

January 5, 2007

CERTIFIED MAIL
(Return Receipt Requested)
Certified Mail No. 7004 1160 0007 3362 3876

Mr. Robert Fox
Lawrence Berkeley National Laboratory
One Cyclotron Road
Berkeley, CA 94720

Dear Mr. Fox:

Re: Wastewater Discharge Permit (Account No. 5034789 1)

Enclosed is the Wastewater Discharge Permit (Permit) for Lawrence Berkeley National Laboratory. This permit is being issued for five years, effective January 7, 2007 through January 6, 2012. Please read the Permit Terms and Conditions. As a Permit holder, you are legally responsible for complying with all Permit conditions and requirements.

Please review the EBMUD Ordinance No. 311A-03 and Wastewater Discharge Permit Standard Terms and Conditions, August 2004 Edition. As a Permit holder, you are legally responsible for complying with all Permit conditions and requirements.

Lawrence Berkeley National Laboratory shall report to the Environmental Services Division any changes, either permanent or temporary, to the premises or operation that significantly affect either the volume or quality of wastewater discharged or deviate from the Terms and Conditions under which this Permit is granted.

If you have any questions regarding this Permit, please contact Cynthia Soohoo of the Environmental Services Division at (510) 287-0290.

Sincerely,



BENNETT K. HORENSTEIN
Manager of Environmental Services

BKH:CLS:cls
Enclosures



WASTEWATER DISCHARGE PERMIT

Terms and Conditions

Lawrence Berkeley National Laboratory (groundwater)
Permit No. 5034789 1
Page No. 1

GENERAL CONDITIONS

- I. Title I, Section 5 of EBMUD Wastewater Ordinance prohibits the discharge of groundwater to the community sewer. This Permit to discharge treated groundwater is considered a waiver of the prohibition and is issued based on Lawrence Berkeley National Laboratory's application that discharge of pollutants to the community sewer will be minimized and methods to reclaim the groundwater, to the extent technically and economically feasible, have been made.
- II. This Permit is granted to Lawrence Berkeley National Laboratory to discharge treated groundwater only from its facility at One Cyclotron Road in Berkeley, California.
- III. Lawrence Berkeley National Laboratory shall cease discharge of groundwater immediately if not in compliance with any of the Terms and Conditions of this Permit.
- IV. Lawrence Berkeley National Laboratory shall comply with all items of the attached *Standard Terms and Conditions, August 2004 Edition (STC)*.

COMPLIANCE REQUIREMENTS

- I. Lawrence Berkeley National Laboratory shall not discharge any radioactive wastewater into a community sewer except when all of the following conditions are met:
 1. Lawrence Berkeley National Laboratory is authorized to use radioactive material by the Nuclear Regulatory Commission or other governmental agency empowered to regulate the use of radioactive materials.
 2. The radioactive wastewater is discharged in strict conformity with current Nuclear Regulatory Commission regulations and recommendation for safe disposal and in compliance with all rules and regulations of State and local regulatory agencies.
- II. Lawrence Berkeley National Laboratory shall pretreat all groundwater prior to discharging to the side sewer at One Cyclotron Road, Berkeley. Pretreatment shall consist of processes displayed in the following diagrams, at a minimum:
 - Figure 3, B51 Fire Trail Treatment System Schematic Flow Diagram, 11/06.
 - Figure 4, B46 Treatment System, Schematic Flow Diagram, 11/06.
 - Figure 5, B51 Motor Generator Room Basement Treatment System, 11/06.
 - Figure 6, Building 7 Groundwater Collection Trench Treatment System Schematic Flow Diagram, 11/06.
 - Figure 7, Building 6 Schematic Flow Diagram Treatment System, 11/06.
 - Figure 2, Building 51L Treatment System Schematic Flow Diagram, 7/06.
 - Figure 8, Building 25A Treatment System Schematic Flow Diagram, 11/06.



WASTEWATER DISCHARGE PERMIT

Terms and Conditions

Lawrence Berkeley National Laboratory (groundwater)
Permit No. 5034789 1
Page No. 2

COMPLIANCE REQUIREMENTS (continued)

- III. Lawrence Berkeley National Laboratory shall maintain the pretreatment systems in proper operating condition.
- IV. Lawrence Berkeley National Laboratory shall maintain records of operation and maintenance activities on the pretreatment systems. The records shall include, but not be limited to, flow meter readings from the flow totalizers on the effluent side of each of the pretreatment systems, at a maximum of monthly intervals; maintenance activities performed; description of operational changes; description of visual observations of the unit for leaks or fouling; and offhaul of hazardous wastes. The records shall be available to the District staff upon request.

REPORTING REQUIREMENTS

- I. Violations shall be reported in accordance with Section B of STC.
- II. Lawrence Berkeley National Laboratory shall submit technical reports as required below.

<u>Date Due</u>	<u>Reporting Period</u>
March 31, 2007	September 9, 2006 through February 28, 2007
October 8, 2007	March 1, 2007 through September 8, 2007
March 31, 2008	September 9, 2007 through February 28, 2008
October 8, 2008	March 1, 2008 through September 8, 2008
March 31, 2009	September 9, 2008 through February 28, 2009
October 8, 2009	March 1, 2009 through September 8, 2009
March 31, 2010	September 9, 2009 through February 28, 2010
October 8, 2010	March 1, 2010 through September 8, 2010
March 31, 2011	September 9, 2010 through February 28, 2011
October 8, 2011	March 1, 2011 through September 8, 2011

The technical reports shall contain the following information, at a minimum:

- 1. Self-monitoring reports prepared in accordance with the "Self-Monitoring Reporting Requirements" of this Permit.
- 2. Monthly readings from flow totalizers on the effluent side of each pretreatment system.
- 3. Total volume of groundwater discharged to the sanitary sewer for the reporting period.
- 4. Certification and signature prepared in accordance with Section B Part V of STC, "Signature Requirements".



WASTEWATER DISCHARGE PERMIT

Terms and Conditions

Lawrence Berkeley National Laboratory (groundwater)

Permit No. 5034789 1

Page No. 3

WASTEWATER DISCHARGE LIMITATIONS

Lawrence Berkeley National Laboratory shall not discharge wastewater from the pretreatment systems into a sanitary sewer if the strength of the wastewater exceeds the following:

Regulated Parameter	Daily Maximum (mg/L)
Total Identifiable Chlorinated Hydrocarbons (TICH) ¹	0.5

*As defined in Section E, STC, and includes the following chlorinated hydrocarbons: Bromodichloromethane; Carbon tetrachloride; Chlorobenzene; Chloroethane; Chloroform; Chloromethane; Dibromochloromethane; 1,2-Dichlorobenzene; 1,3-Dichlorobenzene; 1,4-Dichlorobenzene; 1,1-Dichloroethane; 1,2-Dichloroethane; 1,1-Dichloroethene; trans-1,2-Dichloroethene; 1,2-Dichloropropane; cis-1,3-Dichloropropene; trans-1,3-Dichloropropene; Methylene chloride; 1,1,2,2,-Tetrachloroethane; Tetrachloroethene; 1,1,1-Trichloroethane; 1,1,2-Trichloroethane; Trichloroethene; Trichloroflouromethane; Vinyl chloride.



WASTEWATER DISCHARGE PERMIT

Terms and Conditions

Lawrence Berkeley National Laboratory (groundwater)

Permit No. 5034789 1

Page No. 4

SELF-MONITORING REPORTING REQUIREMENTS

- I. Lawrence Berkeley National Laboratory shall monitor and obtain representative samples of the wastewater discharged from the pretreatment systems in accordance with Section C of STC.
- II. Self-monitoring reports shall contain all laboratory results and the corresponding chain of custody documentation, and signatory requirements.
- III. The sampling locations are identified as follow:
(Note: Side Sewer #1 (SS#1) is the side sewer that connects to the community sewer at Hearst Avenue. SS#1 conveys the final discharge from the pretreatment systems to combine with other discharges at the facility prior to discharging to the community sewer.)
 1. Samples representative of discharges from the B51 Fire Trail Treatment System to SS#1 are to be obtained from Process Sampling Point #2 (PSP#2). PSP#2 is the sample tap SP6 located on the final effluent side of the B51 Fire Trail Treatment System. PSP#2 is indicated in *Figure 3, Building 51 Fire Trail GAC Treatment System Schematic Flow Diagram, 11/06.*
 2. Samples representative of discharges from the B46 Treatment System to SS#1 are to be obtained from Process Sampling Point #3 (PSP#3). PSP#3 is the last sample tap SP5 located on the final effluent side of the B46 Treatment System. PSP#3 is indicated in *Figure 4, B46 GAC Treatment System, Schematic Flow Diagram, 11/06.*
 3. Samples representative of discharges from the Building 51 Motor Generator Room Basement Treatment System to SS#1 are to be obtained from Process Sampling Point #4 (PSP#4). PSP#4 is the sample tap SP6 located on the final effluent side of the B51 Motor Generator Room Discharge Sump Treatment System. PSP#4 is indicated in *Figure 5, Building 51 Motor Generator Room Basement GAC Treatment System Schematic Flow Diagram, 11/06.*
 4. Samples representative of discharges from the Building 7 Groundwater Collection Trench Treatment System to SS#1 are to be obtained from Process Sampling Point #5 (PSP#5). PSP#5 is the sample tap SP15 located on the final effluent side of the Building 7 Treatment System. PSP#5 is indicated in *Figure 6, Building 7 GAC Treatment System Schematic Flow Diagram, 11/06.*
 5. Samples representative of discharges from the Building 6 Treatment System to SS#1 are to be obtained from Process Sampling Point #6 (PSP#6). PSP#6 is sample tap SP6 located on the final effluent side of the Building 6 Treatment System. PSP#6 is indicated in *Figure 7, Building 6 GAC Treatment System Schematic Flow Diagram, 11/06.*



WASTEWATER DISCHARGE PERMIT

Terms and Conditions

Lawrence Berkeley National Laboratory (groundwater)

Permit No. 5034789 1

Page No. 5

SELF-MONITORING REPORTING REQUIREMENTS (continued)

6. Samples representative of discharges from the Building 51L Treatment System to Side Sewer No. 1 (SS#1) are to be obtained from Process Sampling Point #7 (PSP#7). PSP#7 is the sample tap SP7 located on the final effluent side of the Building 51L Treatment System. PSP#7 is indicated in *Figure 2, B51L GAC Treatment System Schematic Flow Diagram, 7/06*.
7. Samples representative of discharges from the Building 25A Treatment System to Side Sewer No. 1 (SS#1) are to be obtained from Process Sampling Point #8 (PSP#8). PSP#8 is the sample tap SP3 located on the final effluent side of the Building 51L Treatment System. PSP#7 is indicated in *Figure 8, Building 25A GAC Treatment System Schematic Flow Diagram, 11/06*.

IV. Groundwater discharge to the sanitary sewer shall be sampled at the following locations at the indicated frequency, at a minimum, for the following parameters:

Parameter	Sample Type	EPA Method	PSP#2, PSP#3, PSP#4, PSP#5, PSP#6, PSP#7, PSP#8
TICH	grab	8260/624	quarterly

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WASTEWATER DISCHARGE PERMIT

Terms and Conditions

Lawrence Berkeley National Laboratory (groundwater)

Permit No. 5034789 1

Page No. 6

MONITORING and TESTING CHARGES

EBMUD Inspections Per Year: 3 @ \$715.00 each \$2,145.00 / year

Analyses Per Year:

Parameter	Tests per year	Charge per test	Total Charge per year
EPA 624	7	\$193.00	\$1,351.00
Total Monitoring and Testing Charge =			\$3,496.00 / year \$291.33 / month

WASTEWATER DISPOSAL CHARGE

All wastewater discharged will be charged for treatment and disposal service at the unit rate measured for other carbon treated groundwater discharges. (1 Ccf = 100 cubic feet = 748 gallons)

Unit rate = \$0.510 /Ccf
 Discharge volume = 428 Ccf/month or \$218.19 /month

WASTEWATER CAPACITY FEE

The volume of the groundwater discharge is included in the capacity charge paid by Lawrence Berkeley National Laboratory when the facility was first connected to the community sewer.



WASTEWATER DISCHARGE PERMIT

Terms and Conditions

Lawrence Berkeley National Laboratory (groundwater)

Permit No. 5034789 1

Page No. 7

FEES AND WASTEWATER CHARGES

The following fees and charges are due when billed by the District:

Permit Fee: 2006 - 2007	\$1,822.00 /year (PAID)
2007 - 2008	\$2,004.00 /year (Est)
2008 - 2009	\$2,145.00 /year (Est)
2009 - 2010	\$2,145.00 /year (Est)
2010 - 2011	\$2,145.00 /year (Est)
2011 - 2012	\$2,145.00 /year (Est)

Monthly Monitoring Charge:	\$291.33
Monthly Wastewater Disposal Charge	\$218.19
Monthly Wastewater Capacity Charge	\$0.00
Total Monthly Charges =	<u>\$509.52</u>

The District may change the terms and conditions of a Wastewater Discharge Permit, including changing the average limits on the elements of wastewater strength and rates and charges, from time to time as circumstances may require. Treatment rate updates shall be provided by means of a rate revision letter. The District shall allow a discharger reasonable time to comply with any District required changes in the permit except that a change in average limits of wastewater strength shall immediately affect calculation of the wastewater disposal charge.

