

Alternative Stormwater Monitoring Plan

Prepared by:
Environment, Health and Safety Division
Environmental Services Group

September 2009

Revision 1



Ernest Orlando Lawrence Berkeley National Laboratory
Berkeley, CA 94720

This work was supported by the Director, Office of Science, U.S. Department of Energy under Contract Number DE- AC02-05CH11231

Certification


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 ensure 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 the 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 or imprisonment for knowing violations.

Certified By:

Anita Murrah for J. Krupnick Date: October 1, 2010
Jim Krupnick, Associate Laboratory
Director for Operations

Review and Approval

Prepared By:



Date:

09/18/09

Tim Bauters, PhD, PE, Stormwater Program Manager
Golder Associates Inc.
Sunnyvale, California

Reviewed By:




Date:

9/21/09

Ron Pauer, Group Leader
Environmental Services Group
Environment, Health and Safety Division

Approved By:



Date:

9/30/09

Howard Hatayama, Division Director
Environment, Health and Safety Division

Record of Revisions

Revision Number	Description	Section(s)	Date of Revision
Rev. 0	Original Issue	All	1/02/09
Rev. 1	Update	All	9/30/09

Table of Contents

Certification	iii
Review and Approval	iv
Record of Revisions	v
Acronyms	viii
1.0 Introduction.....	1
1.1 Facility Description.....	1
1.2 Report Organization.....	4
2.0 Planned Monitoring Activities.....	5
2.1 Monitoring Location Rationale.....	5
2.2 Quarterly Dry Weather Visual Observations of Authorized NSWDS	8
2.3 Quarterly Dry Weather Visual Observations of Unauthorized NSWDS	9
2.4 Monthly Visual Observations of Stormwater Discharges	9
2.5 Annual Inspection	9
3.0 Sampling and Analyses.....	11
3.1 Basic Analytical Parameters	11
3.2 Sector-Required Analyses.....	11
3.3 Other Suspected Chemicals	12
3.4 Sampling Locations	12
3.5 Sampling Procedures	12
4.0 Record-Keeping and Reporting Procedures	15
4.1 Annual Reporting.....	15
4.2 Supplemental Reporting	15
5.0 Training	17
6.0 Quality Assurance/Quality Control and Program Evaluation.....	19
6.1 Purpose.....	19
6.2 QA/QC Measures.....	19
6.3 Procedures and Schedules.....	20
7.0 References.....	23

Appendix A - Sampling and Inspection Data Forms

Appendix B - Example of Chain-of-Custody Form

List of Tables

Table 3-1: Alternative Stormwater Monitoring Parameters	14
Table 6-1: Parameter Benchmark Values	21

List of Figures

Figure 1-1. Vicinity Map	2
Figure 1-2. LBNL Facility Plan with Buildings, Topography, and Stormwater Monitoring Locations	3
Figure 2-1. Monitoring Location and Surface Water Flow Direction of the Blackberry Parking Lot	6
Figure 2-2. Monitoring Location and Surface Water Flow Direction in Vicinity of Fuel Dispensing Industrial Area	6
Figure 2-3. Monitoring Location and Surface Water Flow Direction in Vicinity of Metal Fabrication and Scrap Recycling Industrial Area	7
Figure 2-4. Monitoring Location and Surface Water Flow Direction in Vicinity of HWHF Industrial Area	7
Figure 2-5. Monitoring Location and Surface Water Flow Direction in Vicinity of the Bus Parking Industrial Area	8
Figure 3-1. Schematic of Some Drop Inlet Details and Their Representative Filter Systems	13

Acronyms

ACSCE	Annual Comprehensive Site Compliance Evaluation
ASTM	American Society for Testing and Materials
ASWMP	Alternative Stormwater Monitoring Plan
AST	Aboveground Storage Tank
BMP	Best Management Practice
COD	Chemical Oxygen Demand
DOE	Department of Energy
DSA	Drum Storage Area
EH&S	Environmental, Health and Safety
ESG	Environmental Services Group
LBNL	Lawrence Berkeley National Laboratory (also Berkeley Lab)
MSL	Mean Sea Level
NPDES	National Pollutant Discharge Elimination System
NSWD	Non-Stormwater Discharge
QA/QC	Quality Assurance and Quality Control
SC	Specific Conductance
SFRWQCB	San Francisco Bay Regional Water Quality Control Board
SIC	Standard Industrial Classification
SM	Standard Methods for the Examination of Water and Wastewater
SWRCB	California State Water Resources Control Board
SWPPP	Stormwater Pollution Prevention Plan
TOG	Total Oil and Grease
TSS	Total Suspended Solids
UC	University of California
USEPA	United States Environmental Protection Agency
WAA	Waste Accumulation Area
WDR	Waste Discharge Requirements

1.0

Introduction

This *Alternative Stormwater Monitoring Plan* (“ASWMP”) has been prepared for the Lawrence Berkeley National Laboratory (LBNL) located at 1 Cyclotron Road in Berkeley and Oakland, Alameda County, California (“the Facility,” Figure 1-1). The ASWMP fulfills the monitoring requirements and monitoring program objectives of the California State Water Resources Control Board (SWRCB) Order No. 97-03-DWQ *National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001 (General Permit), Waste Discharge Requirements (WDRs) for the Discharge of Storm Water Associated with Industrial Activities Excluding Construction Activities* (“General Permit”). This ASWMP has been prepared to provide a more industrial activity-specific indicator of pollutant contributions from regulated activities at LBNL and thus a more reliable basis for evaluating the performance and effectiveness of Best Management Practices (BMPs), as described in the *Stormwater Pollution Prevention Plan* for the Facility (SWPPP; ESG, 2009).

The monitoring program that has historically been implemented at LBNL has focused on larger drainage areas within the Facility, with the result that monitoring results have reflected the combined runoff from regulated and non-regulated areas. Approximately half of LBNL is undeveloped, native terrain, and runoff from these areas is not exposed to any industrial activity. Additionally, the developed areas of the Facility are largely dedicated to basic and applied scientific research (most of which is conducted indoors), with only incidental supporting industrial activity. The ASWMP is specifically designed to focus on the areas of industrial activity, which represent the only potential sources of pollutants that are specifically regulated under the General Permit.

1.1 Facility Description

1.1.1 Facility Location

The Facility occupies approximately 200 acres in Oakland and Berkeley, Alameda County, California (Figure 1-1).

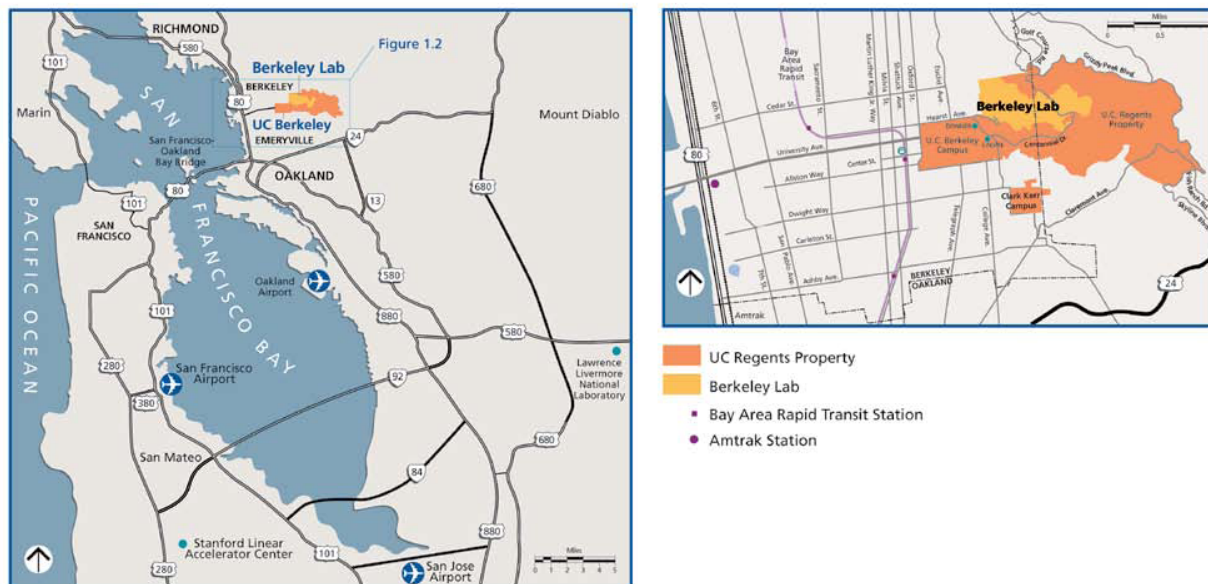


Figure 1-1. Vicinity Map

Eighty permanent buildings at the LBNL facility are used for administrative offices, research and development laboratories; site maintenance and operations activities; a cafeteria; a fire response station; construction trade shops (plumbing, electrical, and mechanical); hazardous waste storage; vehicle fueling and minor maintenance operations; site maintenance operations crew yard; and shipping and receiving, stores, and warehouse activities. Approximately 100 smaller buildings and trailers are used primarily as offices, but also house monitoring stations, emergency generators, and chemical and waste storage facilities. Figure 1-2 shows the overall layout of major buildings and structures at LBNL. Topography at the Facility slopes south to southwest. The ground surface elevations at the Facility range from approximately 500 feet above Mean Sea Level (MSL) to 1,000 feet above MSL.

