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DTSC SMP for Shellmound III —

This site also had Heavy metals —

Tom

SOIL MITIGATION PLAN
Shellmound Parcels I, II, & III
Emeryville, California

Orient & Western (Holdings) Corporation
Berkeley, California

4 September 1998
Project No. 2116.02

Treadwell&Rollo
Environmental and Geotechnical Consultants

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SOIL MITIGATION PLAN
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1.0 INTRODUCTION

This soil mitigation plan (SMP) presents the measures recommended by Treadwell & Rollo, Inc. to mitigate worker and site user and neighbor risks associated with the presence of certain constituents in the soil at the Shellmound Parcels (Figure 1) in Emeryville, California both during and after construction. We understand that the plans to develop the parcels, which are currently vacant, include constructing an eleven-story hotel and four (4) one-story commercial/retail structures as shown conceptually on Figure 2. The proposed buildings will cover approximately one-half the total acreage of the parcels with the majority of the remaining area to be covered by asphaltic concrete for parking and driveways. A pedestrian bridge is planned over Temescal Creek.

Current plans are to raise the grade of the site by importing and compacting about 5,000 to 8,000 cubic yards of clean fill material. Based on preliminary plans, construction activities on the parcels may disturb about 1,500 cubic yards of the existing soil during the installation of the grade beams and pile caps, elevator pits, and a shallow swimming pool for the hotel and during the placement of utility lines for the entire development. The one-story structures are not expected to involve disturbance of the existing soil during construction.

The presence of organic and inorganic compounds in the native soil were identified by soil sample analyses, as described in previous environmental reports by others and in our *Phase I Environmental Site Assessment* report dated 8 June 1998. The information, data, and conclusions contained in A *Human Health Risk Assessment (HHRA)* report dated 30 July 1997 and a *Removal Action Workplan (RAW)* dated 2 February 1998, both prepared for the site by SOMA

Environmental Engineering for the Emeryville Redevelopment Agency, are incorporated herein by reference.

At this time, the Department of Toxic Substances Control (DTSC) has granted the Shellmound Parcels property the "Institutional Control" alternative in a letter dated 6 January 1998, which was included in the RAW. The institutional control alternative requires a deed restriction, which restricts the current and future zoning of the parcels to industrial/commercial use.

Regulations stipulate that the "disturbance" or excavation of soil with these constituents must include special soil handling procedures and specific worker heath and safety measures. In addition, provisions for long-term maintenance and management practices will be necessary to minimize exposure to future site users. A description of the findings of previous environmental studies and our recommendations for further action are presented in the remainder of this plan.

2.0 BACKGROUND

The site is relatively level with about three feet of vertical difference between the east and west portions. The site is bounded to the north by Powell Street Plaza, to the east by Shellmound Street, and to the west by Interstate Highway 80/580. Temescal Creek, which passes between Parcels II and III, is confined in an open, reinforced concrete box culvert which is about 36 feet wide and 12 feet deep.

2.1 Geologic and Hydrogeologic Setting

The site is underlain by several soil formations over very deep bedrock. Previous subsurface investigations conducted at the site and in the vicinity and published geologic maps indicate the area is blanketed with approximately 8 to 19 feet of fill (consisting of clayey sand and clayey gravel with large amounts of foundry slag, mill waste, brick fragments, and concrete). The fill is underlain by soft, gray to dark gray clay, locally known as Bay Mud. The Bay Mud varies from

8 to 28 feet thick, with the greatest thickness found beneath the southwestern portion of the site. Below the Bay Mud, stiff to very stiff silty clay is encountered, with occasional interbedded sandy clay layers.

Previous investigations reported encountering groundwater at various depths (from 2 to 15 feet) below existing grade. The groundwater flows slowly in variable directions both toward Temescal Creek and toward San Francisco Bay. Groundwater levels and flow directions may fluctuate depending on rainfall and seasonal conditions, as well as manmade obstructions and the tidal influences of the Bay.