Charges listed in this Permit will be assessed on EBMUD bills in accordance with the EBMUD Meter Reading Schedule.

Authorization

Permit Holder shall report to EBMUD, Wastewater Department any changes, permanent or temporary, to the premises or operations that significantly change the quality or volume of the wastewater discharge or deviation from the terms and conditions under which this permit is granted.

Permit Holder is hereby authorized to discharge wastewater to the community sewer, subject to said Applicant's compliance with EBMUD Wastewater Control Ordinance as well as permit terms and conditions.

Effective: January 7, 2007

Expiration: January 6, 2012

David R Williams

Director, Wastewater Department

1/8/07

Date

EBMUD WASTEWATER DISCHARGE PERMIT STANDARD TERMS AND CONDITIONS

TABLE OF CONTENTS

SECTION A. GENERAL PROVISIONS	1
I. DUTY TO COMPLY	1
II. DISCHARGE LOCATION AND PROCESS.....	1
III. PERMIT RENEWAL.....	1
IV. PROHIBITED DISCHARGES	1
V. LIMITATIONS ON DISCHARGES	3
VI. DISPOSAL OF HAZARDOUS WASTE.....	5
VII. CLOSURE PLAN.....	5
VIII. AVAILABILITY OF PERMIT	5
IX. PAYMENT OF PERMIT FEES AND CHARGES	5
X. CONTINUATION OF EXPIRED PERMITS	5
XI. PERMIT TERMINATION	5
XII. TRANSFER OF PERMIT PROHIBITION.....	5
XIII. SEVERABILITY	5
XIV. PROPERTY RIGHTS.....	6
SECTION B. REPORTING AND RECORD KEEPING.....	6
I. SPILL OR SLUG DISCHARGE NOTIFICATION	6
II. TWENTY-FOUR HOUR VIOLATION REPORTING	6
III. CHANGES IN QUANTITY AND QUALITY OF WASTEWATER.....	7
IV. HAZARDOUS WASTE NOTIFICATION.....	7
V. SIGNATURE REQUIREMENT	7
VI. RETENTION OF RECORDS	8
VII. FALSIFYING INFORMATION.....	9
SECTION C. MONITORING AND SAMPLING	9
I. REPRESENTATIVE SAMPLING	9
II. CHAIN OF CUSTODY.....	9
III. SAMPLE PRESERVATION AND ANALYTICAL METHODS.....	9
IV. LABORATORY REPORTS	10
V. ADDITIONAL MONITORING.....	10
VI. CALIBRATION AND MAINTENANCE OF EQUIPMENT	10
VII. FLOW MEASUREMENTS.....	10
VIII. TAMPERING WITH EQUIPMENT.....	10
IX. ACCESS TO FACILITIES	10
SECTION D. ENFORCEMENT AND PENALTIES	11
I. PUBLIC NOTIFICATION OF PERMIT HOLDERS IN SIGNIFICANT NON-COMPLIANCE	11
II. VIOLATIONS OF PERMIT TERMS AND CONDITIONS	11
III. SCHEDULE OF REMEDIAL OR PREVENTIVE MEASURES (COMPLIANCE SCHEDULE)	11
IV. CRIMINAL PENALTIES.	11
V. CIVIL ENFORCEMENT PENALTIES.	11
VI. PAYMENT OF FINES AND VIOLATION FEES	12
SECTION E. DEFINITIONS.....	12
APPENDIX -- EBMUD Table of Approved Test Methods.....	i

SECTION A. GENERAL PROVISIONS

I. Duty to Comply

The Permit Holder shall comply with all terms and conditions of the Wastewater Discharge Permit (Permit).

II. Discharge Location and Process

The Permit Holder shall discharge wastewater only from the location(s) and process(es) described in the Permit.

III. Permit Renewal

The Permit Holder shall submit an application for Permit renewal at least 60 days prior to expiration of the existing Permit.

IV. Prohibited Discharges

a. General Prohibition: No Permit Holder shall discharge wastewater into a community sewer which will result in contamination, pollution, or a nuisance.

b. Prohibited Effects: No Permit Holder shall discharge wastewater into a community sewer if it contains substances or has characteristics which, either alone or by interaction with other wastewaters, cause or threaten to cause:

- (1) Damage to District facilities.
- (2) Interference with or impairment of the operation or maintenance of District facilities.
- (3) Obstruction of flow in sewers or interceptors.
- (4) Danger to life or safety of any person.
- (5) Interference with, or overloading of, treatment or disposal processes.
- (6) Flammable or explosive conditions at or near District facilities.
- (7) Wastewater or any other by-products of the treatment process to be unsuitable for reclamation and reuse, or interfere with any processes for reclamation.
- (8) Noxious or malodorous gases or odors at or near District facilities.
- (9) Discoloration or any other condition in the quality of the District's treatment plant effluent in such a manner that receiving water quality requirements established by law cannot be met by the District.

(10) Conditions at or near District facilities which violate any statute or any rule, regulation, or ordinance of any public agency or State or Federal regulatory body, including the general prohibitions contained in Federal General Pretreatment Regulations.

(11) The presence of toxic gases, fumes, or vapors in quantities injurious to the health and safety of District personnel.

(12) Pass-through of the District's treatment plant, causing a violation of any requirement of the District's NPDES permit.

c. Prohibited Substances: No Permit Holder shall discharge the following to a community sewer:

(1) Wastewater which is not polluted and meets requirements for and is acceptable for discharge to storm sewers or to receiving waters of the State; provided that the Director may grant permission for the discharge of unpolluted wastewaters which comply with regulations of the public agency owning the community sewer.

(2) Wastewater which creates a fire or explosion hazard including, but not limited to, discharges with a closed cup flashpoint of less than 140° F (60° C) using the test methods specified in 40 CFR 261.21.

(3) Garbage, except ground garbage from residential and commercial premises where food is prepared and consumed.

d. Prohibited Locations: Except for sewer construction and maintenance by public agencies and contractors, no Permit Holder shall discharge any wastewater directly into a manhole or other opening in a community sewer system other than through side sewers approved by the public agency owning the system; provided that the Director may grant permission for such direct discharges, upon written application, at locations approved by the public agency and upon payment of applicable sewage disposal charges to the District.

e. Prohibition on Use of Dilution: Except where expressly authorized to do so by an applicable pretreatment standard or requirement, no Permit Holder shall increase the use of process water, or in any other way attempt to dilute a discharge as a partial or complete substitute for adequate pretreatment to achieve compliance with a pretreatment standard, requirement or discharge limitation. The District may impose mass limitations on Permit Holders which are using dilution to meet applicable Pretreatment Standards or requirements, or in other cases where the imposition of mass limitations is appropriate.

f. Prohibition on Slug Discharges: No Permit Holder shall discharge any pollutant, including oxygen-demanding pollutants, at a flow rate and/or pollutant concentration which causes or threatens to cause interference with the wastewater treatment process. For the purposes of this section, any discharge at a flow rate or concentration which could

Arsenic	2	mg/L
Cadmium	1	mg/L
Chlorinated Hydrocarbons (total identifiable)	0.5	mg/L
Chromium (total)	2	mg/L
Copper	5	mg/L
Cyanide	5	mg/L
Iron	100	mg/L
Lead	2	mg/L
Mercury	0.05	mg/L
Nickel	5	mg/L
Oil and Grease	100	mg/L
pH	not less than 5.5	S.U.
Phenolic compounds	100	mg/L
Silver	1	mg/L
Temperature	150 ⁽¹⁾	°F
Zinc	5	mg/L

⁽¹⁾ 150°F (65.5°C), or any thermal discharge which as a result of temperature and/or volume causes the influent of the wastewater treatment plant to exceed 104°F (40°C)

b. Additional Wastewater Strength Limits: Wastewater strength limits for constituents not listed in Section A.V.a. may be established in a wastewater discharge permit based on available treatment technology, existing wastewater conditions in the District's facilities or other factors as determined by the Director. The Director may also establish wastewater strength limits on the wastewater discharge permits at locations within a premises whenever non-process water may dilute the wastewater discharging from side sewers.

c. Quantity and Rate of Flow Limits: No Permit Holder shall discharge wastewater into a community sewer in quantities or at rates of flow which may have an adverse or harmful effect on or overload District facilities or cause excessive or additional District treatment costs. The Director may establish mass discharge limits in wastewater discharge permits to control the quantity and rate of flow of wastewater discharges.

d. Radioactive Limits: No Permit Holder shall discharge or cause to be discharged any radioactive wastewater into a community sewer except when the Permit Holder is authorized to use radioactive material by the Nuclear Regulatory Commission or other governmental agency empowered to regulate the use of radioactive materials and when the wastewater is discharged in strict conformity with current Nuclear Regulatory Commission regulations and recommendations for safe, disposal and in compliance with all rules and regulations of State and local regulatory agencies.

e. Deny or Condition New or Increased Contributions: The Director may deny or condition new or increased contributions of pollutants, or changes in the nature of pollutants, to the District's wastewater treatment facility by Permit Holders where such contributions do not meet applicable Pretreatment Standards and Requirements or where such contributions would cause the District to violate its NPDES permit.

cause a violation of the prohibited discharge standards or limitations in Sections A.IV and A.V. of this document shall be deemed a slug discharge.

g. Bypass Prohibited

(1) Bypass of pretreatment equipment and/or discharge points is prohibited and the District may take enforcement action against any Permit Holder for bypass unless:

(i) bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(ii) there were no feasible alternatives to the bypass, as described in 40 CFR 403.17(d) and the Permit Holder submits the notifications required in 40 CFR 403.17(c).

(2) The District may approve an anticipated bypass, after considering its adverse effects, if the District determines that it will meet the conditions specified in part g(i) of this prohibition.

h. Discharge of Petroleum or Mineral Oil Causing Pass-through or Interference Prohibited:

Notwithstanding the provisions of Section A.V.a., no Permit Holder may discharge petroleum oil, non-biodegradable cutting oil or other products of mineral origin in any amount that causes interference or pass-through.

i. Discharge of Trucked or Hauled Wastes Prohibited: No Permit Holder shall discharge any trucked or otherwise hauled wastes to the community sewer or to any District facilities unless a permit has been issued by the District.

V. Limitations on Discharges

a. Wastewater Strength Limits: No Permit Holder shall discharge wastewater from a side sewer into a community sewer if the strength of the wastewater exceeds the following:

VI. Disposal of Hazardous Waste

The Permit Holder shall handle and dispose of hazardous waste in accordance with all local, state, and federal laws and regulations.

VII. Closure Plan

The District may require a Permit Holder who intends to close or cease a regulated process to provide a written Closure Plan. The plan shall include the following four items:

- a. date of proposed work or production stoppage
- b. date of proposed final closure (after cleaning and demobilizing activities are complete)
- c. description of cleaning activities, and
- d. description of disposal of inventoried process material and waste

VIII. Availability of Permit

The Permit Holder shall maintain a copy of the current Permit at the permitted site and make the Permit available to both facility and District staff at all times.

IX. Payment of Permit Fees and Charges

The Permit Holder shall pay all Permit fees, monitoring and testing charges, and wastewater treatment charges.

X. Continuation of Expired Permits

An expired Permit will continue to be effective and enforceable until the Permit is reissued if:

- a. The Permit Holder has submitted a complete permit application at least 60 days prior to the expiration date of the Permit Holder's existing Permit.
- b. The delay in reissuing the expired Permit is not due to any act or failure to act on the part of the Permit Holder.

XI. Permit Termination

The District may terminate the Permit for violation of the Permit terms and conditions or for violation of the provisions of EBMUD Ordinance No. 311A-03, unless waived by the Permit.

XII. Transfer of Permit Prohibition

The Permit Holder shall not assign or transfer the Permit.

XIII. Severability

If any provision of the Permit, EBMUD Ordinance No. 311A-03, or the application thereof to any person or circumstance, is held invalid, the remainder of the Permit or EBMUD Ordinance No. 311A-03, or the application of such provision to other persons or circumstances, shall not be affected thereby.

XIV. Property Rights

The issuance of the Permit does not convey to the Permit Holder any property rights of any sort or any exclusive privileges.

SECTION B. REPORTING AND RECORD KEEPING

I. Spill or Slug Discharge Notification

Immediately upon discovering any spill or slug discharge to the sanitary sewer, the Permit Holder shall notify EBMUD Environmental Services Division at (510) 287-1651 during business hours or (510) 835-3000 during non-business hours.

