

PACIFICA QUARRY RECLAMATION PLAN
FINANCIAL ASSURANCES COST ESTIMATE

California Mine ID#: 91-41-0001

Prepared by

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Prepared for
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I. INTRODUCTION

A. Purpose

The State's Surface Mining and Reclamation Act (SMARA) requires that each mining operation have a financial assurance cost estimate (FACE) to ensure that reclamation is performed in accordance with the approved reclamation plan. Financial assurances must be payable to the local lead agency (in this case the City of Pacifica) and the Department of Conservation. This estimate provides the basis for that assurance.

This estimate has been prepared in accordance with the Office of Mine Reclamation's *Guidelines for Financial Assurances* as described at the following location: http://www.conservation.ca.gov/omr/SMARA%20Mines/financial_assurances/Pages/Index.aspx. The specific format recommended by OMR has been supplemented to make the estimate more consistent with previously approved estimates, e.g. LSA 2009, 2011, 2012 and the 2015 update.

B. Assumptions

1. In the event of a conflict, reclamation activities would be performed in accordance with the tasks described in this cost estimate and the *Pacifica Quarry Reclamation Plan* (Zentner and Zentner, January 2016).

2. Work on the reclamation tasks will be completed in phases described here although there may be some physical overlap, e.g. erosion control activities (phase 2) may begin on some part of the site while grading (phase 1) is still being completed on another part of the site.
3. Stockpiled soil will be used for resoiling; this is especially apparent in the case of the wetland basin, which will be resoiled with topsoil salvaged from the existing wetlands.
4. Operating capacities of equipment have been obtained from San Francisco Bay Area (SF Bay Area) and local companies as well as the Caterpillar Company estimated production reference manual. Equipment descriptions are found in Appendix A.
5. Rental rates for equipment have been obtained from SF Bay Area and local equipment rental companies as well as the 2015 *Labor surcharge and Equipment Rental Rates* (State of California, Department of Transportation, Division of Construction) and found at http://www.dot.ca.gov/hq/construc/eqrr/Book_2015.pdf. These were compared with the rates used in previous FACEs (LSA 2009, 2011, and 2012) and, where State-derived numbers were not available, the previous rates were used increased by 25%.
6. Labor rates are current union scale and represent fully loaded hourly rates and have been obtained from SF Bay Area and local equipment rental companies as well as the "General Prevailing Wage" determination made by the California Department of Industrial Relations at <http://www.dir.ca.gov/OPRL/pwd/Determinations/Northern/NC-023-102-1.pdf> for labor rates and the following for heavy machinery operators: <http://www.dir.ca.gov/OPRL/pwd/Determinations/Northern/NC-023-63-1.pdf>. These were compared with the rates used in previous FACEs (LSA 2009, 2011, and 2012 and Lilburn 2015) and where State-derived numbers were not available, the previous rates were used but increased by 25%.
7. Prices for materials have been obtained from SF Bay Area and local landscape supply companies.

As well, the authors would like to express their appreciation to estimators from Goodfellow TopGrade Construction LLC and DeSilva Gates Construction who provided estimates on earlier versions of the Reclamation Plan and generously provided advice on this estimate.

C. Financial Assurance

An Irrevocable Letter of Credit (LOC) payable to the City of Pacifica and the Department of Conservation has been provided to the City and updated more or less annually for some time. The LOC and the FACE were initially based on the analyses provided by LSA and based on the City-approved 1998 Reclamation Plan. The first FACE by LSA (2009) is attached as Appendix B; this FACE forms the basis for later estimates, including this effort.

Currently, the LOC is in the amount of \$1,241,953, which is based on the updated FACE prepared by the Lilburn Corporation (2015; attached as Appendix C), also based on the 1998 Reclamation Plan.

The 1998 Plan proposed to excavate and fill a bit more than 800,000 cubic yards (CY) of earth over almost the entire 47 acres to sculpt the Quarry to meet SMARA standards. The 2016 proposed Plan results in almost 90% less grading over an area about 60% smaller.

D. Organization of the Estimate and Project Phasing

Reclamation tasks are grouped into four phases: Grading and Drainage, Erosion Control, Revegetation, and Monitoring and Maintenance. Work for each phase may occur simultaneously but is listed separately in the following sections; for example, erosion control (Phase 2) may begin on one part of the site while drainage facilities (Phase 1) are still being installed on another part of the site. Phase 1 tasks are grouped under Grading and Drainage but more specifically include site preparation, topsoil salvage, grading the site to conform with the final grading configuration in the Reclamation Plan, filling and compaction, constructing drainage facilities and keyways, constructing an unpaved access road, and resoiling graded areas. Phase 2 tasks include installing erosion and sediment control devices such as silt fences and straw bales. Phase 3 tasks include applying a hydroseed slurry to all graded areas. Phase 4 tasks include maintaining the site and monitoring the reclamation program over the three-year post-reclamation period. Monitoring and maintenance inspections will occur bi-annually for the first two years and then annually for the third year and include site reviews with the City for the preparation of the Annual report.

The description of each task includes a summary of the equipment, labor and processes necessary to complete the task. Costs associated with each task are shown in summary tables below while Table 2 provides the overall cost summary.

E. Site Conditions

For ease of discussion, the site includes the following elements from roughly north to south: the Hilltop (the high ground on the north edge of the quarry); the East Flank (the hillside comprised mostly of old quarry debris on the east slope of the quarry); the Quarry Face (the scarp left by mining in the quarry center), the Quarry Pit (the bowl remaining in the bottom of the quarry), and the Southern Bluff (the old edge of the Quarry on the south adjacent to the ocean). These are described in more detail below; see the Reclamation Plan for more details.

The Hilltop is the high ground of the site and is located above the Quarry Face and East Flank. The Hilltop extends down over the south slope to a shear zone just above the limestone of the Quarry Face. In contrast with its adjacent landscapes, the surface of the Hilltop has soil and moderate vegetation cover. The invasive pampas grass (*Cortaderia selloana*) and the native coyote bush (*Baccharis pilularis*) are the predominate species. The Reclamation Plan calls for grading the unstable materials above the shear zone to a 2:1 slope and smoothing out the surface of the Hilltop while maintaining the upper elevation.

The East Flank is steeply sloped and is comprised predominately of exposed fill and gains approximately 220 feet in elevation. At the bottom of the East Flank an old access road cuts across and up the slope. The road cuts north across the East Flank and then turns south and continues across the Face. The grade of the slope varies throughout the section with several small, relatively flat, plateaus. The section is moderately vegetated; the lower slope is dominated by pampas grass while the upper, more stable slope contains a variety of native coastal shrubs such as ceanothus (*Ceanothus thyrsiflorus*) and California sage brush (*Artemisia californica*). The East Flank will remain as is under the Reclamation Plan, although an access road will be built that curves across the East Flank to the top of the Hilltop, essentially duplicating an existing access road.

The Quarry Face is predominately an exposed limestone face with approximately 170 feet in elevation gain. The lower two thirds of the Face is steep, comprised of exposed limestone, and is sparsely vegetated. Approximately 120 feet above the old quarry floor, two thirds of the way up the Face, an old access road cuts horizontally across the Face. Above the road, the Face gives way to the Hilltop at the geologic shear zone that separates the limestone from greenstone (see the section below on Local Geology for more information). The access road and upper slope have moderate vegetation cover. Vegetation is predominately non-native and is dominated by pampas grass. The 2015 geotechnical analysis concluded that the Quarry Face is a geologically stable feature that does not require regrading. In accordance with the geotechnical analysis, no work will occur on the Quarry Face and it will be preserved.

The Quarry Pit is generally flat but includes numerous pits and mounds and is vegetated with non-native species. Steep slopes, including the Face, surround the Pit to the north, west, and south. To the east, the Quarry Pit abuts the City-owned parcel and Calera Creek. An approximately 7,800 square foot, 10-foot deep depression is located near the eastern edge. North of the depression is an elevated, predominately exposed rock surface. Approximately 20 cypress (*Cupressus* spp.) trees are located along the southern border of the Quarry Pit. The Quarry Pit is dominated by non-native vegetation including pampas grass and the invasive perennial pepperweed (*Lepidium latifolium*). The Reclamation Plan proposes to fill the Pit to an even elevation of about 50 ft while providing a gentle slope down to Calera Creek at its east edge. Essentially, the Quarry Pit will act as the depository for the fill generated by creating stable slopes elsewhere on-site, eliminating the need to truck earth spoils off-site. This also provides for a balance of cut and fill.

The Southern Bluff abuts the Pacific Ocean to the south, is steeply sloped, and is comprised on the surface of predominantly exposed and unstable rock slopes. The slopes are sparsely vegetated with pampas grass. The ridge top has moderate vegetation cover comprised predominately of non-native species including fennel (*Foeniculum vulgare*) and mustard (*Brassica nigra*). This area has also been called the "arm and the knob" or other terms as the bluff ends in a promontory including large, highly visible rocks on the southern face. The Reclamation Plan will preserve most of the bluff and reduce the slope on its interior by adding fill while preserving the "knob"--the high ground at the easternmost end that also supports dramatic rocks below. No cut or fill is proposed on the outside (ocean side) of the bluff.

II. PHASE 1 TASKS: GRADING AND DRAINAGE

A. Overall Description of Work Activity

- 1.1 Vegetation stripping
- 1.2 Grading
- 1.3 Keyway construction
- 1.4 Basin construction
- 1.5 Road and entrance construction
- 1.6 Drainage facilities construction

B. Quantified Description of Activities

Task 1.1 Vegetation Stripping

Description: Remove vegetative materials from 18.3 acres, including 20 trees. Grind all vegetative material for re-use as mulch and incorporation into fills in quarry bottom and sides. Note: the incorporation of the mulch will be described in the revegetation phase.

Quantity: 19,800 c.y. of vegetative materials to be removed and ground into mulch.

Equipment: 2 bulldozers with blades, 2 loaders, 2 chippers, and 1 water truck (see Appendix A for equipment descriptions).

Duration: Bulldozers to strip vegetative materials at 2,400 c.y./hr = 8.5 hours (Use 2 bulldozers for 0.5 days). Loaders to transport vegetative materials to a chipper at 750 c.y./hour = 27 hours (2 loaders for 1.5 day) . Additional loaders to load vegetation into a chipper which can process material at 500 c.y./hour = 40 hours (2 loaders and 2 chippers for 2.5 days), Water truck to wet area (Use 1 water truck for 2 days)

Labor: 2 Bulldozer operators for 1 day
2 Loaders operators for 4 days
2 Wood chipper operators for 2.5 days.
1 laborer to operate water truck for 2 days.

TABLE 1.1 COST ESTIMATE FOR TASK 1-1 Vegetation Stripping					
	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Bulldozer	2	4.25	8.5	\$195.93	\$1,665.40
Loader	4	16.75	67	\$377.53	\$25,294.51
Rotating Drum Chipper	2	20	40	\$50.11	\$2,004.40
Water Truck	1	16	16	\$43.75	\$700.00
SUBTOTAL				\$29,664.31	
LABOR (L)					
Bulldozer operator	2	4.25	8.5	\$63.74	\$541.79
Loader Operator	4	16.75	67	\$63.74	\$4,270.58
Chipper Operator	2	20	40	\$63.42	\$2,536.80
Laborer	1	16	16	\$42.30	\$676.80
SUBTOTAL				\$8,025.97	
TOTAL COST (excluding management costs*)				\$37,690.28	

*Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit and overhead

Task 1.2 Grading

Description: Site will be graded according to the Reclamation Plan. All of the cut material will be used on-site as fill.

Operation: To grade site according to the Reclamation Plan.

Quantities: 108,300 c.y. of cut and fill mostly to be placed in Quarry Pit.

Equipment: 2 Bulldozers, 2 compactors, 4 scrapers, 4 loaders, and a water truck.

Duration: Bulldozers with ripper teeth will scarify 9.7 acres to a depth of 12 inches at 5.6 ac/hr = 3.0 hours. Bulldozers to excavate and move 108,300 c.y. at 2,400 c.y./hr = 46 hours (Use 2 bulldozers for 3 days). Scrapers and loaders to load and distribute 108,300 c.y. of excavated material at 600 c.y./hr = 180.5 hours (Use 4 scrapers and 4 loaders for 6 days). Sheep's foot to compact 107,700 c.y. at 2,200 c.y./hr. = 49 hours (Use 2 compactors for 3 days). Water truck to wet surface during earthwork (Use 1 water truck for 7 days).

Labor: 2 Bulldozer operators for 3 days
 2 Sheep's foot operators for 3 days
 4 Scraper operators for 6 days
 4 Loader operators for 6 days
 1 laborer to operate water truck for 7 days

TABLE 1.2 COST ESTIMATE FOR TASK 1.2 Grading					
	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Bulldozer	2	24.5	49	\$195.93	\$9,600.57
Compactor	2	24.5	49	\$105.00	\$5,145.00
Scraper	4	45	180.5	\$319.03	\$57,584.92
Loader	4	45	180.5	\$377.53	\$68,144.17
Water Truck	1	56	56	\$43.75	\$2,450.00
SUBTOTAL				\$142,924.66	

LABOR (L)					
Bulldozer Operator	2	24.5	49	\$63.75	\$3,123.75
Compactor operator	2	24.5	49	\$50.50	\$2,474.50
Scraper Operators	4	45	180.5	\$67.00	\$12,093.50
Loader Operators	4	45	180.5	\$63.76	\$11,506.88
Laborer	1	56	56	\$42.30	\$2,368.80
SUBTOTAL				\$31,567.43	
TOTAL COST (excluding management costs*)					
				\$174,492.09	

*Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit and overhead

Task 1.3 Keyway Construction

Description: Construction of keyway along Quarry Pit toe

Quantity: 2 x 730 ft keyways

Materials: 6" perforated sub drain pipe, 1,460 l.f.
 16,060 s.f. filter fabric
 408c.y. (612 tons) crushed rock (including 2 c.y. for dissipater pad)

Equipment: Excavators (one with hook), semi end dump truck flatbed truck, loader, and a water truck.

Duration: Excavator to dig keyway trenches for pipes at 230 l.f./ hour = 6.5 hours;
 Excavator with hook to lift & place pipe at 300 l.f./hour = 5 hours; Excavator to place crushed rock around pipe at 200 c.y./hour = 2 hours. Total is 13.5 hours. (Use 1 excavator for 2 days)
 Loader to distribute excavated material at 750 c.y./hr = 0.5 hrs.
 Semi End Dump Truck to transport crushed rock at 16 c.y./trip = 26 trips x 1 hours/round trip = 26 hours (Use 2 Semi End Dump Trucks for 2 days)
 Flatbed Truck to transport pipe and filter fabric at 1 hour/roundtrip x 3 trips = 3 hours (Use 1 Flatbed Truck for .5 day) 2 laborers to assist in placing pipe at 300 l.f./hour = 5 hours; and 2 laborers to lay out filter fabric at 2,000 l.f./hour = 8 hours for 13 hours total (Use 2 laborers for 2 days)
 Water truck for 2 days

Labor: 1 Excavator operator for 2 days
 2 Semi End Dump Truck operators for 2 days
 1 Flatbed Truck operator for .5 day
 1 laborer to drive Water truck for 2 days
 2 laborers to lay out pipes and filter fabric for 2 days

TABLE 1.3 COST ESTIMATE FOR TASK 1.3 Keyway Construction					
	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Excavator	1	13.5	13.5	\$250.43	\$3,380.74
Semi-End Dump truck	2	13.0	26.0	\$101.78	\$2,116.92
Flatbed truck	1	4.0	4.0	\$37.50	\$150.00

Loader	1	0.5	0.5	\$377.53	\$188.77
Water Truck	1	16.0	16.0	\$43.75	\$700
SUBTOTAL				\$6,536.43	
LABOR (L)					
Excavator operator	1	13.5	13.5	\$67.00	\$904.50
Semi-End Dump truck Operator	2	13.0	26.0	\$65.41	\$1,700.66
Flat Bed Truck Driver	1	4.0	4.0	\$58.15	\$232.60
Loader Operator	1	0.5	0.5	\$63.76	\$31.88
Laborer to drive Water Truck	1	16.0	16.0	\$42.30	\$676.80
Laborers	2.0	16.0	32.0	\$42.30	\$1,353.60
SUBTOTAL				\$4,900.04	
	UNIT			COST PER ITEM	TOTAL
MATERIAL (M)					
6' Perforated Subdrain Pipe (l.f.)	1,460			\$3.44	\$5,022.40
Filter Fabric (s.f.)	16,060			\$0.91	\$14,614.60
Crushed Rock (ton)	612			\$19.38	\$11,860.56
SUBTOTAL				\$31,497.56	
TOTAL COST (excluding management costs*)				\$42,934.03	

*Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit and overhead

Task 1.4 Basin Construction

Description: Construction of a mitigation wetland basin and a water quality basin with outfall. The wetland mitigation basin is a stand-alone basin. The water quality basin will catch sediment and surface flows from the graded areas of the quarry and then transport overflow to an existing outfall in the creek.

Quantity: 5,784 c.y. of soil to be removed and distributed.

Equipment: Bulldozer, 2 loaders, and a water truck

Duration: Bulldozer to excavate 5,784 c.y. at 2,400 c.y./hour = 2.5 hours (Use 1 bulldozer for 0.5 days). Loader distribute 5,784 c.y. of soil @ 250 c.y./hour (12.5 c.y./load & 3 minute turnaround) = 23 hours (Use 2 loaders for 1.5 days). Use 1 water truck for 1.5 days

Labor: 1 Bulldozer operator for 0.5 days; 2 Loader operator for 1.5 days;
1 laborer to drive Water Truck for 1.5 days

TABLE 1.4 COST ESTIMATE FOR TASK 1.4 Basin Construction					
	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Bulldozer	1	2.5	2.5	\$195.93	\$489.83
Loader	2	11.5	23.0	\$377.53	\$8,683.19
Water Truck	1	12.0	12.0	\$43.75	\$525.00
SUBTOTAL				\$9,698.02	
LABOR (L)					
Bulldozer Operator	1	2.5	2.5	\$63.76	\$159.40
Loader Operator	2	11.5	23.0	\$63.76	\$1,466.48
Laborers to drive water truck	1	12.0	12.0	\$42.30	\$507.60
SUBTOTAL				\$2,133.48	
TOTAL COST (excluding management costs; see Table 2)					\$11,831.50

Task 1.5 Road and Entrance Construction

Description: Construction of an unpaved access road from the site entrance at the Calera Creek crossing through the East Flank to the Hilltop; also, construction of a temporary site entrance at the Calera Creek crossing.

