contact information.

Section 2 - Introduction: summarizes the scope of the document, the project's review and approval processes, and the document's organization.

Section 3 - Project Description: presents a description of the proposed project, including the need for the project, the project's objectives, and the elements included in the project.

Section 4 - Environmental Factors Potentially Affected: addresses whether this Initial Study identifies any environmental factors that involve a significant or potentially significant impact that cannot be reduced to a less-than-significant level.

Section 5 - Determination: indicates whether impacts associated with the proposed project would be significant and what, if any, additional environmental documentation is required.

Section 6 - Evaluation of Environmental Impacts: contains the Environmental Checklist form for each resource area. The checklist is used to assist in evaluating the potential environmental impacts of the proposed project. This section also presents a background summary for each resource area, and an explanation of all checklist answers.

Section 7 - References: lists references used in the preparation of this document.

Section 8 - Report Preparers: lists the names of individuals involved in the preparation of this document.

3. PROJECT DESCRIPTION

3.1 Project Summary

The Solar Energy Research Center (SERC) project is the proposed development of a new three-story approximately 40,000 gross square foot (gsf) research building that would house laboratories, offices, and interaction space. The SERC facility is planned to house research focused on developing fuels from sunlight using nanoscale photovoltaic and electrochemical solar energy systems. SERC would require multi-disciplinary laboratories focused on solar-to-electrical energy and solar-to-chemical energy. Wet research laboratories (fume hoods with direct ventilation and specialized piped utilities) and vibration-sensitive imaging and laser equipment would also be required.

3.2 Project Purpose

The goal of SERC is to develop the science and technology that would allow the use of sunlight to create energy sources. There are several fuels that might be generated from this research, including hydrocarbons, ethanol, and methanol. In addition, research into photovoltaics (solar panels), storage of electrical energy, and artificial photosynthesis would be conducted.

Scientific users of the facility are anticipated to hold joint appointments as LBNL researchers and UC Berkeley professors. The research that would be conducted at SERC would focus on developing a materials-based analog to the photosynthetic process found in nature, using nanoscale solar cells (photovoltaics or PVs) and electrical systems to collect sunlight and supply electrical currents that would be used to drive fuel-forming chemical reactions. As envisioned, the chemical reactions would convert water and carbon dioxide into a high-energy-density fuel that could be stored, transported, and used for transportation or other applications. The entire process would take place in a single reactor (termed a photoelectrochemical, or PEC, cell) that would collect sunlight and would be the site of the reactions involving water and ambient carbon dioxide. This research is expected to address major scientific barriers in solar fuel generation.

3.3 Project Location and Surrounding Uses

The LBNL hill site is situated in the eastern hills of the cities of Berkeley and Oakland in Alameda County; it is located on approximately 200 acres that are owned by the University of California. Existing buildings at the LBNL hill site are used for wet, dry, and “heavy” laboratories, office space, and associated uses. The eastern portion of the LBNL hill site is in the city of Oakland while the western portion of the LBNL hill site is in the city of Berkeley.

The LBNL hill site is surrounded by a mix of land uses, including open space, institutional uses, and residential and neighborhood commercial areas. The University of California, Berkeley, including the Strawberry Canyon open space areas, is south and southeast of the LBNL hill site. Residential neighborhoods and a small neighborhood commercial area in the city of Berkeley is to the north and northwest, and regional open space, including the 2,000-acre Tilden Regional Park, is to the northeast.

3.4 Project Site

The proposed SERC project would be centrally located on the LBNL site at the current location of Buildings 25A, 44, 44A, and 44B (see **Figure 1, Project Site**). These buildings currently house a total of 17



SOURCE: Google Earth – 2009, Impact Sciences, Inc. – March 2010

FIGURE 1

Project Site

employees. Building 25A is currently used as the Energy and Environmental Technology Division Shops and Lab, Building 44 is used for storage, and trailers 44A and 44B are used as offices. The existing buildings would be decontaminated and demolished as part of the approved Old Town Demolition and Environmental Restoration project prior to commencement of construction of the SERC project. The project site is located east of Building 5, south of McMillan Road, west of the Health Center (Building 26), and north of Building 25 and a 0.25-acre redwood grove. There are currently about 35 parking spaces within the footprint of the project site. Surrounding research facilities include the Advanced Light Source, which is a national user facility that generates intense light for scientific and technological research, and would include, if approved, the General Purpose Laboratory that is proposed as part of the Seismic Phase 2 project and would be built at the site of Building 25. Other buildings in the general vicinity of the proposed SERC facility, specifically Buildings 4, 5, 14, 16, 40, 41, and 52, are planned to be demolished under the Old Town Demolition and Environmental Restoration project.

The project site is approximately 1.5 acres and would be vacant following demolition of Buildings 25A, 44, 44A, and 44B under the Old Town Demolition and Environmental Restoration project. The site has been heavily disturbed by construction and uses associated with the existing buildings. No jurisdictional waters, wetlands, intermittent waterways, drainages, or blue-line streams exist on the site. The site does not contain suitable habitat for special-status plant and wildlife species.

3.5 Project Characteristics

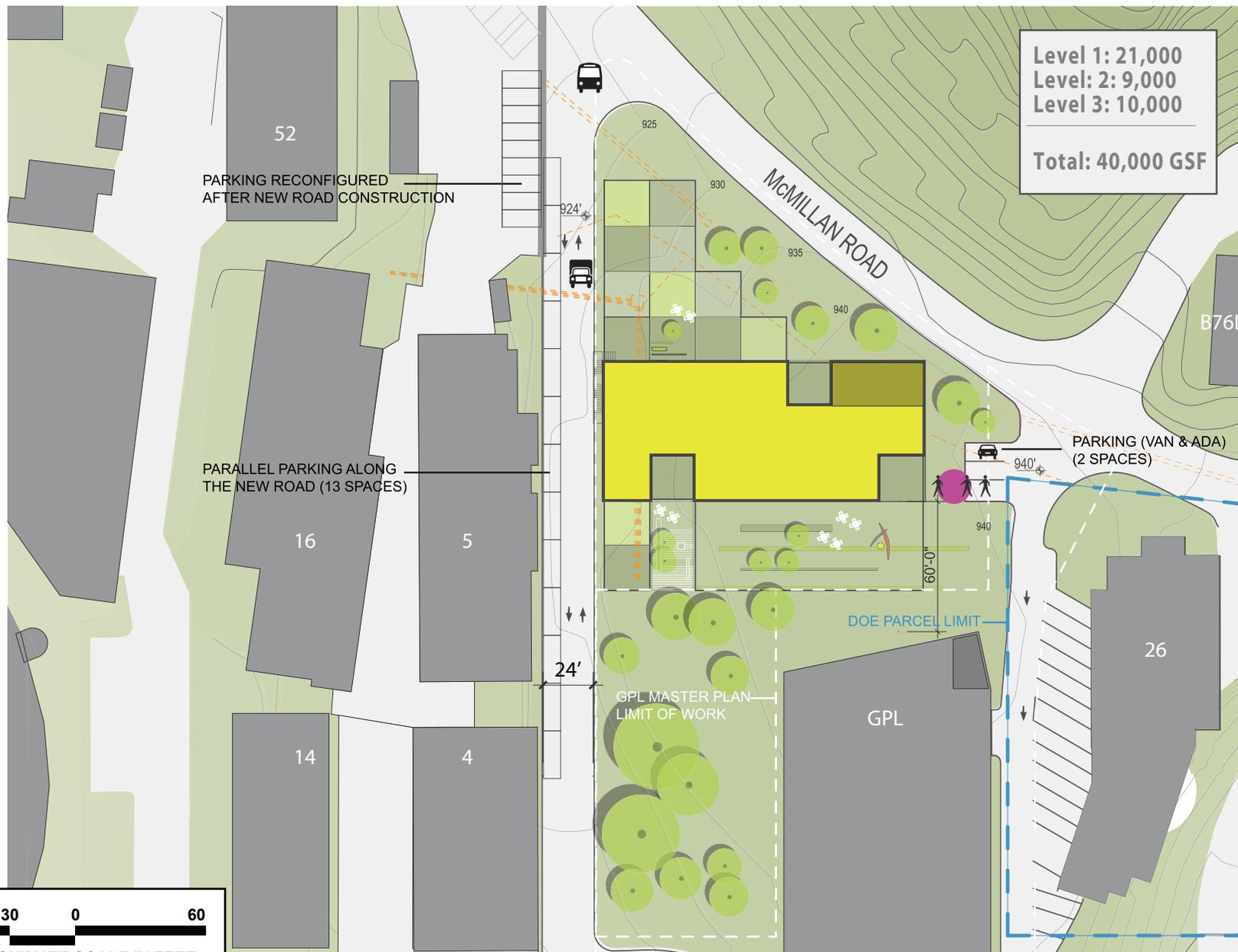
The proposed project includes the construction and operation of a new building, modification of a service road, reconfiguration of parking surrounding the building, and minor modifications to utilities to serve the project (see **Figure 2, Site Plan**).

Proposed Building

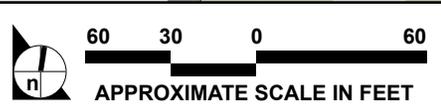
The proposed SERC facility would contain approximately 40,000 gsf of laboratory, office, and interaction space. There would be approximately 21,000 assignable square feet of space in the building. The SERC facility would be a three-story facility with three components: a plinth¹ that is partially buried to minimize the building mass, a glazed office floor acting as a “breezeway” atop the plinth, and a top level that would house laboratories, including wet laboratories.

- Level One (partial basement) would be the largest level of the building with approximately 21,000 gsf of space; however, the apparent mass of this floor would be minimized as it would be mostly below grade. Level One would house light and vibration-sensitive laboratory equipment and a mechanical room. Level One would include a laser spectroscopy lab, a membrane lab, a microwave and electro imaging lab, a PV/PEC characterization lab, an electronics lab, and a number of fabrication labs. Level One would have pedestrian access to the exterior space at the south end of the building via a landscaped stairway that would connect to the redwood grove and the General Purpose Lab main courtyard. The loading and receiving area would also be located at this level and would be accessed by a reconfigured service road around the site.
- Level Two (the ground level) would be smaller with approximately 9,000 gsf of space. It would be the primary access level and would house the main lobby, offices, gathering and seminar spaces, and a small kitchen. Level Two would be the most transparent floor, offering views out

¹ The plinth is the solid base for anchoring the building.



Level 1: 21,000
 Level 2: 9,000
 Level 3: 10,000
 Total: 40,000 GSF



SOURCE: LBNL – March 2010

FIGURE 2

Site Plan

and allowing the green adjacent spaces to be part of the interior. The main entry located at the southeast corner of the building would create a node of pedestrian activity due to its proximity to the proposed General Purpose Lab.

- Level Three would contain approximately 10,000 gsf of space. Biophysics, catalysis, and nano-interface and prototype development labs would be located on Level Three with views of exterior spaces and the surrounding terrain.

These levels would be connected via a “grand” stairway accessible from the entry lobby and would be the primary means of circulation in the building.

The SERC facility would employ green building strategies with a goal of achieving a LEED Gold, or, at minimum, a LEED Silver rating from the U.S. Green Building Council. The mission of the design is to construct a building that is consistent with the proposed research and to implement practices during its construction and operation that reduce reliance upon fossil fuels. Some of the proposed design features include the use of low albedo material and minimization of paved areas to reduce the heat island effect, the use of material with high levels of recycled content, the use of regional material when available, the use of certified wood, and the provision of natural daylight and views in all offices and common areas.

The building would be oriented to maximize light from the north and south. To the north, the views face a steep hill of terrain that is typical of the LBNL hill site. To the south, the building would face the courtyard space that would be developed as part of the future General Purpose Lab and the existing redwood grove, and to the west would be views of Oakland, Berkeley, and the San Francisco Bay. If the General Purpose Lab and courtyard is not constructed, the SERC project would install pedestrian access and landscaping on the south side of the building. The building site is part of the Special Viewshed Zone, as indicated in the LBNL Design Guidelines, and the proposed building meets the height limitations of the Guidelines in order to preserve the views of the Advanced Light Source building dome as an element of architectural history and identity for LBNL and the greater community.

The exterior of the building would be durable, water-resistant, compatible with the surrounding buildings, and appropriate for the intended uses of the site. The exterior cladding is anticipated to include a mix of masonry, concrete, metal, glass, wood, and stone. Exterior lighting features would include landscape lighting and building exterior lighting limited to exit doors and nearby outdoor equipment. Exterior lighting and rooftop lighting would have cut-off shielding to prevent light spill and light pollution per LEED requirements.

Infrastructure and Utilities

Infrastructure improvements would be necessary to provide utilities to the proposed project. Estimated water usage of the SERC facility is 1.1 million gallons per year. Approximately 300 feet of an existing 8-inch high pressure water main along Upper Hill Road would be relocated to remove it from the building footprint. The relocated 8-inch main along with the existing 12-inch main in the service road would be used to provide potable and fire water to the SERC facility. One additional fire hydrant and approximately 50 feet of a new 6-inch waterline would be installed on the project site to serve the SERC facility.

The wastewater from the project would be collected and conveyed through a 6-inch piping system to the west of the service road to be installed as part of the Seismic Phase 2 project. In the event that the Seismic

Phase 2 project is not implemented before the SERC project, the SERC project would replace the existing 4-inch piping system with the new 6-inch system. This existing lateral connects to the sewer main between Building 7 and Building 16.

The existing storm drain system at the project site has insufficient capacity to meet the current needs of the drainage area. As part of the proposed Seismic Phase 2 project, which, if approved, would construct the General Purpose Laboratory on the Building 25 site, a new 125-foot-long, 12-inch storm drain would be installed to the east of the site. This would connect to an existing catch basin in Grizzly Station Road. The SERC project would also utilize the new 12-inch storm drain via a short connection. In the event that the Seismic Phase 2 project is not implemented before the SERC project, the SERC project would install the 12-inch storm drain. It is anticipated that small drains and collection system would be utilized in the landscaping areas. The basement walls for the new building would be drained through a subdrain collection system. Due to the depth of the basement and the location of the available storm drains in the area, it is expected that this collection system would need to be pumped utilizing a small submersible pump contained within a 20-foot deep manhole/vault.

Chilled water would be produced in the building and supplied to the air handling units. The chilled water system would have a cooling load of approximately 240 tons produced by two 120-ton, high-efficiency, centrifugal water-cooled chillers. Chillers and plumbing equipment would be located on Level One in the mechanical room. Cooling towers would be located on the roof of the building.

The estimated building space heating load is about 2,000,000 British thermal units per hour (BTUH), with total output capacity of 3,000,000 BTUH obtained from two 1,500,000-BTUH, gas-fired, hot water boilers and a domestic hot water heater. The water heaters are expected to be located in a penthouse on the roof. Supply air handlers and exhaust fans would also be located on the roof. The parapet would be approximately 14 feet high and would screen the penthouse and other mechanical equipment from view.

A new 1.5-inch gas main and 1-inch compressed air line would be installed as part of the proposed Seismic Phase 2 project and would run along the east side of the SERC building. In the event that the Seismic Phase 2 project is not implemented before the SERC project, the SERC project would install the new gas main and compressed air line. To adequately address the environmental effects of the proposed SERC project, this Initial Study evaluates the effects of implementing the proposed project both with and without the 12-inch storm drain, and the 1.5-inch gas main, and the compressed air line already in place as described above. Both scenarios will also be evaluated in the SERC project EIR.

Conservatively, it is estimated that the SERC facility would use approximately 1,670 megawatt-hours (MWh) of electricity per year. Electricity would be provided to the facility via the on-site distribution system located within the first floor. New three-phase, gas-insulated, sectionalizing switches located to the southwest of the facility and approximately 200 feet of a new reinforced concrete ductbank would provide normal power to the new building. The emergency power source for the new building would be a stand-alone 350 Kilowatt diesel-engine generator, complete with sub-base fuel tank, sound attenuated enclosure, catalyzed diesel particulate filters (air purifiers) to reduce the engine exhaust emission levels, and silencer. A remote fuel tank or concrete encased tank might be required.

Access, On-Site Circulation, and Parking

Automobile access to the site would be via McMillan Road and an existing service road (Medical Road). Medical Road is an existing one-lane service road that traverses the western edge of the project site, then

turns east and then north, completing a loop and connecting back to McMillan Road. That road would be modified in order to meet current fire code requirements. The SERC project would modify approximately 200 linear feet of Medical Road on the western side of the building, while modifications to the southern and eastern portions of Medical Road would be completed as part of the Seismic Phase 2 - General Purpose Lab project. In the event that the Seismic Phase 2 project is not implemented before the SERC project, the SERC project would modify the southern and eastern portions of Medical Road as well.

There would be one main entrance on the east side of the building on Level Two, pedestrian access on the south side of the building on Level One, and a loading area on the west side of the building on Level One along the service road. A lobby area would be located at the main entrance on the second level. Pedestrian circulation throughout the project would be via the stairs located in the northeast corner of the building or by elevator located adjacent to the stairs.

The proposed project would reconfigure the existing layout of parking spaces, reducing the total amount of parking in this area by approximately 15 spaces. Parking at the project site would be located on the west side of the building along the reconfigured service road and near or parallel to McMillan Road.

Public transportation would be available through the LBNL shuttle system. The shuttle route that currently runs off-site to UC Berkeley and the City of Berkeley would be expected to provide access to the site through the stop on McMillan Road at the intersection with Medical Road near the northwest corner of the project site.

Hazardous Materials On-Site

The facility would primarily be an energy research facility and no biological work is anticipated. However, for planning purposes, the SERC facility would be built to Biosafety Level II standards, which involve working with agents with a moderate potential hazard. Research that would be conducted in the proposed facility would involve a wide variety of research materials, including hazardous chemicals, non-hazardous organic and inorganic materials, and nano-scale materials. Other hazardous materials on site would include an on-site bulk liquid nitrogen storage tank generator and a diesel tank to store fuel for the emergency generator. Non-chemical processes would be used to control scale deposits in the cooling towers.

Project Population

It is currently anticipated that the SERC facility would house approximately 60 people. However, it is anticipated that of these 60 persons, approximately 40 employees would relocate from the UC Berkeley campus, 10 employees would relocate from other locations within the LBNL hill site, and 10 new employees would be hired as a result of project implementation. The research anticipated to be conducted in the new facility would represent a partnership between UC Berkeley and LBNL, with many of the principal investigators holding joint assignments as UC Berkeley professors and LBNL researchers.

Construction Schedule and Staging

Construction is anticipated to begin in mid-2011 and continue through mid-2013. Construction employees would park their vehicles off the LBNL hill site at an existing parking lot and be shuttled to the project site. Material staging would occur in space currently used for employee parking in the general "Old Town" area surrounding the project site.

Based on the proposed design of the SERC building, parking facilities, and service road, the proposed project would require the export of approximately 20,000 cubic yards of material. Haul trucks would travel on McMillan Road to Smoot Road and Chu Road, exit via the Blackberry Canyon gate to Cyclotron Road, and then to city streets to dispose of the material off site. Excess material would be hauled off site over a period of three months and, during that time, daily truck trips would be managed within LBNL limits for all construction projects.

4. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

As identified in Section 15063(c) of the State CEQA Guidelines, the purpose of this Initial Study is to: (1) inform responsible agencies and the public of the nature of the proposed project and its location, (2) identify impacts that would clearly not result or would clearly be less than significant and therefore will not be discussed in the EIR, and (3) provide a general description of the topics intended to be addressed in the EIR.

The environmental factors checked below could be potentially affected by implementation of the proposed project and/or by cumulative impacts resulting from implementation of the proposed project in conjunction with other expected developments. These factors will be evaluated in the project EIR.

X	Aesthetics		Agricultural and Forest
X	Air Quality		Biological Resources
	Cultural Resources	X	Geology and Soils
X	Hazards and Hazardous Materials	X	Greenhouse Gas Emissions
	Land Use and Planning	X	Hydrology and Water Quality
X	Noise		Mineral Resources
	Public Services		Population and Housing
X	Transportation/Traffic		Recreation
X	Utilities and Service Systems	X	Mandatory Findings of Significance

6. EVALUATION OF ENVIRONMENTAL IMPACTS

Introduction

Appendix G of the State CEQA Guidelines provides a suggested format to use when preparing an Initial Study. The Environmental Checklist used in this document adopts a slightly different format with respect to response column headings, while still addressing the Appendix G checklist questions for each environmental issue area.

Project-specific and Cumulative Impacts

The attached Environmental Checklist uses the following response headings to identify potential environmental effects that will be addressed in the SERC project EIR:

Impact to be Analyzed in the EIR: An effect that may or may not be significant that will be addressed in the project EIR. The effect may be a less than significant impact that will be addressed to provide a more comprehensive analysis, an impact for which further analysis is necessary or desirable before a determination about significance can be made, an impact that is potentially significant but may be reduced to a less than significant level with the adoption of mitigation measures, or an impact that may be significant and unavoidable.

No Additional Analysis Required: Implementation of the proposed project would clearly not result in an impact or would clearly result in a less than significant impact under CEQA criteria, and no additional analysis beyond that provided in the Initial Study is necessary.

2006 LRDP EIR Mitigation Measures

The 2006 LRDP EIR evaluated environmental impacts of Lab development under the LRDP. Because the proposed project is an element of the growth projected under the LBNL 2006 Long Range Development Plan (LRDP), relevant mitigation measures in the 2006 LRDP EIR adopted by The Regents in conjunction with the approval of the 2006 LBNL LRDP have been incorporated into and made a part of the proposed project. The full text of the 2006 LRDP EIR mitigation measures is presented in **Appendix A**. The analysis presented in this Initial Study evaluates environmental impacts that would result from project implementation following the application of the LBNL 2006 LRDP mitigation measures. The LBNL 2006 LRDP mitigation measures incorporated into the project would be monitored as specified in the Mitigation Monitoring and Reporting Plan adopted as part of the LBNL 2006 LRDP Final EIR.

6.1 Aesthetics

6.1.1 Background

Section IV.A of the 2006 LRDP EIR addresses the aesthetic effects of Lab growth under the 2006 LRDP through 2025 and is incorporated by reference in this Initial Study for this project pursuant to *CEQA Guidelines*, Section 15150. The following discussion summarizes information presented in the ‘Setting’ subsection of Section IV.A of the 2006 LRDP EIR and describes the project site and relevant aspects of the project.