2.2 Site History

The 1856 shoreline of the San Francisco Bay was reportedly located east of the Shellmound Parcels, approximately at the location of the current Shellmound Street. Since the late 1920s and early 1930s, the configuration of the Shellmound Parcels has been changed from tidelands to the current grade. The site was raised with fill materials, which included foundry slag and manufacturing debris. The western portion of the subject site was filled for the construction of Interstate 80 during the 1950s. The Shellmound Parcels have reportedly been used to store motor vehicles, slag and metal debris, and some of the waste from the nearby Judson Steel manufacturing processes. All storage items and buildings were reportedly removed from the parcels in 1988 and they have been essentially vacant since that time.

3.0 SUBSURFACE INVESTIGATIONS

Numerous subsurface investigations have been performed at the site since the late 1980s and early 1990s to assess the presence of regulated compounds in the subsurface. The paragraphs below draw upon the information in the reports of these investigations but do not take the place of the reports themselves.

3.1 Subsurface Conditions

Subsurface information from test borings indicate the site is blanketed by 8 to 19 feet of fill, consisting of clayey sand and clayey gravel with large amounts of foundry slag, mill waste, brick fragments, and concrete. The fill is underlain by soft, gray to dark gray clay, locally known as Bay Mud. The Bay Mud varies from 8 to 28 feet thick, with the greatest thickness beneath the southwestern portion of the site. Below the Bay Mud, stiff to very stiff silty clay was encountered, with occasional interbedded sandy clay layers. Groundwater has been encountered at various depths below existing grade and flows slowly in variable directions, but generally toward Temescal Creek and San Francisco Bay.

The results of the laboratory analyses for soil and groundwater samples have detected concentrations of oil and grease, diesel, volatile and semi-volatile organic compounds (VOCs and SVOCs), polychlorinated biphenyls (PCBs), pesticides, and heavy metals. Maximum concentrations of these chemicals are presented in Tables 1, 2, and 3. When the locations of the underground utilities are finalized, we will submit a copy of the final utility plan drawing to DTSC as an addendum. Our recommended site mitigation procedures, including contingencies for undiscovered contamination, are described in the remainder of this plan.

4.0 RECOMMENDATIONS FOR MITIGATIVE ACTIONS

The results of the environmental investigations indicate the fill (found to depths of approximately 8 to 19 feet below existing grade) at the site contains elevated concentrations of primarily heavy metals and total petroleum hydrocarbons as diesel. The presence of these and other compounds poses soil management and potential health and safety issues to be addressed as part of the site development activities. The soil management objectives for the site are to minimize exposure to construction workers at the site, nearby residents, workers and/or pedestrians, and future users of the site to constituents in the soil. All underground construction activities will be performed in compliance with Alameda County requirements.

4.1 Soil Management

The proposed construction activities will disturb limited amounts of native soil during the construction of the new foundations, pre-drilling holes for the installation of piles (which will include removing all material to the top of Bay Mud), grade beams, elevator pits, utility lines, sanitary sewer lines, and a shallow swimming pool. During construction activities, dust control measures will be implemented to reduce exposure. These measures may include moisture-conditioning the soil, using dust suppressants, covering the exposed soil and stockpiles with weighed down plastic sheeting to prevent exposure of the soil, or by capping the on-site soil with at least two feet of clean imported fill. The site's Health and Safety Plan (prepared by others and submitted to the DTSC) contains additional dust monitoring, action levels, dust control measures, and work stoppage provisions that will be followed during construction activities.

The native soil that is disturbed will all be stockpiled in one location to the west of the hotel. It is anticipated that the stockpile will contain at a maximum approximately 1,500 cubic yards of soil and will be placed to a height of about 8 feet. The site will be secured by fencing at all times and temporary fencing will also be placed around the stockpile.

All existing soil that is disturbed during construction will be re-used on-site as backfill either beneath the asphaltic pavement or the concrete floor slabs of the buildings as previously discussed and agreed upon by DTSC and no off-site disposal will be performed. This encapsulation will mitigate any direct contact with the soil by future site users. No native soil will be used as backfill material within the utility trenches.

