

# Appendix B: Land Leases

The Berkeley Lab main site is a 202 acre parcel of land owned and managed by the University of California. The majority of the facilities at the Laboratory are owned by the US Department of Energy and are located on discreet parcels of land that are leased by the DOE from the University. These leased parcels are defined on the following table and Land Lease Key Map.

<b>Tract / Parcel / Buildings</b>	<b>Acres</b>
<b>Wilson Tract</b>	
Parcel 1 (Bldg 51)	8.695
Parcel 2 (Bldg 46)	2.161
Parcel 3 (Bldg 50)	1.76
Parcel 4 (Bldg 70)	1.55
Parcel 5 (Bldg 58)	4.32
Parcel 6 (Bldg 55)	2.296
Parcel 7 (Bldg 71)	4.39
Parcel 9 (Bldg 90)	5.395
Parcel 10 (Bldg 88)	3.916
Parcel 16 (Bldg 50A-F)	1.85
Parcel 22 (Bldg 81)	0.218
<b>Bailey Tract</b>	
Parcel 20 (Bldg. 26)	0.632
Parcel 26 (Bldg 6)	4.14
<b>State Univ Tract (Plots 80 &amp; 82)</b>	
Parcel 5A (Bldg 2)	1.8
Parcel 11 (Bldg. 70A)	2.314
Parcel 21 (Bldg. 54)	1.654
Parcel 27 (Bldg 10)	1.99
<b>State Univ. Tract (Simmons Plot)</b>	
Parcel 14 (Bldg 73)	1.035
Parcel 15 (Bldg 74)	3.891
Parcel 19 (Bldg 62)	3.412
Parcel 23 (Bldg 61)	0.312
Parcel 25 (Bldg 83)	3.243
Parcel 25A (Bldg. 85)	3.889
Parcel 28 (Bldgs 31, 66, 72, 72A, 72B, 72C, 67)	4.947
<b>State Univ. Tract (Plot "O")</b>	
Parcel 12 (Bldg 75)	4.512
Parcel 17 (Bldg 77)	5.88
Parcel 18 (Bldg 76)	1.938
Parcel 29 (Grizzly Peak Substation)	0.503

