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A	Storm Water and Non-Storm Water Discharge Monitoring Plan for Lehigh Southwest Cement Company Facility
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C	California Storm Water Best Management Practices (Source Control)
D	California Storm Water Best Management Practices (Erosion and Sediment Control)
E	Erosion Control Plan Report for Permanente Quarry East Materials Storage Area

Acronyms and Phrases

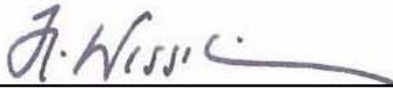
Annual Report	Storm Water Annual Report due by July 1 of each year to the Executive Officer of the RWQCB.
AST	Above-ground Storage Tank
BAAQMD	Bay Area Air Quality Management District
BMP	Best Management Practices
CARB	California Air Resources Board
COD	Chemical Oxygen Demand

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Lehigh	Lehigh Southwest Cement Company
EMSA	East Material Storage Area
EPA	United States Environmental Protection Agency
General Permit	General Industrial Storm Water Permit (Water Quality Order No. 97-03-DWQ) prepared by the State Water Resources Board and by the NPDES (General Permit No. CAS000001)
KACC	Kaiser Aluminum Chemical Corporation
mg/L	milligrams per liter
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Units
POL	Petroleum, Oils, and Lubricants
RWQCB	San Francisco Bay Regional Water Quality Control Board
SMARA	Surface Mining and Reclamation Act
SPCC Plan	Spill Prevention, Control and Countermeasure Plan
SWMP	Storm Water Monitoring Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TSS	Total Suspended Solids
UST	Underground Storage Tank
WMSA	West Material Storage Area
WDID	Waste Discharger Identification

Signed Certification Statement

I certify under penalty of law that this Storm Water Pollution Prevention Plan 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 and imprisonment for knowing violations.



Henrik Wesseling, Plant Manager,
Lehigh Southwest Cement Company – Permanente Plant

Facility WDID Number: 2 43S006267

Waste Discharge Requirements for discharges of storm water associated with industrial activities are authorized by the General Industrial Storm Water Permit (Water Quality Order No. 97-03-DWQ) prepared by the State Water Resources Control Board and by the National Pollutant Discharge Elimination System (General Permit No. CAS000001) prepared by the United States Environmental Protection Agency (EPA) (SWRCB 1997). The General Industrial Storm Water Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP is to be updated as storm water pollution BMPs are improved and implemented. This SWPPP revision (SWPPP15) outlines the latest pollution prevention practices at the Lehigh Southwest Cement Company Facility (Lehigh) and updates the following:

- Description of industrial activities;
- Lehigh's strategy for reducing and preventing storm water pollution;
- Personnel responsible for implementing the SWPPP15 program;
- Revised Storm Water Monitoring Plan;
- Creek Inspection Procedures;
- Updated Reporting Procedures;
- Baseline and Site-specific Industrial BMPs;
- Existing, new, and planned Best Management Practices (BMPs) for reducing and preventing storm water pollution; and,
- Erosion and Sediment Control Measures.

The Storm Water Monitoring Plan (SWMP) is an important component of the SWPPP and is used to verify the effectiveness of the storm water pollution prevention program. A revised SWMP for the Lehigh facility is currently being developed based on the improvements implemented and information obtained during the past year of monitoring. The revised SWMP will focus on source areas identified during the storm water consolidation effort and the effectiveness of the BMPs implemented for the source area identified. This SWMP will include sections describing dry and wet weather inspections, storm water sampling and analysis, and annual evaluations, including logistical information and completion of necessary forms.

The SWPPP15 and SWMP are to be kept at the Lehigh facility, readily available for routine use by facility operators, the public, and regulators. The plans are subject to periodic reviews and updates to meet the latest needs and changes at the Lehigh facility.

Lehigh operates a cement manufacturing facility just west of Cupertino, California (Figure 1). Lehigh operations include an active quarry, conveyor systems to transport rock and raw materials to the cement plant, several crushers and mills, a pre-calcining tower, and a rotary cement kiln. The site layout is shown on Figure 2.

On August 10, 1995, Lehigh purchased the adjacent property formerly owned by Kaiser Aluminum Chemical Corporation (KACC). This site has been abandoned since 1991 and there are no current plans for manufacturing activities at this site. On March 5, 1997, Lehigh formally requested that the former KACC Waste Discharger Identification (WDID) Number be incorporated into Lehigh's WDID Number for the 1996/1997 Annual Report. On March 25, 1997, the SWRCB informed Lehigh that this request was approved and, therefore, the former KACC area is covered under this plan.

All of the Lehigh operations are confined to the Permanente Canyon situated on a northwest-southeast axis. Lehigh occupies a portion of the upper watershed of Permanente Creek (the Creek), covering approximately 3,500 acres. The Creek is a natural stream that rises in the higher elevations of the Coast Range and flows eastward until it reaches the floor of the Santa Clara Valley (approximately where the Creek crosses the I-280 freeway). The Lehigh facility consists of six drainage areas, which are shown on Figure 3. The general flow within each drainage area, and discharge locations into the Creek are also shown on Figure 3. Impacts to the Creek by sediment loading are of prime concern to Lehigh and are the focus of this SWPPP15.

The general strategy of the storm water pollution prevention program at Lehigh consists of the interaction among four basic program components:

- A Pollution Prevention Team, led by Henrik Wesseling, responsible for implementing and updating the program;
- Best Management Practices (BMPs) (both Baseline and Site-specific) for General Industrial Activities;
- Erosion Control Measures for minimizing sediment load to the Creek; and,
- Storm Water Monitoring and Creek Inspections to evaluate the effectiveness of Industrial BMPs and Erosion Control Measures.

Table 3-1 below outlines the general strategy for preventing storm water pollution at Lehigh in terms of goal, strategy, objectives, and actions. The goal is the desired result of the program. The strategy is a list of tactical elements necessary for achieving the goal. Each tactical element is supported by the following: 1) objectives, which are the building blocks of the goal; and, 2) actions, which are the specific tasks to be achieved.

**Table 3-1
Program Strategy
Storm Water Pollution Prevention Program
Lehigh Southwest Cement Company**

GOAL		
Comply with storm water regulations per the California General Industrial Activities Storm Water Permit under the Clean Water Act		
Strategy	Objectives	Actions
Prepare SWPPP15 and SWMP.	Meet permit requirements for SWPPP15 and SWMP. Establish a program for preventing storm water and non-storm water discharge pollution. Establish discussion among Lehigh, the regulators, and the public on storm water issues.	Identify potential sources of pollution to storm water. Implement existing BMPs to minimize each potential source(s) of pollution, and design new BMPs as required to improve pollution prevention plan. Design an inspection and sampling program to monitor the effectiveness of the BMPs. The inspection and sampling program is detailed in the Annual Report.

Table 3-1
Program Strategy
Storm Water Pollution Prevention Program
Lehigh Southwest Cement Company

GOAL		
Comply with storm water regulations per the California General Industrial Activities Storm Water Permit under the Clean Water Act		
Strategy	Objectives	Actions
Train Lehigh personnel on SWPPP15 program.	<p>Ensure that personnel understand the importance of storm water prevention measures.</p> <p>Ensure that personnel are aware of storm pollution sources and of the means for preventing it.</p> <p>Establish communication channels between facility program manager and Lehigh facility operators to address storm water pollution issues.</p>	<p>Conduct initial training workshop to teach specific BMPs for industrial activities.</p> <p>Conduct a follow-up investigation to ascertain proper use of BMPs and to address questions.</p> <p>Develop a reporting procedure and develop a line of communication in case of an unforeseen release.</p>
Monitor potential pollution to storm water.	<p>Confirm the effectiveness of erosion control measures and BMPs.</p> <p>Ensure that the SWPPP15 addressed all storm water and non-storm water pollution sources.</p> <p>Obtain information necessary to modify the SWPPP15 or SWMP.</p>	<p>Conduct dry season inspections per SWPPP15.</p> <p>Conduct wet season inspections and quarterly non-storm water discharge visual observations per SWPPP15.</p> <p>Conduct sampling and analyses per SWMP. The SWMP results are presented in the Annual Report.</p>
Evaluate and update storm and water pollution prevention program based on the overall effectiveness of the program.	Identify needs to update SWPPP15 and SWMP for the next calendar year.	Evaluate the results of inspections and sampling to determine if erosion control measures and BMPs are adequately addressed by the SWPPP15 and SWMP. Modify program as appropriate to increase its effectiveness.
Report to San Francisco Bay Regional Water Quality Control Board (RWQCB).	Comply with reporting requirements.	<p>Submit SWPPP by July 1 of each year.</p> <p>Submit Annual Report to RWQCB by July 1 of each year.</p> <p>Utilize the California Annual Report Form and attached sampling results, field forms, and explanation test.</p>

