Appendix K.1D

Forest Lake Reservoir Phase II Improvements

2001 PBCSD Addendum to Expanded Initial Study for Phase II CAWD/PBCSD Wastewater Reclamation Project

Addendum to

EXPANDED INITIAL STUDY

PHASE II CAWD/PBCSD WASTEWATER RECLAMATION PROJECT

Prepared for

PEBBLE BEACH COMMUNITY SERVICES DISTRICT

Acting as Lead Agency For

Carmel Area Wastewater District
Pebble Beach Community Services District
Pebble Beach Company

May 2001

Prepared by

PARSONS ENGINEERING SCIENCE, INC.
PLANNING • DESIGN • CONSTRUCTION MANAGEMENT
99 PACIFIC STREET - SUITE 400A, MONTEREY, CA 93940 · 831/373-2933
OFFICES IN PRINCIPAL CITIES
738421

TABLE OF CONTENTS

LIST OF FIGURES

1 PROJECT DESCRIPTION

PURPOSE AND BACKGROUND

Phase I of the CAWD/PBCSD Wastewater Reclamation Project became operational on 21 September 1994. Shortly thereafter, the Carmel Area Wastewater District (CAWD), Pebble Beach Community Services District (PBCSD) and Pebble Beach Company jointly proposed the second phase of the project. The PBCSD, acting as lead agency for the project, adopted a Negative Declaration for Phase II of the CAWD/PBCSD Wastewater Reclamation Project on February 23, 1996. This Negative Declaration was based on an Final Expanded Initial Study published on February 22, 1996, which evaluated the following elements of Phase II: Forest Lake Reservoir modifications and monitoring, Forest Lake treatment facility, Sawmill Gulch emergency outlet structure, Pacific Grove transmission pipeline extension, and irrigation system modification to the Pacific Grove Golf Course and El Carmelo Cemetery. The Pacific Grove transmission pipeline extension and irrigation system modifications were subsequently removed from the project, which now consists only of the treatment facility, outlet structure and modifications to the reservoir. A Negative Declaration was filed by Monterey County on July 17, 1997 in association with issuance of a Use Permit for improvement of Forest Lake Reservoir and emergency outlet at Saw Mill Gulch. Since the adoption of the Negative Declaration, the Division of Safety of Dams has required more extensive modifications of the Forest Lake Reservoir north embankment than was described in the original Initial Study. All of the other project elements remain the same.

The purpose of this Addendum is to provide additional review for the additional reservoir embankment modifications. Construction of the embankment modifications is scheduled to begin in late 2001. This Addendum has been prepared in accordance with Section 15164 of the California Environmental Quality Act (CEQA) Guidelines, which state that an Addendum to a previously adopted Negative Declaration may be prepared if only minor technical changes or additions to the Negative Declaration are necessary.

DESCRIPTION OF NORTH EMBANKMENT MODIFICATIONS

The original project included:

1) Lining for the inside of Forest Lake Reservoir;

2) Construction of a new inlet/outlet structure;

3) Access walk bridge to the inlet/outlet structure;

4) An underdrain system; and

5) Inlet/outlet piping.

All project components are shown in Figure 1. During the review process, the Division of Safety of Dams (DSOD) recommended reconstruction of the exterior face of the north embankment. This reconstruction of the exterior face is the only change in the project. Figure 1 shows the area of the north embankment that would have to be reconstructed. Figures 2A and 2B show section views of the north embankment that would have to be reconstructed. As can be seen from these figures, the construction will affect a relatively small section of the reservoir. The embankment modifications would change the cubic yards (CY) of earthwork as follows:

	Soil Removed	Concrete Removed	Soil Imported
Original Proposal	10,000 CY	3,500 CY	3,500 CY
Current Proposal	23,000 CY	350 CY	24,700 CY

Addendum to
Expanded Initial Study

PHASE II - CAWD/PBCSD WASTEWATER RECLAMATION PROJECT

Prepared for

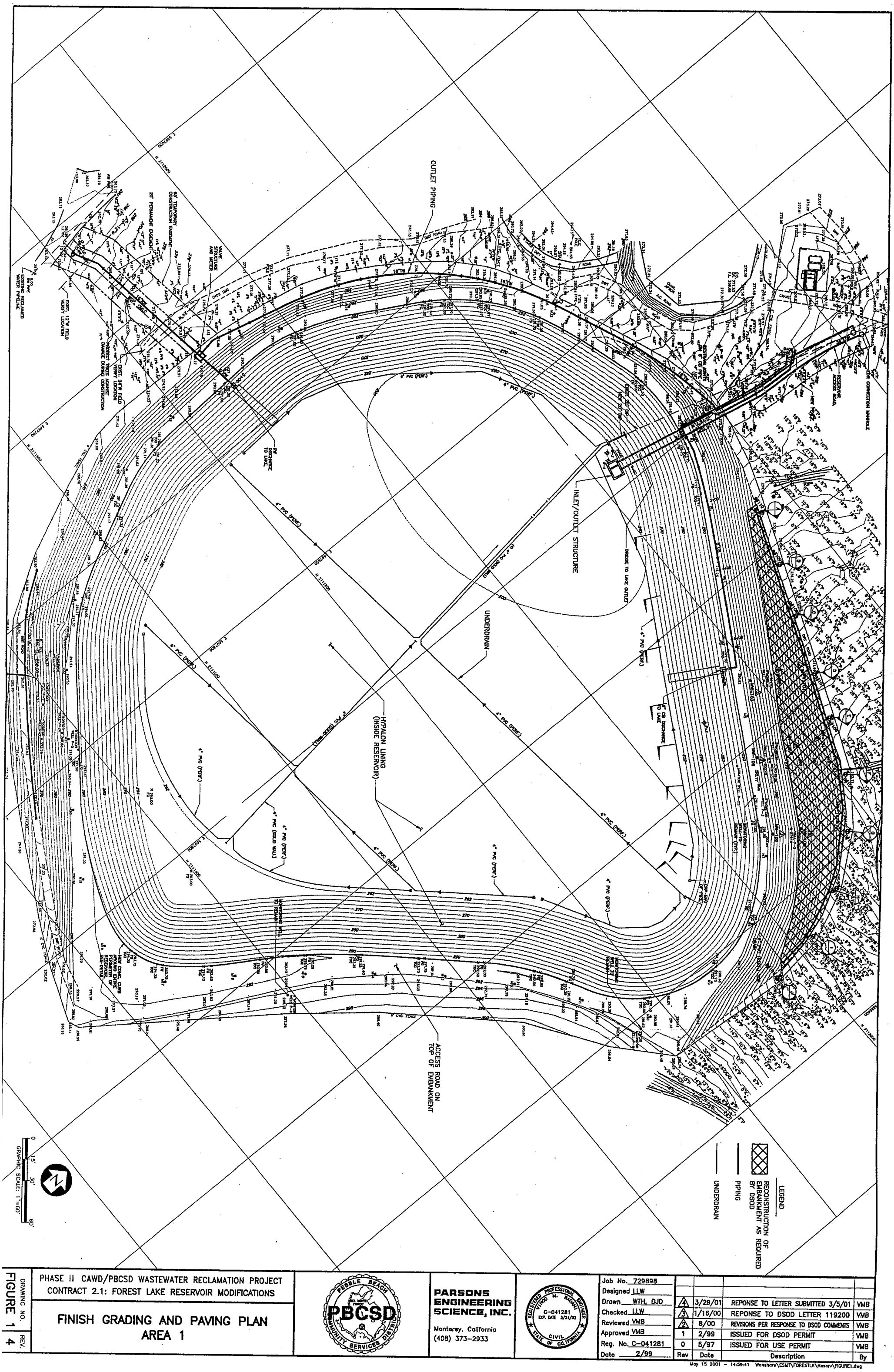
PEBBLE BEACH COMMUNITY SERVICES DISTRICT
Acting as Lead Agency For