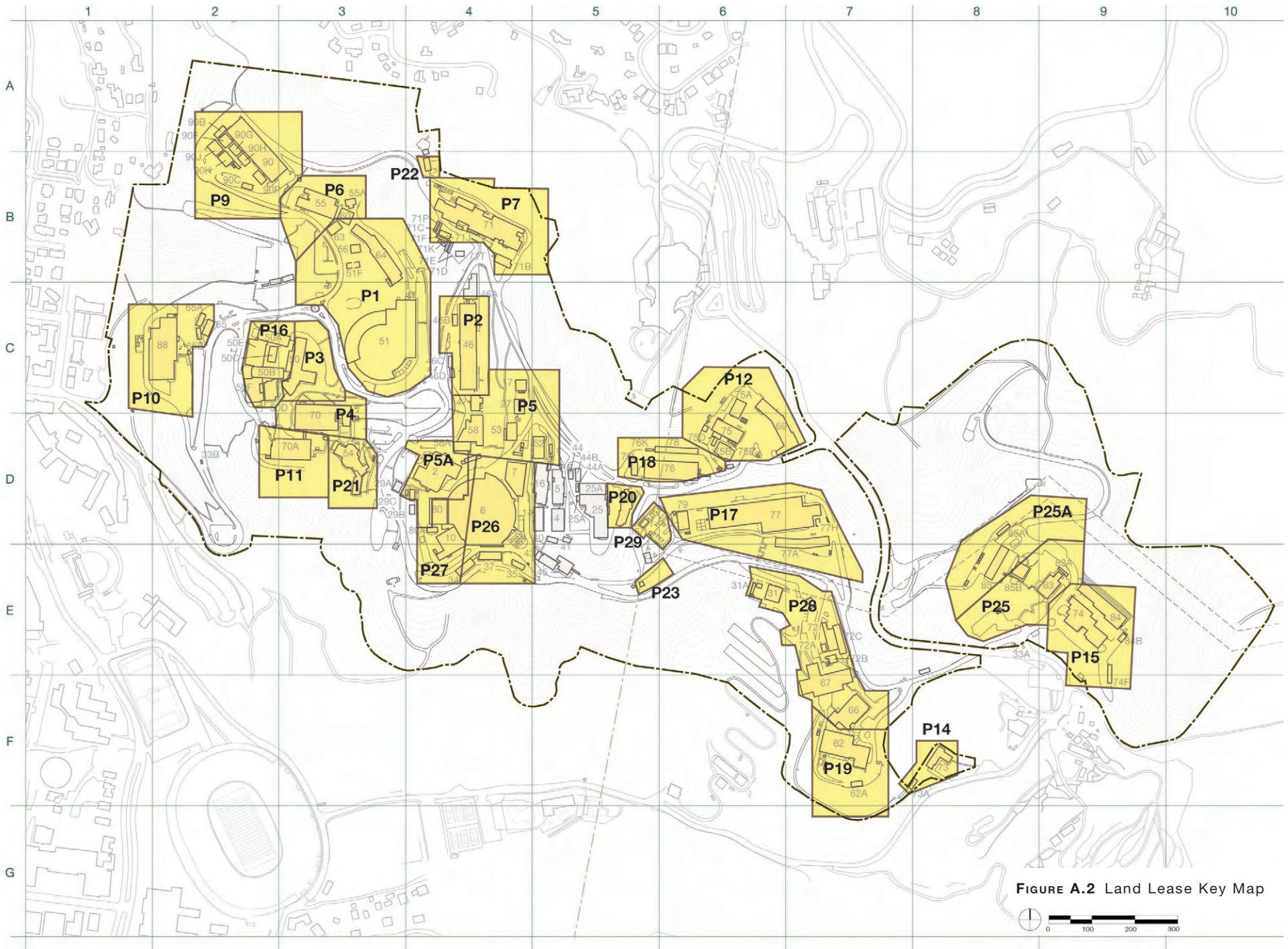


FIGURE A.2 Land Lease Key Map

# Appendix C: Figures and Tables

Figure F.1	3	<i>Photo</i> The new Molecular Foundry building earned the U.S. Green Building Council's "Silver" rating for sustainable design and construction	Figure 1.12	23	<i>Photo</i> The Laboratory's natural environment and adjacency to UC Berkeley are cherished attributes
Figure I.1	5	<i>Photo</i> The view southwest from the Laboratory at sunset	Figure 1.13	24	<i>Photo</i> Inefficient, high-maintenance office trailers make up 5% of the main site's space
Figure 1.1	11	Berkeley Lab's Location within the San Francisco Bay Area	Figure 1.14	25	<b>Map</b> Over half of the buildings at Berkeley Lab require rehabilitation or replacement
Figure 1.2	11	Berkeley Lab's Location within the Cities of Berkeley and Oakland	Figure 1.15	27	<i>Photo</i> Demolition of facilities that are unsuitable for future research purposes
Figure 1.3	12	<i>Photo</i> Developed clusters follow the hillside terrain at Berkeley Lab	Figure 2.1	31	Berkeley Lab's scientific goals address significant problems facing humankind and the environment
Figure 1.4	13	<b>Map</b> The Laboratory's hillside development pattern on its 203-acre parcel of UC Regent's land	Figure 2.2	32	<i>Photo</i> The proposed User Support Building would provide staging area and laboratory space for users of the Advanced Light Source, as well as replace a seismically "very poor" building
Figure 1.5	14	<i>Photo</i> The Radiation Laboratory originated the national laboratory system on the campus of UC Berkeley	Figure 2.3	33	Prospective high-performance computing facility to accelerate discovery in all scientific and engineering disciplines
Figure 1.6	15	The Laboratory has a 75-year history of achievement in Berkeley	Figure 2.4	34	Berkeley Lab's Projected Population Increase
Figure 1.7	15	<i>Photo</i> The historic dome of the 184" Cyclotron, now the home of the Advanced Light Source, has been a Berkeley Hills landmark since 1941	Figure 2.5	35	Berkeley Lab's Projected Occupied Building Space Increase at the main site
Figure 1.8	16	<i>Photo</i> Laboratory Director and Nobelist Ed McMillan with Edward Lofgren on the Bevatron, 1963	Figure 2.6	37	Genomics and Biosciences facilities with advanced infrastructure are required to address major challenges in energy, health, and the environment
Figure 1.9	18	<i>Photo</i> The wide range of research disciplines at the Berkeley Lab	Figure 2.7	39	<i>Photo</i> Laboratory facilities like the historic ALS building complement the Berkeley Hills setting
Figure 1.10	19	<i>Photo</i> The Molecular Foundry is dedicated to supporting nanoscience research by scientists from around the world	Figure 2.8	40	<i>Photo</i> New facilities built at higher densities, like the Advanced Materials Laboratory, enhance operational effectiveness and flexibility
Figure 1.11	22	Berkeley Lab operates user facilities for use by the world-wide scientific community	Figure 2.9	40	Select architectural elements of a campus-like setting
			Figure 2.10	41	<i>Photo</i> Access to advanced scientific equipment like

