

ATTACHMENT B: Monitoring Program and Reporting Requirements

A. Implementation Schedule

1. All dischargers subject to the General Permit (cite Order No.) shall develop and implement a Construction Site Monitoring Program (CSMP) in accordance with the requirements of this Attachment. The CSMP shall be developed prior to the commencement of construction activities, and revised as necessary to reflect project revisions. The CSMP shall be a part of the Storm Water Pollution Prevention Plan (SWPPP), included as an appendix or separate SWPPP chapter.
2. When a change of ownership occurs for all or any portion of the construction site prior to completion or final stabilization, the new discharger(s) [responsible party(ies)] shall comply with these requirements as of the date the ownership change occurs.

B. Objectives

1. The CSMP shall be developed and implemented to address the following objectives:
 - a. To demonstrate that the site is in compliance with the requirements (e.g. Discharge Prohibitions, Numeric Action Levels (NALs), and Numeric Effluent Limitations (NELs) of this General Permit;
 - b. To determine whether non-visible pollutants that are known or should be known to occur on the construction site are causing or contributing to exceedances of water quality objectives;
 - c. To determine whether immediate corrective actions, additional Best Management Practice (BMP) implementation, or SWPPP revisions are necessary to reduce pollutants in storm water discharges and authorized non-storm water discharges; and
 - d. To determine whether BMPs included in the SWPPP/Rain Event Action Plan (REAP) are effective in preventing or reducing pollutants in storm water discharges and authorized non-storm water discharges.
2. The discharger shall develop a written site-specific CSMP that includes all monitoring procedures and instructions, location maps, forms, and checklists as required in this attachment.

Table 1 - Required Monitoring Elements for Risk Levels

	Visual	Non-visible Pollutant	Effluent	Receiving Water
Risk Level 1			pH, turbidity	Not ever required
Risk Level 2	Three types required: Non-storm Water, Pre-Rain and Post-rain	As needed (see below)	pH, turbidity [if turbidity NEL exceeded, also monitor for SSC]	If any NEL is exceeded
Risk Level 3			pH, turbidity, SSC	Always

C. Visual Monitoring/Inspection Requirements for Non-storm Water Discharges

All dischargers shall refer to Table 2 for applicable visual monitoring (inspection) requirements.

Table 2 - Visual Monitoring/Inspection Requirements by Risk Level

	Non-storm Water	Pre-rain Event	Post-rain Event
Risk Level 1		one inspection within 48 hours of a qualifying rain event	one inspection within 2 days after a qualifying rain event
Risk Level 2	one inspection non-SW quarterly	one inspection within 48 hours of a qualifying rain event, plus photograph	one inspection within 2 days after a qualifying rain event, plus photograph

1. The discharger shall visually observe (inspect) each drainage area for the presence of (or indications of prior) unauthorized and authorized non-storm water discharges and their sources.
2. One visual observation (inspection) shall be conducted quarterly in each of the following periods: January-March, April-June, July-September, and October-December. Visual observation (inspections) are only required during daylight hours (sunrise to sunset).
3. Visual observation (inspections) shall document the presence or evidence of any non-storm water discharge, pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.), and source. The discharger shall maintain on-site records indicating the personnel performing the visual observation (inspections), the dates and approximate time each drainage area and non-storm water discharge was observed, and the response taken to eliminate unauthorized non-storm water discharges and to reduce or prevent pollutants from contacting non-storm water discharges.

D. Visual Monitoring (Inspection) Requirements for Qualifying Rain Events

All dischargers shall refer to Table 2 for applicable visual monitoring (inspection) requirements.