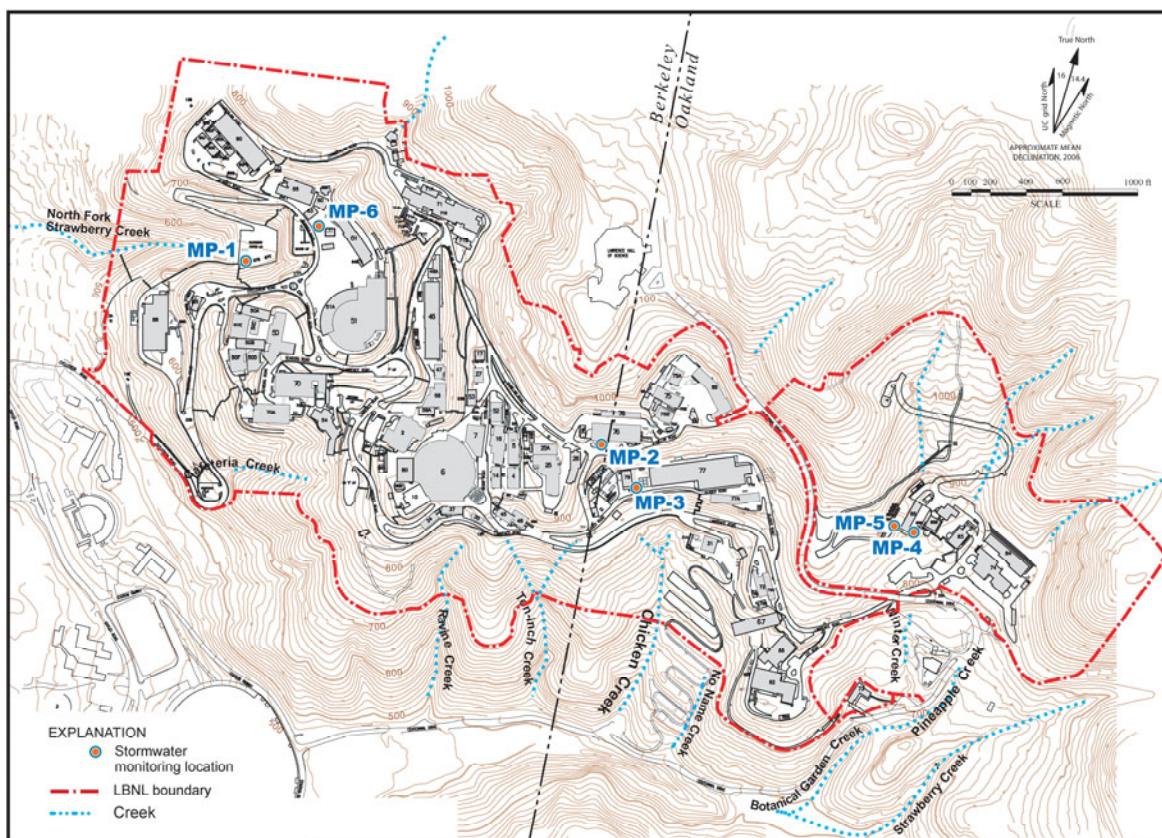


Figure 1-2. LBNL Facility Plan with Buildings, Topography, and Stormwater Monitoring Locations

1.1.2 Facility Operations

The Facility is managed by the University of California (UC) for the United States Department of Energy (DOE) and conducts basic and applied science research. Industrial operations conducted at LBNL to facilitate research include fabrication of metals, transportation services, fueling services, hazardous waste storage and handling, and scrap recycling. The Facility is regulated by the General Permit under Standard Industrial Classifications (SIC):

- 3499 – Fabricated Metal Products, Not Elsewhere Classified
- 4173 – Terminal and Service Facilities for Motor Vehicle Passenger Transportation
- 4953 – Hazardous Waste Treatment Storage or Disposal
- 5093 – Scrap Recycling Facility

A detailed description of the Facility, Facility activities, and stormwater management programs is presented in the SWPPP (ESG, 2009).

1.2 Report Organization

This ASWMP contains:

- 1) A rationale for the monitoring locations.
- 2) A description of planned monitoring activities, locations, and procedures.
- 3) A presentation of the record maintenance and reporting procedures to be followed.
- 4) Stormwater training requirements.
- 5) A presentation of the quality assurance and quality control procedures to be employed in obtaining complete and accurate data collection.

2.0

Planned Monitoring Activities

Monitoring of stormwater discharge and evaluation of the storm drainage system are required under the conditions of the General Permit. This ASWMP has been prepared to achieve the following objectives:

- Verify compliance with discharge prohibitions and limitations specified in the General Permit.
- Aid in evaluating the adequacy of the SWPPP.
- Aid in evaluating the effectiveness of BMPs in removing pollutants in stormwater discharge.
- Support future refinements to the ASWMP and SWPPP as needed to respond to observed conditions at the Facility.

2.1 Monitoring Location Rationale

The ASWMP identifies sample locations at or near pollutant sources where industrial activities regulated by the General Permit have the potential to be exposed to stormwater (Figure 1-2). The objective of the alternative monitoring is to provide equivalent or more accurate measurement of pollutants in stormwater associated with industrial activities, and to evaluate the effectiveness of BMPs in controlling discharges of pollutants in stormwater at these industrial areas. This alternative monitoring is presented in contrast to sampling an entire drainage area, where the stormwater discharge has commingled with stormwater from areas with little or no industrial activity.

Five areas with industrial activities regulated under the General Permit and with the potential for contributions to stormwater pollution were selected for monitoring:

- 1) Previous bus parking and storage at the Blackberry Canyon parking lot (Figure 2-1).
- 2) Fueling area at Building 76 (Figure 2-2).
- 3) Metal fabrication, storage, and scrap recycling at Building 77 and 79 (Figure 2-3).
- 4) Hazardous waste storage and handling at Building 85 (Figure 2-4).
- 5) Bus parking in front of Building 64 (Figure 2-5).

Stormwater monitoring data collected at these locations will be used to assess the effectiveness of the BMPs in controlling pollutants in stormwater from industrial activities across the Facility.

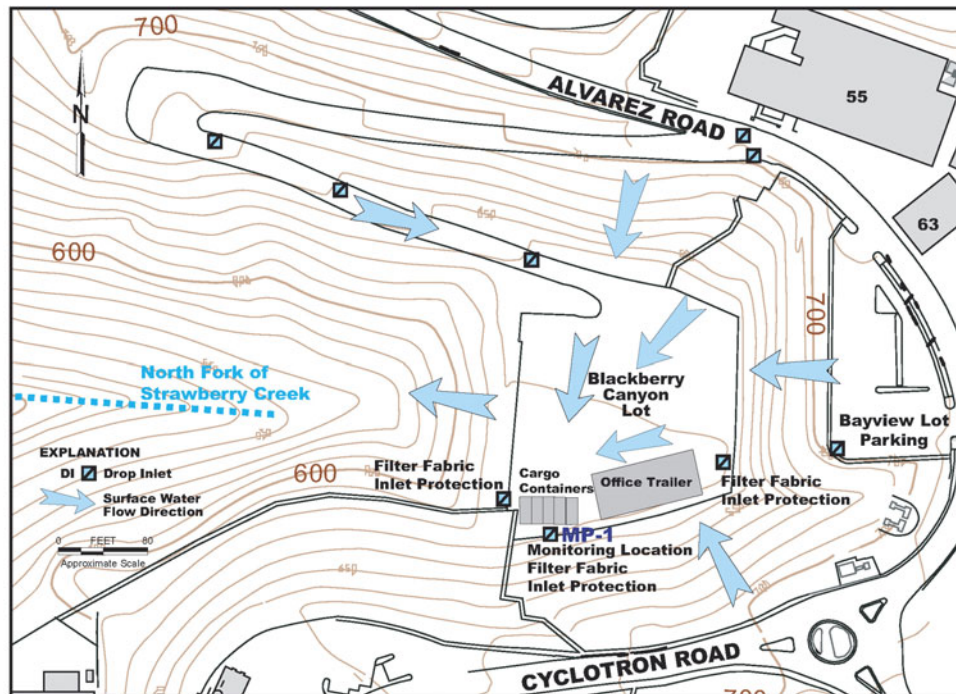


Figure 2-1. Monitoring Location and Surface Water Flow Direction of the Blackberry Parking Lot