		the Advanced Light Source supports international collaborations	Figure 3.16	63	<i>Photo</i> One way traffic pattern on Chamberlain Road allows for parking on both sides of the street
Figure 3.1	45	The Berkeley Lab site in 2006 is a blend of landscape and building clusters	Figure 3.17	64	<i>Photo</i> Existing surface parking lots unevenly distribute capacity relative to adjacent demand
Figure 3.2	46	The Laboratory's main site blends with the rustic landscape of the UC Berkeley Hill Campus	Figure 3.18	65	<b>Map</b> Laboratory Circulation
Figure 3.3	47	<b>Map</b> 1998 – Present Berkeley Lab Boundary	Figure 3.19	66	<i>Photo</i> Service areas often conflict with parking areas and pedestrian pathways
Figure 3.4	49	<b>Map</b> Berkeley Lab Fixed Constraints	Figure 3.20	67	<b>Map</b> Vehicle Circulation and Parking Framework
Figure 3.5	51	<b>Map</b> Berkeley Lab Easement/Setback Constraints	Figure 3.21	68	Illustrative improvement to vehicular access, circulation, and parking
Figure 3.6	53	<b>Map</b> Berkeley Lab Land Use Plan	Figure 3.22	70	<i>Photo</i> Pedestrian circulation often overlaps with service access and parking
Figure 3.7	56	<i>Photo</i> Aerial view of the Laboratory in 2003 reveals how the cluster development pattern follows the main site's hillside topography	Figure 3.23	71	<i>Photo</i> Buildings are used as a means to overcome the Laboratory's steep topography for pedestrians
Figure 3.8	57	<i>Photo</i> Building and infrastructure forms at Berkeley Lab have a purpose-built, industrial character with a consistent palette of materials, and colors	Figure 3.24	72	<i>Photo</i> A network of pedestrian paths accommodate circulation through the park-like setting of the Laboratory
Figure 3.9	58	Future development will focus on creating Research Clusters which will reinforce a more campus-like environment at the Laboratory	Figure 3.25	73	<b>Map</b> Pedestrian Circulation Framework
Figure 3.10	59	<b>Map</b> Development Framework	Figure 3.26	74	<i>Photo</i> Views of Laboratory buildings from the City of Berkeley are softened by screening tree stands and open space reserves
Figure 3.11	60	Cluster commons will create outdoor use areas	Figure 3.27	75	<i>Photo</i> The Laboratory is host to more than 120 different animal species, including Columbian Black-Tailed deer
Figure 3.12	61	<i>Photo</i> Pedestrian paths and walkways among research clusters will be enhanced to stimulate interaction and ease circulation	Figure 3.28	77	<b>Map</b> Open Space and Open Area Framework
Figure 3.13	61	<i>Photo</i> The area near the Cafeteria will be developed into the Central Commons	Figure 3.29	79	<b>Map</b> Landscape Framework
Figure 3.14	62	Laboratory Regional Access	Figure 3.30	80	<i>Photo</i> The Laboratory's open space is characterized by a rustic landscape of native and naturalized woodlands and grasslands
Figure 3.15	63	<i>Photo</i> Berkeley Lab's shuttle bus system minimizes individual vehicle use			