1. The discharger shall visually observe (inspect) storm water discharges at all discharge locations within one business day after each qualifying rain event.
2. The discharger shall visually observe (inspect) the discharge of stored or contained storm water that is derived from and discharged subsequent to a qualifying rain event. Stored or contained storm water that will likely discharge after operating hours due to anticipated precipitation shall be observed prior to the discharge during operating hours.
3. Visual observations (inspections) are only required during daylight hours (sunrise to sunset).
4. The discharger shall record the time and date of any qualifying rain event.
5. Within 48 hours of each qualifying rain event, the discharger shall visually observe (inspect):
 - a. all storm water drainage areas to identify any spills, leaks, or uncontrolled pollutant sources and implement appropriate corrective actions;
 - b. all BMPs to identify whether they have been properly implemented in accordance with the SWPPP/REAP and implement corrective actions; and
 - c. any storm water storage and containment areas to detect leaks and ensure maintenance of adequate freeboard.
6. For the visual observations (inspections) described in D.1 and D.3 above, the discharger shall observe the presence or absence of floating and suspended materials, a sheen on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.
7. Within two business days after each qualifying rain event, the discharger shall conduct post rain event visual observations (inspections) to (1) identify whether BMPs were adequately designed, implemented, and effective, (2) identify additional BMPs and revise the SWPPP accordingly, and, if Risk Level 3, (3) photograph each drainage area discharge location and structural BMPs.
8. The discharger shall maintain on-site records of all visual observations (inspections), personnel performing the observations, observation dates, weather conditions, locations observed, and corrective actions taken in response to the observations.

E. Water Quality Sampling and Analysis

All dischargers shall refer to Table 3 for applicable effluent monitoring requirements and Table 4 for applicable receiving water monitoring requirements.

Table 3 - Storm Water Effluent Monitoring Requirements by Risk Level

	Frequency	Effluent Monitoring (Section E, below)
Risk Level 1	one sample per storm event	turbidity and pH plus non-visible pollutant parameters (if applicable)
Risk Level 2	one sample beginning the first hour of any new discharge ¹ and one sample during the first and last hour of every day of normal operations for the duration of the discharge event	turbidity, pH, and suspended sediment concentration (SSC) ² (only if turbidity NEL exceeded) plus non-visible pollutant parameters (if applicable)
Risk Level 3	one sample beginning the first hour of any new discharge and one sample during the first and last hour of every day of normal operations for the duration of the discharge event	turbidity, pH and SSC plus non-visible pollutant parameters (if applicable)
OR		
continuous at any discharge point where sampling results exceed the turbidity NEL		

¹ A new discharge is defined here as any type of discharge (storm water or non-storm water) that goes beyond the property boundary after at least a 48 hour period of no discharge.

² Suspended Sediment Concentration monitoring is required for any Level 2 site that exceeds its turbidity NEL.

Table 4 - Receiving Water Monitoring Requirements by Risk Level

	Trigger	Receiving Water Monitoring Parameters
Risk Level 1	not required	not required
Risk Level 2	if NEL exceeded, next sampling event shall include RW monitoring	turbidity, pH, and SSC (only if turbidity NEL exceeded),
Risk Level 3	none - all sampling events shall include effluent and receiving water monitoring	turbidity, pH, SSC and bioassessment

1. All dischargers shall collect storm water grab samples from one sampling location in each drainage area beginning the first hour of any new discharge and during the first and last hour of every day of normal operations for the duration of the discharge event.
2. The discharger shall collect samples of stored or contained storm water that is discharged subsequent to a storm event producing precipitation of ½ inch or more at the time of discharge.
3. The storm water grab sample(s) obtained shall be representative of the flow and characteristics of the discharge.

Storm Water Effluent Monitoring Requirements

4. All dischargers shall analyze their effluent samples for:
 - a. pH and turbidity;
 - b. Non-visible pollutant parameters (if applicable) - parameters indicating the presence of pollutants identified in the pollutant source assessment required in Section VII.F.5 contained in the General Permit (the discharger shall modify its CSMP to address these additional parameters in accordance with any updated SWPPP pollutant source assessment); and
 - c. Any additional parameters for which monitoring is required by the Regional Water Board.
5. Risk Level 2 dischargers sites that have violated the turbidity NEL shall analyze subsequent effluent samples for all the parameters specified in Section E.4. and Suspended Sediment Concentration (SSC).

Receiving Water (RW) Monitoring Requirements

6. In the event that a Risk Level 2 discharger violates an NEL contained in this General Permit, the discharger shall subsequently sample RWs for all

parameter(s) required in Section E.4 above for the duration of coverage under this General Permit.