Carmel Area Wastewater District
Pebble Beach Community Services District
Pebble Beach Company

May 2001

Prepared by

PARSONS ENGINEERING SCIENCE, INC.
PLANNING · DESIGN · CONSTRUCTION MANAGEMENT
99 PACIFIC STREET - SUITE 400A, MONTEREY, CA 93940 · 831/373-2933
OFFICES IN PRINCIPAL CITIES
738421



PHASE II CAWD/PBCSD WASTEWATER RECLAMATION PROJECT
CONTRACT 2.1: FOREST LAKE RESERVOIR MODIFICATIONS

FINISH GRADING AND PAVING PLAN AREA 1

DRAWING NO. FIGURE 1 | REV. 4

PEBBLE BEACH COMMUNITY SERVICES DISTRICT — PBCSD

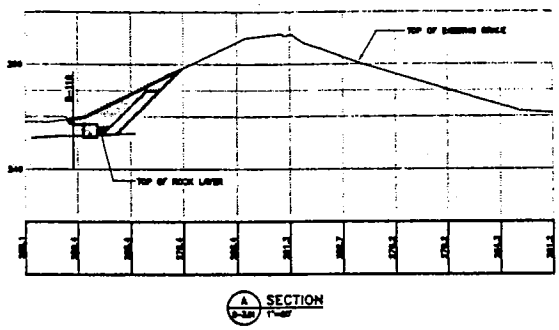
PARSONS ENGINEERING SCIENCE, INC.
Monterey, California
(408) 373-2933

REGISTERED PROFESSIONAL ENGINEER — VINOD M. BADANI — C-041281 EXP. DATE 3/31/03 — CIVIL — STATE OF CALIFORNIA

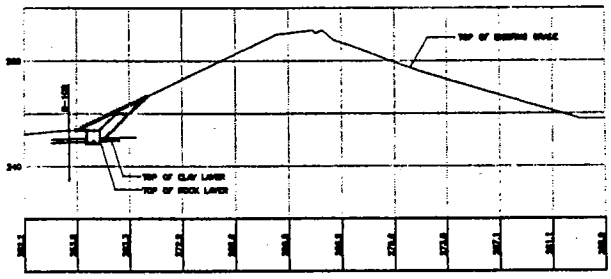
Job No. 729898
Designed LLW
Drawn WTH, DJD
Checked LLW
Reviewed VMB
Approved VMB
Reg. No. C-041281
Date 2/99

Rev	Date	Description	By
4	3/29/01	REPONSE TO LETTER SUBMITTED 3/5/01	VMB
3	1/16/00	REPONSE TO DSOD LETTER 119200	VMB
2	8/00	REVISIONS PER RESPONSE TO DSOD COMMENTS	VMB
1	2/99	ISSUED FOR DSOD PERMIT	VMB
0	5/97	ISSUED FOR USE PERMIT	VMB

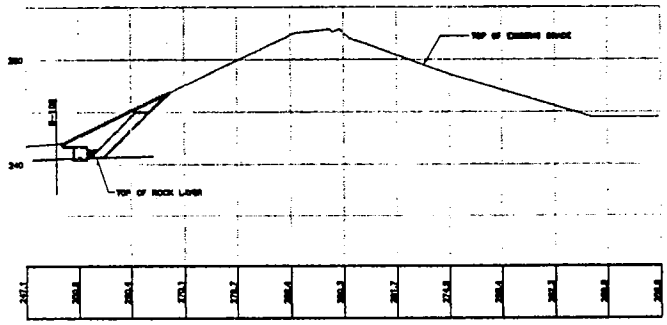
May 15 2001 - 14:59:41 Wanshare\ESMT\FORESTLK\Reserv\FIGURE1.dwg