Figure 3.31	80	<i>Photo</i>	Areas of Rustic Riparian Landscape on the Laboratory are protected from future development	Table 1.1	20	Building space occupied by Scientific Research Area in assignable square feet
Figure 3.32	80	<i>Photo</i>	Stands of trees screen the view of Laboratory buildings from neighboring communities	Table 2.1	37	Summary of Projections for Population Growth
Figure 3.33	81	<i>Photo</i>	Ornamental landscapes are placed near pedestrian spines	Table 2.2	37	Summary of Projections for Space Growth
Figure 3.34	81	<i>Photo</i>	Special plantings used to heighten visual interest in high-activity pedestrian areas	Table 3.1	54	Land Use Plan Area Calculations
Figure 3.35	83	<i>Photo</i>	Berkeley Lab's sedans and pickups operate on 85% ethanol to minimize air pollutants and reduce dependence on foreign oil (buses run on biodiesel)	Table 3.2	69	Parking Program
Figure 3.36	85	<b>Map</b>	Utilities Framework			
Figure 3.37	87	<i>Photo</i>	Grizzly Substation and UC Berkeley's Hill Area Substation each provide emergency backup for the other			
Figure A.1	93		Building Inventory Key Map			
Figure A.2	95		Land Lease Key Map			

# Appendix D: Related Documents

*Department of Energy Laboratory Plans, FY 2007 - FY 2011*, US Department of Energy, March 2006.

*Ernest Orlando Lawrence Berkeley National Laboratory Institutional Plan, FY 2004 - FY 2008*, Lawrence Berkeley National Laboratory, January 2004.

*Final Environmental Impact Report: UC Berkeley 2020 Long Range Development Plan & Chang-Lin Tien Center for East Asian Studies*, University of California Berkeley, January 2005.

*Lawrence Berkeley National Laboratory Transportation Demand Management Plan, Working Draft*, Lawrence Berkeley National Laboratory, November 2006.

*Lawrence Berkeley Laboratory Long Range Development Plan*, Lawrence Berkeley National Laboratory Office of Planning and Development, August 1987.

*Policy on Approval of Design, Long Range Development Plans, and the Administration of the California Environmental Quality Act*, The Regents of the University of California, January 2003.

*University of California Policy on Green Building Design, Clean Energy Standards, and Sustainable Transportation Practices*, UC Office of the President, January 2006.

# Appendix E: Abbreviations and Definitions

**ADP** Adjusted Daily Population

**ALS** Advanced Light Source: a national user facility that generates intense light for scientific and technological research. See also [www.als.lbl.gov](http://www.als.lbl.gov)

**BART** Bay Area Rapid Transit District: see [www.bart.gov](http://www.bart.gov)

**baseline** Refers to population, area, or parking data that was established as the current reference data at the beginning of the planning process; the data upon which the LRDP is based.

**CEQA** California Environmental Quality Act. See <http://ceres.ca.gov/ceqa/>

**cfs** Cubic feet per second

**commons spaces** Central, campus-like collegial spaces creating a focal point and gathering space in each research cluster.