7. Risk Level 3 dischargers shall sample RWs for all parameter(s) required in Section E.4 above.
8. Risk Level 3 dischargers shall conduct or participate in benthic macroinvertebrate bioassessment of RWs prior to commencement of construction activity.
9. The discharger shall obtain RW samples in accordance with the RW sampling location section (Section L), below.

Non-Visible Pollutant Monitoring Requirements

10. Visual observation (inspections) may trigger the requirement to collect samples. Any breach, malfunction, leakage, or spill observed which could result in the discharge of pollutants to surface waters that would not be visually detectable in storm water shall trigger the collection of a sample.
11. Samples shall be collected at all discharge locations that can be safely accessed.
12. A sufficiently large sample of storm water that has not come in contact with the disturbed soil or the materials stored or used on-site (uncontaminated sample) shall be collected for comparison with the discharge sample.
13. Samples shall be collected during the first two hours of discharge from rain events that occur during daylight hours and which generate runoff.
14. The uncontaminated sample shall be compared to the samples of discharge using field analysis or through laboratory analysis.³
15. All field and/or analytical data shall be kept in the SWPPP document.

ATS Monitoring Requirements

16. Any discharger who deploys an ATS on their site shall conduct the following:
 - a. Visual Monitoring
 - i. A designated responsible person shall be on site daily at all times during treatment operations.
 - ii. Daily on-site visual monitoring of the system for proper performance shall be conducted and recorded in the project data log.

³ For laboratory analysis, all sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR Part 136. Field discharge samples shall be collected and analyzed according to the specifications of the manufacturer of the sampling devices employed.

- iii. The log shall include the name and phone number of the person responsible for system operation and monitoring, and shall include documentation of the responsible person's training.
- b. Operational and Compliance Monitoring
- i. Flow shall be continuously monitored and recorded at not greater than 15-minute intervals for total volume treated and discharged.
 - ii. Influent and effluent pH must be continuously monitored and recorded at not greater than 15-minute intervals.
 - iii. Influent and effluent turbidity (expressed in NTU) must be continuously monitored and recorded at not greater than 15-minute intervals.
 - iv. The type and amount of chemical used for pH adjustment, if any, shall be monitored and recorded.
 - v. Dose rate of chemical used in the ATS system (expressed in mg/L) shall be monitored and reported 15-minutes after startup and every 8 hours of operation.
 - vi. Laboratory duplicates – monthly laboratory duplicates for residual coagulant analysis must be performed and records shall be maintained onsite.
 - vii. Effluent shall be monitored and recorded for Residual chemical/additive levels.
 - viii. If a residual chemical/additive test does not exist and the ATS is operating in a batch treatment mode of operation refer to the toxicity monitoring requirements below.
- c. Toxicity Monitoring
- i. A discharger operating in Batch Treatment mode shall perform toxicity testing in accordance with the following:
 - (a). The discharger shall initiate acute toxicity testing on effluent samples representing effluent from each batch prior to discharge⁴. All bioassays shall be sent to a laboratory certified by the Department of Health Services (DHS) Environmental Laboratory Accreditation Program (ELAP). The required field of testing number for Whole Effluent Toxicity (WET) testing is E113⁵.

⁴ This requirement only requires that the test be initiated prior to discharge.

⁵ http://www.dhs.ca.gov/ps/ls/elap/pdf/FOT_Desc.pdf

- (b). Acute toxicity tests shall be conducted with the following species and protocols. The methods to be used in the acute toxicity testing shall be those outlined for a 96-hour acute test in “Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, USEPA-841-R-02-012” for Fathead minnow, *Pimephales promelas* or Rainbow trout, *Oncorhynchus mykiss* may be used as a substitute for fathead minnow.
- (c). All toxicity tests shall meet quality assurance criteria and test acceptability criteria in the most recent versions of the EPA test method for WET testing.

d. Reporting and Recordkeeping

- i. At a minimum, every 30 days a legally responsible official (LRO) representing the discharger shall access the California Information for Water Quality System (CIWQS) database for the project and electronically download field data from the ATS.

e. Non-compliance Reporting

- i. Any indications of toxicity or other violations of water quality objectives shall be reported to the appropriate regulatory agency as required by this General Permit.
- ii. Upon any measurements that exceed water quality standards, the system operator shall immediately notify his supervisor or the Main Office, who shall notify the Regional Water Board.
- iii. If any monitoring data exceeds any applicable NEL in this General Permit, the discharger shall electronically submit a NEL Violation Report in accordance with Section L, below.