SWPPP15 = Storm Water Pollution Prevention Plan Revised February 2010

SWMP = Storm Water Monitoring Plan

BMPs = Best Management Practices

RWQCB = San Francisco Bay Regional Water Quality Control Board

3.1 POLLUTION PREVENTION TEAM

Planning and organization are critical to the success of the SWPPP. The Lehigh Southwest Cement Company Pollution Prevention Team (the Team) is led by Henrik Wesseling, Plant Manager, and has been designated for assuring the successful implementation of SWPPP15 at the Lehigh facility. Mr. Wesseling will ensure the proper implementation of BMPs, sediment and erosion control measures, monitoring schedules, and inspection programs. The Environmental Manager, Scott Renfrew, is the Storm Water Inspection Coordinator responsible for the Creek Inspection Program. His duties include making sure that the Creek inspections are performed properly, assuring that accurate records are maintained and reporting potential problems to the Team Leader (Henrik Wesseling). All employees at the cement plant are part of the Team, and are responsible for immediately reporting to the Team Leader or the Coordinator any potential problems they may observe. Table 3-2 lists the role of the Pollution Team Leader and describes his interaction with the site representatives.

Table 3-2
Responsibilities of Pollution Prevention Team Leader
Lehigh Southwest Cement Company

Responsibilities	
1.	Read and understand the entire SWPPP15 and SWMP. Ensure that Lehigh representatives receive the appropriate sections for their area and understand their responsibilities.
2.	Keep facility representatives informed of pollution prevention and monitoring requirements.
3.	Conduct periodic erosion control measures and BMP inspections to ensure that they are being implemented correctly and to identify additional erosion control measures and/or BMPs as necessary.
4.	Coordinate the daily dry-season and wet season inspections annually to monitor the presence of non-storm water discharges.
5.	Oversee preparation of the Annual Report and ensure its submittal by July 1 of each year.
6.	Maintain and update SWPPP15 and SWMP, as required.
7.	Serve as interface with outside parties (e.g., the public and regulatory agencies) on storm water issues.
8.	Coordinate sampling team efforts and ensure that they collect samples at least twice during the wet season in accordance with the SWMP.

Notes:

Henrik Wesseling is the Lehigh Southwest Cement Company Pollution Prevention Team Leader.

3.2 MONITORING PROGRAM

3.2.1 Storm Water Monitoring

The purpose of the SWMP at the Lehigh facility is to evaluate the amount of sediment contained in storm water runoff entering the Creek due to quarry and facility operations. Storm water monitoring at the Lehigh facility is required by the Clean Water Act (USEPA 2008), and is

overseen by the San Francisco Bay Regional Water Quality Control Board (RWQCB), and has been on-going at the facility since January 1996. The details and results of the SWMP are presented in the Annual Reports for the Lehigh facility. The samples are analyzed for total suspended solids (TSS), oil and grease, chemical oxygen demand (COD), pH, and specific conductance.

Historically, up to 45 samples were collected during storm water events to monitor the storm water discharge from potential sources. Since the commencement of the SWMP in 1996, the Lehigh facility has undergone several modifications including facility layout, sediment pond configuration, etc, that has led to many storm water sample locations being discontinued. The current and historic SWMP sampling locations are summarized below in Table 3-3. The historic and current storm water sampling locations are shown on Figures 4 and 5, respectively.

Table 3-3
Current and Historic Storm Water Sampling Locations
Lehigh Southwest Cement Company

Storm Water Monitoring ID	Sampling Location:	Potential Source Area(s):
1) SL-BG-CR (Discontinued)	Background creek sample.	Sediments in creek before entering Quarry area of influence.
2) SL-1-CR	Upstream creek sample south of Overburden Stockpile (NW corner of facility).	Sediments in creek south of Overburden Stockpile.
3) SL-2-RD	Upper Quarry Road before Pond 5.	Runoff from Upper Quarry Road.
4) SL-3A-RD (Discontinued)	Inlet to Pond 5 from area north of pond.	Runoff from area north of Pond 5.
5) SL-3-PD (Discontinued)	Effluent from Pond 5 - the Quarry Settlement Pond.	Runoff from Upper Quarry Road.
6) SL-4-CR	Downstream of Overburden Stockpiles before concrete footing.	Former Overburden Stockpiles.
7) SL-4A1-RD	Inlet to Pond 4A (east end).	Runoff from Upper/Middle Quarry Road.
8) SL-4A2-RD (Discontinued)	Inlet to Pond 4A (west end).	Runoff from Upper/Middle Quarry Road.
9) SL-4A3-PD	Effluent from Pond 4A.	Runoff from Upper/Middle Quarry Road.
10) SL-4B (Discontinued)	Inlet to Pond 4B.	Runoff from Upper/Middle Quarry Road.
11) SL-4B2-PD (Discontinued)	Effluent from Pond 4B.	Runoff from Upper/Middle Quarry Road.
12) SL-4C2-PD (Discontinued)	Effluent from Pond 4C.	Runoff from Upper/Middle Quarry Road.
13) SL-5-CR	Ore Feeder and the Primary Crusher.	Upstream of runoff from the Primary Crusher.
14) SL-5A-CR (Discontinued)	Creek sample - downstream of Ponds 4 & 4A.	Natural Erosion and Runoff from Ponds 4 & 4A.

**Table 3-3
Current and Historic Storm Water Sampling Locations
Lehigh Southwest Cement Company**

Storm Water Monitoring ID	Sampling Location:	Potential Source Area(s):
15) SL-6-RD	Runoff along side of Upper Quarry Road.	Upper Quarry Road.
16) SL-7 (Discontinued)	Middle/Upper Quarry Road after Pond 5.	Runoff from Upper/Middle Quarry Road after Pond 5 but before the Primary Crusher at the inlet to the overflow pipe.
17) SL-8 (Discontinued)	Ore Feeder to the Primary Crusher.	Runoff from the Ore Feeder to the Primary Crusher.
18) SL-9 (Discontinued)	Primary Crusher.	Runoff from the Primary Crusher.
19) SL-10 (Discontinued)	Ore Feeder and the Primary Crusher.	Downstream from the Primary Crusher before the Quarry Pit Discharge.
20) SL-11-CR	Inlet to Pond 13.	Primary Crusher.
21) SL-12-PD and duplicate (SL-D12-PD)	Outlet of Pond 13.	Primary Crusher.
22) SL-13-PD	Inlet to Pond 13 from Pond 13B.	Primary Crusher.
23) SL-13A-RD	Inlet to Pond 13A.	Primary Crusher.
24) SL-13B-PD (Discontinued)	Inlet to Pond 13B from Pond 13A.	Primary Crusher.
25) SL-13D	Duplicate of SL-13.	Primary Crusher.
26) SL-14-CR	Screen Tower Number 4 (under bridge).	Upstream of Screen Tower Number 4.
27) SL-15-CR	Creek sample at creek embankment below Screen Tower 4	Downstream of Screen Tower Number 4.
28) SL-16A-RD	Inlet to Pond 9 (from culvert under Lower Quarry Road).	Runoff from Rock Plant Road originating after the Primary Crusher.
29) SL-16B-RD	Inlet to Pond 9 (from eastern culvert from Middle Quarry Road).	Runoff from Lower Quarry Road originating after the Primary Crusher.
30) SL-17-PD	Effluent from Pond 9.	Runoff from Lower Quarry Road originating after the Primary Crusher.
31) SL-18-RD	Lower Quarry Road (runoff on road, if any, down-hill of Pond 9).	Runoff from Lower Quarry Road after the drop inlet to Pond 9.
32) SL-19-PD (Discontinued)	Effluent from Dinky Shed Basin	Effluent from the Dinky Shed Basin
33) SL-20-RD	Inlet to Pond 17 at Rock Plant 2.	Screen Tower Number 4.
34) SL-21-PD	Outlet of Pond 17 at Rock Plant 2 (from the last point near effluent pipe or pump if no discharge).	Screen Tower Number 4.