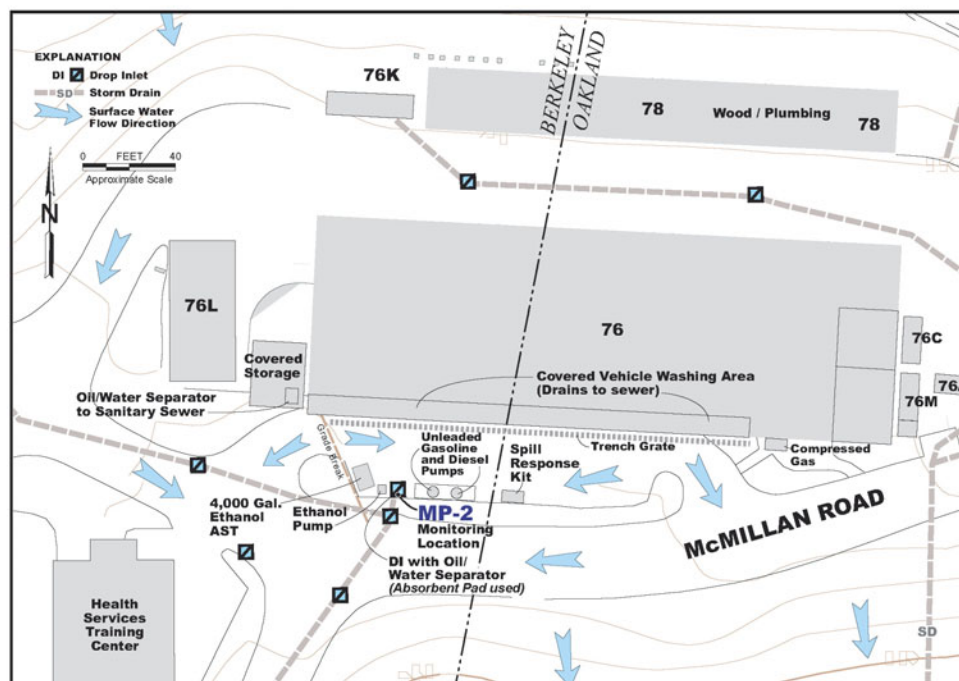


Figure 2-2. Monitoring Location and Surface Water Flow Direction in Vicinity of Fuel Dispensing Industrial Area

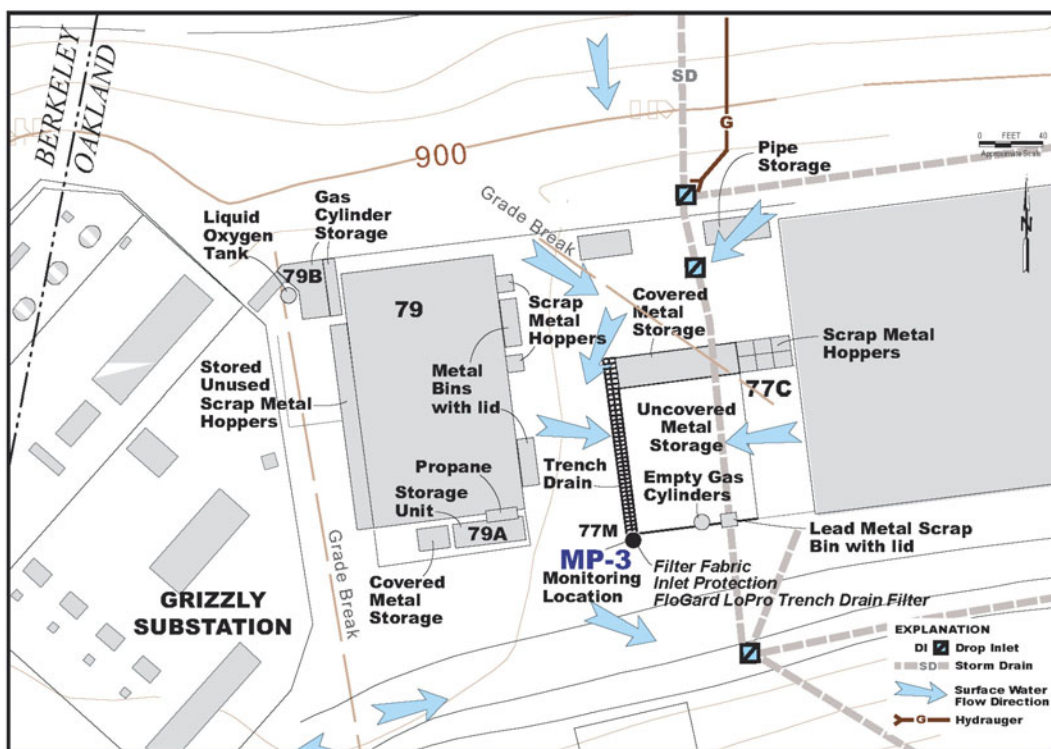


Figure 2-3. Monitoring Location and Surface Water Flow Direction in Vicinity of Metal Fabrication and Scrap Recycling Industrial Area

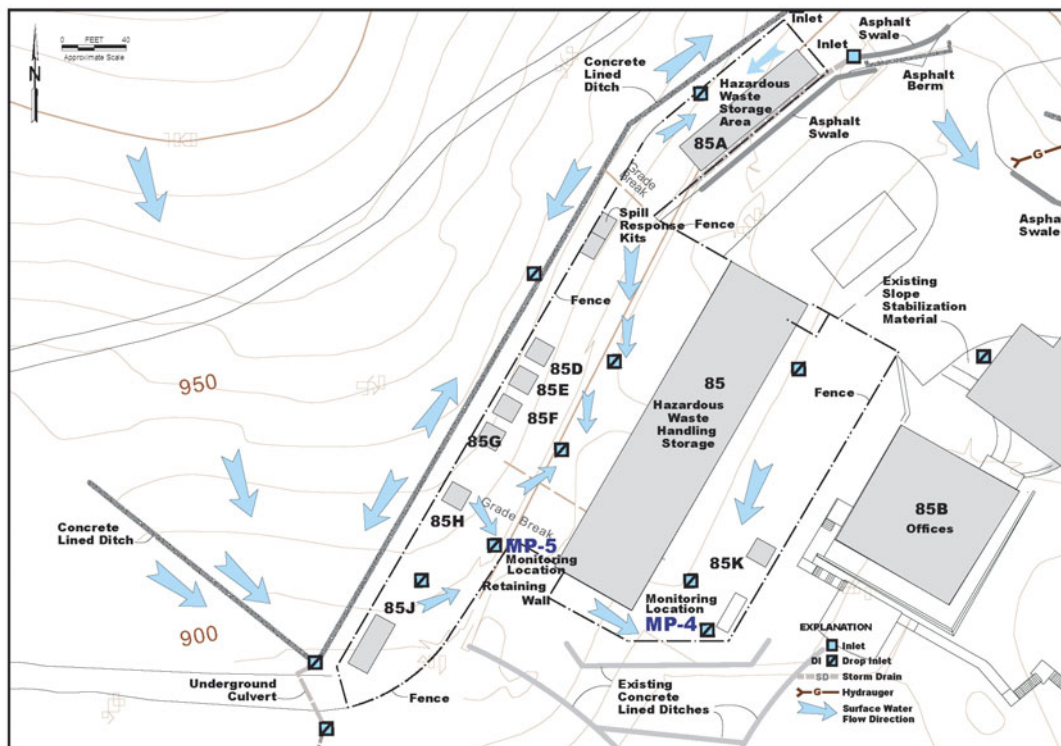


Figure 2-4. Monitoring Location and Surface Water Flow Direction in Vicinity of HWHF Industrial Area

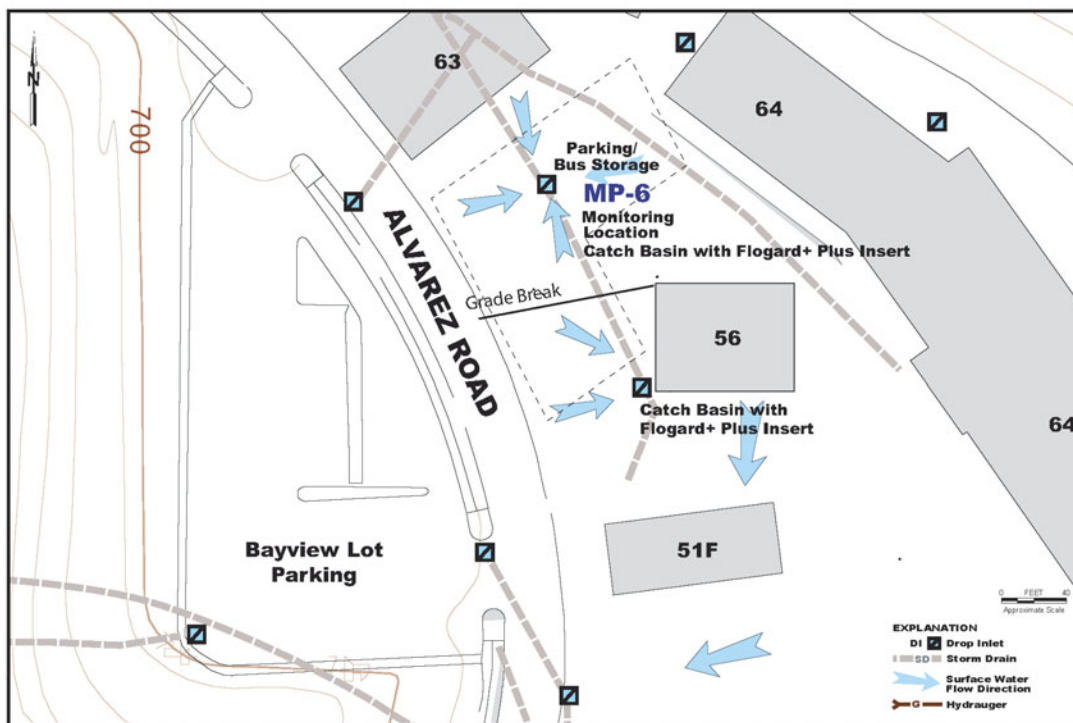


Figure 2-5. Monitoring Location and Surface Water Flow Direction in Vicinity of the Bus Parking Industrial Area