F. Storm Water Effluent Sampling Locations

1. The discharger shall perform sampling of storm water discharges from all drainage areas associated with construction activity. The storm water discharge collected and observed shall represent the effluent in each drainage area based on visual observation of the water and upstream conditions. For example, if there has been concrete work recently in an area, or drywall scrap is exposed to the rain, a pH sample shall be taken of drainage from the relevant work area. Similarly, if muddy water is flowing through some parts of a silt fence, samples shall be taken of the muddy water even if most water flowing through the fence is clear.
2. The discharger may monitor and report run-on from surrounding areas if there is reason to believe run-on may contribute to exceedance of NALs or NELs.

3. A discharger who deploys an ATS on their site shall collect ATS effluent samples and measurements from the discharge pipe or another location representative of the nature of the discharge.
4. The discharger shall select analytical test methods from the list provided in Table 5 below.
5. All storm water sample collection preservation and handling shall be conducted in accordance with Section H “Storm Water Sample Collection and Handling Instructions” below.

Receiving Water (RW) Sampling Locations

6. **Upstream/up-gradient RW samples:** the discharger shall obtain any required upstream/up-gradient receiving water samples from a representative location as close as possible and upstream from the effluent discharge point.
7. **Downstream/down-gradient RW samples:** the discharger shall obtain any required downstream/down-gradient receiving water samples from a representative location as close as possible and downstream from the effluent discharge point.
8. If two or more discharge locations discharge to the same receiving water, dischargers may sample the receiving water at a single upstream and downstream location.

Table 5 - Test Methods, Detection Limits, Reporting Units and Applicable NALs/NELs

Parameter	Test Method	Discharge Type	Min. Detection Limit	Reporting Units	Numeric Action Level	Numeric Effluent Limitation
pH	Field test with calibrated paper or portable instrument	All	0.2	pH units	lower NAL = 6.5 upper NAL = 8.5	lower NEL = 6.0 upper NEL = 9.0
Turbidity	EPA 0180.1 and/or field test with portable instrument	For all other than ATS	Not specified	NTU	Use Attach. J	1000 NTU
		For ATS discharges	Not specified	NTU	N/A	10 NTU for Daily Weighted Average & 20 NTU for Any Single Sample
SSC	ASTM Method D 3977-97 ⁶	Risk Level 2 (if NEL exceeded) and all Risk Level 3	5	mg/L	N/A	N/A
Bioassessment	CA Wadable Stream Method ⁷	Risk Level 3	N/A	N/A	N/A	N/A

⁶ ASTM, 1999, Standard Test Method for Determining Sediment Concentration in Water Samples: American Society of Testing and Materials, D 3977-97, Vol. 11.02, pp. 389-394.

⁷ DFG - California Stream Bioassessment Procedure

(Protocol Brief for Biological and Physical/Habitat Assessment in Wadeable Streams) - <http://www.dfg.ca.gov/abl/Field/professionals.PDF>

G. Visual Observation and Sample Collection Exceptions

1. The discharger shall be prepared to collect samples and conduct visual observation (inspections) until the minimum requirements of Sections D and E above are completed. The discharger is not required to physically collect samples or conduct visual observation (inspections) under the following conditions:
 - a. During dangerous weather conditions such as flooding and electrical storms;
 - b. Outside of scheduled site operating hours.
2. If the discharger does not collect the required samples or visual observation (inspections) due to these exceptions, an explanation shall be included in their SWPPP and in the Annual Report why the sampling or visual observation (inspections) were not conducted.

H. Storm Water Sample Collection and Handling Instructions

All dischargers shall refer to Table 5 above for test Methods, detection Limits, and reporting Units.

