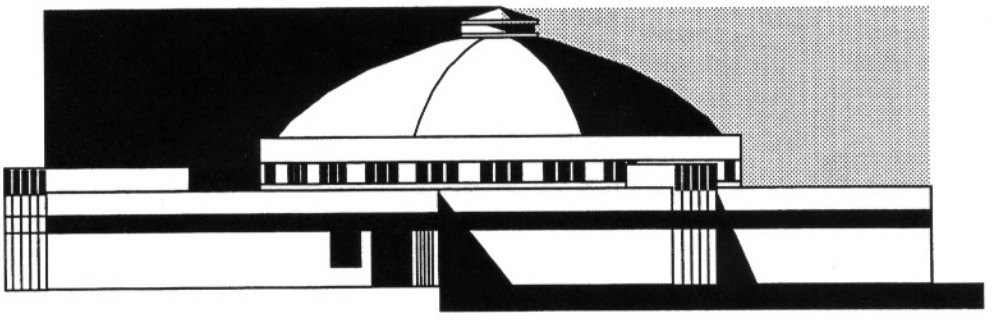
PUB-727

COMMUNITY RELATIONS PLAN
for Lawrence Berkeley Laboratory

Environmental Restoration Program



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LIST OF ACRONYMS USED IN THIS DOCUMENT

ALS	Advanced Light Source
AOCs	Areas of Concern
BASTEC	Bay Area Science and Technology Education Collaboration
CEAC	Community Environmental Advisory Commission (City of Berkeley)
CRP	Community Relations Plan
CSEE	Center for Science and Engineering Education
DCA	Dichloroethane
DCE	Dichloroethylene
DOE	U.S. Department of Energy
DTSC	California Department of Toxic Substances Control
EAC	Environmental Affairs Commission (City of Oakland)
HTO	Tritiated Water
LBL	Lawrence Berkeley Laboratory
PCBs	Polychlorinated Biphenyls
PCE	Perchloroethylene
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RWQCB	Regional Water Quality Control Board
SWRB	State Water Resources Board
SWMUs	Solid Waste Management Units
TCE	Trichloroethylene
UC	University of California
VOCs	Volatile Organic Compounds

INTRODUCTION

About this Community Relations Plan

The Lawrence Berkeley Laboratory (LBL) has applied to the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), for renewal of its Hazardous Waste Handling Facility Permit. A permit is required under Resource Conservation and Recovery Act (RCRA) regulations. The permit will allow LBL to continue using its current hazardous waste handling facility, upgrade the existing facility, and construct a replacement facility. The new facility is scheduled for completion in 1995. The existing facility will be closed under RCRA guidelines by 1996.

As part of the permitting process, LBL is required to investigate areas of soil and groundwater contamination at its main site in the Berkeley hills. The investigations are being conducted by LBL's Environmental Restoration Program and are overseen by a number of regulatory agencies. The regulatory agencies working with LBL include the California Environmental Protection Agency's Department of Toxic Substances Control, the California Regional Water Quality Control Board, the Bay Area Air Quality Management District, the East Bay Municipal Utilities District, and the Berkeley Department of Environmental Health.

RCRA requires that the public be informed of LBL's investigations and site cleanup, and that opportunities be available for the public to participate in making decisions about how LBL will address contamination issues. LBL has prepared this Community Relations Plan (CRP) to describe activities that LBL will use to keep the community informed of environmental restoration progress and to provide for an open dialogue with the public on issues of importance. The CRP documents the community's current concerns about LBL's Environmental Restoration Program.

Interviews conducted between February and April 1993 with elected officials, agency staff, environmental organizations, businesses, site neighbors, and LBL employees form the basis for the information contained in this document. The CRP is divided into the following sections:

INTRODUCTION
HISTORY OF LBL OPERATIONS AND ENVIRONMENTAL RESTORATION FINDINGS
COMMUNITY PROFILE
RESULTS OF COMMUNITY INTERVIEWS
LBL'S COMMUNITY RELATIONS PROGRAM
APPENDICES

During community interviews, concerns were raised that did not pertain specifically to the Environmental Restoration Program. While these concerns have been documented in the section on issues of importance to the community, they are not specifically addressed in the community relations program described in this plan. This CRP focuses on community relations activities associated with the environmental restoration effort. The activities in this CRP will be incorporated into an overall community relations program for LBL that will address the spectrum of issues and questions raised by the community during the interview process.

The Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) was passed by Congress in 1976 and amended in 1984 by the Hazardous and Solid Waste Amendments, which significantly expanded the scope of RCRA and added new requirements.

RCRA's goals are to protect human health and the environment, reduce waste and conserve energy and natural resources, and reduce or eliminate the generation of hazardous waste. The portion of RCRA that controls hazardous waste is Subtitle C and its associated regulations. The Subtitle C program manages hazardous waste "from cradle to grave" and governs the operations of waste generators, transporters, and owners and operators of treatment, storage, or disposal facilities.

Under Subtitle C, LBL must submit a permit application to the California Department of Toxic Substances Control (DTSC) in order to operate its hazardous waste handling facility. The application provides detailed technical information about the design, operation, maintenance, and closure of the facility. DTSC drafted a permit for LBL and held a public comment period on the draft permit from October 30 to December 16, 1992. DTSC is expected to issue a final permit in the spring of 1993.

As part of the permitting process, LBL is required to evaluate its past operating practices and identify areas where contamination may have occurred (from spills, leaks, etc.). LBL completed a preliminary investigation in September 1992, and is currently doing a detailed investigation of areas that showed some contamination. LBL will then evaluate remedial alternatives and implement cleanups where necessary. A schedule for investigation and remediation will be written into LBL's permit.

Throughout the investigation and remediation process, there will be both formal and informal opportunities for the public to comment on the Environmental Restoration Program and any issues of concern.

Lawrence Berkeley Laboratory

Lawrence Berkeley Laboratory (LBL) is a national research facility managed by the University of California for the U.S. Department of Energy (DOE). The oldest of DOE's nine national laboratories, LBL is located in the hills above the UC Berkeley main campus, overlooking the San Francisco Bay (see Figure 1). For more than 60 years, the Laboratory has pursued internationally recognized scientific research. The research develops fundamental understanding and applications in many fields, including energy, environment, materials, physics, transportation, computing and communication, and biology and medicine. LBL does not conduct weapons or defense-related research.

LBL was founded on the Berkeley campus by Ernest O. Lawrence in 1931. It moved to its present location in 1940 when the 184-Inch Cyclotron was constructed. Mr. Lawrence was the first to advance the idea that scientific research is best done through a collaboration between scientists, engineers, technicians, and students with different fields of expertise. Teamwork is the foundation of the LBL approach to science, an approach that has yielded rich dividends in basic knowledge and applied technology, along with many awards, including nine Nobel Prizes for research in physics and chemistry. The Laboratory population is approximately 3,800, including staff and visitors.

Today, LBL has a four-part mission: to perform leading multi-disciplinary research in energy sciences, general sciences, and life sciences; to develop and operate unique national experimental facilities for use by qualified investigators; to educate and train future generations of scientists and engineers; and to foster productive relationships between LBL research programs and industry.

LBL's Environmental Restoration Program

LBL's Environmental Restoration Program is part of a nationwide effort by the Department of Energy to identify and clean up contaminated areas at its facilities. DOE funds the Environmental Restoration Program at LBL and all of its other sites. LBL's Environmental Restoration Program was officially founded in 1991, as part of LBL's Environment, Health, and Safety Division. The Environmental Restoration Program is responsible for implementing the corrective actions that are identified in LBL's RCRA permit.

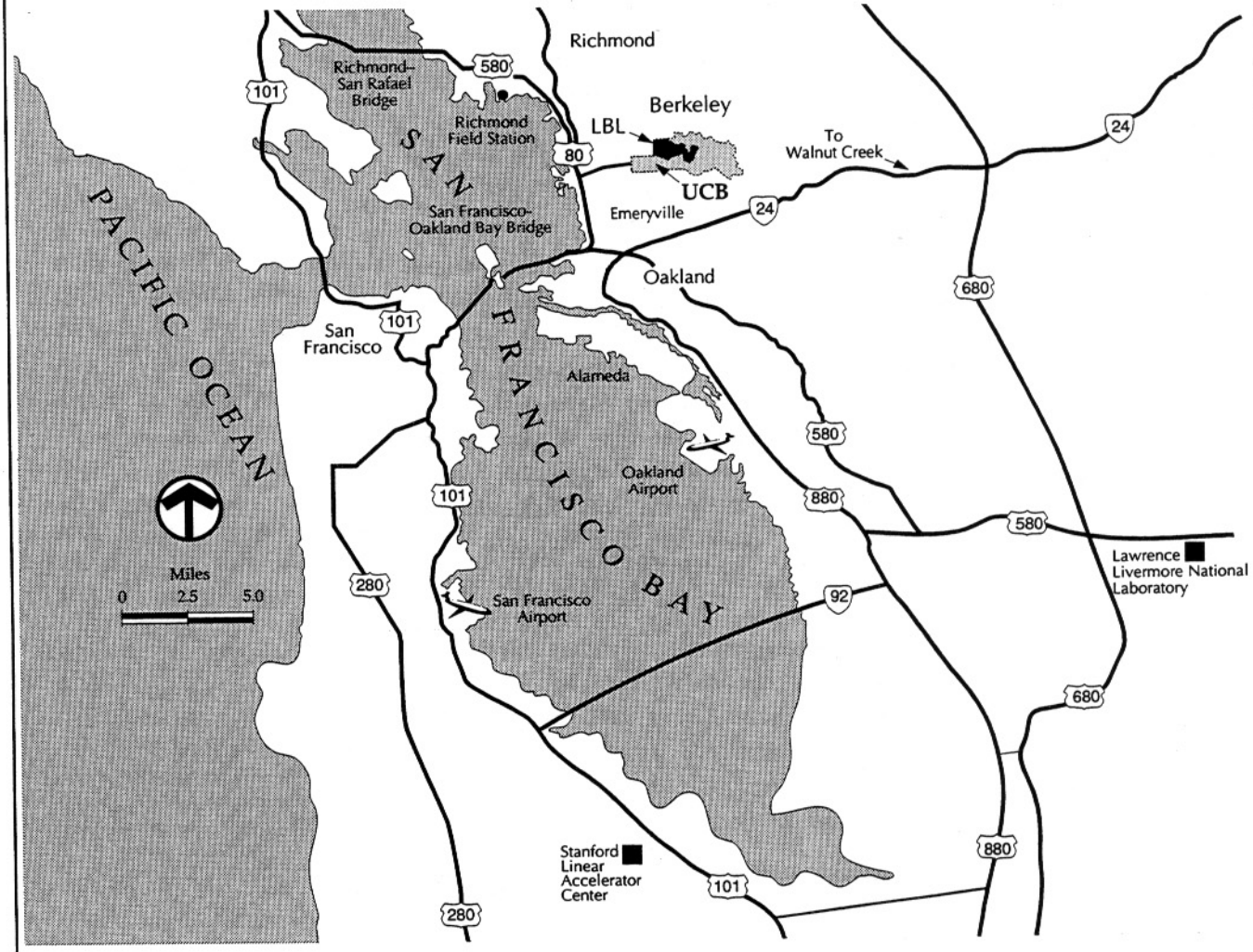

FIGURE 1. San Francisco Bay Area Map

History of Lawrence Berkeley Laboratory Operations and Environmental Restoration Findings

Site Location

LBL is located in Alameda county where approximately 1.3 million people live. Average annual rainfall in Berkeley is 25 inches with 95 percent occurring from October through April at an intensity seldom greater than one-half inch per hour. LBL enjoys a Mediterranean-type climate with drought years as well as heavy rainfall years. Drought years make water conservation efforts critical in the San Francisco area and in California as a whole. LBL is doing its part to conserve water by treating and recycling water contaminated with volatile organic compounds. This water is collected from a subdrain, treated, and then transported by a pipe to a pre-existing 10,000 gallon storage tank. From the tank, the water travels by gravity flow to the Building 88 cooling tower at a rate of approximately 150 gallons per hour. Each day 4,000 to 8,000 gallons of cooling water must be replaced because of evaporation losses. The recycled water replaces drinking water that would normally be supplied by the East Bay Municipal Utility District (EBMUD).

Most of the LBL site is underlain by complex sedimentary and volcanic rock. In general, the bedrock is relatively weak and weathers deeply. During the past 20 years, the Laboratory has carried out a program of slope stabilization to reduce the risk of property damage due to soil movement. LBL has installed an elaborate groundwater detection and drainage system. The drainage system uses both pumped vertical and free flowing horizontal wells (hydraugers). Surface runoff is prevalent due to LBL's hillside location and moderate annual rainfall. Two creeks and their tributaries provide natural drainage for the LBL site. These creeks eventually flow through UC Berkeley Campus and then into the City of Berkeley storm drainage system, which empties into San Francisco Bay. Current drainage facilities have been able to accommodate all runoff.

The LBL facility comprises 134 acres at its main site, on University of California property in the hills above Berkeley, California. Approximately two-thirds of the site is situated in the City of Berkeley, with the eastern third in the City of Oakland (see Figure 2). The site is bordered on the north primarily by single-family homes and on the west by multi-unit housing, UC student residence halls, and commercial districts. The University-owned area to the south and east is maintained in a largely natural state, with parks and recreational facilities. Site neighbors include the Lawrence Hall of Science, the Samuel Silver Space Sciences Laboratory, the Mathematical Sciences Research Institute, Strawberry Canyon Recreational Center, and the UC Botanical Garden (all UC facilities). Wildcat and Tilden Parks, both operated by the East Bay Regional Park District, are located northeast of the site.

Site Operations

LBL performs research in energy sciences, biosciences, and general sciences. *Energy sciences* work includes chemical, geophysical, energy efficiency, and materials research. Energy Sciences research looks for ways to explore and recover energy resources, increase energy efficiency, and protect environmental and human health from hazards that result from energy production and consumption. As part of energy sciences, LBL is developing efficient, clean systems for energy production, use, and transmission. Research in energy efficiency includes studying high-temperature superconducting materials, new ways to generate electricity, better ways to find and produce fuels, and improvements in transportation.

The California Institute for Energy Efficiency is a collaborative process between LBL researchers and California utilities. Together they are developing new ways to conserve energy, including more efficient fluorescent light bulbs and improved insulation for windows. LBL researchers are working with the U.S. Advanced Battery Consortium to develop a power source for electric vehicles. LBL also assists developing countries in choosing energy sources that minimize pollution, maximize efficiency, and can compete economically.

In addition, LBL has recently completed the Advanced Light Source (ALS) to provide the world's brightest beams of soft x-rays and ultraviolet light. The ALS can be used to study the atomic structure of materials, understand chemical reactions, make micro-electronic devices, and see into living cells in their natural state.

Research work in *biological sciences* focuses on understanding and working to prevent both genetically and environmentally caused diseases, as well as establishing health and environmental protection standards. It brings together biologists, physicists, chemists, computer scientists, and engineers to study problems in genetics, structural biology, and broad areas of gene expression—how an organism's genetic program is expressed and regulated. For example, the gene that predisposes individuals to atherosclerosis, a leading cause of heart disease, was discovered by a LBL investigator.

In addition, LBL has developed a new technique for automating DNA sequencing. The technique has the potential to be 100 times faster than the method most widely used today. This discovery may significantly move up the timetable for completing the Human Genome Project. The Human Genome Center is one of three DOE centers working on deciphering the human genetic code.

The National Tritium Labeling Facility labels compounds with tritium, a radioactive form of hydrogen, so that researchers can trace them through the chemical processes of living organisms. One application of tritium tracing is to determine the effectiveness of new drugs being developed to treat disease.

The *general science* programs create chemical components that make advances possible in many different fields of science and study the fundamental forces that shape the universe. LBL researchers have developed high-performance gas-filled panel insulation to replace the ozone-destroying chlorofluorocarbon foam now used in the walls of refrigerators. The insulation could also be used in wall panels for manufactured housing as well as in airplanes, electric vehicles, and water heaters.

Research in nuclear physics has historically been a cornerstone of LBL's operations. LBL moved to its present location in 1940 in order to construct the 184-Inch Cyclotron, a facility used to accelerate atomic particles for use in nuclear physics experiments. This area, with its support shops and associated laboratories, formed the core of LBL operations for many years and is commonly called the "Old Town" area. Today, the 184-Inch Cyclotron is gone, and its familiar dome now crowns the Advanced Light Source building, which occupies the same site. LBL recently closed the Bevatron, another cyclotron famous as a site for Nobel Prize winning research. Today, the only remaining cyclotron facility in use at LBL is the 88-Inch Cyclotron.

Many types of chemicals, some hazardous, have either been used in the operations at these facilities, or in support shops, or have been produced as wastes from these facilities. These include, but are not limited to, gasoline, diesel oil, waste oils, polychlorinated biphenyls (PCBs), Freon 113, solvents, mercury, metals, acids, paints, and tritium and other radioactive materials. Contamination of soil and groundwater in some areas of the LBL facility has occurred as a result of past waste management practices that were standard for the day, routine operations that caused emissions of materials and limited leaks and spills of materials.