LBNL

The LBNL hill site is located on the steeply sloping hillsides of the Berkeley-Oakland hills, rising from elevation 500 feet near the Blackberry Canyon Gate to about 1,000 feet at the northern border of the site. The hills provide a semi-natural, vegetated open space backdrop to the LBNL hill site. The hills are wooded with native stands of oaks and California bay or with introduced eucalyptus or conifers. The entire LBNL hill site cannot be viewed from any one single off-site vantage point. However, portions of the LBNL hill site are visible from residential neighborhoods, public roadways, and public vantage points in the areas that adjoin LBNL. Views of individual buildings or groups of buildings are available from public vantage points such as the Memorial Stadium, the Lawrence Hall of Science, and Grizzly Peak Road. As described in the 2006 LRDP EIR, portions of the LBNL hill site are visible in medium range views (less than 1 mile) from nearby elevated off-site locations such as the residential neighborhoods in the north and northwestern portions of the City of Berkeley. Long-range views (greater than 1 mile) are available from downtown Berkeley and the Berkeley Marina.

The visual character of LBNL’s built environment is eclectic. Many buildings display an industrial look and utilitarian quality. Many buildings are painted in neutral colors to blend with the natural setting. Some of the buildings are recognizable landmarks, including Building 50 and the Advanced Light Source, both of which are also visible from off-site locations.

Some amount of nighttime lighting is produced on the site as a result of interior and exterior lighting associated with LBNL buildings, roadways and parking lots. All buildings and parking areas are equipped with downward-directed light fixtures for nighttime lighting.

Project Site

The SERC project site is located in the center of the LBNL hill site near the Advanced Light Source building and the Health Center in the “Old Town” area. Due to its proximity to nearby hillsides, trees, and other buildings, the project site is not visible from most off-site areas near the LBNL hill site, although medium-range views of the site are available from nearby residential neighborhoods and from intermittent stretches of Centennial Road.

6.1.2 2006 LRDP EIR Analysis

The 2006 LRDP EIR evaluated visual impacts of Lab development under the LRDP utilizing an Illustrative Development Scenario, which was a conceptual portrayal of the likely development under the 2006 LRDP. That illustrative scenario assumed new buildings in the general area that is now being considered for the location of the SERC project. The LRDP EIR analysis determined that development on

the LBNL hill site could result in a significant and unavoidable impact on scenic vistas and resources (LRDP Impact VIS-1), and significantly affect site character (LRDP Impact VIS-2), but would not result in a significant impact related to light and glare or due to construction activities.

The proposed project is within the scope of analysis of the 2006 LRDP EIR. Relevant mitigation measures in the 2006 LRDP EIR have been incorporated into the proposed project planning and design and would be implemented during project operations consistent with LRDP or project-specific mitigation monitoring requirements.

6.1.3 Environmental Checklist and Discussion

	Impact to be Analyzed in the EIR	No Additional Analysis Required
AESTHETICS - Would the project:		
a. Have a substantial adverse effect on a scenic vista?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

DISCUSSION:

- a. **Impact to be Analyzed in the EIR.** While there are no officially designated scenic vistas in the 2006 LBNL LRDP, the area where the project occurs could be considered a scenic vista from off-site locations due to its proximity to the Advanced Light Source. The proposed project would construct a building, service road, and parking spaces in a currently developed location on a ridge of the hillside that is currently developed with other LBNL facilities. The SERC project EIR will contain visual simulations that will show the proposed elevations of the facility as viewed from off-site locations and will further discuss potential impacts of the project on scenic vistas.
- b. **No Additional Analysis Required.** The nearest state highways to the project site are Interstate 80, Interstate 580, Highway 24, and Highway 13. The portions of these highways that are within the vicinity of the project site are not designated or eligible as scenic routes. There are no other scenic resources located on the project site that would be affected by the implementation of the proposed project. Therefore, there would be no impact to scenic resources on-site or within the vicinity of a designated state scenic highway and no additional analysis is required.

- c. **Impact to be Analyzed in the EIR.** The proposed project would involve construction on a previously developed site. A building that would be demolished under a separate project prior to the construction of the SERC facility is currently located at the project site. Construction would be temporary in nature and would largely be screened from off-site receptors by the terrain and intervening structures and vegetation. The proposed three-story building would be partially below grade and would meet the height requirements of the LBNL Design Guidelines in order to preserve the views of the architecturally historic Advanced Light Source building. The SERC project EIR will include visual simulations of the proposed facility as observed from nearby residential areas. Impacts to the existing visual character will be further discussed in the SERC project EIR.

- d. **Impact to be Analyzed in the EIR.** The project would create new sources of light and glare, including expansive windows and metal materials. During the day, sunlight could reflect off the glass and metallic portions of the building exterior and could thereby create additional glare. During the nighttime, portions of the project site would be lit for nighttime operations and security reasons. These new sources could potentially affect day and nighttime views and could conflict with local lighting regulations and policies. Light and glare impacts will be further discussed in the SERC project EIR.

6.1.4 Cumulative Impacts

Cumulative impacts on visual resources will be evaluated in the SERC project EIR.

6.2 Agricultural and Forest Resources

6.2.1 Background

The LBNL site does not contain any designated or actively farmed land. The project site is considered "Urban and Built-Up" by the California Department of Conservation Farmland Mapping and Monitoring Program (FMMP). The project site is currently developed and the buildings on the site would be demolished as part of the Old Town Demolition and Environmental Restoration project prior to construction of the SERC facility. Therefore, development of the project site would not result in the conversion of agricultural land to urban uses.

6.2.2 Environmental Checklist and Discussion

	Impact to be Analyzed in the EIR	No Additional Analysis Required
AGRICULTURAL AND FOREST RESOURCES - Would the project:		
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)) or timberland (as defined in Public Resources Code section 4526)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to nonforest use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION:

- a.-e. **No Additional Analysis Required.** The project site is located in a developed area. According to the FMMP, there are no Williamson Act Contracts within the boundaries of LBNL. The project would not result in the conversion of farmland to a non-agricultural use on-site and off-site because there is no farmland within the LBNL hill site or in the vicinity of the Lab. There is also no forest land on the project site. Therefore, implementation of the project would not impact agricultural and forest resources, and no further analysis is required.

6.2.4 Cumulative Impacts

Because there would be no project impact on agricultural and forest resources, the project would not contribute to any cumulative impacts on these resources. Further analysis is not required.

6.3 Air Quality

6.3.1 Background

Section IV.B of the 2006 LRDP EIR addresses the air quality effects of LBNL growth under the 2006 LRDP through 2025 and is incorporated by reference in this Initial Study for this project pursuant to *CEQA Guidelines* Section 15150. The following discussion summarizes information presented in the 'Setting' subsection of Section IV.B of the 2006 LRDP EIR.

The project area is subject to air quality planning programs developed in response to both the Federal Clean Air Act (CAA) and the California Clean Air Act (CCAA). Within the San Francisco Bay Area, air quality is monitored, evaluated, and regulated by the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and Bay Area Air Quality Management District (BAAQMD).

LBNL

LBNL is located in Alameda County, which, along with eight other counties, is within the San Francisco Bay Area Air Basin (SFBAAB or Basin).

Air pollutants are emitted by a variety of sources, including mobile sources such as automobiles; stationary sources such as manufacturing facilities, power plants, and laboratories; and area sources such as homes and commercial buildings. While some of the air pollutants that are emitted need to be examined at the local level, others are predominantly an issue at the regional level. For instance, ozone (O_3) is formed in the atmosphere in the presence of sunlight by a series of chemical reactions involving oxides of nitrogen (NO_x) and reactive organic gases (ROG). Because these reactions are broad-scale in effects, ozone typically is analyzed at the regional level (i.e., in the Basin) rather than the local level. On the other hand, other air pollutants such as sulfur dioxide (SO_2), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), carbon monoxide (CO), lead (Pb), and toxic air contaminants (TAC) are a potential concern in the immediate vicinity of the pollutant source because the pollutants are emitted directly or are formed close to the source. Therefore, the study area for emissions of SO_2 , PM_{10} , $PM_{2.5}$, CO, Pb, and TAC is the local area nearest the source, such as in the vicinity of congested intersections, whereas the study area for regional pollutants such as NO_x and ROG is the entire Basin.

Air pollutants typically are categorized as criteria pollutants or TACs. The criteria pollutants are those regulated at the federal level by US EPA and at the state level by CARB. These include O_3 , PM_{10} , $PM_{2.5}$, CO, NO_2 , SO_2 , and Pb. O_3 is a secondary pollutant formed during photochemical reactions with precursor pollutants. As such, O_3 is measured by assessing emissions of its precursors, Reactive Organic Gases (ROG) and NO_2 . Sources of criteria pollutants at LBNL include automobiles and heating equipment.

TACs are airborne pollutants for which there are no air quality standards but that are known to have adverse human health effects. Examples include aromatic and chlorinated hydrocarbons, certain metals, and asbestos. Adverse health effects can be carcinogenic, short-term (acute) noncarcinogenic, and long-term (chronic) noncarcinogenic. TACs are generated by a number of sources, including stationary sources such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources such as automobiles and trucks, particularly diesel-fueled vehicles; and area sources, such as farms, landfills, construction sites, and residential areas. Sources of TACs around the LBNL hill site include diesel buses

and trucks; laboratory vent emissions; boilers in individual buildings; emergency generators; and painting operations.

Air quality in the Basin is monitored by the BAAQMD and CARB. Based on pollutant concentrations measured at monitoring stations within the Basin, the SFBAAB is classified as being in attainment or non-attainment of federal and state air quality standards. The Basin is in attainment or unclassified for all federal and state standards except for the state and federal O₃ standards and the state standards for particulate matter. The SFBAAB is designated nonattainment for the state O₃ 1-hour standard, the federal O₃ 8-hour standard, the state PM₁₀, and the state PM_{2.5} standards. The SFBAAB and was recently designated non-attainment for the new federal PM_{2.5} standard. For all other federal and state standards, the SFBAAB is in attainment or unclassified.

Some groups of people are considered more sensitive to adverse effects from air pollution than the general population. These groups are termed "sensitive receptors." Sensitive receptors include children, the elderly, and people with existing health problems, who are more often susceptible to respiratory infections and other air quality-related health problems. Schools, childcare centers, hospitals, and nursing homes are all considered sensitive receptors. Air pollution impacts are assessed, in part, based on potential effects on sensitive receptors.

Project Site

The project site is not within 1/4 mile of any sensitive receptors. There are no hospitals or nursing homes in the project vicinity. Vehicles are the primary sources of air pollution in the vicinity of the project site. Other sources of emissions in the vicinity of the project site include emergency generators associated with various existing buildings, and fume hoods located in laboratories, which are vented to the roofs of laboratory buildings.

6.3.2 2006 LRDP EIR Analysis

Consistent with BAAQMD CEQA Guidelines², the 2006 LRDP EIR evaluated the impact of the LRDP on air quality by focusing on the plan's consistency with the most recently adopted air quality plan (in this case the Bay Area 2005 Ozone Strategy Plan). The 2006 LRDP EIR did not evaluate odor impacts because there is no history of odor complaints from the LBNL hill site and the site is fairly distant from off-site receptors.

Impacts on air quality from LBNL growth under the 2006 LRDP through 2025 are evaluated in Section IV.B of the 2006 LRDP EIR. The analysis concluded that all air quality impacts would be either less than significant or less than significant with mitigation with one exception. With respect to LRDP Impact AQ-6, the 2006 LRDP EIR concluded that even though cumulative emissions of TACs would decrease,

² The BAAQMD released its most recent public review draft of revised CEQA significance thresholds for evaluation of air quality impacts in December 2009. In general, the proposed thresholds are the same or more stringent than thresholds provided in existing BAAQMD guidance. There are also numerous new proposed quantitative thresholds for Criteria Pollutants PM₁₀ and PM_{2.5} and precursors ROG and NO_x that did not previously have quantitative thresholds. No numerical thresholds have yet been proposed for CO or SO₂.

The BAAQMD also recommends significance thresholds for the emission of TACs. The proposed threshold to evaluate a project's impact related to cancer risk is 10-in-one-million while the threshold to evaluate a cumulative TAC impact related to cancer risk is 100-in-one-million.

implementation of the 2006 LRDP in combination with other contributing projects would produce cumulative emissions of TACs that would result in an excess cancer risk that exceeds 10 in one million. BAAQMD did not provide a significance threshold for assessing cumulative cancer risk at the time of publication of the 2006 LRDP EIR. If the cumulative significance threshold now proposed by the BAAQMD were applied, the risk calculated in the LBNL 2006 LRDP EIR would be below the new threshold and the cumulative impact would be less than significant. This analysis uses the BAAQMD-recommended cumulative cancer risk threshold of 100-in-a-million.

The proposed project is within the scope of analysis of the 2006 LRDP EIR. Relevant mitigation measures in the 2006 LRDP EIR have been incorporated into the proposed project planning and design and would be implemented during project operations consistent with LRDP or project-specific mitigation monitoring requirements.

6.3.3 Environmental Checklist and Discussion

	Impact to be Analyzed in the EIR	No Additional Analysis Required
AIR QUALITY - Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:		
a. Conflict with or obstruct implementation of the applicable air quality plan?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Impact to be Analyzed in the EIR	No Additional Analysis Required
d. Expose sensitive receptors to substantial pollutant concentrations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Expose people to substantial levels of toxic air contaminants (TACs), such that the exposure could cause an incremental human cancer risk greater than 10 in one million or exceed a hazard index of one for the maximally exposed individual?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

DISCUSSION:

- a-c. **Impact to be Analyzed in the EIR.** The project site is located in the SFBAAB, which is currently designated a non-attainment area for PM₁₀, PM_{2.5}, and ozone. Project-related increases in UC LBNL employees, laboratory space, equipment, and construction activities would be likely to add incrementally to regional ambient air pollutant emissions including short- and long-term emissions of criteria air pollutants from mobile and stationary sources, including PM₁₀ and ozone. The SERC project EIR will estimate the total emissions from construction and operation of the proposed project and discuss whether the emissions would exceed the BAAQMD existing and proposed thresholds for evaluating criteria pollutant impacts.
- d. **Impact to be Analyzed in the EIR.** It is unlikely that the proposed project would expose sensitive receptors to substantial CO concentrations because the 2006 LRDP EIR determined that CO concentrations associated with full development would not exceed air quality standards. However, concentrations of CO and other pollutants associated with the proposed project will be evaluated in the SERC project EIR to determine whether they would result in a significant effect on sensitive receptors.
- e. **No Additional Analysis Required.** There is no history of odor complaints from the LBNL hill site and the proposed project site is fairly distant from off-site receptors, with the nearest off-site receptors located approximately 1,700 feet to the north. Ongoing activities from the proposed project are not expected to create nuisance or objectionable odors affecting substantial numbers of people, particularly off-site. Therefore no impact related to objectionable odors would occur and no further analysis is required.
- f. **Impact to be Analyzed in the EIR.** Development of the proposed project would add research facilities that would be potential sources of toxic air contaminants (TACs). The 2006 LRDP EIR included a human health risk assessment (HHRA) that evaluated the impact related to incremental carcinogenic and non-carcinogenic human health risk from exposure to TACs associated with Lab growth (LRDP Impact AQ-4) and cumulative growth in TACs (LRDP Impact AQ-6). The SERC project EIR will include a review of the 2006 LRDP HHRA to determine if the assumptions in the HHRA adequately accounted for the TAC emissions that would result from the SERC facility.

6.3.4 Cumulative Impacts

Cumulative impacts on air quality will be evaluated in the SERC project EIR.

6.4 Biological Resources

6.4.1 Background

Section IV.C of the 2006 LRDP EIR addresses the effects on biological resources from LBNL growth under the 2006 LRDP through 2025 and is incorporated by reference in this Initial Study for this project pursuant to *CEQA Guidelines* Section 15150. The following discussion summarizes information presented in the ‘Setting’ subsection of Section IV.C of the 2006 LRDP EIR as it relates to the proposed project.

LBNL

Similar to other developed areas in the Berkeley-Oakland hills, the LBNL hill site is characterized by clusters of development interspersed with open space that contains a mosaic of vegetation types and wildlife habitats, including oaks and mixed hard wood forests, native and non-native grasslands, chaparral, coast scrub, marsh and wetland communities, and riparian scrubs and forests. Grasslands are the predominant plant community and make up approximately 67 acres of the LBNL hill site. Grasslands consist mostly of annual grasses either as open grassland or as an understory in relatively open eucalyptus and pine stands. Eucalyptus stands are the second most dominant plant community with approximately 22 acres under such stands. Oak-Bay woodland is found on about 12 acres of the LBNL hill site and consists of a mix of coast live oaks and California bay. Coast live oak woodland occurs over 9 acres at LBNL and California bay woodland occurs on 5.5 acres of the hill site, and is concentrated mainly in the drainages. Coastal scrub occurs on approximately 8.5 acres at LBNL and includes both California sagebrush scrub and coyote brush scrub. Developed areas at the LBNL hill site have been landscaped with non-native ornamentals in the past and native and drought resistant plants in recent years.

The 2006 LRDP EIR evaluated the potential for the LBNL hill site to support special status plant and wildlife species. Based on the evaluated species, the EIR noted that five special status plant species and 21 special status wildlife species had at least a moderate potential to occur on the LBNL hill site. The EIR also determined that four habitats at the LBNL hill site qualified as sensitive habitats, including known habitat of Lee’s micro-blind harvestman, potential Alameda whipsnake habitat, critical Alameda whipsnake habitat, and riparian and wetland habitat.

Project Site

The SERC project site is located in an area that has previously been graded and disturbed in conjunction with the construction and operation of Buildings 25A, 44, 44A, and 44B and the associated parking lot in the Old Town area. The site is currently occupied by Buildings 25A, 44, 44A, and 44B which would be demolished and the site cleared as part of a separate project. There is no natural habitat present on the project site. A line of non-native blue gum (*Eucalyptus globulus*) trees is located southwest of Building 25/25B. Landscaped trees of 10 giant sequoias (*Sequoiadendron gigantea*) and one dawn redwood (*Metasequoia glyptostroboides*) with irrigated turf as an understory are located along the western side of Building 25.

As noted in the Project Description, in the event that the Seismic Phase 2 project is not implemented and a new storm drain is not constructed by that project to serve the GPL and SERC facility, the SERC project would construct an approximately 125-foot-long storm drain extending from the southeast corner of Building 25 to a connection point on “S” Road, east of the proposed site. This drain crosses a neighboring

hillside, although the land has already been disturbed by the creation of “S’ Road. The area is not recognized as habitat for the Alameda whipsnake according to the LBNL 2006 LRDP EIR.

6.4.2 2006 LRDP EIR Analysis

Impacts on biological resources from LBNL hill site growth under the 2006 LRDP through 2025 are evaluated in Section IV.C of the 2006 LRDP EIR and are incorporated herein by reference. The 2006 LRDP EIR analysis concluded that all impacts to biological resources would either be less than significant or would be reduced to a less than significant level with mitigation.

The proposed project is within the scope of analysis of the 2006 LRDP EIR. Relevant mitigation measures in the 2006 LRDP EIR have been incorporated into the proposed project planning and design, and would be implemented during project operations consistent with LRDP or project-specific mitigation monitoring requirements.

6.4.3 Environmental Checklist and Discussion

	Impact to be Analyzed in the EIR	No Additional Analysis Required
BIOLOGICAL RESOURCES - Would the project:		
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION:

- a. **No Additional Analysis Required.** Due to the project site’s history of disturbance and the absence of habitat, implementation of the proposed project would not have direct or indirect adverse effects on any rare, endangered, or threatened species. The site is currently developed with Building 25A, 44, 44A, and 44B, in addition to paved roadways and parking areas, and landscaped spaces. The project site does not contain suitable habitat for special status species as these buildings would be demolished and the site would remain in a disturbed state prior to construction of the SERC facility.

The project site is located near a grove of 11 redwood trees. The close proximity of the grove to existing buildings reduces the likelihood for nesting raptors but does not preclude nesting by other birds. Bird species not protected under CESA or FESA are protected under the Fish and Game Code 3503 and the Migratory Bird Treaty Act. The reconfiguration of parking spaces along McMillan Road could result in the removal of approximately 10 trees which could potentially provide habitat for nesting birds. Nesting birds may potentially be impacted by project construction noise or tree removal. Disturbance during the nesting season (February 15 through August 15) could potentially result in the potential nest abandonment and mortality of young, which is considered a “take” of an individual. Implementation of LRDP Mitigation Measure BIO-3, which is incorporated into and a part of the proposed project, would prevent take of nesting birds. Therefore, the impact would be less than significant.

In the event that Buildings 25 and 25B are not demolished as part of the Seismic Phase 2 project prior to construction of the SERC project, the proposed project could potentially disturb bats which may use these abandoned buildings or tree crevices for maternity roosts. Implementation of LRDP Mitigation Measure BIO-4, which is incorporated into and a part of the proposed project, would prevent take of roosting bats. Therefore, the impact would be less than significant.

In the event that the Seismic Phase 2 project is not constructed prior to the SERC project, the proposed project would install approximately 125 feet of storm drain from the southeast corner of Building 25, through the neighboring undeveloped hillside, to a connection point on “S” Road. Construction of the storm drain would require the removal of one Coast live oak with a circumference of 26 inches at 4 feet above the ground surface. The proposed project is not subject to the City of Berkeley’s Tree Ordinance. However, UC LBNL voluntarily plants trees to replace any that are removed. Replanting would be done in accordance with the UC LBNL revegetation policies. Although the hillside is grassland, it has been previously disturbed during grading and construction of “S” Road and Medical Road. As determined in the 2006 LRDP EIR, the hillside does not represent suitable habitat for the Alameda whipsnake or other candidate, sensitive, or special status species.

Therefore, the proposed project would not adversely affect any special status species identified by the California Department of Fish and Game (CDFG) or the U.S. Fish and Wildlife Service (USFWS). No further analysis is required.

- b. No Additional Analysis Required.** There are no existing drainages or other sensitive communities on the SERC project site as discussed above. The project site is situated on the ridge that separates the drainages for Strawberry Canyon and Blackberry Canyon. Therefore, the proposed project would not have a substantial impact on riparian habitat or a sensitive natural community, as defined in local or regional plans, policies, regulations or by the CDFG or USFWS. No further analysis is required.
- c. No Additional Analysis Required.** The project site is developed with Building 25A, 44, 44A, and 44B, paved roadways and parking areas, and landscaped spaces. There are no jurisdictional wetlands or water courses on the project site. Therefore, there would be no impact to wetlands as defined by Section 404 of the Clean Water Act and no further analysis is required.
- d. No Additional Analysis Required.** The project site is developed and surrounded by institutional uses. Although there could be some wildlife movement in the project vicinity, the project site is not part of an established wildlife movement corridor or a native wildlife nursery site. Therefore, there would be no impact to wildlife movement and no further analysis is required.
- e. No Additional Analysis Required.** The project site would be cleared as part of the Old Town Demolition and Environmental Restoration project prior to the start of construction of the SERC building.