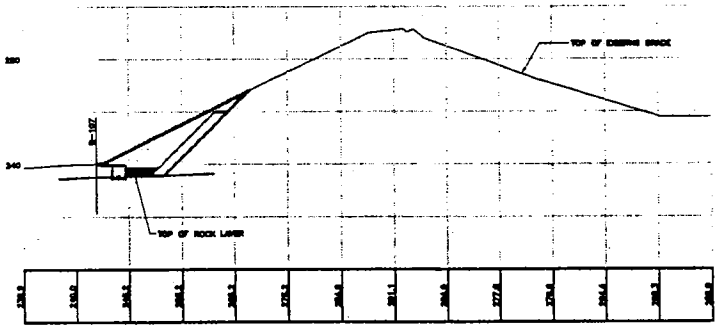
A SECTION



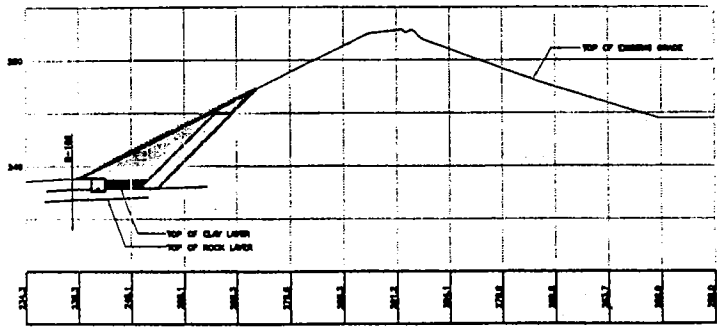
B SECTION



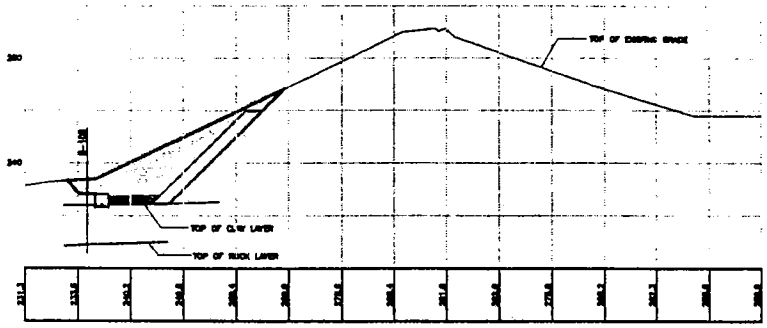
C SECTION



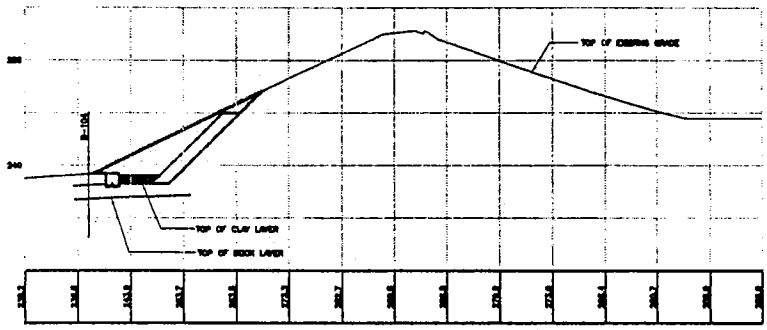
D SECTION



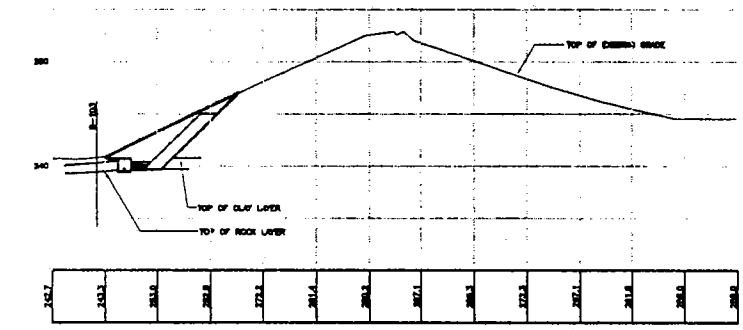
E SECTION



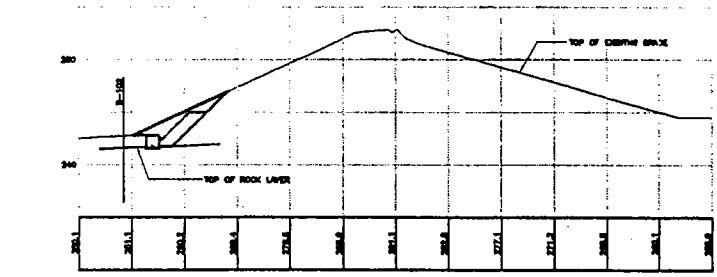
F SECTION



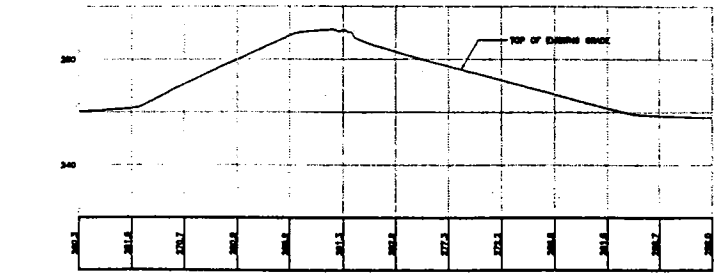
G SECTION



H SECTION



I SECTION



J SECTION

2 ENVIRONMENTAL CHECKLIST

The following checklist identifies any significant impacts that are *new* since the preparation of the 1996 Initial Study. Where impacts for given subject areas are the same as or equivalent to those determined in the Initial Study or where the impact increases but does not become a significant impact, the checklist column is checked "No Significant New Impact." Each issue area is discussed in the following section.

I. BACKGROUND

1. Name of Proponent: Pebble Beach Community Services District

2. Address/Contact: Richard Andrews, General Manager
Forest Lake and Lopez Roads
Pebble Beach, California 93953
(408) 372-1274

3. Date Checklist Submitted: May 2001

4. Agency Requiring Checklist: Pebble Beach Community Services District

5. Name of Proposal, if applicable: Phase II CAWD/PBCSD Wastewater Reclamation Project

II. NEW ENVIRONMENTAL IMPACTS

(Explanations of all "yes" and "maybe" answers are required on attached sheets.)

	Yes	Maybe	No Significant New Impact	Mitigable
1. Earth. Would the proposal result in:				
a. Unstable earth conditions or in changes in geologic substructures?	—	—	X	—
b. Disruptions, displacements, compaction or overcovering of the soil?	—	—	X	—
c. Change in topography or ground surface relief features?	—	—	X	—
d. The destruction, covering or modification of any unique geologic or physical features?	—	—	X	—

	Yes	Maybe	No Significant New Impact	Mitigable
e. Any increase in wind or water erosion of soils, either on or off the site?	___	___	X	___
f. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream of the bed of the ocean or any bay, inlet or lake?	___	___	X	___
g. Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards?	___	___	X	___
2. Air. Would the proposal result in:				
a. Substantial air emissions or deterioration of ambient air quality?	___	___	X	___
b. The creation of objectionable odors?	___	___	X	___
c. Alteration of air movement, moisture, or temperature, or any change in climate, either locally or regionally?	___	___	X	___
3. Water. Would the proposal result in:				
a. Changes in currents, or in the course of direction of water movements, in either marine or fresh waters?	___	___	X	___
b. Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?	___	___	X	___
c. Alterations to the course or flow of flood waters?	___	___	X	___
d. Change in the amount of surface water in any water body?	___	___	X	___
e. Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?	___	___	X	___
f. Alteration of the direction of rate of flow of ground waters?	___	___	X	___

	Yes	Maybe	No Significant New Impact	Mitigable
g. Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?	—	—	X	—
h. Substantial reduction in the amount of water otherwise available for public water supplies?	—	—	X	—
i. Exposure of people or property to water related hazards such as flooding or tidal waves?	—	—	X	—
4. Plant Life. Would the proposal result in:				
a. Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, and aquatic plants)?	—	—	X	—
b. Reduction of the numbers of any unique, rare or endangered species of plants?	—	—	X	—
c. Introduction of new species of plants into an area, or result in a barrier to the normal replenishment of existing species?	—	—	X	—
d. Reduction in acreage of any agricultural crop?	—	—	X	—
5. Animal Life. Would the proposal result in:				
a. Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms or insects)?	—	—	X	—
b. Reduction of the numbers of any unique, rare or endangered species of animals?	—	—	X	—
c. Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?	—	—	X	—
d. Deterioration to existing fish or wildlife habitat?	—	—	X	—
6. Noise. Would the proposal result in:				
a. Increases in existing noise levels?	—	—	X	—

	Yes	Maybe	No Significant New Impact	Mitigable
b. Exposure of people to severe noise levels?	___	___	X	___
7. Light and Glare. Would the proposal produce new light or glare?	___	___	X	___
8. Land Use. Would the proposal result in a substantial alteration of the present or planned land use of an area?	___	___	X	___
9. Natural Resources. Would the proposal result in:				
a. Increase in the rate of use of any natural resources?	___	___	X	___
10. Risk of Upset. Would the proposal involve:				
a. A risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions?	___	___	X	___
b. Possible interference with an emergency response plan or an emergency evacuation plan?	___	___	X	___
11. Population. Would the proposal alter the location, distribution, density, or growth rate of the human population of an area?	___	___	X	___
12. Housing. Would the proposal affect existing housing, or create a demand for additional housing?	___	___	X	___
13. Transportation/Circulation. Would the proposal result in:				
a. Generation of substantial additional vehicular movement?	___	___	X	___
b. Effects on existing parking facilities, or demand for new parking?	___	___	X	___
c. Substantial impact upon existing transportation systems?	___	___	X	___
d. Alterations to present patterns of circulation or movement of people and/or goods?	___	___	X	___

	Yes	Maybe	No Significant New Impact	Mitigable
e. Alterations to waterborne, rail or air traffic?	___	___	X	___
f. Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?	___	___	X	___
14. Public Services. Would the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:				
a. Fire protection?	___	___	X	___
b. Police protection?	___	___	X	___
c. Schools?	___	___	X	___
d. Parks or other recreational facilities?	___	___	X	___
e. Maintenance of public facilities, including roads?	___	___	X	___
f. Other governmental services?	___	___	X	___
15. Energy. Would the proposal result in:				
a. Use of substantial amounts of fuel or energy?	___	___	X	___
b. Substantial increase in demand upon existing sources or energy, or require the development of new sources of energy?	___	___	X	___
16. Utilities. Would the proposal result in a need for new systems, or substantial alterations to the following utilities:				
a. Power or natural gas?	___	___	X	___
b. Communications systems?	___	___	X	___
c. Water?	___	___	X	___
d. Sewer or septic tanks?	___	___	X	___
e. Storm water drainage?	___	___	X	___
f. Solid waste and disposal?	___	___	X	___

	Yes	Maybe	No Significant New Impact	Mitigable
17. Human Health. Would the proposal result in:				
a. Creation of any health hazard or potential health hazard (excluding mental health)?	___	___	X	___
b. Exposure of people to potential health hazards?	___	___	X	___
18. Aesthetics. Would the proposal result in the obstruction of any scenic vista or view open to the public, or would the proposal result in the creation of an aesthetically offensive site open to public view?	___	___	X	___
19. Recreation. Would the proposal result in an impact upon the quality or quantity of existing recreational opportunities?	___	___	X	___
20. Cultural Resources.				
a. Would the proposal result in the alteration of or the destruction of a prehistoric or historic building, structure, or object?	___	___	X	___
b. Would the proposal result in adverse physical or aesthetic effects to a prehistoric or historic building, structure, or object?	___	___	X	___
c. Does the proposal have the potential to cause a physical change, which would affect unique ethnic cultural values?	___	___	X	___
d. Would the proposal restrict existing religious or sacred uses within the potential impact area?	___	___	X	___