LBL Community Contact Person

If you have any questions about LBL's Environmental Restoration Program, or its operations in general, you can write or call LBL's Community Relations Specialist:

Shaun Fennessey
Lawrence Berkeley Laboratory
University of California
Building 65A
Berkeley, CA 94720
(510) 486-5122

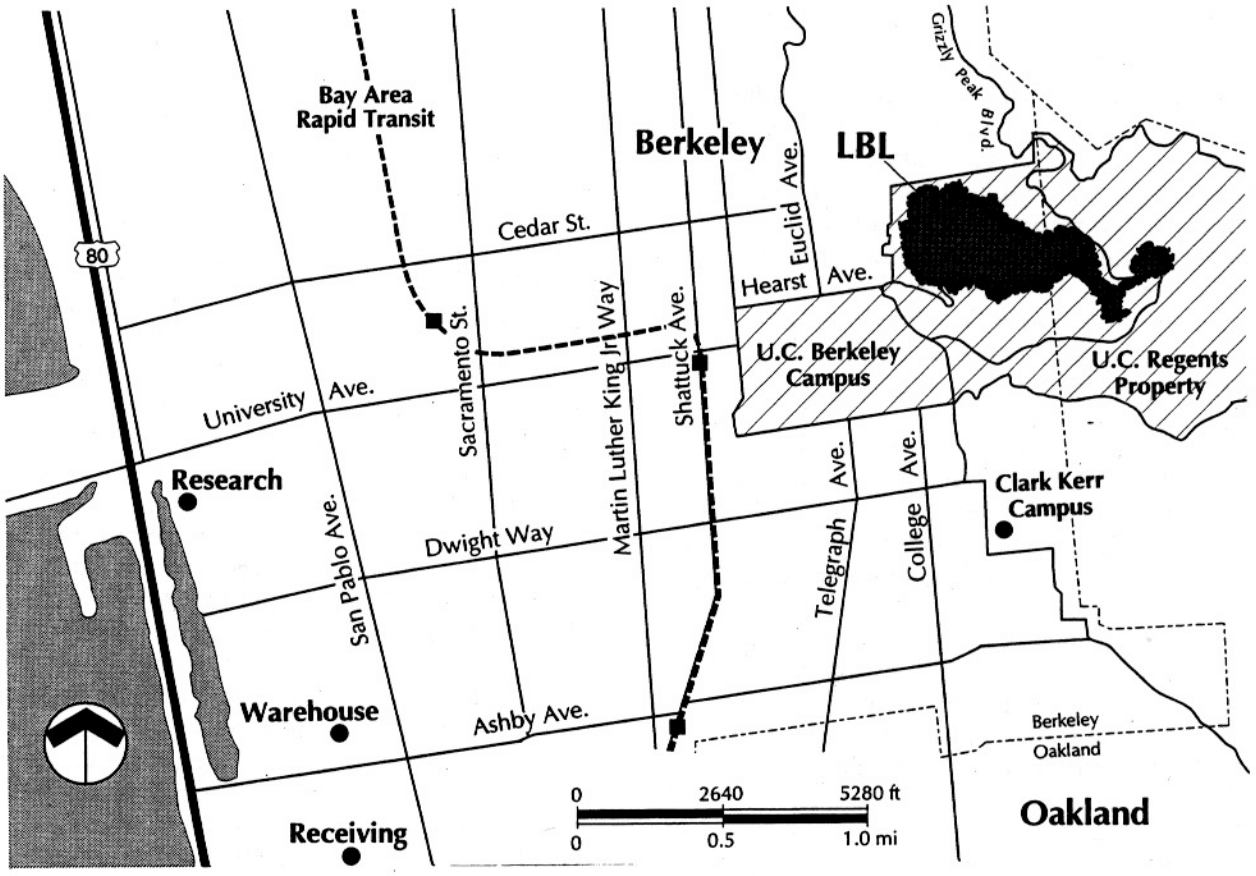

FIGURE 2. LBL Vicinity Map

History of Environmental Restoration at LBL

LBL began its environmental restoration activities in September 1986, when staff collected soil, groundwater, surface water, and vegetation samples from around the site and in adjacent off-site areas as part of its Environmental Baseline Study. These initial samples showed some contamination in the area of Building 51, the Bevalac (see Figure 3).

In February 1988, a DOE Environmental Survey Team visited LBL. Although the team found no contamination problems that posed an immediate threat to human health or the environment, it recommended that LBL conduct further investigation into potential contamination in groundwater. DOE notified the California Regional Water Quality Control Board (RWQCB) that some groundwater contamination might be present at the site.

In October 1988, a plan was submitted by DOE to the RWQCB for additional groundwater sampling and possible treatment of groundwater around Building 51. Chemicals had been detected in some water samples from the horizontal drains (hydraugers) installed in the hillside near Building 51 for slope stabilization purposes. LBL treated the groundwater before it was discharged to storm drains. In order for LBL to get a permit for discharging the water (a National Pollution Discharge Elimination System Permit), the RWQCB required that LBL complete an investigation to determine the nature and extent of the contamination around the site.

Concurrent with the Building 51 investigation, LBL submitted a proposal to DOE for a sitewide environmental investigation and monitoring program, requesting funding for fiscal years 1991 through 1993. LBL carried out a preliminary environmental investigation of the site using its own funds during 1990. DOE subsequently approved funding for the environmental investigation program, and LBL's Environmental Restoration Program was officially established in 1991.

LBL's Environmental Restoration Program is designed to:

- Identify areas of soil and groundwater contamination that may have resulted from past releases of materials to the environment;
- Determine the sources and extent of the contamination;
- Develop plans to remediate contaminated areas; and
- Assure that all environmental restoration activities comply with applicable federal, state, and local regulations.

The first step in the RCRA process is a RCRA Facility Assessment (RFA), in which preliminary investigations are conducted to identify areas that need further attention. The RFA is divided into three parts: the Preliminary Review, in which past records and logbooks are reviewed; the Visual Site Inspection, during which a team visits the site and looks for areas that may need further investigation (e.g., where a spill stain is visible); and the Sampling Visits, when soil and/or groundwater samples are taken at areas where contamination is suspected. A summary of results from LBL's RFA is presented in the section titled "Overview of Current Environmental Findings" on page 14.

For the purposes of RCRA, a site is divided into Solid Waste Management Units (or SWMUs), where some waste handling or treatment activity has occurred. SWMUs include units that handle hazardous waste, such as waste oil tanks, hazardous waste handling facilities, and waste accumulation areas. During the RFA at LBL, 73 SWMUs were identified and investigated.

SWMUs at LBL include the following:

- Waste storage areas, including two former and one current scrap yard;
- Above-ground and underground waste storage tanks used mainly for storing waste oils;
- Several waste collection sumps;
- Several liquid treatment systems, including acid neutralization systems, wastewater pretreatment units, and silver recovery units;

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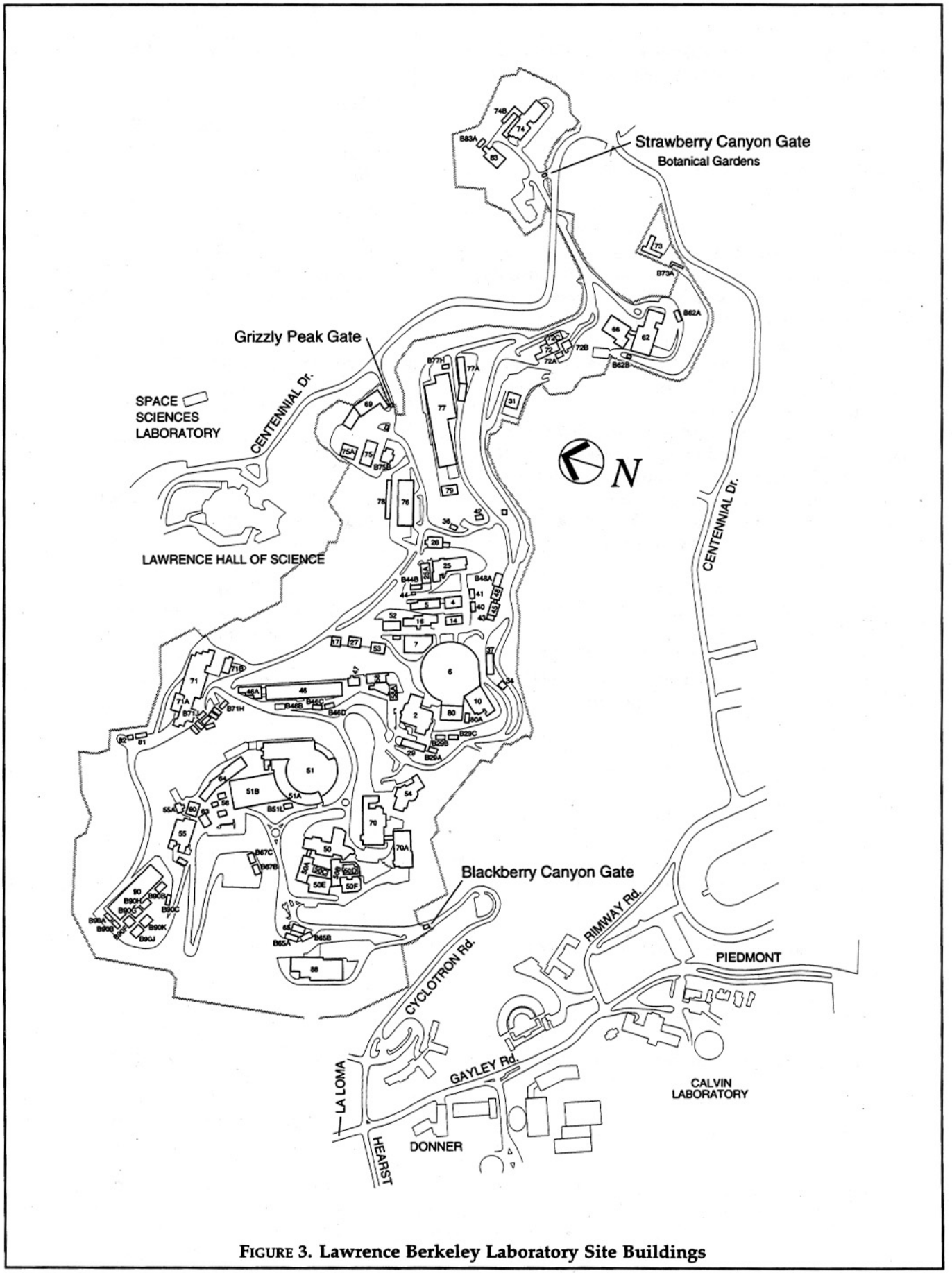

FIGURE 3. Lawrence Berkeley Laboratory Site Buildings

- Past and current plating shops, paint shops, and photography labs that routinely discharge process waters; and

- Miscellaneous other units, including acid dip sinks, ion exchange columns, and an oil/ water separator.

In addition to the SWMUs regulated under RCRA, LBL investigated what are referred to in its reports as Areas of Concern (AOCs). AOCs include units that handle chemical *materials* (not *waste*), such as fuel or Freon storage tanks or storage areas for unused hazardous materials. Since these areas do not handle waste, they are not subject to RCRA regulations. However, LBL recognizes that these AOCs may be sources for some of the contamination identified, and has included them as part of its environmental investigations. The RCRA Facility Investigation will investigate both the locations where contamination was detected during the earlier investigations and all SWMUs and AOCs where there was a potential release of contaminants.

There are 63 AOCs at LBL, including the following:

- Underground and above-ground product storage tanks used for storing diesel, gasoline, solvents, and other substances;

- Hazardous materials storage areas;

- Numerous transformers that once contained PCB oils;

- Areas where radiation releases may have occurred;

- The hydraugers, or horizontal drains, used for slope stability;

- Water releases from cooling towers; and

- The sanitary sewer and storm drain systems.

LBL's Environmental Restoration Process

RCRA investigations being conducted as part of the Environmental Restoration Program will go through the four-phase process outlined below:

STEP 1:
PRELIMINARY INVESTIGATION
(RCRA Facility Assessment, or RFA)

Identify types and locations of contaminants from past activities.

Completed Oct. 1992

STEP 2:
DETAILED INVESTIGATION
(RCRA Facility Investigation, RFI)

Determine the extent and source of areas of contamination, and assess hazards posed by the contamination, if any.

Initiated Sept. 1992

STEP 3:
STUDY OF POTENTIAL CLEAN-UP METHODS
(Corrective Measures Study, CMS)

Evaluate available clean-up methods to choose the most suitable ones for the LBL site.

STEP 4:
REMOVAL AND CLEAN-UP OF CONTAMINANTS
(Corrective Measures Implementation, CMI)

Design, construction, and implementation of the clean-up methods.

Chronology of Major Events in LBL's Environmental Restoration Program

Sept. 1986	LBL conducts environmental investigations as part of its Environmental Baseline Study. Several soil, surface water, groundwater, and vegetation samples are taken around the site and at nearby offsite locations. Some contamination is detected in the vicinity of Building 51.
Feb. 1988	DOE's Environmental Survey Team visits LBL to identify site-wide chemical use, potentially contaminated areas, and chemicals of concern in soil and groundwater. DOE alerts RWQCB that some groundwater contamination may exist on the site.
Oct. 1988	The RWQCB sends a letter to LBL requiring soil and groundwater characterization.
1988	LBL submits a funding proposal to DOE for establishment of a site-wide program of environmental investigation and monitoring.
July 1990	DOE enters into an Agreement in Principle with the California Department of Health Services for oversight of environmental investigations and other activities at six major DOE sites in California, including LBL.
Nov. 1990	LBL begins characterizing contamination in the area between Buildings 51 and 71; the "Old Town" area (Buildings 7, 52, and 53); and the Corporation Yard (Buildings 69 and 75).
Apr. 1991	LBL formally establishes the Environmental Restoration Program with funding from DOE.
Apr. 1991	The Environmental Restoration Program establishes the Groundwater Protection Management Program to integrate groundwater-related activities at LBL.
July - Aug. 1991	LBL conducts investigations for a RCRA Facility Assessment, including a review of records, interviews with staff about waste handling practices, visual inspections, and sampling visits where needed.
Sept. 1991	Environmental Restoration videotapes several thousand feet of sewer line on-site to identify breaks and any potential sources of contamination. Soil samples are collected from around the break points and are analyzed for contaminants.
Nov. 1991	DTSC issues its RCRA Facility Assessment report, based on its Preliminary Site Review and Visual Site Inspection findings.
Apr. 1992	LBL initiates a Community Relations Program to inform local government agencies, businesses, and the general public of Environmental Restoration Program activities.
Aug. 1992	Environmental Restoration finalizes the LBL Well Management Plan that summarizes information available for on-site and off-site monitoring wells, test borings, slope stability wells, and slope indicator wells.

Chronology of Major Events in LBL's Environmental Restoration Program (continued):	
Aug. 1992	Environmental Restoration finalizes a Soil Disposal Plan outlining how contaminated soil that is excavated during investigation work will be managed and disposed.
Oct. 1992	LBL completes its RCRA Facility Assessment (RFA) report, which includes information on soil and groundwater contamination, and submits it to DTSC. The RFA recommends further investigation of some SWMUs and AOCs.
Oct. 1992	DTSC issues a draft RCRA permit for LBL's Hazardous Waste Storage and Treatment Facility. The public comment period is open until December 16, 1992. The City of Berkeley Department of Environmental Health submits comments, but no comments are received from the public.
Oct. 1992	LBL submits its draft RCRA Facility Investigation (RFI) Work Plan to the agencies for review. The Work Plan details the environmental investigations necessary to characterize the site.
Feb. 1993	LBL begins community interviews for the preparation of the Environmental Restoration Program Community Relations Plan.
Feb. 1993	LBL makes a presentation on the Environmental Restoration Program at the Berkeley City Council meeting.

Overview of Current Environmental Restoration Findings

Results of the RFA indicate that there is some contamination of the soil and groundwater at LBL. The majority of contaminants found in the soil and groundwater at LBL belong to a class of chemicals known as volatile organic compounds (VOCs). Volatile organic compounds are substances that contain hydrogen and carbon and evaporate easily at room temperature. Some familiar substances that contain VOCs include gasoline, nail polish remover, and dry cleaning fluid. The types of VOCs that are present in soil and groundwater at LBL include trichloroethylene (TCE), perchloroethylene (PCE), 1,1-dichloroethylene (1,1-DCE), cis-1,2-dichloroethylene (cis-1,2-DCE), 1,1-dichloroethane (1,1-DCA), and Freon 113. Smaller concentrations of other VOCs have been found, including benzene, ethylbenzene, carbon tetrachloride, and vinyl chloride. VOCs were used at LBL as solvents and degreasers to clean equipment, and as coolants in experiments.

The RFA identified the areas of soil contamination (see Figure 4). The areas will be studied as part of ongoing site investigations. The RFA identified five plumes of contaminated groundwater, three contaminated with halogenated hydrocarbons (some of which are VOCs and some of which are not volatile), one with fuel-related hydrocarbons, and one with tritium. Figure 5 shows areas where groundwater contamination has been identified.

Tritium, a radioactive form of hydrogen, has been found in soil and groundwater in the vicinity of the National Tritium Labeling Facility, Building 75 (See Figure 3). Levels of tritium found in groundwater on LBL property are either below or slightly above the drinking-water standard. Because local drinking-water supplies do not use groundwater, LBL believes that the tritium in site groundwater poses little, if any, health risk. LBL will conduct a formal health risk assessment in the next phase of investigations to confirm this.