Waste Accumulation Areas (WAAs) and Drum Storage Areas (DSAs) were not selected as monitoring locations at the Facility as they should not be exposed to rainfall due to full or partial covering. Scrap metal hoppers were not selected as sampling locations as they are covered or stored under cover when not in use. Aboveground storage tank (AST) locations were not selected as monitoring locations as the ASTs are double-walled with leak detection and their contents should not be exposed to stormwater.

2.2 Quarterly Dry Weather Visual Observations of Authorized NSWDS

Visual observations will be conducted at each authorized non-stormwater discharge (NSWD) source, impacted drainage area, and discharge location on a quarterly basis. Authorized NSWSD locations identified at the Facility include fire hydrant flushing, landscape watering, water line breaks, safety shower/eyewash testing and operation, air conditioning condensates, groundwater, and utility vault pump-outs, as described in detail in the Facility's SWPPP (ESG, 2009).

The observations will be conducted during daylight hours, dry weather, and scheduled Facility operating hours. The authorized NSWSD inspections will consist of making visual observations of the NSWSD points to verify adequate conveyance to storm drains, absence of soil erosion, and that NSWSDs do not contact materials or equipment with the potential to contain significant quantities of pollutants. The visual observations will be recorded on the Quarterly Visual Observations of Authorized Non-Stormwater Discharges form provided in Appendix A (Form 2).

2.3 Quarterly Dry Weather Visual Observations of Unauthorized NSWDs

Visual observations to identify unauthorized NSWDs will be conducted quarterly during daylight hours, dry weather with no stormwater discharges, and scheduled Facility operating hours. The quarterly visual observations will be conducted during January to March, April to June, July to September, and October to December.

The unauthorized NSWD inspections will consist of making visual observations of the stormwater discharge points to verify the absence of flow in the system and to assess whether there are any visual indications of staining, sludges, odors, or other abnormal conditions. The visual observations will be recorded on the Quarterly Visual Observations of Unauthorized Non-Stormwater Discharges form provided in Appendix A (Form 3).

2.4 Monthly Visual Observations of Stormwater Discharges

Facility operators will visually observe stormwater discharge during one storm event per month during the wet-weather season (October 1 to May 30). Visual observations are only required of stormwater discharges that occur under the following conditions:

- 1) During daylight hours.
- 2) During scheduled Facility operating hours;
- 3) Preceded by at least three working days without stormwater discharges.
- 4) The inspections will be conducted during the first hour of discharge at all discharge locations.

The inspections will include visual observations of stormwater runoff to evaluate the presence of floating or suspended materials, oil and grease, discoloration, turbidity, or other signs of pollutant impact to stormwater runoff. Records will be maintained of observation dates, locations observed, observations, and response taken, if needed, to reduce or prevent pollutants in stormwater discharges. Observations will also be made to assess the proper performance of stormwater collection and diversion structures, e.g., surface drains and concrete lined ditches. The visual observations will be recorded on the Monthly Visual Observations of Stormwater Discharges form provided in Appendix A (Form 4).

2.5 Annual Inspection

Annual inspections will be performed to evaluate compliance with the SWPPP and assess the effectiveness of stormwater management activities. The inspections will identify areas contributing to stormwater discharge associated with industrial activities. The inspections will consist of making visual observations of the storm drain systems, industrial activities, and location around the lower perimeter of the Facility where stormwater discharges into creeks to evaluate whether conditions related to stormwater runoff have changed since preparation of the SWPPP, and to assess compliance with the SWPPP and the General Permit.

The inspections will also allow evaluation of whether additional control measures are needed to reduce pollutants in stormwater discharge.

The BMPs will be inspected to verify that they are functioning and that there are no unauthorized non-stormwater discharges. Records of the inspections will be maintained on the Annual Site Stormwater Inspection Form (Appendix A – Form 5); the annual report includes a certification statement that the Facility complies with the General Permit. The General Manager or his designee will sign the certification.

3.0

Sampling and Analyses

Facility operators will collect stormwater samples from: (1) the first storm event of the wet-weather season starting October 1; and (2) at least one other storm event during the wet-weather season at the six sampling locations. If samples from the first storm event during the wet-weather season are not collected, the Facility operators are still required to collect samples from two other storm events during the wet-weather season. Stormwater samples are to be collected from sample locations as summarized on Figure 1-2 and shown in more detail on Figures 2-1 to 2-5. The samples are required to be collected during normal working hours (0800-1700). The samples are to be collected from storm events meeting the following criteria:

- The storm event is preceded by at least three working days of dry weather.
- The sample is collected during the first hour of runoff.
- The first hour of runoff occurs during normal working hours.

A Facility operator is not required to collect a sample or conduct visual observations under Section B.4 and Section B.5 of the General Permit if weather conditions pose safety risks, e.g., during a lightning storm.

3.1 Basic Analytical Parameters

The General Permit requires the analysis of at least four parameters for stormwater samples at each monitoring location. These parameters are pH, total suspended solids (TSS), specific conductance (SC), and total oil and grease (TOG). Therefore, the stormwater samples will be analyzed for the standard stormwater parameters as stipulated in the General Permit (5.c.i.):

- TSS by Standard Method (SM) 2540D
- pH by SM 4500 H+B
- SC by USEPA Method 120.1
- TOG by USEPA Method 1664 (HEM-SGT)

3.2 Sector-Required Analyses

Based on the SIC codes for specific industrial activities conducted at the Facility, the following sector-required analyses are specified in the General Permit monitoring program:

3499 – Fabricated Metal Products

- Nitrite and Nitrate as nitrogen by USEPA 300.0, 353.2 or SM 4500-NO₃
- Aluminum, Iron, and Zinc by USEPA 200.7/200.8

4953 – Hazardous Waste Treatment Storage or Disposal

- Ammonia by SM 4500 or USEPA 350.1
- Chemical oxygen demand (COD) by USEPA 410.4
- Magnesium by USEPA 200.7
- Arsenic, Cadmium, Lead, Selenium, and Silver by USEPA 200.7/200.8
- Mercury by USEPA 245.1 / 245.2
- Cyanide by USEPA 335.4 or SM 4500-CN-C, D, or E

5093 – Scrap Recycling Facility

- Chemical Oxygen Demand (COD) by USEPA 410.4
- Aluminum, Copper, Iron, Lead, and Zinc by USEPA 200.7/200.8

3.3 Other Suspected Chemicals

Other suspected chemicals in addition to those required under the General Permit have not been identified at the Facility.

3.4 Sampling Locations

Samples will be collected from the Facility at discharge locations where industrial activities have the potential to expose stormwater to pollutants (Figure 1-2). The sample locations have been selected to provide stormwater analytical data that is representative of the industrial activities conducted at the Facility. Stormwater samples will be collected from the monitoring points in accordance with the procedures outlined below.

3.5 Sampling Procedures

Stormwater samples will be collected directly into laboratory-supplied sample containers or collected using a plastic bailer, or dipper and transferred to the laboratory-supplied sample containers. EH&S Procedure 263, Surface Water Sampling Procedure, describes in detail the collection of stormwater samples. A few schematic diagrams of representative drop inlet details are depicted on Figure 3-1. Stormwater samples are collected by lifting the metal protective grate, without disturbing BMPs, if in place, and consequently collecting the stormwater sample.