The Permit Holder shall submit to the District within five days of the occurrence a formal written notification describing:

- a. the circumstances of discharge
- b. what was discharged
- c. volume of discharge
- d. duration of discharge including beginning and end times and dates
- e. corrective actions to prevent recurrence
- f. whether discharge violates the terms and conditions of the Permit

II. Twenty-Four Hour Violation Reporting

- a. The Permit Holder shall notify the District within 24 hours of becoming aware of any of the following violations:
 - (1) discharges prohibited by EBMUD Ordinance No. 311A-03, Title II, except where authorized by the Permit
 - (2) exceedence of Categorical Pretreatment Standards
 - (3) exceedence of wastewater discharge limits as established in the Permit
 - (4) bypass of any part of a required pretreatment system
- b. The Permit Holder shall submit a written report to the District within five days of becoming aware of a violation. The report shall include the following information:
 - (1) the date and time of the violation
 - (2) the cause of the violation
 - (3) a description of the violation, including what was discharged
 - (4) the volume of the discharge
 - (5) the duration of the discharge violation including start and end times and dates
 - (6) analytical results, if available, with chain of custody and other pertinent documentation
 - (7) measures taken to correct the violation

(8) measures taken to prevent recurrence

c. If analytical results of a sample collected by the Permit Holder indicate a violation, the Permit Holder shall repeat the sampling and analysis, and submit the results to the District within 30 days of becoming aware of the violation, unless:

- (1) the District samples for the same parameter between the time the Permit Holder performs its initial sampling and the time when the Permit Holder receives the results of the sampling or
- (2) the District samples the permitted discharge at a frequency of at least once per month

Such notification shall not relieve the Permit Holder of any expense, loss, damage, or other liability which may be incurred as a result of damage to the POTW, natural resources, or any other damage to person or property; nor shall such notification relieve the Permit Holder of any fines, penalties, or other liability which may be imposed pursuant to EBMUD Ordinance No. 311A-03.

III. Changes in Quantity and Quality of Wastewater

The Permit Holder shall immediately report to the District any significant change to the quality or volume of the wastewater discharge or any deviation from the Permit terms and conditions.

IV. Hazardous Waste Notification

The Permit Holder shall submit to the District a written notification in accordance with 40 CFR 403.12(p)(1) and (3), unless exempted under the provisions of 40 CFR 403.12(p)(2), of any discharge, which, if otherwise disposed of, would be a hazardous waste under 40 CFR 261. Pollutants reported as part of the Self-Monitoring Reporting Requirements are not subject to this notification requirement.

V. Signature Requirement

a. All required reports, permit applications, self-monitoring reports, violation response reports, and periodic reports on continued compliance, shall be signed:

- (1) by a responsible corporate officer, if the Permit Holder submitting the reports is a corporation. For the purpose of this paragraph, a responsible corporate officer means:
 - (i) a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - (ii) the manager of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
- (2) by a general partner or proprietor if the Permit Holder submitting the reports is a partnership or sole proprietorship, respectively;

- (3) by a duly authorized representative of the individual designated in paragraph (1) or (2) of this section if:
- (i) The authorization is made in writing by the individual designated in paragraph (1) or (2);
 - (ii) The authorization specifies either an individual or a position having responsibility for the overall operation of the facility from which the industrial discharge originates, such as the position of plant manager, operator of a well, or well field superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters for the company; and
 - (iii) The written authorization is submitted to the District.
- (4) If an authorization under paragraph (a)(3) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for environmental matters for the company, a new authorization satisfying the requirements of paragraph (a)(3) of this section must be submitted to the District prior to or together with any reports to be signed by an authorized representative.

b. Reports and applications must include the following certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

VI. Retention of Records

a. The Permit Holder shall retain all records and relevant correspondence, including but not limited to:

- (1) all records used to complete the Permit Application
- (2) all information resulting from any monitoring activities
- (3) discharge reports
- (4) self-monitoring data
- (5) pretreatment system process control logs, including calibration and maintenance records, and original strip chart recordings of continuous monitoring instrumentation

b. The Permit Holder shall make all retained records available for inspection and copying by a duly authorized representative of the District or any other governmental entity having jurisdiction.

VII. Falsifying Information

Knowingly making any false statement on any report or other document required by the Permit or knowingly rendering any monitoring device or method inaccurate, is a crime, and may result in administrative, civil and criminal enforcement action.

SECTION C. MONITORING AND SAMPLING

I. Representative Sampling

Samples and measurements taken, as required in the Permit or those submitted with the application, shall be representative of the volume and nature of the monitored discharge. The Permit may require that a sample be representative of certain, specific, discharge periods.

Detection limits shall be sufficient to determine compliance with the Permit terms and conditions.

II. Chain of Custody

a. The Permit Holder shall submit a Chain of Custody record for each sample that documents the following:

- (1) the location, the type of sample(s) (grab or composite), the date(s) and time, or span of time the sample was taken
- (2) the number of containers, and type (glass, plastic, vial, etc.)
- (3) preservation techniques (ice, refrigeration at 4°C, chemicals added, etc.)
- (4) sample collector's name, legibly written
- (5) sample ID number (to cross-reference with the sample ID number on the Laboratory results)
- (6) all persons handling the sample and the individual receiving the sample at the laboratory, including their signature, printed name, company, date and time the sample was relinquished and accepted

b. The Permit Holder shall ensure that samples transported or handled by a courier, delivery service (public or private) or shipper shall include the company or individual's name, and the method of packaging the samples, on the Chain of Custody record.

c. The Permit Holder shall show all sample analyses performed in the field on the Chain of Custody record (e.g. pH - field test).

d. The District may require resampling of the wastewater for an incomplete or incorrect Chain of Custody record.

III. Sample Preservation and Analytical Methods

Unless the Permit requires otherwise, the Permit Holder shall use sampling methods, sample preservation, and analytical methods for each parameter in accordance with applicable sections of:

- a. *EBMUD Table of Approved Test Methods*

- b. *Standard Methods of Water and Wastewater Analysis*, Edition used in the EBMUD Table of Approved Test Methods
- c. EPA 40 CFR Part 136, *Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act*, latest edition

IV. Laboratory Reports

The Permit Holder shall use a laboratory certified by the California Department of Health Services for each sample analysis required by the Permit. The laboratory report for each sample shall include:

- a. the name and address of the laboratory performing the analyses
- b. sample ID number (to cross reference with the sample ID number on the Chain of Custody)
- c. the analytical result(s)
- d. the date of sampling, the date the sample(s) was received at the laboratory, and the date of analysis
- e. the Standard Method or EPA Method used for analyses
- f. the detection limit
- g. the signature and title of an authorized representative of the Laboratory, who reviewed the laboratory results

V. Additional Monitoring

If the Permit Holder monitors any pollutant at the compliance point more frequently than required by the Permit, using test methods specified in the Permit, the results of such monitoring shall be included in the subsequent self-monitoring report.

VI. Calibration and Maintenance of Equipment

The Permit Holder shall calibrate, inspect, and maintain all flow measuring, discharge sampling, monitoring, and pretreatment equipment to ensure the equipment accuracy and reliability.

VII. Flow Measurements

The Permit Holder shall use appropriate flow measurement devices and methods when required by the District. Flow measurement devices and methods are subject to approval by the District.

VIII. Tampering with Equipment

The Permit Holder shall not tamper with monitoring equipment or treatment units.

IX. Access to Facilities

The Permit Holder shall provide access to facilities by District staff in order to ascertain compliance with the Ordinance and Permit.

SECTION D. ENFORCEMENT AND PENALTIES

I. Public Notification of Permit Holders in Significant Non-Compliance

At an interval of not less than once per year, the District will publish the identities of any Permit Holder(s) which is (are) found to be in significant non-compliance of any national pretreatment standard, discharge limitation or prohibition, Permit terms and conditions, or any other requirement of these regulations. The definition of significant non-compliance shall be as specified in Section E. The publication shall occur in the newspaper having the largest daily circulation within the service area of the District.

II. Violations of Permit Terms and Conditions

The Permit Holder shall be subject to District actions for failure to comply with the Permit terms and conditions. The actions may include violation follow-up inspections and fees, issuance of Cease and Desist Orders, Administrative Civil Liability penalties, and other actions as authorized by EBMUD Ordinance No. 311A-03, Title VI.

III. Schedule of Remedial or Preventive Measures (Compliance Schedule)

When the District finds that a discharge of wastewater is taking place or threatening to take place that violates or will violate prohibitions or limits prescribed by Ordinance 311A-03, or wastewater source control requirements or the provisions of a wastewater discharge permit, the District may require the Permit Holder to submit for approval, a detailed time schedule of specific actions the Permit Holder shall take in order to correct or prevent a violation of requirements. Such schedule shall not extend the compliance date beyond applicable federal deadlines.

IV. Criminal Penalties.

- a. A Permit Holder who intentionally discharges wastewater in any manner, in violation of any order issued by the Director, which results in contamination, pollution, or a nuisance, as defined in Ordinance 311A-03, is guilty of a misdemeanor and may be subject to criminal penalties of not more than \$1,000 per day for each such violation, including, but not limited to, any violation of pretreatment standards or requirements.
- b. A Permit Holder who knowingly makes any false statement or representation in any record, report, plan, or other document filed with the District, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required by the District, shall be punished by a fine of not more than twenty-five thousand dollars (\$25,000) or by imprisonment in the county jail for not more than six months, or by both.

V. Civil Enforcement Penalties.

- a. A Permit Holder who fails to comply with any order issued by the District, including orders related to pretreatment standards or requirements, shall be subject to a civil penalty not to exceed ten thousand dollars (\$10,000) for each day in which the discharge, violation, or refusal occurs.
- b. A Permit Holder who intentionally or negligently violates any order issued by the District for violation of rules regulating or prohibiting discharge of wastewater which causes or

threatens to cause a condition of contamination, pollution or nuisance, as defined in this article, may be liable civilly in a sum not to exceed twenty-five thousand dollars (\$25,000) for each day in which the violation occurs. The attorney of the District, upon request of the Board of Directors of the District, shall petition the Superior Court to impose, assess, and recover such sums.

VI. Payment of Fines and Violation Fees

The Permit Holder shall pay the District any fines and violation fees that are assessed.

SECTION E. DEFINITIONS

BMPs - Best Management Practices are guidelines and procedures that reduce the generation of pollutants or hazardous wastes, and prevent them from being released to the environment.

Bypass - The intentional diversion of wastestreams from any portion of a treatment facility.

Chain of Custody - A Chain-of-Custody is a legal record of each person who had possession of a sample. It is included with an analytical report.

Combined Wastestream Formula - Formula defined in 40 CFR 403.6(e)

Director - Director of the Wastewater Department of the East Bay Municipal Utility District, or his/her designated representative.

Discharge Minimization Permit - Mandatory permit that includes monitoring and reporting requirements.

District - East Bay Municipal Utility District.

Hazardous Waste - Listed and characterized wastes under Section 3001 of the Resource Conservation and Recovery Act, as described in the Code of Federal Regulations (40 CFR Part 261) or as defined in California Health and Safety Code Section 25117. VII.

Permit Holder - Any individual, partnership, firm, association, corporation, or public agency issued a Wastewater Discharge Permit.

Pollution Prevention Permits - Mandatory permits that contain best management practices to reduce or eliminate pollutants discharged to the sanitary sewer.

POTW - Publicly Owned Treatment Works, e.g., EBMUD SD-1. A treatment works owned by a state or municipality. This includes any devices, and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. [Ref. 40 Code of Federal Regulations, 403.3(o)]

Pretreatment Program - A program administered by a POTW that meets the criteria established in EPA 40 CFR Part 403.8, 403.9 and 403.11.

Prohibition - Prohibited wastewater discharges as defined in EPA 40 CFR Part 403.5 or EBMUD Ordinance No. 311A-03, Title I, Section 5, and Title II, Section 2.

Regional Water Quality Control Board - The California Regional Water Quality Control Board, San Francisco Bay Region, is the approval authority for the District's Pretreatment Program.

Sample - A portion of wastewater that is representative of a larger volume of wastewater being discharged. The two types of samples are:

- a. Grab - an individual sample collected in a short period of time not exceeding fifteen minutes.
- b. Composite - a sample consisting of a number of discrete aliquots combined into a single sample, representative of a period of time.

SD-1 - EBMUD Special District No. 1, a district established to provide treatment of wastewater from the following East Bay Communities: Alameda, Albany, Berkeley, Emeryville, Oakland, Piedmont, and the Stege Sanitary District that includes the City of El Cerrito, the Richmond Annex, and the Kensington area. [Ref. MUD Act, Division 6, Chapter 8, Section 13451].