1. Identify the parameters required for testing and the number of storm water discharge points that will be sampled. Request the laboratory to provide the appropriate number of sample containers, sample container labels, blank chain of custody forms, and sample preservation instructions.
2. Determine how to ship the samples to the laboratory. The testing laboratory should receive samples within 48 hours of the physical sampling (unless otherwise required by the laboratory). Options are to either deliver the samples to the laboratory, arrange to have the laboratory pick them up, or overnight ship them to the laboratory.
3. Use only the sample containers provided by the laboratory to collect and store samples. Use of any other type of containers could contaminate your samples.
4. To prevent sample contamination, do not touch, or put anything into the sample containers before collecting storm water samples.
5. Do not overfill sample containers. Overfilling can change the analytical results.

6. Tightly screw the cap of each sample container without stripping the threads of the cap.
7. Complete and attach a label to each sample container. The label shall identify the date and time of sample collection, the person taking the sample, and the sample collection location or discharge point. The label should also identify any sample containers that have been preserved.
8. Carefully pack sample containers into an ice chest or refrigerator to prevent breakage and maintain temperature during shipment. Remember to place frozen ice packs into shipping container. Samples should be kept as close to 4° C (39° F) as possible until arriving at the laboratory. Do not freeze samples.
9. Complete a Chain of Custody form for each set of samples. The Chain of Custody form shall include the discharger's name, address, and phone number, identification of each sample container and sample collection point, person collecting the samples, the date and time each sample container was filled, and the analysis that is required for each sample container.
10. Upon shipping/delivering the sample containers, obtain both the signatures of the persons relinquishing and receiving the sample containers.
11. The discharger shall designate and train personnel to collect, maintain, and ship samples in accordance with the above sample protocols and good laboratory practices.
12. The discharger should refer to the Surface Water Ambient Monitoring Program's (SWAMP) Quality Assurance Management Plan (QAMP) for more information on sampling collection and analysis. See <http://www.waterboards.ca.gov/swamp/index.html>⁸

I. Monitoring Methods

1. The projects CSMP shall include a description of the following items:
 - a. Visual observation locations, visual observation procedures, and visual observation follow-up and tracking procedures.
 - b. Sampling locations, and sample collection and handling procedures. This shall include detailed procedures for sample collection, storage, preservation, and shipping to the testing lab to assure that consistent

⁸ Additional information regarding QAMP can be found at <http://mpsl.mlml.calstate.edu/swqacompare.htm>.

quality control and quality assurance is maintained. Dischargers shall attach to the monitoring program an example Chain of Custody form used when handling and shipping samples.

- c. Identification of the analytical methods and related method detection limits (if applicable) for each parameter required in Section E above.
2. All sampling and sample preservation shall be in accordance with the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association). All monitoring instruments and equipment (including a discharger's own field instruments for measuring pH and turbidity) shall be calibrated and maintained in accordance with manufacturers' specifications to ensure accurate measurements. All laboratory analyses shall be conducted according to test procedures under 40 CFR Part 136, unless other test procedures have been specified in this General Permit or by the Regional Water Board. With the exception of field analysis conducted by the discharger for turbidity and pH, all analyses shall be sent to and conducted at a laboratory certified for such analyses by the State Department of Health Services. The discharger shall conduct their own field analysis of pH and may conduct their own field analysis of turbidity if the discharger has sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform the field analysis.

J. Analytical Methods

All dischargers shall refer to Table 5 above for test Methods, detection Limits, and reporting Units.

1. **pH:** the discharger shall perform pH analysis on-site with a calibrated pH meter, pH test kit, or wide range pH indicator paper. The Discharger shall record pH monitoring results on paper and retain these records in accordance with Section L, below.
2. **Turbidity:** the discharger shall perform turbidity analysis using a calibrated turbidity meter (turbidimeter), either on-site or at an accredited lab. Acceptable test methods include Standard Method 2130 or USEPA Method 180.1. The results shall be recorded in the site log book in Nephelometric Turbidity Units (NTU).
3. **Suspended sediment concentration (SSC):** the discharger shall perform SSC analysis using ASTM Method D3977-97.