**constraints** Significant habitats, resources, facilities, environmental qualities, or other features of a study area that serve to restrain, restrict, or prevent the implementation of proposed improvements in a given area.

**cyclotron** a circular particle accelerator in which charged particles are confined by a vertical magnetic field and accelerated by an alternating high-frequency applied voltage, in order to study the way they interact.

**DHS** Department of Homeland Security: see [www.dhs.gov](http://www.dhs.gov)

**DOE** United States Department of Energy: see [www.energy.gov](http://www.energy.gov)

**EBMUD** East Bay Municipal Utility District: see [www.ebmud.com](http://www.ebmud.com)

**EIR** Environmental Impact Report

**ESnet** Energy Sciences Network: a national user facility that is a high-speed computing network serving Department of Energy scientists and collaborators worldwide. See [www.es.net](http://www.es.net).

**FAR** Floor Area Ratio: The ratio of floor area in a building to the land area of the lot on which it sits. Used to regulate or measure building volume and planning density.

**framework** A system of concepts and principals that bring order to a portion of the LRDP.

**FTE** Full-Time Equivalent

**Gbps** Gigabit per second

**GPD** Gallons Per Day

**GSF** Gross Square Feet

**HILAC** Heavy Ion Linear Accelerator

**IDS** Illustrative Development Scenario: one of many possible development scenarios under this LRDP, specifically designed to encompass the maximum amount of new building space, population, parking, and other site improvements identified in the LRDP, as a basis for assessing the environmental impacts in the EIR.

**JGI** Joint Genome Institute: a national user facility whose mission is to provide integrated high-throughput sequencing and computational analysis to enable genomic-scale/systems-based scientific approaches to DOE-relevant challenges in energy and the environment. See [www.jgi.doe.gov](http://www.jgi.doe.gov).

**MW** Megawatt

**MWh** Megawatt hour

**NCEM** National Center for Electron Microscopy

**NIH** National Institutes of Health

**NSF** Net Square Feet

**on-site** Refers to projects or facilities on the Berkeley Lab main site, as opposed to projects or facilities owned, leased or managed off-site.

**off-site** Refers to projects or facilities that are not on the Berkeley Lab main site, as opposed to on-site.

**open area** The rustic hillside terrain within Berkeley Lab that lies between each research cluster.

**open space** The area within Berkeley Lab that includes most of the site's protected habitats and provides a buffer to neighboring uses.

**LBNL** Lawrence Berkeley National Laboratory: a United States Department of Energy National Laboratory, managed by the University of California. See also [www.lbl.gov](http://www.lbl.gov)

**LEED** Leadership in Energy & Environmental Design: A green building rating system developed by the US Green Building Council.

**LRDP** Long Range Development Plan

**main site** The 202 acre portion of UC Regents land in the Oakland/Berkeley Hills that forms the primary location of the Lawrence Berkeley National Laboratory, that is the subject of this LRDP. In contrast to other facilities leased or owned by the Berkeley Lab.

**NERSC** National Energy Research Scientific Computing Center: a national user facility that is one of the largest facilities in the world devoted to providing computational resources and expertise for basic scientific research. See [www.nersc.gov](http://www.nersc.gov).

**NNSA** National Nuclear Security Administration: see [www.nnsa.doe.gov](http://www.nnsa.doe.gov)

**registered guests** Non-employee population that are granted access to the Laboratory for a variety of scientific or operational activities for a set period of time.

**research clusters** Areas within the Berkeley Lab main site defined by major topographic features encompassing research functions that share common needs and interests.

**TDM** Traffic Demand Management

**UC** University of California see [www.universityofcalifornia.edu/](http://www.universityofcalifornia.edu/)

**UCB** UC Berkeley

**UCOP** UC Office of the President

**user facility** any of the national user facilities operated by the Berkeley Lab for the US Department of Energy Office of Science; major scientific resources that are available for use by the larger scientific community.