Table 3-3
Current and Historic Storm Water Sampling Locations
Lehigh Southwest Cement Company

Storm Water Monitoring ID	Sampling Location:	Potential Source Area(s):
35) SL-22A-CR	Downstream of Dinky Shed Basin. Upstream of hillside runoff.	Effluent from the Dinky Shed Basin if Dinky Shed Basin is discharging.
36) SL-22B-CR	Downstream of Dinky Shed Basin and downstream of hillside runoff behind the shed.	Hillside runoff observed on 11/19/99.
37) SL-23-CR	Creek Sample along Railroad tracks.	Runoff from the main plant area, parking lot, car wash.
38) SL-24-PD (Discontinued)	Outlet of Pond 21 along railroad tracks.	Runoff from the main plant area, parking lot, car wash.
39) SL-25-CR and duplicate (SL-D25-CR)	Inlet to Pond 22.	Runoff from the main plant area, parking lot, car wash.
40) SL-26-PD and duplicate (SL-D26-PD)	Effluent of Pond 22.	Treatment of all sources that originate either upstream or from the Lehigh facility
41) SL-27-PD and duplicate (SL-D27-PD)	Effluent from Pond 14.	Treatment of all sources that originate either upstream or from the Lehigh facility.

3.2.2 Overburden Stockpile Area (Pre-SMARA Slope)

The low point in the unpaved access road running across the Overburden Stockpile Area slope above Permanente Creek and below Upper Quarry Road causes runoff to discharge over the slope. Lehigh has placed a number of large rocks in this outfall to mitigate the potential erosion and instability. In addition, a second drainage outlet was added in the road berm located further to the east that discharges surface water to the head of a natural channel. Both of these surface water collection locations will be monitored as part of the site's SWMP inspection program to control runoff from the access road running across the south facing pre-SMARA slope. The mitigation measures will be inspected and evaluated for effectiveness to and will be modified, as necessary.

These areas are shown on Figure 6, and will be inspected twice yearly on the same day that the Permanente Creek storm water sampling occurs. Inspections will be documented in writing and submitted with the Annual Report.

3.2.3 Material Storage Areas

Lehigh will continue to monitor the West Material Storage Area (WMSA) and East Material Storage Area (EMSA) for stability and erosion control. A small cross slope drainage swale will be constructed in the eastern portion of the WMSA to re-direct runoff away from the closed depression at the toe of the slope and into a natural drainage channel.

These areas are identified on Figure 6 and will be inspected twice yearly on the same day that the Permanente Creek storm water sampling occurs. Inspections will be conducted by Lehigh staff, documented in writing, and submitted with the Annual Report.

3.2.4 Authorized Non-Storm Water Discharge Monitoring

Three sources of non-storm water discharge are authorized under the General Permit (Special Conditions) at Lehigh. These sources include: 1) dust suppression water spray applied to Lower Quarry Road, Rock Plant Road, and the lower entrance/exit road to the Rock Plant, 2) wash-down water spray applied to the upper exit road at the Rock Plant, and 3) quarry dewatering discharges. Water spray is applied on Lower Quarry Road, Rock Plant Road and the lower entrance/exit road to the Rock Plant using a water truck, and at the Rock Plant using a permanently installed sprinkler system. Dust suppression water spray is applied to the above referenced site haul roads once daily in the morning, and wash-down water spray is applied at the Rock Plant once daily in the afternoon. The authorized non-storm water discharges associated with dust suppression water spray and wash down water are restricted in volume due to their limited application rates, and thus, do not contain significant quantities of suspended solids.

Authorized non-storm water discharges from these dust suppression and wash down water spray sources are routed to existing off-stream retention Ponds 9 and 17 (i.e., structural BMPs). Effluent from Ponds 9 and 17 flows directly into Permanente Creek. It was demonstrated in June 2004 that there was no adverse impact to water quality in Permanente Creek as a result of the two authorized non-storm water discharges. Analyses of TSS of water samples collected in Permanente Creek immediately up-stream of Pond 9 and down-stream of Pond 17 reported no difference in concentration within the laboratory reporting limits of 10 mg/L and below. Ponds 9 and 17 were shown to be effective BMPs in removing TSS from non-storm water discharges.

Authorized non-storm water discharges from quarry dewatering consist of storm water and groundwater collected at the bottom of the quarry (the quarry bottom also acts as a sediment control pond under the SWPPP as described in Section 6.2) and pumped into Pond 4 to reduce suspended sediment, from which this water is discharged to Permanente Creek. Water from the quarry is pumped by a two-storage system through a 10-inch diameter Drisco pipe that ascends the South wall of the quarry from the quarry bottom and descends the south facing slope to Pond 4. The pumping system is monitored by an in-line turbidity meter that automatically shuts down the pumps at 30 NTUs.

To document the existence of authorized non-storm water discharges and the inspections for unauthorized non-storm water discharges, Lehigh has implemented a non-storm water discharge visual monitoring program in accordance with the General Permit, Section B.3. (Non-Storm Water Discharge Visual Observations) since July 1, 2004. The following elements were incorporated into the monitoring program and details of the non-storm water discharge monitoring program are presented in Appendix A of this report.

- **Observations:** Visually observe all drainage areas for the presence of unauthorized non-storm water discharges, and visually observe authorized non-storm water discharges and their sources.

- **Schedule:** Non-storm water discharge visual monitoring shall occur quarterly, during daylight hours, on days with no storm water discharges, and during scheduled facility operating hours. For the purpose of non-storm water discharge visual monitoring, quarterly observations shall be conducted during the following periods: January through March, April through June, July through September, and October through December. Lehigh shall conduct quarterly visual observations within 6 to 18 weeks of one another. The quarterly observations will determine if the BMPs implemented are effective.
- **Documentation:** Visual observations shall document the presence of any discoloration, stains, odors, floating materials, etc. as well as the source of any discharge. Records will be maintained of the visual observation dates, locations observed, observations, and the response taken to eliminate unauthorized non-storm water discharges and to reduce or prevent pollutants from contacting non-storm water discharges.
- **Reporting:** Visual observations have been reported annually in the SWPPP and Annual Report since the 2004/2005 season. Authorized non-storm water discharges are reported and described in the Annual Report.

3.3 CREEK AND POND INSPECTION PROCEDURES

As part of the pollution prevention program implemented at the Lehigh facility, visual inspections of Permanente Creek are performed at six locations: the quarry storm water and groundwater dewatering discharge point at Pond 4, Pond 13, the area adjacent to the Rock Plant, the area adjacent to Dinky Shed Basin, the creek below Screen Tower #4, and Pond 22. The inspector records the date, time, name of the inspector, and a description of the visual observations on one of four “Daily Creek Inspection Forms”. The inspection forms cover inspection of locations along Permanente Creek for key visual observations of water quality parameters, under both wet and dry season conditions as well as inspections of key retention ponds. The forms are completed by designated staff from the Yard, Quarry, Rock Plant, and Control Room for designated segments along the creek, and are included in the Annual Report.