Quantity: 1,847 l.f. of a 32-foot wide primary access road and 150 l.f. of a 20-foot wide temporary construction entrance.

Equipment: Bulldozer, semi end dump truck, loader, motor grader, roller compactor, and a water truck.

Material: 6" base rock for 62,100 sq. ft. of road surface (temporary and permanent) = 1,160 c.y. base rock (1,740 tons).

Duration: Bulldozer to excavate access road bed (average 2' depth) 4,377 c.y. at 2,400 c.y./hour = 1.8 hours. (Use 1 bulldozer for .5 day). Semi End Dump Truck to import rock at 16 c.y./load/hr c.y. = 73 hours (73 trips x 1 hour roundtrip) Use 5 dump trucks for 2 days). Loader to transport base rock around site at 125 c.y./hour = 9.3 hours. (Use 1 loader for 2 days). Motor grader to level the road surface at 1 acre/hour = 1.5 hours. (Use 1 motor grader for .5 day). Roller to compact road surface at 2,200 c.y./hour = 0.5 hours. (Use 1 roller compactor for 1.0 hours). Use 1 water truck for 2 days

Labor: 1 Bulldozer operator for 0.5 day
 5 Semi-end dump truck operators for 2 days
 1 Loader operator for 2 days
 1 Grader operator for .5 day
 1 Roller compactor operator for .5 day
 1 laborer to drive Water truck for 2 days

TABLE 1.5 COST ESTIMATE FOR TASK 1.5 Road and Entrance Construction					
	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Bulldozer	1	1.8	1.8	\$195.93	\$352.67
Loader	1	9.3	9.3	\$377.53	\$3,511.03

Semi-End Dump Trucks	5	14.5	73	\$101.78	\$7,429.94
Grader	1	1.5	1.5	\$164.29	\$246.44
Compactor	1	0.5	0.5	\$67.53	\$33.77
Water Truck	1	16	16	\$43.74	\$699.84
SUBTOTAL				\$12,273.69	
LABOR (L)					
Bulldozer operator	1	1.8	1.8	\$63.76	\$114.77
Loader operator	1	9.3	9.3	\$63.76	\$529.97
Semi-End Dump truck operators	5	14.5	73	\$65.41	\$4,774.93
Grader operator	1	1.5	1.5	\$60.94	\$91.41
Roller Compactor operator	1	0.5	0.5	\$50.50	\$25.25
Laborer	1	16	16	\$42.30	\$676.80
SUBTOTAL				\$18,486.82	
	UNIT			COST PER ITEM	TOTAL
MATERIAL (M)					
Base rock (tons)	1,740			\$21.10	\$36,714.00
SUBTOTAL				\$36,714.00	
TOTAL COST (excluding management costs*)				\$67,474.51	

*Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit and overhead

Task 1.6 Drainage Facilities Construction

Description: Construction of all storm drains and drainage ditches. Installation of inlets and manholes along the access road. Placement of outlet and energy dissipater in the water quality basin.

Quantity: 3,359 l.f. of concrete-lined drainage ditch and 1,936 l.f. of storm drain trench.

Materials: 74.6 c.y. concrete
9x18" drop inlets
12" hdpe culvert, 1,720 l.f.
24" hdpe culvert, 216 l.f.
4x48" concrete manholes

Equipment: Backhoe, concrete trucks, (truck with pump and telescopic boom (28 m), flatbed truck, backhoe with hook, and a water truck.

Duration: Backhoe to excavate 5,296 l.f. combined of ditches and culvert trench at 230 l.f./hour = 23 hours; a backhoe to place 2 c.y. of crushed rock for the dissipater pad, and a Backhoe with hook to lift 1,937 l.f. of culvert at 300 l.f. /hour = 6.5 hours and place all inlets, outlets, manholes, and the energy dissipater at 6 structures/hour = 2.5 hours. Total is 32 hours (Use 2 backhoes for 2 days). Flatbed Truck to transport culverts and inlets (Use 1 flatbed truck for 1.5 days) Concrete truck to deliver concrete at 10 c.y./load (assuming 2 hour round trip with rotating vehicles) = 2 trucks for 1 day. Material cost also includes operator and equipment. Truck with concrete pump and boom 9 c.y./hour= 8 hours (Use 1 truck w/pump & boom for 1 day) Additional fee of \$3.75/c.y. that is pumped. Bulldozer to fill trenches after drain pipe is laid at 2,400 c.y./hr = 16 hrs and bulldozer to construct 725ft earthen berm =8 hrs (1 bulldozer for 3 days). Water truck for 2 days.

Labor: 2 backhoe operators for 2.5 days
1 truck w/pump & boom for 1.5 days
2 concrete truck operators for 1 day
1 bulldozer operator for 3 days
1 flatbed truck operator for 1.5 day
1 laborer to drive Water truck for 2 days
6 laborers to construct frames, assist in pouring of concrete and placing inlets & culverts for 3.5 days.

**TABLE 1.6
COST ESTIMATE FOR TASK 1.6
Drainage Facilities Construction**

	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Backhoe	2	16.0	32.0	\$29.00	\$928.00
Concrete Truck	2	8.0	16.0	\$156.00	\$2,496.00
Truck w/ concrete pump,boom	1	8.0	8.0	\$203.50	\$1,628.00
Fee to pump concrete (cy)	74.6	--	--	\$3.75	\$279.75
Flatbed truck	1	12.0	12.0	\$37.50	\$450.00
Bulldozer	1	24.0	24.0	\$195.93	\$4,702.32
Water Truck	1	16.0	16.0	\$43.75	\$700
SUBTOTAL				\$11,184.07	
LABOR (L)					
Backhoe operators	2	20.0	40.0	\$67.00	\$2,680.00
Concrete Truck Operator	2	8.0	16.0	\$60.94	\$975.04
Truck w/ concrete pump and boom	1	8.0	8.0	\$0.00	\$0.00
Flatbed truck driver	1	12.0	12.0	\$58.15	\$697.80
Bulldozer operator	1	24.0	24.0	\$63.75	\$1,530.00
Laborers for water truck	1	16.0	16.0	\$42.30	\$676.80
Laborers to assist w/ installation	6	28.0	168.0	\$42.30	\$7,106.40
SUBTOTAL				\$22,666.04	

MATERIAL (M)					
	UNIT			COST PER ITEM	TOTAL
Concrete (c.y.)	74.6			50.00	\$3,730.00
Concrete inlets (ea)	9			\$1,177.50	\$10,597.50
48" Concrete Manhole	4			\$650.00	\$2,600
24" HDPE Culvert (l.f.)	216			\$53.75	\$11,610.00
12" HDPE Culvert (l.f.)	1,720.0			\$15.93	\$27,399.60
SUBTOTAL				\$55,937.10	
TOTAL COST (excluding management costs*)				\$89,787.21	

*Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit and overhead

II. PHASE 2 TASKS: EROSION CONTROL

A. Overall Description of Work Activity

2.1 Install erosion control

B. Quantified Description of Activities

Task 2.1 Install erosion control

Description: Installation of the following components for erosion control: silt fence surrounding all areas to be graded; Gravel bags and filter fabric along v ditches and around inlets; Fiber roll on all graded slopes; Geotextile mat on certain cut slopes and slopes adjacent to the creek; Protective plastic sheeting for storage of vehicles, materials, wastes and concrete washout.

Equipment: 1 flatbed truck, 3 pickup trucks, 1 bulldozer

Materials: 9,230 l.f of silt fencing
37,700 l.f. of fiber roll
116,075 sf of geotextile mat
232 l.f. of gravel bags
9,144 sf of plastic sheeting

Duration: One flatbed truck can make 8 round trips in 1 day to deliver materials (Use 1 Flatbed truck for .5 days). Bulldozer to scrape out a concrete washout pad (<1 hr). Two laborers to install plastic sheeting for concrete washout, and storage areas for waste, vehicles and material stock piles (2 laborers for 1.5 days). Two laborers install silt fencing in 2,000 l.f./day = 4.6 days (Use 4 laborers for 2.5 days). Two laborers install fiber roll at 5,000 l.f./day = 7.5 days (Use 6 laborers for 2.5 days). 2 laborers can install a catch dam or drop inlet protection in 0.5 hrs x 28 units = 14 hours (Use 2 laborers for 2 days). Two laborers can install geotextile at 5,000 sf/day = 23.5 days (use 8 laborers for 6 days). 1 pickup truck can transport up to 3 laborers and haul materials for the duration of the work (Use 3 pickup trucks for 10 days).

Labor: 3 laborers (Laborer will operate pickup truck) for 10 days.
8 laborers to install all erosion control measures for 10 days.
1 Flatbed truck operator for 1 day.
1 Bulldozer operator for < 1 hr.

TABLE 2.1 COST ESTIMATE FOR TASK 2.1 Installation of Erosion Control					
	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Flatbed truck	1	4.0	4.0	\$37.50	\$150.00
Pickup truck	3	80.0	240.0	\$15.00	\$3,600.00
SUBTOTAL			\$3,750		
LABOR (L)					
Flatbed truck operator	1.0	4.0	4.0	\$58.15	\$232.60
Laborers	8.0	80.0	240.0	\$42.30	\$10,152.00
SUBTOTAL			\$10,384.60		
	UNIT			COST PER ITEM	TOTAL
MATERIAL (M)					
Silt Fencing (linear feet)	9,230			\$0.25	\$2,307.50
Fiber Roll (linear feet)	37,700			\$2.20	\$37,323.00
Gravel Bags (linear feet)	232.0			\$4.00	\$928.00
Geotextile Mat (s.f.)	116,075			\$0.10	\$11,607.50
Plastic Sheeting (s.f.)	9,144			\$0.10	\$914.40
SUBTOTAL			\$98,697.40		
TOTAL COST (excluding management costs*)			\$112,832.00		

*Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit and overhead

III. PHASE 3 TASKS: REVEGETATION

A. Overall Description of Work Activity

3.1 Apply hydroseed to graded slopes

B. Quantified Description of Activities

Task 3.1 Apply hydroseed

Description: Chipped vegetation will be reapplied to the quarry pit as an organic amendment and worked into the soil before the area is hydroseeded. Hydroseeder to apply hydroseed mix over the entire grading area.

Quantity: 19,790 c.y. of chips
18.3 acres to be hydroseeded

Equipment: 2 loaders, 1 bulldozer and 2 hydroseed trucks

Materials: 4 different Hydroseed Specifications on Table 1 – Table 3 of Reclamation Plan

Duration: Loader to move 19,790 c.y. of mulch at 750 c.y./hour = 26.5 hrs (Use 2 loaders for 2 days). Bulldozer can distribute mulch at 2,400 c.y./hr = 8.25 hours (Use 1 bulldozer for 1 day). Hydroseed truck at 1 acre/hour = 18.3 hours (Use 2 hydroseed vehicles for 2days).

Labor: 2 loader operators for 2 days
1 bulldozer operator for 1 day
4 hydroseed operators for 2 days

TABLE 3.1 COST ESTIMATE FOR TASK 3.1 Revegetation					
	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Loader	2	13.25	26.5	\$377.53	\$10,004.55
Bulldozer	1	8.25	8.25	\$195.93	\$1,616.42
Hydroseed Truck	2	9.25	18.5	\$62.50	\$1,156.25
SUBTOTAL			\$12,776.92		

LABOR (L)					
Loader Operator	1	8.0	8.0	\$63.75	\$510.00
Bulldozer Operator	1	4.0	4.0	\$63.75	\$255.00
Hydroseed Truck Operators	4	26.0	104.0	\$50.50	\$5,252.00
SUBTOTAL				\$6,017.00	
	UNIT			COST PER ITEM	TOTAL
MATERIAL (M)					
Hydroseed Mixes (ac)	18.3			\$3,000.00	\$36,600.00
SUBTOTAL				\$54,900.00	
TOTAL COST (excluding management costs*)				\$73,693.92	

*Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit and overhead

IV. PHASE 4 TASKS: MAINTENANCE AND MONITORING

A. Overall Description of Work Activity

4.1 Complete maintenance and monitoring

B. Quantified Description of Activities

Task 4.1 Monitor and maintain site for three years

Description: The owner's revegetation expert will visual inspect the newly revegetated areas and will observe the hydroseeded areas for targeted noxious weeds and inspect erosion and sediment controls. Weed control will be required as either hand spraying or weeding.

Operation: Visually observe the newly revegetated areas, observe site for presence of targeted noxious weeds; observe for erosion and sediment problems, provide weed control.

Quantity: A bit more than 18 acres of revegetated areas to visually inspect and observe for presence of targeted noxious weeds and erosion. One sediment basin to inspect for sediment control problems.

Materials: Defoliant (if noxious weeds are found).

Equipment: Pickup truck to transport personnel, tools and supplies. Hand tools (shovels and wheelbarrows) and backpack spray rig if noxious weeds are found.

Duration: The ecological monitor (EM) will visually observe all revegetated areas four times during the first year after planting, three times the second year, and twice the third year (Use 1 EM for 9 eight-hour visits to the site; total number of hours = 72 in the 3 year period). EM will inspect erosion control and sediment basin at the same time.

Pickup truck to be used by the EM to conduct inspections (1 pickup truck for EM at 72 hours over 3 years). Landscape contractor will spot spray or pull noxious weeds and perform minor maintenance; estimate work time as equivalent to EM, i.e. 72 hours over 3 years.

Labor: 1 EM for a total of 72 hours over 3 years.
1 Landscape Contractor for a total of 72 hours over 3 years.

TABLE 4.1					
COST ESTIMATE FOR TASK 4.1**					
Post Reclamation Monitoring and Maintenance (3 year period)					
	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Pickup truck	1.0	16.0	144.0	\$12.00	\$1,728.00
SUBTOTAL			\$1,728.00		
LABOR (L)					
Ecological Monitor	1.0	8.0	72.0	\$90.00	\$6,480.00
Landscape Contractor	1.0	8.0	72.0	\$75.00	\$5,400.00
SUBTOTAL			\$11,880.00		
	UNIT			COST PER ITEM	TOTAL
MATERIAL (M)*					
Defoliant	5.0			\$550.00	\$2,750.00
SUBTOTAL			\$2,750.00		
TOTAL COST (excluding management costs*)				\$16,358.00	

*Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit and overhead

**Cost over 3 years

TABLE 2 PACIFICA QUARRY 2009 RECLAMATION COST SUMMARY		
TASK	DESCRIPTION	COST
1.1	Vegetation stripping	\$37,690.28
1.2	Grading	\$174,492.09
1.3	Keyway Construction	\$42,934.03
1.4	Basin Construction	\$11,831.50
1.5	Road and Entrance Construction	\$67,474.51
1.6	Drainage Facilities Construction	\$89,787.21
2.1	Erosion Control	\$112,832.00
3.1	Revegetation	\$73,693.92
4.1	Maintenance and Monitoring	\$16,358.00
TOTAL OF DIRECT COSTS		\$627,093.54
INDIRECT COSTS		
Mobilization (5% of Direct Costs)*		\$31,546.75
Supervision (4.5% of Direct Costs)*		\$28,219.20
Contingency (7% of Direct Costs)*		\$43,896.50
Profit & Overhead (9.5% of Direct Cost)*		\$59,573.83
Lead Agency Administration Cost (10% of Direct Cost)**		\$62,709.30
TOTAL OF INDIRECT COSTS		\$225,945.58
TOTAL OF DIRECT + INDIRECT COSTS		\$853,040.00

*These percentages are based on the State Mining & Geology Board – Financial Assurance Guidelines

**These percentages are based on those used in the previous FACEs, see LSA 2009, 2011, and 2012 and Lilburn 2015.

Appendix A

Equipment Descriptions

Phase 1 Equipment

Bulldozer with a blade will remove vegetative materials; **Loader** will place materials into **Dump Truck** for transport to **Rotating Drum Chipper**, which will be used to mulch materials. **Water Truck** will spray work area to control dust for this task and those below.

Bulldozer will strip the topsoil from the Quarry Hilltop. **Loaders** will stockpile topsoil at the top of hill and transport it after rough grading is completed to the Quarry Pit.

Bulldozers will lower the Southern Bluff and move loose fill and mine deposits downslope to create more stable slope.

Loader will transport stockpiled soils for re-soiling; **Bulldozer** will spread topsoil and trackwalk the terrace slopes and cut slopes.

A sheep's foot **Compactor** will compact the resulting grades.

Bulldozer with ripper teeth will scarify the ground surface of the Quarry Pit to 12 inch depth to accept fill.

Excavator will construct the keyways and will place crushed rock around pipe; **Semi End Dump Truck** will transport crushed rock; **Flat Bed Truck** will import pipe and filter fabric; a **Loader** will transport dirt for backfill; **Laborers** will lay filter fabric and place drain pipe.

Bulldozers will construct the sediment basin with inflow and outflow pipes and the wetland mitigation basin in the Quarry Pit; a **Loader** will transport the excess dirt to fill areas.

Bulldozers and **Loader** will construct the access road and construction entry; **Semi-End Dump Truck** will transport road base rock to work areas; **Grader** and **Compactor** will provide final grade; **Water Truck** will spray area roadbed to control dust.

Backhoe will construct drainage ditches on Quarry Face benches; **Concrete Truck** will pump concrete up to drainage ditches so laborers can line the ditches with concrete. **Flat Bed Truck** will transport pipe, filter fabric, inlets and culvert; **Bulldozer** will provide final grading.

