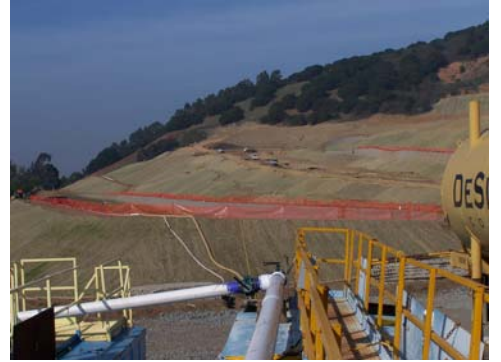


Leona Quarry

Best Management Practices for Erosion Control During Construction



DeSilva Construction has been maintaining and repairing all erosion and sediment control measures at Leona Quarry and will continue to do so for the duration of the project construction, consistent with the SWPPP. We appreciate the opportunity to share the Leona construction site with you and hope you enjoy your visit to our site today.

At DeSilva Group, we take our environmental responsibilities seriously. As a land development company, we recognize that construction activities associated with our work product may affect the quality and quantity of stormwater runoff. It is our policy to protect water resources by complying with the Clean Water Act. We dedicate financial and human resources to recognize and address the implications of our work activities on the quality of water runoff and promote adequate consideration of the environment.



The Leona Quarry site history exemplifies our attention to environmental concerns. As part of project permitting and in compliance with the Construction General National Pollutant Discharge Elimination System (NPDES) Permit, a Storm Water Pollution Prevention Plan (SWPPP) was prepared for the site and reviewed by the City of Oakland prior to approval. The NPDES storm water program arises from the Clean Water Act and regulations established by the U.S. Environmental Protection Agency. In California, the permit requirements are overseen by the State Water Resources Control Board and the nine Regional Water Quality Control Boards.



At the time of the first October storm events, slopes and graded areas of Leona Quarry, including large areas of completed slopes, were protected by most of the BMPs identified in the Project SWPPP and discussed with RWQCB staff the previous month. These measures included, but were not limited to, (1) the application of hydroseed/mulch/tackifier (specified jointly by the Project certified erosion/sediment control specialist and the Project biologist in accordance with standard erosion control practice), (2) the installation of straw rolls, (3) the installation of erosion control fabric, (4) the installation of a construction entrance, (5) the installation of inlet protection, (6) polyacrylamide soil stabilization, (7) check dams, and (8) the detention basin with standpipe in accordance with water quality design.

The hydroseed/mulch/tackifier recommended in the project SWPPP is consistent with standards presented by the International Erosion Control Association (IECA); the RWQCB (Erosion and

Sediment Control Field Manual Pg. B-15); the Association of Bay Area Governments (ABAG Manual of Standards for Erosion and Sediment Control Measures, Pg. 8.38); and the California Stormwater Quality Association (CASQA, Stormwater Best Management Practice Handbook, Pg. EC-3, EC-4). The application of hydroseed/mulch/tackifier has been used successfully as an erosion control BMP at comparable Bay Area construction sites, but was supplemented with erosion control fabric at Leona Quarry due to the early intense rainfalls this past Fall. In addition to source controls, structural erosion controls are installed at the Leona Quarry site.

Permanent Detention Basin

The permanent detention basin in the western portion of the site is serving as a temporary sediment basin during grading and construction operations. The performance of the sediment removal or water quality portion of the basin has been routinely re-evaluated and revised/repared as necessary before, during and after each significant rainstorm. No water discharges are planned from the detention basin unless the water reaches the temporary sediment basin outlet height of approximately 9.5 feet above basin base elevation. Only approximately six discharges from the basin have occurred to date this Winter season; no flooding problems have been reported along Edwards Avenue or downstream and the average turbidity readings from stormwater leaving the site have been at or below background/incoming levels.



The sediment removal aspects of the basin are in accordance with the project SWPPP which includes current industry standard designs. It should be noted that the use of the basin as a temporary sediment basin was recommended in the SWPPP as a back up or secondary defense measure. The use of source control BMPs is assumed and additional filtration systems may be necessary prior to discharge due to the nature of the site soils. A filtration system is currently in place, as described below.

Filtration System

Storm water collected in the detention basin is currently processed to reduce turbidity prior to release to a storm drain that leads to Chimes Creek. Water in the detention basin is pumped to wier tanks utilizing a 13 hp, 4-inch pump that floats on the surface of the basin. The pumped water is treated with 0.25 to 0.50 mg/L of Chitosan prior to traveling through approximately 500 feet of 6-inch discharge hose. Upon exiting the hose, the water is pumped into a plate clarifier to facilitate flocculation and settlement, followed by treatment in three 18,000-gallon over-under weir tanks that promote sediment settling. The weir tanks drain to one surge tank that provides the feed water for the polishing step. Finally, the water is pumped through secondary treatment sand filters to remove all flocculants and residual Chitosan prior to discharge to the storm drain. The filtration system processes the majority of stormwater leaving the site, and filters at an average rate of approximately 337 gpm.



The chitosan-based polymer, Storm-Klear^(TM) Liqui-Floc^(TM), to be used at the Leona Quarry to remove solids from storm water discharges is made of a natural biopolymer of chitin (Natural Site Solutions, 2003).

Ninety-six hour bioassay treatment studies by USEPA Method 600/4-90/027 using Storm-Klear^(TM) Liqui-Floc^(TM) resulted in a zero percent mortality rate for rainbow trout, reductions in turbidity and no detectable change in pH (Natural Site Solutions, 2003).

Temporary Sediment Pond

All Season II grading work is undertaken in a completely contained area provided with a new temporary sediment pond (also referred to as T Pond 2 or I Street Pond) as shown on the Winter (Season II) Erosion Control Plans. The temporary pond is sized such that it contains 3,600 cubic feet of volume for each acre of watershed, including the slope below Campus Drive. It should be noted that this sediment pond is not a detention basin and is not designed for or intended as a substitute for the lower detention basin. The pond is designed to remove a portion of the sediment load from the water it temporarily stores and is a temporary BMP. A filtration Baker tank is available for use at this Pond if necessary. To date, all stormwater from the I Street Pond has been able to be filtered by the filtration system already in place near the site entrance after storage in the lower water quality/detention basin.



the site entrance after storage in the lower water quality/detention basin.

Compliance with stormwater requirements calls for a variety of skills from many individuals acting as a team, and DeSilva Group strives to be recognized as a company dedicated to compliance. Our project team has knowledge of technical requirements and environmental laws as well as site planning considerations. In the construction/implementation stage, we promote daily discipline from every person onsite. The paperwork requirements to document the program are complex, detailed, and time consuming, but we remain dedicated to proper documentation and to keeping our on-site records up to date. Capital expenditures for BMPs, particularly if unanticipated or improperly managed after installation, are costly. We therefore promote careful attention to installation according to specification, as well as monitoring and maintenance.

Source controls, including but not limited to hydroseed/mulch/tackifier, straw mulch, erosion control fabric and slope drains are combined with structural sediment controls including sediment ponds, traps, check dams, inlet protection and stabilized road surfaces to produce an effective erosion and sediment control program at the Leona Quarry. The performance of all BMPs on the site continue to be monitored before, during and after storm events and every 24 hours during extended storm events. Monitoring records are kept at the on-site trailer with the Project SWPPP. Evaluation is on-going to determine the effectiveness of existing BMPs and whether additional control practices or corrective maintenance activities are needed.