The following describes the location and recording procedure at each location:

1. **Quarry in-line flow meter and Ponds 4 and 13 discharge:** Lehigh staff conducts inspections at the quarry in-line flow meter and quarry groundwater dewatering discharge point at Pond 4, and at the discharge point from Pond 13. The quarry supervisor or a designated staff member performs the inspection on a daily basis and records the values on the “Daily Creek Inspection Form: Quarry Staff”. When the quarry is discharging water to the Creek from Pond 4, the discharge is controlled by the in-line turbidity meter that automatically shuts off the discharge at 30 NTUs.
2. **Dinky Shed Basin:** Periodic visual observations are made of the area adjacent to the Dinky Shed Basin by the yard staff supervisor, the rock plant supervisor, or a designated staff member and recorded on the “Daily Creek Inspection Form: Rock Plant Staff”.
3. **Area Adjacent to Rock Plant Road:** Periodic visual observations by the rock plant supervisor or designated staff member are made at Rock Plant Road where the creek full culvert discharges. The visual observations are recorded on the “Daily Creek Inspection Form: Rock Plant Staff”.

4. Creek Below Screen Tower #4: Periodic visual observations are made of the creek below screen tower #4 by the rock plant supervisor or designated staff member and recorded on the “Daily Creek Inspection Form: Rock Plant Staff”.
5. Pond 22 Discharge: The Pond 22 inspection point is where Pond 22 discharges to Permanente Creek. Daily visual observations of Pond 22 discharge are completed by the control room supervisor or a designated staff member and recorded on the “Daily Creek Inspection Form: Control Room Staff”.

As part of the improvements made by Lehigh under the storm water management plan in 1999, a new inspection procedure and the forms that are listed above were developed to standardize visual observations by Lehigh personnel. The goal of the reference comparison technique was to standardize visual observations between personnel collecting samples and to more accurately describe the creek condition.

To standardize the visual observation being recorded by Lehigh personnel, a set of sediment reference samples was prepared in 1999. Each reference sample set consisted of five sample bottles containing creek water with varying total suspended solids. Each sample jar was assigned a designated number between 1 and 5 that corresponds to a specific description (i.e. clear, almost clear, cloudy, very cloudy). Due to continuous breaking of jars, a palette was created using clear pictures of the five sample bottles. Copies of these palettes were distributed to the inspection staff. When water samples are collected, each inspector compares the sample to the reference sample set shown on the palette and records the sample number that best describes the sample collected.

3.4 REPORTING PROCEDURE

Another important aspect of an effective pollution prevention plan is to ensure that there is a clear reporting procedure in place in case of an unforeseen upset or release to the Creek. As described in the Table 3-2 above, the Plant Manager (the Team Leader) is responsible for implementation of the SWPPP, which includes reporting non-storm water discharges to the Creek. The Team Leader is assisted by the Storm Water Inspection Coordinator. If a potential problem is observed during a daily inspection or during the course of normal business hours, staff is directed to report that problem immediately to the Storm Water Inspection Coordinator, who is responsible for investigating the reported problem. If the Coordinator determines that a discharge has occurred, he/she or the Team Leader (depending on availability) will notify the Regional Board by telephone. Written notification will be submitted to the Regional Board within five working days from the time of the incident.

3.5 EROSION CONTROL MEASURES AND BEST MANAGEMENT PRACTICES

In order to reduce sediment loading into Permanente Creek, numerous erosion controls and Best Management Practices (BMPs) have been developed and implemented at the Lehigh facility. In general, Lehigh has taken an active role in limiting erosion at the facility; this includes 17 retention ponds and basins at the site that are currently in use (Table 6-1). Eight retention ponds (Ponds 1, 3, 5, 7, 8, 10, 12, and 15) have been abandoned and one pond (Pond 2) was never built. These changes have been made due to changes in the Quarry reconfiguration. Pond 1, for example, has been closed due to the overburden stockpile development towards the southeast.

The retention ponds are used to collect sediment prior to reaching Permanente Creek. Although the site is undergoing constant change, replacements and alternatives are being implemented to justify the changes such that storm water management at Lehigh is continuously in effect. In addition to the retention ponds, Lehigh has also implemented both Baseline Best Management Practices (BMPs), and Site-Specific BMPs (Section 4.0). Baseline BMPs are provided in Table 5-1, and a list of implemented BMPs are provided in Table 5-2. Table 6-1 presents the proposed BMPs for the 2009/2010 storm season and Table 6-2 lists all of the ongoing BMP implementation at Lehigh.

4.1 MATERIALS INVENTORY AND POTENTIAL POLLUTANT SOURCES

A materials inventory for the facility was conducted to identify the location(s) of materials that potentially may have been or are exposed to rain water. Table 4-1, Materials Inventory Summary, contains a list of the significant materials associated with industrial activities that are handled, stored, or used in a manner that may be potentially exposed to storm water and thus could add significant amounts of pollutants to storm water runoff. Table 4-1 includes the following information:

- Name of the material
- Storage, receiving, shipping and handling locations
- Quantity of material stored
- Type of management
- Risk of contact with storm water

Table 4-1 will be updated whenever new materials are handled, treated, stored, or disposed of and when existing listed materials are no longer used at the facility.

Hazardous materials which are used or stored at the facility include motor oil (new and used), diesel fuel, and lubrication oil. All of these materials except the Quarry diesel fuel tank, which is stored in a double walled tank in secondary containment, and the Warehouse standby generator diesel fuel tank, are stored with a cover and therefore have a very low to low likelihood of storm water contact. Table 4-1 summarizes the risks of material contact with storm water run-off.

Non-hazardous waste generated by the facility includes dirty paper towels, packaging materials, and normal refuse which may be associated with daily operations. Trash generated from the facility is placed trash bins, and storm water contact is limited because the bins have covers.

Methods and locations of on-site storage and the associated existing materials management practices employed to minimize the contact of these materials with storm water are presented in the following subsections. BMPs for these areas are discussed in Section 5.0.

4.1.1 Outdoor Material Storage Areas

The facility has five above-ground storage tanks (ASTs) (Warehouse Standby, Quarry, Finish Mill Flats, Auxiliary Kiln Drive, and the Garage) located outside of structures that contain diesel fuel. The Warehouse Standby tank has a 500-gallon capacity and a concrete berm. The Quarry tank is double walled with a concrete berm, and has a 12,000-gallon capacity. The Finish Mill Flats has a 1,000-gallon capacity is covered and has a concert berm. The Auxiliary Kiln Drive tank has a 1,000-gallon capacity and has a concrete berm. The Garage diesel fuel tank is an AST equipped with a concrete berm. All of the loading/unloading areas associated with these tanks, except the Auxiliary Kiln Drive tank, are equipped with a reclamation system and temporary containment equipment or are within the concrete berms associated with the containment structure. This minimizes any contact with storm water run-off during loading/unloading of the tanks. The facility also has two underground storage tanks (USTs) that contain unleaded and diesel fuel. These tanks are equipped with leak detection systems.

**Table 4-1
Materials Inventory Summary
Lehigh Southwest Cement Company, Cupertino, California**

Material Name	Location / Storage Type	Storage Type	Volume	Material Management Practice	Loading/Unloading Management Practice	Storm Water Contact Risk Factor
Warehouse Standby Generator Diesel Fuel Tank	Warehouse (Drawing 2)	AST	500 gal	Concrete berm	Reclamation system and temporary secondary containment equipment	Low-during fueling and loading/unloading
Finish Mills Flats Standby Generator Diesel Fuel Tank	Finish Tank (Drawing 3)	AST	1,000 gal	Concrete berm and covered	Reclamation system and temporary secondary containment equipment	Very low- during loading/unloading
Upper Oil Shed Waste Oil	Upper Oil Shed (Drawing 5)	AST	(4) 250 gal tanks	Concrete berm	Reclamation system and temporary secondary containment equipment	Low-during loading/unloading
Upper Oil Shed Lubricant Oil	Upper Oil Shed (Drawing 5)	55 gal	Several drums	Concrete berm	Reclamation system and temporary secondary containment equipment	Low-during loading/unloading
Oil Tank Farm 15W-40 Oil (Tank F)	Garage Oil Tank Farm (Drawing 6)	AST	4,000 gal	Concrete berm and covered	Truck Loading/Unloading Area within concrete berm	Very low – during loading/unloading
Oil Tank Farm Motor Oil (Tank E)	Garage Oil Tank Farm (Drawing 6)	AST	4,000 gal	Concrete berm and covered	Truck Loading/Unloading Area within concrete berm	Very low – during loading/unloading
Oil Tank Farm Waste Oil Tank D	Garage Oil Tank Farm (Drawing 6)	AST	1,000 gal	Concrete berm and covered	Truck Loading/Unloading Area within concrete berm	Very low – during loading/unloading
Oil Tank Farm Waste Oil (Tank C)	Garage Oil Tank Farm (Drawing 6)	AST	1,000 gal	Concrete berm and covered	Truck Loading/Unloading Area within concrete berm	Very low – during loading/unloading
Quarry Diesel Fuel Tank	Quarry (Drawing 7)	AST	12,000 gal	Double-walled tank and concrete berm	Truck Loading/Unloading Area within concrete berm	Low-during fueling and loading/unloading