Significant Noncompliance - A Permit Holder is in significant noncompliance with applicable pretreatment requirements if any violation meets one or more of the following criteria:

- a. Chronic violations of wastewater discharge limits, defined as those in which sixty-six percent or more of all of the measurements taken during a six-month period exceed (by any magnitude) the daily maximum limit or the average limit for the same pollutant parameter.
- b. Technical Review Criteria (TRC) violations, defined as those in which thirty-three percent or more of all of the measurements for each pollutant parameter taken during a six-month period are equal to or exceed the product of the daily maximum limit or the average limit multiplied by the applicable TRC.
 - (1) TRC = 1.4 for BOD, TSS, fats, oil and grease
 - (2) TRC = 1.2 for all other pollutants (except pH)
- c. Any other violations of a pretreatment effluent limit (daily maximum or longer term average) that the District determines has caused, alone or in combination with other discharges, interference or pass through (including endangering the health of POTW personnel or the general public).
- d. Any discharge of a pollutant that has caused imminent endangerment to human health, welfare or to the environment or has resulted in the POTW's exercise of emergency authority to halt or prevent such a discharge.
- e. Failure to meet, within 90 days after the due date, a compliance schedule milestone contained in this Permit or Manager's order for starting construction, completing construction, or attaining final compliance.
- f. Failure to provide, within 30 days after the due date, required reports such as baseline monitoring reports, 90-day compliance reports, self-monitoring reports, and reports on compliance with compliance schedules.
- g. Failure to accurately report noncompliance.
- h. Any other violation or group of violations, which the District determines, will adversely affect the operation or implementation of the local pretreatment program.

Slug Discharge - Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or non-customary batch discharge.

Spill - An accidental discharge of a substance that may pose an environmental, public health, or wastewater quality concern.

Total Identifiable Chlorinated Hydrocarbons (TICH) - The sum of the concentrations of all quantifiable values equal to or greater than the detection limit for all chlorinated hydrocarbons identified by EPA Method 624.

Total Metals - The sum of the concentrations of copper, chromium, nickel, and zinc (40 CFR 413.02,e)

Total Toxic Organics (TTO) - The sum of the concentrations of specific toxic organic compounds found in the wastewater discharge at a concentration greater than 10 ug/L. Each categorical standard (40 CFR 405 - 471) lists the specific toxic organic compounds that are to be included in the summation.

Wastewater Discharge Limits - A wastewater discharge limit is the maximum concentration of a pollutant allowed to be discharged during a specific period of time. Wastewater discharge limits may be of three types: Monthly Average, 4-day Average, and Maximum.

Monthly Average - The maximum arithmetic average value of all samples taken in a calendar month.

4-day Average - The maximum arithmetic average value of four consecutive samples taken on different days.

Maximum - The maximum concentration of a pollutant allowed to be discharged at any time, as determined from the analysis of a grab or composite sample.

APPENDIX -- EBMUD Table of Approved Test Methods

The District has approved the following test methods for wastewater analysis. These methods are generally used for District and self-monitoring. Other methods not listed in this table may be required. Refer to the self-monitoring section of your wastewater discharge permit for required specific test methods. Alternative EPA methods for water and wastewater may also be acceptable.

Parameter	Preservative	Maximum Hold Time	EPA Method	STD Methods* 18 th Ed.
Arsenic (Total)	HNO ₃ to pH<2 Cool to 4°C	6 months	206.3 200.7	3114 B 3120 B
Cadmium (Total)	HNO ₃ to pH<2 Cool to 4°C	6 months	213.2 200.7	3113 B 3120 B
CODF, using a Whatman 934AH Glass Microfiber filter, or equivalent	Preserve with H ₂ SO ₄ to pH <2 Cool to 4°C	28 days		5220 D
Chromium (Total)	HNO ₃ to pH<2 Cool to 4°C	6 months	218.2 200.7	3113 B 3120 B
Copper (Total)	HNO ₃ to pH<2 Cool to 4°C	6 months	220.2 200.7	3113 B 3120 B
Cyanide (Amenable)	NaOH to pH>12 Ascorbic acid if Cl ₂ present Cool to 4°C	14 days	335.1	4500-CN G
Cyanide (Total)	NaOH to pH>12, ascorbic acid if Cl ₂ present Cool to 4°C	14 days	335.2	4500-CN B-E
Iron (Total)	HNO ₃ to pH<2 Cool to 4°C	6 months	200.7	3113 B 3120 B
Lead (Total)	HNO ₃ to pH<2 Cool to 4°C	6 months	239.2 200.7	3113 B 3120 B
Mercury (Total)	HNO ₃ to pH<2 Cool to 4°C	28 days	245.1 245.2	3112 B
Nickel (Total)	HNO ₃ to pH<2 Cool to 4°C	6 months	249.2 200.7	3113 B 3120 B
Oil & Grease (Total) Oil & Grease (HC)	HCl or H ₂ SO ₄ to pH<2 Cool to 4°C	28 days	1664 HEM 1664 HEM-SGT	
Phenolic Compounds	H ₂ SO ₄ to pH<2 Cool to 4°C	28 days	420.1	5530-D
pH, Hydrogen Ion	None	Analyze Immediately	150.1	4500-H+ B
Silver (Total)	HNO ₃ to pH<2 Cool to 4°C	6 months	272.2 200.7	3113 B 3120 B

Parameter	Preservative	Maximum Hold Time	EPA Method	STD Methods* 18 th Ed.
Temperature (°C)	None	Analyze immediately	170.1	2550 B
Total Suspended Solids TSS, filtered with Whatman 934 AH Glass Microfiber filter, or equivalent	Cool to 4°C	7 days	160.2	
Zinc (Total)	HNO ₃ to pH<2 Cool to 4°C	6 months	289.2 200.7	
Organochlorine Pesticides & Poly Chlorinated Biphenyls (PCBs)	Cool to 4°C	7 days until extraction; 40 days after extraction	608	6630B & C
Purgeable Organics (BTEX)	HCl to pH <2, add ascorbic acid if Cl ₂ is present. VOA vials, No headspace. Cool to 4°C	14 days	624 ¹ 8021 B 8260 B	
Semi-Volatile Organics (BNA's)	Cool to 4°C	7 days until extraction; 40 days after extraction	625	
Total Identifiable Chlorinated Hydrocarbon (Volatile Organics)	HCl to pH<2, add ascorbic acid if Cl ₂ is present. VOA vials, no headspace. Cool to 4°C	14 days	624 8260 B	

¹ EPA Method 624 table in 40CFR Part 136 does not list xylenes; however, EBMUD may accept xylenes detected by this method.

* Standard Methods for the Examination of Water and Wastewater

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WASTEWATER DISCHARGE PERMIT
Terms and Conditions
APPLICANT INFORMATION

APPLICANT BUSINESS NAME Regents of the University of California Lawrence Berkeley National Laboratory			PERMIT NUMBER 50347891
ADDRESS OF SITE DISCHARGING WASTEWATER			
One Cyclotron Rd	Berkeley	94720	
STREET ADDRESS	CITY	ZIP CODE	
PERSON TO BE CONTACTED REGARDING THIS APPLICATION			
Robert Fox	RAFOX@LBL.gov	(510) 486-7327	(510) 486-6603
NAME	ELECTRONIC MAIL ADDRESS	TELEPHONE NUMBER	FACSIMILE NUMBER
PERSON(S) TO RECEIVE PERMIT AND CORRESPONDENCE IF DIFFERENT THAN PERSON SIGNING APPLICATION			
NAME		MAILING ADDRESS	
NAME		MAILING ADDRESS	
PERSON TO BE CONTACTED IN THE EVENT OF AN EMERGENCY			
LBNL Fire Department	(510) 486-7911	(510) 486-7911	
NAME	DAYTIME TELEPHONE NUMBER	NIGHTTIME TELEPHONE NUMBER	
AUTHORIZATION			
Robert Fox <u>Environmental Specialist</u> is authorized to sign reports, documents, and other correspondence required by this Permit. NAME & TITLE			
CERTIFICATION			
I understand that I am legally responsible for discharge of wastewater from the facility and for complying with the Terms and Conditions of this Wastewater Discharge Permit.			
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.			
Robert Fox	Environmental Specialist		
NAME	TITLE		
	12/22/06		
SIGNATURE	DATE		
(TO BE SIGNED BY CHIEF EXECUTIVE OFFICER OR DULY AUTHORIZED REPRESENTATIVE. SEE CERTIFICATION REQUIREMENTS ON REVERSE)			
One Cyclotron Rd MS 85B0198 Berkeley, CA	(510) 486-7327		
MAILING ADDRESS	PHONE NUMBER		
94720			



APPLICANT BUSINESS NAME _____

Lawrence Berkeley
National Laboratory

WASTEWATER DISCHARGE PERMIT
Terms and Conditions
PROCESS DESCRIPTION

The information on this form provides a description of wastewater generating processes, characteristics of the wastewater, and waste management activities. Instructions are on the back of this form.	Permit Number 50347891
--	---------------------------

BUSINESS ACTIVITY Treatment of contaminated groundwater	Standard Industrial Classification	Business Classification Code 4950
---	------------------------------------	--------------------------------------

PROCESSES

Process Description	Wastewater Characteristics	Schematic Process Number
Contaminated groundwater is filtered through 25 micron and 5 micron filters.	Very low concentrations (if any) of PCE, TCE, DCE,	
Then granular activated carbon canisters are used to treat the contaminated groundwater.	chloroform, and freon-113.	

POLLUTION PREVENTION TECHNIQUES / BEST MANAGEMENT PRACTICES (BMPs)

Please see attached standard operating procedure, "4.6 Water Treatment Systems," revision 4, July 17, 2006 for a detailed process description and BMPs.

PRETREATMENT

Pretreatment System	Design Capacity	Loading Rate	Size	Side Sewer Number
<input checked="" type="checkbox"/> filtration			25µ + 5µ	SS#1 (Hearst)
<input type="checkbox"/> grease trap/oil and water separator				
<input checked="" type="checkbox"/> granular activated carbon	Varies by treatment unit		Min. 1000 lb	SS#1 (Hearst)
<input type="checkbox"/> sedimentation				
<input type="checkbox"/> pH adjustment				
<input type="checkbox"/> chlorination				
<input type="checkbox"/> chemical precipitation				
<input type="checkbox"/> other (describe)				
<input type="checkbox"/> none				

PROCESS GENERATED WASTE

Waste / Disposal Method	Annual Waste Generation	
	Quantity	Unit
Regenerate spent granular activated carbon (recycle)	1000 lbs.	all 7 combined



Lawrence Berkeley **WASTEWATER DISCHARGE PERMIT**
Terms and Conditions

APPLICANT BUSINESS NAME National Laboratory

WATER BALANCE/STRENGTH SUMMARY

The information on this form describes the volume, source, and strength of wastewater discharged to the community sewer. Instructions are on the back of this form.

Permit Number
50347891

WATER USE AND WASTEWATER DISCHARGE BALANCE

Units expressed in: gallons per calendar day or gallons per working day (Number of working days per year _____)

Water Use	Source			Wastewater Discharge to each Side Sewer					Water Diverted	Code ²
	EBMUD	Other	Code ¹	No. 1	No.	No.	No.	No.		
Sanitary										
Processes										
Product										
Boiler										
Cooling										
Washing										
Irrigation										
Treated Groundwater		27,153		9,526					17,627	F
Sub-total		27,153		9,526					17,627	
Total	All Sources 27,153			All Side Sewers 9526			All Side Sewers + Water Diverted 27,153			
Maximum Daily Discharge (gallons)										

METERED WATER

Water Meter Number	Code ³	Percent Discharge to each Side Sewer				Total % Discharge
N/A						

¹Other / Code: Compute the average gallon per day water use from non-EBMUD sources and enter the value in the Other "Sub-total" box. Do not include sources that discharge only to the stormdrain. Allocate the subtotal value to each type of water use. Enter the code(s) that identifies the source water:

A= Well Water / Groundwater B= Stormwater C= Reclaimed Water D= Other (describe)

²Water Diverted/Code: Enter the diverted volume for each type of water use. Enter the code(s) that identifies the diversion:

A= Product B= Evaporation C= Irrigation D= Creek/Bay E= Rail, Truck, Vessel F= Other (describe)

³Metered Water Code(s): E= EBMUD Meter P= Private Meter

F=Re-injected to groundwater for DTSC approved soil flushing purposes.



APPLICANT BUSINESS NAME _____

WASTEWATER DISCHARGE PERMIT

Terms and Conditions

WATER BALANCE/STRENGTH SUMMARY

WASTEWATER STRENGTH ESTIMATES		Wastewater Discharge to each Side Sewer				
		No.	No.	No.	No.	No.
Total Suspended Solids mg/L (TSS)	Average	Negligible- Discharged water passes through 5 micron filters				
	Maximum					
Filtered Chemical Oxygen Demand mg/L (CODF)	Average	Negligible - Discharged water passes through granular activated carbon				
	Maximum					

DISCHARGE FREQUENCY

Days of Week	7				
Time of Day (Start & Stop Time)	24hrs				
Volume, if Batch Discharge	Typically continuous but batch discharge may be done with prior permission from EBMUD				

SIDE SEWER LOCATION

No. 1 Hearst Monitoring Station
No.
No.
No.
No.

