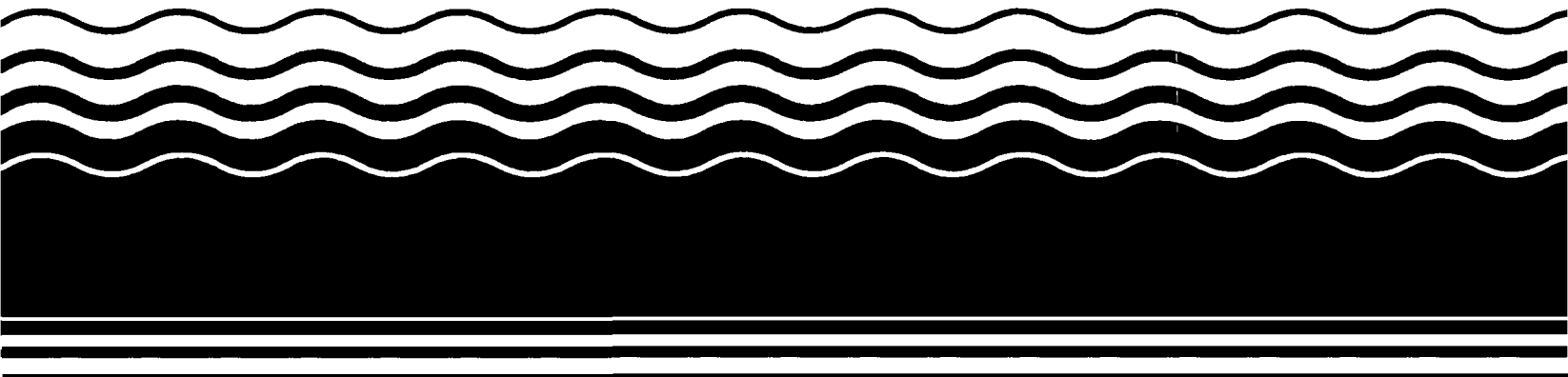




# **Superfund Record of Decision:**

## **Liquid Gold Oil, CA**



<b>REPORT DOCUMENTATION PAGE</b>		<b>1. REPORT NO.</b> EPA/ROD/R09-93/091	<b>2.</b>	<b>3. Recipient's Accession No.</b>															
<b>4. Title and Subtitle</b> SUPERFUND RECORD OF DECISION Liquid Gold Oil, CA First Remedial Action - Final				<b>5. Report Date</b> 06/21/93															
				<b>6.</b>															
<b>7. Author(s)</b>				<b>8. Performing Organization Rept. No.</b>															
<b>9. Performing Organization Name and Address</b>  				<b>10. Project Task/Work Unit No.</b>															
				<b>11. Contract(C) or Grant(G) No.</b> (C)  (G)															
				<b>13. Type of Report &amp; Period Covered</b> 800/800															
<b>12. Sponsoring Organization Name and Address</b> U.S. Environmental Protection Agency 401 M Street, S.W. Washington, D.C. 20460				<b>14.</b>															
<b>15. Supplementary Notes</b> PB94-964517																			
<b>16. Abstract (Limit: 200 words)</b>  <p>The 18-acre Liquid Gold Oil site is an inactive used oil and solvent collection and transfer facility in Richmond, Contra Costa County, California. The site is bounded by Hoffman Marsh to the east and southeast and by drainage channels connecting to San Francisco Bay on the west and southwest. From 1965 to 1980, the site operated as a used oil and solvent collection, storage, and transfer facility. Since 1982, the property owner performed several interim remedial measures at the site. These actions included removal of 25 bulk storage tanks, 73 drums containing hazardous wastes, 760 yd<sup>3</sup> of contaminated soil; and any remaining structures, debris, and asbestos for offsite disposal at RCRA facilities. This ROD addresses a final remedy for the remaining onsite low-level contamination in soil, sediment, and debris. The primary contaminants of concern affecting the soil, sediment, and debris are organics, including PAHs; and metals, including lead.</p> <p>The selected remedial action for this site includes removing offsite approximately 1,000 yd<sup>3</sup> of contaminated sediment and debris from the drainage channels leading to the Marsh to mitigate past impacts from the site; consolidating the sediment onsite; installing a RCRA-hybrid soil cap over the contaminated onsite soil, and grading and</p> <p>(See Attached Page)</p>																			
<b>17. Document Analysis</b> <table border="0"> <tr> <td><b>a. Descriptors</b></td> <td></td> </tr> <tr> <td>Record of Decision - Liquid Gold Oil, CA</td> <td></td> </tr> <tr> <td>First Remedial Action - Final</td> <td></td> </tr> <tr> <td>Contaminated Media: soil, sediment, debris</td> <td></td> </tr> <tr> <td>Key Contaminants: organics (PAHs), metals (lead)</td> <td></td> </tr> <tr> <td><b>b. Identifiers/Open-Ended Terms</b></td> <td></td> </tr> <tr> <td><b>c. COSATI Field/Group</b></td> <td></td> </tr> </table>						<b>a. Descriptors</b>		Record of Decision - Liquid Gold Oil, CA		First Remedial Action - Final		Contaminated Media: soil, sediment, debris		Key Contaminants: organics (PAHs), metals (lead)		<b>b. Identifiers/Open-Ended Terms</b>		<b>c. COSATI Field/Group</b>	
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<b>18. Availability Statement</b>		<b>19. Security Class (This Report)</b> None		<b>21. No. of Pages</b> 16															
		<b>20. Security Class (This Page)</b> None		<b>22. Price</b>															