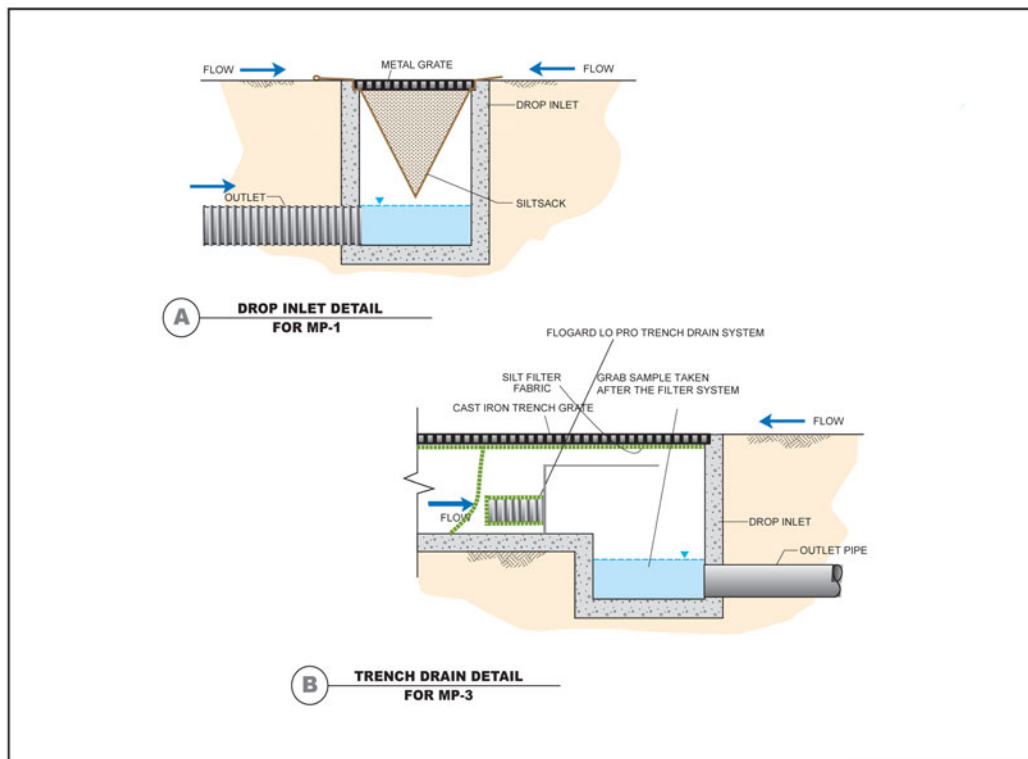


Figure 3-1. Schematic of Some Drop Inlet Details and Their Representative Filter Systems

After collection, the stormwater samples will then be labeled and stored in a chilled cooler until delivery to a California Department of Public Health, Environmental Laboratory Accreditation Program-certified analytical laboratory under the chain-of-custody procedures consistent with the requirements of ASTM D4840; except for the pH measurement which is carried out with field-monitoring equipment. Analytical methods to be employed are listed in Table 3-1. Sampling information and results will be recorded on Form 1 (Appendix A). An example of a chain-of-custody form is included in Appendix B.

PH is measured in the field using a temperature-corrected pH meter, in lieu of analytical laboratory analysis because of short holding times. The pH meter is calibrated and maintained in accordance with the manufacturer's specifications. Calibrations, sample measurements and internal QAQC checks are documented on the appropriate form, in accordance with Facility procedures.

Table 3-1: Alternative Stormwater Monitoring Parameters

Location	Parameter	Method	Minimum Sample Container	Preservative	Hold Time
MP-1	pH	SM4500H+B	1L HDPE	None, cool, <6°C	24 hours
	Specific Conductance	USEPA 120.1			28 days
	Total Suspended Solids	SM 2540D			7 days
	Oil and Grease	USEPA 1664A-HEM	1L Amber Glass	HCl, cool, <6°C	28 days
MP-2	pH	SM4500H+B	1L HDPE	None, cool, <6°C	24 hours
	Specific Conductance	USEPA 120.1			28 days
	Total Suspended Solids	SM 2540D			7 days
	Oil and Grease	USEPA 1664A-HEM	1L Amber Glass	HCl, cool, <6°C	28 days
MP-3	pH	SM4500H+B	1L HDPE	None, cool, <6°C	24 hours
	Specific Conductance	USEPA 120.1			28 days
	Total Suspended Solids	SM 2540D			7 days
	Oil and Grease	USEPA 1664A-HEM	1L Amber Glass	HCl, cool, <6°C	28 days
	Al, Cu, Fe, Pb, Zn	USEPA 200.7/200.8	500 ml HDPE	HNO ₃ , cool, <6°C	6 months
	Nitrite plus Nitrate as Nitrogen	USEPA 300.0, 353.2 or SM 4500-NO ₃	500 ml HDPE	Cool, <6°C; none for USEPA 300.0; H ₂ SO ₄ to pH <2 for USEPA 353.3 or SM 4500-NO ₃	48 hours/ 28 days
	COD	USEPA 410.4	500 ml HDPE	H ₂ SO ₄ , cool, <6°C	28 days
MP-4/ MP-5	pH	SM4500H+B	1L HDPE	None, cool, <6°C	24 hours
	Specific Conductance	USEPA 120.1			28 days
	Total Suspended Solids	SM 2540D			7 days
	Oil and Grease	USEPA 1664A-HEM	1L Amber Glass	HCl, cool, <6°C	28 days
	Ammonia (NH ₃)	SM 4500 or USEPA 350.1	500 ml HDPE	H ₂ SO ₄ , cool, <6°C	28 days
	Cyanide (CN)	USEPA Method 335.4	500 ml HDPE	NaOH pH>12, <6°C	14 days
	Mg	USEPA 200.7	500 ml HDPE	HNO ₃ , cool, <6°C	6 months
	Ag, As, Cd, Pb, Se	USEPA 200.7/200.8			6 months
	Hg	USEPA 245.1 / 245.2			28 days
	COD	USEPA 410.4			28 days
MP-6	pH	SM4500H+B	1L HDPE	None, cool, <6°C	24 hours
	Specific Conductance	USEPA 120.1			28 days
	Total Suspended Solids	SM 2540D			7 days
	Oil and Grease	USEPA 1664A-HEM	1L Amber Glass	HCl, cool, <6°C	28 days

Notes:

USEPA: United States Environmental Protection Agency

SM: Standard Method

ml: Milliliter

L: Liter

H₂SO₄: Sulfuric acid

HCl: Hydrochloric acid

HNO₃: Nitric acid

NaOH: Sodium hydroxide

HDPE: High Density Polyethylene

Al: Aluminum

As: Arsenic

Cd: Cadmium

Cu: Copper

Fe: Iron

Hg: Mercury

Mg: Magnesium

Pb: Lead

Se: Selenium

Zn: Zinc

4.0

Record-Keeping and Reporting Procedures

Records and plans (including this ASWMP and all documents incorporated by reference) are maintained in accessible form by the Environmental, Health, and Safety Division's Environmental Services Group. These records of all inspections and sampling events will be retained in accordance with regulatory and DOE recordkeeping and archival requirements for a period of at least five years.

4.1 Annual Reporting

An Annual Comprehensive Site Compliance Evaluation (ACSCE) will be prepared for submittal to the California Regional Water Quality Control Board – San Francisco Bay Region (SFRWQCB) by July 1 of each year as required by the General Permit. The annual reports shall provide a summary of inspections, sampling events, and stormwater-related maintenance activities conducted during the year. An assessment of permit compliance and planned corrective actions will also be included. Results of chemical analyses and field measurements will be provided in tabular format. Copies of relevant field data forms, chain-of-custody (see Appendix B for example), and laboratory reports will be included in the ACSCE reports.

4.2 Supplemental Reporting

In the event that sampling results indicate a discharge that has caused or contributed to an exceedance of the General Permit requirements, a report will be submitted to the Regional Board within 60 days summarizing the BMPs currently being implemented and additional BMPs that will be implemented to address the exceedance. The report will also include an implementation schedule for the additional BMPs. Following approval of the report, the SWPPP shall be revised to incorporate the additional BMPs and any additional monitoring required within a timely manner, but in no case more than 90 days after the exceedance of the General Permit requirements was known.

5.0

Training

Training is performed as part of the quality control program for the stormwater pollution prevention program at the Facility. Training is required for facility personnel who are responsible for:

- 1) Implementing BMPs and other activities identified in the SWPPP such as bus drivers, construction managers, custodians, excess program laborers, grounds crew, laborers, plant maintenance technicians, plumbers, riggers, and truck drivers.
- 2) Conducting inspections, sampling, and visual observations.
- 3) Managing stormwater.

Training will address topics such as spill response, good housekeeping, material handling procedures, and actions necessary to implement all BMPs identified in the SWPPP. Training is conducted by the Stormwater Program Manager experienced in water quality monitoring and sampling, instrument maintenance and calibration, data management, and the regulatory framework.

The training schedule is identified in the SWPPP, but the Stormwater Management course is given on a monthly basis, and is a biennial requirement for all trained personnel. Training records are maintained by the Stormwater Program Manager and the EH&S training management system. As conditions or parameters change, or the scope of operations increases, additional training will be designed and implemented.