**Table 4-1
Materials Inventory Summary
Lehigh Southwest Cement Company, Cupertino, California**

Material Name	Location / Storage Type	Storage Type	Volume	Material Management Practice	Loading/Unloading Management Practice	Storm Water Contact Risk Factor
Auxiliary Kiln Drive Diesel tank	Auxiliary Kiln Drive (Drawing 8)	AST	1,000 gal	Concrete berm	none	Medium-during fueling and loading/unloading
Waste oil, oil water tank	Auxiliary Kiln Drive (Drawing 8)	AST	(2) 500 gal	Double Walled Tanks	none	Medium-during loading/unloading
Oil House No. 2 Storage	Oil House No. 2 Storage Facility (Drawing 9)	55 gal	Various drums	Concrete berm and covered	Covered area	Very low – during loading/unloading
Oil House No. 1 Storage	Finish Mills Flats (Drawing 10)	55 gal	Various drums	Concrete berm and covered	Covered area	Very low – during loading/unloading
Lube and Waste Oil	Garage Oil Containment Areas 1,2,and 3 (Drawing 11)	AST	Area 1: (2) 500 gal portable tanks Area 2: 300 gal tank Area 3: various drums	Concrete berms around Areas 1, 2, and 3 and secondary containment pads within. All covered in garage.	Covered area	Very low – during loading/unloading
Garage Diesel Fuel Tank	Garage (Drawing 12)	AST	500 gal	Concrete berm	Truck Loading/Unloading Area within concrete berm	Low-during fueling and loading/unloading
Garage Waste Oil	Garage (Drawing 12)	AST	300 gal	Concrete berm	Truck Loading/Unloading Area within concrete berm	Low-during fueling and loading/unloading
Portable Generator Diesel Fuel Tank	Drawing 13	AST	550 gal	Secondary tank	Reclamation system and temporary secondary containment equipment	Low- during fueling and loading/unloading

Table 4-1
Materials Inventory Summary
Lehigh Southwest Cement Company, Cupertino, California

Material Name	Location / Storage Type	Storage Type	Volume	Material Management Practice	Loading/Unloading Management Practice	Storm Water Contact Risk Factor
Portable Motor Oil	Garage (Drawing 11)	55 gal	(4) 55 gal	Double walled containers	NA	Very low-during loading/unloading
Diesel/Unleaded fuel	Engineering Area	UST	(2) 10,000 gal	Secondary containment and leak detection system	Covered area	Low- during fueling and loading/unloading

4.1.2 Indoor Material Storage Areas

Materials stored inside at the facility are included in Table 4-1. These materials include new and used oil that is stored in the Garage, Oil Tank Farm, Oil House II, and the Upper Waste Oil Storage Area. Additional materials stored inside include towels, rags, batteries, lubricant, and hydraulic oil. These areas are not exposed to storm water and do not present a risk as a potential source of storm water pollution.

4.1.3 Loading and Unloading Areas

All of the loading/unloading areas, except the Auxiliary Kiln Drive area, are equipped with a reclamation system and temporary containment equipment or are within the concrete berms associated with the containment structure. This minimizes any contact with storm water run-off during loading/unloading.

4.2 SPILLS AND LEAKS

Spill information and actions are discussed in the Spill Prevention, Control and Countermeasure (SPCC) Plan. In the event future spills or leaks should occur, the List of Significant Spills and Leaks will be update in the SPCC plan.

4.3 DUST AND PARTICULATE GENERATING ACTIVITIES

The facility's dust generating and control activities are discussed in Table 4-2 and Appendix D. As reflected therein, the facility has extensive measures to control dust emissions from its quarrying activities; those same BMPs control particulates from the cement plant operations that may be generated at the facility.

To control dust and particulate emissions the facility utilizes dust collection control equipment. The largest of these, which controls emissions for the preheater/precalciner rotary kiln, utilizes a baghouse comprised of two 16-unit kiln mill dust collectors.

Particulate and source emissions are locally, state and federally regulated by permit issuances and enforcement activities. The Permanente Plant has local and federal operating permits issued by the Bay Area Air Quality Management District (BAAQMD), enforceable by Federal EPA oversight. Additionally, the California Air Resources Board (CARB) mandates requirements for air toxic emission which the plant meet. The plant is in compliance with all local, state and federal air emission requirements.

4.4 NON-STORM WATER DISCHARGES

Non-storm water discharges are not authorized under the California NPDES General Industrial Storm Water Permit with few exceptions. Examples of unauthorized non-storm water discharges are contact and non-contact cooling water, boiler blow down, rinse water, vehicle wash water, etc. Examples of authorized non-storm water discharges include:

- Uncontaminated storm water that has been temporarily stored or contained on-site,
- Fire hydrant and fire system flushing,

- Potable water sources including water related to the operation, maintenance, or testing of potable water systems,
- Drinking fountain water,
- Uncontaminated atmospheric condensates including refrigeration,
- Air conditioning and compressor condensate,
- Uncontaminated irrigation drainage,
- Landscape watering,
- Irrigation drainage,
- Springs,
- Groundwater,
- Foundation or footing drainage, and

The above non-storm water discharges are authorized by the General Permit if:

- The non-storm water discharges are in compliance with RWQCB requirements.
- The non-storm water discharges are in compliance with local agency ordinances and/or requirements.
- BMPs are specifically included in the SWPPP & SWMP to 1) prevent or reduce pollutants in non-storm water discharges, and 2) minimize the flow or volume of non-storm water discharges.
- The monitoring program includes quarterly visual observations of each non-storm water discharge and its source to ensure that BMPs are being implemented and are effective.
- The non-storm water discharges are reported and described annually as part of the annual report.

Examples of unauthorized non-storm water discharges are rinse and wash water (whether detergents are used or not), contact and non-contact cooling water, boiler blow-down, etc.

There is no indication of any sanitary cross-connection drainage to storm water conveyances in the existing facility prints and as-built plans. The resources cited above indicate no reason to believe that there is any unauthorized non-storm water discharge to surface water. Authorized non-storm water discharges at the Lehigh facility are described in Section 3.2.4 above and in the Annual Report.

4.5 CLEANING AND RINSING AREAS

The vehicle wash down area is a closed water system that does not enter any storm water drains. The water from this operation flows to a sump pump and is then used in the kiln cooling process.

4.6 SOIL EROSION AREAS

See SWPPP Section 6.

4.7 ASSESSMENT SUMMARY

This is a supplement to the assessment of potential pollutant sources associated with the materials and process described above. In Table 4-1 we have given each material a storm water contact risk factor to stress the importance of maintaining good housekeeping procedures in these areas. Risk factors for storm water pollution may be categorized as high, medium, and low. A low designation represents areas where the pollutant can only come into contact with storm water in the event of an accidental spill or leak. Potential sources of contamination through contact with storm water runoff are designated as medium. Frequent or constant waste streams of pollutants are characterized as high risk.

As reflected in Table 4-1, potential pollutant risks identified at this facility are limited to the loading and unloading operations associated with the oil and diesel tanks at the Auxiliary Kiln Drive location. The pollutant risk associated with the loading and unloading area exists because this area is uncovered and it does not have any additional loading and unloading containment structures.

Aerial depositions of emissions from the facility are another potential pollutant source. The majority of the deposition will end up on pervious areas throughout the facility. Fortunately, the facility has implemented several sediment and erosion BMPs to minimize sediment loading into nearby waterways.