	Yes	Maybe	No Significant New Impact	Mitigable
21. Mandatory Findings of Significance.				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	___	___	X	___
b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environmental is one which occurs in a relatively brief, definitive period of time while long-term impacts would endure well into the future).	___	___	X	___
c. Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant).	___	___	X	___
d. Does the project have environmental effects , which would cause substantial adverse effects on human beings, either directly or indirectly?	___	___	X	___

3 ENVIRONMENTAL ANALYSIS

The modifications to the Forest Lake Reservoir take place entirely within the area evaluated in the 1996 Initial Study. Although the project will require more extensive excavation of the embankment at the northeast edge of the lake, the overall area of construction remains the same. Once construction is completed, the project elements will be exactly the same as those originally proposed. The conclusions in this Addendum are based on information contained in the adopted environmental document and subsequent calculations of additional construction period impacts. Following are conclusions for each impact category.

GEOLOGY, SOILS AND SEISMICITY

No new impacts have been identified. The project will comply with previously identified mitigation measures to address safety concerns of the California Department of Water Resources Division of Safety of Dams (DSOD). The additional reinforcement of the reservoir embankment will provide an even greater level of safety in the event of a seismic event.

AIR QUALITY

The additional earthwork required to reinforce the reservoir embankment has the potential to result in additional air quality impacts at the site, primarily generation of dust. Dust emissions are regulated in the form of an air quality standard for particulate matter less than 10 microns in diameter (PM_{10}). The North Central Coast Air Basin still exceeds California Ambient Air Quality Standards (CAAQS) for both PM_{10} and ozone, and is designated as a non-attainment area for both pollutants. The Monterey Bay Unified Air Pollution Control District (MBUAPCD) has determined that emissions of PM_{10} greater than 82 pounds per day are potentially significant. If emissions are projected to be greater than 82 pounds per day, the Air District requires dispersion modeling to evaluate impacts on nearby sensitive receptors. PM_{10} emissions associated with the currently proposed project construction have been calculated based on the following revised construction scenario.

Construction Activities

Construction activities were separated into the following three general categories: initial clearing and grading, earthwork and excavation, and backfilling and compacting. Activities would occur for eight hours a day, five days a week. A total of 24 acres would be worked on, with only 12 acres being worked on at any one time. The overall construction period would remain the same as originally described at approximately 11 months. However, some construction phases would last longer because of the additional embankment work. Specifically, backfilling and compacting would require a total of four months instead of two.

1. Clearing and Grading – Clearing and grading would be performed in two phases. Each clearing phase would clear 12 acres, occurring over a 15-day interval. Construction equipment would consist of one grader and one water truck.

2. Earthwork and Excavation – This phase is estimated to take a total of six months (or 126 working days.) Material to be excavated and removed from the site includes 23,000 cubic yards of soil and 350 cubic yards of concrete. As a conservative estimate, it was assumed that the material would be trucked to the Marina Landfill (approximately 15 miles from Forest Lake Reservoir). Construction equipment would include two bulldozers, one scraper, and one water truck.

3. Backfilling and Compacting – It is estimated that 24,700 cubic yards of backfill would be required. It was assumed that the truck trip distance for imported material would be 15 miles each way. It was also assumed that these activities would be performed over a four-month period (or 82 working days). Construction equipment would include one grader, one compactor, and one water truck.

Calculations and Approach

PM_{10} emissions were calculated for the above three phases with and without dust controls for the following construction-related activities: grading, dozing, compacting, materials handling, equipment exhaust, haul truck and water truck exhaust, vehicle re-entrained dust on unpaved roads, and wind erosion.

Established emissions factors as published in AP-42 5th Edition (EPA 1995) and Nonroad Engine and Vehicle Emission Study (EPA 1991) were used in the analysis.

The results of the analysis are shown in Table 1, and supporting calculations are included in Appendix A.

Table 1

Construction Emissions (lbs/day)

Phase	Without Controls	With Controls
Clearing and Grading	89	46
Earthwork and Excavation	88	32
Backfilling and Compacting	135	44

Mitigation Measures

Mitigation measures would be the same as originally proposed, but are repeated here for reference. The following mitigation measures have been proposed:

1. Water all exposed surfaces at least twice daily. During dry and/or windy weather visually monitor dust generation and water more frequently as necessary. Prohibit grading-type activities during periods of high wind (over 15 miles per hour) from the northwest, west, and southwest quadrants.

2. Confine active earthwork to the portion of the reservoir bed and/or embankment that can be actively worked on in a given day (e.g. six-acre maximum working cell).

3. Use a soil binder or surfactant to reduce dust emissions after final excavation and backfilling of an area, or for any area that will not be worked actively for five or more days.

4. Install the underdrain piping and hypalon liner as soon as practicable, section by section, as backfilling and compacting are completed.

5. Water stockpiled excavated material and imported backfill dirt prior to loading into trucks.

6. Cover loads on trucks that will be leaving the site and traveling on public or private streets.

7. Use a road dust control agent on all unpaved haul roads.

8. Wash wheels of haul trucks before they leave the construction zone.

9. Clean on a regular basis the access area adjacent to paved surface roads.

10. Limit the speed of trucks on unpaved roads to 25 miles per hour.

11. Maintain and tune construction equipment and haul trucks in accordance with the manufacturers' recommendations.

12. Keep equipment idling to a minimum when not in use. No piece of equipment shall idle in one place for more than 30 minutes.

It is estimated that the mitigation measures listed above will provide approximately 50 percent control during grading, dozing, compacting and materials handling activities, 65 percent control of wind erosion-related dust, and 80 percent control of dust from travel on unpaved roads. No attempt was made to calculate the control efficiencies for equipment and vehicle exhaust.

Emissions Summary

The analysis of PM_{10} emissions from construction activities at Forest Lake Reservoir shows that controlled emissions are below the MBUAPCD significance threshold of 82 lbs/day for on-site emissions. Therefore, dispersion modeling is not necessary. In addition the site conditions reduce the potential effects of dust on nearby areas.

The reservoir is not flat, but depressed, and the reservoir embankments act as a wind barrier for most wind directions. The reservoir is also separated from nearby residences by trees, which can act as effective wind and fugitive dust barriers. Based on wind flow information, the residences most likely to be downwind of the construction site will be those located to the southeast of the reservoir. This portion of the reservoir is cut sloped upwards. The residences in this direction lie on a hilly area above the site. The difference in elevation from the reservoir floor to these homes is approximately 60 to 80 feet. Some of the wind flow may tend to actually go around this terrain obstacle instead of going over it, diverting some of the dust emission to the south and east, where vacant lots are located. Winds in the area are generally from the northwest, minimizing the amount of time that residences to the west and north would be directly downwind of the construction area.

Some periods of construction that generate air emissions would last longer than originally proposed, thus protacting the period in which dust would be produced. However, daily emissions would not exceed air quality significance thresholds established by the MBUAPCD, and the change in emissions is therefore not considered significant. The total construction period would remain the same.

HYDROLOGY AND WATER QUALITY

No new impacts have been identified. The required Erosion Control Plan and Storm Water Pollution Prevention Plan will reflect the revised construction requirements and additional embankment work, and will address water quality concerns associated with construction. The Sawmill Gulch outlet structure will be the same as originally proposed.