6.0

Quality Assurance/Quality Control and Program Evaluation

6.1 Purpose

This ASWMP has been developed in order to assist in implementing data collection activities and to generate thorough and accurate data. Where possible, this will be accomplished with data collection forms. The forms provide a “fill-in-the-blank” approach so that each item of interest can be addressed during the sampling events and inspections, and if not addressed, an appropriate explanation can be provided. In addition, all Facility inspectors and sampling personnel are trained in the proper sampling methods and documentation.

6.2 QA/QC Measures

This ASWMP is part of the overall environmental compliance program at the Facility. In keeping with the objectives of the ASWMP, the following quality assurance/quality control (QA/QC) measures have been adopted:

- All monitoring is conducted by trained personnel.
- Laboratory reporting limits should be below their respective data quality objectives for the chemicals analyzed.
- All personnel who will be conducting sampling are certified for completion of a training course in stormwater sampling, and the certification is included as part of the individual's training record.
- Records are maintained certifying that all field-monitoring instruments are calibrated and maintained in accordance with manufacturers' instructions and Facility procedures.
- Only state-certified laboratories with approved QA/QC programs for the analysis of samples are used, and such analysis is documented by chain-of-custody forms and laboratory reports (the pH measurement is carried out with field-monitoring equipment because of short holding times).
- Verification of data quality is carried out in accordance with USEPA Data Quality Objectives Guidelines.
- Procedures are initiated by which the Stormwater Program Manager will review activities and confirm that all elements of the ASWMP have been carried out.

The purpose of periodic evaluation is to monitor, in an ongoing and systematic fashion, the effectiveness of the ASWMP in meeting the objectives stated in the General Permit. The General Permit objectives include: (1) producing accurate, representative data on the amount of pollutants, if any, discharged by the Facility in its stormwater runoff; and (2) using the data to demonstrate a reduction in such pollutants due to measures and practices described in the SWPPP.

6.3 Procedures and Schedules

Upon receipt of the laboratory results, the Stormwater Program Manager or designee will review them for completeness and any reduction/increase in chemical concentrations. The Stormwater Program Manager will validate the results and address any unusual or unexpected results (See EH&S Procedure 268 for further detail). During the dry season, the stormwater monitoring activities are limited to the observation of non-stormwater discharge, if any. During the wet season, both the visual observation reporting forms and the results of any sampling analyses will be reviewed. The Stormwater Program Manager will also review the monitoring design to evaluate whether all activities that need to be conducted are in fact carried out.

Since rainfall and stormwater discharge may not occur during regular working hours, emphasis is placed upon collecting samples from at least two storm events per season, including the first storm event meeting permit conditions, if possible. During the dry season, activities will be reviewed once per month to confirm that observations are completed, since there will be no sampling results.

The Stormwater Program Manager shall periodically report the status of stormwater monitoring to the upper management. Any anomalies in monitoring results will be reported immediately. The Stormwater Program Manager will monitor the status of the program by reviewing the data at least once per month.

The records of observations and results of analyses will become part of the permanent record and provide the basis for the ACSCE, which is due to the SFRWQCB on July 1 each year (see EH&S procedure 200 for further details on reporting). The periodic program evaluation is the basis for the annual evaluation of the ASWMP also found in the ACSCE, and for any revisions or amendments to the ASWMP.

To be effective, the ASWMP must collect and present accurate, representative data that characterize the Facility's stormwater runoff. The ultimate goal is to document the reduction in stormwater pollutants that industrial sources at the Facility may be contributing to runoff. If the levels of contaminants decrease or if levels are within acceptable benchmarks as listed in the Table 6-2, this will demonstrate that both the SWPPP and the ASWMP are fulfilling their respective functions; the former by achieving the reduction or elimination of stormwater pollutants through BMPs and the latter by documenting that achievement.

Table 6-1: Parameter Benchmark Values

Parameter	Method	Units	Acceptable Range
pH	SM4500H+B	pH Units	6.0-9.0
Specific Conductance	USEPA 120.1	µmhos/cm	NA
Total Suspended Solids	SM 2540D	mg/l	<100
Oil and Grease	USEPA 1664A-HEM	mg/l	<15
COD	USEPA 410.4	mg/l	<120
Nitrite plus Nitrate as Nitrogen	USEPA 300.0, 353.2 or SM 4500-NO ₃	mg/l	<0.68
Ammonia (NH ₃)	SM 4500 or USEPA 350.1	mg/l	<19
Cyanide (CN)	USEPA Method 335.4	mg/l	<0.0636
Aluminum (Al)	USEPA 200.7/200.8	mg/l	<0.75
Arsenic (As)	USEPA 200.7/200.8	mg/l	<0.17
Cadmium (Cd)	USEPA 200.7/200.8	mg/l	<0.0159
Copper (Cu)	USEPA 200.7/200.8	mg/l	<0.0636
Iron (Fe)	USEPA 200.7/200.8	mg/l	<1.0
Lead (Pb)	USEPA 200.7/200.8	mg/l	<0.0816
Magnesium (Mg)	USEPA 200.7	mg/l	<0.0636
Mercury (Hg)	USEPA 245.1 / 245.2	mg/l	<0.0024
Selenium (Se)	USEPA 200.7/200.8	mg/l	<0.2385
Zinc (zn)	USEPA 200.7/200.8	mg/l	<0.117

Notes:

USEPA: United States Environmental Protection Agency

SM: Standard Method

mg: milligram

µmhos: micromhos

l: liter

cm: centimeter

7.0

References

Environmental Services Group, Lawrence Berkeley National Laboratory, Berkeley, California, *Stormwater Pollution Prevention Plan, Revision 6*, June 2009 (ESG, 2009).

Environmental Services Group, Lawrence Berkeley National Laboratory, Berkeley, California, *Storm Water Discharges Associated with Industrial Activities*, 2008-2009 Annual Report, June 26, 2009 (ESG, 2009).

State Water Resources Control Board (State Water Board), *Water Quality Order No. 97-03-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001 (General Permit), Waste Discharge Requirements (WDRs) For Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities*, Adopted 1997 (SWRCB, 1997).

United States Environmental Protection Agency (USEPA), *Final Modification of the National Pollutant Discharge Elimination Systems (NDPES) Storm Water Multi-Sector General Permit for Industrial Activities; Termination of the EPA NPDES Storm Water Baseline Industrial General Permit*, Washington D.C Federal Register, October 30, 2000 (USEPA, 2000).

APPENDIX A

Sampling and Inspection Data Forms

FORM 1-SAMPLING & ANALYSIS RESULTS

SECOND STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.
- Make additional copies of this form as necessary.

NAME OF PERSON COLLECTING SAMPLE(S):

TITLE:

SIGNATURE:

DESCRIBE DISCHARGE LOCATION	DATE / TIME OF SAMPLE LOCATION	TIME DISCHARGE STARTED	BASIC PARAMETERS				Nitrate+ Nitrite (as N)	Al Fe Zn	Pb	Cu	As Cd Cn*	Mg Hg** Se Ag	NH ₃ (as N)	COD
			pH	TSS	SC	O&G								
MP-1	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM												
MP-2	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM												
MP-3	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM												
MP-4	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM												
MP-5	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM												
MP-6	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM												
TEST REPORTING UNITS:			pH Units	mg/L	µmhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg O/L
TEST METHOD DETECTION LIMIT:			0.01	1.7-7.7	1.0	5.0	0.1	0.05	0.05	0.05	0.005-0.05	0.0002-0.1	0.20	25
TEST METHOD USED:			SM 4500 HB	SM 2540D	USEPA 120.1	USEPA 1664	USEPA 353.2	USEPA 200.7	USEPA 200.7	USEPA 200.7	USEPA 200.7 *335.4	USEPA 200.7 **245.1	USEPA 350.1	USEPA 410.4
ANALYZED BY (SELF/LAB):			SELF	LAB	LAB	LAB	LAB	LAB	LAB	LAB	LAB	LAB	LAB	LAB

Notes: TSS = Total Suspended Solids; SC = Specific Conductance; O&G = Oil & Grease; N = Nitrogen; Al = Aluminum; Fe = Iron; Zn = Zinc; As = Arsenic; Cd = Cadmium; Cn = Cyanide; Cu = Copper; Pb = Lead; Mg = Magnesium; Hg = Mercury; Se = Selenium; Ag = Silver; NH₃ = Ammonia; COD = Chemical Oxygen Demand.

FORM 1-SAMPLING & ANALYSIS RESULTS

SECOND STORM EVENT

If analytical results are less than the detection limit (or non detectable), show the value as less than

the numerical value of the detection limit (example: <.05)

- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank

- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.
- Make additional copies of this form as necessary.