Investigators believe that this contamination results from emissions of tritiated water (HTO) from the stack at the facility. The HTO then falls to the ground near the facility and enters the soil and groundwater. LBL has substantially reduced the quantity of HTO emitted from the stack in recent

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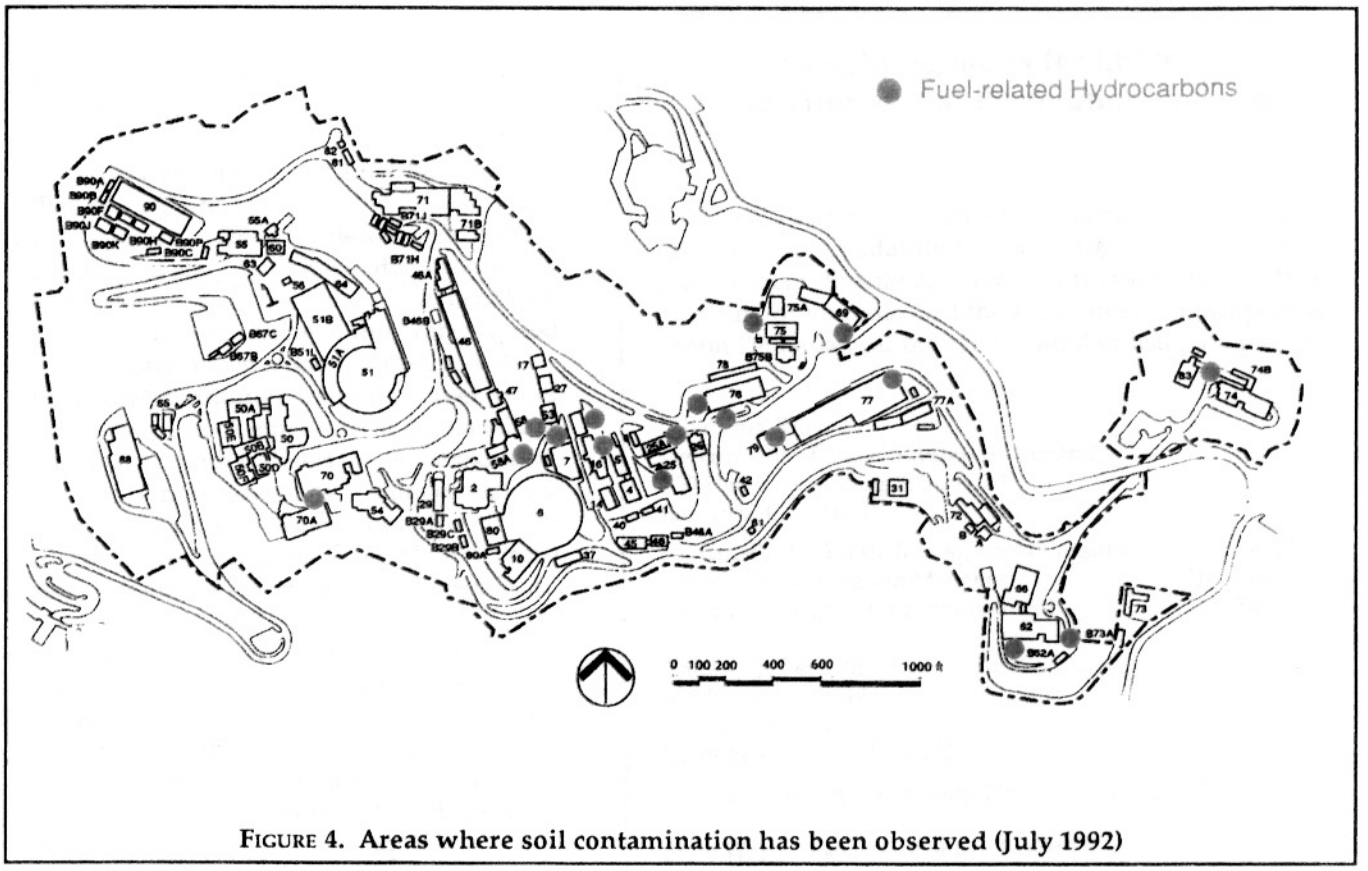

FIGURE 4. Areas where soil contamination has been observed (July 1992)

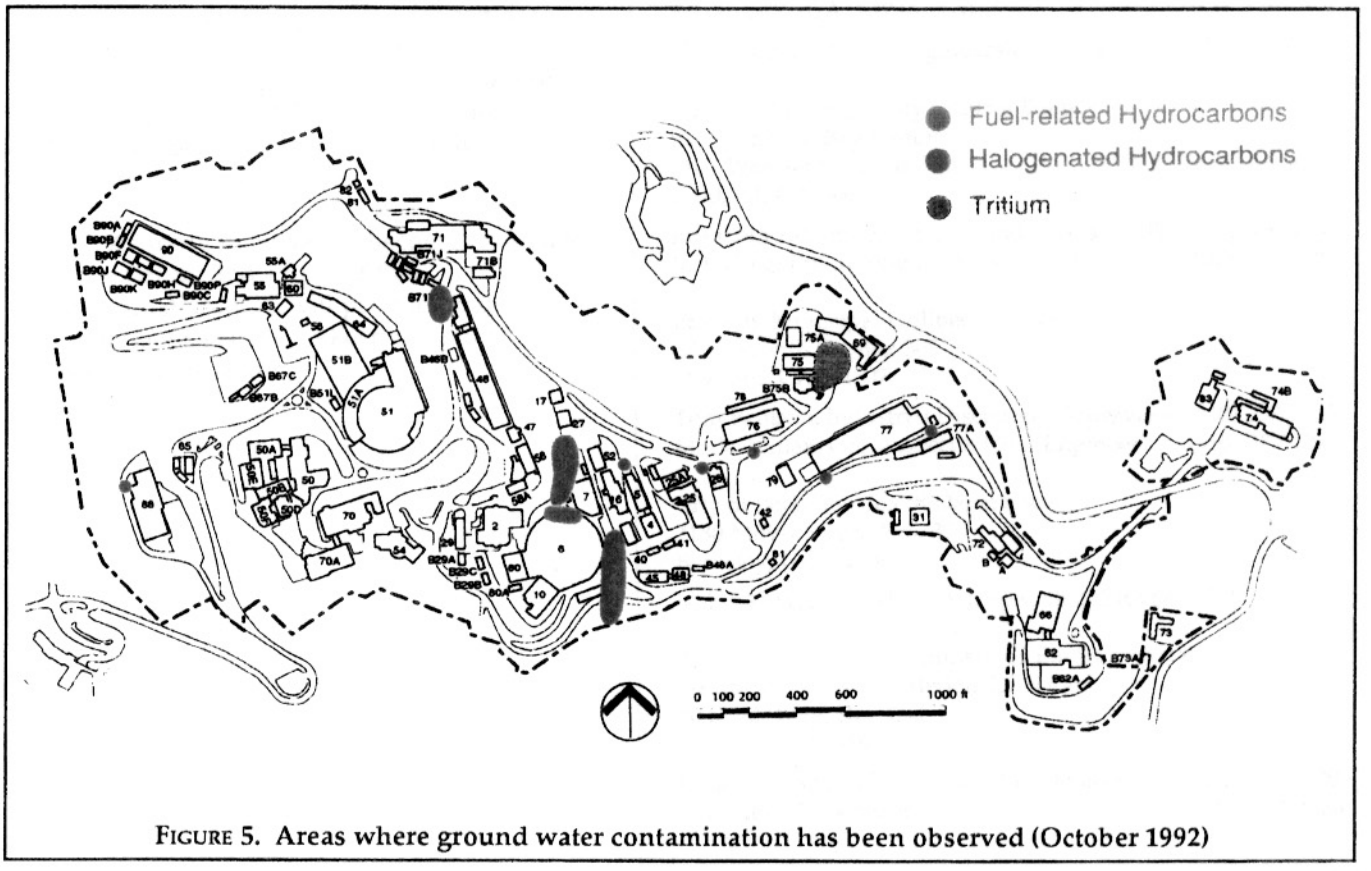

FIGURE 5. Areas where ground water contamination has been observed (October 1992)

years and continues to work on ways to reduce emissions further.

Very low levels of tritium have been detected off-site, in creeks that flow through LBL property. These levels are well below federal and state drinking water standards, and do not pose a threat to human health or the environment. None of this water is used for drinking water. Again, investigators believe that tritium measured in creek water results from stack emissions at the Labeling Facility. Tritium is detectable in creeks after periods of rain, when any tritium emissions from the stack are washed out of the air. For more detailed information on tritium, please refer to the fact sheet on tritium in Appendix A.

At present, preliminary findings indicate that the groundwater and soil contamination at LBL does not pose a threat to human health or the environment. Contamination in groundwater is present under specific areas of the site and has not been detected off-site. The aquifer containing the contaminated groundwater is not a source for drinking water. Soil contamination on-site occurs mostly under paved areas, so little potential for contact with humans or animals exists. LBL will conduct a health risk assessment as part of the next phase of RCRA investigations. Migration of contaminated groundwater will continue to be monitored.

As more information becomes available on the nature and extent of the contamination, LBL will produce and distribute fact sheets to keep the public aware of new findings.

Oversight Agencies for LBL's Environmental Restoration Program

There are a number of regulatory agencies that monitor LBL's Environmental Restoration Program. You may contact them directly for more information about LBL's program, or you may call the Laboratory contact person, Shaun Fennessey, at the phone number listed on page 8.

California EPA
Department of Toxic Substances Control
700 Heinz Ave., Bldg F, Suite 200
Berkeley, CA 94710

Sal Ciriello, Sr. Waste Management Engineer	(510) 540-3972
Alfred Wong, Program Manager	(510) 540-3946
Carol Northrup, Public Involvement	(510) 540-3928

California Department of Health Services
601 North 7th Street
P.O. Box 942732
Sacramento, CA 94234-7320

Donna Sutherland, Sr. Health Physicist (916) 323-2758

State Water Resources Control Board
Division of Clean Water Programs
2014 T St., Suite 130
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Heidi Temko, Assoc. Engineering Geologist (916) 227-4376

Regional Water Quality Control Board
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Jack Greg, Environmental Specialist II	(510) 286-1199

East Bay Municipal Utilities District
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Oakland, CA 94607

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Mark Williamson, Associate Civil Engineer	(510) 287-1214

City of Berkeley Health Department
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Berkeley, CA 94704

Nabil Al-Hadithy, Haz. Mat. Specialist (510) 644-7719

Alameda County Department of Environmental
Health Hazardous Materials Division
80 Swan Way, Rm. 200
Oakland, CA 94621

Edgar Howell, Chief of Haz. Mat. Division	(510) 271-4320
Ariu Levi, Supervisor	(510) 271-4320

Upcoming Environmental Restoration Activities

The Environmental Restoration Program is now in its detailed investigation phase. LBL will continue its quarterly sampling of monitoring wells and will install new wells to get a better understanding of the magnitude and extent of groundwater contamination. Similarly, LBL will perform additional surface water, soil, and soil vapor sampling and analysis to determine the extent of contamination in those media. All the data will be compiled and reported in the RCRA Facility Investigation Report. The report will include a health risk assessment that analyzes the potential effects of the contamination at LBL on public health and the environment. The RFI is currently scheduled for completion in February 1997. LBL will be submitting progress reports to the regulatory agencies in November 1994 and November 1995. These documents will summarize the investigations conducted and results obtained during the previous period and will be available for the public to review at the information repositories listed in Appendix B.

During the investigation phase, interim cleanup measures may be taken as appropriate or necessary. For instance, LBL will continue to collect and treat contaminated water from the drains (hydraugers) that it uses to lower groundwater levels in the hills and improve slope stability. Water from hydraugers that has shown low levels of contamination is treated through a carbon filter system to remove contaminants, and the clean water is used in cooling towers on the site or is discharged to the sanitary sewer.

COMMUNITY PROFILE

The first known Berkeleyans were the Huchium Indians, encountered in 1769 by Spanish explorer Gaspar de Portola. They were hunters and gatherers. The lands of Berkeley remained inhabited largely by the Indians until 1820, when the King of Spain granted Luis Maria Peralta more than 48,000 acres of the East Bay. When Spain lost California to Mexico in 1823, Peralta was regranted the land by the Mexicans and gave it to his son, Jose Domingo Peralta, who was Berkeley's first resident of European descent. With the Treaty of Guadalupe de Hidalgo in 1848, Mexico ceded California to the United States and the Peraltas lost their land to the U.S. Soon the land was populated by enthusiastic immigrants heading west during the Gold Rush era.

In the mid-1850's, a small community of settlers began to cluster near the shores of the Bay in an area of West Berkeley then known as Ocean View. Its proximity to San Francisco, the cheap land prices, and plentiful water in Strawberry Creek made it an attractive site for these early settlers. Business enterprises such as the Pioneer Start and Grist Mill, a lumberyard, and even a small dock were established. Farmers spread out into various parts of the flatlands east of Ocean View. Most residents at the time were foreign-born immigrants.

The Protestant Church wanted to establish its presence in this "wilderness" and determined that a university to educate the commonwealth would be beneficial to their cause. The College of California, later to become the University of California, was first established in Oakland in 1860. It was decided that the city was not a fruitful environment for a university, and so land was purchased on the slopes above Ocean View for building a new college. The decision to found the University of California near Ocean View completely changed the area's history.

The College Homestead Association took charge of selling lots to people to encourage settlement and raise money for the new college. People moved in and decided to name their new community Berkeley, after the English Bishop of Cloyne, George Berkeley. In 1873, the University opened, and with it Berkeley began a period of great development.

In 1878, for political and economic reasons, Ocean View and Berkeley united to form a single political entity. In the early 1900's, Berkeley acquired its neighboring villages to form an even larger city. The earthquake and fire of 1906 in San Francisco brought an influx of people to the East Bay area. By the 1920's and 30's, second-generation Americans outnumbered immigrants. There was a sizable population of Germans, Italians, Swedes, Finns, and British with some African-Americans and Chinese. By 1930, Berkeley's population was 82,000. During this era, community projects like the yacht harbor, Rose Garden, and Aquatic Park were built.

As early as the 1920's, Berkeley's politics were widely hailed as the height of reform. A city manager form of government was instituted. Berkeley was considered an enlightened, well-governed and prosperous city.

The University was considered a rival to Harvard in its academic instruction. With its reputation as a center of liberal arts education well-established, it began to gain world recognition in the sciences, especially in the promising field of atomic and subatomic research. Ernest O. Lawrence was among the first of many university professors to receive a Nobel Prize.

By 1950 the population had increased to 114,000 and the city was beginning to show signs of overcrowding. With the construction of the Caldecott Tunnel, the Bay Bridge, and a freeway system throughout the East Bay, the cattle-grazing lands to the north and east of Berkeley were accessible to its citizenry and Berkeley's middle class left the city to reside in these areas.

The 1960's found Berkeley noticeably changed. New residents came to the area to enjoy the congenial atmosphere and low-rent apartments and multi-unit dwellings that had been constructed earlier. "Counterculture" youth from across the United States came to Berkeley to live in the shadow of the University. The campus became a focus for political dissent, with the free speech movement and anti-Vietnam War protests serving to establish Berkeley's reputation as a radical community of activists.

Today, the City of Berkeley continues to be recognized internationally as a center of activism and progressive thinking. Berkeley citizens take an active role in government: there are over 40 citizen commissions that advise the City Council on matters of interest and importance to the City's people. Commissions address diverse topics including peace and justice, budget, and the environment. There are numerous local, regional, and national environmental organizations in the Bay Area, including the Sierra Club, Save the Bay, the Ecology Center, Citizens Opposed to a Polluted Environment, SANE/Freeze, and the Urban Creek Coalition, to name a few.

Many of the young people of the '60's have stayed in the area and established shops that helped to found Berkeley's three current growth industries: outdoor equipment, publishing, and gourmet foods. The largest employer in the city by far is still the University, with approximately 9,000 faculty members and staff serving 31,000 students. Lawrence Berkeley Laboratory and the City of Berkeley rank second and third, respectively. Other large employers include Alta Bates/Herrick Hospital, the Berkeley Unified School District, California Department of Health Services, Miles/Cutter Biological, Kaiser Permanente, the North Face, and Xoma Corporation.

Information on anticipated growth, potential demographic and industrial trends affecting changes in land use patterns and demands on natural resources and services has been provided by interviews and the Association for Bay Area Governments publication entitled, "San Francisco Bay Area Projections '92."

Due to the overall United States and San Francisco Bay Area's economic recession, many of the previous projections on job growth, housing developments, and personal income levels needed to be adjusted down. The following projections are for the cities of Berkeley and Oakland, assuming a moderate economic recovery between 1995 and 2000. Downtown Oakland's redevelopment is anticipated to bring more jobs to the area. It is projected that there will be an increase in service-related jobs (excluding business services) in both cities, a slight increase in retail jobs in both cities, and a decrease in manufacturing/wholesale jobs in Oakland.

There is still a net in-migration to the Bay Area, with Berkeley and Oakland becoming more and more ethnically diversified. Housing availability in Berkeley has flattened due to regulations limiting development. Subsequently, Berkeley has the largest deficit of available housing relative to jobs. Oakland, however, has potential for developing more housing, and there are plans to tap into this resource. It is projected that Alameda county, especially the bay plain, will be built out by the year 2000.

Due to the Laboratory's distance from any populated areas in Oakland, the Oakland community has expressed less concern about LBL than the Berkeley community. LBL will continue to involve the City of Oakland in its activities, but this community profile will focus on the Berkeley community because of its closer proximity and consequently greater concern about LBL's activities.

History of Community Involvement

As part of the permitting process under RCRA, LBL is required to keep the public informed of its facility investigations and site cleanup. RCRA also requires that the public be given the opportunity to participate in making decisions about how LBL will address contamination issues. DTSC held a public comment period on the draft RCRA permit for LBL's Hazardous Waste Handling Facility from October 30 to December 16, 1992. During the comment period, no comments were received from the public. Comments were submitted by the City of Berkeley Health Department.