BIOTIC RESOURCES

No new impacts have been identified. The project will comply with previously identified mitigation measures, which require replacement of trees removed during construction. The 1996 Initial Study reported that Forest Lake Reservoir was "mostly devoid of vegetation ... so that very little damage to any vegetation is anticipated." In the intervening years ruderal vegetation has developed within the reservoir area, but it is not expected that removal of this weedy vegetation would result in any significant impacts. The reservoir site does not constitute important wildlife habitat. Tree removal required for construction of the pipeline to the reservoir was identified in the Initial Study, and mitigation in the form of replacement plantings has already been identified.

NOISE

There will be slightly more construction noise at the reservoir site, due to the more extensive embankment excavation required at the reservoir. The project will comply with the Monterey County noise ordinance, including limitations on construction hours and the requirement that construction noise be limited to 85 dBA at 100 feet. Some noise-generating activities, such as backfilling and compacting, would last longer (four months instead of two months) with the changes in the project. Elevated noise levels

during construction would, however, be temporary and are still not deemed significant. Because of limitations on the amount of construction activity that can occur at the site at any one time, the peak noise levels during construction are not expected to change. Operational noise would not change.

LIGHT AND GLARE

No new impacts have been identified. Lighting and materials at the reservoir would be the same as previously described. The project will comply with previously identified mitigation measures for this impact category.

LAND USE

No new impacts have been identified. The Forest Lake Reservoir will continue to be used as a water storage facility.

NATURAL RESOURCES

No new impacts have been identified. The project would still result in a reduction in use of potable water, thus conserving natural resources.

PUBLIC HEALTH AND RISK OF UPSET

No new impacts have been identified. The project will comply with previously identified mitigation measures for this impact category. Measures for treating any hazardous materials encountered during construction will be the same as previously proposed, and use of hazardous materials during construction and operation would not be changed. Uses of recycled water would be the same as originally proposed and have been shown to be safe.

POPULATION AND HOUSING/GROWTH INDUCEMENT

No new impacts have been identified. The changes in the project do not affect the previous analysis, which concluded that no mitigation measures are required beyond those measures already contained in the Water Allocation Program Environmental Impact Report being implemented by the Monterey Peninsula Water Management District.

TRANSPORTATION/CIRCULATION

No significant new impacts have been identified. The project will comply with previously identified mitigation measures for this impact category, which include restricting construction to between 8 a.m. and 5 p.m. weekdays. Haul truck traffic would be increased, with 10 haul truck trips per day during the earthwork/excavation phase (as compared to 5 trips per day under the original project), and 15 haul truck trips per day

while backfilling the reservoir embankment (as compared to 4 trips per day for the original project). The small number of additional trips is not expected to result in a measurable degradation of level of service of any roadways in the project area.

Traffic would be routed to Lopez Road through a temporary construction site access road to minimize traffic impacts on residential areas. Truck trips would be limited to the most direct routes and designated employee parking areas will be provided. These routes will be predetermined and designed to minimize traffic impacts on residential areas.

PUBLIC SERVICES AND UTILITIES

No new impacts have been identified. The project will comply with previously identified mitigation measures, and would not create a need for new schools, libraries, police or fire service.

ENERGY

No new impacts have been identified. There will be a slight-increase in construction energy requirements associated with the additional embankment modifications, but operational energy use will remain the same.

AESTHETICS

No new impacts have been identified; after construction the visual appearance of the reservoir will be the same as previously described. The project will comply with previously identified mitigation measures for this impact category.

RECREATION

No new impacts have been identified. The project would still increase the reliability of water supply for area golf courses.

HISTORIC AND ARCHAEOLOGICAL RESOURCES

No new impacts have been identified. The Forest Lake Reservoir site was previously surveyed by Archaeological Consulting, and results are presented in their report of February 15, 1996. The construction area was covered in this field reconnaissance, and their report indicated no areas of concern in the vicinity of the reservoir.

CUMULATIVE IMPACTS

Since preparation of the original Initial Study in 1996, the status of other construction projects occurring simultaneously in the Pebble Beach area has changed. Some proposed construction projects have already taken place, and the schedule for other projects has been delayed. Related potential projects in the Pebble Beach - western Pacific Grove

area include PBCSD water and wastewater system improvements, the Pebble Beach Company Lot Development Program, Cal-Am water system improvements and City of Pacific Grove improvements to their golf course. The status of these projects is briefly discussed below.

PBCSD Water and Wastewater System Improvements

PBCSD Water System Improvements for Fire Protection include construction of waterline replacement and fire hydrant additions. These fire protection improvements are intended to correct existing fire flow deficiencies and would not provide additional domestic potable water for development. They are being phased over several years. Due to the minor nature and extended schedule of work, PBCSD water system improvements would not contribute to significant construction related cumulative impacts. Landscaping plans utilizing native species, use of earthen paint colors and wooden slat fencing mitigate for minor losses of vegetation and provide visual screening.

PBCSD routinely plans and constructs minor localized wastewater system line replacement and rehabilitation projects. Due to the minor nature and extended schedule of work, PBCSD wastewater system improvements would not contribute to significant construction-related cumulative impacts. Provisions in plans and specifications mitigate minor, temporary potential construction related impacts due to truck traffic, noise, exhaust, dust and erosion.

Pebble Beach Company Lot Development Program

When the Initial Study was prepared, an additional 891 service connections were allowed for full build-out within PBCSD under the Del Monte Forest Area Local Coastal Plan (LCP). However, since that time, passage of Measure A reduced the allowable new units from 891 to 38. Future development includes construction of a new golf course, which would utilize reclaimed water for irrigation. The Pebble Beach Company also proposes 60 employee housing units adjacent to existing company facilities, additional hotel rooms at The Lodge at Pebble Beach and The Inn at Spanish Bay, relocation of the equestrian center to the Sawmill Gulch quarry area, and a new driving range. The PBCSD has agreed to provide sewer capacity to all of the proposed components of the Del Monte Forest Plan.

Independent of any Pebble Beach Co. work planned, PBCSD has moved forward with construction of the four pump station improvements necessary to correct existing fireflow deficiencies and provide reliable emergency power in already developed areas. This program includes pump stations that would be designed to provide adequate potable water supply and fire protection, and emergency standby power. Adequate water storage for full build-out and fire protection in the first lift zone would be provided by a single 374,000-gallon tank located off Spruance Road. The tank would be constructed as part of the Lot Development Program (LDP). This is considered more cost effective than building a smaller Spruance storage tank for fire protection, and then building a second tank when lot development occurs. Provisions to minimize short-term construction related nuisance impacts due to these LDP-related water system improvements, (i.e.,

traffic noise, exhaust, dust and erosion) would be addressed by plans, specifications and permit conditions for these individual projects prior to the time of construction.

Cal-Am Capital Improvement Program

Cal-Am is the water purveyor for the Pebble Beach potable water system. The existing Cal-Am water distribution and storage system in the Pebble Beach area has been improved by Cal-Am and they are not proposing to construct any major capital improvements in the near future. Cal-Am has replaced the distribution main from the Carmel/Pebble Beach border to Forest Lake Road and distribution mains in the gravity pressure zone along San Carlos Road, Bird Rock Road, Herders Road and Rodeo Road.

Cal-Am has decommissioned Forest Lake as a potable water supply reservoir. There are two (2) five-million-gallon potable water storage tanks adjacent to the access road to Forest Lake. A third five-million-gallon tank is planned for this site and the foundation ring wall is in place. A specific schedule for the construction of the third tank has not been established. However, it would not be constructed in 2001 or 2002, when the proposed Phase II CAWD/PBCSD Wastewater Reclamation Project, including the Forest Lake Reservoir and Treatment facility, are scheduled for construction. The lack of scheduled coincidence between these two proposed projects avoids cumulative construction related impacts in the vicinity of Forest Lake.