**USGBC** United States Green Building Council: see [www.usgbc.org](http://www.usgbc.org).

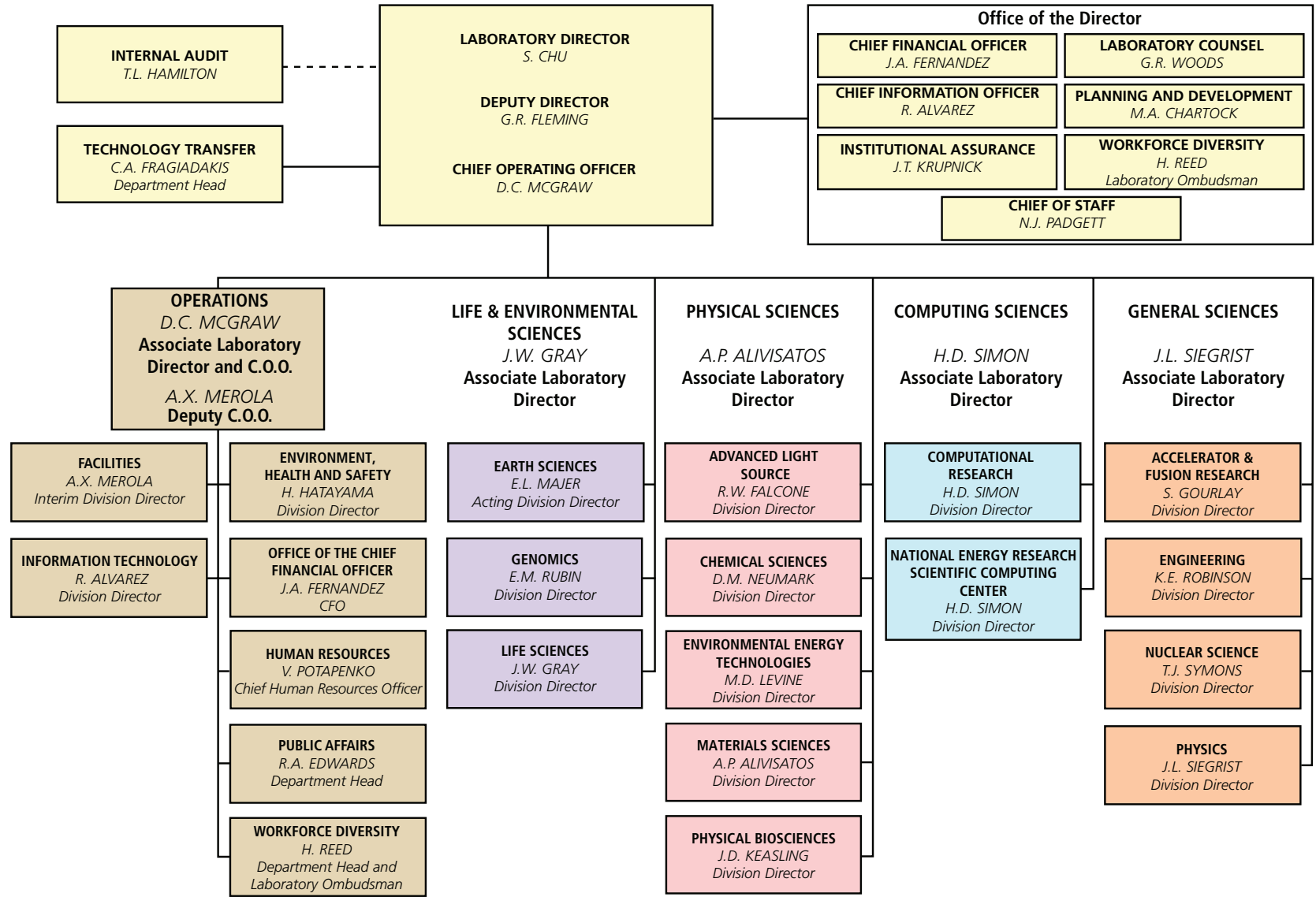
**viewshed** An area of particular scenic or historic value that is deemed worthy of preservation against development or other change.