Phase 2 Equipment

Flat bed Truck will import silt fencing and straw bales to site; **Pick up truck** will transport laborers, silt fencing and straw bales to areas requiring erosion control; **Laborers** will install **silt fence and straw bales** at areas indicated.

Phase 3 Equipment

Loader and **Bulldozer** will move mulch to bare areas; **Hydroseed Truck** will spread hydroseed.

Appendix B

LSA (2009) Financial Assurances Cost Estimate



LSA ASSOCIATES, INC.
601 GATEWAY BOULEVARD, SUITE 1270
SOUTH SAN FRANCISCO, CALIFORNIA 94080

650.985.2590 TEL
650.238.0016 FAX
WWW.LSA-ASSOC.COM

May 13, 2009

City of Pacifica Engineering Department
ATTN: Van Ocampo
170 Santa Maria Avenue
Pacifica, CA 94044

RE: Pacifica Quarry - Financial Assurance Cost Estimate: CA Mine ID# 91-41-0001

Dear Mr. Ocampo

With this letter, we are sending you an updated Reclamation Cost Estimate for the Pacifica Quarry on behalf of the owner, Rockaway Beach Ltd. This document summarizes the costs that would be required to reclaim the site in a safe and stable condition as required by the Surface Mining and Reclamation Act (SMARA). The total estimated cost is \$1,039,638 which is \$205,914 less than the prior estimate. The reason for the difference is a more detailed in-depth review of the costs for equipment, labor and materials.

Please review the 2009 cost estimate and let us know if you have any comments or questions about it. If it would be helpful, we would be glad to meet at the site to review the existing conditions and discuss the activities described in the cost estimate. After you have reviewed and approved the estimate you need to send it to the Office of Mine Reclamation. After both agencies approve the estimate then the owner will obtain a new financial assurance mechanism (FAM) in the amount of \$1,039,638. A copy on the new FAM will be sent to you and OMR.

Thank you for your consideration.

Sincerely,

Mignone Wood, AICP

Enclosures: Reclamation Cost Estimate for Pacifica Quarry, dated May 2009

CC: Daniel Grimm, Rockaway Beach Ltd.

COST ESTIMATE FOR PACIFICA QUARRY

May 7, 2009

RECLAMATION COSTS AND GUARANTEE

Reclamation Assumptions. Reclamation costs are shown in the various task tables, Tables 1a to 1n, and summarized in Table 2. Costs are based on work being performed by outside contractors and include the following assumptions:

- 1) In the event of an upset condition, reclamation activities would be performed in accordance with the tasks described in this cost estimate and the adopted *Pacifica Quarry Reclamation Plan* (dated May 1998).
- 2) Work on various reclamation tasks will be done simultaneously to the maximum extent practicable.
- 3) Stockpiled soil will be used for resoiling.
- 4) Operating capacities of equipment have been obtained from the Caterpillar Company estimated production reference manual.
- 5) Rental rates for equipment have been obtained from the local equipment rental companies; and from *Labor surcharge and Equipment Rental Rates*, April 1, 2009 through March 31, 2010 (State of California, Department of Transportation, Division of Construction)
- 6) Labor rates are current union scale and represent fully loaded hourly rates. The source of these costs is from the "General Prevailing Wage" determination made by the California Department of Industrial Relations; and/or from consultation with staff from local quarry operators.
- 7) Prices for materials have been obtained from local landscape supply companies.

Financial Assurance. An Irrevocable Letter of Credit payable to the "City of Pacifica or the Department of Conservation" will be provided to the City of Pacifica in the amount of the estimated cost of reclamation. As items of reclamation work are completed to the standards set forth in the adopted Reclamation Plan and are acceptable to the County, the owner intends to

retrieve the existing assurance and submit a new one with the face value reduced accordingly.

Reclamation Cost Estimate. Reclamation tasks are grouped into four categories of related work. Work in various categories may occur simultaneously but are listed separately in the following section. Group Tasks 1 and 2 include site preparation; topsoil salvage; grading the site to conform with the final grading configuration in Figure 7 of the adopted Reclamation Plan; filling and compaction; constructing drainage facilities and keyways; constructing an unpaved compacted access road; scarifying the ground surface of the quarry floor, ripping the areas to receive topsoil; scarifying smooth rock surfaces; resoiling some of the graded areas; and installing erosion and sediment control devices such as silt fences and straw bales. Group 3 Tasks involve planting woody plant materials and applying a hydroseed slurry to graded areas. Group 4 Tasks involves maintaining the site and monitoring the reclamation program over the three-year post reclamation period, as shown on Tables 1m and 1n. Maintenance will include; annual inspections, and if needed maintenance of the excavated benches and slopes, drainage facilities, culverts, and erosion control mechanisms. Inspections will occur bi-annually for the first two years and then annually for the third year.

The description of each task includes a summary of the equipment, labor and processes necessary to complete the task. Costs associated with each task are shown in summary tables 1a through 1n; while Table 2 provides the overall cost summary.

GROUP 1 & 2 TASKS: SITE PREPARATION, GRADING & SITEWORK

Overall Description of Work Activity:

- 1) Remove vegetative materials.
- 2) Remove sediments from existing sediment basin.
- 3) Scarify quarry pit.
- 4) Extend the existing sub drain on quarry floor.
- 5) Strip areas with salvageable topsoil.
- 6) Grade Westerly Bluff, Main Face and East Flank.
- 7) Install keyways.
- 8) Fill existing quarry pit.
- 9) Construct temporary sediment basin.
- 10) Construct compacted maintenance road.
- 11) Rip ground surface to be resoiled and resoil the top of hill and Pad A, andd scarify hard rock surfaces of excavated slopes.
- 12) Construct concrete lined drainage ditches, earth swales; and install inlets and culverts.
- 13) Install erosion controls.

Summary of Reclamation Methods to be used:

1. **Bulldozer with a blade** will remove vegetative materials; **Loader** will place materials into **Dump Truck** for disposal at landfill.
2. **Backhoe** will remove sediments from the existing sediment pond on the quarry floor and transported to the landfill;
3. **Bulldozer with ripper teeth** will scarify the ground surface of the quarry pit to 12 inch depth;
4. **Backhoe** will dig a trench and then a **backhoe with hook** will lift sub drainpipe off and filter fabric off of **flatbed truck** and place the pipe, with laborers assistance, into the trench in the quarry pit. **Laborers** will assist in connecting the sub drainpipe to the existing pipe; wrapping the pipe with filter fabric and filling the trench with base rock. **Backhoe** will place crushed rock around pipe. **Pick up Truck** will transport laborers;
5. **Bulldozer** will strip the topsoil from the top of the hill, and East Flank. **Loaders** will stockpile topsoil at the top of hill and transport it after rough grading is completed to either, Pad A, the top of the hill or the East Flank after it is reconstructed;
6. **Bulldozers** will lower the westerly bluff, reshape the Main Face and remove loose fill and landslide deposit from the East Flank;
7. **Scrapers** will transport fill materials to backfill the quarry pit; **Bulldozer** will push fill materials into the pit and spread it over the East Flank; **Sheep's foot** will compact the fill material; **Water Truck** will moisten ground surface for dust control. **Motor Grader** will construct final ground surface of Pad A.
8. **Excavator** will construct an undrained keyway at mid-slope below Pad A, a drained keyway at the toe of Pad A, and a keyway on the reconstructed slopes of the East Flank; **Flat Bed Truck** will import pipe and filter fabric; **Semi End Dump Truck** will transport crushed rock; **Pick up Truck** will transport laborers; **Backhoe with hook** will lift drain pipe and filter fabric off of **Flatbed Truck**; **Laborers** will lay filter fabric and place drain pipe; **Excavator** will place crushed rock around pipe;
9. **Bulldozer** will construct a temporary sediment basin with outflow pipe and spillway on Pad A; **Flat Bed Truck** will import pipe and filter fabric; **Semi End Dump Truck** will transport crushed rock. **Backhoe** to dig trench and **Excavator** to place culvert into trench. **Water Truck** will spray work area to control dust.
10. **Bulldozers and Motor Grader** will construct the maintenance road; **Semi-End Dump Truck** will transport road base rock to work area; **Roller** will compact the roadbed; **Backhoe** will construct drainage ditches adjacent to access road; **Water Truck** will spray area roadbed to control dust; **Concrete Truck** will pump concrete so laborers can line the drainage ditches with concrete;
11. **Bulldozers** with ripper teeth will rip areas to receive fill to 24-inch depth to relieve compaction. **Loader** will transport stockpiled soils for re-soiling; **Bulldozer** will spread topsoil and trackwalk the terrace slopes and cut slopes.
12. **Backhoe** will construct earth swale at top of hill, and north edge of Pad A.

Backhoe will construct drainage ditches on Main Face benches, Pad A south slope benches and **Concrete Truck** will pump concrete up to drainage ditches so laborers can line the ditches with concrete. **Flat Bed Truck** will transport inlets and culvert; **Backhoe with hook** will unload inlets and culverts for laborers to install.

13. **Flat bed Truck** will import silt fencing and straw bales to site; **Pick up truck** will transport laborers, silt fencing and straw bales to areas requiring erosion control; **Laborers** will install **silt fence and straw bales** at areas indicated on Figure 10, Interim Erosion Control Plan.

Quantified Description of Activities for Grading and Site Work Cost Estimate

(Task 1-1) Site Preparation- Vegetation Stripping

Description: Bulldozer with blade will remove vegetative materials from all areas to be graded and/or filled; Backhoe to remove sediments from existing sediment basin; Loader will transport vegetative materials to Dump Trucks for disposal at the landfill.

Operation: Remove vegetative materials from 15 acres, and sediments from existing basin.

Quantity: 16,214 c.y. of vegetative materials (1,621 cy soil/organic matter; and 14,593 cy vegetative matter) to be removed from 15 acres; and 208 c.y. of sediments removed from temporary sediment basin.

Equipment: Bulldozer with blade to stripped materials from ground surface and separate into piles of vegetative matter and soil with organic matter. Loaders to put these materials into Semi End Dump Trucks for removal to landfill. Water truck to wet area for dust control. Loader to remove sediments from sediment basin and place it into dump truck for transport to landfill.

Duration: Bulldozers to strip vegetative materials and bulldozer to remove top 3 – 4 inches of soil with organic matter at 2,400 c.y./hr = 7 hours (Use 2 bulldozer for 1 day)
Semi End Dump Trucks with high sides to transport vegetative materials and soils with organic matter/sediments to landfill at 16,214 c.y ÷ 23 c.y./load = 705 loads x 1 hour/ round trip = 705 hours = 88 days (Use 11 dump trucks for 8 days)
Loaders to transport vegetative materials and soil with organic matter/sediments and place these materials into dump trucks at 750 c.y./hour = 21 hours = 2.6 days, Loaders will also be need to load semi end dump trucks for 8 days(see above) and removed sediments from the temporary sediment basin (1.5 hours). (Use 2 loaders for 10 days)

Water truck to wet area (Use 1 water truck for 11 days)

Labor: 2 Bulldozer operators for 1 day
2 Loaders operators for 10 days
11 Semi End Dump truck operators for 8 days
1 laborer to operate water truck for 11 days.

(Task 1-2) Quarry Pit Preparation

Description: Bulldozer with ripper teeth will scarify the ground surface to 12-inch depth. Backhoe will dig trench. Flatbed truck will import pipe and filter fabric. Semi End Dump Truck will import crushed rock. Backhoe with hook will unload drainpipe and filter fabric from Flatbed Truck and place pipe into trench with assistance from laborers.

Operation: Scarifying ground surface of quarry pit; excavate trench to extend existing sub

drain on quarry floor.

Quantity: 14 acres to be scarified.

Equipment: Bulldozer with ripper teeth to scarify ground surface. Backhoe to dig trench and backhoe with hook to unload pipe. Water truck to wet area for dust control. Backhoe with hook to unload drainpipe. Flat bed truck to transport drainpipe and filter fabric. Semi End Dump Truck to import crushed rock and backhoe to spread crushed rock in trench.

Materials: 50 l.f. of sub drainpipe, 550 s.f. filter fabric and 6.3 tons (4.2 c.y.) of crushed rock.

Duration: Bulldozer to scarify ground surface at 5.6 ac./hr = 2.5 hours (Use 1 bulldozer for .5 day)
 Backhoe to excavate 50 l.f. of trench @ 230 l.f./hour = 0.2 hours; backhoe with hook to unload 50 feet of 6 inch sub drainpipe for 0.5 hours; backhoe to place crushed rock into trench @ 400 c.y./hour = 0.01 hours (Use 1 backhoe for .5 days)
 Flatbed Truck to transport drainpipe and filter fabric to site (Use 1 flat bed truck for .5 day)
 Semi End Dump Truck to transport crushed rock to site (Use 1 semi end dump truck for .5 day)
 2 Laborers to unbundle 6 inch sub drainpipe, connect pipe to existing pipe on quarry floor, wrap pipe with filter fabric, and assist with spreading crushed rock into trench at 150 l.f./hour = .5 hour (2 laborers for .5 day)
 Water truck to wet area (Use 1 water truck for .5 days)

Labor: 1 Bulldozer operator for .5 day.
 1 Backhoe operator for .5 day.
 1 Flatbed Truck operator for .5 day.
 1 Semi End Dump Truck operator for .5 day.
 2 laborers to assist with installation of pipe and operation of water truck for .5 days.

(Task 2-1) Salvage Topsoil

Description: Bulldozer will strip topsoil and loader will transport it to temporary stockpile; water truck will wet area for dust control.

Operation: Salvage topsoil for later reuse during re-soiling.

Quantity: 12,540 cy topsoil

Equipment: Bulldozer to strip topsoil. Loaders to transport topsoil to stockpile. Water truck to wet area for dust control.

Duration: Bulldozer to strip topsoil at 2,400 c.y./hr = 5.5 hours (Use 1 bulldozer for 1 day)
 Loader to transport topsoil at 250 c.y./hour ÷ 12,540 c.y. = 6.5 days (Use 3 loaders for 2 days)
 Water truck to wet area (Use 1 water truck for 3 days)

Labor: 1 Bulldozer operator for 1 day
 3 Loaders operators for 2 days
 1 laborer to operate water truck for 3 days

Task 2-2: Grading of Westerly Bluff, Main Face and East Flank

Description: Bulldozers will excavate these three areas. Scrapers will transport and distribute earth materials; Sheep's foot compactor will compact earth materials; Motor Grader will level surface of Pad A; Water truck will spray work area to control dust.(Note, this task is closely related to Task 2-3).

Operation: To grade site according to the Reclamation Grading Plan, Figure 7.

Quantities: 806,400 c.y. cut/fill & 100,000 cy. landslide repair to be excavated at and replaced on East Flank.

Equipment: Bulldozers to excavate and move 806,400 c.y. at 2,400 c.y./hr = 336 hours = 42 days; and Bulldozers to excavate and move 100,000 c.y. at 2,400 c.y./hr = 42 hours = 5.5 days. Bulldozer to level surface of East Flank at 1 ac/hour ÷ 11 acres

= 11 hours = 1.5 days. Total of 49 days (Use 4 bulldozers for 12 days)
Sheep's' foot to compact 806,400 c.y. at 2,200 c.y./hr. = 366 hours = 46 days
(Use 4 compactors for 12 days)
Scrapers to distribute excavated material at 600 c.y./hr. ÷ 403,200 cy = 84 days
(Use 6 scrapers 14 days)
Motor grader to level surface of Pad A at 1 ac/hour ÷ 10.9 ac = 11 hours = 1.5
days (Use 1 Motor grader for 1.5 days)
Water truck to wet surface during earthwork (Use 1 water truck for 16 days)

Labor:

2 Bulldozer operators for 12 days
4 Sheep's foot operators for 12 days
6 Scraper operators for 14 days
1 Motor Grader operator for 1.5 days
1 laborer to operate water truck for 16 days

TABLE 1a
COST ESTIMATE FOR TASK 1-1
Site Preparation - Vegetation Stripping

	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Bulldozer	2.0	8.0	16.0	\$156.74	\$2,507.84
Loader	2.0	80.0	160.0	\$302.02	\$48,323.20
Semi-End Dump trucks	11.0	64.0	704.0	\$81.42	\$57,319.68
Water truck	1.0	88.0	88.0	\$35.00	\$3,080.00
SUBTOTAL					\$111,230.72
LABOR (L)					
Bulldozer operator	2.0	8.0	16.0	\$51.01	\$816.16
Loader operator	2.0	80.0	160.0	\$51.01	\$8,161.60
Semi-End Dump truck operators	11.0	64.0	704.0	\$52.33	\$36,840.32
Laborer	1.0	88.0	88.0	\$33.84	\$2,977.92
SUBTOTAL					\$48,796.00
TOTAL COST (excluding management costs**)					\$160,026.72

**Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit & overhead

TABLE 1b
COST ESTIMATE FOR TASK 1-2
Quarry Pit Preparation

	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Bulldozer	1.0	4.0	4.0	\$156.74	\$626.96
Flatbed truck	1.0	4.0	4.0	\$30.00	\$120.00
Backhoe	1.0	4.0	4.0	\$29.00	\$116.00
Semi-End Dump truck	1.0	4.0	4.0	\$81.42	\$325.68
Water truck	1.0	4.0	4.0	\$35.00	\$140.00
SUBTOTAL					\$1,328.64
LABOR (L)					
Bulldozer operator	1.0	4.0	4.0	\$51.01	\$204.04
Flatbed truck operator	1.0	4.0	4.0	\$46.52	\$186.08
Backhoe operator	1.0	4.0	4.0	\$53.60	\$214.40
Semi-End Dump truck operator	1.0	4.0	4.0	\$52.33	\$209.32
Laborer	2.0	4.0	8.0	\$33.84	\$270.72
SUBTOTAL					\$1,084.56
	UNIT			COST PER ITEM	TOTAL
MATERIAL (M)					
Crushed Rock (ton)	6.3			\$15.50	\$97.65
6" Perforated Subdrain Pipe (l.f.)	50			\$2.75	\$137.50
Filter Fabric (s.f.)	50			\$0.73	\$36.50
SUBTOTAL					\$271.65
TOTAL COST (excluding management costs**)					\$2,684.85

**Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit & overhead

**TABLE 1c
COST ESTIMATE FOR TASK 2-1
Salvage Topsoil**

	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Bulldozer	1.0	8.0	8.0	\$156.74	\$1,253.92
Loader	3.0	16.0	48.0	\$302.02	\$14,496.96
Water Truck	1.0	24.0	24.0	\$35.00	\$840.00
SUBTOTAL					\$16,590.88
LABOR (L)					
Bulldozer operators	1.0	8.0	8.0	\$51.01	\$408.08
Loader operators	3.0	16.0	48.0	\$51.01	\$2,448.48
Laborers	1.0	24.0	24.0	\$33.84	\$812.16
SUBTOTAL					\$3,668.72
TOTAL COST (excluding management costs**)					\$20,259.60

**Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit & overhead

TABLE 1d					
COST ESTIMATE FOR TASK 2-2					
Grading of Westerly Bluffs, Main Face, and East Flank					
	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Bulldozer	4.0	96.0	384.0	\$156.74	\$60,188.16
Sheep's Foot	4.0	96.0	384.0	\$84.00	\$32,256.00
Scraper	6.0	112.0	672.0	\$255.22	\$171,507.84
Motor Grader	1.0	12.0	12.0	\$131.43	\$1,577.16
Water truck	1.0	136.0	136.0	\$35.00	\$4,760.00
SUBTOTAL					\$270,289.16
LABOR (L)					
Bulldozer operator	4.0	96.0	384.0	\$51.01	\$19,587.84
Sheep's foot operator	4.0	96.0	384.0	\$40.40	\$15,513.60
Scraper operators	6.0	112.0	672.0	\$53.60	\$36,019.20
Motor Grader operator	1.0	12.0	12.0	\$48.75	\$585.00
Laborer	1.0	128.0	128.0	\$33.84	\$4,331.52
SUBTOTAL					\$76,037.16
TOTAL COST (excluding management costs**)					\$346,326.32

**Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit & overhead

(Task 2-3) Construction of Keyways

Description: Excavator will construct keyway below Pad A, at toe of Pad A and on the slope of the East Flank; Semi End Dump Truck will transport crushed rock; Flat bed truck will transport filter fabric and pipe to the site. Pick up truck will transport laborers; Excavator with hook will lift drain pipe off Flat bed truck; Laborers will assist in placing rock, filter fabric and pipe; Backhoe will place crushed rock around pipe; Water truck to spray work area to control for dust.