The proposed project would not conflict with LBNL 2006 LRDP policies protecting biological resources. The proposed project would remove approximately 10 trees in the parking area along McMillan Road during construction. If the SERC project also constructs the storm drain through the hillside to the southeast of the project site, it would also remove one Coast live oak. UC LBNL would replace these trees in accordance with its revegetation policies. Therefore, the impact would be less than significant and no additional analysis is required.

- f. **No Additional Analysis Required.** No Habitat Conservation Plans or Natural Community Conservations Plans have been adopted that encompass the project area. Therefore, no impact would occur and no additional analysis is required.

6.4.4 Cumulative Impacts

The magnitude of cumulative effects of development on biological resources is in large part determined by the extent to which resources are protected in plans and during specific project implementation. The LBNL and UC Berkeley LRDPs, as well as the East Bay Regional Park District's Master Plan and the City of Oakland and City of Berkeley General Plans, all contain policies and guidelines for protecting natural resources, including special-status species, sensitive natural communities, and jurisdictional waters. All development under the LBNL 2006 LRDP (including the SERC project) and UC Berkeley 2020 LRDP and any development under the East Bay Regional Park District's Master Plan would also take place in a regulatory context of federal, state, and local laws that combine to avoid and minimize impacts to special-status species, sensitive natural communities, jurisdictional waters, and wildlife migratory corridors and nurseries through a variety of tools, including the creation of resource-specific management plans and the application of mitigation measures. Mitigation measures and best management practices applied to specific projects would help to ensure that they would not result in substantial adverse impacts to biological resources. As noted above, development of the proposed building would not affect any special status species or regulated habitat. Therefore, the cumulative impact to biological resources resulting from the proposed SERC project and other foreseeable development in the project vicinity would be less than significant. No further analysis is required.

6.5 Cultural Resources

6.5.1 Background

Section IV.D of the 2006 LRDP EIR addresses the effects on cultural resources from LBNL development under the 2006 LRDP through 2025 and is incorporated by reference in this Initial Study for this project pursuant to *CEQA Guidelines* Section 15150. The following discussion summarizes information presented in the 'Setting' subsection of Section IV.D of the 2006 LRDP EIR.

LBNL hill site history presented in the 2006 LRDP EIR was based on information from technical studies prepared for the project area, including archival research at the California Historical Resources Information System's Northwest Information Center; a cultural resources evaluation and survey; an archaeological survey report; and the first of a series of reports being prepared as part of an inventory and evaluation of potential historically significant buildings and structures at the LBNL hill site.

Previous Site-Wide Studies

As part of the environmental analysis for the 1987 LRDP EIR, as amended, all undeveloped land and then-proposed building locations were examined for potential historical and archaeological resources. All reasonably accessible parts of the LBNL hill site area were examined. Special attention was given to areas of relatively flat land or rock outcrops. The steep hillsides were not examined intensively, although transects were made through accessible areas. Based on the findings of the historic and archaeological resources survey, no indications of historic or prehistoric archaeological resources were encountered in any location on the LBNL hill site. Based on this survey, the LBNL hill site was determined not to be eligible for listing on the National Register of Historic Places.

Current Studies of Archaeological Resources

Field surveys and archival research at the California Historical Resources Information System's Northwest Information Center have been undertaken to determine whether any archaeological resources have been discovered at the LBNL hill site. The Northwest Information Center has indicated there is a "low potential for Native American sites in the project area" and thus "a low possibility of identifying Native American or historic-period archaeological deposits in the project area." Additionally, field studies conducted at various times at the LBNL hill site have not encountered any archaeological resources. Native American archaeological sites in this portion of Alameda County tend to be situated on terraces along ridgetops, midslope terraces, alluvial flats, near ecotones, and near sources of water, including springs. LBNL is situated on a steep slope adjacent to Strawberry Creek. Therefore, there is a low-to-moderate potential for Native American sites to be present on the LBNL hill site.

6.5.2 2006 LRDP EIR Analysis

Impacts on cultural resources from LBNL development under the 2006 LRDP through 2025 are evaluated in Section IV.D of the 2006 LRDP EIR and incorporated herein by reference. The proposed project is within the scope of analysis of the 2006 LRDP EIR. Relevant mitigation measures in the 2006 LRDP EIR have been incorporated into the proposed project planning and design and would be implemented during project operations consistent with LRDP or project-specific mitigation monitoring requirements.

6.5.3 Environmental Checklist and Discussion

	Impact to be Analyzed in the EIR	No Additional Analysis Required
CULTURAL RESOURCES - Would the project:		
a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION:

- a. No Additional Analysis Required.** The proposed project does not involve demolition or alteration of existing buildings. The demolition of Buildings 25A, 44, 44A, and 44B would occur as part of the Old Town Demolition and Environmental Restoration project which has been analyzed separately. Therefore, the project site would be vacant prior to the start of construction of the SERC facility. There would be no impact related to historical resources and no further analysis is required.
- b., d. No Additional Analysis Required.** There is a low potential that undiscovered archaeological resources could be discovered during construction of the proposed building because the site was previously disturbed by the construction of Buildings 25A, 44, 44A, and 44B.

As noted in the Project Description, in the event that the Seismic Phase 2 project is not constructed prior to the SERC project, the proposed project would install 125 feet of storm drain from the southeast corner of Building 25 through an undeveloped hillside to a connection point on "S" Road. Although the hillside is currently undeveloped, it has been previously disturbed during grading and construction of "S" Road and Medical Road. LRDP Mitigation Measure CUL-3, which requires work stoppage and archaeological assessment in the event of a discovery during construction, is incorporated in and a part of the proposed project to minimize impacts to undiscovered archaeological resources. The 2006 LRDP Mitigation Measure CUL-4, also included in the proposed project, provides for work stoppage and appropriate treatment and Native American involvement in the event of the discovery of human remains. With the inclusion of these measures in the proposed project, the potential for the project to result in impacts to any archaeological resources or human remains that might be discovered during construction would be less than significant. Further evaluation is not required.

- c. No Additional Analysis Required.** During the course of development at LBNL, including at the project site, extensive excavation for buildings and infrastructure has not revealed the presence of unique paleontological or geologic resources, and thus implementation of the proposed project would not affect

such resources. No impact would occur with implementation of the proposed project and further analysis is not required.

6.5.4 Cumulative Impacts

The proposed project would not require the demolition of any building that qualifies as a historic resource and therefore the project would not contribute to a cumulative impact related to historic resources.

Concerning potential cumulative impacts on unknown archaeological resources, the areas surrounding the LBNL hill site are either built out or would be retained as open space, thus limiting development in undisturbed areas. Furthermore, all projects would be required to halt construction in the event that previously unknown archaeological resources are encountered during ground disturbing activities. Therefore, cumulative impacts on archaeological resources would not be considered significant.

Furthermore, as specific projects are proposed in the vicinity and in the region, lead agencies would have to determine, on a case-by-case basis, whether the potential for historical or archaeological resources to be disturbed or adversely affected exists at a particular site. Therefore, site-specific research on the presence of historical and/or archaeological resources is frequently one of the first considerations in project planning and CEQA review. Accordingly, implementation of the proposed project, in conjunction with other reasonably foreseeable development, would not be expected to result in a significant cumulative effect on historical or archaeological resources. Further analysis is not required.

6.6 Geology and Soils

6.6.1 Background

Section IV.E of the 2006 LRDP EIR addresses the effects related to geology and soils from LBNL growth under the 2006 LRDP through 2025 and is incorporated by reference in this Initial Study for this project, pursuant to *CEQA Guidelines* Section 15150. The following discussion summarizes information presented in the 'Setting' subsection of Section IV.E of the 2006 LRDP EIR.

LBNL

The LBNL hill site is located on the western slopes of the Berkeley-Oakland hills within the central region of the Coast Range Geomorphic province. The Miocene Orinda Formation, composed of poorly indurated non-marine mudstone and sandstone underlies most of the site. The western and southern portions are underlain by older marine mudstone and sandstone deposits. Some of the higher elevation portions of the site and a portion of the eastern part of the site are underlain by Moraga Formation rocks, and a small portion of the eastern extent of the site is underlain by shallow marine sandstones of the Claremont Formation. The entire site is mapped by the California Department of Conservation, Geologic Survey (CGS) as MRZ-1, an area where no significant mineral or aggregate deposits are present. The majority of the site soils are Xerorthents-Millsholm complex, 30 to 40 percent slope. These soils are well-drained and susceptible to erosion. Other soil types on the site include Altamont Clay, Mayhem loam, and Mayhem-Los Gatos complex, all soil types highly susceptible to erosion.

The Hayward Fault and associated Earthquake Fault Zone traverses the western edge of the Lab site near the Blackberry Canyon Gate. The San Andreas Fault Zone is approximately 19 miles southwest of the LBNL hill site. According to the USGS Working Group on California Earthquake Probabilities estimates, there is a 27 percent chance of an earthquake of M 6.7 on the Hayward-Rodgers Creek Fault system by 2032 and a 21 percent chance of an earthquake of M 6.7 on the San Andreas Fault by 2032. The LBNL hill site is expected to experience strong ground shaking from a seismic event on any of the Bay Area major faults. CGS has designated much of the LBNL hill site as a Seismic Hazard Zone for earthquake-induced landslides. The CGS has not designated any portion of the site as a Seismic Hazard Zone for liquefaction.

Project Site

The SERC project site is located in the center of the LBNL hill site in the Old Town area. According to previously prepared geotechnical evaluations, the project site is underlain by a relatively shallow (0 to about 10-foot-thick) layer of soil over bedrock. Orinda Formation bedrock (including siltstone, sandstone, claystone, and conglomerate) underlies the building site.

6.6.2 2006 LRDP EIR Analysis

Impacts related to geology and soils from LBNL growth under the 2006 LRDP through 2025 are evaluated in Section IV.E of the 2006 LRDP EIR and incorporated herein by reference. The 2006 LRDP EIR analysis concluded that all impacts related to geology and soils would either be less than significant or would be reduced to a less than significant level with mitigation.

The proposed project is within the scope of analysis of the 2006 LRDP EIR. Relevant mitigation measures in the 2006 LRDP EIR have been incorporated into the proposed project planning and design, and would

be implemented during project operations consistent with LRDP or project-specific mitigation monitoring requirements.

6.6.3 Environmental Checklist and Discussion

	Impact to be Analyzed in the EIR	No Additional Analysis Required
GEOLOGY AND SOILS - Would the project:		
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:		
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. Strong seismic ground shaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii. Seismic-related ground failure, including liquefaction?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv. Landslides?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Result in substantial soil erosion or the loss of topsoil?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION:

a. i-iv. **Impact to be Analyzed in the EIR.** The project site is not within a designated Earthquake Fault Zone, which indicates that there is a low potential for fault rupture on the project site. However, this issue will be further discussed in the SERC project EIR. As mentioned above, the entire LBNL hill site is likely to experience strong ground shaking during most large magnitude earthquakes located in the Bay Area. The LBNL hill site does contain one or more landslide deposits, but the geomorphology of the site indicates that the last movement of the main deposit beneath the LBNL hill site was considerably more than 11,000 years ago. However, in conformance with LRDP Mitigation Measure GEO-2, a detailed

geotechnical investigation will be conducted for the SERC project and the recommendations of the investigation will be incorporated into the building design. This investigation will address seismic-related ground failure and non-seismic landsliding. The results of the investigation will be summarized in the SERC project EIR.

- b. Impact to be Analyzed in the EIR.** The project site is underlain with soils classified as Xerorthents-Millsholm complex, which is characterized by high erosion potential. Although the project site has been previously disturbed, construction activities (i.e., excavation, grading) could result in increased rates of erosion. Because construction would disturb soils, these areas may be subject to erosion by rain splash and overland flow of storm water for the duration of any construction activities. This runoff could loosen soil that could discharge sediment into storm drains. The proposed project would disturb approximately 1.5 acres and, therefore, would be required by state law to obtain coverage under the California State National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges of Storm Water Associated with Construction Activity prior to construction. As required by the NPDES program, a Storm Water Pollution Prevention Plan (SWPPP) must be developed and implemented during construction for minimizing sedimentation and contamination of storm water runoff generated by the project. The SWPPP specifies Best Management Practices (BMPs) to prevent erosion and sedimentation of runoff water and to keep construction pollutants from coming into contact with storm water. Although anticipated to be less than significant, erosion impacts will be further discussed in the SERC project EIR.
- c.-d. Impact to be Analyzed in the EIR.** The project site is already developed with a building and is not a historically unstable area. Nor is it likely to become unstable as a result of project implementation. However, in conformance with LRDP Mitigation Measure GEO-2 as mentioned above, a detailed geotechnical investigation addressing stability and expansion potential of earth materials at the site will be conducted for the SERC project and the recommendations of the investigation will be incorporated into the building design. The results of the investigation will be summarized in the SERC project EIR.
- e. No Additional Analysis Required.** The project site is currently developed and sewers are available for the disposal of wastewater. Therefore, implementation of the project would not require the construction of septic tanks for wastewater disposal. No further analysis is required.

6.6.4 Cumulative Impacts

Cumulative impacts related to geology and soils will be evaluated in the SERC project EIR.

6.7 Greenhouse Gas Emissions

6.7.1 Background

Section IV of the 2006 LRDP Final EIR addresses the greenhouse gas emissions associated with LBNL growth under the 2006 LRDP through 2025 and is incorporated by reference in this Initial Study for this project, pursuant to *CEQA Guidelines* Section 15150. The 2006 LRDP EIR evaluated the increase in global warming-associated gases associated with the 2006 LRDP in response to a comment raised on the Draft EIR. The following discussion summarizes information presented in the 2006 LRDP Final EIR.

Definition of Greenhouse Gases

“Greenhouse gases” (so called because of their role in trapping heat near the surface of the earth), including those emitted by human activity, are implicated in global climate change, commonly associated with “global warming.” These greenhouse gases trap heat in the earth’s atmosphere by reflecting solar energy (i.e., long wave radiation) back toward the earth’s surface. The greenhouse effect is responsible for maintaining a habitable climate on earth, but human activity has caused increased concentrations of these gases in the atmosphere. Increasing concentrations of greenhouse gases are therefore considered to contribute towards increasing global temperatures as well as increasing variability in regional and global weather patterns.

The principal greenhouse gases (GHGs) are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. Of greenhouse gases generated by human activities, carbon dioxide and methane are generated in the largest quantities. Emissions of carbon dioxide are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. There is general international scientific agreement that human-caused increases in GHGs have contributed to and will continue to contribute to global warming, although there is less agreement concerning the magnitude and rate of the warming.

LBNL

LBNL activities that generate GHG emissions include the use of motor vehicles (mobile sources) and building heating (area sources), as well as indirect sources such as electricity generation. These sources represent the great majority of GHGs produced in association with the activities at LBNL, because LBNL does not emit industrial or agricultural gases, and thus generates little in the way of GHGs other than carbon dioxide. While certain research activities may incorporate other GHGs, their use typically results in minimal emissions. Moreover, while some refrigeration units at LBNL use a hydrofluorocarbon chemical, such as HFC-134a, this class of chemical is a U.S. EPA-acceptable alternative to the more harmful ozone-depleting substances (chlorofluorocarbons) that were banned in the 1990s. LBNL refrigeration units are closed-loop systems that do not emit during normal operation. When work is performed on these systems, EPA-certified refrigerant recovery equipment is used, which effectively eliminates emissions.

On-road transportation sources (i.e., automobiles, trucks, and buses), represent the largest source of GHG emissions, consistent with existing Bay Area and statewide patterns of GHG emissions. Electricity generation (both from in-state and out-of-state power plants) represents the second largest source of GHG emissions for LBNL (although most of these emissions would occur outside the Bay Area).

Project Site

Vehicles are the primary sources of GHG emissions in the vicinity of the project site. Other sources of GHG emissions in the vicinity of the project site include emergency generators associated with various existing buildings.

6.7.2 2006 LRDP EIR Analysis

The 2006 LRDP EIR evaluated the increase in global warming pollutants associated with the 2006 LRDP in response to a comment raised on the Draft EIR. The Final EIR explained that while the 2006 LRDP would result in “incremental increases” in greenhouse gases, they would be neither substantial nor significant due to the LRDP’s numerous features that would reduce overall emissions:

Qualitatively... the proposed LRDP includes numerous provisions that will substantially lessen the LBNL’s contribution to global climate change. The proposed LRDP would encourage use of transit and alternative transportation modes...New construction at the Lab would also be required to meet California Energy Efficiency Standards in the state Building Code...Moreover, subsequent individual projects under the 2006 LRDP would implement GHG emission reduction strategies through compliance with the UC Policy on Sustainable Practices and the Guidelines for implementation of this policy. Emission reduction strategies instituted under this policy include practices related to green building design, clean energy, climate protection, transportation, operations, recycling and waste management, and environmentally preferable procurement.

The Final EIR explained that these LRDP features support the EIR’s conclusion that the LRDP’s contribution to greenhouse gas emissions “would not be cumulatively considerable, and the cumulative impact of the project would therefore be less than significant.”

6.7.3 Environmental Checklist and Discussion

	Impact to be Analyzed in the LRDP EIR	No Additional Analysis Required
GREENHOUSE GAS EMISSIONS - Would the project:		
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

DISCUSSION:

- a.,b. **Impact to be Analyzed in the EIR.** Project-related increases in UC LBNL staff, laboratory space, equipment, and construction activities would contribute to global GHG concentrations resulting from mobile and stationary source emissions of carbon dioxide. The SERC project EIR will estimate the direct and indirect GHG emissions from the operation of the proposed project and discuss whether the emissions would exceed the BAAQMD's proposed threshold for GHGs emitted by land use development projects.

6.7.4 Cumulative Impacts

Cumulative impacts on greenhouse gas emissions will be evaluated in the SERC project EIR.

6.8 Hazards and Hazardous Materials

6.8.1 Background

Section IV.F of the 2006 LRDP EIR addresses impacts related to hazards and hazardous materials from the growth of LBNL under the 2006 LRDP through 2025 and is incorporated by reference in this Initial Study for this project pursuant to *CEQA Guidelines* Section 15150. The following discussion summarizes information presented in the 'Setting' subsection of Section IV.F of the 2006 LRDP EIR.

Definition of Hazardous Materials

The term hazardous material is defined in different ways for different regulatory programs. The 2006 LRDP EIR uses the definition given in California Health and Safety Code Section 25501(o), which defines hazardous material as:

...any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.

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

In addition to hazardous chemicals, biohazardous and radioactive materials are also used in laboratories at LBNL.

LBNL Hazardous Materials Plans and Policies

UC LBNL has developed an Integrated Safety Management (ISM) System that establishes environment, safety, and health policies and procedures to ensure all work is performed safely and in a manner that strives for the highest protection for the employees, guests, visitors, the public, and the environment. In addition, UC LBNL has developed an Environmental Management System to implement sound environmental stewardship practices that protect the air, water, land, and other resources that could potentially be affected by facility operations. The UC LBNL Environment, Health, and Safety (EH&S) Division has the primary responsibility of developing strategies for compliance with applicable local, state, and federal laws and regulations. EH&S has the authority to require abatement of any condition or operation that could endanger people or facilities at the LBNL hill site or result in violations of pertinent federal or state laws or LBNL policies concerning health and safety. EH&S develops specific policies and programs in the following areas: industrial hygiene, chemical safety, physical safety, radiation safety, biohazard safety, hazardous waste management, and environmental protection.

Hazardous Materials Storage, Handling and Disposal

UC LBNL stores chemicals and other hazardous materials in aboveground tanks and storage drums. Hazardous, radioactive and mixed wastes are stored in designated areas in research and support areas throughout the LBNL hill site. From these locations, they are taken to the permitted Hazardous Waste Handling Facility (Building 85) for temporary storage and permitted treatment. From this site, the wastes are hauled off for treatment and disposal.

Other Hazards

Other potential hazards at the LBNL hill site include the presence of asbestos, lead-based paints, PCBs, and radioactive materials in structures; soil and groundwater contaminations in some areas of the hill site due to historical releases of hazardous and radioactive materials.

In 1988, LBNL began a rigorous evaluation of potential historical releases of contaminants to the environment as part of an investigation under RCRA, which was required for renewal of its Part B hazardous waste facility permit. This process revealed contamination in soil and groundwater due to past site activities. A number of interim corrective measures were undertaken during the 1990s to clean up soil and groundwater that posed an imminent threat to human health or the environment. The remaining contamination that exceeded the DTSC required site cleanup levels was addressed in a Corrective Measures Implementation (CMI) Work Plan, which was approved by DTSC in March 2006. In July 2007, DTSC determined that LBNL had implemented the approved remedies for the remaining soil contamination and that the approved remedies for groundwater had been constructed and were operating successfully. UC LBNL continues to perform monitoring using about 150 groundwater monitoring wells located throughout the hill site and one additional well located off-site. In addition, prior to demolition of older structures, UC LBNL conducts surveys to identify locations where hazardous substances are present and to establish procedures to safely remove the substances.

Similar to other developed hillside areas, LBNL hill site's developed areas are interspersed with grassland areas and groves of trees. UC LBNL implements a vegetation management program to minimize the risk of wildland fires. In addition, Alameda County Fire Station 19 is located on the LBNL hill site.

Project Site

The project site is located in a developed portion of the LBNL hill site. There is known subsurface contamination near the project site that is currently being remediated. If additional soil contamination is identified below the current site of Buildings 25A, 44, 44A, and 44B after demolition, the site would be remediated as part of the demolition project prior to construction of the SERC facility. The project site is not within ¼ mile of any schools or childcare centers.

6.8.2 2006 LRDP EIR Analysis

Impacts related to hazards and hazardous materials from LBNL growth under the 2006 LRDP through 2025 are evaluated in Section IV.F of the 2006 LRDP EIR and are incorporated herein by reference. The 2006 LRDP EIR analysis concluded that all hazards and hazardous materials related impacts would either be less than significant or would be rendered less than significant by mitigation.

The proposed project is within the scope of analysis of the 2006 LRDP EIR. Relevant mitigation measures in the 2006 LRDP EIR have been incorporated into the proposed project planning and design and will be implemented during project operations consistent with LRDP or project-specific mitigation monitoring requirements.