LBL has been involved with the community both before and since receiving its RCRA permit. LBL has had contact with the Berkeley and Oakland communities through its Center for Science and Engineering Education (CSEE). CSEE was established in 1987 to use the expertise of LBL's employees to improve technical education in the surrounding communities. As a result of its work, LBL was named the lead laboratory for the Bay Area Science and Technology Education Collaboration (BASTEC) between the Oakland Unified School District, the four DOE laboratories in the Bay Area, and a dozen local educational institutions.

To date, LBL has distributed two fact sheets on environmental restoration topics to introduce the community to LBL and its activities. The first fact sheet, produced in Fall 1992, gave an overview of the Environmental Restoration Program. A second fact sheet was distributed in February 1993 in response to community questions about tritium. In addition, LBL published an article on Environmental Restoration in the February 19, 1993, edition of its on-site newspaper, *Currents* (see Appendix A). Since the publication of these fact sheets, the interest of the community residents has increased.

LBL is currently conducting quarterly meetings with representatives from federal, state, and local governments in an effort to institute a proactive environmental remediation policy. Participating agencies include the U.S. Department of Energy; the California Environmental Protection Agency, Department of Toxic Substances Control; the State Water Resources Control Board; the Regional Water Quality Control Board; and the City of Berkeley, Department of Health.

At the Berkeley City Council's request, LBL gave a presentation on the Environmental Restoration Program to the Council and the public at the City Council meeting on February 17, 1993. The City's Community Environmental Advisory Commission (CEAC) began discussing the LBL Environmental Restoration Program that same month. CEAC was established in June of 1991 to advise Council on environmental matters of importance to the community and to provide for "citizen input in the development of and implementation of the City's environmental protection programs." LBL representatives began attending the CEAC meetings in February 1993, and it is anticipated that they will continue to do so as long as LBL's Environmental Restoration program continues to be a CEAC agenda item. LBL's goal is to provide an information resource to CEAC and to address any concerns they may have on LBL's operations.

LBL has been in communication with the Oakland Environmental Affairs Commission (EAC). The function and duties of the Oakland EAC are to "advise the City Council on coordinated strategies, policies, programs and service delivery needed to protect and enhance the environment." The EAC has been in existence for approximately one year. LBL has offered to make presentations regarding its Environmental Restoration Program and to address any other LBL-related questions the Oakland commission may have. LBL will attend EAC meetings during the summer of 1993 to become more acquainted with the EAC and to provide an informational resource.

Overall, LBL has received very few community inquiries relative to its activities. The main area of concern voiced by several LBL neighbors is noise coming from the facility. In response to these concerns, LBL is monitoring noise levels at residents' properties, and will continue to work to reduce any noise problems related to site operations.

LBL recognizes that its employees form a community of their own and, like the surrounding communities, can benefit from education on the Environmental Restoration Program. LBL has therefore taken the initiative to educate its employees about the Environmental Restoration Program and other on-site activities through orientations, trainings, and newsletters. Employees who participate in environmental restoration field activities are given additional health and safety training.

Results of Community Interviews

LBL conducted community relations interviews with 60 individuals, representing elected officials, agency staff, environmental organizations, neighborhood associations, University staff, LBL employees, and interested citizens. The interviews were held between February and April, 1993. The interview process gave participants an opportunity to discuss their questions and concerns about LBL with community relations specialists. The results are summarized below. Methods for responding to concerns expressed in interviews are described in the Community Relations Program section.

Interview questions asked of participants are presented in Appendix C.

Issues of Importance to the Community

Through the interview process, it became apparent that community questions and concerns relate not only to the environmental restoration process specifically, but to LBL operations in general as they pertain to environmental issues. The following discussion will be divided into those issues that relate specifically to environmental restoration and those issues that apply to LBL on a larger scale. However, because this Community Relations Plan is concerned specifically with the Environmental Restoration process, the activities listed in the section describing the community relations program will focus on addressing concerns related to environmental restoration. Overall community concerns will be taken into account as LBL develops its overall community relations program.

Issues Related to Environmental Restoration

Issues concerning environmental restoration fall into two general categories: concerns about the ***process*** and concerns about the ***contamination*** and its possible effects.

Process

In general, interview responses suggest that there is a great deal of confusion in the community about the environmental restoration process, including why investigations are being conducted now, which regulatory requirements drive the effort, what agencies are responsible for oversight, and what the distinction is between the RCRA process and the Tiger Team reviews of LBL operations.

The mechanics of the restoration effort concerned respondents, who made comments on the following points:

Disclosure of information to employees.

Several people who are not employed at LBL mentioned the importance of regular communications with employees about the status of the environmental restoration program, especially as the findings might affect worker health and safety. Employees at LBL also expressed a desire for more information about environmental restoration, although they voiced confidence in LBL's handling of the technical aspects of the cleanup, including those related to health and safety.

Availability of information to the public.

Several questions were asked regarding what information would be made available to the public, and how that would be accomplished. Virtually all of those interviewed expressed a desire for more information about LBL's environmental restoration program. Neighboring UC facilities were especially interested in receiving information about any developments that might affect their operations. Requests for information varied, from a need for technical reports that provide detailed information, to summaries and community newsletters that give an overview of the program. Most people interviewed stated a preference for receiving written materials rather than attending a meeting to get information. Many individuals were also interested in going on a site tour.

For More Information

If you would like to know more about the environmental investigations at LBL, the *Annual Environmental Report of the Lawrence Berkeley Laboratory, 1991*, is available at the Berkeley Public Library, Main Branch Reference Desk, and at LBL's Building 50 Library. It contains information on the soil and groundwater investigations, and also discusses the results of monitoring ongoing operations (e.g., air emissions from the tritium stack).

Financing and costs of the investigation and cleanup.

A number of people voiced concern about funding of the investigation and cleanup, noting recent government cutbacks and the change of administrations in Washington as a cause for concern. They wondered whether funds would be available to complete all the necessary tasks. There was also concern that the City of Berkeley would be asked to contribute financially to the cleanup.

Schedule for the investigation and cleanup.

Many people interviewed asked about the timeline for the cleanup and how long LBL expected that environmental restoration efforts would continue. There was a general desire expressed for a timely cleanup to reduce the potential for exposure to contaminants and to reduce potential cleanup costs. Several people mentioned that the cleanup would take "50 years," although that figure has not been used by LBL staff in any discussions of the effort. The assumption is that this figure came from the latest DOE five-year planning document, which states the cleanup of all DOE facilities within 50 years as a goal. The cleanup time issue further indicates the confusion between the Environmental Restoration program at LBL and other programs and issues.

Objectivity of environmental investigations.

Several comments were made expressing concern that LBL itself is carrying out the environmental investigations and that there may be a loss of objectivity because of this "self-monitoring." People making this comment suggested that they would feel more confident in results if there were a "neutral third party" involved in investigating and reporting results.

Information on the regulatory agencies that monitor LBL's environmental investigations can be found on page 16 of this document. This topic is highlighted as a future fact sheet topic in the Community Relations Program portion of the CRP on page 26.

LBL resistance to third-party inspections.

One interviewee was concerned that there had been resistance in the past on the part of LBL to having outside inspectors come to the Laboratory and that information on environmental issues was difficult to obtain.

Consensus among regulators on oversight responsibilities.

One agency representative emphasized the need for the regulatory agencies to come to an agreement on what aspect of the Environmental Restoration Program each agency will be responsible for, to avoid duplication of effort and confusion about the requirements LBL must meet.

Contamination

Responses to interview questions indicate that the community has little knowledge of the contaminants found on LBL property, both in terms of what they are and their potential health effects. Following are the concerns related to contamination that people expressed during interviews.

Health effects of contamination on humans, animals, and the watershed as a whole.

Many participants interviewed were concerned about the potential health effects of contamination at LBL, particularly any contamination in groundwater or surface water. Respondents mentioned potential contamination of groundwater and of streams that flow out of LBL as a source for concern, because of the potential for contact with children who might play in the creeks or wild animals that use the creeks for drinking. In addition, the eventual discharge of the creeks into the San Francisco Bay and the subsequent potential for contamination of the Bay was of major concern for several interviewees. Those who voiced concern about health effects emphasized that they were concerned not only for human health, but also the health of natural systems that could be affected by any contamination. Two interviewees mentioned that a health study of neighbors of LBL would be useful to them in assessing the potential health effects of the facility and identifying any areas which may have a higher incidence of cancer that could be in some way connected to LBL operations.

Presence of radioactive materials in soil and groundwater.

Many of those interviewed mentioned the presence of tritium contamination in the soil and groundwater at LBL as a source of concern. Many questions posed by interviewees centered on what the tritium levels are in soil and groundwater and what potential health risks are associated with those levels. Several people questioned what could be

done to address tritium contamination, since there are no known treatment technologies to eliminate radioactive materials.

Potential for off-site migration of contaminants.

The majority of people interviewed raised concerns about the potential for off-site migration of contaminants into creeks, the Bay, or drinking water sources. They wondered what effects a major disaster (e.g., earthquake or fire) might have on the movement of contaminants. Migration of contaminants was of concern because of the potential for negative effects on a larger, more populated area.

Presence of native grasses on the LBL site.

Several people mentioned concern for viable populations of native grasses on the site and questioned the effect that either the contamination or its investigation and cleanup could have on these grasses. They suggested that LBL take native populations into account before initiating any remedial investigations, cleanups, or general construction.

Effects of publicity on Lawrence Hall of Science.

One interviewee stated concern for the possible effects of any negative publicity that LBL receives on attendance at the Lawrence Hall of Science. The facility relies on admission charges for funding, and a lower attendance due to any public perception that some risk to health exists would reduce its ability to operate.

Issues Related to LBL in General

Many of the concerns enumerated for the environmental restoration program were also applied by commentors to the LBL facility as a whole. Interviews made it clear that the community is interested not only in addressing the problems left over from past practices, but also in addressing environmental issues related to current LBL operations. These general concerns are described below.

Waste reduction and pollution prevention.

The overwhelming concern of those interviewed centered on the need to address current operations and prevent contamination problems before they occur. Virtually all of the participants requested that LBL not only concentrate on investigations of past practices, but also focus heavily on ways to reduce waste volumes to a minimum and prevent emissions of hazardous or toxic materials from current operations. Specific concern related to air emissions, including those from the National Tritium Labeling Facility and ways to further reduce emissions of tritiated water from the stack.

LBL's mission.

According to many people interviewed, there is a significant degree of confusion in the community between the operations at LBL and those at Lawrence Livermore National Laboratory. Those interviewed believe that many community members make no distinction between the operations of the two facilities, and have mistakenly assumed that LBL is involved in weapons- and defense-related research.

LBL operations.

The majority of those interviewed had only a vague or general knowledge of the types of research in which LBL is engaged. They mentioned "secret operations" and frequently commented that there is a "mystique" surrounding LBL. Several interviewees knew that LBL was involved in energy research of some type, but many of the other programs are completely unfamiliar to the public.

Use of radioactive materials.

The presence of radioactive materials at LBL concerned many of the people interviewed, in terms of the potential for health effects on workers and the general public. They expressed concern about exposures during normal operations as well as those resulting from accidents or natural disasters (fires, earthquakes). Concerns were also related to the misperception that LBL is involved in nuclear-related defense research.

Emergency preparedness.

Many individuals interviewed named emergency preparedness as an important issue, referring to recent events (Oakland Hills Fire, Loma Prieta Earthquake) as the impetus for many neighborhood groups and the City to be putting together detailed emergency plans. Interviewees were concerned that LBL should have specific plans in place and adequate resources to deal with major natural disasters or catastrophic accidents on the site. Several were particularly concerned about the safeguarding of hazardous materials and waste products to prevent large releases (and subsequent health effects) in the event of an accident or disaster.

Compliance with environmental regulations.

Several individuals questioned LBL's compliance with environmental regulations, citing its status as a federal facility. They attributed their concern to the former exemption of federal facilities from certain regulatory requirements related to hazardous waste. They wanted information on the specific regulations with which LBL must comply and what agencies are responsible for enforcing these regulations.

The laws that govern LBL's corrective action are explained on page 4 of the CRP under the section titled "The Resource Conservation and Recovery Act." The community's concern about LBL's compliance with environmental regulations will be addressed in the Community Relations Program in fact sheets.

Storage and transport of hazardous materials.

Several people stated that hazardous waste transportation is a significant general concern for Berkeley and wanted to know how waste is transported from LBL, what precautions are taken to prevent accidents, and what routes hazardous materials trucks take through the City. In addition, one official requested information on the amount and types of hazardous waste generated by LBL operations.

Animal testing.

One person interviewed was concerned about the use of animals in research at LBL and requested additional information on animal testing.

Communication with the public.

One interviewee suggested that LBL increase its communications with the public to include the full disclosure of potential hazards to the community. Accurate, consistent information and an overall willingness to work with the community on problem-solving were issues of importance in this respect.

Summary of Current Community Concerns and Level of Interest

The five issues most frequently mentioned by the community with respect to LBL's Environmental Restoration Program can be summarized as follows:

- The potential effects of contamination at LBL on the health of humans and natural systems;
- The presence of radioactive contamination (tritium);
- The potential for off-site migration of contaminants;
- The availability of information about environmental restoration to both the public and employees; and
- The availability of funding to complete the environmental restoration at LBL and the schedule for completion.

The Berkeley community takes a moderate interest in environmental issues at LBL in the context of their overall interest in environmental issues. Two groups have indicated a strong interest in the environmental restoration process, including City of Berkeley elected officials and staff, who monitor specific LBL operations and investigations, and the Berkeley Community Environmental Advisory Commission, made up of citizen appointees who address environmental issues and make recommendations to the City Council.

The Oakland community has expressed less interest in the site thus far, perhaps because of its distance from populated areas of the city. Concerns expressed by one Oakland official were limited to the potential for off-site migration of contaminants through surface water runoff or groundwater movement and subsequent health effects for Oakland residents.

While LBL employees displayed a lower level of concern about environmental restoration activities than did the public, they also are more interested in receiving further information about the program. Their interest stems from a general interest in LBL activities, a need to have answers about their workplace when asked for information by others (e.g., neighbors, relatives), and a desire to be "ambassadors" for LBL in the community.

Many of those interviewed for this CRP said they were encouraged by LBL's initial efforts to involve the community in the environmental restoration process, and they look forward to continuing a dialogue with LBL staff. The community relations program outlined in the following section will provide a wide range of opportunities for an exchange of information and opinions among LBL staff and managers, officials, and citizens.

LBL's Community Relations Program for Environmental Restoration Activities

Highlights of the Program

The community relations program for LBL's environmental restoration effort will work to meet the needs of the community as they were identified during the community interview process. The program provides a process whereby the community can ensure that investigations and decision-making associated with cleanup activities are conducted openly, in the public interest, and in compliance with appropriate regulations. Part of the goal of the community relations program is to get community participation in the decision-making process and to ensure that the community's priorities are met. The program seeks to provide interested groups and individuals with understandable and timely information about the environmental restoration process, so that they may participate in it to the fullest extent possible. This program is tailored to the needs and concerns of the Berkeley community. As these needs change, the program will be re-evaluated and adjusted through continuing feedback from interested members of the public.

LBL will continue to maintain contact with Oakland representatives to keep them informed of LBL activities and will monitor any changes in interest that warrant new community relations efforts for the Oakland community. In brief, the goals of the community relations program are as follows:

- To integrate community relations activities specific to the environmental restoration program with an overall LBL community relations effort, so that all issues of public concern may be addressed in a coordinated program;
- Continue a two-way communication with the public on issues related to the Environmental Restoration Program;
- Provide the community with accurate and timely information to increase the level of understanding of the RCRA process and environmental restoration activities;
- Respond to the different information requirements of specific groups, including elected officials, City staff, the Berkeley CEAC, and Oakland Environmental Affairs Commission (EAC), site neighbors, employees, and interested community members; and
- Respond to the changing needs of the community.

Activities will be designed to answer the types of questions and concerns the community had during the interview process. Specific activities are described in the following pages.

Community Relations Goals and Activities

1. Integrate community relations activities specific to the Environmental Restoration Program with an overall LBL community relations effort, so that all issues of public concern may be addressed in a coordinated program.

Community relations interviews made it clear that the community takes an interest in a broad range of environmental issues associated with LBL, not only those specific to the Environmental Restoration Program. In order to satisfy the community's needs for information on all its environmental issues, LBL will work to coordinate a dialogue with the public on the range of community concerns and interests.

Quarterly Meetings with LBL Environmental Restoration Staff, Community Relations Contractors, DOE, and the LBL Office of Planning and Development

LBL community relations and technical staff, contractors, and Department of Energy staff will meet on a quarterly basis to review community relations activities and schedule community relations activities for the following quarter. Community concerns and comments will be taken into account when planning or modifying activities.

Updates on Community Relations Activities for the Regulatory Agencies

LBL will continue to hold quarterly meetings with representatives from the regulatory agencies to discuss environmental restoration progress. At each quarterly meeting, LBL will present a community relations update to the agencies and will discuss schedules for future community relations efforts related to the Environmental Restoration Program.

Designated Point Person

LBL's Community Relations Specialist, Shaun Fennessey, will serve as the LBL point person for the overall community relations program. All staff and contractors associated with community relations efforts will report to her so that activities can be coordinated efficiently and evaluated for appropriateness.

2. Continue a two-way communication with the public on issues related to the Environmental Restoration Program.

The Berkeley community is active in many environmental issues. Opportunities for public involvement in the RCRA process are built into the regulations, but LBL will expand these opportunities by encouraging the public to participate in discussions about environmental restoration issues. LBL will take public comments and concerns into account in conducting investigation and cleanup at the facility.