EPA/ROD/R09-93/091  
Liquid Gold Oil, CA  
First Remedial Action - Final

Abstract (Continued)

vegetating the site to control runoff; monitoring ground water; and implementing institutional controls, including deed restrictions. The estimated present worth cost for this remedial action is \$800,000.

PERFORMANCE STANDARDS OR GOALS:

Not provided.

## **RECORD OF DECISION**

**Liquid Gold Oil Corp. Superfund Site  
Richmond, California**

**EPA ID# CAT000646208**

### **PART I - DECLARATION**

#### **Statement of Basis and Purpose**

This Record of Decision ("ROD") presents the selected remedial action for the Liquid Gold Oil Corporation Superfund site ("the Site") in Richmond, California. This document was developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980, ("CERCLA"), as amended by the Superfund Amendments and Reauthorization Act of 1986 ("SARA"), 42 U.S.C. §§9601 et seq., and, to the extent practicable, in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 C.F.R. Part 300, and the laws of the State of California. This decision is based on the Administrative Record for the Site. The administrative record index identifies the documents upon which the selection of the remedial action is based.

The State of California Department of Toxic Substances Control ("DTSC") is the lead agency which has been responsible for overseeing the Remedial Investigation and Feasibility Study ("RI/FS") for this Site. The State has finalized its selection of a remedial action for the Site in its Remedial Action Plan ("RAP"). With this Record of Decision, EPA selects and concurs with the remedy chosen in the State's RAP.

#### **Assessment of the Site**

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

#### **Description of the Remedy**

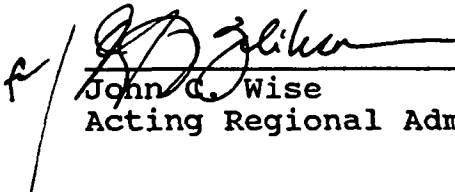
The Liquid Gold Oil Corporation operated a used oil and solvent collection, storage and transfer facility from 1965 until 1980. Interim remedial measures, begun in 1982, have included the removal of 25 storage tanks, 73 drums, 760 cubic yards of contaminated soils, and all remaining structures and debris. All of these hazardous substances were disposed of offsite at RCRA facilities. These interim response actions addressed the principal threats at the Site. The final remedy addresses

threats remaining after the interim measures. The major components of the selected remedy include:

- A deed restriction prohibiting residential development;
- Grading, addition of soil, and seeding to control runoff patterns;
- Groundwater monitoring for a minimum of five years; and
- Removal of sediments and debris from two drainage channels leading to the adjacent marsh to mitigate possible past adverse impacts from Liquid Gold.