Prior to being re-used on-site as backfill, the existing soil that is disturbed will be stockpiled and tested for total petroleum hydrocarbons as diesel by EPA Method 8015M, total recoverable petroleum hydrocarbons (TRPH) by EPA Method 418.1, volatile organic compounds (VOCs) by EPA Method 8010, semi-volatile organic compounds (SVOCs) by EPA Method 8270, polychlorinated biphenyls (PCBs) by EPA Method 8080, and Title 22 Metals by EPA Method

6010/7000. Approximately every 200 cubic yards of stockpiled soil will be sampled by collecting a four point composite sample. The samples will be collected by using a hand driven sampler with an inside diameter of two inches, lined with a clean stainless steel tube and driven into the soil. The ends of the sample tube will be covered with Teflon and sealed with plastic end caps, and placing the samples into and ice-cooled chest until delivery to an analytical laboratory. The soil samples collected from the stockpile will be identified by using a progressive numbering sequence with the date of the sample collection and the location. All appropriate regulatory sampling methods, holding times, and detection limits will be followed.

The fill materials designated for import purposes will be tested as noted above and also for total petroleum hydrocarbons as gasoline by EPA Method 801M, and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020. The results of these tests will be submitted to the DTSC for approval before any actions are taken regarding import or re-use.

4.2 Groundwater Management

The proposed construction activities most likely will not encounter groundwater in quantities that will require its removal from the subsurface. If more groundwater than expected is encountered during construction, the groundwater will be pumped into appropriate containers and samples will be obtained for chemical analyses. The groundwater will be tested for parameters established by the East Bay Municipal Utility District (EBMUD) for discharge of groundwater into the sanitary sewer system. If contamination is detected in the groundwater, the groundwater will be properly treated prior to disposal.

4.3 Health and Safety Issues

Based on our experience on similar sites, there are potential health and safety issues associated with the compounds detected at the site. We judge there may be the potential for these compounds to affect construction workers at the site, nearby residents, workers and/or pedestrians, and future users of the site. The routes of potential exposure to these compounds

will be through three pathways: (1) dermal (skin) contact with the soil, (2) inhalation of dusts and/or vapors, and (3) ingestion of the soil.

The most likely potential for human exposure to the compounds in the soil will be during soil excavation operations. Because on-site materials may contain lead and other concentrations in excess of the Proposition 65 guidelines, we recommend that proper health and safety procedures, as well as warning requirements, be implemented during construction. The potential health risk to on-site construction workers and the public will be minimized by developing and implementing a comprehensive health and safety plan (HSP). This plan has been prepared for the contractor by a certified industrial hygienist and we understand that it has been submitted to DTSC for review and approval prior to the start of any construction activities. The site contractor shall be responsible for establishing and maintaining proper health and safety procedures to minimize worker and public exposure to site contaminants during construction.

The HSP describes the health and safety training requirements, specific personal hygiene, and monitoring equipment that will be used during construction to protect and verify the health and safety of the construction workers and the general public from exposure to constituents in the soil. It may also be necessary to conduct air monitoring to evaluate the amount of airborne particles during grading. A site health and safety officer (HSO) will be on site at all times during excavation activities to ensure that all health and safety measures are maintained. The HSO will have authority to direct and stop (if necessary) all construction activities in order to ensure compliance with the HSP.

4.4 Site Encapsulation

The risk of direct contact with the soil by future site users will be mitigated by encapsulating the soil with either an asphaltic pavement or the concrete floor slab for the proposed hotel and commercial/retail buildings. The concrete floor slab and asphaltic pavement will be considered the cap above the fill. The encapsulation will sufficiently reduce the health risk through dermal

contact and ingestion by providing a physical barrier, thereby eliminating the exposure pathway between the contaminants and site users.

4.5 Certification

A Certification Report will be prepared by a third party (separate from the contractor) upon completion of soil mitigation activities. This report will present a chronology of the construction events, a summary of analytical data, and a description of all mitigation activities at the site. It will also include a certification statement that indicates the mitigation activities have been performed in accordance with this SMP. The Certification Report will be submitted to the Department of Toxic Substances Control (DTSC) for review and approval.