Designated LBL Contact Person

LBL's Community Relations Specialist, Shaun Fennessey, is the designated contact person for the community. The contact person will receive, record, and process requests for information and will refer technical questions to the appropriate technical staff. Use of a contact person ensures that requests are processed quickly, and that consistent information is provided. Every public information document produced (fact sheets, technical document summaries) will include the contact name, address, and telephone number for easy reference.

Formal Comment Periods and Public Meetings

At certain milestones in the RCRA permitting process, regulations require that the public be given an opportunity to voice support for or opposition to proposals made by LBL or the oversight agency for the RCRA permit. DTSC held a public comment period on the draft RCRA permit for LBL's Hazardous Waste Handling Facility, from October 30 to December 16, 1992. (During that time, no comments were received from the public. The City of Berkeley Health Department did submit comments on the draft permit.)

After DTSC issues a final permit, the next opportunity for formal public comment will come if any major modifications to the permit are requested either by the Laboratory or the regulatory agency with primary oversight responsibility. At that time, the Laboratory will hold a public comment period and a public meeting. Following the LBL comment period and meeting, the oversight agency will hold its own comment period and will schedule a public meeting if requested to do so by the community. The agency will accept written comments during the comment period.

A public notice announcing any public comment periods or public meetings will be published in local newspapers. Newspapers will include the *Berkeley Voice*, the *East Bay Express*, and the *Oakland Tribune*. The notice will include a brief description of the issues to be commented on; the dates of the public comment period; dates, times, and locations of any public meetings on the matter; and a contact name and address to which written comments may be sent.

Response Documents

Following LBL comment periods, LBL will prepare a fact sheet to address concerns raised by the community in its comments, both written comments and any oral comments made at the public meeting. This fact sheet will be mailed to the facility mailing list.

Following any agency comment periods, the oversight agency will prepare responses to the written public comments made during the comment period. A full set of responses in the form of a written report will be distributed to everyone who made a comment on the issue. Response documents also will be distributed to anyone who requests a copy from the agency.

Meetings and Presentations

LBL will continue informal discussions with the community by making technical and community relations staff available for presentations and question-and-answer sessions for interested local groups on an ongoing basis. LBL will contact neighborhood associations, interested environmental groups, and neighboring UC facilities when significant new technical information is available or when the Environmental Restoration Program reaches a major milestone to offer a presentation. LBL will attend regular group meetings to give presentations, or will hold a separate question-and-answer session for the general public at a convenient time and location for members of the community. Any update presentations, question-and-answer sessions, and

invite interested members of the public to see the facility and discuss environmental restoration activities.

Mobile Exhibits, Slide Shows, or Videos

LBL may add segments on environmental restoration activities to its existing informational exhibits, slide shows, and videos to inform the community about investigation and cleanup work at the site as part of LBL's overall activities. Segments would be added in the course of LBL's periodic updates of these materials. The materials will be used at LBL community events, and may be offered on loan to schools, environmental organizations, and other interested groups.

4. Respond to the different information requirements of specific groups, including elected officials, city staff, the CEAC, site neighbors, employees, and the Oakland community.

Within the community, there are specific groups that have special information needs. Elected officials and staff need to be informed of activities in time to respond to their constituents' questions and concerns as well as to inquiries from the press. The Community Environmental Advisory Commission needs more detailed technical information in order to make recommendations to the City Council. Site neighbors, including residents and adjacent facilities, need to know about activities that could affect their daily lives, including changes in traffic patterns, emergencies, and the like. Employees want to be kept informed of environmental restoration activities so that they can answer questions from their friends and relatives, and so they can be aware of any issues that might affect their health and safety.

Briefings for Elected Officials

At key points in the technical process, LBL will offer briefings to officials prior to release of information to the public in order to prepare them for any questions from constituents or the press. When briefings are not possible because of time constraints, LBL will send written information or make phone calls to officials before releasing information to the public.

Fax Notification List

LBL will maintain a current fax list of elected officials and agency representatives. The Community Relations Coordinator will be responsible for contacting the people on the fax list prior to issuance of press releases on Environmental Restoration Program activities.

Attendance at CEAC Meetings

LBL will continue to meet with the Berkeley Community Environmental Advisory Commission at its regular monthly meetings for as long as LBL's Environmental Restoration program is a CEAC agenda item. LBL staff will work with a CEAC representative to set a schedule and identify discussion topics prior to the meetings, so that appropriate LBL technical staff can be on hand for the discussions.

Electronic Mail Notification System for Neighboring Facilities

LBL will use the University of California electronic mail system to keep designated contacts at neighboring UC facilities abreast of developments that may affect their operations. The Community Relations Coordinator will be the point person for communications with neighboring facilities. LBL will send a letter to neighboring facilities that lists the Community Relations Coordinator's name, address, telephone number, and e-mail address and asks the facility to designate a contact person to receive LBL information.

Neighborhood Association Contact List

LBL will develop and maintain a list of neighborhood associations in the vicinity of the Laboratory that should be informed of any environmental restoration activities that could affect them (e.g., traffic, off-site sampling). One or two contact persons will be identified from each association to act as a liaison with LBL.

Update Articles in Currents

To keep employees informed of environmental restoration activities, LBL will publish update articles in the facility's weekly newspaper, *Currents*. LBL published an update article on the Environmental Restoration Program in the February 19, 1993, edition of *Currents*. Other articles will run as new information becomes available or milestones are reached.

Brown Bag Seminars on Environmental Restoration

For employees who want more detailed information about environmental restoration activities, LBL technical staff will hold brown bag luncheon seminars on topics of interest to the employees. Question-and-answer sessions will follow the presentations. Seminars will be announced in *Currents*.

Information for the Oakland Community

LBL will offer presentations to the City Council and the Environmental Affairs Commission (EAC) at key points in the process, when significant new technical information becomes available or cleanup decisions are being made. LBL will contact City Council representatives and the chair of the EAC regularly to monitor any changes in community interest.

In order to reach interested Oakland residents who are not included on the mailing list, LBL will provide extra copies of public information materials to the Strawberry Canyon Recreation Area office. An Oakland official indicated that many Oakland residents use the facility. Due to the Recreation Area's proximity to LBL, the Oakland users of the facility may be interested in LBL environmental restoration efforts as they could affect the Recreation Area.

5. Respond to the changing needs of the community.

As more information becomes available and the investigation moves into the cleanup at LBL, community concerns and questions may change as well. LBL's community relations program will be designed to be flexible to accommodate these changes.

Follow-Up Phone Calls/Interviews with Interested Individuals

LBL will monitor community concerns by conducting follow-up phone calls or short in-person interviews with interested individuals who participated in the original interview process, in addition to evaluating concerns in ongoing meetings with community members and groups. Phone calls will be made to the chairs of the CEAC and EAC and other community leaders at least semi-annually, as well as at turning points in the cleanup process. Calls will be made prior to or as soon as possible following any remedial work on site, or when significant new information becomes available.

Re-Evaluation of the Community Relations Plan

Following additional interviews with community contacts as described above, LBL will modify existing community relations activities or develop new ones to meet the needs of the community. Any changes to this CRP will be made as a written appendix, and will be kept with this original document in the information repositories. Activities described above are keyed to steps in the technical process in the following charts.

Community Relations Activities and the Technical Schedule for LBL's RCRA Permitting and Corrective Action Process

TECHNICAL MILESTONES	COMMUNITY RELATIONS ACTIVITIES
RCRA Facility Assessment (RFA) *DTSC conducts a preliminary review of records, interviews with staff, visual inspections and limited sampling to identify areas of potential contamination, and prepares a report.* [DTSC Report completed April 1991] [Additional LBL Report submitted Oct. 1992]	Establish mailing list Distribute introductory fact sheet on the Environmental Restoration Program Designate LBL contact person Hold quarterly meetings with regulatory agency representatives (ongoing)
Draft RCRA Permit for LBL's Hazardous Waste Storage and Handling Facility and Associated Operations under RCRA *DTSC reviews LBL's RCRA permit application and issues a draft permit for public comment.* [Completed December 1992]	DTSC is responsible for the following: Make the draft permit available for public review Send a fact sheet or statement of basis summarizing the permit to the mailing list Place a public notice in the newspaper informing the community of the draft permit issuance and the beginning of a 45-day public comment period Address public comments in preparing the final permit
RCRA Facility Investigation (RFI) *LBL conducts a detailed investigation of areas identified in the RFA, including soil, soil vapor, groundwater, surface water, and/or air sampling to determine the nature and extent of contaminated areas on the site. LBL prepares a report and submits it to the regulatory agencies.* [Started October 1992, with anticipated completion date February 1997]	Produce community relations plan Establish information repositories and update quarterly or as needed Attend monthly meetings with Berkeley CEAC Give update presentations/information sessions to Berkeley City Council, Oakland City Council, Oakland EAC, and other interested groups Conduct tours for interested groups Include neighboring UC facilities on e-mail distribution list for the Environmental Restoration Program Distribute a fact sheet on results of RFI to the mailing list Hold quarterly meetings with LBL staff to coordinate overall community relations activities (ongoing) Give a brown bag seminar on the Environmental Restoration Program for employees
Corrective Measures Study (CMS) *Identification and evaluation of technologies to treat the contamination.*	Give presentations to interested groups on the technologies being evaluated Continue attending monthly meetings with the Berkeley CEAC as needed Distribute a fact sheet on the CMS to the mailing list

Community Relations Activities and the Technical Schedule for LBL's RCRA Permitting and Corrective Action Process (continued)	
TECHNICAL MILESTONES	**COMMUNITY RELATIONS ACTIVITIES**
Proposed Remedy Selection/Draft RCRA Permit Modification *Selection of a technology or technologies to treat contamination, and drafting of a permit modification to include implementation of the treatment(s).*	Distribute a notice or a fact sheet summarizing the proposed remedy to the mailing list Place a public notice in a major newspaper that describes the proposed remedy and announces the beginning of a 60-day public comment period Hold a public meeting to discuss the proposed remedy DTSC is responsible for the following: Place a public notice in a major newspaper that describes DTSC's proposed decision on the remedy and announces the beginning of a 45-day public comment period on the proposed decision Hold a public hearing if requested Respond to any written comments received from the public during the comment periods
Final Selection of Remedy *DTSC approves the treatment method(s).*	DTSC is responsible for the following: Mail a notice of DTSC's final decision to the mailing list and anyone else who submitted written comments Mail a response to public comments to everyone who submitted written comments
Corrective Measures Implementation (CMI) *LBL designs, constructs and operates the treatment method(s).*	Make the design and construction reports available in the information repositories Send a notice to the mailing list announcing the availability of design and construction reports Distribute a fact sheet on the design plans and implementation schedule to the mailing list Hold an open house

Community Relations Activities and the Technical Schedule for LBL's RCRA Permitting and Corrective Action Process (continued)	
TECHNICAL MILESTONES	**COMMUNITY RELATIONS ACTIVITIES**
Completion of Remedy (continued) *DTSC and LBL evaluate the treatment effectiveness and the RCRA permit is modified to recognize that remedial activities are complete.*	Distribute a fact sheet on completion of the remedy to the mailing list Place a public notice of completion of treatment and start of 60-day public comment period in a major newspaper Hold a public meeting to discuss completion of the remedy DTSC is responsible for the following: Place a public notice announcing DTSC's proposed decision on acceptance of LBL's completion of the remedy and the beginning of a 45-day comment period Distribute a fact sheet or statement of basis on the completion of the remedy to the mailing list Hold a public hearing if requested Mail a notice of decision to accept the remedy as complete to the mailing list and anyone else who submitted written comments Mail a response to public comments to everyone who submitted written comments during the comment periods

Please note that this is not an exhaustive list of community relations requirements. There may be circumstances when additional technical or regulatory activities are necessary that will require additional community relations activities.

APPENDICES

APPENDIX A

PUBLIC INFORMATION DISTRIBUTED TO DATE

FACT SHEET NO. 1
FALL 1992

ENVIRONMENTAL RESTORATION PROGRAM

LAWRENCE BERKELEY LABORATORY

COMMITMENT TO ENVIRONMENT AND COMMUNITY

This fact sheet is intended to acquaint the community with the Lawrence Berkeley Laboratory (LBL) and to describe the LBL Environmental Restoration Program. This is part of the U.S. Department of Energy's (DOE) environmental cleanup program. We plan to keep the community informed about this important program, and we invite the community to get involved.

LBL and DOE are committed to maintaining a quality environment. We believe that this commitment can best be accomplished by working cooperatively with the community.

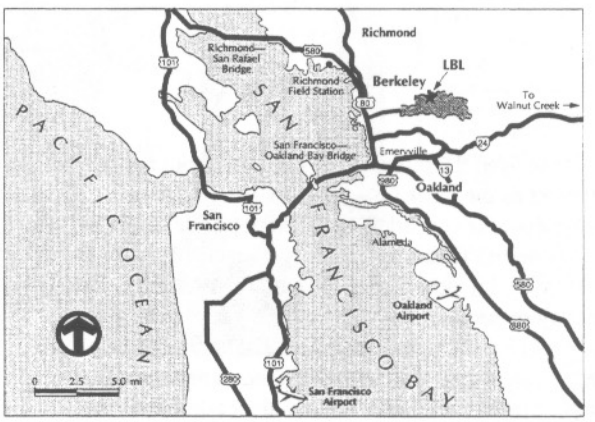
LAWRENCE BERKELEY LABORATORY

LBL pursues internationally recognized scientific research. This research develops fundamental understanding and applications in many fields, including:

- Biology and Medicine
- Communications
- Energy and Environment
- Materials
- Physics
- Transportation

The Laboratory is managed by the University of California for the DOE. LBL is located on a 130-acre site overlooking the UC Berkeley campus. With an annual budget of $250 million, LBL supports 3,000 employees, including 1,000 scientists and engineers.

LBL is the oldest of nine DOE national laboratories and was founded in 1931 by Ernest O. Lawrence, winner of the 1939 Nobel Prize in Physics. Over the years, LBL's research efforts have produced numerous awards, including nine Nobel Prizes.



ENVIRONMENTAL ASSESSMENT UNDER WAY

In the Spring of 1991, LBL submitted a Resource Conservation and Recovery Act (RCRA) Part B permit application to the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), as required to operate a hazardous waste handling facility. A recently revised application was submitted to DTSC in August 1992. As part of the permitting process, LBL is currently investigating the effect of past Laboratory operations on its environment. This assessment is part of the LBL Environmental Restoration Program.

The first phase of this facility assessment consisted of four elements:

- Review of past and current records of Laboratory activities
- Visual facility inspection
- Interviews
- Evaluation of on-site soil, water and air samples

To date, some low-level contaminants (mostly solvents) have been found in soil and ground water on the LBL site. These contaminants do not impact drinking water sources.

LBL Community Relations Office / ER
Lawrence Berkeley Laboratory
Bldg. 50A, Room 4112
Berkeley, CA 94720

LBL has used the information obtained from the facility assessment as the basis for a draft RCRA Facility Investigation (RFI) Work Plan. The objective of the work plan is to design future site investigations so that the nature and extent of any potential site contamination can be accurately determined. Any necessary restoration of the site is expected to begin in the next few years. Interim corrective measures will be undertaken as necessary.

As part of the RFI, LBL will conduct additional site investigations, including the installation of ground-water monitoring wells and the periodic sampling of ground water, soil, surface water and air. Off-site monitoring wells will also be installed to evaluate ground-water quality beyond the LBL boundaries.

LBL is currently conducting quarterly meetings with representatives from federal, state and local governments in an effort to institute a proactive environmental remediation policy. Participating agencies include the U.S. Department of Energy; the California Environmental Protection Agency, Department of Toxic Substances Control; the State Water Resources Control Board; the Regional Water Quality Control Board and the City of Berkeley Department of Health.

LBL WELCOMES COMMUNITY PARTICIPATION

LBL is developing a community involvement program. What shape this program takes will be determined by input gathered directly from the community. A mailing list of individuals, community groups and organizations interested in learning more about LBL's Environmental Restoration Program is being developed.

To be included in future mailings about the program or to express interest in participating in the community involvement program, please call LBL Community Relations at 510/486-5122 or write to the address given below.

TO GET ON THE MAILING LIST

To receive future information on the Environmental Restoration Program, call the Community Relations Coordinator at 510/486-5122. To comment on this fact sheet or to express areas of community interest, mail correspondence to: LBL Community Relations Office/ER at LBL, Building 50A, Room 4112, Berkeley, CA 94720.

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LAWRENCE BERKELEY LABORATORY

Environmental restoration

LBL team examines the past

By Peter Weiss

Like any bygone era, the age before this environmentally aware one has left its traces in the ground beneath our feet. And, like archaeologists, a team at LBL is digging into the earth to uncover those remains. But, unlike most scientists who wish to preserve their discoveries, LBL's investigators want to eliminate what they find.

Why so little fondness for the past? Because the remains being sought are contaminants—solvents, fuels, oils, and low-level radioactive substances—and the team investigating them is LBL's Environmental Restoration group—the arm of Environment, Health & Safety (EH&S) charged with locating and cleaning up such residues. Helping the team with its task are other personnel from Earth Sciences and Facilities.

So far, tests indicate that in certain, limited areas, LBL's groundwater and soil contain low levels of a number of chemicals, says Jackie Thomas, an administrator for the project. Because local public drinking-water supplies do not use groundwater, the contamination poses little, if any, health risk, she says. To make sure, however, a formal risk assessment will be conducted later in the project.