4. **Bioassessment:** the discharger shall perform bioassessment sampling and analysis according to the Department of Fish and Game's California Wadable Stream Method⁹.

K. Watershed Monitoring Option

1. If a discharger is part of a qualified regional watershed-based monitoring program the discharger may be eligible for relief from the requirements in Sections E and F above. The Regional Water Board may approve proposals to substitute an acceptable watershed-based monitoring program by determining if the watershed-based monitoring program will provide substantially similar monitoring information in evaluating discharger compliance with the requirements of this General Permit.

L. Records

1. Records of all storm water monitoring information and copies of all reports (including Annual Reports) required by this General Permit shall be retained for a period of at least three years. They shall be retained on-site while construction is ongoing. These records shall include:
 - a. The date, place, time of facility inspections, sampling, visual observation (inspections), and/or measurements, including precipitation;
 - b. The individual(s) who performed the facility inspections, sampling, visual observation (inspections), and or measurements;
 - c. The date and approximate time of analyses;
 - d. The individual(s) who performed the analyses;
 - e. A summary of all analytical results from the last three years, the method detection limits and reporting units, and the analytical techniques or methods used;
 - f. Quality assurance/quality control records and results;
 - g. Non-storm water discharge inspections and visual observation (inspections) and storm water discharge visual observation records (see Section C and D above);

⁹ DFG - California Stream Bioassessment Procedure (Protocol Brief for Biological and Physical/Habitat Assessment in Wadeable Streams) - <http://www.dfg.ca.gov/abl/Field/professionals.PDF>

- h. Visual observation and sample collection exception records (see Section G above); and
- i. The records of any corrective actions and follow-up activities that resulted from analytical results, visual observation (inspections), or inspections.

L. NEL Violation Report

1. In the event that a discharger samples effluent and it violates an applicable NEL, the discharger shall electronically submit these results to the State Water Board no later than 2 days after the results.
2. The discharger shall certify each NEL Violation Report in accordance with the Standard Provisions for Construction Activity (Attachment I, Sections I and J).
3. The discharger shall retain an electronic or paper copy of each NEL Violation Report for a minimum of three years after the date the annual report is filed.
4. The discharger shall include in the NEL Violation Report:
 - a. a summary and evaluation of all sampling and analysis results, including original laboratory reports;
 - b. the analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as "less than the method detection limit"); and
 - c. the date, place, time of sampling, visual observation (inspections), and/or measurements, including precipitation.

M. NAL Exceedance Report

1. In the event that a discharger samples effluent and it exceeds an applicable NAL, the discharger shall electronically submit these results to the State Water Board no later than 10 days after the results.
2. The discharger shall certify each NAL Exceedance Report in accordance with the Standard Provisions for Construction Activity (Attachment I, Sections I and J).

3. The discharger shall retain an electronic or paper copy of each NAL Exceedance Report for a minimum of three years after the date the annual report is filed.
4. The discharger shall include in the NAL Exceedance Report:
 - a. a summary and evaluation of all sampling and analysis results, including original laboratory reports;
 - b. the analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as "less than the method detection limit"); and
 - c. the date, place, time of sampling, visual observation (inspections), and/or measurements, including precipitation.

N. Annual Report

1. All dischargers shall prepare and electronically submit an Annual Report no later than February 1 of each year.
2. The discharger shall certify each Annual Report in accordance with the Standard Provisions for Construction Activity (Attachment I, Sections I and J).
3. The discharger shall retain an electronic or paper copy of each Annual Report for a minimum of three years after the date the annual report is filed.
4. The discharger shall include in the Annual Report:
 - a. a summary and evaluation of all sampling and analysis results, including original laboratory reports;
 - b. the analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as "less than the method detection limit");
 - c. a summary of all corrective actions taken during the compliance year;
 - d. identification of any compliance activities or corrective actions that were not implemented;
 - e. a summary of all violations of the General Permit;

- f. the individual(s) who performed the facility inspections, sampling, visual observation (inspections), and/or measurements;
- g. the date, place, time of facility inspections, sampling, visual observation (inspections), and/or measurements, including precipitation; and
- h. the visual observation and sample collection exception records and reports specified in Section K.1.h..