**visitors** Non-employee population visiting the Laboratory for meetings or tours on a single-visit basis; as opposed to registered guests.

**WFO** Work For Others



# Appendix F: Berkeley Lab Organization



# Appendix G: Acknowledgments

The 2006 Long Range Development Plan (LRDP) was prepared by the Facilities Division, Lawrence Berkeley National Laboratory, University of California with guidance from the LRDP/EIR Executive Steering Committee.

## *Facilities Division:*

Jerry O'Hearn - Department Head, Planning, Design and Construction

Hansel Bauman - Senior Facilities Planner

Laura Chen - Chief Facilities Planner

Paul Franke - Facilities Planner

Doug Lockhart - Special Projects Manager

Rich McClure - Senior Facilities Planner

Jeff Philliber - Senior Environmental Planner

## *Executive Steering Committee:*

David McGraw, Chair - Associate Laboratory Director/Chief Operating Officer

Michael Chartock - Director, Planning and Development

Laura Chen - Chief Facilities Planner

Reid Edwards - Head, Public Affairs

James Krupnick - Director, Institutional Assurance

A.X. Sandy Merola - Deputy Chief Operating Officer/Interim Facilities Division Director

Jerry O'Hearn - Department Head, Planning, Design and Construction

Jeff Philliber - Senior Environmental Planner

## *Consultants:*

BMS Design Group: Barbara Maloney, Principal

Dangermond Architects: Steve Dangermond, Principal

# Appendix H: Index

- Adjusted Daily Population (ADP) 34
- Advanced Light Source (ALS) 17, 32, 35, 38, 74
- Alameda Whipsnake 48, 49
  
- Berkeley Lab *see Lawrence Berkeley National Laboratory*
- Berkeley Lab at a glance 21
- Berkeley Lab Design Guide 5, 44
- Berkeley Lab Sustainability Policy 5, 44
- bicycles
  - lanes 68
  - parking 69
- Blackberry Canyon 48, 84
- Blackberry Canyon Gate 48, 62, 66, 86
- building conditions 25
  
- California Department of Fish and Game 48
- California Environmental Quality Act (CEQA) 5
- campus-like research environment 40
- central commons 54, 58, 61, 68, 70, 72
  - land use zone 53, 54
- Chicken Creek 48
- circulation
  - pedestrian 73
  - vehicle 65, 67
- City of Berkeley 10, 83, 84
- cluster commons 60
- corporation yard 66
  
- Department of Energy (DOE) 4, 17, 18
- design guide 5, 44
- design guidelines 60
- development density 55
  
- development framework 56-61
  - existing conditions 56
  - plan 59
  - strategies 58
  
- East Bay Municipal Utility District (EBMUD) 82, 83, 84
- easement/setback constraints 50, 51
- electrical power and distribution 84
- Environmental Impact Report (EIR) 5, 6
  
- facilities conditions 24-27
- federal science research initiatives 31
- fixed constraints 48, 49
  
- gate improvements 66
- Grizzly Peak Gate 62
  
- Hayward fault zone 48
- Heavy Ion Linear Accelerator (HILAC) 16
- Howard, John Galen 15
  
- Illustrative Development Scenario (IDS) 5, 6
- interdisciplinary collaboration 41
  
- landscape zones 78
- land use 46-55
  - area calculations 54
  - constraints 48-51
  - development density 55
  - existing conditions 46
  - plan 52
  - strategies 52
  - zones 52
  