Operation: Construct keyways

Quantity: 3 keyways

Materials: 6 "perforated sub drain pipe, 1,550 l.f.
17,050 s.f. filter fabric
431 c.y. crushed rock (647 tons)

Equipment: Excavator to construct keyway, to lift pipe, and place crushed rock around pipe; Semi End Dump Truck to transport rock; Flatbed truck to transport filter fabric and pipe; Excavator with hook will lift and place pipe with assistance of 2 laborers; Water truck to reduce dust.

Duration: Excavator to construct keyway trenches for pipes at 230 l.f./hour = 7 hours; Excavator with hook to lift & place pipe at 300 l.f./hour = 5 hours; Excavator to place crushed rock around pipe at 200 c.y./hour = 2 hours. Total is 14 hours. (Use 1 excavator for 2 days)

Semi End Dump Truck to transport crushed rock at 16 c.y./trip = 27 trips x 1 hours/round trip = 27 hours (Use 1 Semi End Dump Truck for 3.5 days)

Flatbed Truck to transport pipe and filter fabric at 1 hour/roundtrip x 3 trips = 3 hours (Use 1 Flatbed Truck for .5 day)

2 laborers to assist in placing pipe at 300 l.f./hour = 5 hours; and 2 laborers to lay out filter fabric at 2,000 l.f./hour = 8.5 hours. Total hours = 13.5 hours (Use 2 laborers for 2 days)

Water truck for 1 day

Labor: 1 Excavator operator for 2 days
1 Semi End Dump Truck operator for 3.5 days
1 Flatbed Truck operator for .5 day
1 laborer to drive Water truck for 1 days
2 laborers to lay out pipes and filter fabric for 2 days

(Task 2-4) Construct Temporary Sediment Basin on Pad A.

Description: Bulldozer to dig sediment basin, loader to distribute soils. Flat bed truck to import 12" and 18" CMP pipe. Semi-end dump Truck to import crushed rock. Backhoe to dig trench and excavator with bucket and laborers to set pipe in place. Laborers to install outflow pipe and spread crushed rock at spillway. Water truck to spray work area.

Operation: Construct temporary sediment basin.

Quantity: 4,623 c.y. to be removed and distributed.

Materials: 12" CMP pipe, 270 l.f.
18" pipe, 7 l.f.
5.5 c.y. crushed rock (8.3 tons)

Equipment: Bulldozer can remove soil at rate of 2,400 c.y./hour
Loader to distribute soils at 12.5 c.y./load & 3 minute turnaround = 250 c.y. /hour
Flat bed truck to import pipe
Semi-End dump truck to import crushed rock
Backhoe to dig trench for culvert at 230 l.f./hour
Water Truck

Duration: Bulldozer to excavate 4,623 c.y. at 2,400 c.y./hour = 2 hours (Use 1 bulldozer for 0.5 day)

Loaders distribute 4,623 c.y. of soil @ 250 c.y./hour = 18 hours (Use 1 loader for 2 days)

Flat bed Truck to pick up pipe and wire at rate of 1 hour round trip (Use flat bed truck for .5 day)

Semi-end dump Truck to import crushed rock at rate of 1 hour round trip (Use 1 dump truck for .5 day)

Backhoe to dig 270 l.f. of trench at 230 l.f./hour = 1.25 hours (Use 1 backhoe for .5 day)

Use 1 water truck for 1 day

Labor:

1 Bulldozer operator for .5 day

1 Loader operator for 2 days

1 Flat bed truck operator for .5 day

1 Semi-end dump truck operator for .5 day

1 Backhoe operator for .5 day

1 laborer to drive Water Truck for 2 day

2 laborers to help place pipe for .5 day

**TABLE 1e
COST ESTIMATE FOR TASK 2-3
Construction of Keyways**

	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Excavator	1.0	16.0	16.0	\$200.34	\$3,205.44
Semi-End Dump truck	1.0	28.0	28.0	\$81.42	\$2,279.76
Flat Bed truck	1.0	4.0	4.0	\$30.00	\$120.00
Backhoe w/hook	1.0	8.0	8.0	\$29.00	\$232.00
Water truck	1.0	8.0	8.0	\$35.00	\$280.00
SUBTOTAL					\$6,117.20
LABOR (L)					
Excavator operator	1.0	16.0	16.0	\$54.98	\$879.68
Semi-End Dump truck operator	1.0	28.0	28.0	\$52.33	\$1,465.24
Flat Bed truck driver	1.0	4.0	4.0	\$46.52	\$186.08
Backhoe operator	1.0	8.0	8.0	\$53.60	\$428.80
Laborer to drive Water truck	1.0	8.0	8.0	\$33.84	\$270.72
Laborers	2.0	16.0	32.0	\$33.84	\$1,082.88
SUBTOTAL					\$4,313.40
	UNIT			COST PER ITEM	TOTAL
MATERIAL (M)					
6" Perforated Subdrain Pipe (l.f.)	1,550			\$2.75	\$4,262.50
Filter Fabric (s.f.)	17,050			\$0.73	\$1,131.50
Crushed Rock (ton)	647			\$15.50	\$10,028.500
SUBTOTAL					\$15,422.50
TOTAL COST (excluding management costs**)					\$25,853.10

**Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit & overhead

TABLE 1f					
COST ESTIMATE FOR TASK 2-4					
Construction of Temporary Sediment Basin on Pad A					
	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Bulldozer	1.0	4.0	4.0	\$156.74	\$626.96
Loader	1.0	16.0	16.0	\$302.02	\$4,832.32
Flat bed truck	1.0	4.0	4.0	\$30.00	\$120.00
Backhoe	1.0	4.0	4.0	\$29.00	\$116.00
Semi- End Dump truck	1.0	4.0	4.0	\$81.42	\$325.68
Water truck	1.0	16.0	16.0	\$35.00	\$560.00
SUBTOTAL					\$6,580.96
LABOR (L)					
Bulldozer operator	1.0	4.0	4.0	\$51.01	\$204.04
Loader operator	1.0	16.0	16.0	\$51.01	\$816.16
Flat bed truck operator	1.0	4.0	4.0	\$46.52	\$186.08
Backhoe operator	1.0	4.0	4.0	\$53.60	\$214.40
Semi-End Dump truck operator	1.0	4.0	4.0	\$52.33	\$209.32
Laborer to drive water truck	1.0	16.0	16.0	\$33.84	\$541.44
Laborers	2.0	4.0	8.0	\$33.84	\$270.72
SUBTOTAL					\$2,442.16
	UNIT			COST PER ITEM	TOTAL
MATERIAL (M)					
18" Corrugated Metal Pipe (l.f.)	7.0			\$16.51	\$115.57
12" Corrugated Metal Pipe (l.f.)	270.0			\$11.21	\$3,026.70
Crushed Rock (ton)	8.3			\$15.50	\$128.65
SUBTOTAL					\$3,270.92
TOTAL COST (excluding management costs**)					\$12,294.04

**Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit & overhead

(Task 2-5) Construct unpaved Roads.

Description: Bulldozer will excavate the maintenance roadbed (existing roadway to top of hill in poor condition). Dump Truck will transport road base rock to site; Loader will distribute base rock along the road alignment. Motor Grader will level the surface of maintenance and access road. Roller compactor will compact the surface. (Drainage ditches for roadways are described in Task 2-7). Water truck will control dust.

Quantity: 560 l.f. of 70 foot wide primary access road and 1,160 l.f. of 25 foot wide maintenance road.

Equipment: Bulldozer to excavate road bed at 2,700 c.y./hour
Semi End Dump Truck to transport road base rock at 16 c.y./load with 1 hour roundtrip
Loader to transport road base rock at 12.5 c.y./load and 3 minute turnaround = 250 c.y./hour
Motor Grader to level road surface at 1 acre/hour
Roller compactor to compact at 2,200 c.y./hour
Water truck for duration of task

Material: 6" base rock for road surface x 70,670 sq. ft. of road = 1,308 c.y. base rock (1,962 tons)

Duration: Bulldozer to excavate maintenance road bed (average 2' depth) at 2,400 c.y./hour ÷ 2,148 cy = 1 hour. (Use 1 bulldozer for .5 day)
Semi End Dump Truck to import rock at 16 c.y./load ÷ 1,308 c.y. = 82 trips x 1 hour roundtrip = 82 hours = 10.5 days. (Use 4 dump trucks for 2.5 days)
Loader to transport base rock around site at 250 c.y./hour = 5.5 hours. (Use 1 loader for 1 day).
Motor grader to level both road surfaces at 1 acre/hour = 2 hours. (Use 1 motor grader for .5 day)
Roller to compact road surface at 2,200 c.y./hour = 1 hours. (Use 1 roller compactor for .5 hours)
Use 1 water truck for 2 days

Labor: 1 Bulldozer operator for 2.5 day
4 Semi-end dump truck operators for 0.5 days
1 Loader operator for 1 day
1 Grader operator for .5 day
1 Roller compactor operator for .5 day
1 laborer to drive Water truck for 2.5 days

(Task 2-6) Resoiling

Description: Bulldozer with ripper teeth to rip ground surface at top of hill and at Pad A to a depth of 24 inches before resoiling. Bulldozer will track up and down areas with hard rock surfaces to reduce amount of smooth rock surface; these slopes and benched areas, per the Geotechnical engineer will not be resoiled. Loaders will load topsoil into Off-road Trucks. Off-road Truck will transport stockpiled topsoil to areas to be resoiled; Scraper will spread topsoil over level areas and Grader will level these areas. Water Truck will spray work area with water.

Operation: Rip compacted surface to facilitate drainage on top of hill and Pad A. Apply topsoil to top of hill, Pad A, and East Flank.

Quantity: 12,538 c.y. of topsoil; and 39,043 c.y. to be ripped

Equipment: Bulldozer with ripper teeth can rip at rate of 2,400 c.y./hour.
Bulldozer can track up and down hard rock slopes at 2 acres/hour.
Loader can load topsoil into trucks at 750 c.y./hour
Scraper can distribute soil at rate of 660 c.y./hour
Grader can level at rate of 1 acre/hour
Water truck to reduce dust

Duration: Bulldozer with ripper teeth to rip at 2,400 c.y./hour = 16.3 hours; and Bulldozer to scarify hard rock surfaces (8.8 acre Main Face) at 2 acres/hour = 4.5 hours.

Total 2.5 days (Use 1 bulldozer for 2.5 day)
Loader to load topsoil into trucks at 750 cy/hour \div 12,538 c.y. soil = 17 hours = 2 equipment days. (Use 2 loaders for 1 day).
Off-Road Truck can transport 232 cy (58 cy/load)/hour \div 12,538 c.y. = 54 hours = 7 days (Use 7 Off-Road Trucks for 1 day)
Scraper to spread 12,538 c.y. topsoil 660c.y./hour = 19 hours = 2.5 days (Use 1 scraper for 2.5 days)
Motor grader to level 23.1 acre area with new topsoil \div 1 ac/hour = 23.1 hours = 3 days (Use motor grader for 3 days)
Water truck for 9 days

Labor:

1 Bulldozer operator for 2.5 days
2 Loader operators for 1 day
7 Off-Road Truck operators for 1 day
1 Scraper operators for 2.5 days
1 Motor grader operator for 3 days
1 Laborer to drive Water Truck for 9 days

**TABLE 1g
COST ESTIMATE FOR TASK 2-5
Construct Unpaved Roads**

		HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Bulldozer	1.0	4.0	4.0	\$156.74	\$626.96
Loader	1.0	8.0	8.0	\$302.02	\$2,416.16
Semi-End Dump truck	4.0	20.0	80.0	\$81.42	\$6,513.60
Grader	1.0	4.0	4.0	\$131.43	\$525.72
Roller Compactor	1.0	4.0	4.0	\$54.02	\$216.08
Water truck	1.0	20.0	20.0	\$35.00	\$700.00
SUBTOTAL					\$10,998.52
LABOR (L)					
Bulldozer operator	1.0	4.0	4.0	\$51.01	\$204.04
Loader operator	1.0	8.0	8.0	\$51.01	\$408.08
Semi-End Dump truck operator	4.0	20.0	80.0	\$52.33	\$4,186.40
Grader operator	1.0	4.0	4.0	\$48.75	\$195.00
Roller Compactor operator	1.0	4.0	4.0	\$40.40	\$161.60
Laborer	1.0	20.0	20.0	\$33.84	\$676.80
SUBTOTAL					\$5,831.92
	UNIT			COST PER ITEM	TOTAL
MATERIAL (M)					
Base rock (tons)	1,962.00			\$13.50	\$26,487.00
SUBTOTAL					\$26,487.00
TOTAL COST (excluding management costs**)					\$43,317.44

**Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit & overhead

**TABLE 1h
COST ESTIMATE FOR TASK 2-6**

Resoiling

	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Bulldozer (with ripper teeth)	1.0	20.0	20.0	\$156.74	\$3,134.80
Loaders	2.0	16.0	32.0	\$302.02	\$9,664.64
Off -Road truck (67 c.y)	7.0	8.0	56.0	\$126.00	\$7,056.00
Grader	1.0	24.0	24.0	\$131.43	\$3,154.32
Scraper	1.0	20.0	20.0	\$255.22	\$5,104.40
Water truck	1.0	72.0	72.0	\$35.00	\$2,520.00
SUBTOTAL					\$30,634.16
LABOR (L)					
Bulldozer operator	1.0	20.0	20.0	\$51.01	\$1,020.20
Loader operators	2.0	16.0	32.0	\$51.01	\$1,632.32
Off-Road truck driver	7.0	8.0	56.0	\$52.33	\$2,930.48
Grader operator	1.0	12.0	12.0	\$48.75	\$585.00
Scraper operator	1.0	20.0	20.0	\$53.60	\$1,072.00
Laborer to drive water truck	1.0	72.0	72.0	\$33.84	\$2,436.48
SUBTOTAL					\$9,676.48
TOTAL COST (excluding management costs**)					\$40,310.64

**Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit & overhead

(Task 2-7) Construct Drainage Facilities

Description: Backhoe will construct earth swales at top of hill & on north edge of Pad A, and construct drainage ditches to be lined with concrete on benches of Main Face, and benches on south slope of Pad A. Water truck to spray work area; Concrete truck to import concrete and place it into truck with concrete pump unit with a telescopic boom to pump concrete into ditches. Laborers to assist in distributing concrete into ditches. Flat bed truck will transport inlets and culverts that backhoe with hook will lift into place with assistance from laborers.

Operation: Dig earth swales, construct concrete lined drainage ditches, and install inlets and culverts

Quantity: 2090 l.f. of earth swales and 3,580 l.f. of concrete lined drainage ditch(total of 5,670 l.f of swale/ditch trenching); 15 inlets and 1,960 l.f. of culvert

Materials: 88 c.y. concrete
15 inlets
12" rcp culvert, 890 l.f.
15" rcp culvert, 300 l.f.
18" rcp culvert, 480 l.f.
27" rcp culvert, 420 l.f.
30" rcp culvert, 95 l.f.
36" rcp culvert, 45 l.f.