6.8.3 Environmental Checklist and Discussion

	Impact to be Analyzed in the EIR	No Additional Analysis Required
HAZARDS AND HAZARDOUS MATERIALS- Would the project:		
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. For a project located within an airport land use plan or, where such plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wild lands?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION:

a.,b. Impact to be Analyzed in the EIR. Operation of the SERC facility would involve increased use, transport, or disposal of hazardous materials associated with laboratory uses. Future generation, handling, storage, and transport of these types of materials would continue to be subject to applicable federal, state, and local requirements. Therefore, significant impacts are not anticipated. Nonetheless,

impacts associated with handling, storage, use and disposal of hazardous materials will be further discussed in the SERC project EIR.

- c. **No Additional Analysis Required.** There are no public or private elementary, middle, or high schools within one-quarter mile of the LBNL hill site. Compliance with federal, state, and local rules and regulations, and LRDP Mitigation Measures HAZ-3a through HAZ-3f, would reduce potential impacts to nearby schools associated with the handling of hazardous materials and wastes to a less-than-significant level. No further analysis is required.
- d. **No Additional Analysis Required.** Because the proposed project would not be located on a Cortese List site, it would not result in a significant hazard to the public or environment. Therefore, there would be no impact and no further analysis is required.
- e. **No Additional Analysis Required.** The project site is more than 11 miles northeast of the Oakland Metropolitan Airport, and lies outside the boundaries of the Alameda County Airport Land Use Commission Plan for the Oakland Metropolitan Airport. Therefore, implementation of the project would not expose people on the project site to hazards from aircraft overflights. No further analysis is required.
- f. **No Additional Analysis Required.** The project site is not located within the vicinity of a private airstrip. Therefore, implementation of the project would not result in any safety hazards related to private airstrips. No further analysis is required.
- g. **Impact to be Analyzed in the EIR.** The proposed project would increase the number of people and the amount of property that could be exposed to regional, compounded, or terrorist-related catastrophic events. Regionally catastrophic events could include earthquakes or fires of sufficient magnitude to impair regional emergency support and service systems such that LBNL could not expect to receive aid from external sources. The proposed project would contribute to the increase in the daily population at the LBNL hill site and amount of property that could be exposed to catastrophic events. This impact will be discussed in the SERC project EIR.
- h. **No Additional Analysis Required.** Development of the proposed project would increase both laboratory and other facility space at the LBNL hill site. This development would meet required safety standards and fire codes at the time of facility construction. Furthermore, the SERC would be located in the center of the LBNL hill site in an area that is developed with building and is not adjacent to wildland areas. Therefore, the project would not expose structures or persons to a significant risk from wildland fires. No further analysis is required.

6.8.4 Cumulative Impacts

Cumulative impacts related to hazards and hazardous materials will be evaluated in the SERC project EIR.

6.9 Hydrology and Water Quality

6.9.1 Background

Section IV.G of the 2006 LRDP EIR addresses the hydrology and water quality effects of LBNL growth under the 2006 LRDP through 2025 and is incorporated by reference in this Initial Study for this project pursuant to *CEQA Guidelines* Section 15150. The following discussion summarizes information presented in the 'Setting' subsection of Section IV.G of the 2006 LRDP EIR.

LBNL

Surface Water Hydrology

The LBNL hill site is located within the Blackberry and Strawberry Canyons in the East Bay Hills, with the majority of the hill site in the Strawberry Canyon. The northwestern portion of the LBNL hill site drains to the North Fork of Strawberry Creek in Blackberry Canyon whereas the majority of the site drains to the South Fork of Strawberry Creek in Strawberry Canyon. The total watershed area of the Strawberry Creek North and South Forks pertinent to LBNL is 878 acres, of which about 202 acres are within the LBNL hill site. A number of smaller drainages discharge into the South Fork, including Ravine Creek, Ten-Inch Creek, Chicken Creek, No Name Creek, and Botanical Garden Creek. Runoff from the LBNL hill site that drains into the South Fork of Strawberry Creek is routed into a mid-canyon retention basin from where it is released downstream at flow rates consistent with the design parameters of the storm drainage systems of UC Berkeley and the City of Berkeley. Runoff from the LBNL hill site that drains into the North Fork exits the site at the bottom of Blackberry Canyon from where it flows through a series of check dams and settlement basins before entering the City's storm water system.

Groundwater Resources

Groundwater at LBNL occurs at depths ranging from zero feet to approximately 100 feet below ground surface. Groundwater flow patterns generally reflect the site topography with groundwater flowing to the south for the vast majority of the site. Groundwater at LBNL is not used for potable or irrigation uses.

Flooding

The LBNL hill site is not located within a 100-year flood plain as determined by the Federal Emergency Management Agency flood hazard mapping.

Surface Water and Groundwater Quality

LBNL has had a storm water management program in place since 1992. This program is designed to control pollution of surface waters. Groundwater in some portions of the LBNL hill site has been affected by accidental releases of hazardous and radioactive materials. UC LBNL is implementing a remediation and monitoring program to address the groundwater contamination.

Project Site

The proposed SERC project site is located on the ridge that separates the Strawberry Canyon and Blackberry Canyon drainages, just southeast of the watershed division, which means that the site drains

to the South Fork of Strawberry Creek via Ten-Inch Creek. Most of the project site is currently impervious as it is covered with buildings and paved parking areas.

6.9.2 2006 LRDP EIR Analysis

Impacts on hydrology and water quality from LBNL growth under the 2006 LRDP are evaluated in Section IV.G of the 2006 LRDP EIR and are incorporated herein by reference. The LRDP EIR analysis concluded that all hydrology and water quality impacts of LBNL growth under the 2006 LRDP would be less than significant. No mitigation measures related to hydrology and water quality impacts are identified in the 2006 LRDP EIR. The proposed project is within the scope of analysis of the 2006 LRDP EIR.

6.9.3 Environmental Checklist and Discussion

	Impact to be Analyzed in the EIR	No Additional Analysis Required
HYDROLOGY AND WATER QUALITY- Would the project:		
a. Violate any water quality standards or waste discharge requirements?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, that would result in substantial erosion or siltation on or off site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, that would result in flooding on or off site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Otherwise substantially degrade water quality?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Impact to be Analyzed in the EIR	No Additional Analysis Required
h. Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j. Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION:

a.,c.-f. Impact to be Analyzed in the EIR. Water quality is regulated by both state and federal agencies under the authority of the Clean Water Act. Projects that have the potential to degrade water quality are subject to the regulations of those agencies. Stormwater runoff from the LBNL hill site enters the City of Berkeley storm drain system at the western edge of the UC Berkeley campus, at Oxford Street.

The project site is currently developed with a building and is mostly impervious. The areas where infrastructure improvements would be constructed as part of the proposed project are also either impervious or compacted in conjunction with the ongoing activities in the area. Therefore, the proposed project would not substantially change the amount of impervious surfaces associated with the project site and would not result in a substantial increase in runoff (or a reduction in infiltration) compared to existing conditions. Therefore off-site flooding or hydromodification-related erosion impacts are not expected. However, these impacts will be further discussed in the SERC project EIR.

The project site is approximately 1.5 acres. Under the state’s National Pollutant Discharge Elimination System (NPDES) permit for construction sites (sites one acre or more in size), which is administered by the San Francisco Bay RWQCB, a Stormwater Pollution Prevention Plan (SWPPP) must be developed and implemented during construction for minimizing sedimentation and contamination of storm water runoff generated by the project. The SWPPP may include the following:

- Construction Storm Water Management Controls: These practices minimize the contact of construction materials and equipment with storm water. The SWPPP should include specific requirements that earth-moving equipment not be operated within an active creek channel. Operation of equipment near creeks should be strictly limited. Both an on-site drainage system connecting to the City’s storm water system and on-site source control measures designed to allow filtered storm water to percolate into the ground and to filter storm water prior to leaving the site should be installed.
- Erosion and Sediment Controls: Best management practices (BMPs) designed to reduce erosion of exposed soil may include, but are not limited to, soil stabilization controls, watering for dust control, perimeter silt fences, placement of hay bales, and sediment basins.
- Post-construction Storm Water Management: these measures prevent storm water pollution associated with post-construction activities at the developed site. Controls may include oil/water separators for the parking lots and contaminant control measures from the

laboratory areas. The project occupants would be responsible for long-term maintenance of post-construction storm water controls and monitoring.

Water quality and drainage impacts associated with development of the SERC facility will be further discussed in the SERC project EIR.

- b. No Additional Analysis Required.** Water used at LBNL is supplied from the East Bay Municipal Utility District's Shasta Reservoir and Berkeley View Reservoir systems and groundwater at the site is not used. The proposed project would not require any groundwater withdrawal. Recharge of the groundwater table would not be affected by implementation of the proposed project because most of the project site is currently impervious as it is covered with buildings and paved parking areas. Furthermore, the groundwater in the project area is not used for public water supply. Therefore, a less than significant impact related to groundwater recharge would occur and no further analysis is required.
- g-i. No Additional Analysis Required.** The project site is not located within the Federal Emergency Management Agency's (FEMA) Flood Zone A (100-year flood zone). The project site is developed and is located approximately 950 feet above sea level, and therefore, existing structures are outside the flood plain with or without the project. The project would not involve the construction of residential structures. Therefore, there would be no impact and no further discussion is required.
- j. No Additional Analysis Required.** Active faults within the San Francisco Bay Area have largely horizontal movement and are not expected to generate significant waves in the San Francisco Bay. Given the elevation and distance of the project site from the bay's edge, there would be no potential for flooding from a seiche or tsunami. Moreover, given the location of the project site on a ridge, there would be minimal impacts from mudflows. Therefore, implementation of the project would result in no impact related to the risk of inundation from seiche, tsunami, or mudflow and no further discussion is required.

6.9.4 Cumulative Impacts

Cumulative impacts on hydrology and water quality will be evaluated in the SERC project EIR.

6.10 Land Use and Planning

6.10.1 Background

Section IV.H of the 2006 LRDP EIR addresses the effects of LBNL growth under the 2006 LRDP on land use and planning and is incorporated by reference in this Initial Study for this project pursuant to *CEQA Guidelines* Section 15150. The following summarizes information presented in the ‘Setting’ subsection of Section IV.H of the 2006 LRDP EIR.

LBNL

The LBNL hill site covers approximately 200 acres in the eastern hills of Berkeley and Oakland. The site is largely buffered by undeveloped land owned by the University of California, although the northwest corner of the LBNL hill site generally abuts residential neighborhoods in the City of Berkeley.

Access to LBNL’s hill site is limited to three controlled-access vehicular gates on Cyclotron Road (the main Blackberry Canyon Gate) and Centennial Drive (the Strawberry Canyon and Grizzly Peak gates), all of which are staffed by an on-site security firm contracted by LBNL. Visitors primarily use the Blackberry Canyon Gate. The Grizzly Peak Gate is an exit-only gate after the morning commute hours.

The LBNL hill site is comprised of approximately 200 acres of land owned by the Regents of the University of California, adjacent to the University of California, Berkeley campus. The LBNL hill site includes research and support buildings and structures that are primarily part of a multi-program national research facility called the Lawrence Berkeley National Laboratory, which is managed and operated by the University of California under contract with the Department of Energy. The University is generally exempted by the state constitution from compliance with local land use regulations, including general plans and zoning. However, UC seeks to cooperate with local jurisdictions to reduce any physical consequences of potential land use conflicts to the extent feasible. The western part of the LBNL hill site is within the Berkeley city limits, and the eastern part is within the Oakland city limits.

Project Site

The SERC project site is currently developed with structures and a paved parking lot. The 2006 LRDP designates the project site as Research and Academic. The project site is located within the Berkeley city limits.

6.10.2 2006 LRDP EIR Analysis

Impacts of LBNL growth under the 2006 LRDP through 2025 on land use and planning are evaluated in Section IV.H of the 2006 LRDP EIR and incorporated herein by reference. The LRDP EIR analysis concluded that all land use and planning impacts of LBNL growth under the 2006 LRDP would be less than significant. The proposed project is within the scope of analysis of the 2006 LRDP EIR.

6.10.3 Environmental Checklist and Discussion

	Impact to be Analyzed in the LRDP EIR	No Additional Analysis Required
LAND USE AND PLANNING - Would the project:		
a. Physically divide an established community?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION:

- a. **No Additional Analysis Required.** The project site is located in the central area of the LBNL hill site in an area currently developed with institutional research and support uses. Implementation of the project would not disrupt an existing community. Therefore, no impacts would occur and no further analysis is required.
- b. **No Additional Analysis Required.** The applicable land use plan for the project site is the LBNL 2006 LRDP. The following discussion describes the proposed project’s relationship to and consistency with the development projections, population projections, land use designations, and objectives contained in the 2006 LRDP and LRDP EIR. It should be noted that while the 2006 LRDP EIR used 2003 building space and population as baseline, the 2006 LRDP baseline is based on contemporaneous 2006 figures. Consequently, building space added or removed and the population added to LBNL by projects approved between 2003 and 2006 are counted under the 2006 LRDP.

Consistency with 2006 LRDP Scope of Development

The 2006 LRDP provides for the construction of approximately 884,000 gross square feet (gsf) of additional research and support space and demolition of up to 272,000 gsf of building space, for a net increase of 612,000 gsf of new research and support space on the LBNL hill site. As a result, the total building space at LBNL under the 2006 LRDP could increase to 2,420,000 gsf.

The proposed SERC project would add approximately 40,000 gsf of research and support space to the LBNL hill site. The building space proposed for the project is well within the 2006 LRDP’s scope of development. Other projects that UC LBNL has approved for implementation since 2006 would also add research and support space to LBNL hill site and would be counted against the adopted 2006 LRDP building space for LBNL. As shown in Table 1, 2006 LRDP Building Space and Approved and Pending

Projects, below, the approved projects in conjunction with the SERC project would not add research and support space in excess of the building space approved under the 2006 LRDP.

Table 1
2006 LRDP Building Space and Approved and Pending Projects

Project	Research and Support Space Increment (gsf)	Cumulative Total (gsf)
Existing Building Space as of 2006	N/A	1,808,000
Guest House	25,000	1,833,000
User Support Building	30,000	1,863,000
Building Space Demolished since 2003	-69,939	1,793,061
Solar Energy Research Center Facility*	40,000	1,833,061
Seismic Phase 2*	0	1,833,061
Computational Research and Theory Facility*	126,000	1,959,061
Old Town Demolition	-55,000	1,904,061
Change since 2006	96,061	N/A
2006 LRDP Projection for 2025	612,000	2,420,000

** Indicates a proposed but not yet approved project; all other projects listed in the table are approved projects.*

The 2006 LRDP also projects a net gain of 500 parking spaces. Since 2006, the total number of parking spaces at LBNL has decreased from about 2,300 spaces to 2,175 due to construction staging on several parking areas. The proposed project would further reduce parking by approximately 15 spaces. The proposed project would not contribute toward the up to 500 net additional parking spaces allowed under the 2006 LRDP.

Consistency with 2006 LRDP Land Use Designations

The project site is designated as Research and Academic under the 2006 LRDP. This land use designation provides for scientific research and associated support functions and constitutes the majority of the developed land at the LBNL hill site. The proposed project fits within that land use category and is thus consistent with the 2006 LRDP land use designations. The 2006 LRDP Height Zone Map designates the project area as a Special Viewshed Zone, which means that building heights shall not extend into the viewing plane of the ALS dome when viewed from the intersection of University Avenue and Milvia Street in downtown Berkeley. The proposed project would have a total of three floor levels of which two stories would be above grade. The ALS dome is 88 feet in height and would block views of the SERC building from the downtown Berkeley viewpoint. Therefore, the project would be consistent with the 2006 LRDP Height Zone Map.

Consistency with 2006 LRDP Population Projections

The 2006 LRDP projects that, through 2025, the LBNL adjusted daily population could increase to approximately 5,375 persons, which is an increase of approximately 860 persons over the 2006 baseline. The proposed project, which would add approximately 60 new employees to the LBNL hill site, would not, in itself or in combination with other recently approved and currently proposed projects, increase LBNL's adjusted daily population in excess of that projected under the 2006 LRDP (see **Table 2, 2006 LRDP Adjusted Daily Population and Approved and Pending Projects**). Therefore, the proposed project is within the 2006 LRDP's population projections.

Table 2
2006 LRDP Adjusted Daily Population and Approved and Pending Projects

Project	Population Increment (FTE)	Cumulative Total
Existing ADP as of 2006	0	4,515
Guest House	8	4,523
User Support Building	0	4,523
Solar Energy Research Center Facility*	50	4,573
Seismic Phase 2*	0	4,573
Computational Research and Theory Facility*	120	4,693
2006 LRDP Population Projection for 2025	860	5,375

Note: This table reports the net new persons associated with each project and does not include persons that would be relocated from another LBNL building on the hill site to the project site.

** Indicates a proposed but not yet approved project; all other projects listed in the table are approved.*

Consistency with 2006 LRDP Objectives

The primary objectives of the 2006 LRDP are to revitalize existing facilities and infrastructure at the LBNL hill site and to guide the future development at the site. The 2006 LRDP identifies the following principal objectives:

- Strengthen and expand existing research programs to sustain and grow Berkeley Lab's role as a national research laboratory;
- Expand partnerships and collaborations to enhance Berkeley Lab's scientific and technical base;
- Provide flexibility to return staff from its off-site facilities leased in Berkeley and Oakland to the main site in order to enhance collaboration, productivity, and efficiency;
- Expand the capacity of existing high demand advanced facilities and provide broader functionality;
- Rehabilitate facilities that have outlived their intended purpose and can be cost-effectively adapted for use in regions of scientific discovery;
- Replace single-purpose facilities with new facilities programmed to accommodate multiple disciplines with advanced infrastructure suitable for future scientific endeavors; and

- Construct new scientific facilities to support future research initiatives and continued growth in existing programs.

The proposed project would support several of these key objectives of the 2006 LRDP. The SERC project would support a new research initiative and would facilitate research related to alternative and sustainable energy sources with a view to reduce the dependence on fossil fuels and develop carbon neutral energy sources to mitigate global climate change. This research is expected to sustain and grow LBNL's role as a national research laboratory. The proposed project would also provide a new interdisciplinary facility on a site that is currently occupied by underutilized and outdated buildings. The location of the project site has been selected to foster interaction between existing LBNL research programs in the center of the hill site and the proposed SERC facility. The proposed project is consistent with the objectives of the 2006 LRDP.

Consistency with LBNL 2006 Design Guidelines

In addition to the 2006 LRDP, the proposed project must also be designed consistent with LBNL Design Guidelines. As mentioned above, the LBNL Design Guidelines were developed in parallel with the 2006 LRDP; therefore, certain areas of the Guidelines (i.e., population, development, land use/zones) would be similar to the 2006 LRDP. Because the proposed project would be consistent with the population, development (i.e., height, area), land use requirements, and objectives set forth by the 2006 LRDP, the proposed project would also be consistent with the LBNL Design Guidelines.

The guidelines applicable to land use are separated into three main categories: Land, Topography, and Views; Research Clusters; and Linkages. The proposed SERC building would minimize its visibility by constructing one of its total three stories below grade. With respect to the Research Clusters portion of the LBNL Design Guidelines, the proposed project would connect to the GPL courtyard and the main entrances for both buildings would be constructed at the same grade. Projects that promote research clusters and minimize the visibility of new developments would be considered consistent with the LBNL Design Guidelines. Therefore, the proposed project would be consistent with the LBNL Design Guidelines and would not cause a significant impact with respect to this criterion.

- c. **No Additional Analysis Required.** The project site is not within the purview of any habitat conservation plan or natural community conservation plan, nor would the proposed activity or development affect any area so designated, directly or indirectly. Therefore, no project impact would occur and no further analysis is required.

6.10.4 Cumulative Impacts

Because the proposed project would not result in any land use impact, it would not contribute to a cumulative land use impact. No further analysis is required.

6.11 Mineral Resources

6.11.1 Background

According to the State of California Department of Mines and Geology, Mineral Resource Zones and Resource Sectors map, the LBNL hill site is located in an area designated as MRZ-1. This designation refers to an area “where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.” Therefore, development at LBNL would not impede extraction or result in the loss of availability of mineral resources.

6.11.2 Environmental Checklist and Discussion

	Impact to be Analyzed in the LRDP EIR	No Additional Analysis Required
MINERAL RESOURCES - Would the project:		
a. Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION:

a.-b. No Additional Analysis Required. According to the State of California Department of Mines and Geology, Mineral Resource Zones and Resource Sectors map, the project site is located in an area designated as MRZ-1. This designation refers to an area “where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.” Therefore, implementation of the project would not impact mineral resources and no further analysis is required.

6.11.4 Cumulative Impacts

Because the proposed project would not result in any impact on mineral resources, it would not contribute to a cumulative impact on mineral resources. No further analysis is required.

6.12 Noise

6.12.1 Background

Section IV.I of the 2006 LRDP EIR addresses the noise effects of LBNL growth under the 2006 LRDP through 2025 and is incorporated by reference in this Initial Study for this project pursuant to *CEQA Guidelines* Section 15150. The following discussion summarizes information presented in the ‘Setting’ subsection of Section IV.I of the 2006 LRDP EIR that is relevant to the proposed project.

Characterization of Noise

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Technically, sound is described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB), and the decibel scale adjusted for A-weighting (dBA) is a special frequency-dependent rating scale that relates to the frequency sensitivity of the human ear.

Community noise usually consists of a base of steady “ambient” noise that is the sum of many distant and indistinguishable noise sources, as well as more distinct sounds from individual local sources. A number of noise descriptors are used to analyze the effects of community noise on people, including the following:

- Leq, the equivalent sound level, which is used to describe noise over a specified period of time, typically one hour.
- DNL, the energy average of the A-weighted sound levels occurring during a 24 hour period, with a 10 dBA “penalty” added to noise occurring during the hours of 10:00 PM to 7:00 AM to account for greater nocturnal noise sensitivity.
- CNEL, the Community Noise Equivalent Level, which is a 24-hour-average Leq with a “penalty” of 5 dB added to evening noise occurring between 7:00 PM and 10:00 PM, and a “penalty” of 10 dB added to nighttime noise occurring between 10:00 PM and 7:00 AM.