NAME OF PERSON COLLECTING SAMPLE(S):

TITLE:

SIGNATURE:

DESCRIBE DISCHARGE LOCATION	DATE / TIME OF SAMPLE LOCATION	TIME DISCHARGE STARTED	BASIC PARAMETERS				Nitrate+ Nitrite (as N)	Al Fe Zn	Pb	Cu	As Cd Cn*	Mg Hg** Se Ag	NH ₃ (as N)	COD
			pH	TSS	SC	O&G								
MP-1	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM												
MP-2	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM												
MP-3	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM												
MP-4	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM												
MP-5	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM												
MP-6	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM												
TEST REPORTING UNITS:			pH Units	mg/L	µmhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg O/L
TEST METHOD DETECTION LIMIT:			0.01	1.7-7.7	1.0	5.0	0.1	0.05	0.05	0.05	0.005-0.05	0.0002-0.1	0.20	25
TEST METHOD USED:			SM 4500 HB	SM 2540D	USEPA 120.1	USEPA 1664	USEPA 353.2	USEPA 200.7	USEPA 200.7	USEPA 200.7	USEPA 200.7 *335.4	USEPA 200.7 **245.1	USEPA 350.1	USEPA 410.4
ANALYZED BY (SELF/LAB):			SELF	LAB	LAB	LAB	LAB	LAB	LAB	LAB	LAB	LAB	LAB	LAB

Notes: TSS = Total Suspended Solids; SC = Specific Conductance; O&G = Oil & Grease; N = Nitrogen; Al = Aluminum; Fe = Iron; Zn = Zinc; As = Arsenic; Cd = Cadmium; Cn = Cyanide; Cu = Copper; Pb = Lead; Mg = Magnesium; Hg = Mercury; Se = Selenium; Ag = Silver; NH₃ = Ammonia; COD = Chemical Oxygen Demand.

**FORM 2-QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED
NON-STORM WATER DISCHARGES (NSWDs)**

- * Quarterly dry weather visual observations are required of each authorized NSWD.
- Observe each authorized NSWD source, impacted drainage area, and discharge location.

- Authorized NSWDs must meet the conditions provided in Section D (pages 5-6), of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: JULY - SEPTEMBER DATE:	Observers Name: _____ Title: _____ Signature: _____	WERE ANY AUTHORIZED NSWD'S DISCHARGED DURING THIS QUARTER? <input type="checkbox"/> YES If YES , Complete the reverse side of this form <input type="checkbox"/> NO
QUARTER: OCTOBER - DECEMBER DATE:	Observers Name: _____ Title: _____ Signature: _____	WERE ANY AUTHORIZED NSWD'S DISCHARGED DURING THIS QUARTER? <input type="checkbox"/> YES If YES , Complete the reverse side of this form <input type="checkbox"/> NO
QUARTER: JANUARY - MARCH DATE:	Observers Name: _____ Title: _____ Signature: _____	WERE ANY AUTHORIZED NSWD'S DISCHARGED DURING THIS QUARTER? <input type="checkbox"/> YES If YES , Complete the reverse side of this form <input type="checkbox"/> NO
QUARTER: APRIL - JUNE DATE:	Observers Name: _____ Title: _____ Signature: _____	WERE ANY AUTHORIZED NSWD'S DISCHARGED DURING THIS QUARTER? <input type="checkbox"/> YES If YES , Complete the reverse side of this form <input type="checkbox"/> NO

**FORM 2-QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED
NON-STORM WATER DISCHARGES (NSWDs)**

DATE /TIME OF OBSERVATION	SOURCE AND LOCATION OF AUTHORIZED NSWD <u>EXAMPLE:</u> AC Condensate	NAME OF AUTHORIZED NSWD <u>EXAMPLE:</u> Groundwater	DESCRIBE AUTHORIZED NSWD CHARACTERISTICS Indicate whether unauthorized NSWD is clear, cloudy, discolored, causing stains; contains floating objects or an oil sheen, has odors, etc.		DESCRIBE ANY REVISED OR NEW BMPs AND PROVIDE THEIR IMPLEMENTATION DATE
			AT THE NSWD SOURCE	AT THE NSWD AREA & DISCHARGE LOCATION	
<input type="checkbox"/> AM <input type="checkbox"/> PM					
<input type="checkbox"/> AM <input type="checkbox"/> PM					
<input type="checkbox"/> AM <input type="checkbox"/> PM					
<input type="checkbox"/> AM <input type="checkbox"/> PM					

FORM 3-QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

- Unauthorized NSWDS are discharges (such as wash or rinse waters) that do not meet the conditions provided in Section D (pages 5-6) of the General Permit.
- Quarterly visual observations are required to observe current and detect prior unauthorized NSWDS.
- Quarterly visual observations are required during dry weather and at all facility drainage areas.
- Each unauthorized NSWDS source, impacted drainage area, and discharge location must be identified and observed.
- Unauthorized NSWDS that can not be eliminated within 90 days of observation must be reported to the Regional Board in accordance with Section A.10.e of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: <b style="color: blue;">JULY - SEPTEMBER Date/Time of Observations <input type="checkbox"/> AM <input type="checkbox"/> PM	Observers Name: _____ Title: _____ Signature: _____	<div style="display: flex; justify-content: space-between;"> <div> WERE UNAUTHORIZED NSWDS OBSERVED? <input type="checkbox"/> YES <input type="checkbox"/> NO </div> <div> If YES to either question, complete the reverse side of this form </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDS? <input type="checkbox"/> YES <input type="checkbox"/> NO </div> </div>
QUARTER: <b style="color: blue;">OCTOBER -DECEMBER Date/Time of Observations <input type="checkbox"/> AM <input type="checkbox"/> PM	Observers Name: _____ Title: _____ Signature: _____	<div style="display: flex; justify-content: space-between;"> <div> WERE UNAUTHORIZED NSWDS OBSERVED? <input type="checkbox"/> YES <input type="checkbox"/> NO </div> <div> If YES to either question, complete the reverse side of this form </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDS? <input type="checkbox"/> YES <input type="checkbox"/> NO </div> </div>
QUARTER: <b style="color: blue;">JANUARY - MARCH Date/Time of Observations <input type="checkbox"/> AM <input type="checkbox"/> PM	Observers Name: _____ Title: _____ Signature: _____	<div style="display: flex; justify-content: space-between;"> <div> WERE UNAUTHORIZED NSWDS OBSERVED? <input type="checkbox"/> YES <input type="checkbox"/> NO </div> <div> If YES to either question, complete the reverse side of this form </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDS? <input type="checkbox"/> YES <input type="checkbox"/> NO </div> </div>
QUARTER: <b style="color: blue;">APRIL - JUNE Date/Time of Observations <input type="checkbox"/> AM <input type="checkbox"/> PM	Observers Name: _____ Title: _____ Signature: _____	<div style="display: flex; justify-content: space-between;"> <div> WERE UNAUTHORIZED NSWDS OBSERVED? <input type="checkbox"/> YES <input type="checkbox"/> NO </div> <div> If YES to either question, complete the reverse side of this form </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDS? <input type="checkbox"/> YES <input type="checkbox"/> NO </div> </div>

**FORM 3 QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED
NON-STORM WATER DISCHARGES (NSWDs)**

OBSERVATION DATE (FROM REVERSE SIDE)	SOURCE AND LOCATION OF UNAUTHORIZED NSWD <u>EXAMPLE:</u> Sewer discharge	NAME OF UNAUTHORIZED NSWD <u>EXAMPLE:</u> Sewer line Break	DESCRIBE UNAUTHORIZED NSWD CHARACTERISTICS Indicate whether unauthorized NSWD is clear, cloudy, discolored, causing stains; contains floating objects or an oil sheen, has odors, etc.		ACTIONS TO ELIMINATE UNAUTHORIZED NSWD AND TO CLEAN IMPACTED DRAINAGE AREAS. PROVIDE UNAUTHORIZED NSWD ELIMINATION DATE.
			AT THE UNAUTHORIZED NSWD SOURCE	AT THE UNAUTHORIZED NSWD AREA & DISCHARGE LOCATION	
<input type="checkbox"/> AM <input type="checkbox"/> PM					
<input type="checkbox"/> AM <input type="checkbox"/> PM					
<input type="checkbox"/> AM <input type="checkbox"/> PM					
<input type="checkbox"/> AM <input type="checkbox"/> PM					

FORM 4-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES (Continued)