LBL's environmental restoration is part of a broader Department of Energy (DOE) program affecting all of the national laboratories, says EH&S Division Director David McGraw. "Our program grew out of a major initiative launched by DOE in 1988 to characterize contamination at the national labs and—where appropriate—to clean up that contamination. We applied for Environmental Restoration Waste Management funds set aside by that initiative in order to characterize our site."

LBL's environmental restoration is also a legal requirement. The Lab is currently applying for renewal of a hazardous waste handling permit under the federal Resource Conservation and Recovery Act (RCRA). LBL must have the permit because it stores certain hazardous wastes, such as industrial solvents and fuels—for instance, gasoline that has collected water—for more than 90 days. The wastes come from both laboratories and research-support activities such as plating shops and motor pools. As a requirement for permit renewal, the Lab must identify areas of contamination and create a plan for restoring them.

LBL hydrogeologist Iraj Javandel (left) watches EH&S health and safety technicians Susan Monheit and Steve Louie take groundwater samples from a monitoring well near Bldg. 7.
Photo by Steve Adams

The restoration team recently submitted findings to the California Environmental Protection Agency's Department of Toxic Substances Control (Cal-EPA DTSC). The LBL report described a year and a half of work by the team reviewing documents, interviewing Lab employees, testing soil samples, installing groundwater-monitoring wells, and analyzing water from both underground and on the surface.

"Surface water samples collected from creeks in Blackberry and Strawberry Canyons haven't shown any volatile organic contaminants," says LBL hydrogeologist Iraj Javandel, who runs the restoration team's investigations.

On the other hand, groundwater tests revealed five regions, or "plumes," of contaminated groundwater during the team's initial survey—known officially as a RCRA Facility Assessment, or RFA. "Three of the plumes contain mainly industrial solvents used in machine shops, plating shops and some chemical labs," Javandel says. "Another plume has low levels of tritium, and the last contains a mixture of industrial solvents and contaminants that have leaked from an old, underground fuel tank." The plumes lie about 30—100 feet underground. Low levels of solvent contamination were also discovered in a few other monitoring wells. "The extent of those will be determined as we conduct more detailed investigations," Javandel says.

The tritium—a radioactive form of hydrogen—comes from LBL's National Tritium Labeling Facility (NTLF), which inserts the radioisotope into biological compounds to "label" them—in other words, to make them detectable and traceable by scientists studying their roles in living organisms. Many drugs, including cyclosporin, the anti-rejection drug used in organ transplants, are developed with the help of studies that use tritium labeling. During normal operation of the plant, which serves investigators at LBL and other labs around the country, small amounts of tritiated

(See **Examining the past,** *p.4)*

Examining the past

Hydrogeologist plays slueth

By Peter Weiss

For Earth Sciences Division hydrogeologist Iraj Javandel, pinpointing a source of groundwater contamination can become an obsession. One recent Sunday morning, his sleep disturbed by an unsolved puzzle, Javandel came to the Lab at 6 a.m., picked up a shovel, and set out to examine an old, concrete-lined sump north of Bldg. 7. The sump had been buried and ignored for perhaps 25 to 30 years.

As senior scientist for LBL's Environmental Restoration group, Javandel's job is both to locate contaminated soil and groundwater on the Hill, and to track down contamination sources so they can be eliminated. Concern about that second task had brought him back to the Hill early that weekend morning. Besides that, he was perplexed.

Javandel knew there was groundwater contamination in the vicinity of the Bldg. 7 sump, but he couldn't pin down its source. The week before, his crew had lifted a concrete cover from the long unused sump and found soil and water mixed with industrial solvents and PCBs in the coffer. The chemicals, which must have been deposited there many years before, were

(See **Playing sleuth,** *p.4)*

Examining the past . . .

(continued from page 1)

water evaporate into the air. Between 1989 and 1991, a series of steps taken by NTLF cut tritium emissions by more than 80 percent.

In 1992, tritium concentrations measured in LBL groundwater monitoring wells were all less than California's maximum allowable level for drinking water, Javandel says. "And, that standard is for drinking water," he stresses, "whereas groundwater isn't even part of the public drinking-water supply in this area."

Two groundwater-monitoring wells just downhill from LBL have shown no contamination, Javandel says. Because groundwater generally flows downhill extremely slowly, LBL's contaminated groundwater would take at least several decades to move past the Lab's perimeter, he estimates, if it were not intercepted first.

Aside from groundwater, there is also contaminated soil in a few small areas of the Lab containing measurable tritium, industrial solvents or fuel-related hydrocarbons, Javandel says. Those areas are either already restricted, or are far enough underground that they don't need to be marked or fenced off, he says.

Since completing the RFA in October 1992, the team has begun a more detailed, RCRA Facility Investigation, or RFI, in order to determine the source and extent of each contaminated zone. When these investigations and a risk assessment are finished, the Lab will formally launch a clean-up if it is needed.

LBL won't wait until then, however, to start certain remedial actions, Thomas says. The team has already located and removed what may be the main source of groundwater pollution in the Lab's Old Town area, north of Bldg. 7 (see sidebar). "We consider ourselves proactive," Thomas says. "We're trying to get in and do what's needed up front instead of just conducting studies."

As LBL's environmental restoration progresses, the Lab's team is working closely with federal, state and local regulators. It holds quarterly meetings with Cal-EPA, the Regional Water Quality Control Board, California Department of Health Services, the State Water Control Board, UC Office of the President, UC Berkeley, the City of Berkeley Office of Emergency Services and Toxics Management and Department of Energy (DOE) officials. It also encourages participation by citizens living in communities surrounding the Lab. Last month, the team mailed a fact sheet to community leaders, regulators and other interested parties. On Tuesday, LBL representatives also made a presentation to the Berkeley City Council about the program.

For a copy of the fact sheet on LBL's environmental restoration program, please contact LBL Community Relations Coordinator Shaun Fennessey at X5122.

Playing sleuth . . .

(continued from page 1)

promptly carted away for proper storage and treatment.

It would have been easy to conclude that the sump was the groundwater contamination source; the pollutants cleaned out of it were the same kind found in the groundwater. But, the facts didn't completely add up. "We knew we had a sealed concrete box on the one hand, and groundwater contamination on the other," Javandel says. "The question was how the contamination got from one to the other." If sources are not identified with great care, he explains, contamination has a habit of "reappearing" after an often expensive clean-up.

In the early morning chill, digging soil away from the sides of the box, Javandel found his answer. Running across the walls of the coffer were cracks through which water could seep. The pollutants inside apparently had been leaking out when the coffer filled up after rains. Then, the contaminated rainwater slowly trickled through the earth into the groundwater below.

Javandel gave a sigh of relief. Now he could feel confident that a clean-up in the vicinity of the sump would be a success. Indeed, later tests showed the same contaminants in soil right around the sump, confirming that seepage had occurred.

"There is a good possibility that this sump has been one of the major, if not only, sources of groundwater contamination in the Old Town area," Javandel says. "If we had not discovered it, no matter how much money would have been spent for cleaning the groundwater, this source would have continued to contaminate it for many years to come."

A-4

LBL's Environmental Restoration Process

The nation's principal hazardous-materials law, the Resource Conservation and Recovery Act (RCRA) of 1976, requires organizations that treat, store, or dispose of hazardous substances to obtain renewable operating permits from the federal government. Amendments passed in 1984 also mandate investigation and clean-up of contamination from past practices.

LBL has applied to renew its permit under RCRA to store solvents, fuels and other hazardous wastes. To fulfill permit requirements, the Lab is conducting a four-stage investigation and clean-up process overseen by the California Environmental Protection Agency's Department of Toxic Substances Control. The steps are:

STEP 1:
PRELIMINARY INVESTIGATION
(RCRA Facility Assessment, or RFA)

Identify types and locations of contaminants from past activities.

Completed October 1992

STEP 2:
DETAILED INVESTIGATION
(RCRA Facility Investigation, RFI)

Determine extent and source of areas of contamination, and assess hazards posed by contamination, if any.

Initiated September 1992

STEP 3:
STUDY OF POTENTIAL CLEAN-UP METHODS
(Corrective Measures Study, or CMS)

Evaluate available clean-up methods to choose the most suitable ones for the LBL site.

STEP 4:
REMOVAL AND CLEAN-UP OF CONTAMINANTS
(Corrective Measures Implementation, or CMI)

University of California February, 1993

LAWRENCE BERKELEY LABORATORY

Environmental Restoration Program

Questions & Answers about Tritium

What is tritium?

Tritium is a radioactive form of hydrogen. Since tritium is just like hydrogen chemically, it is usually found attached to molecules in place of hydrogen. For example, a water molecule may exchange one of its hydrogen atoms for a tritium atom, resulting in "tritiated water" sometimes referred to as "HTO."

Tritium is produced both by natural processes (the interaction of cosmic rays with the atmosphere) and by man-made processes (in nuclear reactions). A great deal of tritium was released to the general environment in the 1950s and early 1960s by aboveground nuclear weapons testing. Relatively small amounts of tritium are released from nuclear reactors and related facilities in various locations around the world. Tritium is also used in a wide variety of consumer products such as illuminated watches, thermostat dials, and airplane exit lights. Both the natural and man-made sources have contributed (and continue to contribute) to a worldwide "background" level of tritium.

Why is tritium used at Lawrence Berkeley Laboratory?

Only one facility at Lawrence Berkeley Laboratory (LBL) uses tritium in large quantities: the National Tritium Labeling Facility (NTLF - Building 75 on Map 1). Established as a National Institutes of Health (NIH) national resource center in 1982, the facility's role is to conduct research and to supply educational and tritium labeling support for biomedical researchers in North America. NIH funds the NTLF's operations. LBL's Environmental Health and Safety Division closely monitors all of the NTLF's activities for compliance with environmental health and safety regulations.

The NTLF provides benefits to public health by helping biomedical researchers test new products that can be useful in curing disease. Facility staff and visiting researchers "label" pharmaceuticals and other materials with tritium by adding a tritium atom in place of a hydrogen atom in materials used in experiments. For example, a potential cancer drug might be labeled so that researchers can track the deposition of the tritium-labeled drug in the body and evaluate its effectiveness in treating a particular type of cancer. It is unique in the United States as a facility that provides the technology to do labeling and analysis at the same place.

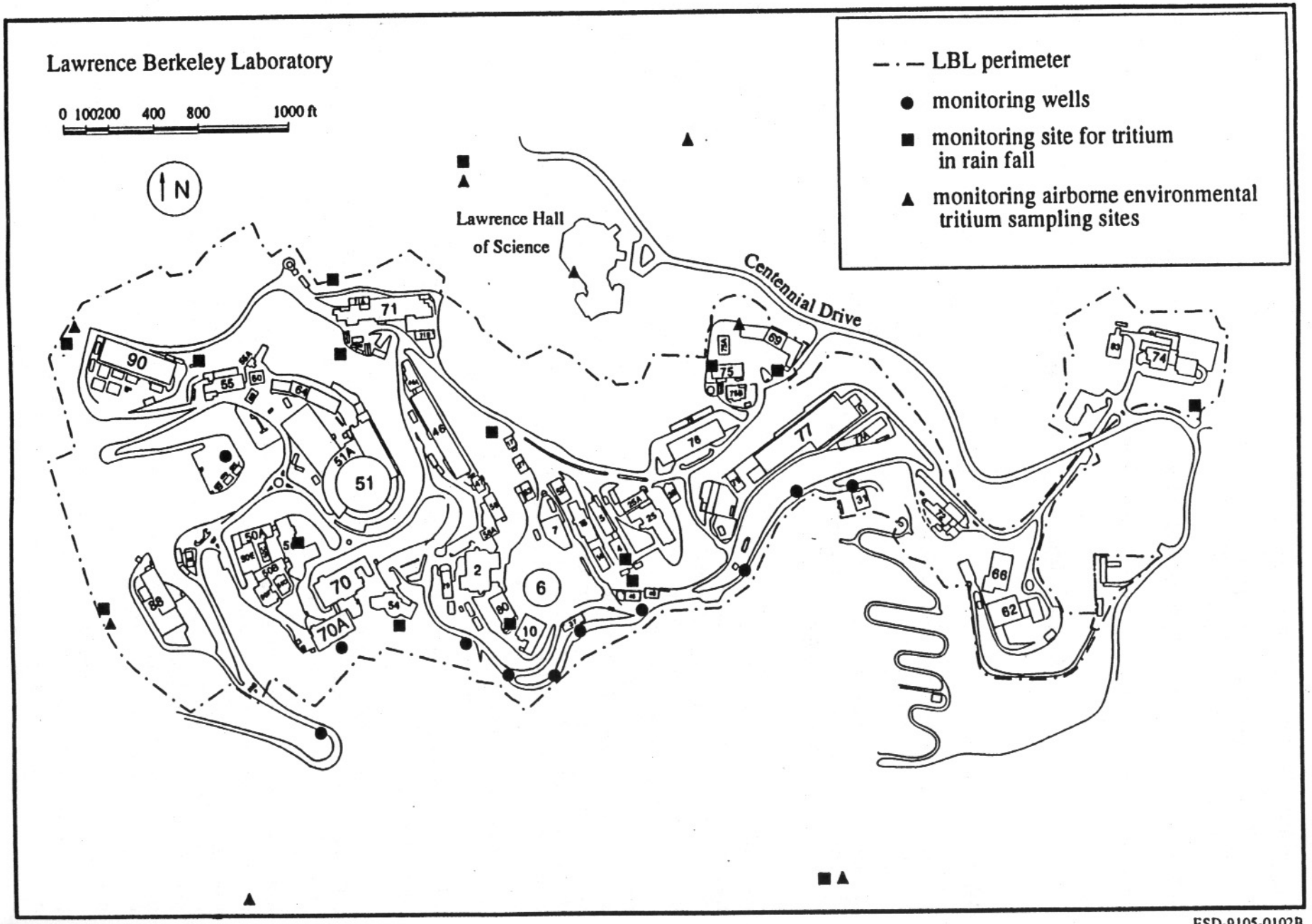
Collaborative research projects initiated over the past three years have shown new ways for studying cell metabolism and biomolecular structure and function. The seven staff members of the facility actively publish articles and reports and present their work at a wide range of meetings. In addition, more than 100 users have visited the NTLF since 1982 to label upwards of 250 compounds. These visitors have represented university and industrial concerns from throughout the U.S. Service to outside users represents about 25% of the total effort of the staff.

What are tritium's radiological characteristics?

The very low energy radiation emitted by tritium is too weak to present a radiation hazard outside of the human body. The radiation from tritium can only travel about 5 millimeters in air, and can be stopped completely by a sheet of paper or by ordinary clothing.

Tritium can deliver a radiation dose if it is taken *inside* the body. Such an intake could occur by eating or drinking tritium-contaminated foods or water, or by breathing tritium in the air.

Any tritium taken into the body is rapidly distributed throughout the body as tritiated water, HTO. Since these HTO molecules behave just like normal water molecules, they are subject to the normal rate of removal of water from the body. Thus, the amount of tritium in the body is reduced by a factor of 2 about every ten days.



ESD-9105-0102B

Are there health risks from exposure to tritium?

The fact that tritium emits very low-energy radiation, is diluted throughout the body, and is eliminated fairly quickly from the body makes tritium one of the least hazardous of radioactive materials. Again, tritium could pose a potential health risk only if it were taken inside the body. Exposure to radiation has the potential to cause cancer. The risk of cancer from exposure to tritium is related to the magnitude of the dose and the time period in which that dose is received.

Radiation doses are measured in units of "millirem." Very high doses of radiation (hundreds of thousands or millions of millirem) can deposit enough energy in the organs of the body to cause immediate illness and, in some cases, death. More moderate doses of radiation do not cause immediate health effects, but can increase the risk of cancer.

Low doses of radiation (up to thousands or a few tens of thousands of millirem) do not cause any observable increases in cancer incidence or mortality. However, for the purposes of setting public health regulations, it is *assumed* that low doses of radiation may result in an increased risk of cancer. The presumed risk is assumed to be proportional to the dose; that is, the lower the dose, the lower the risk.

How much radiation are workers and the community exposed to from the NTLF?

The presence of tritium in the environment is due to tritium gas and tritiated water (HTO) emitted from the ventilation stack at Building 75. The level of these emissions is monitored both on-site and off-site by LBL environmental staff as part of LBL's overall environmental monitoring program (see Maps 1 and 2). LBL takes samples of stack emissions, air, local rainfall, ground water, streams, and sewers to check for tritium.

The radiological impacts of the National Tritium Labeling Facility on people and the environment in and around LBL are minimal because exposure levels are very low. LBL monitors the level of exposure to employees by doing weekly testing of urine samples from those employees working at or near the NTLF. The allowable workplace exposure to tritium radiation for a one-year period is 5,000 millirem under federal Occupational Safety and Health regulations. For comparison's sake, you might receive a radiation dose of approximately 295 millirem from natural sources during the course of a year. The exposure for NTLF employees is measured at approximately 60 millirem per year. For some LBL workers at places other than the NTLF, exposures are less than 2 millirem per year. The largest possible exposure to offsite individuals was measured at 0.07 millirem for all of 1991. (See LBL's 1991 Environmental Report, LBL-27170, 1992.)

Where has tritium contamination been found?

Tritium has been detected in soil, rainwater, and groundwater in the immediate area of Building 75. The levels detected in the water at some locations are slightly above the EPA-established drinking water standard. However, none of this water is used for drinking, or would flow into any sources of drinking water for Berkeley. The tritium levels are very low in other drainage channels on-site.