Equipment: Backhoe to construct ditches and swales. Concrete trucks (10 c.y.) to import concrete; truck with pump unit and telescopic boom (28 m) to pump concrete into ditches. Flat bed truck to import inlets and culverts. Backhoe with hook to unload culverts and inlets and place culverts into trenches and position inlets into the ground. Water truck to reduce dust

Duration: Backhoe to construct 5,670 l.f. drainage ditch/swale ÷ 230 l.f./hour = 24.7 hours; and Backhoe with hook to lift culvert at 3,000 l.f. /hour = 12 hours and place inlets at 6 inlets/hour = 2.5 hour. Total hours is 40.2 hours = 5 days (Use 2 backhoe for 2.5 days)
Concrete truck (10 c.y./load) to deliver concrete (material cost also includes operator and equipment cost)
Truck with concrete pump unit and boom 88 c.y. ÷ 9 c.y./hour= 10 hours = 1.5 days (Use 1 truck w/pump & boom for 1.5 days) Additional fee of \$2.35/c.y. that is pumped.
Flat bed Truck to transport culverts and inlets at 1 hour/ trip = 6 trips = 6 hours (Use 1 flat bed truck for 1 day)
Water truck for 5 days

Labor: 2 backhoe operators for 2.5 days
1 truck w/pump & boom for 1.5 days
1 flat bed truck operator for 1 day
1 laborer to drive Water truck for 2.5 days
2 laborer to assist in pouring of concrete and placing inlets & culverts for 3.5 day

(Task 2-8) Installation of Erosion Controls

Description: Flat bed truck will import silt fence and straw bales. Pick-up truck will transport laborers, tools and materials to install silt fences and straw bales.

Operation: Place silt fence and straw bales to help control sediments and reduce erosion.

Equipment: Flat bed truck to import erosion control supplies
Pick up truck to transport laborers

Materials: 4,530 l.f of silt fencing
60 straw bales

Duration: 1 Flat bed truck can make 8 round trips in 1 day x 4 trips= .5 day (Use 1 Flat bed truck for .5 days)
2 laborers can install silt fencing in 2,000 l.f/day = 2.3 days (Use 2 laborers for 2.5 days)

2 laborers can install a set of straw bales @ key locations in drainage system in
.5 hour x 15 sets of straw bales = 7.5 hours = 1 day (Use 2 laborers for 1 day)
1 pickup truck can transport up to 3 laborers (Use 1 pickup truck for 3.5 days)

Labor:

2 laborers (Laborer will operate pick up truck)
for 3.5 days
1 Flat bed truck operator for .5 day

**TABLE 1i
COST ESTIMATE FOR TASK 2-7
Construct Drainage Facilities**

	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Backhoe	2.0	20.0	40.0	\$29.00	\$1,160.00
Truck w/concrete pump and boom	1.0	12.0	12.0	\$203.50	\$2,442.00
Fee to pump concrete (cy)	88.0	--	--	\$3.00	\$264.00
Flat Bed truck	1.0	8.0	8.0	\$30.00	\$240.00
Water truck	1.0	20.0	20.0	\$35.00	\$700.00
SUBTOTAL					\$4,806.00
LABOR (L)					
Backhoe operators	2.0	20.0	40.0	\$53.60	\$2,144.00
Truck w/concrete pump and boom driver (price of driver included Equipment cost)	1.0	12.0	12.0	\$0.00	\$0.00
Flat Bed truck driver	1.0	8.0	8.0	\$46.52	\$372.16
Laborers for water truck	1.0	20.0	20.0	\$33.84	\$676.80
Laborers to assist w/installation	2.0	28.0	56.0	\$33.84	\$1,895.04
SUBTOTAL					\$5,088.00
	UNIT			COST PER ITEM	TOTAL
MATERIAL (M)					
Concrete (c.y.)	88.0			\$120.00	\$10,560.00
Concrete inlets (ea)	15.0			\$942.00	\$14,130.00
36" RCP Culvert (l.f.)	45.0			\$58.00	\$2,610.00
30" RCP Culvert (l.f.)	95.0			\$43.00	\$4,085.00
27" RCP Culvert (l.f.)	420.0			\$43.00	\$18,060.00
18" RCP Culvert (l.f.)	480.0			\$21.00	\$10,080.00
15" RCP Culvert (l.f.)	300.0			\$16.00	\$4,800.00
12" RCP Culvert (l.f.)	890.0			\$12.75	\$11,347.50
SUBTOTAL					\$75,672.50
TOTAL COST (excluding management costs**)					\$85,566.50

**Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit & overhead

**TABLE 1j
COST ESTIMATE FOR TASK 2-8
Installation of Erosion Control**

	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Flat bed truck	1.0	4.0	4.0	\$30.00	\$120.00
Pick up truck	1.0	28.0	28.0	\$12.00	\$336.00
SUBTOTAL					\$456.00
LABOR (L)					
Flat bed truck operator	1.0	4.0	4.0	\$46.52	\$186.08
Laborers	2.0	28.0	56.0	\$33.84	\$1,895.04
SUBTOTAL					\$2,081.12
	UNIT			COST PER ITEM	TOTAL
MATERIAL (M)					
Silt Fencing (linear feet)	4,530.0			\$0.20	\$906.00
Straw Bales (each)	60.0			\$10.91	\$654.60
SUBTOTAL					\$1,560.60
TOTAL COST (excluding management costs**)					\$4,097.72

**Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit & overhead

GROUP 3 TASKS: REVEGETATION

Overall Description of Work Activity:

- 1) Plant woody plant materials.
- 2) Apply Hydroseed to graded slopes.

Summary of Reclamation Methods to be used:

1. **Woody Plant Materials** to be planted in selected locations. **Pick up truck** will transport laborers, equipment, supplies and plant materials to planting areas; **laborers** will dig planting holes and place fertilizer tablets into planting holes; plant woody plant materials with amended soil and mulch during the months of December 15 to February 15.
2. **Hydroseeder** will apply hydroseed mix to graded areas preferably during the months of October and November, shortly before the rainy season.

Quantified Description of Activities for Revegetation Cost Estimate.

(Task 3-1) Planting Woody Plant Materials

Description: Semi End Dump Truck to import soil amendments and mulches. Flat Bed Truck to import plant materials. Pick up Truck to import fertilizer tablets. Laborers to dig planting holes and prepare watering basins around each planting hole. Laborers to place fertilizer tablets into each planting hole, backfill planting holes with amended soils, install plants and add mulch to each watering basin. Laborers to water each plant the same day that they are planted. Mulches and fertilizer tablets are placed in planting holes to enhance plant growth.

Operation: Prepare planting holes and install plants into planting holes. Water each plant.

Quantity: 9 coastal scrub planting areas with 40 plants in each

Materials: 360 tube stock @ \$2.4 each.

Fertilizer – allowance \$76.

Soil amendments – 0.5 c.y. per planting hold = 180 c.y

Mulch – 0.25 c.y. per planting hole = 90 c.y.

Equipment: Hand tools

Pick up Trucks to transport laborers and equipment and supplies (fertilizer tablets, soil amendments and mulch)

Flat Bed Truck to transport plant materials

Semi End Dump Truck to import soil amendments, fertilizer and mulches

Duration: 2 laborers can prepare 110 planting holes/day = 3.25 days; and install 110 plants/day = 3.25 days. Total 6.5 days. (Use 2 laborers for 6.5 days)

Pick up truck can haul 3 laborers (Use 1 pick up trucks for 6.5 days)

1 Flat bed truck for 1 day

1 Semi-End dump truck for .5 days

Labor: 1 Flat bed truck operator for 1 day

1 Semi-End dump truck for .5 days

2 laborers for planting hole preparation and installing plants for 6.5 days

(Task 3-2) Hydroseed Graded Areas

Description: Hydroseeder to apply hydroseed mix with mechanical hydroseed equipment mounted on a four-wheel drive vehicle. Hydroseed provides erosion and weed control, and helps to retain soil moisture. Foliage diffuses the downward force of

rain and plant roots hold soil in place.

Operation: Apply hydroseed on graded areas

Quantity: 34 acres to be hydroseeded

Materials: 3 different Hydroseed Specifications on Figure 12

Equipment: 1 Hydroseed Vehicle can cover 0.67 acres/hour

Duration: Hydroseed vehicle at 0.67 acres/hour \div 34 acres = 51 hours = 6.5 days (Use 1 hydroseed vehicle for 6.5 days)

Labor: 1 hydroseed operator for 6.5 days
1 laborer to assist hydroseed operator for 6.5 days

**TABLE 1k
COST ESTIMATE FOR TASK 3-1
Planting Woody Plant Materials**

	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Flat Bed truck	1.0	8.0	8.0	\$30.00	\$240.00
Semi-End Dump trucks	1.0	4.0	4.0	\$81.42	\$325.68
Pick up truck	1.0	52.0	52.0	\$12.00	\$624.00
SUBTOTAL					\$1,189.68
LABOR (L)					
Flat Bed truck operator	1.0	8.0	8.0	\$46.52	\$372.16
Semi-End Dump truck operator	1.0	4.0	4.0	\$52.33	\$209.32
Laborer	2.0	52.0	104.0	\$33.84	\$3,519.36
SUBTOTAL					\$4,100.84
	UNIT			COST PER ITEM	TOTAL
MATERIAL (M)					
Tube Stock (each)	360.0			\$2.40	\$864.00
Soil Amendments (cubic yards)	180.0			\$23.00	\$4,140.00
Fertilizer (allowance)	1.0			\$76.00	\$76.00
Mulch (cubic yards)	90.0			\$34.00	\$3,060.00
SUBTOTAL					\$8,140.00
TOTAL COST (excluding management costs**)					\$13,430.52

**Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit & overhead

TABLE1					
COST ESTIMATE FOR TASK 3-2					
Hydroseed Graded Areas					
	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Hydroseed truck	1.0	52.0	52.0	\$50.00	\$2,600.00
SUBTOTAL					\$2,600.00
LABOR (L)					
Hydroseed truck operator	1.0	52.0	52.0	\$40.40	\$2,100.80
Laborer	1.0	52.0	52.0	\$33.84	\$1,759.68
SUBTOTAL					\$3,860.48
	UNIT			COST PER ITEM	TOTAL
MATERIAL (M)					
Hydroseed A (acres)	14.6			\$760.00	\$11,096.00
Hydroseed B (acres)	12.1			\$740.00	\$8,954.00
Hydroseed C (acres)	5.3			\$1,220.00	\$6,466.00
SUBTOTAL					\$26,516.00
TOTAL COST (excluding management costs**)					\$32,976.48

**Refer to the Cost Summary Table 7 for the management costs: mobilization, supervision, contingency and profit & overhead

GROUP 4 TASKS: POST RECLAMATION MAINTENANCE AND MONITORING

Overall Description of Work Activity:

During the three year post reclamation period, the property owner will conduct routine maintenance of the drainage facilities, the erosion and sediment control systems; and conduct visual inspections of revegetated areas, and inspections for noxious weeds, and soil and erosion control problems.

Summary of Reclamation Methods to be Used:

1. **Property owner's representative** will inspect the drainage ditches, earth swales, temporary sediment basin, and inlets to determine if they need cleaning, and will observe the reclaimed areas for presence of erosion. **Property owner's representative** will conduct erosion and sediment control inspections.
2. **Revegetation expert** will conduct visual inspection of revegetated areas and inspect for noxious weeds. Areas with excessive plant dieback with less than 50 percent coverage will be replanted. Weeds will be removed.
3. **Backhoe** will remove excess sediments from drainage ditches/swales and place sediments into **Semi-End Dump Truck** for removal off-site.
4. **Pick up truck** will transport revegetation expert and quarry personnel to revegetated areas. **Pick –up truck** will transport laborers, equipment and defoliant to areas with targeted noxious weeds to be removed, if any.

Quantified Description of Activities for Post Reclamation Maintenance and Monitoring Cost Estimate

(Task 4-1) Post Reclamation Maintenance (3 year period)

Description: Loaders and Backhoes will remove excess sediments in drainage facilities and place sediments into Semi-End Dump Truck for transport to a local landfill for disposal. Inspections will be made to identify targeted noxious weeds and identify, and correct, as needed, areas with erosion problems.

Operation: Property owner will inspect site for evidence of erosion and sediment accumulation and will arrange for the removal of excess sediment build up from drainage facilities, as needed, and arrange for transporting excess sediments to a local land fill for disposal.

Quantity: Estimate 310 cy of sediments to be removed each year of the 3 year post reclamation maintenance period, by loader or backhoe and transported to landfill by semi-end dump truck.

Equipment: Backhoe to remove sediments from drainage ditches
Semi-end Dump Trucks to transport sediments off-site
Pick-up Truck to transport inspector

Duration: Loader to remove 290 c.y sediments from basin at 150 c.y./hour = 2 hours (Use 1 loader for .5 day each of the 3 years = 1.5 days)
Backhoe to remove sediments in ditches at 400 l.f./hour ÷ 5,050 l.f. = 13 hours (Use 1 backhoe for 2 days each of the 3 years = 6 days)
Semi-End Dump Trucks to transport 310 c.y. of sediments from basin to landfill

(over 5 years) at 18 c.y./trip = 17 loads ÷ 10 loads/day (1 hour turnaround = 8 trips/day) = 2 days x 3 years (Use 1 semi-end dump trucks for 2 days each of 3 years = 24 hours = 3 days)

Pick up to transport inspector 2 times a year for 3 years (Use 1 pick up truck for .5 day twice a year for 3 years = 3 days total)

Labor:

1 Loader operator for .5 day annually for 3 years = 1.5 days

1 Backhoe operator for 2 days each, annually for 3 years = 6 days

1 Semi-End Dump Truck operators for 2 days annually for 3 years= 6 days

1 Inspector to identify areas requiring maintenance for 2 four hour days for each of the 3 years (1 four hour inspection in the spring and 1 in the fall x 3 years = 3 days total)

(Task 4-2) Revegetation Inspections

Description:

The owner's revegetation expert will visual inspect the newly revegetated areas and will observe for targeted noxious weeds, and inspect erosion and sediment controls.

Operation:

Visually observe the newly revegetated areas, observe site for presence of targeted noxious weeds; and observe for erosion and sediment problems.

Quantity:

34 acres of revegetated areas to visually inspect and observe for presence of targeted noxious weeds and erosion and sediment control problems

Materials:

Defoliant (if noxious weeds are found)

Equipment:

Pick up truck to transport personnel, tools and supplies.

Hand tools (shovels, wrecking bars, and wheelbarrows) if noxious weeds are found

Duration:

The revegetation expert will visually observe all revegetated areas twice during the first two years after planting. (Use 1 revegetation expert for 2 four hour days visits to the site, one in the spring and 1 in the fall, for each of the first 2 years. Total number of 8 hours per year = total of 2 days in the 2 year period)

The revegetation expert will visually observe all revegetated areas once during the spring of the third year after planting. (Use 1 revegetation expert for a total of 4 hours for the last year of the revegetation program.)

Owner's representative to inspect the site at minimum twice a year. (Use 1 person to observe for erosion and sediment problems, and noxious weeds for a total of 3 hours/visit x 2/year x 3 years = 18 hours = total of 2.5 days in the 3 year period)

Pick up truck to be used by the revegetation expert and the owner's representative to conduct their inspections. (1 pick up truck for revegetation expert at 20 hours and quarry personnel at 18.5 hours= 38.5 hours= 5 days over 3 years)

Labor:

1 revegetation expert for total of 2.5 days over 3 years.

1 quarry personnel for total of 2.5 days over 3 years.

TABLE 1m					
COST ESTIMATE FOR TASK 4-1*					
Post Reclamation Maintenance (3 year period)					
	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR/UNIT	TOTAL
EQUIPMENT (E)					
Loader	1.0	12.0	12.0	\$302.02	\$3,624.24
Backhoe	1.0	48.0	48.0	\$29.00	\$1,392.00
Semi-End Dump trucks	1.0	48.0	48.0	\$81.42	\$3,908.16
Pick-up truck	1.0	24.0	24.0	\$12.00	\$288.00
SUBTOTAL					\$9,212.40
LABOR (L)*					
Loader operator	1.0	12.0	12.0	\$51.01	\$612.12
Backhoe operator	1.0	48.0	48.0	\$53.60	\$2,572.80
Semi-End Dump truck operator	1.0	48.0	48.0	\$52.33	\$2,511.84
Inspector	1.0	24.0	24.0	\$90.00	\$2,160.00
SUBTOTAL					\$7,856.76
	UNIT			COST PER ITEM	TOTAL
MISCELLANEOUS*					
Soil Disposal Fee (c.y.)	930.0			\$18.00	\$16,740.00
SUBTOTAL					\$16,740.00
TOTAL COST (excluding management costs**)					\$33,809.16

* Cost over 3 years

**Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit & overhead

TABLE 1n
COST ESTIMATE FOR TASK 4-2*
Revegetation Inspections

	UNIT	HOURS NEEDED	SUBTOTAL OF HOURS	COST PER HOUR	TOTAL
EQUIPMENT (E)					
Pick up truck	1.0	40.0	40.0	\$12.00	\$480.00
SUBTOTAL					\$480.00
LABOR (L)					
Revegetation Inspector	1.0	20.0	20.0	\$150.00	\$3,000.00
Quarry personnel	1.0	20.0	20.0	\$33.84	\$676.80
SUBTOTAL					\$3,676.80
TOTAL COST (excluding management costs**)					\$4,156.80

* Cost over 3 years

**Refer to the Cost Summary Table 2 for the management costs: mobilization, supervision, contingency and profit & overhead

**TABLE 2
PACIFICA QUARRY 2009 RECLAMATION COST SUMMARY**

TASK	DESCRIPTION	COST
1-1	Site Preparation - Vegetation Stripping	\$160,026.72
1-2	Quarry Pit Preparation	\$2,684.85
2-1	Salvage Topsoil	\$20,259.60
2-2	Grading of Westerly Bluff, Main Face and East Flank	\$346,326.32
2-3	Construction of Keyways	\$25,853.10
2-4	Construct Temporary Sediment Basin on Pad A	\$12,294.04
2-5	Construct Unpaved Roads	\$43,317.44
2-6	Resoiling	\$40,310.64
2-7	Construct Drainage Facilities	\$85,566.50
2-8	Installation of Erosion Controls	\$4,097.72
3-1	Planting Woody Plant Materials	\$13,430.52
3-2	Hydroseed Graded Areas	\$32,976.48
4-1	Post Reclamation Maintenance (3 year period)	\$33,809.16
4-2	Revegetation Inspections	\$4,156.80
TOTAL OF DIRECT COST		\$825,109.89
INDIRECT COSTS		
Mobilization (2% of Direct Costs) *		\$16,502.20
Supervision (4.5% of Direct Cost) *		\$37,129.95
Contingency (7% of Direct Cost) *		\$57,757.69
Profit & Overhead (9.5% of Direct Cost) *		\$78,385.44
Lead Agency Administrative Cost (3% of Direct Cost)		\$24,753.30
TOTAL OF DIRECT + INDIRECT COSTS		\$1,039,638

* These percentages are based on the State Mining & Geology Board - Financial Assurance Guidelines

Appendix C

Lilburn Corporation (2015) Financial Assurances Cost Estimate

FINANCIAL ASSURANCE COST ESTIMATE

FOR

Pacifica QUARRY

CA MINE ID# 91-41-0001

Prepared by:

Lilburn Corporation
1905 Business Center Drive
San Bernardino, CA 92408

Date: January 2015

Note: This worksheet was developed by the Office of Mine Reclamation to assist lead agencies and operators prepare a reclamation cost estimate and determine an appropriate amount for the financial assurance in conformance with Section 2773.1 of SMARA. It should be used in conjunction with the Financial Assurance Guidelines adopted by the State Mining and Geology Board. Like the guidelines, it is advisory only.