5.1 WHAT ARE BEST MANAGEMENT PRACTICES?

Best Management Practices are measures to prevent or mitigate storm water pollution. They include a broad range of solutions to storm water problems, from structural solutions (e.g., diversion berms) to non-structural solutions (e.g., regular inspections). The Clean Water Act requires facilities like Lehigh to identify areas and activities that may cause storm water pollution, and to identify and implement erosion control measures and BMPs to control pollution from those areas.

To provide additional detail and guidance on the implementation of BMPs, Appendices C and D provide excerpts from the document, California Storm Water Best Management Practice Handbooks, March 1993, prepared for the State Water Resources Control Board (SWRCB) Storm Water Quality Task Force (SWRCB 1993). Appendices C and D are from the Industrial and Construction Handbooks, respectively, of this referenced guidance document. These appendices also provide guidance on the implementation of the site-specific erosion control measures specified in Section 6.0 of this SWPPP15.

BMPs can be any combination of practices or structures that might reduce pollution. Baseline BMPs are typically procedural modifications or training requirements that are applicable to most areas and activities at Lehigh. Site-specific BMPs, on the other hand, usually relate to the particular activities carried out within a given industrial area. However, the two types of BMPs can overlap in some instances.

A detailed description of Baseline and Site-specific BMPs is presented in this section. The Pollution Prevention Coordinator at Lehigh will reference these BMPs and coordinate with other facility personnel to communicate the necessary steps toward minimizing sediment loading into Permanente Creek.

5.2 BASELINE BMPS

Table 5-1 presents a list of baseline BMPs and corrective actions for implementing each BMP.

Table 5-1
Baseline Best Management Practices (BMPs)
Lehigh Southwest Cement Company

Baseline BMP	Corrective Action
Good Housekeeping	<p>When storm water contacts disturbed earthen materials, silt, and other uncovered materials, it can wash away residues and materials that pollute receiving waters. To control this type of storm water contamination, outdoor areas at Lehigh will be kept neat and clean. Whenever possible, personnel will attempt to prevent littering and promptly remove any waste materials so that they do not contact storm water.</p> <p>“Good housekeeping” includes other types of practices as well. Sensitive materials, like petroleum, oils, and lubricants (POLs), cleaning agents, and fuels commonly used for ground equipment, will be clearly labeled for use and disposal. Indoor areas will remain uncluttered so that work does not take place outdoors, and so that leaks and spills can be quickly detected and controlled.</p>

Table 5-1
Baseline Best Management Practices (BMPs)
Lehigh Southwest Cement Company

Baseline BMP	Corrective Action
Covering of Trash Dumpsters	Exposed trash in open bins can bring pollutants into contact with storm water. All trash dumpsters at Lehigh that could contribute to creek discharge should be covered.
Preventive Maintenance	Materials and equipment that are in disrepair are more likely to become storm water hazards than those that operate smoothly. Promptly repair equipment that regularly leaks oil, fuel, or other contaminants. Roads, parking lots and landscaping will not be allowed to degrade to the point where they erode and contaminate Permanente Creek. Storm sewer drains should not accept the discharge of waste or contaminated water. Most importantly, these types of activities will be undertaken before problems arise, so that storm water pollution is minimized.
Spill Prevention and Response	<p>Lehigh handles few hazardous materials on-site, however, the facility is proactive in addressing facility spills. Since outdoor spills are a major source of storm water pollution, all care is taken to prevent such an occurrence, and equipment is in place to mitigate such a spill, if it occurs. Spill equipment is readily available and personnel will receive training in its use.</p> <p>Berms and containment features will be in place around all sensitive material storage areas, so that spills can be easily detected and controlled.</p>
Storm Water Management Practices	In some areas within the Lehigh facility, measures to divert runoff or collect runoff will reduce storm water pollution. These include removing loose dirt from areas adjacent to Permanente Creek, stabilization of slopes and maintenance of sediment basins. Grassed swales or vegetated drainage strips that remove sediments and pollutants from runoff are also examples of storm water management practices. A comprehensive set of measures is presented in Section 5.
Erosion Control and Sediment Control	<p>Wind and water erosion can dislodge soil particles and increase the turbidity of receiving waters. To prevent their releases, some roads are paved if they receive significant use or if they show signs of significant erosion. As an intermediate measure, gravel and road base material are used to enhance drainage and reduce erosion.</p> <p>Erosion also takes place when runoff flows uncontrolled over unpaved areas. Rainfall events can create channels in areas where native vegetation has been removed and can rapidly remove topsoil. To the extent possible, off-road vehicle usage will be minimized. In addition, erosion controls such as landscaping, hydroseeding, and retention ponds will be routinely maintained. Section 5 presents a comprehensive set of current and proposed erosion control measures for Lehigh.</p>
Training	This baseline BMP is an integral part of the overall storm water pollution prevention program. Personnel will be thoroughly trained in pollution prevention measures pertaining to their day-to-day activities. Training will be tailored to specific industrial areas conducted at Lehigh; ground maintenance personnel will receive specialized training in landscaping strategies for erosion control, for example. Facility personnel will receive feedback on their efforts through periodic inspections and reviews.
Inspections	As part of the storm water monitoring program, the Pollution Prevention Coordinator will conduct inspections of industrial activities and storm water discharge points. The inspections will verify that erosion control measures and BMPs are being implemented correctly in each area. Additionally, the Coordinator and designee will check for signs of storm water pollution (sediments in creek, signs of erosion, oil sheen on runoff or standing water) and will identify ways to correct these problems.

5.3 SITE-SPECIFIC BMPs

Most industrial activities throughout the Lehigh facility involve the movement and/or crushing of large quantities of earthen materials. These activities have the potential for contributing sediments into Permanente Creek. Therefore, significant erosion and sediment control measures have been implemented and additional BMPs are proposed. These measures are the focus of Section 6.0 of this SWPPP15. However, some areas within the Lehigh facility perform industrial activities that require specific storm water pollution prevention measures. These specific types of industrial activities within the Lehigh facility include the following:

- Truck and equipment washing;
- Facility-wide dust control;
- Collection of rain water; and,
- Truck and support equipment storage.

For these industrial areas, Site-specific BMPs have been developed and designed to address the specific industrial activities that occur at each site. It is important to note that Site-specific BMPs and Baseline BMPs complement each other; both must be used effectively to prevent storm water pollution. The authorized non-storm water discharge of groundwater from the quarry p is included in the BMPs.

The Site-specific BMPs and associated industrial facilities are presented in Table 5-2. Appendices C and D present a more detailed description of each Site-specific BMP and suggested remedies for the reduction of storm water pollution.

Table 5-2
Industrial Activities and Associated BMPs
Lehigh Southwest Cement Company

Site Location	Industrial Activity	BMPs Implemented	Detailed BMP Description (Appendix)
Plant Area	Truck and Equipment Washing	<ul style="list-style-type: none">• Wash trucks and equipment at designated wash rack• Recycle wash water• Do not permit wash water to enter storm drain or runoff onto ground surface• Installed additional retention ponds to contain storm water during heavy storm events	Appendix C

Table 5-2
Industrial Activities and Associated BMPs
Lehigh Southwest Cement Company

Site Location	Industrial Activity	BMPs Implemented	Detailed BMP Description (Appendix)
Quarry/Plant Area	Facility-wide Dust Control	<ul style="list-style-type: none"> • When feasible, pave, vegetate, and stabilize access roads • Stabilize unpaved haul roads • Install cross drains and culverts to catch and divert water off road into multiple retention ponds to minimize overland flow and therefore sediment load • Wet suppression stabilization of exposed soil, while limiting dust control water runoff 	Appendix D
Quarry Area	Quarry Area Erosion Control and Management of Collected Storm Water and Groundwater	<ul style="list-style-type: none"> • Storm water collected in quarry and retention ponds. The quarry bottom is included as a retention pond and is dewatered as described in Section 3.2.2. • Install additional retention ponds to capture storm water in upper quarry area • Storm water recycled through facility's water recirculation system • Storm water used for dust control 	Appendix D
Quarry/Plant Area	Truck and Support Equipment Storage	<ul style="list-style-type: none"> • Repair equipment or replace parts to prevent leaks • Place drip pans under leaking equipment to collect the leaking fluids • Routinely dispose of fluids accumulated on drip pans • Routine inspections of vehicles 	Appendix C

Although storm water runoff is part of a natural hydrologic process, human activities, including the disturbance of land from excavation and industrial activities, can alter natural drainage patterns and increase sediment loading in storm water. Excavation activities can impact drainage patterns by the disturbance of soil or by removing natural vegetation that helps alleviate erosion of the ground surface.