The creeks flowing out of the LBL area also are monitored for tritium (see Map 2). Tritium has been detected in Strawberry and Blackberry Creeks, but at levels that are less than one-tenth of the U.S. Environmental Protection Agency's (EPA) drinking water standard.

What can be done to clean up the contamination?

Right now, there is no easy way to treat the low levels of tritium found in water or soil at LBL. Options for addressing tritium contamination will be explored after LBL has completed its investigations to determine exactly how much tritium contamination is present and where it is located. Depending on the final results of investigations, one option might be to keep monitoring water and soil and to let the tritium decay naturally into its non-radioactive components. Tritium decays relatively quickly into helium. It has a half-life of 12.3 years, meaning that half of the tritium will have decayed into non-radioactive helium in that amount of time. In ten years, the original radioactivity in LBL groundwater will have decayed to undetectable levels. LBL will explore all available options and will ask for public comments before a final decision is made on how the tritium contamination will be handled. In the meantime, the best way to address the tritium contamination is to continue improving operations to minimize tritium emissions in the future and contain the tritium contamination currently on site.

(Continued on next page)

What is LBL doing to minimize tritium emissions?

Since the source of contamination is the tritium emissions from the NTLF stack, an emissions reduction plan was implemented by NTLF in April 1990. The goal was to reduce tritium discharges by at least 75% and tritium waste shipments by an equivalent or greater percentage. As of 1992, HTO releases from the NTLF stack had been decreased by an estimated 84% from the 1989 levels. Airborne HTO levels and tritium in rainfall measured at sites within 100 meters of Building 75 have decreased by at least a factor of ten over the period from January 1989 to December 1992.

Emissions and exposures have been reduced as a result of improvements in the efficiency of techniques at the NTLF, changes in the form in which tritium waste is stored, improved disposal methods, redesign of equipment to contain the tritium, and improved monitoring. In addition, the majority of the tritium supplies which were previously disposed of as radioactive waste at the DOE's Hanford facility in Washington State are now being purified and recycled for reuse. This recycling and source reduction concept formed the basis for California Assembly Bill 3798.

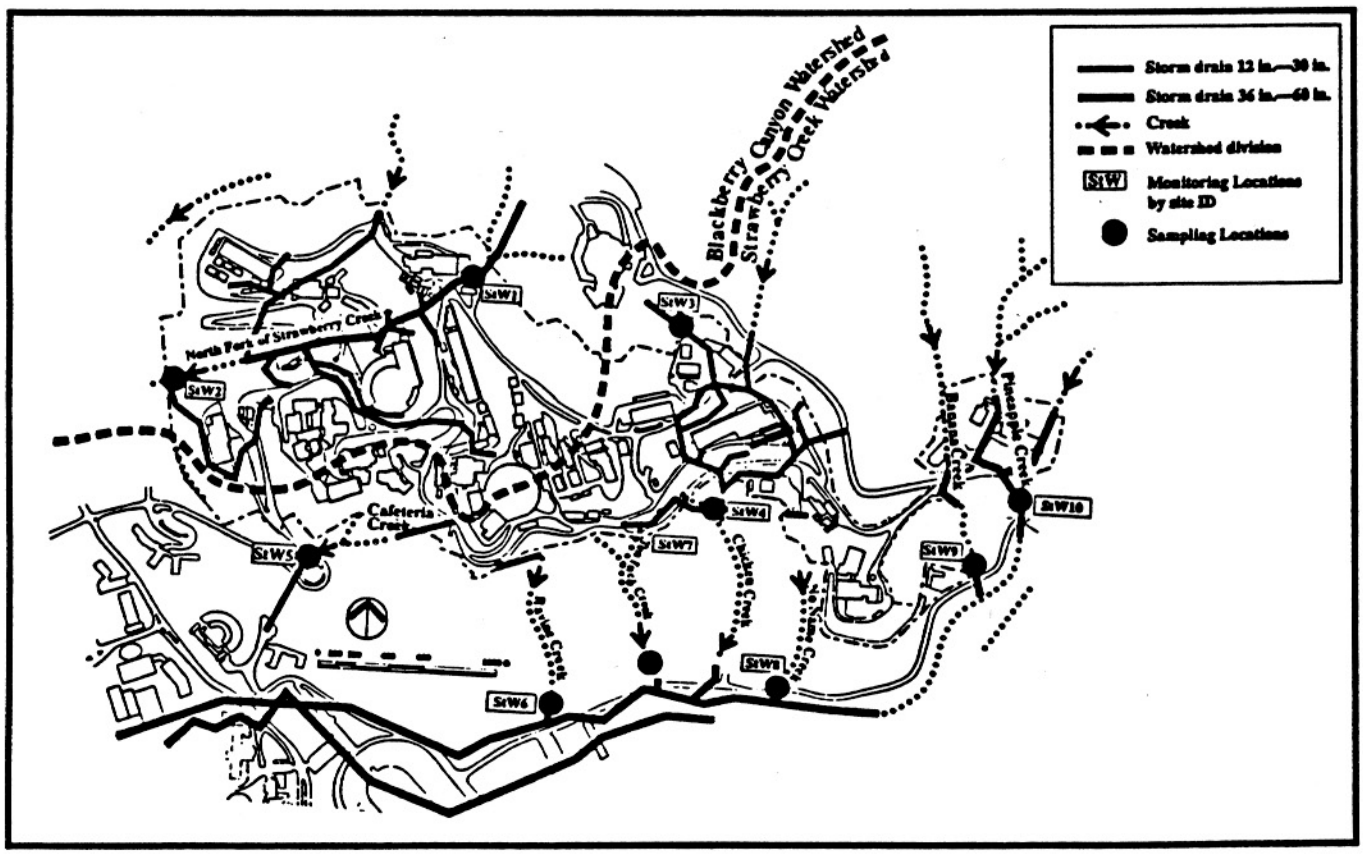
What governmental agencies are overseeing the cleanup?

The lead agency for the environmental restoration at LBL is the California Environmental Protection Agency's Department of Toxic Substances Control (DTSC). Many other regulatory agencies are involved in oversight activities, including U.S. EPA, Regional Water Quality Control Board, East Bay MUD, and the City of Berkeley. Emissions from the NTLF stack are monitored continuously and the results are included in LBL's Annual Environmental Report, which is distributed to agencies and is available in the Berkeley Public Library.

How can I get more information?

For more information or to make comments, please contact Shaun Fennessey, LBL's Community Relations Coordinator, at (510) 486-5122. Written correspondence may be sent to: LBL Community Relations Office/ER, LBL, Building 50A, Room 4112, Berkeley, CA 94720.

If you would like more technical information on environmental investigations at LBL, you can refer to LBL's Annual Environmental Report (LBL-27170, 1992). Copies can be found at the Berkeley Public Library Reference Desk.



Map 2: Site Storm Drainage and Monitoring Locations

APPENDIX B

INFORMATION REPOSITORIES AND MEETING LOCATIONS

APPENDIX B

INFORMATION REPOSITORIES AND MEETING LOCATIONS

Information Repositories:

Berkeley Public Library
2090 Kittredge St.
Berkeley, CA 94704
(415) 649-3926
Contact: Andrea Moss

Hours of Operation:
Mon. - Thurs. : 10 am - 9 pm
Fri. - Sat. : 10 am - 6 pm
Sun.: 1 pm - 5 pm

Lawrence Berkeley Laboratory 50 Main Library
One Cyclotron Road
Berkeley, CA 94720
(510) 486-6307
Contact: Carol Backhus

Hours of Operation:
Mon. - Fri.: 8 am - 5 pm

Meeting Locations:

ASUC - Martin Luther King, Jr. Student Union
Reservations Services, Room 207C
University of California
Berkeley, CA 94720
Contacts: Julie De Joya or Richard Watson
Phone: (510) 642-1141
Capacity: Rooms for 20-300 persons

Berkeley Conference Center
2105 Bancroft Way
Berkeley, CA 94704
Contact: Mark Evans
Phone: (510) 848-3957
Capacity: One room - 90 persons;
two rooms - 300 persons

Berkeley Unified School District
2134 Martin Luther King Jr. Way
Berkeley, CA 94704
Contact: Yvonne Adams
Phone: (510) 644-8603
Capacity: Large range of room sizes

North Berkeley Senior Center
1901 Hearst Avenue
Berkeley, CA 94709
Contact: Clare Gilalian
Phone: (510) 644-6107
Capacity: One room - 250 persons;
6 rooms - 30-60 persons
This facility is disabled accessible.

South Berkeley Senior Center
2939 Ellis St.
Berkeley, CA 94703
Contacts: Yvette Hill or Betty Lowman
Phone: (510) 644-6109
Capacity: Workroom B - 30 persons
Dining Room - 130 persons
Multipurpose Room - 130 persons
This facility is disabled accessible.

West Berkeley Senior Center
1900 Sixth St.
Berkeley, CA 94710
Contact: Loree Johnson
Phone: (510) 644-6036
Capacity: Classroom A - 30 persons
Multi-purpose room - 125 persons
This facility is disabled accessible.

APPENDIX C

COMMUNITY INTERVIEW QUESTIONS

APPENDIX C

COMMUNITY INTERVIEW QUESTIONS

Questions for Community Members

1. How long have you lived in the area?

2. On a scale of 1 (lowest) to 5 (highest), how concerned are you about environmental issues? What environmental issues are most important to you? What do you think are the three most important environmental issues locally?

3. Have you heard of Lawrence Berkeley Laboratory? Are you a UC employee?

4. Are you familiar with what LBL is and what it does? Do you have any concerns about LBL? If so, what are they?

5. Are you aware of any environmental investigations going on at LBL? If yes, where did you hear about them, and what did you hear? (If no, brief explanation about investigations and results—show map of plumes.) Do you have any concerns about environmental investigations at LBL?

6. What issues are important to you in terms of the LBL environmental investigation and cleanup? Health issues? Costs? Time? Any others?

7. Would you be interested in receiving information on LBL's Environmental Restoration Program?

8. Where do you currently get most of your local news? Newspapers? Radio? TV? Specify.

9. How would you prefer to get information? Would you like to be on a facility mailing list? Are written materials useful? Meetings? What size of meeting do you prefer? How often would meetings be appropriate? Tours?

10. Would you use an information repository?

11. What would you like to see in the repository? Technical documents? Fact sheets? Summaries? Other?

12. Where could we locate a repository so that it would be convenient to you?

13. Do you have any questions you would like answered about LBL or its Environmental Restoration Program? If you have any questions or comments in the future, how would you like LBL to respond to them (in writing, by phone, in newsletters, etc.) ?

14. Do you have any other comments, questions, or concerns about LBL?

15. Do you know anyone else to whom we should talk in putting together the community relations program for LBL?

APPENDIX C

COMMUNITY INTERVIEW QUESTIONS

Questions for LBL Employees

1. How long have you worked at LBL? In what department? Where do you live?

2. Have you had any contact with the community (e.g., your neighbors, friends) about LBL? What kinds of questions have people asked you?

3. Are you familiar with LBL's Environmental Restoration Program?

4. Are you aware of any environmental investigations or cleanups going on at LBL? If yes, where did you hear about them?

5. Do you have any concerns about environmental contamination or cleanup at the Lab?

6. What issues are important to you in terms of the investigation and cleanup? Health issues? Costs? Time? Any others?

7. Would you be interested in receiving information on LBL's Environmental Restoration Program?

8. Where do you currently get most of your local news? Newspapers? Radio? TV? Specify.

9. How would you prefer to get information? Would you like to be on an LBL mailing list? Are written materials useful? Meetings? What size of meeting do you prefer? How often would you like to have a meeting? Tours?

10. Would you use an information repository?

11. What would you like to see in the repository? Technical documents? Fact sheets? Summaries? Other?

12. Where could we locate a repository so that it would be convenient to you?

13. Do you have any questions you would like answered about LBL or its Environmental Restoration Program?

14. Do you have any other comments about LBL or the Environmental Restoration Program?

15. Do you know anyone else to whom we should talk in putting together the community relations program for LBL?

APPENDIX C

COMMUNITY INTERVIEW QUESTIONS

Questions for Officials and Agency Staff

1. How long have you lived in the area? How long have you served as (position)?
2. On a scale of 1 (lowest) to 5 (highest), how would you rate your constituents' concern about environmental issues? What environmental issues are important to them? What other issues are most important?
3. Have you heard of Lawrence Berkeley Laboratory?
4. Are you familiar with what LBL is and what it does?
5. Do you have any contact with LBL representatives? Who and why?
6. Have you had any contact with your constituents about LBL? What kind of questions and comments have you received?
7. Are you aware of any environmental investigations going on at LBL? If yes, where did you hear about them? (If no, briefly explain using map)
8. Do you have any concerns about environmental contamination or cleanup at LBL?
9. What issues are important to you in terms of the investigation and cleanup? Health issues? Costs? Time? Any others?
10. Would you be interested in receiving information on LBL's Environmental Restoration Program?
11. Where do you currently get most of your local news? Newspapers? Radio? TV? Specify. How about your constituents?
12. How would you prefer to get information? Would you like to be on a facility mailing list? Are written materials useful? Meetings? What size of meeting do you prefer? Tours?
13. What is the best way to reach your constituents?
14. Would you use an information repository? Would your constituents?
15. What would you like to see in the repository? Technical documents? Fact sheets? Summaries? Other?
16. Where could we locate a repository so that it would be convenient to you and your constituents?
17. Do you have any questions you would like answered about LBL or its Environmental Restoration Program?
18. Do you have any other comments, questions, or concerns about LBL?
19. Do you know anyone else whom we should consult in formulating the community relations program for LBL?

APPENDIX D

LIST OF KEY CONTACTS

APPENDIX D

KEY CONTACTS

A. Federal Elected Officials

Senator Barbara Boxer
Washington D.C. Office
Senate Office Building
Washington, DC 20510
(202) 224-3553

District Office
1700 Montgomery St. #204
San Francisco, CA 94111
(415) 403-0100

Senator Dianne Feinstein
Washington D.C. Office
Senate Office Building
Washington, DC 20510
(202) 224-3841

District Office
1700 Montgomery St. #305
San Francisco, CA 94111
(415) 433-1333

Representative Ron Dellums
Washington D.C. Office
2136 Rayburn Building
Washington, DC 20515
(202) 225-2661

District Office
201 13th Street #105
Oakland, CA 94612
Contact: Ying Li Kelly
(510) 763-0370

B. State Elected Officials

State Senate

Senator Daniel Boatwright (7th District)
State Capitol
Sacramento, CA 95814
(916) 445-6083

1001 Galaxy Way, Suite 210
Concord, CA 94520
Contact: Brett Hughes
(510) 689-1973

Senator Nicholas Petris (9th District)
Rm. 5080, State Capitol
Sacramento, CA 95814
(916) 445-6577

District Office
Suite 1030
1970 Broadway
Oakland, CA 94612
Contact: Suzanne Bellechi
(510) 286-1333

Senator Bill Lockyer (10th District)
State Capitol
Sacramento, CA 95814
(916) 445-6671

Suite 415
22300 Foothill Blvd.
Hayward, CA 94541
Contact: Elsa Ortiz
(510) 582-8800

State Assembly

Assemblyman Robert Campbell (11th District)
State Capitol
Sacramento, CA 95814
(916) 445-7890

815 Estudillo St.
Martinez, CA 94553
Contact: Nina Redway
(510) 372-7990

Assemblyman Tom Bates (14th District)
Rm. 446, State Capitol
Sacramento, CA 95814
(916) 445-7554

3923 Grand Avenue
Oakland, CA 94610
Contact: Judy DeVries
(510) 428-1423

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KEY CONTACTS

Assemblyman Richard Rainey (15th District)
State Capitol
Sacramento, CA 95814
(916) 445-6161

1948 Mount Diablo Blvd.
Walnut Creek, CA 94596
Contact: Cindy Hughs
(510) 933-9196

Assemblywoman Barbara Lee (16th District)
State Capitol
Sacramento, CA 95814
(916) 445-7442

1440 Broadway St.
Suite 810
Oakland, CA 94612
Contact: Brent Mori
(510) 286-0339

C. City Representatives

City of Berkeley

Mayor Loni Hancock
2180 Milvia St.
Berkeley, CA 94704
Contact: Robin Ordin, Scheduling
(510) 644-6484

Councilmember Linda Maio (1st District)
2180 Milvia St.
Berkeley, CA 94704
(510) 644-6359

Councilmember Mary Wainwright (2nd District)
2180 Milvia St.
Berkeley, CA 94704
(510) 644-6400

Councilmember Maudelle Shirek (3rd District)
2180 Milvia St.
Berkeley, CA 94704
(510) 644-6243

Councilmember Dona Spring (4th District)
2180 Milvia St.
Berkeley, CA 94704
(510) 644-6266

Councilmember Shirley Dean (5th District)
2180 Milvia St.
Berkeley, CA 94704
(510) 644-6294

Councilmember Betty Olds (6th District)
2180 Milvia St.
Berkeley, CA 94704
(510) 644-6399

Councilmember Carla Woodworth (7th District)
2180 Milvia St.
Berkeley, CA 94704
(510) 644-6398

Councilmember Fred Collignon (8th District)
2180 Milvia St.
Berkeley, CA 94704
(510) 644-6401

City of Oakland

Mayor Elihu Harris
505 14th St.
Suite 510
Oakland, CA 94612
Contact: Crystal Page, Press Secretary
(510) 238-3141

Councilmember Sheila Jordan (1st District)
505 14th St.
Suite 601
Oakland, CA 94612
(510) 238-3266