LBNL

Noise Sources

Within the boundaries of the LBNL hill site, ambient noise levels are generated by vehicular traffic on the road network, heating, ventilation and air conditioning equipment associated with buildings and other stationary equipment such as pumps, cooling towers, generators, and machine shop equipment. Ongoing construction projects also raise noise levels in the vicinity of the construction sites.

Sensitive Receptors

Sensitive receptors are noise-sensitive locations, where noise from a project's construction or operations could be experienced and could detract from or interfere with normal activities. Some land uses are considered more sensitive to ambient noise levels than others due to the amount of exposure and the types of activities involved. Typically sensitive receptors include residences, schools, medical facilities, parks, and outdoor recreation areas. The LBNL hill site does not immediately border residential areas, except along its western and northern boundary near Cyclotron Road.

Project Site

The primary existing noise sources in the vicinity of the SERC project site are vehicular traffic on McMillan Road and stationary sources associated with the surrounding buildings. Secondary, intermittent sources of noise include distant aircraft noise and sounds from parking lots. There are no noise-sensitive receptors in the vicinity of the project site. The nearest residential receptors are homes in the North Berkeley Hills neighborhood, which are more than 1,700 feet from the site.

6.12.2 2006 LRDP EIR Analysis

Impacts of LBNL growth under the 2006 LRDP through 2025 related to noise are evaluated in Section IV.I of the 2006 LRDP EIR and that analysis is incorporated herein by reference. The 2006 LRDP EIR concluded that all noise impacts except two would be either less than significant or less than significant following implementation of mitigation measures. The 2006 LRDP EIR concluded that LRDP Impact NOISE-1 related to construction noise would be significant and unavoidable even after mitigation and LRDP Impact NOISE-5 related to cumulative construction noise would also be significant and unavoidable after mitigation.

The proposed project is within the scope of analysis of the 2006 LRDP EIR. Relevant mitigation measures in the 2006 LRDP EIR have been incorporated into the proposed project planning and design and will be implemented during project operations consistent with LRDP or project-specific mitigation monitoring requirements.

6.12.3 Environmental Checklist and Discussion

	Impact to be Analyzed in the EIR	No Additional Analysis Required
NOISE - Would the project result in:		
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Impact to be Analyzed in the EIR	No Additional Analysis Required
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION:

- a., c., d. **Impact to be Analyzed in the EIR.** The proposed project could result in increases or changes in noise levels from sources such as construction activities, operation of buildings and infrastructure, and increased vehicular traffic. The EIR will evaluate the potential for development of the SERC facility to increase ambient noise levels and expose people to noise levels in excess of relevant standards.

- b. **Impact to be Analyzed in the EIR.** Construction activities associated with development of the proposed project could generate groundborne vibration and noise on and near the project site. The SERC project EIR will evaluate the potential for increased groundborne vibration or noise levels associated with construction of the SERC project to affect nearby sensitive receptors.

- e. **No Additional Analysis Required.** The project site is not located within the boundaries of any airport land use plan and is more than 2 miles from the nearest public airport. Therefore, implementation of the proposed project would not be affected by operation of a public airport and no further discussion is required.

- f. **No Additional Analysis Required.** The project site is not located within the vicinity of a private airstrip. Therefore, implementation of the project would neither impact nor be affected by a private airstrip. No further evaluation is required.

6.12.4 Cumulative Impacts

The proposed project’s cumulative noise impacts will be analyzed in the SERC project EIR.

6.13 Population and Housing

6.13.1 Background

LBNL Population, Housing and Residence Patterns

Section IV.J of the 2006 LRDP EIR addresses the population and housing effects of LBNL growth under the 2006 LRDP through 2025, and is incorporated by reference in this Initial Study for this project pursuant to *CEQA Guidelines* Section 15150. The following discussion summarizes information and is based on analysis presented in the 'Setting' subsection of Section IV.J of the 2006 LRDP EIR.

In 2003, there were 3,800 people employed at LBNL. Most of these employees (56 percent) were full-time employees in scientific and technical positions. Administrative support positions accounted for 16 percent of LBNL employment. Faculty (seven percent of the total), and postdoctoral researchers (six percent of the total), as well as undergraduate and graduate students (combined representing 15 percent of the total) were also counted among the LBNL employees.

In 2003, over the course of the year, a total of about 2,500 people used LBNL facilities as guests. Guests include industry and government researchers working at LBNL for short-term assignments, scientists visiting from other academic institutions, or people from other institutions such as UC Davis who use LBNL facilities regularly over a period of weeks or months. On an average day, 40 percent of total annual guests use LBNL facilities. In 2003, this represented about 1,000 people on any given day. LBNL estimated an adjusted total daily population of 4,515 people for 2006, counting both employees and guests.³

LBNL employees and their dependents represented 2.0 percent of the Berkeley and Albany population in 2003. In all other residential locations, LBNL employees and their dependents accounted for less than one percent of the total population. LBNL employees and their dependents represented 0.3 percent of the total population of Emeryville, Oakland and Piedmont; 0.6 percent of the total population of El Cerrito, Richmond, and San Pablo; and 0.7 percent of the total population of Lafayette, Moraga, and Orinda. For the Bay Area region as a whole, LBNL employees and the other members of their households represented 0.1 percent of total regional population in 2003.

Implementation of the 2006 LRDP could increase the LBNL hill site's total ADP from 4,375 in 2003 to 5,375 in 2025, an increase of about 1,000 people or 23 percent. Compared to the ADP in 2006, the increase by 2025 would be of about 860 persons.

Regional Population and Housing

There were 7.1 million people living in the nine-county Bay Area region in 2005. The region's population grew at a compound rate of approximately 0.8 percent per year from 2000 to 2005. However, the Bay Area lost approximately 300,000 jobs between 2000 and 2005 after substantial increases in employment opportunities in the 1990s. The number of jobs decreased at a compound rate of 1.6 percent per year, falling to a total of 3.5 million jobs in the nine-county region in 2005 (ABAG 2009).

3 The LBNL estimate of adjusted daily population (ADP) is defined to include FTE employment plus 40 percent of total annual guests.

Housing production kept pace with demand associated with in-migration and household formation. Between 2000 and 2005, about 117,000 housing units were added in the region (a 4.5 percent increase). During the same period, the number of employed residents decreased by 227,000 (7 percent) and the number of jobs decreased by 307,000 (8 percent). Housing prices in the Bay Area increased substantially in the 1990s and early 2000s due to the imbalance between supply and demand. However, housing prices peaked around 2006 when the US housing and credit bubbles burst, resulting in sharp drops in housing values beginning in 2007.

Projections prepared by ABAG in August 2009 for the Bay Area show regional population growth of almost 2.3 million and an increase of about 837,000 households for the 2000–2035 period. For the region as a whole, the projection is for growth of 25 percent over levels in 2000. Population and household growth for Berkeley and Albany represent about one percent of the total population and household growth forecast for the Bay Area region. Population growth is expected to continue in the City of Berkeley with an increase of approximately 18,000 people in the City of Berkeley between 2000 and 2035 (a 17 percent increase over 2000 levels) and an increase of about 7,000 households in the city (a 16 percent increase over that same period). The total population living in the City of Berkeley is projected to reach 120,500 by 2035. In Albany, population is forecast to increase by 17 percent to a total of 19,300 people in 2035. The forecast shows an additional 1,070 households in Albany between 2000 and 2035, an increase of about 15 percent over the period.

The numerical and percentage increases in population and housing are expected to be greater in other parts of the Bay Area that house substantial numbers of Lab employees. The expected increases in population and households are around 20 percent or more in Oakland, Emeryville, and Piedmont; in El Cerrito, Richmond, and San Pablo; and in central Contra Costa County communities.

Proposed Project

The proposed project would provide laboratory and office space for approximately 60 employees. Of these employees, approximately 40 employees would relocate from the UC Berkeley campus, approximately 10 employees would relocate from other locations within the LBNL hill site, and approximately 10 new employees would be hired as a result of project implementation. Under the 2006 LRDP EIR, each new LBNL employee is assumed to require one housing unit in the Bay Area.

6.13.2 2006 LRDP EIR Analysis

Impacts related to population and housing from LBNL growth under the 2006 LRDP through 2025 are evaluated in Section IV.J of the 2006 LRDP EIR. The 2006 LRDP EIR concluded that all impacts related to population and housing impacts of LBNL growth under the 2006 LRDP would be less than significant. The proposed project is within the scope of analysis of the 2006 LRDP EIR.

6.13.3 Environmental Checklist and Discussion

	Impact to be Analyzed in the EIR	No Additional Analysis Required
POPULATION & HOUSING - Would the project:		
a. Induce substantial population growth in an area, either directly	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Impact to be Analyzed in the EIR	No Additional Analysis Required
(for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?		
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION:

- a. **No Additional Analysis Required.** The proposed project does not include residential uses, and would not require extension of roads or other infrastructure that could indirectly induce substantial population growth. It would generate incidental, short-term construction employment that would create an undetermined number of new jobs. These jobs are expected to be filled by construction workers in the greater Bay Area where there is an ample construction workforce. Project construction activities are not expected to substantially increase the Bay Area population.

Operation of the project would involve approximately 60 employees. Of the projected SERC population, it is estimated that 10 employees would come from existing laboratories and offices within LBNL. The 40 UC Berkeley employees and the 10 new employees associated with the proposed project are within the anticipated 2006 LRDP growth and represent approximately 5 percent of the 1,000 new employees that would be added to the LBNL hill site by buildout of the 2006 LRDP. This does not represent substantial population growth for the project area. Therefore, this impact would be less than significant and no further analysis is required.

- b., c. **No Additional Analysis Required.** The LBNL site does not include housing or long-term residential uses, and no housing would be displaced with implementation of the proposed project. No individuals would be displaced as a result of the project and no replacement housing would be required. Therefore, no further analysis is required.

6.13.4 Cumulative Impacts

LRDP Impact POP-2 evaluated the cumulative impact of 2006 LRDP growth in conjunction with other regional growth on population and housing. As noted in the Setting, LBNL is one of the largest employers in Berkeley, and by far the greatest number of UC LBNL employees live in Berkeley or the immediate vicinity. Accordingly, growth in Berkeley (including at UC Berkeley) is the focus of the cumulative analysis in the 2006 LRDP EIR.

In addition to the population growth associated with the 2006 LBNL LRDP, other future growth would contribute to existing population and housing totals. This future growth could be accommodated through both new development and through changes in the occupancy and use of existing housing and other building space.

As part of the environmental review for its General Plan Update in 2001, the City of Berkeley prepared estimates for 2000 and projections of growth through 2020 in the city under the new General Plan policies. City staff projected an increase of about 3,200 households in the city between 2000 and 2020 and a total population of about 116,000 in 2020 – about the same number of people that lived in Berkeley in 1970.

The UC Berkeley 2020 LRDP could result in an increase of 2,870 faculty and staff working in the Campus Park and adjacent blocks and an increase in 1,650 students. In addition, an important objective of the UC Berkeley 2020 LRDP is increasing the housing supply near the campus for students, faculty, and staff. Under the UC Berkeley 2020 LRDP, there could be an additional 2,600 beds of housing added within one mile of the center of campus. It is likely that most of this housing would be developed in the city of Berkeley.

Many students, faculty, and staff prefer to live in Berkeley, close to the campus. Therefore, the employment and enrollment growth associated with the two LRDPs, in conjunction with other projected population growth, would represent substantial cumulative population growth and a concentration of population in the City of Berkeley. The employee population growth associated with the proposed 2006 LBNL LRDP would contribute to this cumulative impact; however, increases in population growth associated with the implementation of the 2006 LRDP would represent about 2 percent of the total number of people projected to be living in the Berkeley and Albany in 2025, and less than 1 percent of total projected population in 2025 in all other places of residence. Housing demand associated with implementation of the 2006 LRDP would account for less than 1 percent of the total increase in households projected for most communities where LBNL employees live. These increases under the 2006 LRDP represent a less-than-significant impact under existing conditions, and therefore would not be considered a cumulatively considerable contribution to potential population and housing impacts.

The university-related housing production anticipated in the UC Berkeley 2020 LRDP could be part of the City of Berkeley General Plan scenario of increased housing supply. At the same time, more housing production would lead to greater concentration of population in the city. As noted above, the City of Berkeley General Plan EIR found that such a concentration of population in Berkeley would result in a net benefit both to the city and to the region as a whole.

In light of the above, LBNL growth under the 2006 LRDP would not contribute to cumulative adverse effects with regard to population or housing. Because the proposed project is within the 2006 LRDP scope of development, the proposed project would also not contribute to cumulative adverse effects related to population and housing.

6.14 Public Services

6.14.1 Background

Section IV.K of the 2006 LRDP EIR addresses the effects on public services from LBNL growth under the 2006 LRDP through 2025 and is incorporated by reference in this Initial Study for this project pursuant to *CEQA Guidelines* Section 15150. The following discussion summarizes information presented in the 'Setting' subsection of Section IV.K of the 2006 LRDP EIR.

In accordance with the *CEQA Guidelines*, this public services analysis evaluates the environmental effects associated with any physical changes required to meet increases in demand for public services, including police, fire protection, schools, and parks. Project-level public services impacts are addressed by evaluating the effects of LBNL employee growth on public services that directly serve the project site population.

Fire Protection

The Alameda County Fire Department is under contract with UC LBNL to provide firefighting services and to staff and operate the on-site LBNL fire station. The Alameda County Fire Department provides the LBNL hill site an "around-the-clock" engine company staffed by four Hazardous Materials Emergency Response (HAZMAT) certified firefighters. UC LBNL and the City of Berkeley have developed an Automatic Aid Agreement, under which the LBNL on-site fire station is the first responder for a portion of north Berkeley, including portions of the UC campus. The Berkeley Fire Department provides paramedic transport for LBNL; therefore, if a patient in a medical emergency requires transport to a hospital, a City of Berkeley ambulance responds at the Lab. The City of Oakland Fire Department served the far eastern and southeastern portion of the LBNL hill site. The 2006 LRDP EIR also discusses hazardous materials emergency response and the emergency program. HAZMAT automatic aid is available through the Berkeley Fire Department or the Alameda County Fire Department. LBNL's Master Emergency Program Plan establishes policies, procedures, and an organizational structure for responding to and recovering from a major disaster at the LBNL hill site. In addition, the 2006 LRDP EIR describes LBNL's Vegetation Management Plan as a prevention program for wildland fires.

Law Enforcement

Police services at LBNL are provided through a contract with the UC Berkeley Police Department (UCPD), as well as with a private security provider responsible for outside security needs including LBNL access, property protection, and traffic control. The UCPD handles all patrol, investigation, and related law enforcement duties for UC Berkeley, LBNL, and other University-owned properties. UCPD operates 24 hours a day, seven days a week, coordinating closely with the City of Berkeley Police Department. UCPD and the Oakland Police Department are members of the California Law Enforcement Master Mutual Aid Plan; all law enforcement agencies in the state belong to this plan to provide each other information and resources when needed. Additionally, UC LBNL has an annual renewable contract with UCPD that provides, when requested, law enforcement emergency response, limited patrols, criminal investigations, and VIP protection. UCPD and the Berkeley Police Department have an agreement regarding jurisdiction over off-site locations occupied by UC staff and LBNL staff; this agreement is reviewed and updated annually. UC LBNL does not have such an agreement with Oakland Police Department.

The LBNL hill site is secured by a perimeter fence that provides access through vehicle entrance points, hardware lock-and-key sets at critical doors, and by an electronic system pre-coded to permit entry only to authorized card holders. Vehicular access onto the LBNL hill site is controlled by security personnel at the three vehicle entrance gates who visually inspect entering vehicles.

Schools

The Berkeley Unified School District (BUSD) and Oakland Unified School District (OUSD) provide public elementary and secondary school services to dependents of LBNL personnel who live in these two communities.

Parks and Recreation

The East Bay Regional Park District (EBRPD) manages over 95,000 acres within Alameda and Contra Costa counties, including 65 regional parks, recreational areas, wilderness, shorelines, preserves, and land bank areas. EBRPD properties within the vicinity of the LBNL hill site include Tilden Park and the Claremont Canyon Preserve.

UC Berkeley manages parks and athletic and recreational facilities that serve the University and the wider community. Athletic and recreational facilities are located within the central campus and also within the Strawberry Canyon Recreation Area. Additional resources include the Ecological Study Areas. The University also owns the 2.3-acre People's Park located south of the UC Berkeley campus.

The City of Berkeley's Parks, Recreation and Waterfront Department manages the city's parks and open space. The City has 243 acres of City-owned and/or maintained parks and open space throughout Berkeley, excluding the 99-acre Aquatic Park. There are 52 parks providing traditional activities such as athletic fields, swimming pools, and tennis and basketball courts, as well as numerous tot and school-age play areas, community gardens, rock climbing, and a variety of water sports at the Berkeley Marina. The City of Berkeley maintains the parks-to-population ratio of 2.0 acres of parkland per 1,000 residents that was established in the 1977 City of Berkeley Master Plan.

The City of Oakland's Office of Parks, Recreation and Cultural Affairs manages the city's parks and recreation centers. According to the Open Space, Conservation and Recreation (OSCAR) Element of the Oakland General Plan, an estimated 3,073 acres of total parklands are available within Oakland's city limits, providing about 8.26 acres of parkland per 1,000 residents; local-serving parks provide an estimated 1.33 acres per 1,000 residents.

Project Site

The proposed project would accommodate a population of approximately 60 employees, and involve construction of about 40,000 gsf of new building space. These employees and the new building space developed under this project would be served by public services agencies in the Cities of Berkeley and Oakland, Alameda County, and LBNL in the manner discussed above.

6.14.2 2006 LRDP EIR Analysis

Impacts of LBNL development under the 2006 LRDP through 2025 on public services are evaluated in Section IV.K of the 2006 LRDP EIR. Because implementation of the 2006 LRDP would not result in any significant impacts to public services and recreation, the 2006 LRDP EIR did not identify any mitigation

measures for impacts to public services and recreation. The proposed project is within the scope of analysis of the 2006 LRDP EIR.

6.14.3 Environmental Checklist and Discussion

	Impact to be Analyzed in the EIR	No Additional Analysis Required
PUBLIC SERVICES		
a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:		
i. Fire protection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii. Police protection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii. Schools?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv. Parks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
v. Other public facilities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION:

a.i. No Additional Analysis Required. Construction of the new building and additional employees associated with the proposed project would increase the potential need for emergency fire services. LBNL fire station currently serves the LBNL hill site. Implementation of the proposed project would add about 50 employees to the LBNL hill site, which had an ADP of approximately 3,650 in 2003. Based on the historic average of calls (approximately 15 calls per month), the proposed project would result in approximately two to three additional calls for fire services per year, which could be accommodated without additional staff or facilities. Therefore, impacts of the proposed project in relation to fire protection services would be less than significant and no further analysis is required.

a.ii. No Additional Analysis Required. Construction of the new building and the additional staff associated with the proposed project would increase the potential need for police services. Police services are provided through the UCPD and a private on-site security firm on a contract basis. The private security firm is responsible for on-site security needs including access to the LBNL hill site, property protection, and traffic control, and can respond to any road accessible area of the LBNL hill site in less than five minutes. Under the existing contract, UCPD responds to LBNL as needed, and response times for UCPD are also less than five minutes. Implementation of the proposed project would add about 50 employees to the LBNL site, which had an ADP of approximately 3,650 in 2003. Based on the historic average of calls

(approximately 10 calls per year), the proposed project would result in less than one additional call for police services per year. In addition, the increased demand for on-site security would be addressed in the contract for services between LBNL and the private security provider, to ensure adequate police services for the on-site population. This incremental increase in demand for police services is not anticipated to result in the need for new facilities, staff or equipment to provide adequate police services. Therefore, impacts of the proposed project in relation to police services would be less than significant and no further analysis is required.

- a.iii. **No Additional Analysis Required.** The proposed project would not develop residential uses and therefore would not directly generate new student enrollment in the Berkeley Unified School District (BUSD) or Oakland Unified School District (OUSD) (or other school districts). It is possible that project-related households would relocate to the cities of Berkeley and Oakland as a result of new employment generated by implementation of the proposed project. School-aged children in these households would attend BUSD or OUSD schools. The proposed project would draw up to 10 new employees with school-aged children to the LBNL commute area.

Using student generation rates of 0.7 students per household from the State Department of Education, the proposed project would generate approximately seven elementary, middle, or high school students in Berkeley and Oakland. This represents a negligible percentage of current enrollments for either district. These new students could be accommodated in existing school facilities and would not require the construction of new school sites. The proposed project would therefore have a less than significant impact on schools and no further analysis is required.

- a.iv. **No Additional Analysis Required.** Project-related increases in personnel would draw up to 10 new households to the LBNL commute area and would thus result in a very small increase in demand for parks and recreational facilities. The additional demand for parks and recreational facilities would be negligible compared to Berkeley's 243 acres of existing parkland and Oakland's 3,703 acres of parkland. Therefore, impacts of the proposed project in relation to parks and recreation would be less than significant and no further analysis is required.

- a.v. **No Additional Analysis Required.** No other governmental services would be affected by the proposed project and no further analysis is required.

6.14.4 Cumulative Impacts

Police and Fire Services

Cumulative conditions related to fire and police protection services are discussed under LRDP Impact PUB-5 in the 2006 LRDP EIR. Implementation of the 2006 LRDP would contribute to an increase in demand for fire protection services and police services. However, the 2006 LRDP EIR concluded that this increased demand would not result in the need for new or physically altered facilities, the construction of which could cause significant environmental impacts. While foreseeable development may cause call volume for fire services to increase slightly, such incremental increases in demand for fire protection services can be accommodated without additional staffing or facilities. The increase in population proposed by the project is well within the levels of growth analyzed in the 2006 LRDP EIR and the demand for police and fire services attributable to the proposed project is within the scope of the 2006 LRDP analysis.

Reasonably foreseeable development in the East Bay could result in the increased 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, the 2006 LRDP EIR concludes that implementation of the 2006 LRDP would not result in the need for new facilities, staff, or equipment to provide adequate fire protection or police services. Accordingly, it concludes that the LRDP's contribution to cumulative demand would not be cumulatively considerable. Furthermore, planned residential development in local jurisdictions where UC LBNL employees might live, such as the cities of Berkeley or Oakland, would be subject to the local agency's zoning ordinance and general plan policies, which would require that environmental impacts associated with new residential development be mitigated to the maximum extent feasible. No conditions have changed and no new information has become available since certification of the 2006 LRDP EIR that would alter this previous analysis and no further analysis is required.