#### Statutory Determinations

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate ("ARARs") to the remedial action, and is cost effective. The selected remedy uses engineering controls to address remaining low levels of hazardous substances at the Site. Concentrated wastes which may have presented principal threats at the Site were addressed by interim remedial measures prior to the enactment of SARA and the CERCLA §121 preference for treatment. Because this remedy will result in hazardous substances remaining on-site, a review will be conducted within five years after the commencement of remedial action, and every five years thereafter, to ensure that the remedy continues to provide adequate protection of human health and the environment.

  
\_\_\_\_\_  
John C. Wise  
Acting Regional Administrator

6-21-93  
\_\_\_\_\_  
Date

## PART II - DECISION SUMMARY

### **Liquid Gold Oil Corp. Superfund Site Richmond, California**

A detailed analysis of the selected remedial action for the Liquid Gold Site is contained in the RAP prepared for DTSC in March, 1993. The Site information summarized below is discussed fully in the RAP. After considering public comments, the State adopted the draft RAP, without change, as the final RAP. EPA's Record of Decision concurs with the State's action, and selects the remedial action alternative proposed in the draft RAP without change.

#### **1. Site Name, Location, and Description.**

The Liquid Gold Oil Corporation Superfund site is located in the City of Richmond, Contra Costa County, California, west of Interstate 580 and southwest of the Bayview West interchange. The Site is bounded by Hoffman Marsh on the east and southeast, and by drainage channels connecting to San Francisco Bay on the west and southwest. The area of the Site is approximately 18 acres.

The Site is currently fenced and unoccupied. Current and expected future zoning of the Site permits only commercial and industrial uses. Land use restrictions selected as part of the site remedy will also permit only commercial and industrial uses in the future.

#### **2. Site History and Enforcement Activities.**

The Site is owned by Southern Pacific Transportation Company ("SPTCo") and was leased to several tenants from the 1940s to the early 1980s. An asphalt manufacturing plant was operated on the Site in the 1940s and '50s. Later the Site was leased to the Liquid Gold Oil Corporation ("Liquid Gold"), which operated an oil and solvent collection, storage and transfer facility. In the 1970s and early '80s, investigations by the San Francisco Bay Regional Water Quality Control Board and the U.S. Coast Guard documented spills of oil and chemicals at the Site. Liquid Gold cleaned up some surface spills after ceasing operations in 1980, and then abandoned the facility. The Site was placed on the California State Superfund List in January 1983, and on the National Priorities List ("NPL") in September, 1983.

The property owner, SPTCo, performed a number of interim response actions prior to and after California and NPL listing. These actions have included the removal and off-site disposal of 25 bulk storage tanks in 1982 and '83; the removal and off-site disposal of 73 drums of hazardous waste in 1984; the excavation

and off-site disposal of 760 cubic yards of contaminated soil; and the demolition of remaining site buildings and off-site disposal of the demolished buildings along with some asbestos contaminated debris, in 1989. On January 13, 1988, DTSC issued a Consent Order to SPTCo requiring completion of an RI/FS for the Site.

### 3. Highlights of Community Participation.

Three fact sheets have been released describing activities at the Site. In February, 1993 DTSC, released a proposed plan and RI/FS for the Site. Site documents were made available at the lead agency offices and a local repository, and a public notice was published allowing 30 days for public comment on the RI/FS and Proposed Plan. A public meeting was held on March 30, 1993 to describe the proposed remedy and receive comments. Four members of the public asked questions at the public meeting, and two written comments were received from the community. The comments were favorable. DTSC responded to all comments received during this period, which were primarily from other State agencies, in the attached "Analysis of Public Comments." The decision for this Site is based upon the Administrative Record.

### 4. Scope and Role of Remedial Actions.

The remedial actions selected in this Record of Decision will be the final response actions performed at the Site. As described in the Site history above, significant interim remedial measures were performed at the Site in the past. These actions addressed the principal threats at the Site. The selected remedy addresses the low levels of contaminants remaining in soils and groundwater at the Site, as well as sediments in drainage channels leading from the Site which may have been impacted by past Site operations.