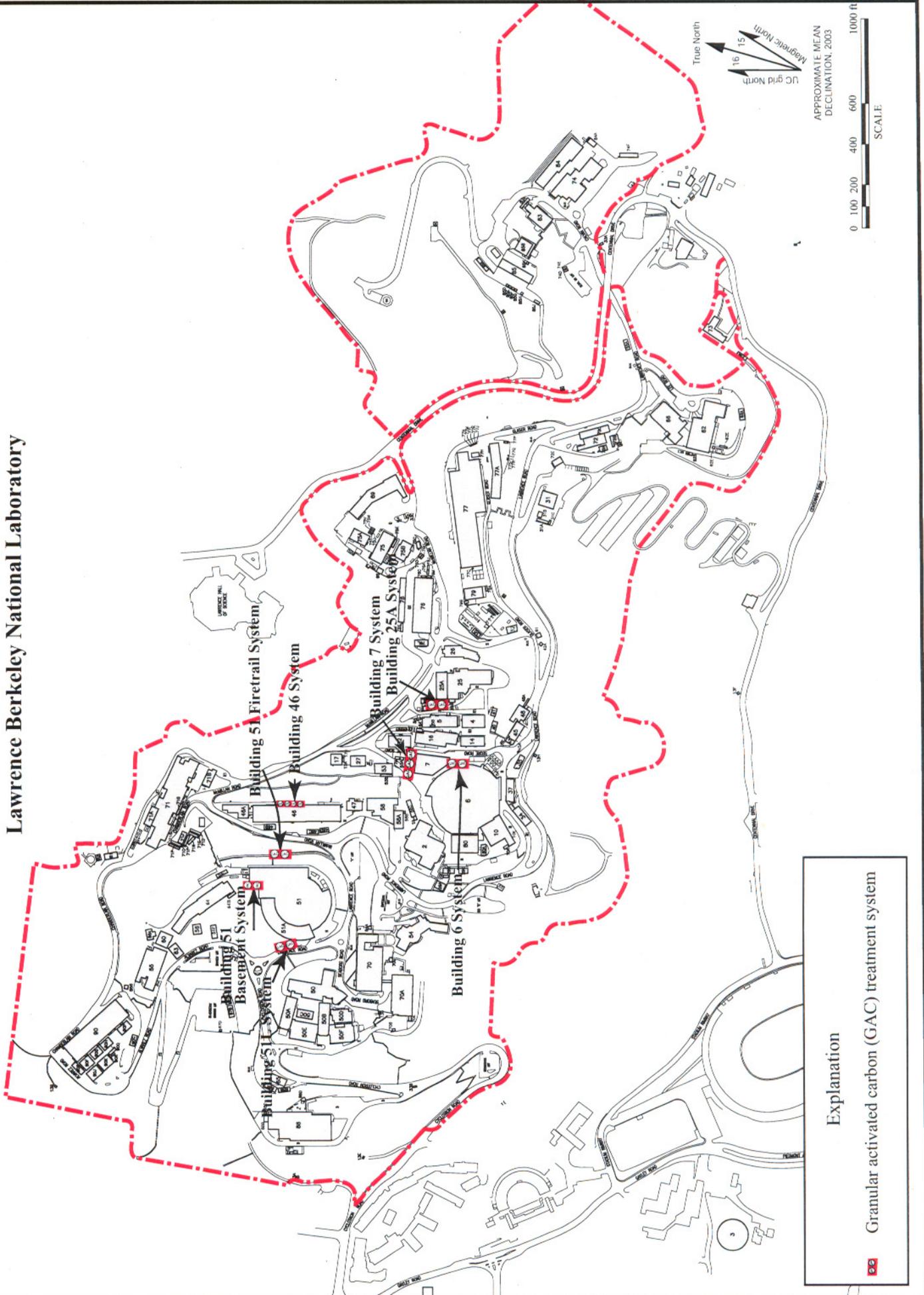
STORMWATER AREA

Total square-foot area exposed to stormwater that drains to the sanitary sewer: _____ N/A _____ sq. ft.

FIGURES

Lawrence Berkeley National Laboratory

Permit No. 50347891



Explanation	
	Granular activated carbon (GAC) treatment system

Figure 1. Locations of LBNL Treatment Systems.

WATER FLOW COMPONENTS

 Flow Control / Flood Valve

 Sampling Port

PG
 Pressure Gauge

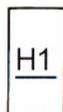
 System Totalizer
System

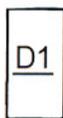
 Individual Totalizer

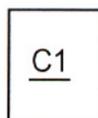
CV
 One-way Check Valve
(Back Flow Control Valve)

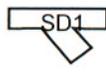
 Pressure Relief Valve

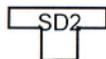
 Particulate Filter
0.5µm, 5µm, 25µm

 Holding Barrel

 Aqua Scrub Granular Activated
Carbon (GAC) Drum
(55-gallon)

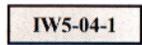
 Aqua Scrub Granular Activated
Carbon (GAC) Canister
(1000-lb)

 Sediment Strainer



 Water Flow Line
(showing direction of flow)

 Groundwater Extraction Location
(MW=Monitoring Well, EW=Extraction Well)

 Groundwater Injection Location
(MW=Monitoring Well, IW=Injection Well)

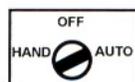
ELECTRICAL COMPONENTS

Electric Power Source

 AC Outlet
Power Cable

Electric Power Controls

 ON
OFF On/Off Switch

 Three-Way (Auto/Off/Hand)
Electric Control Switch Panel

Pump Controls

 Float Switch

Pump Types

 GF1 Submersible (Grundfos) Pump

 SMP1 Sump Pump

Figure 4.6-2. Key to Symbols Used in Schematic Diagrams of Soil Flushing System

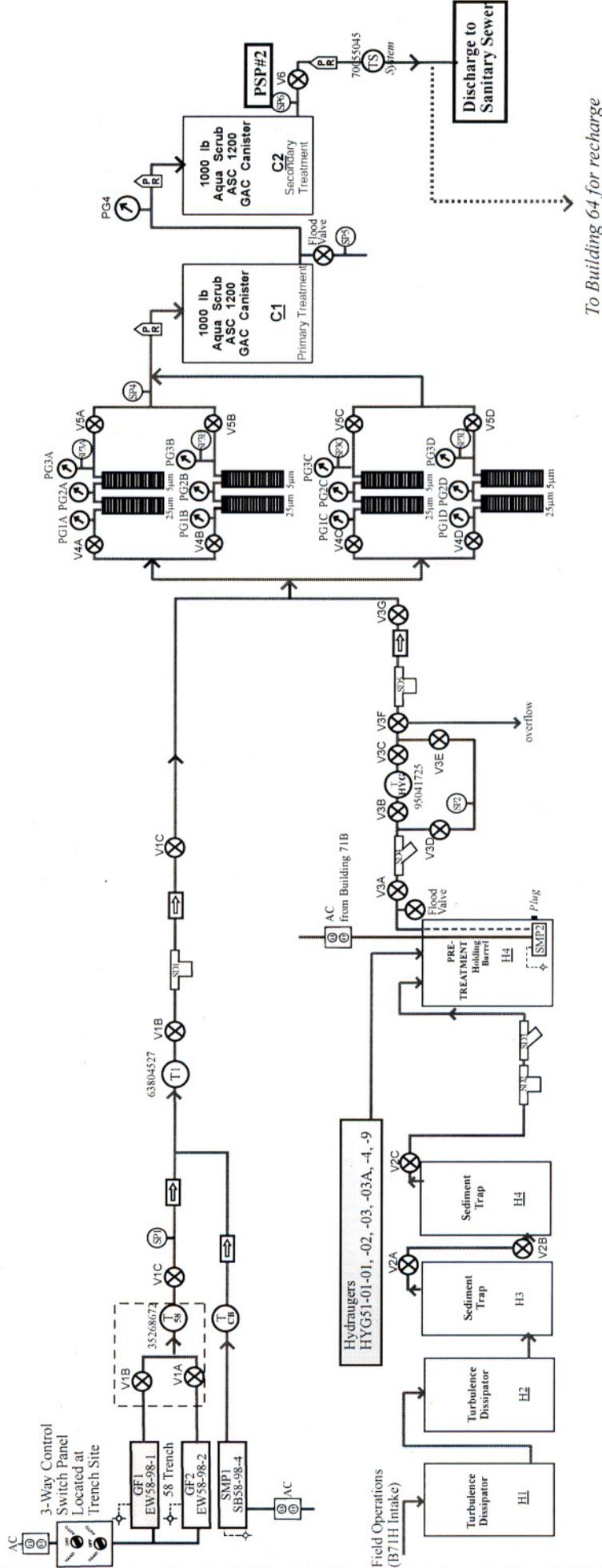


Figure 3. Building 51 Fire Trail GAC Treatment System Schematic Flow Diagram (PSP#2).

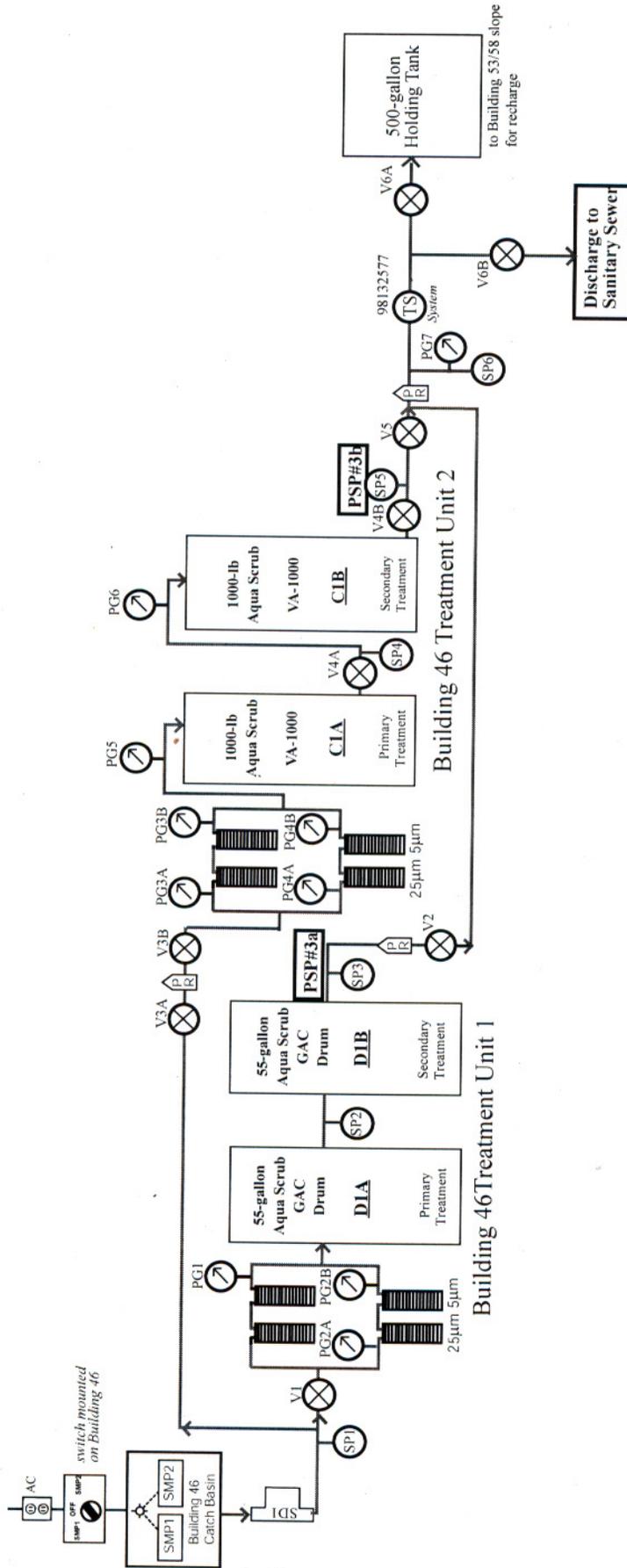
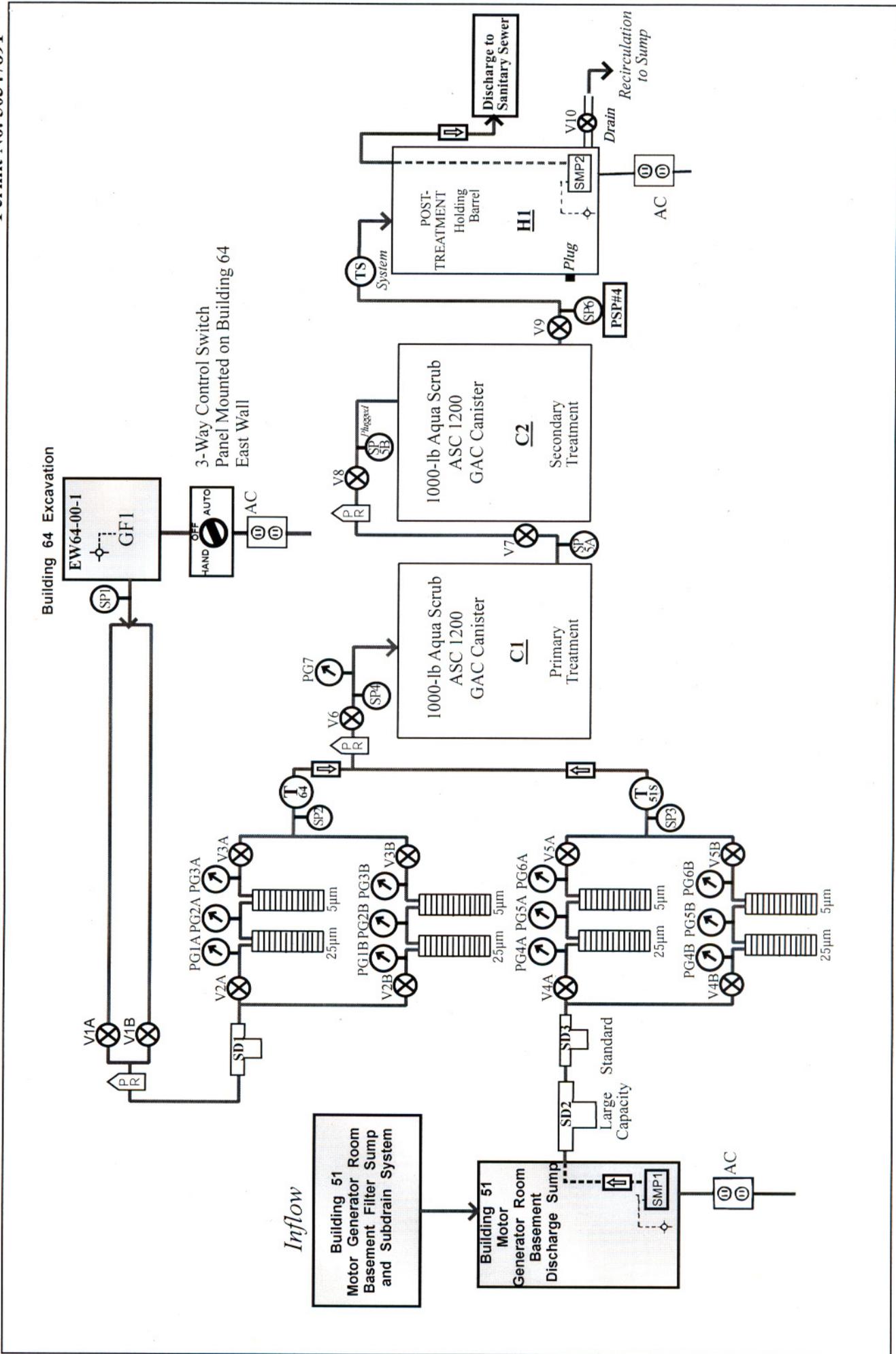