The need to replace 112,000 feet of small diameter water line throughout portions of Pebble Beach to meet fire protection requirements was identified by PBCSD in separate independent engineering analyses conducted in 1987 and 1990. PBCSD is currently in the process of updating the 1990 study. Cal-Am's capital improvement program would take many years to gradually replace these water lines. Impacts of these distribution system improvements would be minor and localized at any one time. Provisions in Cal-Am's plans and specifications to general contractors would mitigate for potential construction related traffic, noise, exhaust, dust and erosion impacts.

Impacts

The changes in status of other proposed construction projects do not materially change the cumulative impacts of the Phase II project combined with other construction projects in the region. It is still anticipated that the individual and cumulative long-term impacts to visual quality and biotic resources, and the short-term construction impacts to traffic, noise levels, erosion and sedimentation and air quality, would all be below levels of significance. With the reduced development proposed in the project area by the Pebble Beach Company, cumulative impacts would probably be less than previously described.

CONCLUSIONS

The proposed changes in construction at the Forest Lake Reservoir would not result in any new environmental impacts that were not previously identified in adopted environmental documents. The project will comply with all appropriate mitigation measures that have already been identified and incorporated into the Phase II Mitigation

Monitoring Program. Pursuant to Section 15164 of the CEQA Guidelines, the minor changes made to the project by the additional embankment work at the Forest Lake Reservoir do not raise important new issues about significant impacts on the environment.

APPENDIX A

PM_{10} AIR QUALITY ANALYSIS FOREST LAKE RESERVOIR

Clearing

1. Grading

A. Fugitive Dust

Dust Emission Factor

$EF=k*0.051*(S)^2$

where

EF= emission factor (lb/VMT)

k= factor to convert to PM10

S= travel speed (mph)

Source: AP-42 5th Edition, Table 11.9-1 (EPA 1998)

Assumptions

k=	0.6		Source: AP-42 5th Edition, Table 11.9-1 (EPA 1998)
S=	7.1	mph	Source: AP-42 5th Edition, Table 11.9-3 (EPA 1998)

Calculation

EF= 1.54 lb/VMT

Vehicle Miles Traveled

VMT = S*H

where

VMT = vehicles miles traveled (mi/day)

S= travel speed (mph)

H = hours of operation (hr/day)

Assumptions

S=	7.1	mph
H=	8	hrs/day

Calculations

VMT= 56.8 miles/day

Dust Emissions = EF * VMT=	87 lbs/day	With No Control
	44 lbs/day	With 50% control

Clearing

B. Equipment Exhaust

Emissions

E= EF*HP*H*L

where

E= Emissions (g)

EF = Emission Factor (g/(hp-hr)

HP = Horsepower (hp)

H = Hours of Operation (hr/day)

L = Load Factor

Assumptions

Equipment	Number of Pieces	Daily Use (hr/day)
Grader	1	8
Water Truck	1	2

	Emission Factors (g/hp-hr)						
Equipment	HC	CO	NOx	PM10	SOx	Horsepower	Load Factor
Grader	1.57	3.8	9.6	1	0.87	172	0.61
Water Truck	0.36	2.8	9.6	0.5	0.89	489	0.57

Source: Nonroad Engine and Vehicle Emission Study (EPA 1991)

Calculations

	Emissions (kg/day)				
Equipment	HC	CO	NOx	PM10	SOx
Grader	1.32	3.19	8.06	0.84	0.73
Water Truck	0.20	1.56	5.35	0.28	0.50
Total (kg/day)	1.52	4.75	13.41	1.12	1.23
Total (lbs/day)	3.35	10.47	29.56	2.47	2.71

Clearing

2. Wind Erosion

Fugitive Dust

Dust Emissions

$E = EF * A$

$EF = k*P*N$

$P = 58*(u^*-u^*_t)^2 + 25*(u^*-u^*_t)$

$P=0$ if $u^* <= u^*_t$

$u^* = 0.053*u^+_{10}$ for large flat piles with a height to base ratio < 0.2

where

E = Emissions (g/day)

A = area disturbed (m^2)

N=number of disturbances over area per day

EF = emission factor (g/(m^2-day))

k = particle size multiplier

P = erosion potential (g/(m^2-day))

u^* = friction velocity (m/s)

u^*_t = threshold friction velocity (ms/)

u^+_{10} = fastest mile at reference anemometer hieght of 10m

Source: AP-42 5th Edition, Section 13.2.5 (EPA 1995)

Assumptions

k=	0.5		Source: AP-42 5th Edition, Section 13.2.5 (EPA 1995)
u^+_{10}=	30	mph	Based on 1960-1963 Gust Wind Data at
	13.4	m/s	Monterey, CA (Lat 36 36' N / Long -121 52' W)
u^*_t=	1.02	m/s	Source: AP-42 5th Edition, Section 13.2.5 (EPA 1995)
A=	0.8	acres/day	Disturbed 12 acres over 15 days.
	3237.6	m^2	
N=	1		Assume each area is disturbed once during grading.

Calculations

u^*=	0.7102	m/s		
P=	0	g/(m^2-day)	P=0 if $u^* <= u^*_t$	
EF=	0	g/(m^2-day)		
E=	0	g/day		
	0	lb/day	No Control	(See Note Below)
	0	lb/day	With 65% Control	

Note: EPA defines wind erosion in terms of a threshold friction velocity which is based on soil characteristics. If the friction velocity(based on local wind conditions) is not high enough to not exceed this threshold, PM10 emissions due to wind erosion are assumed insignificant, as in this case.

Clearing

3. Summary of Clearing Emissions

PM10	Uncontrolled (lb/day)	With control(lb/day)	
Dust from Grading	87.00	44.00	50% Control
Equipment Exhaust	2.47	2.47	No Control
Wind Erosion	0.00	0.00	65% Control
Total	89.47	46.47	
Hydrocarbons	3.35		
Carbon Monoxide	10.47		
Nitrogen Oxides	29.56		
Sulfur Oxides	2.71		

Earthwork

1. Material Handling

A. Fugitive Dust from Loading

Dust Emission Factor from Loading (Excavation and Loading)

$EF = k*0.0032*(u/5)^{1.3}/(M/2)^{1.4}$

where

EF= emission factor (lb/ton material)

k= particle size multiplier

U= mean wind speed (mph)

M= material moisture content (%)

Source: AP-42 5th Edition, Table 13.2.4 (EPA 1995)

Assumptions

k=	0.35		Source: AP-42 5th Edition, Table 13.2.4 (EPA 1995)
u=	5.7	mph	Source: CARB 1992
M(soil)=	7.9	%	default for soil
M(stone)=	0.7	%	default for stone

Calculation

Soil EF=	1.94E-04	lb/ton of material handled
Stone EF=	5.77E-03	lb/ton of material handled

Amount of Material Handled

Soil = 23000 yd^3

assuming 1.59 tons per cubic yard and 126 days of earthwork
and that material is handled twice (excavation and truck loading)
580 tons/day

Stone= 350 yd^3

assuming 2 tons per cubic yard and 126 days of earthwork
and that material is handled twice (excavation and truck loading)
11 tons/day

Emissions = EF * Material Handled

Soil=	0.11	lbs/day	
Stone=	0.06	lbs/day	
Total	0.18	lbs/day	With No Control
	0.09	lbs/day	With 50% Control

Earthwork

B. Dust from Bulldozing

Dust Emission Factor

E= EF*H

$EF=k*s^{1.5}/M^{1.4}$

where

E= emissions (lbs/day)

H= Hours of operation (hrs/day)

EF= emission factor (lbs/hr)

k= factor to determine PM10

s= silt content of material (%)

M= moisture content of material (%)

Source: AP-42 5th Edition, Table 11.9-1, (EPA 1998)