D. Federal, State, and Local Agencies

Department of Energy
ERWM Division
Lawrence Livermore National Laboratory
P.O. Box 808, L-574
Livermore, CA 94550
Contact: Larry McEwen
(510) 422-0751

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KEY CONTACTS

US EPA
Region 9
75 Hawthorne St.
San Francisco, CA 94105
Contact: Caroline Douglas
(415) 744-2343

California EPA
Department of Toxic Substances Control
700 Heinz Ave. Bldg F, Suite 200
Berkeley, CA 94710
Contact: Sal Ciriello, Solid Waste Management Engineer (510) 540-3972
Alfred Wong, Project Manager
(510) 540-3946
Carol Northrup, Public Involvement
(510) 540-3928

California Department of Health Services
601 North 7th Street
P.O. Box 942732
Sacramento, CA 94234-7320
Contact: Donna Sutherland, Sr. Health Physicist
(916) 323-2758

State Water Resources Control Board
Division of Clean Water Programs
2014 T St., Suite 130
P.O. Box 944212
Sacramento, CA 94244-2120
Contact: Heidi Temko, Assoc. Engineering Geologist
(916) 227-4376

Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster St., Suite 500
Oakland, CA 94612
Contact: Elizabeth Adams, Environmental Specialist III
(510) 286-3980
Jack Greg, Environmental Specialist II
(510) 286-1199

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109
Contact: Milton Feldstein
(415) 749-4970

East Bay Municipal Utilities District
375 Eleventh St., Box 305
Oakland, CA 94607
Contact: Tom Paulson, Industrial Discharge Supervisor (510) 287-1630

East Bay Regional Parks District
2950 Peralta Oaks Court
Oakland, CA 94605
Contact: Tom Lindemeyer
(510) 635-0135

City of Berkeley Health Department
2180 Milvia Street, Rm. 308
Berkeley, CA 94704
Contact: Nabil Al-Hadithy, Haz. Mat. Specialist
(510) 644-7719

City of Oakland Health Department
470 27th St.
Oakland, CA 94612
Contact: Renee Domingo
(510) 271-4263

Alameda County Health Department
Hazardous Materials Division
80 Swan Way, Rm. 200
Oakland, CA 94621
Contact: Ariu Levi, Supervisor
(510) 271-4320

Berkeley Chamber of Commerce
1834 University Avenue
Berkeley, CA 94703
Contact: Dick Kraber
(510) 549-7003

Oakland Chamber of Commerce
475 14th Street
Oakland, CA 94612
Contact: Rear Admiral Toney
(510) 874-4821

City of Berkeley Planning
2180 Milvia St., 2nd floor
Berkeley, CA 94704
Contact: Gil Kelley, Director
(510) 644-6534

APPENDIX D

KEY CONTACTS

Berkeley Community Environmental Advisory Committee
2180 Milvia St.
Berkeley, CA 94704
Contact: Denise Johnston, Secretary
(510) 644-6644

Oakland Environmental Affairs Commission
1333 Broadway
Oakland, CA 94612
Contact: Jackie Campbell, Administrative Analyst or Sandra Taylor, Administrative Services Manager
(510) 238-6688

E. University of California

Office of Community Affairs
2020 Milvia St., Suite 401
University of California
Berkeley, CA 94720
Contact: Milton Fujii, Director
(510) 643-5296

Public Information Office
University of California
101 Sproul Hall
Berkeley, CA 94720
Contact: Jesus Mena, Director
(510) 642-3734

CalPIRG-Campus
University of California
46 Shattuck Square #25
Berkeley, CA 94704
(510) 644-3454

Strawberry Canyon Recreation Area
5 Haas Clubhouse
University of California
Berkeley, CA 94720
Contact: Linda Dezzani
(510) 643-6720

Lawrence Hall of Science
University of California
Centennial Drive
Berkeley, CA 94720
Contact: Greg Watty, Director
(510) 642-5133

Botanical Garden
University of California
Centennial Drive
Berkeley, CA 94720
Contact: Judith Finn
(510) 642-0849

F. Schools

Child Educational Center
1414 Sacramento
Berkeley, CA 94702
(510) 528-1414

G. Environmental/Community Groups

The Ecology Center
2530 San Pablo Ave.
Berkeley, CA 94702
Contact: Christopher Williams
(510) 548-2220

Community Action Agency
2180 Milvia St.
Berkeley, CA 94704
Contact: Manuel Hector
(510) 644-6080

Urban Ecology
P.O. Box 10144
Berkeley, CA 94709
Contact: Stuart Chaitkin
(510) 549-1724

League of Women Voters
1414 University Ave, Suite D
Berkeley, CA 94702
Contact: Phyllis Clement, Mim Hawley
(510) 843-8824

Golden Gate Audubon Society
2530 San Pablo Ave.
Berkeley, CA 94702
Contact: Arthur Feinstein
(510) 843-2222

Sierra Club-SF Bay Chapter
5237 College Avenue
Oakland, CA 94618
Contact: Ruth Gravanis
(510) 653-6127

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KEY CONTACTS

Environment Defense Fund
5655 College Ave., Suite 304
Oakland, CA 94618
Contact: Fred Krupp
(510) 658-8008

Community Health Protection
2180 Milvia St.
Berkeley, CA 94704
Contact: Carmen Nevarez
(510) 644-6510

California Natural Resource Foundation
Golden State Wildlife Federation
2530 San Pablo Ave.
Berkeley, CA 94702
Contact: A.L. Riley
(510) 848-2211

Local Solutions to Global Pollution
2121 Bonar, Studio F
Berkeley, CA 94702
Contact: Nancy Skinner
(510) 540-8843

Citizens Opposed to a Polluted Environment
1908 Tenth Street
Berkeley, CA 94710
Contact: Jamie Caseber
(510) 548-0861

Urban Creeks Council
861 Regal Road
Berkeley, CA 94708
Contact: Carol Schemmerling
(510) 540-6669

H. Neighborhood Associations and Individuals

Council of Neighborhood Associations
2935 Garber Street
Berkeley, CA 24705
Contact: John Denton - president 1993
(510) 849-1293

Dwight/Hillside Neighborhood Association
2428 Hillside Ave.
Berkeley, CA 94704
(510) 843-1270

North East Berkeley Association
P.O. Box 7477
Berkeley, CA 94707
(510) 525-2708

Olympus Street Area Neighborhood Assoc.
1488 Olympus St.
Berkeley, CA 94708
(510) 848-7054

Panoramic Hill Association
Panoramic Planning/Zoning Assoc.
265 Panoramic Way
Berkeley, CA 94704
Contact: Doris Maslach
(510) 549-0247

Sterling Preservation Assoc.
1160 Sterling Avenue
Berkeley, CA 94708
(510) 841-0444

Summit Road Neighborhood Watch Assoc.
1365 Summit Road
Berkeley, CA 94708
(510) 644-0796

I. Media

Newspapers

Daily Californian
2150 Dwight Way
Berkeley, CA 94704
Contact: Barbara Sullivan
(510) 548-8080

East Bay Express
P.O. Box 3198
Berkeley, CA 94703
Contact: Brady Kahn
(510) 540-7400 (fax) 540-7700

Oakland Tribune
66 Jack London Square
Oakland, CA 94607
Contact: Rachele Kanigel or Charles Jackson
(510) 208-6454

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KEY CONTACTS

San Francisco Bay Guardian
520 Hampshire St.
San Francisco, CA 94110
Contact: Jean Tepperman or John Betteiger
(415) 255-3100

San Francisco Chronicle
901 Mission St.
San Francisco, CA
Contact: David Perlman
(415) 777-7117

San Francisco Examiner
110 Fifth St.
San Francisco, CA
Contact: Jane Kay or Keay Davidson
(415) 777-8704

Alameda Times-Star
1516 Oak St
Alameda, Ca 94501
Contact: Fiorangela Davila
(510) 523-1205

The Sun Reporter
1366 Turk St.
San Francisco, CA 94115
Contact: Huel Washington
(415) 931-5778

The Alameda Journal
1416 Park Ave.
Alameda, CA 94501
Contact: John McNulty
(510) 748-1666

Berkeley Monthly
1301 59th St.
Emeryville, Ca 94608
Contact: Teresa Cirolia
(510) 658-9811

Berkeley Voice
6208 LaSalle Ave.
Oakland, CA 94611
Contact: Sally St. Lawrence
(510) 339-8777

The Post
630 - 20th St.
Oakland, CA 94612
Contact: Loraine Strain
(510) 763-1120

Radio

KALX
2311 Bowditch St.
Berkeley, CA 94704
Contact: Will Harper
(510) 642-1111

KCBS
1 Embarcadero #32
San Francisco, CA 94111
Contact: Ed Cavagnaro or Arlen Bolton
(415) 765-4112

KGO
900 Front St.
San Francisco, CA 94111
Contact: Cathy Whitman
(415) 954-8142

KPFA
1929 Martin Luther King Way
Berkeley, CA 94704
Contact: Matt Binder
(510) 848-6767, ext. 699 or (510) 848-3812

KQED
2601 Mariposa St.
San Francisco, CA 94110
Contact: Raul Ramirez or Michael Krasny
(415) 864-2000

KKHI
St. Francis Hotel, 14th floor
San Francisco, CA 94102
Contact: Lou Sinclair
(415) 986-2151

KFOG
55 Hawthorne St, 11th Floor
San Francisco, CA 94105
Contact: Marshall Phillips
(415) 543-1045

APPENDIX D

KEY CONTACTS

KOIT-FM
77 Maiden Lane
San Francisco, CA 94108
Contact: Vickie Jenkins
(415) 777-0965

KABL
1025 Battery St.
San Francisco, CA 94111
Contact: Marie Peng
(415) 788-5225

KFRC
500 Washington St
San Francisco, CA 94111
Contact: Gil Haar
(415) 391-9970

KNBR
1700 Montgomery St, Suite 400
San Francisco, CA 94111
Contact: Mark Provost
(415) 995-6800

KYA
300 Broadway
San Francisco, CA 94133
Contact: Dave Henderson
(415) 398-5600

KSAN-FM
PO Box 7448
San Francisco, CA 94120
Contact: Betsy O'Conner
(415) 291-0202

Television

KGO
900 Front St.
San Francisco, CA 94111-1450
Contact: Jeri Wong
(415) 954-7777

KPIX
855 Battery St.
San Francisco, CA 94111
Contact: Steve Week
(415) 765-8601

KQED
2601 Mariposa St.
San Francisco, CA 94110
Contact: Kevin Harris or Michael Swartz
(415) 864-2000

KRON
1001 Van Ness Ave.
San Francisco, CA 94109
Contact: Giselle Blong
(415) 561-8905

KTVU
P.O. Box 22222
Oakland, CA 94623
Contact: Jay Martinez
(510) 834-1212

KBHK
420 Taylor St.
San Francisco, CA 94102
Contact: Suzanne Guyette
(415) 249-4444

KCRA
3 Television Circle
Sacramento, CA 95814
Contact: Jan Richard
(916) 446-3333

APPENDIX E

GLOSSARY OF TERMS USED IN THIS DOCUMENT

APPENDIX E

GLOSSARY OF TERMS USED IN THIS DOCUMENT

Area of Concern - An area where hazardous or radioactive materials are handled, such as an underground fuel storage tank, that may contribute to contamination problems. AOCs are not regulated as part of RCRA because they do not handle waste products.

Bay Area Air Quality Management District (BAAQMD) - The California State agency exercising regulatory authority over air emissions in Bay Area counties.

Benzene - A highly flammable chemical compound found in dyes, varnishes, and lacquers.

Carbon Tetrachloride - A colorless liquid halogenated hydrocarbon often used as a solvent for oils, varnishes, etc.

Cleanup - Actions taken to deal with a release or threatened release of hazardous substances that could affect public health and/or the environment.

Comment Period - A time period during which the public can review and comment on various documents and EPA actions. For example, a comment period is provided when EPA proposes to add sites to the National Priorities List.

Community Relations Plan (CRP) - The CRP outlines specific community relations activities that will occur during the remedial response at a site. The CRP also outlines how the public will be kept informed of work at the site and the ways in which citizens can review and comment on decisions that may affect the final site actions. This document is typically placed in the information repositories established for the site.

Corrective Action Order - An order issued by a regulatory agency under RCRA guidelines requiring generators or handlers of hazardous substances to modify improper procedures they might have, or to implement a remedy for the results of previous mishandling of hazardous substances.

Department of Energy (DOE) - An agency of the U.S. Government. DOE owns the Lawrence Berkeley Laboratory and has a contract with the University of California to administer the day-to-day operations of the Laboratory.

Department of Toxic Substances Control (DTSC) - A department of the California Environmental Protection Agency, having responsibility for incidents of hazardous waste contamination that affect public health.

Dichloroethane (DCA) - A volatile organic compound used as a solvent.

Dichloroethylene (DCE) - A volatile organic compound commonly used as a solvent.

Environmental Restoration Program - A Department of Energy program to clean up environmental contamination caused by past waste practices at DOE facilities.

Ethylbenzene - A colorless, flammable liquid hydrocarbon used as a solvent for resins.

Freon - A colorless, odorless chlorofluorocarbon (CFC) that is commonly used as a coolant. Freon 113 is used as an aerosol propellant, in cleaning fluids, and as a cooling agent. CFCs break down in the upper atmosphere and contribute to the depletion of the ozone layer.

Groundwater - Underground water that fills pores in soil or openings in rocks to the point of saturation. Where groundwater occurs in significant quantity, it can be used as a water supply.

APPENDIX E

GLOSSARY OF TERMS USED IN THIS DOCUMENT

Halogenated Hydrocarbon - A chemical compound containing hydrogen, carbon, and either chlorine, iodine, or bromine. Vinyl chloride is an example of a halogenated hydrocarbon.

Hazardous Wastes - Wastes exhibiting any of the following characteristics: ignitability, corrosivity, reactivity, or toxicity. The EPA has also listed as hazardous other wastes that do not necessarily exhibit these characteristics. Although the legal definition of hazardous waste is complex, the term generally refers to any waste that EPA believes could pose a threat to human health and the environment if managed improperly. RCRA regulations set strict controls on the management of hazardous wastes.

Hydrauger - A horizontal drain installed in a hillside that drains groundwater from the area to increase slope stability in areas prone to landslides.

Information Repository - A file containing current information, technical reports, and reference documents regarding a Superfund site. The information repository is usually located in a public building that is convenient for local residents such as a library, public school, or city hall. In order to provide better public access, there is often more than one information repository for a particular Superfund site.

National Pollution Discharge Elimination System (NPDES) - This federal regulation, under the Clean Water Act, requires permits for discharge into surface waterways.

Perchloroethylene (PCE) - A volatile organic compound commonly used as a solvent. It is classified as a suspected carcinogen by EPA.

Petroleum Hydrocarbons - Organic compounds found in fossil fuels, some of which are major contributors to air pollution.

Plume - A well-defined, usually mobile, area of contamination found in surface water or groundwater.

Polychlorinated Biphenyls (PCBs) - A family of chemical compounds used from 1926 to 1976 in electric transformers as insulators and coolants, in adhesives, and in caulking compounds. PCBs were banned in 1976 by the U.S. Environmental Protection Agency due to health hazards.

RCRA Facility Investigation (RFI) - An investigation conducted to fully assess the nature and extent of the release, or threat of release, of hazardous substances, pollutants, or contaminants. This investigation gathers the necessary data to support the corresponding Corrective Measures Study (CMS).

Regional Water Quality Control Board (RWQCB) - A California State agency that exercises regulatory authority over water quality standards within its jurisdiction and enforces state water quality laws.

Remediation - Treatment or cleanup of a contaminated area.

Resource Conservation and Recovery Act (RCRA) - RCRA was approved in 1976 as an amendment to the first federal solid waste legislation, the Solid Waste Disposal Act of 1965. In RCRA, Congress established initial directives and guidelines for the EPA (and authorized state agencies) to regulate and manage hazardous wastes as they are produced.

Response Summary - A summary of oral and or/written public comments received during formal public comment periods on key documents or activities, and the formal responses to these comments.

APPENDIX E

GLOSSARY OF TERMS USED IN THIS DOCUMENT

Soil Gas Survey - The survey provides data on sources and extent of chemicals within underlying soil and ground water. Soil gas samples are collected by driving a hollow probe into the ground and evacuating a small amount of air. These samples are then analyzed on-site for VOCs.

Solid Waste Management Unit (SWMU) - Under RCRA regulations, a SWMU is defined as an area where some hazardous waste handling or treatment activity occurs.

Solvent - A substance capable of dissolving another substance to form a solution. The chief uses of solvents are as industrial cleaners, in paints, and in pharmaceuticals. Many solvents are flammable and, to varying degrees, toxic as well.

Trichloroethane (TCA) - A volatile organic compound widely used as a solvent.

Trichloroethylene (TCE) - A volatile organic compound widely used as an industrial degreaser; as a solvent for oils, paints, and varnishes; and as a dry cleaning agent.

Tritium - A radioisotope of hydrogen that emits a low-energy electron. These electrons are only able to travel very short distances through the air; this sheet of paper would stop a tritium electron if it were between you and a source of tritium. The State Action Level for tritium in groundwater is 20,000 picoCuries per liter.

Volatile Organic Compound (VOC) - A group of organic compounds characterized by their tendency to evaporate easily at room temperature. Some familiar substances containing VOCs are solvents, gasoline, paint thinners, and nail polish remover. DCE, PCE, TCA, and TCE are all VOCs.

Vinyl Chloride - A halogenated hydrocarbon compound used in producing some plastics.