Figure 4. Building 46 GAC Treatment System Schematic Flow Diagram (PSP#3).



5-451mgroom.ai
1106

Figure 5. Building 51 Motor Generator Room Basement GAC Treatment System Schematic Flow Diagram (PSP#4).

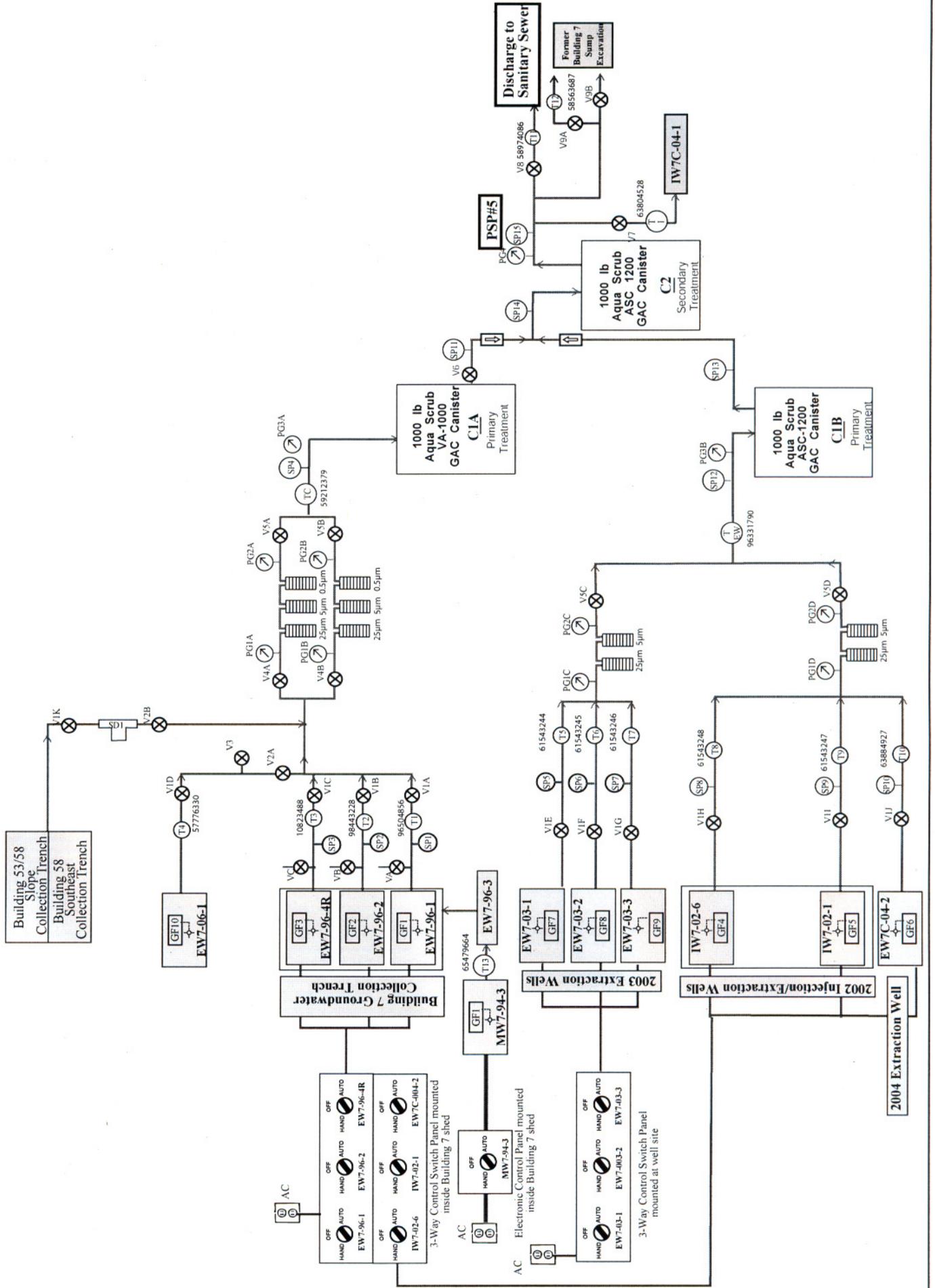


Figure 6. Building 7 GAC Treatment System Schematic Flow Diagram (PSP#5).

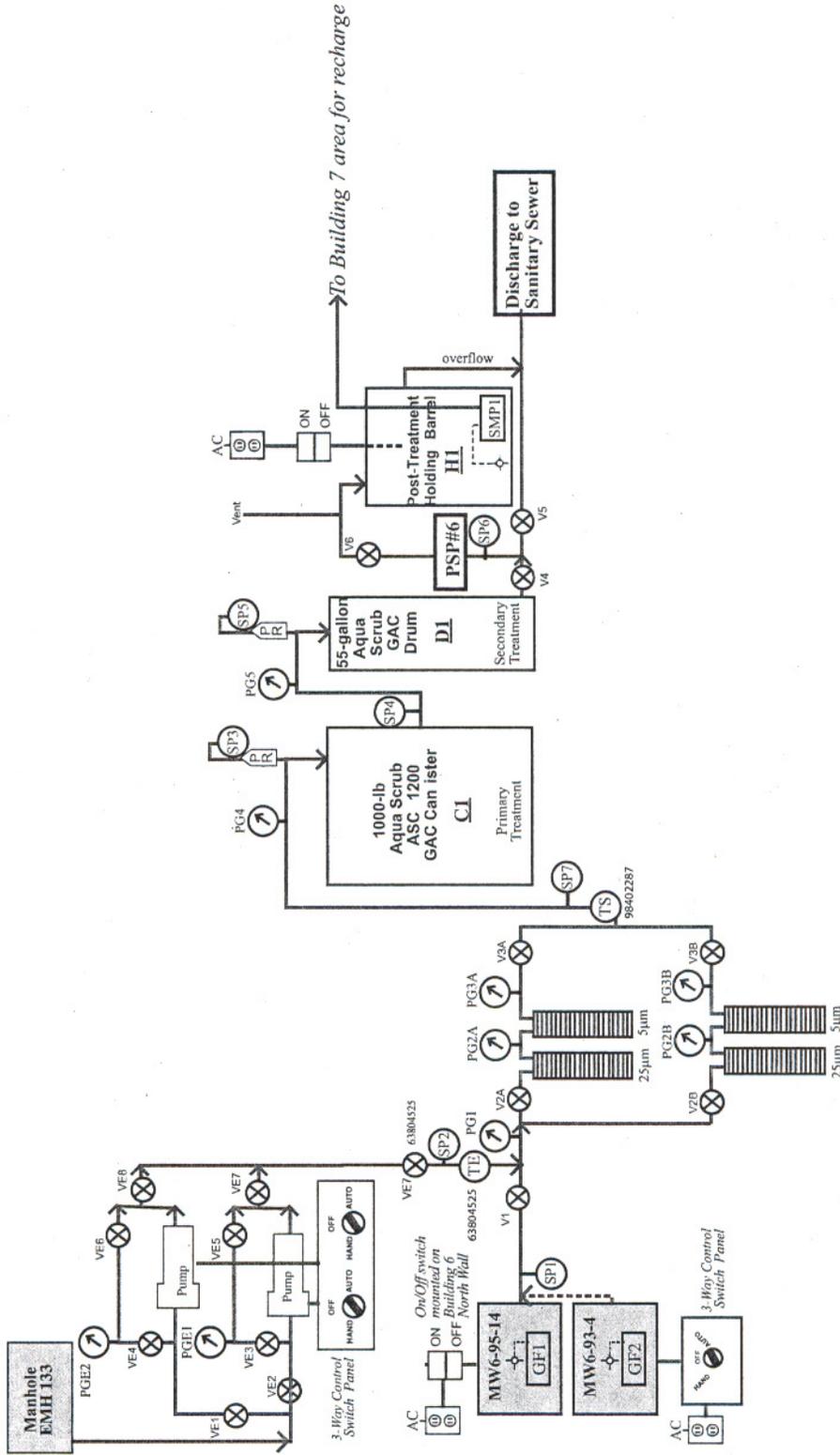


Figure 7. Building 6 GAC Treatment System Schematic Flow Diagram (PSP#6).



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Environmental Restoration Program



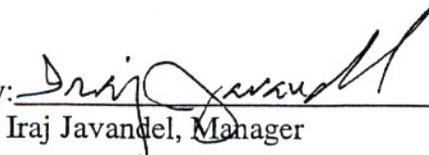
United States Department of Energy

STANDARD OPERATING PROCEDURE 4.6 Water Treatment Systems

for the
Lawrence Berkeley National Laboratory
Environmental Restoration Program

Revision 4
July 17, 2006

Approved by:


Iraj Javandel, Manager

Date:

7, 19, 06

4.6 WATER TREATMENT SYSTEMS

4.6.1 SCOPE AND APPLICATION

The purpose of this SOP is to provide guidelines for operating and maintaining the granular activated carbon (GAC) treatment systems used to remove dissolved volatile organic compounds (VOCs) from extracted groundwater.

4.6.2 DISCUSSION

The LBNL Environmental Restoration Program (ERP) operates and maintains eleven GAC treatment systems, which it designed and constructed. The systems are listed in the following table and their locations are shown on Figure 4.6-1. The table also lists the disposition of the treated water from each system and the number of the figure that provides a schematic diagram for each system.