In order to protect storm water quality throughout the Lehigh facility, a comprehensive erosion and sediment control program has been implemented. The erosion and sediment control program objectives include the following:

- Characterization of storm water flow, drainage patterns, and discharge points to the Creek within the facility;
- Identification of erosion and other potential sediment sources;
- Current measures to minimize erosion and sediment potential;
- Annual review of erosion and sediment control measures to minimize erosion and sediment loading of Permanente Creek; and,
- Continual Improvement Program to reduce sediment loading based on data collected during each rain season.

A focused effort was made in 1999 to increase the understanding of drainage flow patterns and discharge locations within the facility. A comprehensive storm water discharge consolidation study was performed as requested by the RWQCB staff. The goal of this exercise was to critically review the current storm water sampling data and build upon the information collected during the "Water Balance Study" performed in 1997.

The focus of the 1999 comprehensive water discharge consolidation study effort was to understand where storm water is entering the creek, consolidate discharge locations, and determine which discharge points were contributing the highest sediment load to the Creek. The information collected during the storm water discharge consolidation study was then used to identify and prioritize sediment sources and to modify the existing SWMP to more accurately assess the source contribution from the sources identified. Based on the 1998/1999 evaluation, three of the previous discharge points were eliminated and the storm water monitoring plan was modified to more accurately quantify the sediment load entering the Creek via the discharge locations.

A Refined Water Balance Study was prepared in December 2000 to provide a detailed evaluation of the water sources and usage at the Lehigh facility. This refined study included recommendations for decreasing water supply costs by managing and reusing onsite storm water runoff.

Figure 3 shows the main drainage areas, flow patterns within drainage area, retention ponds, and discharge locations into the Permanente Creek within the Lehigh facility property boundary.

A site-wide source identification evaluation was performed in 1998/1999 to identify potential sediment sources and improve and prioritize BMPs for the source areas contributing the greatest sediment load to the Creek. Six major sources were identified during this evaluation and are briefly discussed in Section 6.1 below. The focus of the BMPs in 2008/2009 was to implement BMPs for source areas and continue to improve BMPs to control sediment and erosion from

areas around the facility. Proposed BMPs for 2009/2010 will continue this work. Implemented and proposed BMPs are discussed in Section 6.3.

6.1 POTENTIAL SOURCES OF EROSION WITHIN LEHIGH SOUTHWEST CEMENT COMPANY

During the first few years of the SWPPP program, two facility-wide potential sources of erosion and sediment loading to storm water systems within the Lehigh facility were identified: facility-wide surface erosion, and overflow from retention ponds during storm events. In 1996/1997, an evaluation of facility-wide surface erosion revealed that erosion occurs at several locations. These included the areas along the Upper, Middle, and Lower Quarry Roads that serve as the main arteries for travel throughout the facility. During storm events, surface erosion along the Quarry Road eventually drains into Permanente Creek. A second potential source of erosion included the uncovered material piles located along the roadway between Rock Plant 1 and Rock Plant 3. During a storm event, these material piles had the potential for loading Permanente Creek with sediments. A third potential source of sediment loading included the naturally sloped and contoured areas of the facility that allow storm water runoff to flow directly into Permanente Creek. An annual hydroseeding program was implemented to minimize surface erosion from un-vegetated slopes and has been very effective in many areas of the facility. Lehigh has implemented a program to address facility-wide erosion potential as presented in Section 6.2.

The second potential source of erosion and sediment loading identified during the initial Site evaluation included overflow from the Lehigh retention ponds during severe storm events. Efforts were made to improve the retention efficiency of the ponds in place to control sediment loading to Permanente Creek. Table 6-1 presents the current list of retention ponds at Lehigh.

Table 6-1
Current Retention Ponds
Lehigh Southwest Cement Company

Sediment Pond	Drainage Area/Location and Associated Storm Water Samples
Quarry Bottom	Area A: Located in bottom of Quarry
Pond 4*	Area C: Southern portion of site, near the former rock crusher adjacent to Sample Road to Creek. Associate storm water samples: SL-4-CR, SL-4A1-RD, SL-4A3-PD, SL-5-CR.
Basin E (formerly Pond 6)	Area A: Adjacent to Primary Crusher
Pond 9	Area D: North of Screen Tower 4. Associated storm water samples: SL-15-CR, SL-16A-RD, SL-16B-RD, SL-17-CR.
Pond 11	Area B: Main Plant Area, north of equipment storage area referred to as "The Lake".
Pond 13 (in Stream)	Area D: Central portion of site, south of Pond 13A and Pond 13B. Associated storm water samples: SL-11-CR, SL-12-CR, SL-13-PD.
Pond 13A	Area D: Central portion of site, north of Pond 13. Associated storm water samples: SL-13A-PD.
Pond 13B	Area D: Central portion of site, north of Pond 13
Pond 14	Area F: Northeast corner of Lehigh property. Associated storm water samples: SL-27-PD.
Dinky Shed Basin (formerly Pond 16)	Area E: North of Pond 17. Associated storm water samples SL-18-RD, SL-22A-CR, SL-22B-CR.
Pond 17	Area E: Southeastern portion of facility, northeast of Screen Tower 4. Associated storm water samples SL-20-RD, SL-21-PD.
Pond 19	Area F: East of former Kaiser Aluminum facility and Truck Wash Area
Pond 20	Area F: East of former Kaiser Aluminum facility and Truck Wash Area
Pond 21	Area F: East of former Kaiser Aluminum facility and Truck Wash Area
Pond 22 (in Stream)	Area F: Northeast corner of Lehigh Southwest Cement Company property, south of Pond 14. Associated storm water sample SL-25-CR.

*Ponds 4B and 4C are no longer used as retention ponds because of mine development which removed their culverts, and runoff is diverted to Pond 4 (formerly Pond 4A)

All but two of the retention ponds are located outside of Permanente Creek. The retention pond locations are schematically presented on Figure 3. Overflow from retention ponds during heavy storm events can have an adverse impact on Permanente Creek since the sediment control efficiency of the ponds generally drops due to the increase in flow and sediment load. Many improvements have been made to the retention ponds to improve the sediment removal efficiency.

Several changes have been made to the drainage configuration due to changes in the Quarry reconfiguration. However, although the site is undergoing constant change, replacements and alternatives are being implemented to justify the changes such that storm water management at Lehigh Southwest Cement Company is continuously in effect. Ponds 4B and 4C no longer exist because of the mine development that necessitated the removal of the culverts to these two ponds. Storm water from the Former Overburden Haul Road is now diverted into the quarry

bottom, which acts as a retention pond, and the discharge is pumped via the quarry Dewatering Line to Pond 4.

During the 1998/1999 winter season, a focused effort was made to identify and prioritize the sediment sources within the facility. Potential sediment sources were identified within the six drainage areas. Of those potential sources, six had been identified as having the highest priority: 1) the run-off from the Upper and Lower Quarry Roads; 2) the ore feeder to the primary crusher; 3) the primary crusher; 4) the former overburden stockpile area; 5) Screen Tower No. 4 and the adjacent area including the stockpiles adjacent to Screen Tower No. 4; and, 6) the embankment adjacent to Screen Tower No. 4.

The RWQCB has requested as part of their review of the Permanente Creek Long-term Restoration Plan that Lehigh implement a new sediment source study. This study will be proposed to the RWQCB in March 2010, and is planned for 2010 and 2011 with the final report to be submitted to the RWQCB with the 2011 Annual Report. The 2010/2011 sediment source study will in general evaluate previous and current sediment sources using the following strategy:

- Define the sediment study objectives.
- Identify potential sources of sediment to Permanente Creek.
- Quantify the contribution to sediment load from each potential source.
- Evaluate the existing erosion and sediment control measures.
- Evaluate the effectiveness of the sediment control measures.