4.6 Maintenance Requirements

The objective of these maintenance requirements is to ensure that the long-term soil mitigation measures, specifically encapsulating soil beneath the floor slab will remain effective during the building's use and occupancy period. The owner and operator will maintain this SMP, maintenance work plans, and maintenance records in a readily accessible on-site location and shall be responsible for informing any employee or contractor, who will perform below grade construction, of the environmental conditions, soil management concerns, and health and safety requirements stipulated in this SMP.

These measures will also be enforced during any post-development construction activities such as utility line repair, building expansion, and other activities that may disturb the underlying contaminated soil. To maintain the integrity of the encapsulation layer and to protect future site workers who may disturb the encapsulation layer, the following procedures must be adhered to by the owner and/or operator of the site:

1. Notify the DTSC of any proposed activity expected to disturb the integrity of the encapsulating layer or soil, thirty (30) calendar days before work commences. In cases of

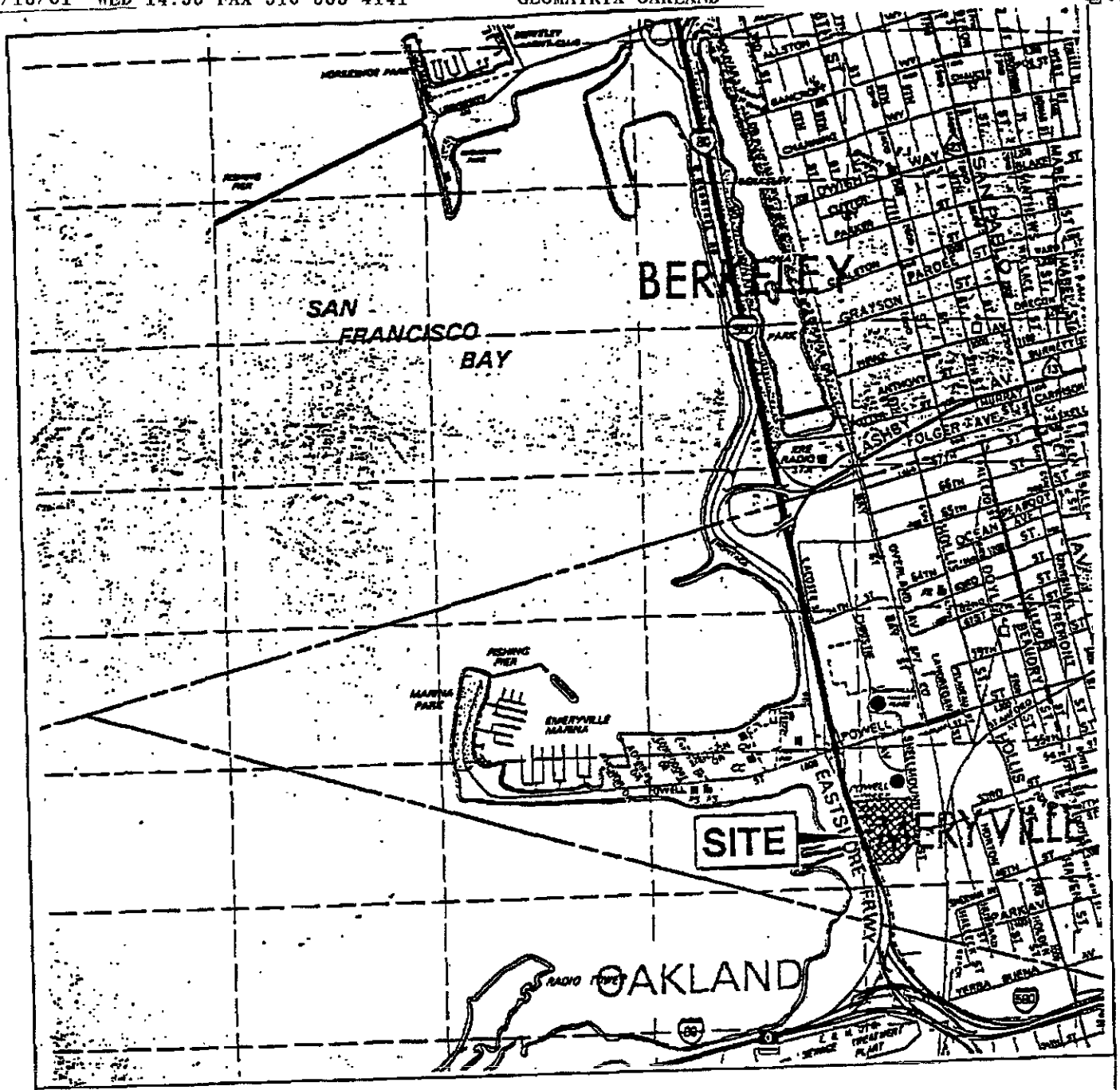
emergency, the DTSC shall be notified within 24 hours and the work should commence in accordance with the mitigation measures described in this SMP.