Summary of Treatment Systems

Treatment System	Disposition of Treated Water	Figure Number for Schematic Diagram
Building 6	Recirculated for in situ soil flushing or sanitary sewer	4.6-3
Building 7	Recirculated for in situ soil flushing or sanitary sewer	4.6-3
Building 25	Recirculated for in situ soil flushing	4.6-4
Building 25A	Recirculated for in situ soil flushing or sanitary sewer	4.6-5
Building 46	Recirculated for in situ soil flushing or sanitary sewer	4.6-6
Building 51 Firetrail	Sanitary sewer	4.6-7
Building 51 Motor Generator Room Basement	Sanitary sewer	4.6-8
Building 51L	Sanitary sewer	4.6-9
Building 53	Recirculated for in situ soil flushing	4.6-6
Building 64	Recirculated for in situ soil flushing	4.6-7
Building 71B	Recirculated for in situ soil flushing	4.6-10

The systems are used to treat groundwater pumped from extraction wells and collection trenches that were primarily installed to control the migration of groundwater contaminant plumes. Many of these extraction wells and collection trenches are also currently used to contain water injected

for in situ soil flushing purposes. In situ soil flushing consists of the concurrent injection of clean water into, and extraction of contaminated water from, the subsurface. The purpose of flushing is to increase the rate that residual soil contaminants desorb into the flowing groundwater and to promote the flow of contaminated groundwater towards location(s) where it can be extracted.

The systems also treat effluent from contaminated hydraugers (horizontal drains); contaminated water from subdrains; and water produced during ERP field activities, such as well purging, well development, and equipment decontamination. The treated water is either reinjected into the subsurface for soil flushing purposes or, if the water is not needed for flushing, discharged to the sanitary sewer in accordance with provisions of a Wastewater Discharge permit issued by the East Bay Municipal Utility District (EBMUD).

The primary components of each system are 55-gallon drums filled with GAC (GAC drums) or 1,000-pound GAC canisters. The GAC vessels (drums or canisters) are installed in pairs (in series) to help ensure that contamination will not be present at detectable concentrations in the post-treatment effluent. Ancillary equipment includes pumps; particulate filters; pressure gauges; holding barrels; flow totalizers; flow control, pressure relief, and back flow control valves; sampling ports; and electric power controls. Schematic diagrams of the systems are presented on Figures 4.6-3 through 4.6-10. A key to symbols used on the diagrams is provided on Figure 4.6-2.

4.6.3 ASSOCIATED SOPs

<u>SOP #</u>	<u>Title</u>
2.2	Water Sampling
4.1	Sample Control and Documentation
4.3	Handling, Packaging, and Shipping of Samples
4.4	Equipment Decontamination
4.5	General Instructions for Field Personnel

4.6.4 PREPARATION

4.6.4.1 Office Coordination

Coordinate activities with the field supervisor and obtain a list of the treatment systems to be monitored and/or sampled.

4.6.4.2 Field Preparation

Obtain required equipment and supplies (See Section 4.6.10).

4.6.5 GENERAL PROCEDURES

4.6.5.1 General Guidelines

Record all observations, notes, sample numbers, and maintenance performed in a field notebook.

4.6.5.2 System Monitoring and Maintenance

All treatment systems should be inspected daily. During the inspection, the condition of the systems and associated components including valves, pressure gauges, and totalizers should be observed and evaluated. Water leaks from pipes or overflows from holding tanks etc. should be noted. If necessary, flow volumes should be adjusted to prevent overflows. Any components that are not operating properly should be repaired or replaced.

Inform the Program Manager of unusual conditions or components requiring maintenance or repair. If a condition is observed that requires repair, replacement, or maintenance by a skilled craft worker (e.g. electrician, plumber, etc.) call the Work Request Center (X6274) to arrange for the work to be completed. If the condition is considered an emergency (e.g., imminent threat to human health or the environment), call the LBNL Facilities 24-hour emergency number X5481.

Read all pressure gauges and replace filters if necessary. The filter system at each treatment system generally consists of a pair of filters, with the first a 25 μ m filter to remove coarse particles followed by a 5 μ m filter to remove finer particles. Pressure gauges are generally installed before and after the filter canisters on the filter rack to monitor the efficiency of the filters. **A pressure drop of more than 2 psi between two pressure gauges (for a two-filter system) indicates the filter(s) are clogging and that they should be replaced.** The 2-psi criterion is based on an allowable pressure drop of 1 psi per filter. If additional filters are required they can be ordered through Berkeley Lab Stores. The following procedure should be followed when changing filters.

- A. Wear waterproof gloves.
- B. If the filter system consists of two parallel lines, change the filters on one line at a time, while keeping the treatment system operational. If the filter system consists of a single filter line, turn off the pump before changing the filters.
- C. Close the inlet and outlet valve(s) providing water to the filters. To close the valves turn the valves perpendicular to flow direction. Unscrew the filter canister (counterclockwise). Remove the filter from each canister and allow the water in the filter to drain. Containerize the drain water.
- D. Pour any water in the canister into a container for disposal. If necessary clean the inside of the canister with a *Kim Wipe* or similar clean towel. Clean the canister gasket with a *Kim Wipe* or similar clean towel and make sure it is properly seated.

- E. Insert a new filter in the canister. Screw in the filter canister and filter (clockwise). -- **Hand tighten only.**
- F. Place a bucket beneath the changed filter canister to catch any leaks. Open the valve(s). To open the valves turn the valves parallel to flow direction. Run water through the system to check for leaks. Adjust or re-tighten the canisters as necessary until the system operates without leakage. Press the air release button on the top of the filter canister to remove any air trapped in the system (or remove the air at the nearest downstream pressure release location if the canister does not have an air release button).
- G. Dispose of any water collected at a treatment system.
- H. Dispose of the solid waste generated (used filters, *Kim Wipes*, gloves, etc.) as sanitary waste.

Record all system flow totalizer readings in the field notebook.

Observe clarity of water flowing through clear hoses. If water appears turbid, contact the Field Supervisor.

Before performing any maintenance where there is a potential for electrical hazard, turn off power to the system and lock out/tag out the system.

System Sampling

"Post-Treatment" sampling requirements for compliance with LBNL's Wastewater Discharge Permit are summarized in the following table. "Post Treatment" samples of the water discharged to the sanitary sewer are collected every other month and analyzed for Volatile Organic Compounds (VOCs) by EPA Method 8260B. Samples from the Building 51 Motor Generator Room Basement Treatment System are also analyzed for polychlorinated biphenyls (PCBs) by EPA Method 608. Results of this sampling are reported to EBMUD in compliance with LBNL's Wastewater Discharge Permit (See Section 4.6.8). In addition, water samples are routinely collected for VOC analysis from sampling ports located at various locations at all of the treatment system to assess the level of contamination in pre-treated water ("Pre-Treatment" sample), to monitor for the breakthrough of contaminants after the first treatment vessel ("Between Canister" sample), and to document that the effluent from each treatment system is clean ("Post-Treatment" sample).

To ensure that the sample is representative of the water being flushed through the system, the samples should be collected, if possible, while each system is operating. Samples are collected after the system has been monitored, all routine maintenance has been performed, and the system is working properly. A new, clean pair of disposable (latex) gloves is worn for each new sample collected.

EBMUD Treatment System Sampling Requirements

Treatment System	Sampling Port Number	EPA Method	Schematic Diagram Showing Sampling Port Location
Building 6	PSP#6	8260B	Figure 4.6-3
Building 7	PSP#5	8260B	Figure 4.6-3
Building 25A	PSP#8	8260B	Figure 4.6-5
Building 46	PSP#3	8260B	Figure 4.6-6
Building 51 Firetrail	PSP#2	8260B	Figure 4.6-7
Building 51 Motor Generator Room Basement	PSP#4	8260B 608	Figure 4.6-8
Building 51L	PSP#7	8260B	Figure 4.6-9

When a contaminant is detected in the “Between Canister” sample, the first GAC drum or the GAC in the first canister is replaced. Call Siemens Water Technologies 800-659-1718) (or other contracted GAC vendor) for GAC exchange/replacement.

4.6.6 SYSTEM SPECIFIC PROCEDURES**4.6.6.1 Building 6 Treatment System****Location and System Description**

The Building 6 Treatment System is located on the east side of the ALS (Building 6). The location of the system is shown on Figure 4.6-1. A schematic diagram of water flow through the system is included on Figure 4.6-3.

The system treats contaminated groundwater extracted from MW6-95-14 and electric manhole EMH 133. MW6-95-14 is located at the site of the Former Building 7E Underground Kerosene Storage Tank. Contaminated groundwater extracted from MW6-93-4 has also been treated at the system. The system consists of a primary GAC canister and a secondary 55-gallon GAC drum in series. Submersible pumps controlled by float switches are used to extract the groundwater from the monitoring wells. An on/off switch mounted on the north wall of Building 6 controls the power to the pump in MW6-95-14. After treatment, the effluent is routed to a holding barrel (H1) and then either discharged to the sanitary sewer or injected into the injection well system in the upgradient core area of the Building 7 lobe of groundwater contamination for soil flushing purposes.

Monitoring and Maintenance

See Section 4.6.5.2 System Monitoring and Maintenance for general requirements.

Sampling the System

- A. The “Pre-Treatment” sample is collected at sampling port SP1 or SP7.
- B. The “Between Canister” sample is collected at SP4.
- C. The “Post-Treatment” sample is collected at SP6. This location is referenced as PSP#6 for EBMUD reporting requirements.

4.6.6.2 Building 7 Treatment System

Location and General Description

The Building 7 Treatment System is located on a concrete pad at the former location of Building 7B. The location of the system is shown on Figure 4.6-1. A schematic diagram of water flow through the system is shown on Figure 4.6-3.

The system treats contaminated groundwater pumped from a number of sources, including extraction wells in the Building 7 groundwater collection trench, extraction wells in the Building 53/58 slope collection trench, extraction wells in the Building 7 soil flushing system, and extraction wells EW7-06-1 and EW7C-04-2.

The system consists of two primary GAC canisters and a single secondary canister. Water is pumped by submersible pumps within the extraction wells that are controlled by float switches. Three-way control switch panels (hand/off/automatic) control the operation of the submersible pumps. After treatment, the effluent is reinjected for soil flushing at various locations or discharged into the sanitary sewer.

Monitoring and Maintenance

See Section 4.6.5.2 System Monitoring and Maintenance for general requirements, in addition to the following.

Once a week, inspect the hose from the Building 58 Southeast Collection Trench to the holding tank on the Building 53/58 slope for leaks, etc.

Sampling the System

- A. The “Pre-Treatment” samples are collected at the sampling ports SP4 and SP12.
- B. The “Between Canister” samples are collected at SP11 and SP13.
- C. The “Post-Treatment” sample is collected at SP15. This location is referenced as PSP#5 for EBMUD reporting requirements.

4.6.6.3 Building 25 Treatment System

Location and System Description

The Building 25 Treatment System is located at the end of the parking area south of Building 25. The location of the system is shown on Figure 4.6-1. A schematic diagram of water flow through the system is shown on Figure 4.6-4.

The system consists of two 55-gallon GAC drums in series and treats contaminated groundwater extracted from MW25-95-5. A submersible pump controlled by a float switch is used to extract the water. A three-way control switch panel (hand/off/automatic) is located at the treatment system to control operation of the submersible pump. After treatment, the effluent is injected into MW25-98-10, located approximately 50 feet upgradient from MW25-95-5.

Monitoring and Maintenance

See Section 4.6.5.2 System Monitoring and Maintenance for general requirements.

Sampling the System

- A. The "Pre-Treatment" sample is collected at sampling port SP1, SP2, or SP3.
- B. The "Between Canister" sample is collected at SP4.
- C. The "Post-Treatment" sample is collected at SP5.

4.6.6.4 Building 25A Treatment System

Location and System Description

The Building 25A Treatment System is located west of Building 44A. The location of the system is shown on Figure 4.6-1. A schematic diagram of water flow through the system is shown on Figure 4.6-5.

The system treats contaminated groundwater from extraction well EW25A-02-1, which was installed in the collection trench at the location of the treatment system and from groundwater monitoring well MW25A-98-3 located north of Building 25A. The system consists of a primary GAC canister and a secondary 55-gallon GAC drum in series. Submersible pumps controlled by float switches are used to extract the water. A three-way control switch panel (hand/off/automatic) is located at the treatment system to control operation of the submersible pumps. After treatment, the effluent is recirculated into a shallow gravel-filled infiltration bed located between Buildings 25A and 44A, upgradient of the trench, to flush the source area of the Building 25A lobe of groundwater contamination.

Monitoring and Maintenance

See Section 4.6.5.2 System Monitoring and Maintenance for general requirements.

Sampling the System

- A. The "Pre-Treatment" sample is collected at sampling port SP1.
- B. The "Between Canister" sample is collected at SP2.
- C. The "Post-Treatment" sample is collected at SP3. This location is referenced as PSP#8 for EBMUD reporting requirements.

4.6.6.5 Building 46 Treatment System

Location and General Description

The Building 46 Treatment System is located on the northeast side of Building 46. The location of the system is shown on Figure 4.6-1. A schematic diagram of water flow through the system is shown on Figure 4.6-6.