### 5. Site Characteristics.

Site investigations have included sampling and analysis of surface and subsurface soils, groundwater, surface water, and marsh sediments.

The soils at the Site consist of 5-10 feet of fill material over the original bay mud. The contaminants of potential concern remaining in soils are lead and polycyclic aromatic hydrocarbons ("PAHs"). Average lead levels across the Site are low (42 ppm) and are well below the most stringent health-based levels for residential use by children (370 ppb). One subsurface area of approximately 5 acres in the center of the Site contains elevated lead levels. The average lead concentration in this area is 400 ppm. The average lead concentration in the most contaminated layer (5 - 6.5 feet below ground surface) is 1,000 ppm. This area also has the highest PAH levels onsite with an average of

approximately 5 ppm. This area was identified as the area of concern for the analysis of risks and remedial alternatives. PAH levels for the rest of the Site are generally not detectable.

Due to the Site's proximity to San Francisco Bay, the groundwater at the Site is naturally saline and is not a source of drinking water under state or federal law. Average concentrations of copper, lead, and nickel exceed the State basin plan marine chronic water quality objectives by roughly a factor of two.

The ecological assessment found evidence of biological stress in at least one drainage channel leading away from the Site. The resource agencies believe that there is also sufficient evidence to demonstrate biological stress in another drainage channel. Although chemical analyses do not clearly establish a link with Site contaminants, the resource agencies believe that the makeup of the biological communities in these areas is indicative of petroleum contamination.

#### 6. Summary of Site Risks.

The Site is currently fenced and unoccupied. Therefore, with the exception of the trespasser scenario, the risks discussed below are potential future risks rather than current risks. The human health risk assessment demonstrated that the interim remedial measures performed at the Site have reduced the level of contamination to acceptable levels for all uses permitted under current zoning. Contaminant levels are also acceptable for trespassing children.

The risk assessment also considered the safety of a hypothetical residential development even though residential development would not be permitted under current zoning and is not expected to occur. The results indicate that lead concentrations, particularly in subsurface soils in the area of concern, could cause unacceptable non-carcinogenic risks if childhood residential exposure were to occur (using an uptake-biokinetic model derived criteria of 370 ppm). However, the maximum lifetime cancer risk levels are within EPA's range of acceptable risk under both residential and commercial scenarios. The risk assessment results are listed below. A hazard index below 1 is acceptable for non-carcinogens. Lifetime risks in the range of  $10^{-4}$  to  $10^{-6}$  are acceptable for carcinogens.



## Risk Assessment Results

	Hazard Index	
	<u>Site Wide</u>	<u>Area of Concern</u>
Child residential	<1	6
Child trespasser	<1	<1
Adult residential	<1	<1
Adult commercial	<1	<1

	Lifetime Cancer Risk	
	<u>Site Wide</u>	<u>Area of Concern</u>
Residential	$1 \times 10^{-5}$	$1 \times 10^{-4}$
Commercial	$3 \times 10^{-6}$	$3 \times 10^{-5}$

As is usual in risk assessments, the values above are based upon a number of conservative assumptions. The actual risks are likely to be lower, and may in fact be zero. The carcinogenic risk assessment is particularly conservative because it used an un-updated IRIS (EPA's Integrated Risk Information System database) value (the revised IRIS value for benzo(a)pyrene indicates less carcinogenic potency) and assumes that all PAHs have equivalent potency. Using current EPA assumptions, the maximum calculated risks would be significantly lower.

### 7. Description of Alternatives.

Alternatives were analyzed to address three media at the Site; soils, groundwater, and the drainage channels leading to the marsh. The alternatives are listed in Table 1, "Remedial Alternative Selection." A brief narrative summary of the alternatives is presented below. Each alternative is described in detail in the State's RAP.

Soils: As discussed in the risk assessment summary above, the interim remedial measures addressed the principle threat soil at the Site, and current soil contamination levels are acceptable for current and reasonably expected future non-residential uses. The alternatives analyzed for soils include those which provide remediation appropriate to the Site's current and expected uses (institutional controls and containment options), and those which would go further and remediate the Site for residential use (excavation and treatment/disposal options). As required by the NCP, a no-action alternative was also considered as a baseline for comparison.