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

OBSERVATION DATE:	Drainage Location Description	North Fork Strawberry Creek Drainage Area	Chicken Creek Drainage Area	East Canyon Drainage Area	Storm Water Sampling Sites (MP1-MP6)
Observer Name:	Observation Time	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM
Title:	Time Storm Event and/or Discharge Began	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM
Signature:	Were Pollutants observed (if YES, complete reverse side)	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO
OBSERVATION DATE:	Drainage Location Description	North Fork Strawberry Creek Drainage Area	Chicken Creek Drainage Area	East Canyon Drainage Area	Storm Water Sampling Sites (MP1-MP6)
Observer Name:	Observation Time	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM
Title:	Time Storm Event and/or Discharge Began	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM
Signature:	Were Pollutants observed (if YES, complete reverse side)	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO
OBSERVATION DATE:	Drainage Location Description	North Fork Strawberry Creek Drainage Area	Chicken Creek Drainage Area	East Canyon Drainage Area	Storm Water Sampling Sites (MP1-MP6)
Observer Name:	Observation Time	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM
Title:	Time Storm Event and/or Discharge Began	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM
Signature:	Were Pollutants observed (if YES, complete reverse side)	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO
OBSERVATION DATE:	Drainage Location Description	North Fork Strawberry Creek Drainage Area	Chicken Creek Drainage Area	East Canyon Drainage Area	Storm Water Sampling Sites (MP1-MP6)
Observer Name:	Observation Time	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM
Title:	Time Storm Event and/or Discharge Began	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM
Signature:	Were Pollutants observed (if YES, complete reverse side)	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO

ND = No significant storm events occurred

NR = Not Required as per SWRCP NPDES General Permit, Section B.4.b

FORM 4-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

DATE/TIME OF OBSERVATION (From Reverse Side)	DRAINAGE AREA DESCRIPTION <u>EXAMPLE:</u> Discharge from material storage Area #2	DESCRIBE STORM WATER DISCHARGE CHARACTERISTICS Indicate whether storm water discharge is clear, cloudy, or discolored; causing staining; containing floating objects or an oil sheen, has odors, etc.	IDENTIFY AND DESCRIBE SOURCE(S) OF POLLUTANTS <u>EXAMPLE:</u> Oil sheen caused by oil dripped by trucks in vehicle maintenance area.	DESCRIBE ANY REVISED OR NEW BMPs AND THEIR DATE OF IMPLEMENTATION
<input type="checkbox"/> AM <input type="checkbox"/> PM				
<input type="checkbox"/> AM <input type="checkbox"/> PM				
<input type="checkbox"/> AM <input type="checkbox"/> PM				
<input type="checkbox"/> AM <input type="checkbox"/> PM				
<input type="checkbox"/> AM <input type="checkbox"/> PM				

FORM 5-ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY BMP STATUS

EVALUATION DATE: _____ INSPECTOR NAME: _____ TITLE: _____ SIGNATURE: _____

EVALUATION DATE: _____ INSPECTOR NAME: _____ TITLE: _____ SIGNATURE: _____

Potential Pollutant Source/Industrial Activity Area	BMP Implementation If YES to either question, complete the next two columns of this form.	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
Loading & Unloading Areas			
Industrial Activity Areas (B76, B77, B79, B85-HWHF)	Have Any BMPs not been Fully Implemented? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Non-Industrial Activity Areas (B69, Site-wide)	Have Any BMPs not been Fully Implemented? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Waste Accumulation Areas (Site-wide)	Have Any BMPs not been Fully Implemented? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Fixed Treatment Units (B25, B70A, B77)	Have Any BMPs not been Fully Implemented? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Material & Storage Use Areas			
Industrial Activity Areas (B76, B77, B79, B85-HWHF)	Have Any BMPs not been Fully Implemented? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Non-Industrial Activity Areas (B69, Site-wide)	Have Any BMPs not been Fully Implemented? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Waste Accumulation & Drum Storage Areas (Site-wide)	Have Any BMPs not been Fully Implemented? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Above Ground Storage Tanks (B25, B70A, B77)	Have Any BMPs not been Fully Implemented? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Metal & Trash Bins (Site-wide)	Have Any BMPs not been Fully Implemented? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Outdoor Equipment-GWTS, Generators, Cooling Towers, (Site-wide)	Have Any BMPs not been Fully Implemented? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No		

FORM 5-ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY BMP STATUS

EVALUATION DATE: _____ INSPECTOR NAME: _____ TITLE: _____ SIGNATURE: _____

EVALUATION DATE: _____ INSPECTOR NAME: _____ TITLE: _____ SIGNATURE: _____

Potential Pollutant Source/Industrial Activity Area	BMP Implementation If YES to either question, complete the next two columns of this form.				Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
Vehicle Washing & Parking Areas						
Fueling Station/Motorpool (B76)	Have Any BMPs not been Fully Implemented?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
	Are Additional/revised BMPs Necessary?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
Fire Station (48)	Have Any BMPs not been Fully Implemented?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
	Are Additional/revised BMPs Necessary?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
Parking Areas (Site-wide)	Have Any BMPs not been Fully Implemented?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
	Are Additional/revised BMPs Necessary?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
Construction & Maintenance Areas						
B10 Site	Have Any BMPs not been Fully Implemented?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
	Are Additional/revised BMPs Necessary?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
B31 Area	Have Any BMPs not been Fully Implemented?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
	Are Additional/revised BMPs Necessary?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
B50 Site	Have Any BMPs not been Fully Implemented?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
	Are Additional/revised BMPs Necessary?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
B51 Site	Have Any BMPs not been Fully Implemented?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
	Are Additional/revised BMPs Necessary?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
Guest House	Have Any BMPs not been Fully Implemented?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
	Are Additional/revised BMPs Necessary?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
Erosion control Measures (Site Wide)	Have Any BMPs not been Fully Implemented?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	
	Are Additional/revised BMPs Necessary?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	

FORM 5-ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY BMP STATUS

EVALUATION DATE: _____ INSPECTOR NAME: _____ TITLE: _____ SIGNATURE: _____

EVALUATION DATE: _____ INSPECTOR NAME: _____ TITLE: _____ SIGNATURE: _____

Potential Pollutant Source/Industrial Activity Area	BMP Implementation If YES to either question, complete the next two columns of this form.	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
Spills & Leaks			
	Have Any BMPs not been Fully Implemented? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Have Any BMPs not been Fully Implemented? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Have Any BMPs not been Fully Implemented? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Have Any BMPs not been Fully Implemented? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No Are Additional/revised BMPs Necessary? <input type="checkbox"/> Yes <input type="checkbox"/> No		

APPENDIX B

Example of Chain-of-Custody Form

U.C. Lawrence Berkeley National Laboratory
1 Cyclotron Road
Berkeley CA 94720

LBNL ENVIRONMENTAL SERVICES GROUP

Chain of Custody

Send Results to: Suying Xu, Mailstop 85B0198
For questions contact John Jelinski, e-mail: JAJelinski@lbl.gov
Phone: 510-486-7616 Fax: 510-486-7034

COC No.: _____ Page ____ of ____

Release Number / DocumentControl No.: _____

Collections: _____

Purpose: Surface Water Monitoring Program-Semiannual Storm Water

Sample Location	Date & Time Sampled	Reference Date/time*	Collection Method	Sample Type	Container Volume & Code** #	Preservative	Analysis Code	Field Sample ID***	Notes to Lab
all sites			composite	aqueous	1 liter PE 1	none	pH-aq:SM4500H+B		
"			composite	aqueous	same container	none	E120.1		
"			composite	aqueous	same container	none	TSS:SM2540D		
all sites			composite	aqueous	1 liter AG 1	HCl	E1664		
MP-3 only			composite	aqueous	500 ml PE 1	none	E200.7:AL, CU, FE, PB, ZN		
MP-3 only			composite	aqueous	250 ml PE 1	H ₂ SO ₄	NO ₃ +NO ₂ (asN):MULT		for E300.0, no preservative
MP-4 & 5 only			composite	aqueous	1 liter PE 1	NaOH	E335.4		
"			composite	aqueous	500 ml PE 1	none	E200.7:Ag, As, Cd, Mg, Pb, Se		
"			composite	aqueous	same container	none	MET-aq:MULT-hg		
MP-4 & 5 only			composite	aqueous	250 ml PE 1	H ₂ SO ₄	Ammonia(asN):MULT		
MP-3, 4 & 5 only			composite	aqueous	500 ml PE 1	none	E410.4		

Total No. of Containers: Shipping Document ID: Turnaround Time****: Lab Name: Sampled By: Special Instructions/Comments:	Relinquished By (Sampler)	Relinquished By	Relinquished By
	Signature _____ Time _____	Signature _____ Time _____	Signature _____ Time _____
	Printed Name _____ Date _____	Printed Name _____ Date _____	Printed Name _____ Date _____
	Company _____	Company _____	Company _____
	Received By	Received By	Received By
	Signature _____ Time _____	Signature _____ Time _____	Signature _____ Time _____
	Printed Name _____ Date _____	Printed Name _____ Date _____	Printed Name _____ Date _____
	Company _____	Company _____	Company _____

*REFERENCE DATE/TIME: Use this value for decay calculations in radiological analyses when applicable **Container Codes: AG = amber glass CG = clear glass PE = polyethylene VV = VOA vi
*** Field Sample ID: If present, use this information as the sample identifier in hard-copy reports (please include Sample Location information in the notes). If blank, and in electronic deliverable files, use Sample Location as the identifier. ****Listed turnaround time is for reporting and is in work days, as defined in the Joint LBNL/LLNL Analytical Services blanket order.