The current and proposed interim erosion and sediment control measures and BMPs are discussed in Sections 6.2 through 6.4 below.

6.2 CURRENT EROSION AND SEDIMENT CONTROL MEASURES

Lehigh annually evaluates and implements erosion and sediment control measures. The program evaluates the performance of existing measures annually against the sampling results from the Storm Water Annual Report. Generally, the erosion control measures have been effective in lowering sediment loading into Permanente Creek.

Furthermore, Appendices C, D, and E present a comprehensive set of erosion and sediment control Best Management Practices, which are referenced by Lehigh personnel as part of the erosion and sediment control program. These appendices provide additional detail to the measures discussed in this section.

6.3 PROPOSED EROSION AND SEDIMENT CONTROLS

As previously discussed, Lehigh annually evaluates facility-wide operations and identifies sources that have a potential for loading sediments into existing waterways. In addition, Lehigh Southwest Cement Company performs an assessment of erosion control measures for the previous year and evaluates them for effectiveness. For areas requiring further sediment reduction, a series of BMPs have been developed to be implemented during the next season.

Table 6-3
Best Management Practices
Proposed BMPs 2009/2010
Lehigh Southwest Cement Company

Area	BMP No.	Proposed BMPs 2009/2010	Discussion and Benefits
Former Overburden Stockpile (WMSA)	1	Additional re-vegetation activities on the Former Overburden Stockpile as needed.	Monitor effectiveness of re-vegetation in decreasing erosion runoff from Former Overburden Stockpile Area.
Active Overburden Stockpile (EMSA)	2	Maintain consideration of the storm water BMPs while developing the Active Overburden Stockpile.	Storm water BMPs continuously in effect throughout the development of the Active Overburden Stockpile. Installation of new off stream retention basins. Current, three (3) new basins being constructed.
Former Overburden Stockpile (WMSA)	3	Install, inspect and maintain the sediment catchment rock berms along Quarry Road near the Former Overburden Stockpile, during the wet season, and clean as necessary.	Decrease runoff/capture sediment from Former Overburden Stockpile. This will decrease sediment loading to Quarry Bottom.

Lehigh performs many annual erosion control measures throughout the facility. These ongoing BMPs are shown on Figure 6 and listed in Table 6-4.

Table 6-4
Best Management Practices
Ongoing BMPs
Lehigh Southwest Cement Company

Area	BMP No.	Ongoing BMPs	Discussion and Benefits
Former Overburden Stockpile	1	Inspect and maintain drainage improvements along Quarry Road near the Former Overburden Stockpile.	Decrease runoff from Former Overburden Stockpile.
Former Overburden Stockpile	2	Conduct inspections of the west end of the Former Overburden Stockpile for surface cracks.	Increase slope stability west of Former Overburden Stockpile and reduce erosion potential. Further action pending resolution with other agencies.
Former Overburden Stockpile	3	Monitor the west end of the Former Overburden Stockpile north slope for slope stabilization and re-vegetation.	Decrease erosion runoff from Former Overburden Stockpile Area.

Table 6-4
Best Management Practices
Ongoing BMPs
Lehigh Southwest Cement Company

Area	BMP No.	Ongoing BMPs	Discussion and Benefits
Ponds 13 and 22	4	Monitor sediment load in in-stream Ponds 13 and 22, and clean out if required (prior to rainy season).	Maintain or increase sediment removal effectiveness of ponds. Ponds 13 and 22 are effective in reducing TSS discharges to the Creek if sediment reduction is maintained. A limited de-sedimentation of Pond 13 occurred in Nov 2009, the first time since 2000. However, due to recent ongoing regulatory actions, Pond 22 clean out has not occurred since 2000.
Middle Quarry Road/ Rock Plant Road	5	Monitor and maintain the sediment catchment rock berms along Middle Quarry Road and Rock Plant during the wet season, and clean as necessary.	Decrease runoff/capture sediment from Middle Quarry Road and Rock Plant Road.
Quarry Road	6	Re-grade Quarry Road as needed to direct runoff to existing drainage basins or cross drains.	Direct runoff from Quarry Road to sediment basins and reduce sediment load by reducing overland flow travel time and distance.
Upper Quarry Road	7	Inspect Upper and Middle Quarry Road earth berms and repair breaches as required.	Decrease runoff from Upper Quarry Road into the Creek.
Facility-wide	8	Conduct post storm event inspections.	Take corrective actions in response to visible signs of erosion or runoff into the Creek.
Facility-wide	9	Monitor all hydroseeded areas to observe whether vegetation is establishing.	Monitor effectiveness of hydroseeding/re-hydroseed if necessary or evaluate other alternatives if hydroseeding is not effective.
Pond 4	10	Inspect, and clean out as necessary, the catch basins and culvert leading to Pond 4.	Increase flow and effectiveness at reducing TSS concentrations at Pond 4.
Pond 13A and Pond 13B.	11	Inspect, and clean out as necessary, the catch basins and culvert leading to Pond 13A and Pond 13B.	Increase flow and effectiveness at reducing TSS concentrations at Pond 13A and Pond 13B.

Table 6-4
Best Management Practices
Ongoing BMPs
Lehigh Southwest Cement Company

Area	BMP No.	Ongoing BMPs	Discussion and Benefits
Pond 17 and Pond 9	12	Inspect, and clean out as necessary, the open-grate culverts, catch basins and culvert leading to Pond 17 and Pond 9.	Increase flow and effectiveness of Pond 17 and Pond 9; Pond 17 and Pond 9 are effective at reducing TSS concentrations if sediment reduction is maintained.
Screen Tower No. 4	13	Maintain material stockpiles away from containment wall adjacent to the Creek embankment at Screen Tower No. 4.	Decrease runoff from material stockpiles into the creek.
In-stream Ponds (Pond 13 and 22)	14	Inspect periodically at in-stream ponds and remove algae and cattails if needed, pending permit approval.	Improve effectiveness of in-stream ponds. A limited de-sedimentation of Pond 13 occurred in Nov. 2009, the first time since 2000. In light of ongoing regulatory concerns raised by other agencies Pond 22 clean out has not occurred since 2000.
Creek and Embankments	15	Inspect entire length of creek and adjacent embankment just prior to first rains; Clean all piles and loose dirt from areas adjacent to creek; Stabilize slopes where necessary.	Decrease runoff to creek by stabilizing creek embankment/slopes and preventing erosion.
Off-stream Ponds	16	Monitor sediment load in off stream ponds and clean out as necessary.	Increase effectiveness of sediment removal. Note: Pond 19, 20 and 21 are off stream retention ponds that control sediment runoff from the rail tracks. These ponds have not been cleaned out due to concerns raised by other regulatory agencies.

- SWRCB. 1993. *California Storm Water Best Management Practices Handbook, prepared for the State Water Resources Control Board (SWRCB) Storm Water Task Force*. March.
- SWRCB. 1997. *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*.
- USEPA. 2008. *Federal Water Pollution Control Act, Title 33-Navigation and Navigable Waters, Chapter 26-Water Pollution Prevention and Control*. Amended July 29.

Appendix A
Storm Water and Non-Storm Water Discharge Monitoring Plan for Lehigh
Southwest Cement Company Facility

Appendix A

**Storm Water and Non-Storm Water Discharge Monitoring Plan for
Lehigh Southwest Cement Company Facility**

Appendix B
Sediment Pond Cleanout Procedures

Appendix B

Sediment Pond Cleanout Procedures

Appendix C

California Storm Water Best Management Practices (Source Control)

Appendix C

California Storm Water Best Management Practices (Source Control)

Appendix D
California Storm Water Best Management Practices (Erosion Sediment Control)

Appendix D

California Storm Water Best Management Practices (Erosion Sediment Control)

Appendix E

Erosion Control Plan Report For Permanente Quarry East Materials Storage Area

Appendix E

Erosion Control Plan Report For Permanente Quarry East Materials Storage Area