Schools

According to the 2006 LRDP EIR, implementation of the 2006 LRDP under cumulative conditions would not result in the need for new or physically altered public school facilities (LRDP Impact PUB-6). As discussed under LRDP Impact PUB-3 of the 2006 LRDP EIR, the 2006 LRDP would include no housing, and therefore the effect of implementing the 2006 LRDP would be indirect; that is, any increased demand for school facilities would derive from residential development to accommodate increased daily population at the LBNL hill site. Because the 2006 LRDP would result in no direct impact on school facilities, and because the indirect effect would be minimal, implementation of the 2006 LRDP would not result in a considerable contribution to any cumulative increase in the demand for school facilities. The increase in population proposed by the project is well within the levels of growth analyzed in the 2006 LRDP EIR and the demand for public school services attributable to the proposed project would be within the scope of the 2006 LRDP analysis.

Compared to existing student enrollment, the 2006 LRDP would increase enrollment by less than 3 percent in the BUSD and less than 1/4 percent in the OUSD. Under cumulative conditions, these percentages would decrease since both the Berkeley General Plan and the Oakland General Plan provide for future residential and employment growth. Therefore, the proposed project would not result in a considerable contribution to the demand for school facilities that would result in the need for new or physically altered facilities under cumulative conditions.

Furthermore, planned residential development in local jurisdictions where new UC LBNL employees might live, such as the cities of Berkeley or Oakland, would be subject to the local agency's zoning ordinance and general plan policies. Planned development may also be required to pay school impact fees that, under CEQA, are deemed as full and complete mitigation for effects on schools. Therefore, the 2006 LRDP's cumulative effect on public school facilities would not be considerable. No conditions have changed and no new information has become available since certification of the 2006 LRDP EIR that would alter this previous analysis. No further analysis is required.

Parks and Recreation Facilities

Implementation of the 2006 LRDP would not substantially affect the provision of parks and recreation facilities under cumulative conditions (LRDP Impact PUB-7). The increase in population proposed by the project is well within the levels of growth analyzed in the 2006 LRDP EIR and the demand for parks

and recreation services attributable to the proposed project would be within the scope of the 2006 LRDP analysis. Implementation of the 2006 LRDP along with cumulative development could result in an increased demand for parks and recreation facilities in Berkeley and Oakland. The 2006 LRDP does not include any housing component, and therefore the effect of implementing the 2006 LRDP would be indirect; that is, any increased demand for park and recreation facilities would derive from new residential development to accommodate increased daily population at the LBNL hill site. As noted under LRDP Impact PUB-4 in the 2006 LRDP EIR, planned residential uses in each city (as well as in other local jurisdictions where the Lab employees might reside) would be subject to the local agency's zoning ordinance and general plan policies, which would require that environmental impacts associated with the development of parks and recreation facilities are mitigated to the maximum extent feasible. Because the 2006 LRDP would result in no direct impact on park and recreation facilities, and because any indirect effect would be minimal, implementation of the 2006 LRDP, including the proposed project, would not result in a considerable contribution to any cumulative increase in the demand for park and recreation facilities. No conditions have changed and no new information has become available since certification of the 2006 LRDP EIR that would alter this previous analysis. No further analysis is required.

6.15 Recreation

6.15.1 Background

Section IV.K (Public Services and Recreation) of the 2006 LRDP EIR addresses the demand for recreational facilities and the potential for substantial deterioration of recreational facilities as a result of development under the 2006 LRDP through 2025 and is incorporated by reference in this Initial Study for this project pursuant to *CEQA Guidelines* Section 15150. Background conditions for recreation are discussed under Section 6.13.1 above.

6.15.2 Environmental Checklist and Discussion

	Impact to be Analyzed in the EIR	No Additional Analysis Required
RECREATION - Would the project:		
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION:

- a. **No Additional Analysis Required.** Impacts associated with the increase in demand for parks and recreational facilities in the region as a result of project-related growth in employees are discussed in the response to 13a, "Parks" above. Because indirect population increase associated with the proposed project is small, a substantial increase in demand for recreational facilities that could cause physical deterioration of recreational facilities is not expected to occur as a result of the proposed project. This impact is considered less than significant and no further analysis is required.
- b. **No Additional Analysis Required.** The project would not include recreational facilities. Since the project's impacts on existing recreational facilities would be less than significant (see response to 13a, "Parks above), the need for new or expanded recreational facilities is not expected to be a result, either direct or indirect, of the proposed project. Therefore, this impact would be less than significant and no further analysis is required.

6.15.3 Cumulative Impacts

Implementation of the 2006 LRDP would not substantially increase the use of existing parks and recreational facilities, nor would it include or require recreational facilities (LRDP Impact PUB-7). The increase in population proposed by the project is well within the levels of growth analyzed in the 2006 LRDP EIR and the demand for parks and recreation services attributable to the proposed project would be within the scope of the 2006 LRDP analysis. Implementation of the 2006 LRDP along with cumulative

development could result in an increased use of parks and recreation facilities in Berkeley and Oakland. The 2006 LRDP does not include any housing component, and therefore the effect of implementing the 2006 LRDP would be indirect; that is, any increased demand for park and recreation facilities would derive from new residential development to accommodate increased daily population at the LBNL hill site. As noted under LRDP Impact PUB-4 in the 2006 LRDP EIR, planned residential uses in each city (as well as in other local jurisdictions where UC LBNL employees might reside) would be subject to the local agency's zoning ordinance and general plan policies, which would require that environmental impacts associated with the development of parks and recreation facilities are mitigated to the maximum extent feasible. Because the 2006 LRDP would result in no direct impact on park and recreation facilities, and because any indirect effect would be minimal, implementation of the 2006 LRDP, including the proposed project, would not result in a considerable contribution to any cumulative increase in the demand for, or physical deterioration of, park and recreation facilities. No conditions have changed and no new information has become available since certification of the 2006 LRDP EIR that would alter this previous analysis. No further analysis is required.

6.16 Transportation/Traffic

6.16.1 Background

Section IV.L of the 2006 LRDP EIR addresses the transportation, circulation, and parking effects of LBNL growth under the 2006 LRDP through 2025 and is incorporated by reference in this Initial Study for this project pursuant to *CEQA Guidelines* Section 15150. The following discussion summarizes information presented in the ‘Setting’ subsection of Section IV.L of the 2006 LRDP EIR, which provides a basis for the analysis of the environmental effects of the proposed project.

Regional and LBNL Roadway Network

The LBNL hill site is located close to three regional highways: Interstate 80/580 about 3 miles to the west and State Routes (SR) 24 and 13 about 2 miles to the south. Access to I-80/580 is via arterial roads in the City of Berkeley and Oakland, including University Avenue, Ashby Avenue, Hearst Avenue, Gayley Road, and College Avenue. Access to SR 24 and 13 is via Tunnel Road.

The LBNL hill site is served by three roadway entrances: (1) the Blackberry Canyon Gate which is the main entrance to LBNL and is on Cyclotron Road, north of the intersection of Hearst Avenue and Gayley Road in the southwestern portion of the LBNL hill site; (2) Strawberry Canyon Gate which is located at the eastern end of the LBNL hill site and is also accessed via Centennial Drive; and (3) Grizzly Peak Gate located along the northern boundary of the LBNL hill site and accessed via Centennial Drive. Internal circulation on the LBNL hill site is provided by an east-west roadway system that generally follows the site contours.

Roadway Levels of Service

Level of service (LOS) is a general measure of traffic operating conditions, whereby a letter grade from A (the best) to F (the worst) is assigned to roadway intersections. These grades represent the comfort and convenience associated with driving from the driver’s perspective. To assess the worst-case traffic conditions, LOS is measured during morning (generally 7 AM to 9 AM) and afternoon (generally 4 PM to 6 PM) peak commute times. The LOS standard for City intersections is LOS D. Of the 20 city intersections evaluated in the 2006 LRDP EIR, only one intersection (Bancroft Way at Gayley Road/Piedmont Avenue) currently operates at an unacceptable level of service. The 2006 LRDP EIR and subsequent traffic analyses found that by 2025, even without traffic added by LBNL growth, three additional intersections (Hearst Avenue/Gayley Road/La Loma Avenue, Stadium Rim Way/Gayley Road, and Durant Avenue/Piedmont Avenue) would operate at unacceptable levels of service.

Parking

There are approximately 2,175 off-street and on-street parking spaces at the LBNL hill site. Because access to the LBNL hill site is controlled, parking facilities are not open to the general public. UC LBNL implements a permit parking program. UC LBNL discourages the use of single occupant vehicles for access to the site as part of its Transportation Demand Management (TDM) program.

Bicycle and Pedestrian Network

Due to the site's hilly terrain, about 10 percent of the employees use bicycles for their commutes. Pedestrian and bicycle facilities within the LBNL hill site are discontinuous. These facilities are used to move between nearby building clusters; for longer trips, the employees use shuttles or personal vehicles.

Transit

The LBNL hill site is served by LBNL shuttles that run between LBNL and the Center Street/Shattuck BART station on 10 minute headways on weekdays and an express shuttle that operates on an hourly schedule during commute hours between the Lab and the Rockridge BART station. The LBNL shuttle stops have been coordinated with AC Transit bus lines serving downtown Berkeley.

Project Site

The SERC project site is located at the intersection of McMillan Road and Medical Road (the one-lane service road), north of Cyclotron Road and east of Segre Road. An LBNL shuttle stop is located at the northeast corner of the project site. There are currently 57 parking spaces on the project site.

6.16.2 2006 LRDP EIR Analysis

Impacts on traffic, circulation, and parking from LBNL growth under the 2006 LRDP through 2025 are evaluated in Section IV.L of the 2006 LRDP EIR. The 2006 LRDP EIR analysis concluded under LRDP Impact TRANS-1 that the addition of LRDP-related traffic would degrade the levels of service at three study intersections. A supplemental cumulative traffic analysis concluded that traffic associated with development under the 2006 LRDP could degrade the level of service to an unacceptable level at a fourth intersection, Bancroft Way and Piedmont Avenue, by the year 2025. This supplemental analysis is provided in the Seismic Phase 2 Draft EIR which was circulated for public review from January 19, 2010 to March 15, 2010. The Seismic Phase 2 Draft EIR includes supplementation of pages IV.L-28 through IV.L-44 of the 2006 LRDP Final EIR.

Fair share funding of traffic improvements pursuant to LRDP Mitigation Measures TRANS-1a, 1b, and 1c would reduce the impact to a less-than-significant level if a plan were currently in place for those traffic improvements. At this time, no plan is in place for the installation of those traffic improvements, although these measures would remain binding mitigation commitments. Accordingly, although mitigation may be accomplished in the future and the mitigation commitment would remain binding, at this time this impact cannot be determined to be mitigated to a less than significant level. The Regents found this remaining significant impact to be acceptable because the benefits of the project outweigh this and the other significant and unavoidable environmental impacts of the LRDP. The Regents will re-evaluate this significant impact as part of the approval process for the proposed Seismic Phase 2 project. The 2006 LRDP EIR also concluded that a significant and unavoidable cumulative traffic impact (LRDP Impact TRANS-8) would occur at certain study intersections. LRDP Mitigation Measure TRANS-8 would be implemented for this impact, but as identified above, there would be a significant unavoidable impact. All other traffic impacts were determined to be less than significant.

The proposed project is within the scope of development analyzed in the 2006 LRDP EIR and the supplemental analysis. Relevant mitigation measures in the 2006 LRDP EIR have been incorporated into the proposed project planning and design and will be implemented during project operations consistent with LRDP or project-specific mitigation monitoring requirements. The proposed LRDP EIR

supplementation described above is not approved at this time; a traffic analysis that will be included in the SERC EIR will evaluate cumulative traffic impacts of the proposed project including traffic impacts identified at intersections that are not identified as affected in the 2006 LRDP EIR. Additional mitigation measures will be imposed on the project to address traffic-related cumulative impacts as appropriate.

6.16.3 Environmental Checklist and Discussion

	Impact to be Analyzed in the EIR	No Additional Analysis Required
TRANSPORTATION/TRAFFIC - Would the project:		
a. Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Result in inadequate emergency access?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

DISCUSSION:

a.-b. Impact to be Analyzed in the EIR. The 2006 LRDP EIR found that with full development under the 2006 LRDP, by 2025, daily traffic on study area roadways due to new employees and visitors to the LBNL hill site would increase and result in significant level of service impacts at three study area intersections (LRDP Impact TRANS-1). Subsequent analysis presented in the Seismic Phase 2 project Draft EIR concluded that traffic associated with development under the 2006 LRDP would degrade the level of service to an unacceptable level at a fourth intersection, Bancroft Way and Piedmont Avenue, by 2025.

LRDP Impact TRANS-1 has been amended to address the impact at this additional intersection in a supplemental analysis as part of the Seismic Phase 2 Draft EIR, which has been circulated for public review. Mitigation measures were developed to improve levels of service at these intersections, but for reasons presented above, the impact would not be reduced to a less than significant level. The proposed project is within the development evaluated in the 2006 LRDP EIR and the supplemental analysis, and the project would contribute to this significant and unavoidable impact. The proposed project would be operational by 2013, and an evaluation of the effect from the addition of project traffic on existing, near-term conditions, and year 2025 conditions will be included in the SERC project EIR.

- c. **No Additional Analysis Required.** The proposed project would not affect the air traffic patterns at any of the regional airports. The project does not include activities or structures that could hinder aviation activity. Therefore, implementation of the project would result in no impact from the safety risks associated with air traffic patterns.
- d. **Impact to be Analyzed in the EIR.** The proposed project would change on-site circulation and site access from existing conditions by reconfiguring Medical Road. The impacts associated with reconfiguration of Medical Road will be evaluated in the SERC project EIR.
- e. **Impact to be Analyzed in the EIR.** The proposed project would reconfigure Medical Road which currently does not meet fire code requirements. Impacts on emergency access will be discussed in the SERC project EIR.
- f. **Impact to be Analyzed in the EIR.** There are numerous policies in the 2006 LRDP related to alternative transportation. An analysis of the project's consistency with policies related to alternative forms of transportation and the UC Policy on Sustainable Practices will be included in the SERC project EIR.

6.16.4 Cumulative Impacts

The cumulative traffic impacts will be evaluated in the SERC project EIR.

6.17 Utilities and Service Systems

6.17.1 Background

Section IV.M of the 2006 LRDP EIR addresses the effects of LBNL growth under the 2006 LRDP on utility systems that serve the LBNL hill site and is incorporated by reference in this Initial Study for this project pursuant to *CEQA Guidelines* Section 15150. The LBNL hill site is served by the following utility and service systems:

Potable and Fire Protection Water: East Bay Municipal Utility District (EBMUD) provides high pressure water to the LBNL hill site via two points of connection – a 12-inch meter on Campus Drive in the Shasta Pressure Zone of the district and a 6-inch meter on Summit Road from the Berkeley View Pressure Zone. On the site, water is distributed by an extensive water distribution system which provides water not only to the buildings but also for use in cooling towers, for irrigation, and for other uses. UC LBNL also maintains three 200,000-gallon water storage tanks on-site for emergency water supply. In 2003, the total annual water consumption at the LBNL hill site was approximately 41.6 million gallons. Even though the total building space at LBNL has increased, water usage has declined substantially since 1990 because of water conservation measures that UC LBNL has implemented in the past few years.

Wastewater: Wastewater generated at the LBNL hill site is collected in a gravity-flow system that eventually discharges into the City of Berkeley's sanitary sewer system through a monitoring station located at Hearst Avenue and a second monitoring station located in Centennial Drive. The volume and quality of effluent at both monitoring stations is monitored and evaluated for compliance with EBMUD discharge requirements. From these monitoring stations, the discharge continues down into the City's sewer system to be transported to EBMUD's north interceptor sewer and then to the wastewater treatment facility in Oakland. Sanitary sewer sub-basin 17-503 which receives flows from the sewer main in Centennial Drive (and other areas of Berkeley and Oakland) is constrained around Dwight Avenue during peak wet weather conditions.

Storm Drainage: The LBNL hill site storm drain system is a gravity-fed system of open and culverted drainages that generally run east west. The combined flows are then conveyed through the developed portions of the site to eventually discharge via outfalls into the open channels of the Strawberry Creek watershed.

Solid Waste: Non-hazardous solid waste is collected and transported off-site by a commercial waste contractor. UC LBNL implements an extensive program focused on waste minimization and recycling.

Electricity: UC LBNL purchases electricity from the Western Area Power Administration. Electricity is delivered to the LBNL's Grizzly Peak Substation via the PG&E transmission system. The total electrical power consumption in 2003 at LBNL was 74,500 megawatt hours. LBNL also has a number of stationary and portable emergency power generators that are powered by diesel, gasoline or natural gas.

Natural Gas: Natural gas is used at LBNL for heating all buildings, to operate certain equipment and also in some experimental uses. Natural gas is delivered to the site by the PG&E system via a 6-inch line. The point of delivery is located above Cyclotron Road and below Building 88. Natural gas is distributed from this point of delivery to all buildings at LBNL. Two buildings (Buildings 73 and 73A) in the eastern portion of LBNL are served by another PG&E line located along Centennial Drive.

Other On-Site Utilities: UC LBNL also owns and operates other specialized utility systems that are needed for the research and specific equipment used on site. These include a LBNL site-wide compressed air system, a LBNL site-wide low conductivity water system, a closed loop cooling water system, building-specific purified water systems, and building-specific de-ionized water systems.

Project Site

The SERC project would require water for human consumption, to produce deionized water for lab use, and for use in the cooling towers. The project would also produce wastewater from sanitary sources, laboratories, and cooling towers. All of the utilities that would be needed for the proposed project are available in the vicinity of the project site. The SERC project would connect to existing utilities located in Medical Road on the east and west sides of the proposed building.

6.17.2 2006 LRDP EIR Analysis

Impacts of LBNL growth under the 2006 LRDP through 2025 on utilities and service systems are evaluated in Section IV.M of the 2006 LRDP EIR. The EIR analysis concluded that implementation of the 2006 LRDP would result in impacts on utilities that would either be less than significant or reduced to a less than significant level with mitigation measures.

The proposed project is within the scope of development analyzed in the 2006 LRDP EIR. Relevant mitigation measures in the 2006 LRDP EIR have been incorporated into the proposed project planning and design and would be implemented during project operations consistent with LRDP or project-specific mitigation monitoring requirements.

6.17.3 Environmental Checklist and Discussion

	Impact to be Analyzed in the EIR	No Additional Analysis Required
UTILITIES AND SERVICE SYSTEMS - Would the project:		
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new and expanded entitlements needed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Result in the need for increased chilled water or steam generation	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Impact to be Analyzed in the EIR	No Additional Analysis Required
capacity or major distribution improvements?		
f. Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h. Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i. Require or result in the construction or expansion of electrical or natural gas facilities which would cause significant environmental impacts?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
j. Require or result in the construction or expansion of telecommunication facilities, which would cause significant environmental impacts?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DISCUSSION:

- a.,b.,f. Impact to be Analyzed in the EIR.** The project would require infrastructure improvements for water service at LBNL. Approximately 300 feet of an existing 8-inch high pressure water main along Upper Hill Road would be relocated to remove it from the building footprint. The relocated 8-inch main along with the existing 12-inch main in Medical Road would be used to provide potable and fire water to the SERC facility. One additional fire hydrant and approximately 50 feet of a new 6-inch water line would be added on the project site to serve the SERC facility. If the proposed Seismic Phase 2 project is implemented prior to the SERC project, sanitary sewer service improvements would not be required as the SERC project would utilize the 6-inch sewer line installed as part of the proposed Seismic Phase 2 project. However, in the event that the SERC project is constructed prior to the Seismic Phase 2 project, the SERC project would install the new lateral connecting from just west of the service road to the sewer main located between Buildings 16 and 7. The potential environmental impacts of these improvements and the potential for the SERC project to contribute to the need for additional wastewater treatment facilities will be discussed in the SERC project EIR.
- c. No Additional Analysis Required.** The SERC facility would utilize a 12-inch storm drain that would be installed as part of the Seismic Phase 2 project. Connections to the 12-inch storm drain would be constructed on the SERC project site. In the event that the Seismic Phase 2 project is not approved and implemented before the SERC project, the SERC project would install the 12-inch storm drain. As discussed in Section 6.4, Biological Resources, and Section 6.5, Cultural Resources, construction of the 12-inch storm drain would not result in any significant impacts to sensitive resources. No further analysis is required.

- d. **No Additional Analysis Required.** Construction of the new building and additional staff associated with the proposed project would increase the demand for water. The proposed project would install water conservation devices such as low-flow plumbing fixtures and water-saving appliances; other devices and new technology (e.g., drip irrigation, re-circulating cooling systems, etc.) would be employed where practicable to further water conservation. Additionally, landscaping introduced to the project site would include drought-tolerant plant materials. The 2006 LRDP also includes various system upgrades intended to improve reliability and reduce water loss due to outdated, deteriorating pipelines. Improvements include the replacement of selected existing water distribution lines.

Pursuant to Sections 10910-10915 (SB 610) of the California Water Code, LBNL submitted a request to EBMUD to prepare a water supply assessment (WSA) for the 2006 LRDP project. EBMUD submitted a WSA to LBNL in a letter dated November 23, 2004. On February 23, 2006 EBMUD confirmed that the 2006 LRDP's estimated water demand is accounted for in EBMUD's water demand projections, as published in the 2000 Urban Water Management Plan. The 2006 LRDP would not change EBMUD's 2020 water demand projection, nor would it result in a new significant increase in water use beyond what EBMUD has projected for the region. Therefore, LBNL development under the 2006 LRDP, including the SERC project, would not result in the need for new or expanded water entitlements and no further analysis is required.

- e. **No Additional Analysis Required.** Implementation of the proposed project would result in increased demand for chilled water and steam generation. However, the project proposes to construct cooling towers and install boilers to accommodate the increased need. Therefore, the proposed project would not result in the need for major distribution system improvements and no further analysis is required.

- g.-h. **No Additional Analysis Required.** The proposed project would result in an increased waste stream due to an increase in operations (additional personnel and building space). The increase of approximately 50 personnel translates to an approximately 1.2 percent increase in ADP over the 2006 LBNL ADP of 4,515 persons. This would result in an increase in disposed waste from the existing estimate of about 413 tons per year to about 419 tons per year with implementation of the proposed project. The amount of recycled waste generated at LBNL would also increase from the existing annual estimate of 1,592 tons to 1,614 tons. The proportion of recycled waste to disposed waste with implementation of the proposed project would remain at the existing ratio of roughly 4:1.