FINANCIAL ASSURANCE ESTIMATES Pacifica Quarry - State Mine ID 91-41-0001

NOTE: The reclamation tasks, equipment, equipment efficiency, volumes and quantity estimates below are based on the FACE prepared for this Reclamation Plan by LSA Associates, Inc., dated November 10, 2011 and revised May 23, 2012.

I. PRIMARY RECLAMATION ACTIVITIES

Page 1 of 30

Description of Task: Site Preparation - Vegetation Stripping

Methods to be Used: Scrape vegetation with dozer, use chipper to mulch, use loader to place vegetative materials into excavation and then backfill.

Miscellaneous Information:

Vegetative Materials plus soil (cubic yards): 16,214 _ Acres: 15

Production Rate (cubic yards/hour): 1. 2,400 2. 150/750 3. _____ 4. _____

Haul Distance (feet): 1. 100 2. 500 3. _____ 4. _____

A. Equipment - List all equipment required to complete identified task.

	Equipment	Quantity	\$/Hour	# of Hours	Cost (\$)
1	D9 Dozer	2	232	16	\$7,424
2	Front End Loader Cat 988B	2	272	211	\$114,512
3	Water Truck	1	36	219	\$7,866
4	Wood Chipper	1	52	8	\$414
5					\$0
Total Equipment Cost for this Task					\$130,216

B. Labor - List all labor categories to complete identified task.

	Labor Category	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Dozer Operator	2	64	16	\$2,043
2	Loader Operator	2	64	211	\$26,940
3	Water Truck Driver	1	53	219	\$11,607
4	Laborer	1	49	8	\$394
5					\$0
Total Labor Cost for this Task					\$40,984

C. Materials - List all materials required to complete identified task (include disposal costs).

	Item	Quantity (yd)	\$/Unit	Cost (\$)
1				0
2				0
3				0
4				0
5				0
Total Materials Cost for this Task				0

D. Direct Cost for this Task

Equipment Cost + Labor Cost + Materials Cost = \$ 171,200

I. PRIMARY RECLAMATION ACTIVITIES

Description of Task: Quarry Floor Preparation

Methods to be Used: Cat D9N Dozer will scarify the quarry floor and backhoe will excavate trench for extending the subdrain.

Miscellaneous Information:

Regrade slope using adjacent materials (cubic yards): Topsoil (cy): NA Acres: 14
 Production Rate (cubic yards/hour): 1. 5.6 ac/hr 2. 3. 4.
 Haul Distance (feet): 1. 2. 3. 4.

A. Equipment - List all equipment required to complete identified task.

	Equipment	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Cat D9 Dozer	1	232	4	928.00
2	Backhoe Cat 416D	1	48	4	190.88
3	Semi-End Dump Truck	1	82	4	326.68
4	Water Truck	1	36	4	144.00
5					0.00
Total Equipment Cost for this Task					1,589.56

B. Labor - List all labor categories to complete identified task.

	Labor Category	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Dozer Operator	1	64	4	256.00
2	Backhoe Operator	1	53	4	212.00
3	Truck Driver	1	53	4	212.00
4	Water Truck Driver	1	53	4	212.00
5					0.00
Total Labor Cost for this Task					892.00

C. Materials - List all materials required to complete identified task.

	Item	Quantity	\$/Unit	Cost (\$)
1	Crushed Base Rock (ton)	6.3	15	94.5
2	6" Perforated Subdrain Pipe (l.f.)	50	2.99	149.5
3	Filter Fabric (s.f.)	50	0.84	42
4				0
5				0
Total Materials Cost for this Task				286

D. Direct Cost for this Task

Equipment Cost + Labor Cost + Materials Cost = \$ 2,768

I. PRIMARY RECLAMATION ACTIVITIES

Description of Task: Salvage Topsoil

Methods to be Used: Cat D9N Dozer will strip topsoil and front end loader will transport to an onsite stockpile, with water truck for dust control.

Miscellaneous Information:

Regrade slope using adjacent materials (cubic yards): _ Topsoil (cy): 12,540 Acres:

Production Rate (cubic yards/hour): 1. 2,400CY/hr 2. 250CY/hr 3. _____ 4. _____

Haul Distance (feet): 1. _____ 2. _____ 3. _____ 4. _____

A. Equipment - List all equipment required to complete identified task.

	Equipment	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Cat D9 Dozer	1	232	8	1,856.00
2	Front End Loader Cat 988B	3	272	16	13,056.00
3	Water Truck	1	82	24	1,960.08
4					0.00
5					0.00
Total Equipment Cost for this Task					16,872.08

B. Labor - List all labor categories to complete identified task.

	Labor Category	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Dozer Operator	1	64	8	512.00
2	Loader Operator	3	64	16	3,072.00
3	Water Truck Driver	1	53	24	1,272.00
4					0.00
5					0.00
Total Labor Cost for this Task					4,856.00

C. Materials - List all materials required to complete identified task.

	Item	Quantity	\$/Unit	Cost (\$)
1				0
2				0
3				0
4				0
5				0
Total Materials Cost for this Task				0

D. Direct Cost for this Task

Equipment Cost + Labor Cost + Materials Cost = \$ 21,728

I. PRIMARY RECLAMATION ACTIVITIES

Grading of Westerly Bluff, Main Face and East Flank

Methods to be Used: Cat D9N Dozers will excavate material from these three areas, scrapers will transport and place fill. The fill will be compacted with a sheepsfoot compactor. Grader will smooth and level areas on Pad A. Water truck to be used for dust control.

Miscellaneous Information:

Regrade slope using adjacent materials (cubic yards): 806,400cy of excavation and 100,000cy of landslide repair
 Production Rate (cubic yards/hour): 1. 2,400cy/hr__ 2. 600cy/hr 3. 2,200 cy/hr 4. _____
 Haul Distance (feet): 1. ____ 2. _____ 3. _____ 4. _____

A. Equipment - List all equipment required to complete identified task.

	Equipment	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Cat D9 Dozer	4	232	96	89,088.00
2	Scraper Cat 623	6	183	112	123,083.52
3	Sheepsfoot Compactor Cat 815	4	149	96	57,300.48
4	Water Truck	1	36	128	4,608.00
5	Motor Grader Cat 14G	1	128	12	1,541.40
Total Equipment Cost for this Task					275,621.40

B. Labor - List all labor categories to complete identified task.

	Labor Category	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Dozer Operator	4	64	96	24,576.00
2	Scraper Operator	6	64	112	42,900.48
3	Sheepsfoot Operator	4	64	96	24,576.00
4	Water Truck Driver	1	53	128	6,784.00
4	Motor Grader Operator	1	64	12	766.08
5					0.00
Total Labor Cost for this Task					99,602.56

C. Materials - List all materials required to complete identified task.

	Item	Quantity	\$/Unit	Cost (\$)
1				0
2				0
3				0
4				0
5				0
Total Materials Cost for this Task				0

D. Direct Cost for this Task

Equipment Cost + Labor Cost + Materials Cost = \$ 375,224

I. PRIMARY RECLAMATION ACTIVITIES

Description of Task: Construction of Keyways

Methods to be Used: Excavator will excavate keyways below Pad A, at the toe of Pad A, and on the slope of the East Flank. Rock, filter fabric and pipe will be placed in keyways and backfilled with the crushed rock.

Miscellaneous Information:

Regrade slope using adjacent materials (cubic yards): Topsoil (cy): NA Acres:
 Production Rate (cubic yards/hour): 1. 230 lf/hr 2. 3. 16cy/trip 4.
 Haul Distance (feet): 1. 2. 3. 4.

A. Equipment - List all equipment required to complete identified task.

	Equipment	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Excavator Cat 330CL	1	171	16	2,738.08
2	Backhoe Cat 416D	1	48	8	381.76
3	Semi-End Dump Truck	1	82	28	2,286.76
4	Water Truck	1	36	8	288.00
5					0.00
Total Equipment Cost for this Task					5,694.60

B. Labor - List all labor categories to complete identified task.

	Labor Category	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Excavator Operator	1	64	16	1,024.00
2	Backhoe Operator	1	64	8	510.72
3	Truck Driver	1	53	28	1,484.00
4	Water Truck Driver	1	53	8	424.00
5					0.00
Total Labor Cost for this Task					3,442.72

C. Materials - List all materials required to complete identified task.

	Item	Quantity	\$/Unit	Cost (\$)
1	6" Perforated Subdrain Pipe (lf)	1550	2.99	4634.5
2	Filter Fabric (sf)	17,050	0.84	14322
3	Crushed 3/4" Drain Rock (ton)	647	15	9705
4				0
5				0
Total Materials Cost for this Task				28661.5

D. Direct Cost for this Task

Equipment Cost + Labor Cost + Materials Cost = \$ 37,799

I. PRIMARY RECLAMATION ACTIVITIES

Description of Task: Construct Temporary Sediment Basin on Pad A

Methods to be Used: Cat D9N Dozer will excavate the sediment basin and the loader will distribute the excavated materials. The outflow pipe will be installed at spillway.

Miscellaneous Information:

Regrade slope using adjacent materials (cubic yards): 4,623 Topsoil (cy): NA Acres:
 Production Rate (cubic yards/hour): 1. 2,400 cy/hr 2. 12.5 cy/hr 3. _____ 4. _____
 Haul Distance (feet): 1. _____ 2. _____ 3. _____ 4. _____

A. Equipment - List all equipment required to complete identified task.

	Equipment	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Cat D9 Dozer	1	232	4	928.00
2	Front End Loader Cat 988B	1	272	16	4,352.00
3	Backhoe Cat 416D	1	48	4	192.00
4	Semi End Dump Truck	1	82	4	328.00
5	Water Truck	1	36	16	576.00
Total Equipment Cost for this Task					6,376.00

B. Labor - List all labor categories to complete identified task.

	Labor Category	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Dozer Operator	1	64	4	256.00
2	Loader Operator	1	64	16	1,024.00
3	Backhoe Operator	1	64	4	256.00
4	Truck Driver	1	53	4	212.00
5	Water Truck Driver	1	53	16	848.00
Total Labor Cost for this Task					2,596.00

C. Materials - List all materials required to complete identified task.

	Item	Quantity	\$/Unit	Cost (\$)
1	18" Corrugated Metal Pipe (lf)	7	13.34	93.38
2	12" Corrugated Metal Pipe (lf)	270	9.35	2524.5
3	Crushed 3/4" Drain Rock (ton)	8.3	15	124.5
4				0
5				0
Total Materials Cost for this Task				2742.38

D. Direct Cost for this Task

Equipment Cost + Labor Cost + Materials Cost = \$ 11,714

I. PRIMARY RECLAMATION ACTIVITIES

Description of Task: Construct Unpaved Roads

Methods to be Used: Cat D9N Dozer will excavate the roadbed, loader will distribute road base delivered by semi truck, and grader will smooth the surface. Roller compactor will compact the base material.

Miscellaneous Information:

Regrade slope using adjacent materials (cubic yards): Topsoil (cy): NA Roadway length: 500 lf of main access road and 1,160 lf of maintenance road.

Production Rate (cubic yards/hour): 1. 2,700 cy/hr 2. 12.5 cy/load 3. 16cy/load 4. 1 acre/hr

Haul Distance (feet): 1. 2. 3. 4.

A. Equipment - List all equipment required to complete identified task.

	Equipment	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Cat D9 Dozer	1	232	4	928.00
2	Front End Loader Cat 988B	1	272	8	2,176.00
3	Semi-End Dump Truck	4	82	20	6,533.60
4	Grader	1	128	4	512.00
5	Roller Compactor Ferguson 10-14	1	42	4	166.12
6	Water Truck	1	36	20	720.00
Total Equipment Cost for this Task					11,035.72

B. Labor - List all labor categories to complete identified task.

	Labor Category	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Dozer Operator	1	64	4	256.00
2	Loader Operator	1	64	8	512.00
3	Truck Driver	4	53	20	4,240.00
4	Grader Operator	1	64	4	256.00
5	Roller Compactor Operator	1	60	4	240.44
6	Water Truck Driver	1	53	20	1,060.00
Total Labor Cost for this Task					6,564.44

C. Materials - List all materials required to complete identified task.

	Item	Quantity	\$/Unit	Cost (\$)
1	Class II Base Rock (tons)	1,962	15	29430
2				0
3				0
4				0
5				0
Total Materials Cost for this Task				29430

D. Direct Cost for this Task

Equipment Cost + Labor Cost + Materials Cost = \$ 47,030

I. PRIMARY RECLAMATION ACTIVITIES

Description of Task: Resoiling

Methods to be Used: Cat D9N Dozer will rip ground surface at top of hill and on Pad A to a depth of 24". Loader will load stockpiled topsoil onto off road trucks. The trucks will deposit the topsoil in the areas identified for re-soiling, and a scraper and grader will level and smooth the topsoil.

Miscellaneous Information:

Place topsoil with stockpiled materials (cubic yards): __ Topsoil (cy): 12,538cy Rip: 39,043cy
 Production Rate (cubic yards/hour): 1. 2,400cy/hr 2. 750cy/hr 3. 660cy/hr 4. _____
 Haul Distance (feet): 1. _____ 2. _____ 3. _____ 4. _____

A. Equipment - List all equipment required to complete identified task.

	Equipment	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Cat D9 Dozer	1	232	20	4,640.00
2	Front End Loader Cat 988B	2	272	16	8,704.00
3	Off Road Truck (67CY)	7	173	8	9,688.00
4	Grader	1	128	24	3,072.00
5	Scraper Cat 623	1	183	20	3,660.00
6	Water Truck	1	36	72	2,592.00
Total Equipment Cost for this Task					32,356.00

B. Labor - List all labor categories to complete identified task.

	Labor Category	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Dozer Operator	1	64	20	1,280.00
2	Loader Operator	2	64	16	2,048.00
3	Truck Driver	7	53	8	2,968.00
4	Grader Operator	1	64	24	1,536.00
5	Scraper Operator	1	64	20	1,280.00
6	Truck Driver	1	53	72	3,816.00
Total Labor Cost for this Task					12,928.00

C. Materials - List all materials required to complete identified task.

	Item	Quantity	\$/Unit	Cost (\$)
1				0
2				0
3				0
4				0
5				0
Total Materials Cost for this Task				0

D. Direct Cost for this Task

Equipment Cost + Labor Cost + Materials Cost = \$ 45,284

I. PRIMARY RECLAMATION ACTIVITIES

Description of Task: Construct Drainage Facilities

Methods to be Used: Backhoe to construct swales at top of slopes, line ditches with concrete, install inlets and culverts.

Miscellaneous Information:

Regrade slope using adjacent materials (cubic yards): Topsoil (cy): NA Acres:
 Production Rate (cubic yards/hour): 1. 5.6 ac/hr 2. 3. 4.
 Haul Distance (feet): 1. 2. 3. 4.

A. Equipment - List all equipment required to complete identified task.

	Equipment	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Backhoe Cat 416D	2	48	20	1,920.00
2	Concrete pump truck (Operator Incl)	1	163	6	978.00
3	Concrete Pumping Fee	1	3	88	264.00
4	Water Truck	1	36	20	720.00
5					0.00
Total Equipment Cost for this Task					3,882.00

B. Labor - List all labor categories to complete identified task.

	Labor Category	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Backhoe Operator	2	53	20	2,120.00
2	Water Truck Driver	1	53	20	1,060.00
3	Laborers	2	49	28	2,756.32
4					0.00
5					0.00
Total Labor Cost for this Task					5,936.32

C. Materials - List all materials required to complete identified task.

	Item	Quantity	\$/Unit	Cost (\$)
1	Concrete (cy)	88	145	12760
2	Concrete Inlets (ea)	15	1,350	20250
3	36" RCP Culvert (lf)	45	58	2610
4	30" RCP Culvert (lf)	95	42	3990
5	27" RCP Culvert (lf)	420	42	17640
6	18" RCP Culvert (lf)	480	20	9600
7	15" RCP Culvert (lf)	300	15	4500
8	12" RCP Culvert (lf)	890	12	10680
Total Materials Cost for this Task				82030

D. Direct Cost for this Task

Equipment Cost + Labor Cost + Materials Cost = \$ 91,848

I. PRIMARY RECLAMATION ACTIVITIES

Description of Task: Installation of Erosion Controls

Methods to be Used: Install silt fence and straw bales

Miscellaneous Information:

Regrade slope using adjacent materials (cubic yards): Topsoil (cy): NA Acres:
 Production Rate (cubic yards/hour): 1. 5.6 ac/hr 2. 3. 4.
 Haul Distance (feet): 1. 2. 3. 4.