This system treats the water pumped from a catch basin located in a subdrain south of the system. Water is pumped by one of two sump pumps (SMP1 and SMP2) within the catch basin. The switch to activate either SMP1 or SMP2 is mounted on Building 46. A floater switch within the catch basin is set to trigger SMP1 or SMP2 (whichever is activated) when the water level is above the corresponding sump pump.

Water is pumped from the catch basin by sump pump SMP1 or SMP2 through a strainer/sediment trap into either one of two treatment units (Treatment Unit 1 or Treatment Unit 2). Treatment Unit 1 consists of two 55-gallon GAC drums in series. Treatment Unit 2 consists of two 1,000-pound GAC canisters in series. After treatment, the water is routed to a 500-gallon holding tank, if it is needed for in situ soil flushing, or discharged to the sanitary sewer.

Monitoring and Maintenance

See Section 4.6.5.2 System Monitoring and Maintenance for general requirements, in addition to the following.

- A. Observe the water level in the catch basin. If the water level is above the trigger level of the floater switch and the pump is not running, the electricity may not be on. Check and reset the SMP1 or SMP2 ground fault interrupter switch (GFI), on the Building 46 east wall adjacent to Treatment Unit 1.
- B. Unscrew the strainer/sediment trap, remove the sediment basket and clean out any debris. Replace the strainer.

Once a week, inspect the pipeline from Building 46 to the Building 52 holding tank for leaks, etc. Monitor the system components (pump, filters, totalizer, and valves) at the Building 52 holding tank daily.

Sampling the System

- A. The “Pre-Treatment” sample is collected at sampling port SP1.
- B. The “Between Canister” sample is collected at SP2 for Treatment Unit 1 and at SP4 for Treatment Unit 2.
- C. The “Post-Treatment” sample is collected at SP3 for Treatment Unit 1, at SP5 for Treatment Unit 2, or at SP6 for either system.
- D. The “Post Treatment” sample for EBMUD reporting is collected at SP3 (PSP#3a) or SP5 (PSP#3b), depending on which system is operating.

4.6.6.6 Building 51 Firetrail Treatment System

Location and General Description

The Building 51 Firetrail Treatment System is located upslope of Building 51, along the fire trail east of the building. The location of the system is shown on Figure 4.6-1. A schematic diagram of water flow through the system is shown on Figures 4.6-7.

This system treats water from extraction wells EW58-98-1, EW58-98-2, and SB58-98-4. EW58-98-1 and EW58-98-2 are used to extract groundwater from the Building 58 West Groundwater Collection Trench. SB58-98-4 extracts water from a concrete sump that was installed adjacent to an abandoned corrugated metal pipe subdrain west of Building 58. A three-way control switch panel (hand/off/automatic) is located at the Building 58 West Groundwater Collection Trench to control operation of the submersible pumps in the extraction wells. Water in SB58-98-4 is pumped by sump pump SMP1, which is controlled by a float switch, into EW58-98-1. Water from the three wells is pumped through a totalizer and sediment trap to the treatment canisters.

The treatment system is also used to treat water from ERP well sampling and development and decontamination activities, and from contaminated hydrauger effluent (HYG51-01-01, -02, -03, -03A, -04, and -09). Contaminated water from field operations is placed in an intake pipe near Building 71H. The water flows by gravity feed into turbulence dissipator H1 located at the treatment system. From there, the water is routed through a second turbulence dissipator (H2) and two sediment trap drums (H3 and H4) into pre-treatment holding barrel H5. Water from the contaminated hydraugers flows by gravity feed into pre-treatment holding barrel H5. Water in H5 is pumped by sump pump SMP3, controlled by a floater switch, through primary treatment canister C1, secondary treatment canister C2, and totalizer TS. The treated water is generally discharged to the sanitary sewer; however, if needed for soil flushing, it can be routed to a post treatment holding tank at the Building 64 Treatment System.

Monitoring and Maintenance

See Section 4.6.5.2 System Monitoring and Maintenance for general requirements, in addition to the following.

- A. Remove the metal cover from H5 and inspect the water level. If water does not flow, manually operate pump SMP2.

Sampling the System

- A. The "Pre-Treatment" sample is collected at sampling port SP4, SP3C, or SP3D.
- B. The "Between Canister" sample is collected at sampling port SP5 located at the base of canister 1.
- C. The "Post-Treatment" sample is collected at SP6 located at the base of canister 2. This location is referenced as PSP#2 for EBMUD reporting requirements.

4.6.6.7 Building 51 Motor Generator Room Basement Treatment System

Location and System Description

The Building 51 Motor Generator Room (MGR) Basement Treatment System is located in the northeast end of the Building 51. The location of the system is shown on Figure 4.6-1. A schematic diagram of water flow through the system is shown on Figure 4.6-8.

This system treats water that flows into the Building 51 MGR Basement Discharge Sump and from extraction well EW64-00-1, which extracts groundwater from the backfilled Building 64 groundwater plume source area excavation. The water in the discharge sump originates from a complex of hillside exterior relief wells/subdrains (to the east of the building) connected to the building's interior floor drainage system. Water in the discharge sump is directed by pumping with an automatic sump pump (SMP1) through the treatment system. Water from EW64-00-1 is extracted using a submersible pump that is controlled by a float switch. A three-way control switch panel (hand/off/automatic) mounted on Building 64 is used to control the submersible pump.

The water is treated by two GAC canisters and then flows into a post treatment holding barrel. A sump pump in the holding barrel, which is controlled by float switch, sends the treated water to the sanitary sewer.

Monitoring and Maintenance

See Section 4.6.5.2 System Monitoring and Maintenance for general requirements, in addition to the following.

- A. Observe the water level in the discharge sump to be sure SMP1 is functioning properly. The sump pump is activated by a float switch.
- B. Look inside the post treatment holding barrel and note the water level. If the level is below where the float switch should turn off the pump and the pump is still running, push down on the switch. If the water in the holding barrel exceeds the level where the float switch should turn on the pump and the pump

is not running, pull up on the switch. If the switch still does not operate properly, turn off the pump.

Call the Work Request Center and request pump repairs be completed, if necessary. (See Section 4.6.5.2)

Sampling the System

Routine samples are collected for VOCs only. Other samples may be collected for fuel identification (TPH-FF, EPA Method 8015M) and PCBs (EPA Method 608). Fill two 1L glass amber bottles for each TPH-FF analysis required. Fill one 1L glass bottle for each PCB analysis required.

- A. The "Pre-Treatment" sample is collected at sampling port SP4. Pretreatment samples can also be collected at SP2, for water from EW64-00-1 and from SP3, for water from the discharge sump.
- B. The "Between Canister" sample is collected at sampling port SP5 at the base of canister C1.
- C. The "Post-Treatment" sample is collected at sampling port SP6 at the base of canister C2. This location is referenced as PSP#4 for EBMUD reporting requirements.

4.6.6.8 Building 51L Treatment System

Location and System Description

The Building 51L Treatment System is located at the west side of Building 51A. The location of the system is shown on Figure 4.6-1. A schematic diagram of water flow through the system is shown on Figure 4.6-9.

The system consists of a primary GAC canister and a secondary 55-gallon GAC drum in series and treats the water pumped from extraction wells SB51L-99-1 and EW51L-00-1 and from SB51A-01-8B. Submersible pumps controlled by float switches are used to extract the water. A three-way control switch panel (hand/off/automatic) is located at the treatment system to control operation of the submersible pumps in SB51L-99-1 and EW51L-00-1. An on-off switch controls the pump in SB51A-01-8B. After treatment, the effluent is discharged into the sanitary sewer.

Monitoring and Maintenance

See Section 4.6.5.2 System Monitoring and Maintenance for general requirements.

Sampling the System

- A. The "Pre-Treatment" sample is collected at sampling port SP5.
- B. The "Between Canister" sample is collected at SP6A.

- C. The “Post-Treatment” sample is collected at SP7. This location is referenced as PSP#7 for EBMUD reporting requirements.

4.6.6.9 Building 53 Treatment System

Location and System Description

The Building 53 Treatment System is located on a concrete pad between Building 53 and Building 27. The location of the system is shown on Figure 4.6-1. A schematic diagram of water flow through the system is shown on Figure 4.6-6.

The system treats contaminated groundwater extracted from several locations including extraction well EW53-04-2 and monitoring wells MW52A-98-8B, MW52-95-2B, and MW53-93-16. The system consists of a primary GAC canister and a secondary 55-gallon GAC drum in series. Submersible pumps controlled by float switches are used to extract the water. Three-way control switch panels (hand/off/automatic) control operation of the submersible pumps. After treatment, the effluent is routed from a holding tank to a booster pump that pumps the water into injection well IW27-04-1 and/or a second holding tank east of Building 52. The water is pumped from this holding tank through a second booster pump and injected into wells IW5-04-1, IW5-04-2, and SB52A-98-1. The injected water is used to flush the core and source areas of the Building 52 lobe of groundwater contamination.

Monitoring and Maintenance

See Section 4.6.5.2 System Monitoring and Maintenance for general requirements.

Sampling the System

- A. The “Pre-Treatment” sample is collected at sampling port SP5.
- B. The “Between Canister” sample is collected at SP3.
- C. The “Post-Treatment” sample is collected at SP4.

4.6.6.10 Building 64 Treatment System

Location and System Description

The Building 64 Treatment System is located near the northeast corner of Building 64. The location of the system is shown on Figure 4.6-1. A schematic diagram of water flow through the system is shown on Figure 4.6-7.

The system treats contaminated groundwater extracted from EW64-05-1, EW64-03-1, and SB64-05-4 outside Building 64 and several temporary groundwater sampling points inside the building. The system consists of a primary GAC canister and a secondary 55-gallon GAC drum in series. Submersible pumps controlled by float switches are used to extract the water from EW64-05-1, EW64-03-1, and SB64-05-4.

Three-way control switch panels (hand/off/automatic) control operation of the submersible pumps. A pump inside Building 64 is used to extract the groundwater from the temporary groundwater sampling points inside the building. After treatment, the effluent is routed from a holding tank to a booster pump that pumps the water into injection well IW64-03-1, which is located in the soil flushing injection trench inside Building 64.

Monitoring and Maintenance

See Section 4.6.5.2 System Monitoring and Maintenance for general requirements.

Sampling the System

- A. The "Pre-Treatment" sample is collected at sampling port SP2.
- B. The "Between Canister" sample is collected at SP3.
- C. The "Post-Treatment" sample is collected at SP4.

4.6.6.12 Building 71B Treatment System

Location and System Description

The Building 71B Treatment System is located south of Building 71B. The location of the system is shown on Figure 4.6-1. A schematic diagram of water flow through the system is shown on Figure 4.6-10.

The system treats contaminated groundwater extracted from SB71B-04-1. Water extracted from SB71B-04-2 and MW71B-99-3R has also been treated. The system consists of a primary GAC canister and a secondary 55-gallon GAC drum in series. Submersible pumps controlled by float switches are used to extract the groundwater. A three-way control switch panel (hand/off/automatic) mounted on the retaining wall at the treatment system location controls operation of the submersible pumps. After treatment, the effluent is routed into a gravel filled drain field/ injection area at the east end of Building 71B to flush contaminants from the source area of the Building 71B VOC plume.

Monitoring and Maintenance

See Section 4.6.5.2 System Monitoring and Maintenance for general requirements.

Sampling the System

- A. The "Pre-Treatment" sample is collected at sampling port SP4.
- B. The "Between Canister" sample is collected at SP5.
- C. The "Post-Treatment" sample is collected at SP6.

4.6.7 POST OPERATION

4.6.7.1 Field

All used materials including disposable gloves, *Kim Wipes*, or other replaced components from the treatment system may be disposed of as sanitary waste.

4.6.7.2 Office

Inform the field supervisor of any anomalous conditions observed at the treatment systems and any maintenance/repairs completed or required.

4.6.8 REPORTING

Every six months, LBNL is required to submit a Self-Monitoring Report in accordance with provisions of LBNL's Wastewater Discharge Permit (503-47891) issued by EBMUD. The reports are submitted in March, for the period September through February, and September, for the period March through August. The report describes the operation of the treatment systems and provides the volume of water discharged to the sanitary sewer during each six-month reporting period, based on totalizer readings (total volume discharged by each treatment system as well as the cumulative total for all systems and daily average total value). The analytical laboratory reporting package is included with the Self-Monitoring Report.

4.6.9 REFERENCES

LBNL/Pub 3000 Health and Safety Manual

Operation and Maintenance Procedures for In Situ Soil Flushing

4.6.10 TREATMENT SYSTEM EQUIPMENT CHECK LIST

_____	Keys
_____	Field note book
_____	Filters (5 and 25 μm)
_____	Sample containers
_____	Pen/pencil
_____	Plastic bags
_____	Filter wrench (available at each system)
_____	Kim Wipes or clean towel