Currently, disposed waste from LBNL is transported to the Altamont Landfill. The Altamont Landfill has a permitted maximum daily disposal of 11,150 tons per day. Under existing conditions, LBNL disposed waste accounts for about 0.01 percent of the daily permitted disposal. With implementation of the 2006 LRDP, including the proposed project, projected disposed waste would increase but would remain at roughly 0.01 percent of the daily permitted disposal. The Altamont Landfill has a maximum permitted capacity of 62 million cubic yards with a remaining capacity of approximately 45 million cubic yards as of August 2005. The landfill is permitted to operate through 2029 (CalRecycle 2010). Therefore, the proposed project would not cause any landfill to exceed its permitted capacity and would result in a less than significant impact on solid waste facilities and no further analysis is required.

- i. **Impact to be Analyzed in the EIR.** The proposed project would not create a substantial demand for energy. The delivery of additional electricity and natural gas to the LBNL hill site could be accommodated by existing infrastructure. Utility connections for the proposed SERC building would occur in developed areas on the west and east sides of the building and would not require the construction or rehabilitation of new structures. The SERC project would utilize a new 1-inch gas main and a ¾-inch lateral installed as part of the Seismic Phase 2 project. In the event that the Seismic Phase 2 project is not implemented before the SERC project, the SERC project would install the gas main and

lateral. If the proposed Seismic Phase 2 project is implemented prior to the SERC project, the SERC project would connect to the new sectionalizing switches installed by the Seismic Phase 2 project. However, if SERC is constructed prior to the Seismic Phase 2 project, the SERC project would install the new sectionalizing switches to the southwest of the project site. The potential environmental impacts of these improvements will be discussed in the SERC project EIR.

- j. **No Additional Analysis Required.** The proposed project would not affect telecommunication facilities and no impact would occur. No further analysis is required.

6.17.4 Cumulative Impacts

The 2006 LRDP EIR analyzed the cumulative impact on utilities under LRDP Impact UTILS-6. According to that analysis, other foreseeable development in the City of Berkeley and in the LBNL area surrounding the Lab hill site would contribute to cumulative increases in utility and energy demand; however, new development would occur within a largely built-out urban area where utilities and service systems generally are provided. Additionally, these increases in demand attributed to other development would be addressed on a site-by-site basis by the service providers prior to approval of new development, and through CEQA review of each development project. The incremental increase in demand for utilities for storm water delivery systems, water supply, and solid waste associated with the 2006 LRDP would not be expected to represent a substantial increase in demand for utility and service systems, and existing utility delivery systems would be expected to handle growth anticipated under the 2006 LRDP. Therefore, the effect of 2006 LRDP development in combination with other foreseeable development would not be significant, nor would the LRDP development's contribution to any cumulative effects be cumulatively considerable. Because the proposed project is within the 2006 LRDP scope of development, the proposed project's contribution to any cumulative impacts would also not be considerable.

6.18 Mandatory Findings of Significance

	Impact to be Analyzed in the EIR	No Additional Analysis Required
MANDATORY FINDINGS OF SIGNIFICANCE		
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or pre-history?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects).	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

DISCUSSION:

- a. **No Additional Analysis Required.** As noted in the checklist responses, the SERC project would not degrade the quality of the environment, or adversely affect wildlife or fish habitat or cultural resources. Therefore, implementation of the proposed project would not substantially degrade the quality of the environment and no further analysis is required.
- b. **Impact to be Analyzed in the EIR.** As noted in the checklist responses, the proposed project has the potential to contribute to cumulative impacts associated with aesthetics, air quality, geology, greenhouse gas emissions, hydrology, hazards, noise, and transportation/traffic. These cumulative impacts will be discussed in the SERC project EIR. All other cumulative impacts are adequately addressed in the 2006 LRDP EIR and further evaluation of those cumulative impacts is not required.
- c. **Impact to be Analyzed in the EIR.** As discussed in this Initial Study, the project has the potential to directly or indirectly impact human beings via impacts on aesthetics, air quality, geology, greenhouse gases, hazards and hazardous materials, noise, and traffic. These are considered potentially significant impacts and will be discussed in the SERC project EIR.

7. REFERENCES

Association of Bay Area Governments (ABAG). 2009. Projections and Priorities 2009: Building Momentum. August.

California Department of Resources Recycling and Recovery (CalRecycle), Solid Waste Information System, Accessed March 23, 2010. <http://www.calrecycle.ca.gov/SWFacilities/Directory/01-AA-0009/Detail/>.

Lawrence Berkeley National Laboratory, Long Range Development Plan Final Environmental Impact Report, SCH No. 200102046, July 2007.

8. REPORT PREPARERS

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APPENDIX A: 2006 LBNL LRDP EIR MITIGATION MEASURES

LRDP VIS-4a: All new buildings on the LBNL hill site constructed pursuant to the 2006 LRDP shall incorporate design standards that ensure lighting would be designed to confine illumination to its specific site, in order to minimize light spillage to adjacent LBNL buildings and open space areas. Consistent with safety considerations, LBNL project buildings shall shield and orient light sources so that they are not directly visible from outside their immediate surroundings.

LRDP VIS-4b: New exterior lighting fixtures shall be compatible with existing lighting fixtures and installations in the vicinity of the new building, and will have an individual photocell. In general, and consistent with safety considerations, exterior lighting at building entrances, along walkways and streets, and at parking lots shall maintain an illumination level of not more than 20 Lux (approximately 2 foot-candles).

LRDP VIS-4c: All new buildings on the LBNL hill site constructed pursuant to the 2006 LRDP shall incorporate design standards that preclude or limit the use of reflective exterior wall materials or reflective glass, or the use of white surfaces for roofs, roads, and parking lots, except in specific instances when required for energy conservation.

LRDP AQ-1a: The BAAQMD's approach to dust abatement calls for "basic" control measures that should be implemented at all construction sites, "enhanced" control measures that should be implemented at construction sites greater than four acres in area, and "optional" control measures that should be implemented on a case-by-case basis at construction sites that are large in area or are located near sensitive receptors, or that, for any other reason, may warrant additional emissions reductions (BAAQMD, 1999).

During construction of individual projects proposed under the LRDP, LBNL shall require construction contractors to implement the appropriate level of mitigation (as detailed below), based on the size of the construction area, to maintain project construction-related impacts at acceptable levels; this would reduce the potential impact to a less-than-significant level.

Elements of the "basic" dust control program for project components that disturb less than one acre shall include the following at a minimum:

- Water all active construction areas at least twice daily. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).

- Pave, apply water three times daily (or as sufficient to prevent dust from leaving the site), or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
- Sweep daily or as appropriate (with water sweepers using reclaimed water if possible) all paved access roads, parking areas and staging areas at construction sites.
- Sweep streets daily or as appropriate (with water sweepers using reclaimed water if possible) if visible soil material is carried onto adjacent public streets.

Elements of the “enhanced” dust abatement program for project components that disturb four or more acres shall include all of the “basic” measures in addition to the following measures:

- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).
- Enclose, cover, water twice daily (or as sufficient to prevent dust from leaving the site), or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 miles per hour.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.

Elements of the “optional” control measures are strongly encouraged at construction sites that are large in area or located near sensitive receptors, or that for any other reason may warrant additional emissions reductions:

- Install wheel washers for all exiting trucks, or wash off tires or tracks of all trucks and equipment leaving the site.
- Install wind breaks, or plant trees/vegetative wind breaks at windward side(s) of construction areas.
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 miles per hour.
- Limit the area subject to excavation, grading, and other construction activity at any one time.
- Pave all roadways, driveways, sidewalks, etc. as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- Designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust off-site. Their duties shall include holidays and weekend periods when work may not be in progress. The names and telephone numbers of such persons shall be provided to the BAAQMD prior to the start of construction.

LRDP AQ-1b: To mitigate equipment exhaust emissions, LBNL shall require its construction contractors to comply with the following measures:

- Construction equipment shall be properly tuned and maintained in accordance with manufacturers' specifications.
- Best management construction practices shall be used to avoid unnecessary emissions (e.g., trucks and vehicles in loading and unloading queues would turn their engines off when not in use).
- Any stationary motor sources such as generators and compressors located within 100 feet of a sensitive receptor shall be equipped with a supplementary exhaust pollution control system as required by the BAAQMD and the California Air Resources Board.
- Incorporate use of low-NO_x emitting, low-particulate emitting, or alternatively fueled construction equipment into the construction equipment fleet where feasible, especially when operating near sensitive receptors.
- Reduce construction-worker trips with ride-sharing or alternative modes of transportation.

LRDP AQ-4a: To avoid the single location where implementation of the 2006 LRDP would result in an increase in health risk in excess of the 10-in-one-million threshold, LBNL shall adjust, prior to the construction of parking structure PS-1 (or similarly configured building), the exhaust system of the existing generator near Building 90 to reduce or eliminate the restriction on upward exhaust flow caused by the existing rain cap. For example, modeling indicates that removal of the rain cap would reduce the risk caused by construction of parking structure PS-1 in proximity to the existing generator to a level below 10 in one million. The Lab could install a hinged rain cap, which would prevent moisture infiltration into the generator but still allow unobstructed exhaust flow and would avoid the significant impact identified in the health risk assessment.

Because most of the cancer risk from TACs is due to diesel particulate, measures to reduce the risk (beyond regulations already in place that will substantially reduce diesel particulate emissions in the next 20 years) would include those measures that could reduce vehicular travel to and from Berkeley Lab. Implementation of Mitigation Measure TRANS-1c, development and implementation of a new Transportation Demand Management Program (see Section IV.L, Transportation/Traffic), would result in a concomitant increase in vehicular emissions, including those of TACs. However, even with implementation of this measure, Berkeley Lab, as a major employer and thus a substantial source of vehicular traffic, would likely continue to contribute to Bay Area-wide emissions of TACs for the foreseeable future.

LRDP BIO-2a: Future development under the 2006 LRDP shall avoid, to the extent feasible, the fill of potentially jurisdictional waters. Therefore, during the design phase of any future development project

that may affect potentially jurisdictional waters, a preliminary evaluation of the project site shall be made by a qualified biologist to determine if the site is proximate to potentially jurisdictional waters and, if deemed necessary by the biologist, a wetlands delineation shall be prepared and submitted to the Corps for verification.

Most development projected under the 2006 LRDP would have no potential for impacts on jurisdictional waters. However, development in specific locations including Buildings S-1 and S-9 S-2 and S-0, as well as Parking Structures and Lots PS-1 and PL-9 and Roads R-2 and R-5, could require fill of or create the potential for accidental discharges to jurisdictional waters. It should be noted that the preferable form of mitigation recommended by the Corps is avoidance of jurisdictional waters. To the extent practicable, new development under the 2006 LRDP shall be located so as to avoid the fill of jurisdictional waters.

LRDP BIO-2b: Any unavoidable loss of jurisdictional waters shall be compensated for through the development and implementation of a project-specific Wetlands Mitigation Plan.

In the event that potential impacts to streams resulting from a 2006 LRDP development project are identified, compensation for loss of jurisdictional waters would be based on the Corps-verified wetlands delineation identified in Mitigation Measure BIO-2.a. During the permit application process for specific development project(s) with identified impacts on jurisdictional drainages or wetlands, LBNL would consult with the Corps, CDFG, and Regional Water Quality Control Board regarding the most appropriate assessment and mitigation methods to adequately address losses to wetland function that could occur as a result of the development project(s). A project-specific wetland mitigation plan would be developed prior to project implementation and submitted to permitting agencies for their approval. The plan may include one or more of the following mitigation options: restoration, rehabilitation, or enhancement of drainages and wetlands in on-site areas that remain unaffected by grading and project development or off-site at one or more suitable locations within the project region; creation of on-site or off-site drainages or wetlands at a minimum of a 1:1 functional equivalency or acreage ratio (as verified by the Corps); purchase of credits in an authorized mitigation bank acceptable to the Corps and CDFG; contributions in support of restoration and enhancement programs located within the project region (such as those operated by local non-profit organizations including the Friends of Strawberry Creek, the Urban Creeks Council, or the Waterways Restoration Institute); or other options approved by the appropriate regulatory agency at the time of the specific project approval.

All mitigation work proposed in existing wetlands or drainages on- or off-site shall be authorized by applicable permits.

LRDP BIO-2c: To the extent feasible, construction projects that might affect jurisdictional drainages and/or wetlands could be scheduled for dry-weather months. Avoiding ground-disturbing activities during the rainy season would further decrease the potential risk of construction-related discharges to jurisdictional waters.

LRDP BIO-3: Direct disturbance, including tree and shrub removal or nest destruction by any other means, or indirect disturbance (e.g., noise, increased human activity in area) of active nests of raptors and other special-status bird species (as listed in Table IV.C 1) within or in the vicinity of the proposed footprint of a future development project shall be avoided in accordance with the following procedures for Pre-Construction Special-Status Avian Surveys and Subsequent Actions. No more than two weeks in advance of any tree or shrub removal or demolition or construction activity involving particularly noisy or intrusive activities (such as concrete breaking) that will commence during the breeding season (February 1 through July 31), a qualified wildlife biologist shall conduct pre-construction surveys of all potential special-status bird nesting habitat in the vicinity of the planned activity and, depending on the survey findings, the following actions shall be taken to avoid potential adverse effects on nesting special-status nesting birds:

1. Pre-construction surveys are not required for demolition or construction activities scheduled to occur during the non-breeding season (August 1 through January 31).
2. If pre-construction surveys indicate that no nests of special-status birds are present or that nests are inactive or potential habitat is unoccupied, no further mitigation is required.
3. If active nests of special-status birds are found during the surveys, a no-disturbance buffer zone will be created around active nests during the breeding season or until a qualified biologist determines that all young have fledged. The size of the buffer zones and types of construction activities restricted within them will be determined through consultation with the CDFG, taking into account factors such as the following:
 - a. Noise and human disturbance levels at the project site and the nesting site at the time of the survey and the noise and disturbance expected during the construction activity;
 - b. Distance and amount of vegetation or other screening between the project site and the nest; and
 - c. Sensitivity of individual nesting species and behaviors of the nesting birds.
4. Noisy demolition or construction activities as described above (or activities producing similar substantial increases in noise and activity levels in the vicinity) commencing during the non-breeding season and continuing into the breeding season do not require surveys (as it is assumed that any breeding birds taking up nests would be acclimated to project-related activities already under way). However, if trees and shrubs are to be removed during the breeding season, the trees and shrubs will be surveyed for nests prior to their removal, according to the survey and protective action guidelines 3a through 3c, above.

5. Nests initiated during demolition or construction activities would be presumed to be unaffected by the activity, and a buffer zone around such nests would not be necessary.
6. Destruction of active nests of special-status birds and overt interference with nesting activities of special-status birds shall be prohibited.
7. The noise control procedures for maximum noise, equipment, and operations identified in Section IV.I, Noise, of this EIR shall be implemented.

LRDP BIO-4: Project implementation under the 2006 LRDP shall avoid disturbance to the maternity roosts of special-status bats during the breeding season in accordance with the following procedures for Pre-Construction Special-Status Bat Surveys and Subsequent Actions. No more than two weeks in advance of any demolition or construction activity involving concrete breaking or similarly noisy or intrusive activities, that would commence during the breeding season (March 1 through August 31), a qualified bat biologist, acceptable to the CDFG, shall conduct pre-demolition surveys of all potential special-status bat breeding habitat in the vicinity of the planned activity. Depending on the survey findings, the following actions shall be taken to avoid potential adverse effects on breeding special-status bats:

1. If active roosts are identified during pre-construction surveys, a no-disturbance buffer will be created by the qualified bat biologist, in consultation with the CDFG, around active roosts during the breeding season. The size of the buffer will take into account factors such as the following:
 - a. Noise and human disturbance levels at the project site and the roost site at the time of the survey and the noise and disturbance expected during the construction activity;
 - b. Distance and amount of vegetation or other screening between the project site and the roost; and
 - c. Sensitivity of individual nesting species and the behaviors of the bats.
2. If pre-construction surveys indicate that no roosts of special-status bats are present, or that roosts are inactive or potential habitat is unoccupied, no further mitigation is required.
3. Pre-construction surveys are not required for demolition or construction activities scheduled to occur during the non-breeding season (September 1 through February 28).
4. Noisy demolition or construction activities as described above (or activities producing similar substantial increases in noise and activity levels in the vicinity) commencing during the non-breeding season and continuing into the breeding season do not require surveys (as it is assumed that any bats taking up roosts would be acclimated to project-related activities already under way). However, if trees are to be removed during the breeding season, the trees would be surveyed for roosts prior to their removal, according to the survey and protective action guidelines 1a through 1c, above.
5. Bat roosts initiated during demolition or construction activities are presumed to be unaffected by the activity, and a buffer is not necessary.

6. Destruction of roosts of special-status bats and overt interference with roosting activities of special-status bats shall be prohibited.
7. The noise control procedures for maximum noise, equipment, and operations identified in Section IV.I, Noise, of this EIR shall be implemented.

LRDP BIO-5a: With the approval of the USFWS on a case-by-case basis, relocate any snake encountered during construction that is at risk of harassment; cease construction activity until the snake is moved to suitable refugium. Alternatively, submit a general protocol for relocation to the USFWS for approval prior to project implementation.

LRDP BIO-5b: Conduct focused pre-construction surveys for the Alameda whipsnake at all project sites within or directly adjacent to areas mapped as having high potential for whipsnake occurrence. Project sites within high potential areas shall be fenced to exclude snakes prior to project implementation. This would not include ongoing and non-site specific activities such as fuel management.

Methods for pre-construction surveys, burrow excavation, and site fencing shall be developed prior to implementation of any project located within or adjacent to areas mapped as having high potential for whipsnake occurrence. Such methods would be developed in consultation or with approval of USFWS for any development taking place in USFWS officially designated Alameda whipsnake critical habitat.

Pre-construction surveys of such project sites shall be carried out by a permitted biologist familiar with whipsnake identification and ecology (Swaim, 2002). These are not intended to be protocol-level surveys but designed to clear an area so that individual whipsnakes are not present within a given area prior to initiation of construction. At sites where the project footprint would not be contained entirely within an existing developed area footprint and natural vegetated areas would be disturbed any existing animal burrows shall be carefully hand-excavated to ensure that there are no whipsnakes within the project footprint. Any whipsnakes found during these surveys shall be relocated according to the Alameda Whipsnake Relocation Plan. Snakes of any other species found during these surveys shall also be relocated out of the project area. Once the site is cleared it shall then be fenced in such a way as to exclude snakes for the duration of the project. Fencing shall be maintained intact throughout the duration of the project.

LRDP BIO-5c: (1) A full-time designated monitor shall be employed at project sites that are within or directly adjacent to areas designated as having high potential for whipsnake occurrence, or (2) Daily site surveys for Alameda whipsnake shall be carried out by a designated monitor at construction sites within or adjacent to areas designated as having moderate potential for whipsnake occurrence.

Each morning, prior to initiating excavation, construction, or vehicle operation at sites identified as having moderate potential for whipsnake occurrence, the project area of applicable construction sites shall be surveyed by a designated monitor trained in Alameda whipsnake identification to ensure that no Alameda whipsnakes are present. This survey is not intended to be a protocol-level survey. All laydown and deposition areas, as well as other areas that might conceal or shelter snakes or other animals, shall be inspected each morning by the designated monitor to ensure that Alameda whipsnakes are not present. At sites in high potential areas the monitor shall remain on-site during construction hours. At sites in moderate potential areas the monitor shall remain on-call during construction hours in the event that a snake is found on-site. The designated monitor shall have the authority to halt construction activities in the event that a whipsnake is found within the construction footprint until such time as threatening activities can be eliminated in the vicinity of the snake and it can be removed from the site by a biologist permitted to handle Alameda whipsnakes. The USFWS shall be notified within 24 hours of any such event.

LRDP BIO-5d: Alameda whipsnake awareness and relevant environmental sensitivity training for each worker shall be conducted by the designated monitor prior to commencement of on-site activities. All on-site workers at applicable construction sites shall attend an Alameda whipsnake information session conducted by the designated monitor prior to beginning work. This session shall cover identification of the species and procedures to be followed if an individual is found on-site, as well as basic site rules meant to protect biological resources, such as speed limits and daily trash pickup.

LRDP BIO-5e: Hours of operation and speed limits shall be instituted and posted. All construction activities that take place on the ground (as opposed to within buildings) at applicable construction sites shall be performed during daylight hours, or with suitable lighting so that snakes can be seen. Vehicle speed on the construction site shall not exceed 5 miles per hour.

LRDP BIO-5f: Site vegetation management shall take place prior to tree removal, grading, excavation, or other construction activities. Construction materials, soil, construction debris, or other material shall be deposited only on areas where vegetation has been mowed.

Areas where development is proposed under the 2006 LRDP are subject to annual vegetation management involving the close-cropping of all grasses and ground covers; this management activity would be performed prior to initiating project-specific construction. Areas would be re-mowed if grass or other vegetation on the project site becomes high enough to conceal whipsnakes during the construction period. In areas not subject to annual vegetation management, dense vegetation would be removed prior to the onset of grading or the use of any heavy machinery, using goats, manual brush cutters, or a combination thereof.

LRDP BIO-6a: Floristic surveys for special-status plants shall be conducted at specific project sites where suitable habitat is present. Floristic surveys shall also be conducted in designated Perimeter Open Space. All occurrences of special-status plant populations, if any, shall be mapped.

Although no special-status plants have been observed at LBNL during past biological resource surveys, the distribution and size of plant populations often vary from year to year, depending on climatic conditions. Therefore, a baseline survey of all non-developed areas, including the designated Perimeter Open Space areas, where there is potential for future development or vegetation management activities, should be conducted in accordance with USFWS and CDFG guidelines by a qualified botanist during the period of identification for all special-status plants. During this initial survey, any special-status plant populations found, as well as areas with high potential for supporting special-status plants (i.e., less disturbed areas, rock outcrops and other areas of thin soils, areas supporting a relatively high proportion of native plant species) would be identified and mapped. Thereafter, surveys of Perimeter Open Space areas where ongoing vegetation management (i.e., active vegetation removal to minimize potential wildland fire damage to facilities and personnel) activities would be undertaken, and that are mapped as supporting or having potential to support special-status plant species, would be conducted in April and June every five years.