A. Equipment - List all equipment required to complete identified task.

	Equipment	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Pick up Truck	1	22	28	616.00
2					0.00
3					0.00
4					0.00
5					0.00
Total Equipment Cost for this Task					616.00

B. Labor - List all labor categories to complete identified task.

	Labor Category	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Laborer	2	49	28	2,744.00
2					0.00
3					0.00
4					0.00
5					0.00
Total Labor Cost for this Task					2,744.00

C. Materials - List all materials required to complete identified task.

	Item	Quantity	\$/Unit	Cost (\$)
1	Silt Fence (lf) Delivery Incl.	4,530	0.25	1132.5
2	Straw Bales (ea)	60	12	720
3				0
4				0
5				0
Total Materials Cost for this Task				1852.5

D. Direct Cost for this Task

Equipment Cost + Labor Cost + Materials Cost = \$ 5,213

II. REVEGETATION

Description of Task: Plant woody plant materials. Apply hydroseed on graded areas.

Methods to be Used: Includes importing soil amendments and mulch, laborers to dig holes, install plants, backfill, fertilize and water.

A. Equipment - List all equipment required to complete identified task.

	Equipment	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Semi End Dump Truck	1	82	2	164
2	Pick Up Truck	1	22	52	1144
3	Hydroseed Truck (operator incl)	1	150	52	7800
4					0
5					0
Total Equipment Cost for this Task					9108

B. Labor - List all labor categories to complete identified task.

	Labor Category	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Truck Driver	1	53	2	106
2	Laborer (New Landscape)	2	42	52	4364
3	Hydroseed Truck Operator	1		52	0
4	Laborer - Hydroseed	1	42	52	2184
Total Labor Cost for this Task					6654

C. Materials - List all materials required to complete identified task (include disposal costs).

	Item/Plant Species	Unit of Measure	# of Units	\$/Unit	Cost (\$)
1	Tube Stock	ea	360	3.95	1422
2	Plant Delivery	ea	1	150	150
3	Soil Amendments	cy	180	27	4860
4	Fertilizer	ea	1	75	75
5	Mulch	cy	90	20	\$ 1,800
Total Materials Cost for this Task					\$ 8,307

II. REVEGETATION

D. Materials - List all materials required to complete identified task (include disposal costs).

	Item/Plant Species	Lbs/Acre	# of Acres	\$/Unit	Cost (\$)
1	Hydroseed A		14.6	812	11855.2
2	Hydroseed B		12.1	778	9413.8
3	Hydroseed C		5.3	1290	6837
4					0
5					0
6					0
Total Materials Cost for this Task					\$ 28,106

E. Direct Cost for this Task

Equipment Cost + Labor Cost + Materials Cost = \$ 52,175

III. PLANT STRUCTURES AND EQUIPMENT REMOVAL

Description of Task: N/A (No equipment or structures on site)

Methods to be Used: N/A

A. Equipment - List all equipment required to complete identified task.

	Equipment	Quantity	\$/Hour	# of Hours	Cost (\$)
1					
2					
3					
4					
5					
Total Equipment Cost for this Task					0.00

B. Labor - List all labor categories to complete identified task.

	Labor Category	Quantity	\$/Hour	# of Hours	Cost (\$)
1					
2					
3					
4					
5					
Total Labor Cost for this Task					0.00

C. Demolition - List all structures and equipment used to complete identified task.
removed from the site based on per load costs noted in section A.

	Structure/Equipment	Type of Material	Amount	Units	Unit Cost Basis	Disposal Cost	Cost (\$)
1							0
2							0
3							0
4							0
5							0
Total Materials Cost for this Task							0

D. Direct Cost for this Task

Equipment Cost + Labor Cost + Demolition Cost = \$ _____ -

E. Surplus/Salvage Value

1. Total cost to dismantle/remove plant structures and equipment pursuant to the approved reclamation plan.	\$ -
2. Net salvage value of the plant structures and equipment*	
3. Subtract Line 2 from Line 1	\$ -
4. If Line 3 is greater than \$0, enter this amount on the total plant structures and equipment removal cost line under Section VIII (Summary of Costs). If Line 3 is less than \$0, enter \$0 on the appropriate line in Sec. VIII.	

IV. MISCELLANEOUS COSTS

Description of Task: This type of cost include post reclamation maintenance for a 3-year period

Methods to be Used: Loader and backhoe will remove excess sediments in drainage facilities and truck will transport soils to a nearby landfill for disposal. Inspector to direct sediment removal.

Miscellaneous Information:

Sediment materials (cubic yards): 310 Topsoil (cy): NA Acres:
 Production Rate (cubic yards/hour): 1. 2,400 cy/hr 2. 150 cy/hr 3. _____ 4. _____
 Haul Distance (feet): 1. _____ 2. _____ 3. _____ 4. _____

A. Equipment - List all equipment required to complete identified task.

	Equipment	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Front End Loader Cat 988B	1	272	12	3,264.00
2	Backhoe Cat 416D	1	48	48	2,304.00
3	Semi End Dump Truck	1	82	48	3,936.00
4	Pick Up Truck	1	22	24	528.00
5					0.00
Total Equipment Cost for this Task					10,032.00

B. Labor - List all labor categories to complete identified task.

	Labor Category	Quantity	\$/Hour	# of Hours	Cost (\$)
1	Loader Operator	1	64	12	768.00
2	Backhoe Operator	1	64	48	3,072.00
3	Truck Driver	1	53	48	2,544.00
4	Inspector	1	53	24	1,272.00
5					
Total Labor Cost for this Task					7,656.00

C. Materials - List all materials required to complete identified task.

	Item	Quantity	\$/Unit	Cost (\$)
1	Soil Disposal Fees (cy)	930	32	29760
2				
3				0
4				0
5				0
Total Materials Cost for this Task				29760

D. Direct Cost for this Task

Equipment Cost + Labor Cost + Materials Cost = \$ 47,448

V. MONITORING

Description of Task - One revegetation inspector and one quarry person to inspect for a total of 2.5 days (each) over a period of three years.

	Monitoring Task	\$/Day	# Visits/Year	# of Monitoring Years	Cost (\$)
1	Revegetation Inspector	1,500	1	3	\$4,500.00
2	Quarry Person	880	1	3	\$2,640.00
Total Monitoring Costs					\$7,140.00

VI. SUPERVISION/PROFIT & OVERHEAD/CONTINGENCIES/MOBILIZATION

- A. Supervision – Supervision or reclamation management includes project inspection and supervision. These activities are usually performed by a consultant or staff member with experience in reclamation of disturbed lands. Reclamation management may include recommending change orders, verifying completed work, verifying compliance with project specifications, and other reclamation management oversight activities. Please refer to Graph No. 1 in the guidelines to determine the supervision cost factor.
- B. Profit and Overhead – Where it becomes necessary for the Lead Agency or the Department of Conservation to complete reclamation of the mining site, a third party will be retained to do the actual reclamation work. Because profit and overhead costs are not included in the reclamation cost sheets, these costs must be added to the total reclamation estimate. Please refer to Graph No. 2 in the guidelines to determine the profit and overhead cost factor.
- C. Contingencies – A contingency cost should be included in the financial assurance estimate to provide for project uncertainties and unexpected natural events. The U.S. Department of the Interior, Office of Surface Mining publishes the Handbook for Calculation of Reclamation Bond Amounts which recommends contingency percentages be based upon the level of direct costs, as shown below:

<u>Total Direct Cost (\$)</u>	<u>Contingency (%)</u>
0 - \$500,000	10
\$500,000 – 5 million	7
5 million – 50 million	4
Greater than 50 million	2

- D. Mobilization – Mobilization costs are attributed to moving equipment to the project site for reclamation purposes. These costs normally range between one and five percent of the totals direct cost of the reclamation operations. These costs will vary depending upon the site location and the total value of the reclamation operations to be performed. Please insert the percentage used to estimate mobilization costs under Section VII – Summary of Costs.

VII. SUMMARY OF COSTS

Total of Primary Reclamation Activities		\$809,808
Total of all Revegetation Costs		\$52,175
Total of all Plant Structures & Equipment Removal Costs		\$0.00
Total of all Miscellaneous Costs		\$47,448.00
Total of all Monitoring Costs		<u>\$7,140.00</u>
	Total Direct Costs	\$916,571
Supervision - 4.5 %		\$41,246
Profit/Overhead - 9.00 %		\$82,491
Contingencies - 7 %		\$64,160
Mobilization - 5 %		<u>\$45,829</u>
	Total Indirect Costs	\$233,726
	Total Direct and Indirect Costs	\$1,150,296
Lead Agency Administrative Cost (10% of Direct Costs)		<u>\$91,657</u>
	Total Estimated Cost of Reclamation	\$1,241,953

**Pacifica Quarry – City of Pacifica (Lead Agency)
FACE Information/Notes – January, 2015**

Reclamation Tasks per approved City of Pacifica Reclamation Plan (dated August, 1996, updated May, 1998):

Assumptions: Two parcels – 105 acres; 34 acres previously disturbed by mining and subject to reclamation (Main Face – 9 acres, Quarry Pit – 14 acres, East Flank – 11 acres)

Major Tasks: Final Grading; Drainage; Revegetation

Reclamation work will be performed in two phases.

Grading/Recontouring – Cut and fill quantities will total 807,200 CY: Phase 1 – 541,200CY Phase 2 – 265,800 CY

PHASE 1:

Grading and drainage work to lower the westerly bluff to elevation 100 and reshape the main face and upper part of the east flank. Grade main face to 2:1 with mid-slope benches, one 12-foot wide bench at el. 180, and one 18-foot wide bench at el. 120. Loose fill and ancient landslide will be removed on the east flank, varying from 2:1 to 4:1. Drainage control measures include temporary sediment basin on (Quarry Pit) Pad A, silt fencing and straw bales, and revegetation with woody vegetation.

Quantities for Phase 1:

- Cut/fill – 541,000 CY
- Subdrains – 870 ‘
- Lined Ditches – 3,580’
- Earth Swales – 1,470’
- Culvert (12”-36”) – 1,960’
- Inlet structures/protection – 15
- Silt Fence – 3,680’
- Sediment Basin – 1 @ 60’X130’
- 12” CMP Outlet – 270’
- Revegetation – 14 acres

PHASE 2:

Grading and drainage work to focus on removal of loose fill and the ancient landslide deposits from the East Flank area. This material will be used to backfill the pit area (Pad A). Also includes excavation and recompaction of about 100,000CY located below the finished slope in order to get a stable base for the East Flank slope. Interim erosion control features during construction include silt fencing and hay bales. Revegetation will include ground cover and woody vegetation to replicate surrounding area.

Quantities for Phase 2:
Cut/Fill – 165,800CY
Excavate and recompact – 100,000CY
Subdrains – 700 feet
Silt Fence – 700 feet

REVEGETATION:

Two methods: Hydraulic mulching with native seeds, using three different seed mixes for slopes and flat areas; hand planting of seedlings in islands randomly spread throughout the area to be revegetated.

POST RECLAMATION MAINTENANCE AND MONITORING:

Post reclamation maintenance and monitoring will be conducted for three years after completion of reclamation work. Monitoring will be conducted to determine success rates per the reclamation plan and if maintenance work is needed it will include slope repair, drainage facility cleaning, and revegetation as needed.

Background Information, Assumptions, and Estimates

This 2015 Reclamation Financial Assurance Cost Estimate (FACE) utilized the background information, equipment type, equipment efficiency assumptions, volume and quantity estimates from the FACE prepared by LSA Associates, Inc., dated November 10, 2011 and revised May 23, 2012. The assumptions, tasks, equipment, volume and quantity estimate made in the LSA report were reviewed relative to the approved reclamation plan and it was determined that the data was generally consistent and suitable for use in the current FACE. Equipment rental rates and labor rates were updated using the current California Department of Transportation Labor Surcharge and Equipment Rental Rates and current State of California Department of Industrial Relations, General Prevailing Wage Determination rates referenced below. Erosion control supplies, seeds and plant stock, and construction materials were updated by contacting suppliers and using online pricing data.

The following is a list of each task description, methods, quantities, and equipment production data. This data is from the LSA 2012 FACE and is repeated here for convenience.

Task 1-1: Site Preparation- Vegetation Stripping

Description: Bulldozer with blade will remove vegetative materials from all areas to be graded and/or filled. Chipper will chip woody plant materials. Loader will excavate 6 foot deep hole and place vegetative materials into the hole at a depth of 3 feet and then replace soil into the hole on top of vegetative materials and create a mound that will over time compact the vegetative materials. Loader will remove sediments from existing sediment basin and will place with soils covering vegetative materials in the hole.

Operation: Remove vegetative materials from 15 acres and sediments from existing basin.

Quantity: 16,214 CY of vegetative materials (1,621 CY soil/organic matter; and 14,593 CY vegetative materials) to be removed from 15 acres; and 29,200 cy of soil excavated from hole to place vegetative materials into. About 208 CY of sediments removed from temporary sediment basin.

Equipment: Bulldozer with blade to strip materials from ground surface and separate into piles of vegetative matter and soil with organic matter. Chipper to chip up woody plants.

Loaders to excavate a 6 foot deep hole and place vegetative materials into hole to a 3foot depth and then replace soil and soil/organic matter on top of vegetative materials.

Loader to remove sediments from sediment basin and place with soils covering vegetative materials.

Water truck to wet area for dust control.

Duration: Bulldozers to strip vegetative materials and bulldozer to remove top 3 – 4 inches of soil with organic matter at 2,400 CY/hour = 7 hours (use 2 bulldozers for 1 day).

Loaders to excavate 6 foot deep hole= 29,200 CY at 150 CY/hour = 195 hours;

Loader to transport vegetative materials and place these materials into excavated hole at 750 CY/hour = 20 hour; Loaders to replace excavated soil and soil with organic matter/sediments into excavated hole at 150 CY/hour = 205 hours

Loaders to remove sediments from the temporary sediment basin= 1.5 hours

(Loader needed for: 195 hr.+20 hr.+205 hr.+1.5 hr.= 421 hours or 53 days) (Use 2 loaders for 26.5 days)

Water truck to wet area (use 1 water truck for 27.3 days)

Labor: 2 Bulldozer operators for 1 day

2 Loader operators for 26.5 days

1 Laborer to operate water truck for 26.5 days

1 Laborer to operate chipper for 1 day

Task 1-2: Quarry Pit Preparation

Description: Bulldozer with ripper teeth will scarify the ground surface to 12-inch depth. Backhoe will dig trench. Sub-drain pipe and filter fabric to be delivered by supplier. Semi-end dump truck will import crushed rock. Backhoe with hook will unload drainpipe and filter fabric from flatbed truck and place pipe into trench with assistance from laborers.

Operation: Scarifying ground surface of quarry pit; excavate trench to extend existing sub drain on quarry floor.

Quantity: 14 acres to be scarified.

Equipment: Bulldozer with ripper teeth to scarify ground surface.

Backhoe to dig trench and backhoe with hook to unload pipe.

Water truck to wet area for dust control.

Backhoe with hook to unload drainpipe.

Semi-end dump truck to import crushed rock and backhoe to spread crushed rock in trench.

Materials: 50 LF of sub drainpipe (delivery allowance of \$100), 550 sq. ft. filter fabric and 6.3 tons (4.2 CY) of crushed rock.

Duration: Bulldozer to scarify ground surface at 5.6 acre/hour = 2.5 hours (Use 1 bulldozer for .5 day)

Backhoe to excavate 50 LF of trench at 230 LF/hour = 0.2 hours; backhoe with hook to unload 50 feet of 6-inch sub drainpipe for 0.5 hours; backhoe to place crushed rock into trench at 400 CY/hour = 0.01

hours (use 1 backhoe for .5 days) Semi-end dump truck to transport crushed rock to site (use 1 semi-end dump truck for .5 days)

2 Laborers to unbundle 6-inch sub drainpipe, connect pipe to existing pipe on quarry floor, wrap pipe with filter fabric, and assist with spreading crushed rock into trench at 150 LF/hour = .5 hours (2 laborers for .5 days)

Water truck to wet area (use 1 water truck for .5 days)

Labor: 1 Bulldozer operator for .5 days

1 Backhoe operator for .5 days

1 Semi-end dump truck operator for .5 days

2 Laborers to assist with installation of pipe and operation of water truck for .5 days.

Task 2-1: Salvage Topsoil

Description: Bulldozer will strip topsoil and loader will transport it to temporary stockpile; water truck will wet area for dust control.

Operation: Salvage topsoil for later reuse during re-soiling.

Quantity: 12,540 CY topsoil

Equipment: Bulldozer to strip topsoil. Loaders to transport topsoil to stockpile. Water truck to wet area for dust control.

Duration: Bulldozer to strip topsoil at 2,400 CY/hour = 5.5 hours (use 1 bulldozer for 1 day)

Loader to transport topsoil at 250 CY/hour ÷ 12,540 CY = 6.5 days (use 3 loaders for 2 days)

Water truck to wet area (use 1 water truck for 3 days)

Labor: 1 Bulldozer operator for 1 day

3 Loaders operators for 2 days

1 Laborer to operate water truck for 3 days

Task 2-2: Grading of Westerly Bluff, Main Face and East Flank

Description: Bulldozers will excavate these three areas. Scrapers will transport and distribute earth materials. Sheep's foot compactor will compact earth materials. Motor grader will level surface of Pad A. Water truck will spray work area to control dust (note: this task is closely related to Task 2-3).

Operation: To grade site according to the Reclamation Grading Plan.

Quantities: 806,400 CY cut/fill & 100,000 CY landslide repair to be excavated at and replaced on East Flank.