Assumptions

k=	0.75		Source: AP-42 5th Edition, Table 11.9-1, (EPA 1998)
s=	6.9	%	Source: AP-42 5th Edition, Table 11.9-3, (EPA 1998)
M=	7.9	%	Source: AP-42 5th Edition, Table 11.9-3, (EPA 1998)

Equipment	Number of Pieces	Daily Use (hr/day)
Dozers	2	8
Scrapers	1	8
	Total	24

Calculations

EF=	0.75	lbs/hr	
E=	18	lbs/day	No Control
	9	lbs/day	With 50% control

C. Vehicle Re-Entrained Dust

Dust Emissions for Unpaved Roads

$E = EF * VMT$

$EF = 2.6 * (s/12)^{0.8} * (W/3)^{0.4} / (M/0.2)^{0.3} * (365-p)/365$

where
E=Emissions (lb/day)
VMT=vehicle miles traveled/day
EF=Emission factor (lb/vmt)
s=surface material silt content (%)
W=mean vehicle weight (tons)
M=surface material moisture content (%)
p=number of days with at least 0.254mm of precipitation per year

Source: AP-42 5th Edition, Section 13.2.2 (EPA 1998)

Assumptions

s=	8.9	%	
W=	40	tons	
M=	0.2	%	Source: AP-42 5th Edition,Section 13.2.2 default
p=	60	days	Source: AP-42 5th Edition,Figure 13.2.2-1
VMT=	12	miles	12 truck trips/day, 1 mile on unpaved roads/trip
			[10 haul truck trips(with 20yd^3 capacity), 2 water truck trips]

Calculations

EF=	4.82	lb/VMT	
E=	57.84	lbs/day	No Control
	11.57	lbs/day	With 80% Control

Earthwork

B. Equipment Exhaust

Emissions

E= EF*HP*H*L

where

E= Emissions (g)

EF = Emission Factor (g/(hp-hr)

HP = Horsepower (hp)

H = Hours of Operation (hr/day)

L = Load Factor

Assumptions

Equipment	Number of Pieces	Daily Use (hr/day)
Dozers	2	8
Scraper	1	8
Water Truck	1	2
Haul Truck	2	1.25
	Total	28.5

Assumes haul truck idles 15 minutes per trip (10 trips/day)

Equipment	Emission Factors (g/hp-hr)					Horsepower	Load Factor
	HC	CO	NOx	PM10	SOx		
Dozers	0.86	2.8	9.6	0.66	0.93	356	0.59
Scraper	0.71	5	8.7	1.36	0.99	311	0.72
Water Truck	0.36	2.8	9.6	0.5	0.89	489	0.57
Haul Truck	0.36	2.8	9.6	0.5	0.89	489	0.57

Source: Nonroad Engine and Vehicle Emission Study (EPA 1991)

Calculations

Equipment	Emissions				
	HC	CO	NOx	PM10	SOx
Dozers (kg/day)	2.89	9.41	32.26	2.22	3.13
Scraper (kg/day)	1.27	8.96	15.58	2.44	1.77
Water Truck (kg/day)	0.20	1.56	5.35	0.28	0.50
Haul Truck (kg/day)	0.25	1.95	6.69	0.35	0.62
Total (kg/day)	4.61	21.88	59.88	5.29	6.02
Total (lbs/day)	10.16	48.24	132.01	11.66	13.27

2. Wind Erosion

Fugitive Dust

Dust Emissions

$E = EF * A$

$EF = k*P*N$

$P = 58*(u^*-u^*_t)^2 + 25*(u^*-u^*_t)$

$P=0$ if $u^* <= u^*_t$

$u^* = 0.1u^+_s$ for large flat piles with a height to base ratio > 0.2

$u^+_s=(u_s/u_r)* u^+_{10}$ Perform for each section of pile

where

E = Emissions (g/day)

A = area disturbed (m^2)

N=number of disturbances over area per day

EF = emission factor (g/(m^2-day))

k = particle size multiplier

P = erosion potential (g/(m^2-day)) for each disturbance

u^* = friction velocity (m/s)

u^*_t = threshold friction velocity (ms/)

u^+_{10} = fastest mile at reference anemometer height of 10m

u_s/u_r = ration of surface wind speed to approach wind speed (based on wind tunnel studies)

Source: AP-42 5th Edition, Section 13.2.5 (EPA 1995)

Assumptions

k=	0.5		Source: AP-42 5th Edition, Section 13.2.5 (EPA 1995)
u^+_{10} =	30	mph	Based on 1960-1963 Gust Wind Data at
	13.4	m/s	Monterey, CA (36 36' N / 121 52' W)
u^*_t=	1.02	m/s	Source: AP-42 5th Edition, Section 13.2.5 (EPA 1995)
A=	52.13	m^2/day	Assume 23,350yd^3 removed in 126 days or 185 yd^3/day. Assume generated pile is approximately 3yd tall and 7.9yd x 7.9yd. Or equivalently 2.7m x 7.22m x 7.22m. Assume effective disturbed pile area is 7.22m x 7.22m per day.
N=	2		Each area is disturbed once when filled and once when removed per day.

Assume equivalent to Pile A in Figure 13.2.5-2 in AP-42 5th Edition

Pile Section	u_s/u_r	Percent of Total Area(%)	Area (m^2)
A	0.2	5	3
B	0.6	48	25
C	0.9	12	6
D	0.2	35	18

Calculations

Pile Section	u_s/u_r	Percent of Total Area(%)	Area (m^2)	u^+_s (m/s)	u^* (m/s)	P (g/(m^2-day)	Emissions (g/day)	Emissions (lb/day)
A	0.2	5	3	2.68	0.27	0	0	0
B	0.6	48	25	8.04	0.8	0	0	0
C	0.9	12	6	12.06	1.21	6.84	41	0.09
D	0.2	35	18	2.68	0.27	0	0	0

IF $u^* <= u^*_t$, P=0

Total Emissions=	0.09	With No Control
	0.03	With 65% Control

Earthwork

3. Summary of Earthwork Emissions

PM10	Uncontrolled (lb/day)	With control(lb/day)	
Dust From Loading	0.18	0.09	50% Control
Dust from Bulldozing	18.00	9.00	50% Control
Vehicle Re-Entrained Dust	57.84	11.57	80% Control
Equipment Exhaust	11.66	11.66	No Control
Wind Erosion	0.09	0.03	65% Control
Total	87.77	32.35	
Hydrocarbons	10.16		
Carbon Monoxide	48.24		
Nitrogen Oxides	132.01		
Sulfur Oxides	13.27		

Backfill and Compacting

1. Material Handling

A. Fugitive Dust from Loading

Dust Emission Factor from Loading

EF= $k*0.0032*(U/5)^{1.3}/(M/2)^{1.4}$

where

EF= emission factor (lb/ton material)

k= particle size multiplier

U= mean wind speed (mph)

M= material moisture content (%)

Source: AP-42 5th Edition, Table 13.2.4 (EPA 1995)

Assumptions

k=	0.35		Source: AP-42 5th Edition, Table 13.2.4 (EPA 1995)
u=	5.7	mph	Source: CARB 1992
M(soil)=	7.9	%	default for soil

Calculation

Soil EF= 1.94E-04 lb/ton of material handled

Amount of Material Handled

Soil= 24700 yd^3

assuming 1.59 tons per cubic yard and 82 days of earthwork
and that material is handled once.