2. Prepare a specific work plan that includes a description of the proposed construction activities, soil management plan, and health and safety plan.
3. Direct any contractor or employee who disturbs the encapsulating layer and is engaged in any excavation or earth movement at the property to comply with the appropriate local, State, and Federal regulations.
4. Direct any contractor or employee engaged in any activities that involve penetrating the encapsulating layer to repair the disturbed area as soon as is practical.
5. Control dust by wetting and protect exposed or excavated soil from storm run-on and run-off during the period of excavation, soil movement, or exposure.
6. Determine by appropriate testing whether any excess material removed from the site is hazardous pursuant to State or Federal hazardous criteria. This material must be managed in accordance with all appropriate regulations.
7. Provide the DTSC with a report that describes the maintenance activities related to the encapsulating layer or excavation of soil.

5.0 SCHEDULE

We understand that the site's Health and Safety plan has been submitted to the DTSC for review and approval. We also understand that construction will begin in mid-September 1998. The Certification Report will be submitted to DTSC for review within 60 days of the completion of all earthwork on the Shellmound parcels.

FIGURES



Base map: The Thomas Guide
Alameda County
1994

N

0 2,200 Feet

Approximate scale

SHELLMOUND PARCELS Emeryville, California	SITE LOCATION MAP
Treadwell&Rollo	Project No. 2116.02 | Figure 1

TABLES

TABLE 1

MAXIMUM REPORTED CONCENTRATIONS
METAL IN SOILS
SHELLMOUND PARCELS 1, II AND III
Emeryville, California

Contaminant	Soil Concentration [1]
Antimony	12
Arsenic	60
Barium	950
Cadmimum [2]	54
Cobalt	24
Chromium	2,228
Lead [2]	7,200
Nickel [2]	240
Vanadium	120
Zinc	12,300

Notes: 1. Reported in milligrams per kilogram of soil (parts per million), source: SOMA Environmental Engineering.
2. Indicates California Propostion 65 substance.

TABLE 2

MAXIMUM REPORTED CONCENTRATIONS HYDROCARBONS IN SOILS SHELLMOUND PARCELS I, II AND III Emeryville, California

Contaminant	Soil Concentration [1]
Toluene [2]	0.028
Trichloroethylene [2]	0.006
Perchloroethylene	0.013
Xylene	0.084
TPH-Gasoline	1.5
TPH-Diesel	5,400
TPH-Oil and Grease	110

Notes: 1. Reported in milligrams per kilogram of soil (parts per million), source: SOMA Environmental Engineering.
2. Indicates California Propostion 65 substance.

TABLE 3

MAXIMUM REPORTED CONCENTRATIONS
GROUNDWATER CONTAMINANTS
SHELLMOUND PARCELS 1, II AND III
Emeryville, California

Contaminant	Concentration [1]
Benzene [2]	0.190
Chloroform [2]	0.005
Ethyl benzene	0.001
Methylene chloride [2]	0.020
Perchloroethylene	0.009
TPH-Diesel	410
TPH-Gasoline	1.5
Toluene	0.004
Trichloroethylene	0.007
Vinyl chloride	0.003
Xylene	0.009

Notes: 1. Reported in milligrams per kilogram of soil (parts per million), source: SOMA Environmental Engineering.
2. Indicates California Propostion 65 substance.