Equipment: Bulldozers to excavate and move 806,400 CY at 2,400 CY/hour = 336 hours = 42 days; and bulldozers to excavate and move 100,000 CY at 2,400 CY/hour = 42 hours = 5.5 days. Bulldozer to level surface of East Flank at 1 acre/hour ÷ 11 acres = 11 hours = 1.5 days. Total of 49 days (use 4 bulldozers for 12 days)

Sheep's foot to compact 806,400 CY at 2,200 CY/hour. = 366 hours = 46 days (use 4 compactors for 12 days)

Scrapers to distribute excavated material at 600 CY/hour ÷ 403,200 CY = 84 days (use 6 scrapers 14 days)

Motor grader to level surface of Pad A at 1 acre/hour ÷ 10.9 acres = 11 hours = 1.5 days (use 1 motor grader for 1.5 days)

Water truck to wet surface during earthwork (use 1 water truck for 16 days)

Labor: 2 Bulldozer operators for 12 days

4 Sheep's foot operators for 12 days

6 Scraper operators for 14 days

1 Motor grader operator for 1.5 days

1 Laborer to operate water truck for 16 days

Task 2-3: Construction of Keyways

Description: Excavator will construct keyway below Pad A, at toe of Pad A and on the slope of the East Flank. Semi-end dump truck will transport crushed rock. Filter fabric and sub-drain pipe to be delivered to the site by manufacturer. Pick-up truck will transport laborers; Excavator with hook will lift drain pipe off flatbed truck.

Laborers will assist in placing rock, filter fabric and pipe. Backhoe will place crushed rock around pipe. Water truck to spray work area to control for dust.

Operation: Construct keyways

Quantity: 3 keyways

Materials: 6" perforated sub-drain pipe, 1,550 LF

17,050 sq. ft. filter fabric

431 CY crushed rock (647 tons)

Equipment: Excavator to construct keyway, to lift pipe, and place crushed rock around pipe.

Semi-end dump truck to transport rock. Excavator with hook will lift and place pipe with assistance of 2 laborers. Water truck to reduce dust.

Duration: Excavator to construct keyway trenches for pipes at 230 LF/hour = 7 hours.

Excavator with hook to lift & place pipe at 300 LF/hour = 5 hours. Excavator to place crushed rock around pipe at 200 CY/hour = 2 hours. Total is 14 hours (use 1 excavator for 2 days)

Semi-end dump truck to transport crushed rock at 16 CY/trip = 27 trips x 1 hour/round trip = 27 hours (use 1 semi-end dump truck for 3.5 days)

2 laborers to assist in placing pipe at 300 LF/hour = 5 hours; and 2 laborers to lay out filter fabric at 2,000 LF/hour = 8.5 hours. Total hours = 13.5 hours (use 2 laborers for 2 days)

Water truck for 1 day

Labor: 1 Excavator operator for 2 days

1 Semi-end dump truck operator for 3.5 days

1 Laborer to drive Water truck for 1 day

2 Laborers to lay out pipes and filter fabric for 2 days

Task 2-4: Construct Temporary Sediment Basin on Pad A

Description: Bulldozer to dig sediment basin, loader to distribute soils. 12" and 18" CMP pipe to be delivered to site by manufacturer. Semi-end dump truck to import crushed rock.

Backhoe to dig trench and excavator with bucket and laborers to set pipe in place.

Laborers to install outflow pipe and spread crushed rock at spillway. Water truck to spray work area.

Operation: Construct temporary sediment basin.

Quantity: 4,623 CY to be removed and distributed.

Materials: 12" CMP pipe, 270 LF.

18" pipe, 7 LF

5.5 CY crushed rock (8.3 tons)

Equipment: Bulldozer can remove soil at a rate of 2,400 CY/hour

Loader to distribute soils at 12.5 CY/load, 3 minute turnaround = 250 CY/hour

Semi-end dump truck to import crushed rock

Backhoe to dig trench for culvert at 230 LF/hour

Water truck

Duration: Bulldozer to excavate 4,623 CY at 2,400 CY/hour = 2 hours (use 1 bulldozer for 0.5 days)

Loaders distribute 4,623 CY of soil at 250 CY/hour = 18 hours (use 1 loader for 2 days)

Semi-end dump truck to import crushed rock at rate of 1 hour round trip (use 1 dump truck for .5 days)

Backhoe to dig 270 LF of trench at 230 LF/hour = 1.25 hours (use 1 backhoe for .5 days)

Use 1 water truck for 1 day

Labor: 1 Bulldozer operator for .5 days

1 Loader operator for 2 days

1 Semi-end dump truck operator for .5 days

1 Backhoe operator for .5 days

1 Laborer to drive water truck for 2 days

2 Laborers to help place pipe for .5 days

Task 2-5: Construct Unpaved Roads

Description: Bulldozer will excavate the maintenance roadbed (existing roadway to top of hill in poor condition). Semi-end dump truck will transport road base rock to site. Loader will distribute base rock along the road alignment. Motor grader will level the surface of maintenance and access road. Roller compactor will compact the surface (drainage ditches for roadways are described in Task 2-7). Water truck will control dust.

Quantity: 560 LF of 70-foot wide primary access road and 1,160 LF of 25-foot wide maintenance road.

Equipment: Bulldozer to excavate road bed at 2,700 CY/hour

Semi-end dump truck to transport road base rock at 16 CY/load with 1 hour roundtrip

Loader to transport road base rock at 12.5 CY/load and 3 minute turnaround = 250 CY/hour

Motor grader to level road surface at 1 acre/hour

Roller compactor to compact at 2,200 CY/hour

Water truck for duration of task

Material: 6" base rock for road surface x 70,670 sq. ft. of road = 1,308 CY base rock (1,962 tons)

Duration: Bulldozer to excavate maintenance road bed (average 2' depth) at 2,400 CY/hour ÷ 2,148 CY = 1 hour (use 1 bulldozer for .5 days)

Semi-end dump truck to import rock at 16 CY/load ÷ 1,308 CY = 82 trips x 1 hour roundtrip = 82 hours = 10.5 days (use 4 dump trucks for 2.5 days)

Pacifica Quarry Site Info for FACE 2015

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Loader to transport base rock around site at 250 CY/hour = 5.5 hours (use 1 loader for 1 day)

Motor grader to level both road surfaces at 1 acre/hour = 2 hours (use 1 motor grader for .5 days)

Roller to compact road surface at 2,200 CY/hour = 1 hour (use 1 roller compactor for .5 hours)

Use 1 water truck for 2 days

Labor: 1 Bulldozer operator for 2.5 days

4 Semi-end dump truck operators for 0.5 days

1 Loader operator for 1 day

1 Grader operator for .5 days

1 Roller compactor operator for .5 days

1 laborer to drive water truck for 2.5 days

Task 2-6: Resoiling

Description: Bulldozer with ripper teeth to rip ground surface at top of hill and at Pad A to a depth of 24 inches before resoiling. Bulldozer will track up and down areas with hard rock surfaces to reduce amount of smooth rock surface; these slopes and benched areas, per the geotechnical engineer will not be resoiled. Loaders will load topsoil into offroad trucks. Off-road trucks will transport stockpiled topsoil to areas to be resoiled.

Scraper will spread topsoil over level areas and grader will level these areas. Water truck will spray work area with water.

Operation: Rip compacted surface to facilitate drainage on top of hill and Pad A. Apply topsoil to top of hill, Pad A, and East Flank.

Quantity: 12,538 CY of topsoil; and 39,043 CY to be ripped

Equipment: Bulldozer with ripper teeth can rip at a rate of 2,400 CY/hour

Bulldozer can track up and down hard rock slopes at 2 acres/hour

Loader can load topsoil into trucks at 750 CY/hour

Scraper can distribute soil at rate of 660 CY/hour

Grader can level at rate of 1 acre/hour

Water truck to reduce dust

Duration: Bulldozer with ripper teeth to rip at 2,400 CY/hour = 16.3 hours; and Bulldozer to scarify hard rock surfaces (8.8 acres Main Face) at 2 acres/hour = 4.5 hours. Total 2.5 days (use 1 bulldozer for 2.5 days)

Loader to load topsoil into trucks at 750 CY/hour ÷ 12,538 CY soil = 17 hours = 2 equipment days (use 2 loaders for 1 day).

Off-road truck can transport 232 CY (58 CY/load)/hour ÷ 12,538 CY = 54 hours = 7 days (use 7 off-road trucks for 1 day)

Scraper to spread 12,538 CY topsoil $660 \text{ CY/hour} = 19 \text{ hours} = 2.5 \text{ days}$ (use 1 scraper for 2.5 days)

Motor grader to level 23.1 acre area with new topsoil $\div 1 \text{ acre/hour} = 23.1 \text{ hours} = 3 \text{ days}$ (Use motor grader for 3 days)

Water truck for 9 days

Labor: 1 Bulldozer operator for 2.5 days

2 Loader operators for 1 day

7 Off-toad truck operators for 1 day

1 Scraper operator for 2.5 days

1 Motor grader operator for 3 days

1 Laborer to drive water truck for 9 days

Task 2-7: Construct Drainage Facilities

Description: Backhoe will construct earth swales at top of hill & on north edge of Pad A, and construct drainage ditches to be lined with concrete on benches of Main Face, and benches on south slope of Pad A. Water truck to spray work area. Concrete truck to import concrete and place it into truck with concrete pump unit with a telescopic boom to pump concrete into ditches. Laborers to assist in distributing concrete into ditches. Inlets and culverts to be delivered by manufacturer and backhoe with hook will lift into place with assistance from laborers.

Operation: Dig earth swales, construct concrete lined drainage ditches, and install inlets and culverts

Quantity: 2090 LF of earth swales and 3,580 LF of concrete lined drainage ditch (total of 5,670 LF of swale/ditch trenching); 15 inlets and 1,960 LF. of culvert

Materials: 88 CY concrete

15 inlets

12" rcp culvert, 890 LF

15" rcp culvert, 300 LF

18" rcp culvert, 480 LF

27" rcp culvert, 420 LF

30" rcp culvert, 95 LF

36" rcp culvert, 45 LF

Equipment: Backhoe to construct ditches and swales. Concrete trucks (10 CY) to import concrete.

Truck with pump unit and telescopic boom (28 m) to pump concrete into ditches.

Backhoe with hook to unload culverts and inlets and place culverts into trenches and position inlets into the ground. Water truck to reduce dust

Duration: Backhoe to construct 5,670 LF drainage ditch/swale $\div 230 \text{ LF/hour} = 24.7 \text{ hours}$; and backhoe with hook to lift culvert at $3,000 \text{ LF/hour} = 12 \text{ hours}$ and place inlets at $6 \text{ inlets/hour} = 2.5 \text{ hours}$. Total hours is 40.2 hours = 5 days (use 2 backhoes for 2.5 days)

Concrete truck (10 CY/load) to deliver concrete (material cost also includes operator and equipment cost)

Truck with concrete pump unit and boom $88 \text{ CY} \div 9 \text{ CY/hour} = 10 \text{ hours} = 1.5 \text{ days}$

(Use 1 truck w/ pump & boom for 1.5 days). Additional fee of \$2.35/CY that is pumped.

Water truck for 5 days

Labor: 2 Backhoe operators for 2.5 days

1 Truck w/ pump & boom for 1.5 days

1 Laborer to drive Water truck for 2.5 days

2 Laborers to assist in pouring of concrete and placing inlets & culverts for 3.5 days.

Task 2-8: Installation of Erosion Controls

Description: Straw bales and silt fence to be delivered by supplier. Pick-up truck will transport laborers, tools and materials to install silt fences and straw bales.

Operation: Place silt fence and straw bales to help control sediments and reduce erosion.

Equipment: Pick-up truck to transport laborers

Materials: 4,530 LF of silt fencing (price includes delivery)

60 straw bales (price includes delivery)

Duration: 2 laborers can install silt fencing in 2,000 LF/day = 2.3 days (use 2 laborers for 2.5 days)

2 laborers can install a set of straw bales at key locations in drainage system in .5 hours x 15 sets of straw bales = 7.5 hours = 1 day (use 2 laborers for 1 day)

1 pickup truck can transport up to 3 laborers (use 1 pickup truck for 3.5 days)

Labor: 2 Laborers (laborer will operate pick-up truck) for 3.5 days

Task 3-1: Planting Woody Plant Materials

Description: Semi-end dump truck to import soil amendments and mulches. Nursery to deliver plant materials. Fertilizer tablets to be delivered by supplier. Pick-up truck to transport laborers who will dig planting holes and prepare watering basins around each planting hole. Laborers to place fertilizer tablets into each planting hole, backfill planting holes with amended soils, install plants and add mulch to each watering basin. Laborers to water each plant the same day that they are planted. Mulches and fertilizer tablets are placed in planting holes to enhance plant growth.

Operation: Prepare planting holes and install plants into planting holes. Water each plant.

Quantity: 9 coastal scrub planting areas with 40 plants in each

Materials: 360 tube stock at \$2.69 each.

Fertilizer – allowance \$76.21

Soil amendments – 0.5 CY per planting hold = 180 CY

Mulch – 0.25 CY per planting hole = 90 CY

Equipment: Hand tools

Pick-up trucks to transport laborers and equipment and supplies (fertilizer tablets, soil amendments and mulch)

Semi-end dump truck to import soil amendments and mulches

Duration: 2 laborers can prepare 110 planting holes/day = 3.25 days; and install 110 plants/day = 3.25 days. Total 6.5 days (use 2 laborers for 6.5 days)

Pick-up truck can haul 3 laborers (use 1 pick-up truck for 6.5 days)

1 Semi-end dump truck for .25 days

Labor: 1 Semi-end dump truck for .25 days

2 Laborers for planting, hole preparation and installing plants for 6.5 days

Task 3-2: Hydroseed Graded Areas

Description: Hydroseeder to apply hydroseed mix with mechanical hydroseed equipment mounted on a four-wheel drive vehicle. Hydroseed provides erosion and weed control, and helps to retain soil moisture.

Foliage diffuses the downward force of rain and plant roots hold soil in place.

Operation: Apply hydroseed on graded areas

Quantity: 34 acres to be hydroseeded

Materials: 3 different Hydroseed Specifications on Figure 12

Equipment: 1 Hydroseed Vehicle can cover 0.67 acres/hour

Duration: Hydroseed vehicle at 0.67 acres/hour \div 34 acres = 51 hours = 6.5 days (use 1 hydroseed vehicle for 6.5 days)

Labor: 1 Hydroseed operator for 6.5 days

1 Laborer to assist hydroseed operator for 6.5 days

Task 4-1: Post Reclamation Maintenance (3 year period)

Description: Loaders and backhoes will remove excess sediments in drainage facilities and place sediments into semi-end dump truck for transport to a local landfill for disposal.

Inspections will be made to identify targeted noxious weeds and identify and correct (as needed) areas with erosion problems.

Operation: Property owner will inspect site for evidence of erosion and sediment accumulation and will arrange for the removal of excess sediment build up from drainage facilities, as needed, and arrange for transporting excess sediments to a local land fill for disposal.

Quantity: Estimate 310 CY of sediments to be removed each year of the 3 year post reclamation maintenance period, by loader or backhoe and transported to landfill by semi-end dump truck.

Equipment: Backhoe to remove sediments from drainage ditches

Semi-end dump trucks to transport sediments off-site

Pick-up truck to transport inspector

Duration: Loader to remove 290 CY sediments from basin at 150 CY/hour = 2 hours (use 1 loader for .5 days each of the 3 years = 1.5 days)

Backhoe to remove sediments in ditches at 400 LF/hour ÷ 5,050 LF = 13 hours (use 1 backhoe for 2 days each of the 3 years = 6 days)

Semi-end dump trucks to transport 310 CY of sediments from basin to landfill (over 5 years) at 18 CY/trip = 17 loads ÷ 10 loads/day (1 hour turnaround = 8 trips/day) = 2 days x 3 years (use 1 semi-end dump truck for 2 days each of 3 years = 24 hours = 3 days)

Pick-up truck to transport inspector 2 times a year for 3 years (use 1 pick-up truck for .5 days twice a year for 3 years = 3 days total)

Labor: 1 Loader operator for .5 days annually for 3 years = 1.5 days

1 Backhoe operator for 2 days each, annually for 3 years = 6 days

1 Semi-end dump truck operators for 2 days annually for 3 years= 6 days

1 Inspector to identify areas requiring maintenance for 2 four hour days for each of the 3 years (1 four hour inspection in the spring and 1 in the fall x 3 years = 3 days total)

Task 4-2: Revegetation Inspections

Description: The owner's revegetation expert will visually inspect the newly revegetated areas and will observe for targeted noxious weeds, and inspect erosion and sediment controls.

Operation: Visually observe the newly revegetated areas, observe site for presence of targeted noxious weeds; and observe for erosion and sediment problems.

Quantity: 34 acres of revegetated areas to visually inspect and observe for presence of targeted noxious weeds and erosion and sediment control problems

Materials: Defoliant (if noxious weeds are found)

Equipment: Pick up truck to transport personnel, tools and supplies.

Hand tools (shovels, wrecking bars, and wheelbarrows) if noxious weeds are found

Duration: The revegetation expert will visually observe all revegetated areas twice during the first two years after planting (use 1 revegetation expert for 2 four hour days visits to the site, one in the spring and 1 in the fall, for each of the first 2 years. Total number of 8 hours per year = total of 2 days in the 2 year period)

The revegetation expert will visually observe all revegetated areas once during the spring of the third year after planting (use 1 revegetation expert for a total of 4 hours for the last year of the revegetation program).

Owner's representative to inspect the site, at minimum, twice a year (use 1 person to observe for erosion and sediment problems, and noxious weeds for a total of 3 hours/visit x 2/year x 3 years = 18 hours = total of 2.5 days in the 3 year period)

Pick-up truck to be used by the revegetation expert and the owner's representative to conduct their inspections (1 pick-up truck for revegetation expert at 20 hours and quarry personnel at 18.5 hours = 38.5 hours = 5 days over 3 years)

Labor: 1 revegetation expert for total of 2.5 days over 3 years

1 quarry personnel for total of 2.5 days over 3 years

References

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