- Lawrence Berkeley National Laboratory (LBNL)
  - access 62
  - boundary plan 47
  - character 56
  - existing space occupied 20
  - fragmentation 23
  - historical perspective 14-18
  - lab at a glance 21
  - leased space 20, 23
  - location 10, 11
  - management 21
  - management zone addition 46, 47
  - mission 4, 20
  - modernization of facilities 26
  - operations 22, 36
  - partnerships 22
  - population 34
  - regional access 62
  - renewal, need for 31
  - scientific vision 30
  - user facilities 17, 22
- Lawrence Hall of Science 46
- leased facilities *see off-site facilities*
- Lee's Micro-Blind Harvestman 48, 49
- life safety 40
- Long Range Development Plan (LRDP)
  - definition and purpose 4, 5
  - preparation 7
  - relationship to EIR 5
  
- major utilities lines or easements 50
- Molecular Foundry 3, 18, 19
  
- National Center for Electron Microscopy (NCEM) 17

National Energy Research Scientific  
     Computing Center (NERSC) 18  
 natural gas distribution 86  
 neighborhood setback 50  
  
 off-site facilities 20, 32, 36  
 office trailers 24  
 open space and landscape 74-79  
     existing conditions 74  
     landscape framework 78  
     landscape framework plan 79  
     landscape zones 78-81  
     open space and open area framework 76  
     open space and open area framework  
         plan 77  
     strategies 75  
 ornamental landscape 81  
  
 Pacific Gas and Electric (PG&E) 50, 86  
 parking 63-69  
     bicycle 69  
     existing conditions 64  
     framework plan 67  
     permits 64  
     program 69  
     projections 68  
     strategies 66  
     structures 68  
 pedestrian circulation 70-73  
     existing conditions 70  
     framework 71  
     framework plan 73  
     strategies 71  
 pedestrian linkages 61  
  
 pedestrian walkways 61, 64, 72  
 perimeter open space land use zone 53, 54  
 protected habitats 48  
 projections  
     parking 68  
     population growth 37  
     space growth 37  
  
 research and academic land use zone 52, 53  
 research clusters 58-61, 78  
 riparian and wetland habitat 48  
 riparian landscape 80  
 rustic landscape 56, 78  
  
 sanitary sewer system 83  
 scientific goals 31  
 scientific vision 30-33  
 screening trees 80  
 seismic restraint upgrades 26  
 service and delivery 64  
 setbacks 50  
 shuttle bus system 41, 62, 63, 68, 72  
 site and facilities vision 38-41  
 slope stabilization 75  
 space and population projections 34-37  
 storm drainage 84  
 Strawberry Canyon 46, 62, 84  
 Strawberry Canyon Gate 62, 66  
 Strawberry Creek 48, 84  
 support services land use zone 53, 54  
 sustainability 22, 23, 38, 44, 58  
     Berkeley Lab policy 5, 44  
  
 telecommunications distribution 87  
  
 Transportation Demand Management  
     (TDM) 62, 66, 70  
 U.S. Department of Energy *see DOE*  
 UC Berkeley 4, 14, 15, 20, 21, 41, 46, 62,  
     63, 72, 84  
     Botanical Garden 46  
     Hill Area Substation 86  
     Hill Campus 46  
     LRDP 46  
     Mathematical Sciences Research Institute 46  
     Regents 4, 5, 10  
     Space Sciences Laboratory 46  
     Strawberry Canyon Recreation Area 46  
 UC Presidential Policy for Green Building  
     Design 38, 58  
 University of California 21  
 User Support Building 32  
 utilities and infrastructure 82-87  
     existing conditions 82  
     framework 82  
     framework plan 85  
     strategies 82  
  
 vegetation management 40, 46, 75, 76  
 vehicle access, circulation, and parking 62-69  
     existing conditions 62-65  
     framework plan 66  
     strategies 66  
 viewshed reserve 50  
  
 water supply and distribution 82  
 wayfinding 61, 66  
 Western Area Power Administration 86  
 wildland fire management *see vegetation  
     management*