In those proposed LRDP development sites where suitable habitat is present for special-status species identified as having a moderate to high potential for occurrence (see Table IV.C 1, p. IV.C-10), protocol-level rare plant surveys would be conducted prior to construction. Surveys should be conducted during the periods of identification for all species under consideration at each applicable development site, the timing and scope to be directed by a qualified botanist. During the initial survey, any special-status plant populations found, as well as all areas with high potential for supporting special-status plants (i.e. less disturbed areas, rock outcrops and other areas of thin soils, areas supporting a relatively high proportion of native plant species), would be identified and mapped.

LRDP BIO-6b: Seeds or cuttings shall be collected from sensitive plant species found within developable areas and open space and at risk of being any adversely affected, or sensitive plants found in these areas shall be transplanted.

If special-status plants are found during floristic surveys and are at risk of being adversely affected, a qualified botanist working in conjunction with an expert in native plant horticulture, CNPS, and CDFG, would collect seeds, bulbs, and cuttings for propagation and planting in specific project revegetation efforts as well as restoration of native habitat within designated Open Space. Perennial species could be transplanted, if found in undeveloped locations that have a high likelihood for future development. Due to its unreliability, translocation alone should not be relied upon as a sole means of mitigation; however,

healthy individuals of any special-status plant species should be transplanted to areas of suitable habitat that are protected in perpetuity. The relocation sites may be located either on or off the LBNL hill site. If the areas for transplanting are located off-site, they should be within a 20-mile radius of the project site. Plants should be relocated to areas with ecological conditions (slope, aspect, microclimate, soil moisture, etc.) as similar to those in which they were found as possible. Existing plants could also be held in containers for specific post-project revegetation efforts on-site.

LRDP CUL-1: Mitigation for the demolition or substantial physical alteration of Buildings 71 and 88, and other historical buildings and structures at LBNL found to be significant historical resources at the completion of the ongoing surveys and research, shall include the development of a Memorandum of Agreement (MOA) among the Department of Energy, the State Historic Preservation Officer, and the Advisory Council on Historic Preservation. Full implementation of the MOA's stipulations shall also be required as part of this mitigation measure.

LRDP CUL-3: If an archaeological artifact is discovered on-site during construction under the proposed LRDP, all activities within a 50-foot radius shall be halted and a qualified archaeologist shall be summoned within 24 hours to inspect the site. If the find is determined to be significant and to merit formal recording or data collection, adequate time and funding shall be devoted to salvage the material. Any archaeologically important data recovered during monitoring shall be cleaned, catalogued, and analyzed, with the results presented in a report of finding that meets professional standards.

LRDP CUL-4: In the event that human skeletal remains are uncovered during construction or ground-breaking activities resulting from implementation of the 2006 LRDP at the LBNL site, CEQA Guidelines Section 15064.5(e)(1) shall be followed:

- In the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the following steps should be taken:
 - (1) There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:
 - (A) The coroner of the county in which the remains are discovered must be contacted to determine that no investigation of the cause of death is required, and
 - (B) If the coroner determines the remains to be Native American: (1) The coroner shall contact the Native American Heritage Commission within 24 hours. (2) The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American. (3) The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98, or

(2) Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance.

(A) The Native American Heritage Commission is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 24 hours after being notified by the commission;

(B) The descendant identified fails to make a recommendation; or

(C) The landowner or his authorized representative rejects the recommendation of the descendant, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.

LRDP GEO-1: Seismic emergency response and evacuation plans shall be prepared for each new project at LBNL that is developed pursuant to the 2006 LRDP. These plans shall incorporate potential inaccessibility of the Blackberry Canyon entrance and identify alternative ingress and egress routes for emergency vehicles and facility employees in the event of roadway failure from surface fault rupture.

LRDP GEO-2: A site-specific, design-level geotechnical investigation shall occur during the design phase of each LBNL building project, and prior to approval of new building construction within the LBNL hill site. This investigation shall be conducted by a licensed geotechnical engineer and include a seismic evaluation of potential maximum ground motion at the site. Geotechnical investigations for sites within either a Seismic Hazard Zone for landslides or an area of historic landslide activity at LBNL, as depicted on Figures IV.E-2 and IV.E-3, or newly recognized areas of slope instability at the inception of project planning, shall incorporate a landslide analysis in accordance with CGS Publication 117. Geotechnical recommendations shall subsequently be incorporated into building design.

Earthquakes and groundshaking in the Bay Area are unavoidable and may occur at some time during the period covered by the LRDP. Although some structural damage is typically not avoidable, building codes and local construction requirements have been established to protect against building collapse and to minimize injury during a seismic event. Considering that the future individual buildings would be constructed in conformance with the California Building Code, LBNL requirements, federal regulations and guidelines, and Mitigation Measure GEO-2, the risks of injury and structural damage from groundshaking and earthquake-induced landsliding would be reduced and the impacts, therefore, would be considered less than significant.

Furthermore, as described in the Project Description, some of the buildings constructed pursuant to the LRDP would be occupied by staff relocated from other, older LBNL facilities, some of which were constructed in accordance with less stringent building code requirements than those that would apply to

future construction. As of 2003, 14 percent of LBNL buildings were over 60 years old. Many of these buildings were constructed as temporary structures that were never replaced. The LRDP specifically proposes the demolition of some 30 outdated buildings that together include approximately 250,000 square feet. In this regard, implementation of the LRDP would result in a beneficial seismic safety impact.

LRDP GEO-3a: Construction under the LRDP shall be required to use construction best management practices and standards to control and reduce erosion. These measures could include, but are not limited to, restricting grading to the dry season, protecting all finished graded slopes from erosion using such techniques as erosion control matting and hydroseeding or other suitable measures.

LRDP GEO-3b: Revegetation of areas disturbed by construction activities, including slope stabilization sites, using native shrubs, trees, and grasses, shall be included as part of all new projects.

Compliance with California Building Code standards and compliance with Mitigation Measures GEO-2, GEO-3a, and GEO-3b would reduce potential impacts associated with expansive soils and soil erosion to a less-than-significant level.

None required for cumulative impacts, although Mitigation Measures GEO-1, GEO 2, GEO-3a, and GEO-3b would be implemented, as identified above.

LRDP HAZ-3a: LBNL shall continue to prepare an annual self-assessment summary report and a Site Environmental Report that summarize environment, health, and safety program performance and identify any areas where LBNL is not in compliance with environmental laws and regulations governing hazardous materials, and worker safety, emergency response, and environmental protection.

An EH&S assessment of LBNL activities is performed annually, and these results are reported annually in the LBNL Self-Assessment Report.

In addition, LBNL prepares an annual Site Environmental Report that describes the environmental activities noted above. Implementation of this measure would ensure that the information in the LBNL Self-Assessment and Site Environmental Reports continues to be collected, reviewed, and provided.

LRDP HAZ-3b: Prior to shipping hazardous materials to a hazardous waste treatment, storage, or disposal facility, LBNL shall confirm that the facility is licensed to receive the type of waste LBNL is proposing to ship.

LBNL is required by DOE Order 435.1 to verify that the receiving facility has all appropriate licenses and that the waste meets all waste acceptance criteria of the receiving facility.

LRDP HAZ-3c: LBNL shall require hazardous waste haulers to provide evidence that they are appropriately licensed to transport the type of wastes being shipped from LBNL.

Shipping procedures at LBNL require all transporters of hazardous, radioactive, and mixed waste to provide evidence that they are appropriately licensed.

LRDP HAZ-3d: LBNL shall continue its waste minimization programs and strive to identify new and innovative methods to minimize hazardous waste generated by LBNL activities.

Each LBNL Division is required to identify and implement new waste minimization activities each year. The waste minimization program at LBNL reduced hazardous waste by 72% during the period 1993-2004.

LRDP HAZ-3e: In addition to implementing the numerous employee communication and training requirements included in regulatory programs, LBNL shall undertake the following additional measures as ongoing reminders to workers of health and safety requirements:

- Continue to post phone numbers of LBNL EH&S subject matter experts on the EH&S website.
- Continue to post Emergency Response and Evacuation Plans in all LBNL buildings.
- Continue to post sinks, in areas where hazardous materials are handled, with signs reminding users that hazardous materials and wastes cannot be poured down the drain.
- Continue to post dumpsters and central trash collection areas where hazardous materials are handled with signs reminding users that hazardous wastes cannot be disposed of as trash.

LRDP HAZ-3f: LBNL shall update its emergency preparedness and response program on an annual basis and shall provide copies of this program to local emergency response agencies and to members of the public upon request.

LRDP NOISE-1a: To reduce daytime noise impacts due to construction/demolition, LBNL shall require construction/demolition contractors to implement noise reduction measures appropriate for the project being undertaken. Measures that might be implemented could include, but not be limited to, the following:

- Construction/demolition activities would be limited to a schedule that minimizes disruption to uses surrounding the project site as much as possible. Such activities would be limited to the hours designated in the Berkeley and/or Oakland noise ordinance(s), as applicable to the location of the project. This would eliminate or substantially reduce noise impacts during the more noise-sensitive nighttime hours and on days when construction noise might be more disturbing.
- To the maximum extent feasible, equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake

silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible).

- Stationary noise sources shall be located as far from adjacent receptors as possible.
- At locations where noise may affect neighboring residential uses, LBNL will develop a comprehensive construction noise control specification to implement construction/demolition noise controls, such as noise attenuation barriers, siting of construction laydown and vehicle staging areas, and community outreach, as appropriate to specific projects. The specification will include such information as general provisions, definitions, submittal requirements, construction limitations, requirements for noise and vibration monitoring and control plans, noise control materials and methods. This document will be modified as appropriate for a particular construction project and included within the construction specification.

LRDP NOISE-1b: For each subsequent project pursuant to the LRDP that would involve construction and/or demolition activities, LBNL shall engage a qualified noise consultant to determine whether, based on the location of the site and the activities proposed, construction/demolition noise levels could approach the property-line receiving noise standards of the cities of Berkeley or Oakland (as applicable). If the consultant determines that the standards would not be exceeded, no further mitigation is required. If the standards would be reached or exceeded absent further mitigation, one or more of the following additional measures would be required, as determined necessary by the noise consultant:

- Stationary noise sources shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible.
- Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever feasible.
- Noise from idling trucks shall be kept to a minimum. No trucks shall be permitted to idle for more than 10 minutes if waiting within 100 feet of a residential area.
- If determined necessary by the noise consultant, a set of site-specific noise attenuation measures shall be developed before construction begins; possible measures might include erection of temporary noise barriers around the construction site, use of noise control blankets on structures being erected to reduce noise emission from the site, evaluation of the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings, and monitoring the effectiveness of noise attenuation measures by taking noise measurements.
- If determined necessary by the noise consultant, at least two weeks prior to the start of excavation, LBNL or its contractor shall provide written notification to all neighbors within 500 feet of the construction site. The notification shall indicate the estimated duration and completion date of the

construction, construction hours, and necessary contact information for potential complaints about construction noise (i.e., name, telephone number, and address of party responsible for construction). The notice shall indicate that noise complaints resulting from construction can be directed to the contact person identified in the notice. The name and phone number of the contact person also shall be posted outside the LBNL boundaries.

LRDP NOISE-4: Mechanical equipment shall be selected and building designs prepared for all future development projects pursuant to the 2006 LRDP so that noise levels from future building and other facility operations would not exceed the Noise Ordinance limits of the cities of Berkeley or Oakland for commercial areas or residential zones as measured on any commercial or residential property in the area surrounding the future LRDP project. Controls that would typically be incorporated to attain adequate noise reduction would include selection of quiet equipment, sound attenuators on fans, sound attenuator packages for cooling towers and emergency generators, acoustical screen walls, and equipment enclosures.

Implementation of Mitigation Measures NOISE-1a and NOISE-1b would reduce the cumulative impact of construction noise to the maximum extent feasible. However, for purposes of a conservative analysis, the cumulative effect of construction noise is considered significant and unavoidable.

LRDP TRANS-1a: LBNL shall work with UC Berkeley and the City of Berkeley to design and install a signal at the Gayley Road/Stadium Rim Way intersection, when a signal warrant analysis shows that the signal is needed. The intersection would meet one hour signal warrants for peak-hour volume and peak hour delay under 2025 conditions with implementation of the LBNL 2006 LRDP. LBNL shall contribute funding on a fair-share basis, to be determined in consultation with UC Berkeley and the City of Berkeley, for a periodic (annual or biennial) signal warrant check to allow the City to determine when a signal is warranted, and for installation of the signal. Should the City determine that alternative mitigation strategies may reduce or avoid the significant impact, the Lab shall work with the City and UC Berkeley to identify and implement such alternative feasible measure(s). See also Mitigation Measure TRANS-1c, development and implementation of a new Transportation Demand Management Program.

With the implementation of this mitigation measure, the intersection of Gayley Road/Stadium Rim Way would operate at an acceptable level of service (LOS B or better under traffic signal control) during both the a.m. and p.m. peak hours. Because LBNL could not implement this measure on its own, but would need the cooperation of UC Berkeley and/or the City of Berkeley, this impact would be considered significant and unavoidable.

This mitigation measure is proposed to be adopted as part of the LRDP and will be monitored through the LRDP mitigation monitoring and reporting program. It will thus continue to be a binding mitigation

commitment of LBNL. Under CEQA case law, however, when the lead agency contributes fair share funding to a mitigation measure that will be carried out by another entity, there must be some evidence of a reasonable plan in place in order for the lead agency to conclude that the adopted mitigation will reduce the impact to a less than significant level (*City of Marina v. Board of Trustees of the California State University* (2006) 39 Cal.4th 341). LBNL has discussed this with the City, and based on that consultation, LBNL understands there have been some discussions of improvements at Gayley Road/Stadium Rim Way. Also, the University has retained a consultant to perform studies related to these improvements, but there is not yet a plan in place for the improvements. As such, it cannot be determined at this time that this impact will be mitigated to a less than significant level. Accordingly, this impact would still be considered significant and unavoidable, but LBNL would contribute to fair share funding which, if a reasonable plan is implemented, would mitigate these impacts to a less than significant level.

LRDP TRANS-1b: LBNL shall work with the City of Berkeley to design and install a signal at the Durant Avenue/Piedmont Avenue intersection, when a signal warrant analysis shows that the signal is needed. LBNL shall contribute funding, on a fair-share basis, to be determined in consultation with UC Berkeley and the City of Berkeley, for a periodic (annual or biennial) signal warrant check to allow the City to determine when a signal is warranted, and for installation of the signal. Should the City determine that alternative mitigation strategies may reduce or avoid the significant impact, the Lab shall work with the City and UC Berkeley to identify and implement such alternative feasible measure(s). See also Mitigation Measure TRANS-1c, development and implementation of a new Transportation Demand Management Program.

With the implementation of this mitigation measure, the Durant Avenue/Piedmont Avenue intersection would operate at an acceptable level of service (LOS B or better under traffic signal control) during both the a.m. and p.m. peak hours. Because LBNL could not implement this measure on its own, but would need the cooperation of the City of Berkeley, this impact would be considered significant and unavoidable.

This mitigation measure is proposed to be adopted as part of the LRDP and will be monitored through the LRDP mitigation monitoring and reporting program. It will thus continue to be a binding mitigation commitment of LBNL. Under CEQA case law, however, when the lead agency contributes fair share funding to a mitigation measure that will be carried out by another entity, there must be some evidence of a reasonable plan in place in order for the lead agency to conclude that the adopted mitigation will reduce the impact to a less than significant level (*City of Marina v. Board of Trustees of the California State University* (2006) 39 Cal.4th 341). LBNL has discussed this with the City, and based on that consultation, LBNL understands there have been some discussions of improvements at Gayley

Road/Stadium Rim Way. Also, the University has retained a consultant to perform studies related to these improvements, but there is not yet a plan in place for the improvements. As such, it cannot be determined at this time that this impact will be mitigated to a less than significant level. Accordingly, this impact would still be considered significant and unavoidable, but LBNL would contribute to fair share funding which, if a reasonable plan is implemented, would mitigate these impacts to a less than significant level.

LRDP TRANS-1c: LBNL shall fund and conduct a study to evaluate whether there may be feasible mitigation (with design standards acceptable to the City) at the intersection of Hearst Avenue at Gayley Road/La Loma Avenue. This intersection is currently signalized, and physical geometric limitations constrain improvements within its current right-of-way. All four corners of this intersection are occupied by existing UC Berkeley facilities, including Foothill Student Housing, Cory Hall, and outdoor tennis courts, as well as the Founders' Rock. The LOS analyses herein used conservative assumptions so as to not underestimate potential project impacts. For example, even though the approach widths at this intersection allow drivers to maneuver past other vehicles as they near the intersection, the absence of pavement striping to delineate separate lanes dictated that the analysis conservatively assume all vehicle movements on each approach are made on a single lane. Similarly, without the certainty that standard lane widths (and adequate storage lengths) could be provided, possible improvement measures were not relied on to judge that significant impacts would be mitigated to less-than-significant levels. Judging the success of possible mitigation measures with a conservative standard is reasonable, but in consultation with City of Berkeley staff, the Lab will conduct a further study to re evaluate whether there may be feasible mitigation (with design standards acceptable to the City) at this intersection. That additional study will be conducted by the Lab as part of the TDM program set forth below as Mitigation Measure TRANS-1d. If such mitigation is determined by Berkeley Lab to be feasible, then Berkeley Lab shall contribute funding on a fair share basis, to be determined in consultation with UC Berkeley and the City of Berkeley, for the installation of the improvements.

This mitigation measure will be monitored through the LRDP mitigation monitoring and reporting program. It will thus continue to be a binding mitigation commitment of LBNL. Under CEQA case law, however, when the lead agency contributes fair share funding to a mitigation measure that will be carried out by another entity, there must be some evidence of a reasonable plan in place in order for the lead agency to conclude that the adopted mitigation will reduce the impact to a less than significant level (*City of Marina v. Board of Trustees of the California State University* (2006) 39 Cal.4th 341). LBNL will reevaluate its conclusion that there is not feasible mitigation for this intersection, and will retain and fund a consultant to perform that reevaluation. However, given that LBNL has evaluated all of the potential mitigation that has been suggested and concluded that mitigation is not feasible, and given the absence of

a City plan for such improvements, it cannot be determined at this time that this impact will be mitigated to a less than significant level. Accordingly, this impact would still be considered significant and unavoidable, but LBNL shall fund the study pursuant to the TDM program, and would contribute to fair share funding which, if feasible mitigation is identified and a plan to proceed with that mitigation is implemented, would mitigate this impact to a less than significant level.

LRDP TRANS-1d: LBNL shall develop and implement a new Transportation Demand Management (TDM) Program to replace its existing TDM program. This enhanced TDM Program has been drafted in consultation with the City of Berkeley, and is proposed to be adopted by the Lab following The Regents' consideration of the 2006 LRDP. The new draft proposed TDM Program is attached to this EIR as Appendix G. The proposed TDM Program includes several implementation phases tied to the addition of parking to LBNL. The final provisions of the TDM Program may be revised as it is finally adopted but will include a TDM coordinator and transportation committee, an annual inventory of parking spaces and a gate count, a study of more aggressive TDM measures, investigation of a possible parking fee, investigation of sharing services with UC Berkeley and an alternative fuels program. The TDM program shall also include funding of a study to reevaluate the feasibility of mitigation at the Hearst and Gayley/LaLoma intersection. The new draft proposed TDM Program also includes a requirement that LBNL conduct an additional traffic study to reevaluate traffic impacts on the earliest to occur of 10 years following the certification of this EIR or the time at which the Lab formally proposes a project that will bring total development of parking spaces pursuant to the 2006 LRDP to or above 375 additional parking spaces.

LRDP TRANS-3: LBNL shall develop and maintain a transportation plan designed to ensure that the current balance of transportation modes is maintained. This plan shall include 1) maintaining the same (or lesser) ratio of parking permits and parking spaces to average daily population (ADP), and 2) ensuring that levels of shuttle bus service and provision of bike racks on shuttle buses are sufficient to accommodate projected demand.

LRDP TRANS-8: LBNL shall implement Mitigation Measure TRANS 1a (work with UC Berkeley and the City of Berkeley to design and install a signal at the Gayley Road/Stadium Rim Way intersection; LBNL would contribute funding on a fair-share basis, to be determined in consultation with UC Berkeley and the City of Berkeley, to install the signal) and Mitigation Measure TRANS 1b (work with the City of Berkeley to design and install a signal at the Durant Avenue/Piedmont Avenue intersection, when a signal warrant analysis shows that the signal is needed; LBNL would contribute funding on a fair-share basis, to be determined in consultation with UC Berkeley and the City of Berkeley, to install the signal and for monitoring to determine when a signal is warranted).

With the implementation of these mitigation measure, the intersections of Gayley Road/Stadium Rim Way and Durant Avenue/Piedmont Avenue would operate at LOS B or better during both the a.m. and p.m. peak hours.

As explained earlier, the intersection of Hearst Avenue at Gayley Road/La Loma Avenue is currently signalized, and physical geometric limitations constrain improvements within its current right-of-way. Without the certainty that standard lane widths (and adequate storage lengths) could be provided, possible improvement measures were not relied on to judge that significant impacts would be mitigated to less-than-significant levels. Judging the success of possible mitigation measures with a conservative standard is reasonable, but in consultation with City of Berkeley staff, the Lab shall fund and conduct a study to evaluate whether there may be feasible mitigation (with design standards acceptable to the City) at this intersection. That additional study will be conducted by the Lab as part of the TDM program set forth below as Mitigation Measure TRANS-1d. If such mitigation is determined by Berkeley Lab to be feasible, then Berkeley Lab shall contribute funding on a fair share basis, to be determined in consultation with UC Berkeley and the City of Berkeley, for the installation of the improvements. Analyses indicate that little can be done to mitigate future LOS conditions without acquiring additional right-of-way or prohibiting certain turning movements, such as minor left-turn movements. Therefore, no mitigation is available for cumulative impacts on this intersection.

LRDP UTILS-2: LBNL shall implement programs to ensure that additional wastewater flows from the Lab are directed into unconstrained sub-basins, as necessary and appropriate. LBNL shall continue to direct the Lab's existing western effluent flows into sub-basin 17-013. In addition, new flows at the Lab shall be directed into either sub-basin 17-013, sub-basin 17-304, unconstrained portions of sub-basin 17-503, or another sub-basin that has adequate capacity. Final design and implementation of these improvements shall be negotiated between the appropriate parties and shall undergo appropriate environmental review and approval. LBNL shall closely coordinate the planning, approval, and implementation of this mitigation with the City of Berkeley and the UC Berkeley, as appropriate.

LRDP UTILS-4: LBNL shall develop a plan for maximizing diversion of construction and demolition materials associated with the construction of the proposed project from landfill disposal.