479 tons/day

Emissions = EF * Material Handled

Soil=	0.09	lbs/day	
Total	0.09	lbs/day	With No Control

Backfill and Compacting

B. Fugitive Dust From Grading

Dust Emission Factor

$EF=k*0.051*(S)^2$

where

EF= emission factor (lb/VMT)

k= factor to convert to PM10

S= travel speed (mph)

Source: AP-42 5th Edition, Table 11.9-1 (EPA 1998)

Assumptions

k=	0.6		Source: AP-42 5th Edition, Table 11.9-1 (EPA 1998)
S=	7.1	mph	Source: AP-42 5th Edition, Table 11.9-3 (EPA 1998)

Calculation

EF= 1.54 lb/VMT

Vehicle Miles Traveled

VMT = S*H

where

VMT = vehicles miles traveled (mi/day)

S= travel speed (mph)

H = hours of operation (hr/day)

Assumptions

S=	7.1	mph
H=	4	hrs/day

Calculations

VMT= 28.4 miles/day

Dust Emissions = EF * VMT=	44 lbs/day	With No Control
	22 lbs/day	With 50% control

Backfill and Compacting

C. Fugitive Dust from Compacting

Dust Emission Factor

$E = EF * H$

$EF = k * s^{1.5} / M^{1.4}$

where

E= emissions (lbs/day)

H= Hours of operation (hrs/day)

EF= emission factor (lbs/hr)

k= factor to determine PM10

s= silt content of material (%)

M= moisture content of material (%)

Source: AP-42 5th Edition, Table 11.9-1, (EPA 1998)

Assumptions

k=	0.75	Source: AP-42 5th Edition, Table 11.9-1, (EPA 1998)
s=	6.9 %	Source: AP-42 5th Edition, Table 11.9-3, (EPA 1998)
M=	7.9 %	Source: AP-42 5th Edition, Table 11.9-3, (EPA 1998)

Equipment	Number of Pieces	Daily Use (hr/day)
Compactor	1	8
	Total	8

Calculations

EF= 0.75 lbs/hr

E=	6 lbs/day	No Control
	3 lbs/day	With 50% control

Backfill and Compacting

D. Vehicle Re-Entrained Dust

Dust Emissions for Unpaved Roads

$E = EF * VMT$

$EF = 2.6 * (s/12)^{0.8} * (W/3)^{0.4} / (M/0.2)^{0.3} * (365-p)/365$

where

E=Emissions (lb/day)

VMT=vehicle miles traveled/day

EF=Emission factor (lb/vmt)

s=surface material silt content (%)

W=mean vehicle weight (tons)

M=surface material moisture content (%)

p=number of days with at least 0.254mm of precipitation per year

Source: AP-42 5th Edition, Section 13.2.2 (EPA 1998)

Assumptions

s=	8.9	%	
W=	40	tons	
M=	0.2	%	Source: AP-42 5th Edition,Section 13.2.2 default (EPA 1998)
p=	60	days	Source: AP-42 5th Edition,Figure 13.3.3-1 (EPA 1998)
VMT=	17	miles	17 truck trips/day, 1 mile on unpaved roads/trip

Calculations — [15 haul truck trips (20yd^3 truck capacity), 2 water truck trips]

EF=	4.82	lb/VMT	
E=	81.94	lbs/day	No Control
	16.39	lbs/day	With 80% Control

Backfill and Compacting

E. Equipment Exhaust

Emissions

E= EF*HP*H*L

where

E= Emissions (g)

EF = Emission Factor (g/(hp-hr)

HP = Horsepower (hp)

H = Hours of Operation (hr/day)

L = Load Factor

Assumptions

Equipment	Number of Pieces	Daily Use (hr/day)
Grader	1	4
Compactor	1	8
Water Truck	1	2
Haul Truck	3	1.25
	Total	17.75

Assumes haul truck idles 15 minutes per trip (15 trips/day)

Equipment	Emission Factors (g/hp-hr)					Horsepower	Load Factor
	HC	CO	NOx	PM10	SOx		
Grader	1.57	3.8	9.6	1	0.87	172	0.61
Compactor	0.82	3.1	9.3	0.9	0.93	8	0.43
Water Truck	0.36	2.8	9.6	0.5	0.89	489	0.57
Haul Truck	0.36	2.8	9.6	0.5	0.89	489	0.57

Source: Nonroad Engine and Vehicle Emission Study (EPA 1991)

Calculations

Equipment	Emissions				
	HC	CO	NOx	PM10	SOx
Grader (kg/day)	0.66	1.59	4.03	0.42	0.37
Compactor (kg/day)	0.02	0.09	0.26	0.02	0.03
Water Truck (kg/day)	0.20	1.56	5.35	0.28	0.50
Haul Truck (kg/day)	0.38	2.93	10.03	0.52	0.93
Total (kg/day)	1.26	6.17	19.67	1.24	1.83
Total (lbs/day)	2.78	13.60	43.36	2.73	4.03

Backfill and Compacting

2. Wind Erosion

Fugitive Dust

Dust Emissions

$E = EF * A$

$EF = k*P*N$

$P = 58*(u^*-u^*_t)^2 + 25*(u^*-u^*_t)$

$P=0$ if $u^* <= u^*_t$

$u^* = 0.1u^+_s$ for large flat piles with a height to base ratio > 0.2

$u^+_s=(u_s/u_r)* u^+_{10}$ Perform for each section of pile

where

E = Emissions (g/day)

A = area disturbed (m^2)

N=number of disturbances over area per day

EF = emission factor (g/(m^2-day))

k = particle size multiplier

P = erosion potential (g/(m^2-day)) for each disturbance

u^* = friction velocity (m/s)

u^*_t = threshold friction velocity (ms/)

u^+_{10} = fastest mile at reference anemometer height of 10m

u_s/u_r = ration of surface wind speed to approach wind speed (based on wind tunnel studies)

Source: AP-42 5th Edition, Section 13.2.5 (EPA 1995)

Assumptions

k=	0.5		Source: AP-42 5th Edition, Section 13.2.5 (EPA 1995)
u^+_{10} =	30	mph	Based on 1960-1963 Gust Wind Data at
	13.4	m/s	Monterey, CA (36 36' N / 121 52' W)
u^*_t=	1.02	m/s	Source: AP-42 5th Edition, Section 13.2.5 (EPA 1995)
A=	82.81	m^2/day	Assume 24700 yd^3 added in 82 days or 301 yd^3/day. Assume generated pile is approximately 3yd tall and 10yd x 10 yd. Or equivalently 2.7m x 9.1m x 9.1m. Assume effective disturbed pile area is 9.1m x 9.1m per day.
N=	2		Each area is disturbed once when filled and once when removed per day.

Assume equivalent to Pile A in Figure 13.2.5-2 in AP-42 5th Edition, Section 13.2.5

Pile Section	u_s/u_r	Percent of Total Area(%)	Area (m^2)
A	0.2	5	4
B	0.6	48	40
C	0.9	12	10
D	0.2	35	29

Calculations

Pile Section	u_s/u_r	Percent of Total Area(%)	Area (m^2)	u^+_s (m/s)	u^* (m/s)	P (g/(m^2-day)	Emissions (g/day)	Emissions (lb/day)
A	0.2	5	4	2.68	0.27	0	0	0
B	0.6	48	40	8.04	0.8	0	0	0
C	0.9	12	10	12.06	1.21	6.84	68	0.15
D	0.2	35	29	2.68	0.27	0	0	0

IF $u^* <= u^*_t$, P=0

Total Emissions=	0.15	With No Control
	0.05	With 65% Control

Backfill and Compacting

3. Summary of Backfill Emissions

PM10	Uncontrolled (lb/day)	With control(lb/day)	
Dust From Loading	0.09	0.09	No Control
Dust from Bulldozing	44.00	22.00	50% Control
Dust from Grading	6.00	3.00	50% Control
Vehicle Re-Entrained Dust	81.94	16.39	80% Control
Equipment Exhaust	2.73	2.73	No Control
Wind Erosion	0.15	0.05	65% Control
Total	134.92	44.27	
Hydrocarbons	2.78		
Carbon Monoxide	13.60		
Nitrogen Oxides	43.36		
Sulfur Oxides	4.03		