The action alternatives which are appropriate to the current and reasonably expected future non-residential uses include institutional controls, a full RCRA cap and a RCRA-hybrid cap (alternatives A-2-4 and B-2-5). Continued groundwater monitoring would be a component of each of these alternatives. The institutional controls alternative consists of a deed restriction prohibiting future residential development and fencing. The RCRA-hybrid cap alternative would include the addition of a layer of clean soil over the surface of the Site, and grading and revegetating of the soil cap to direct rainfall away from contaminated areas, prevent ponding, and further isolate contaminants. The average estimated cost for the hybrid cap would be approximately \$600,000. The full RCRA cap alternative would consist of a cap five feet thick and would include a clay barrier, flexible membrane, and gravel and soil layers. Its estimated average cost would be approximately \$1.3 million. Both capping alternatives would also include imposition of deed restrictions to prevent residential development in the future.

The action alternatives which would allow future residential uses include excavation and treatment or disposal of an approximately five acre area of the most contaminated Site soils (alternatives A-5-7 and B-6-8). The soil lead cleanup level for these alternatives, 370 ppm, was derived from the risk assessment analysis of the lead cleanup level necessary to protect children living onsite in the area of contamination. The average estimated cost of excavation and treatment with contaminants left on-site (solidification) would be \$3 million, excavation and soil washing with off-site disposal of washed soil would be \$5 million, and excavation and off-site disposal alone would be \$7 million.

There are no chemical-specific ARARs for cleanup of the Site soil contaminants. The above-described lead cleanup level is a to-be-considered criterion that was risk-based. California's hazardous waste facility closure requirements, 22 California Code of Regulations ("CCR"), Chapter 14, Article 7, "Closure and Post Closure," (equivalent to 40 CFR Part 264, Subpart G) are relevant and appropriate requirements for the remedial alternatives that do not involve excavation and treatment or disposal of contaminated soil. Since the closure requirements are relevant and appropriate rather than applicable, CERCLA guidance allows consideration of "alternate" or "hybrid" closure if appropriate to particular site conditions. Conditions at this Site are appropriate for hybrid closure because the soil contaminant levels have been reduced to acceptable concentrations for current and expected uses, groundwater is naturally non-potable, and the low level groundwater contaminants are not moving off-site.

Groundwater: Alternatives analyzed for groundwater include no-action, continued monitoring for a minimum of five years, and two types of barriers around the areas with elevated contaminant

concentrations: a slurry wall and interceptor trenches. Groundwater monitoring would still be required if a barrier were installed.

There are no chemical-specific ARARs applicable to site groundwater. The RI found that on-site groundwater concentrations exceed federal (40 CFR 144.3) and state (SWRCB Resolution No. 88-63) limits for salinity because of the Site's proximity to the bay. Since Site groundwater may enter the bay, the State's Water Quality Objectives (marine chronic criteria, MCC) for the bay were reviewed as potential to-be-considered (TBC) criteria for the groundwater/surface water interface. As discussed previously, Site groundwater exceeds the MCCs for copper, lead and nickel by a factor of two. Current groundwater monitoring data does not indicate movement of contaminants off-site. Therefore, no cleanup standard has been adopted.

The cost of continued groundwater monitoring would be approximately \$200,000. The costs of a slurry wall and interceptor trenches with continued groundwater monitoring would be roughly \$700,000 and \$800,000, respectively.

Marsh Drainage Channels: The RI found evidence of possible biological stress in two drainage channels leading away from the Site. Effects are most evident at the upper end of drainage channel 6. Although adverse effects cannot be conclusively linked to Site chemicals, the resource trustees believe benthic populations present in drainage channel 1, are typical of those found in areas which have been subject to petroleum contamination. The alternatives analyzed included excavation of the upper end of transect 6 (up to 150 cubic yards) at a cost of approximately \$50,000, and excavation of both transects 1 and 6 (up to 1,000 cubic yards) at a cost of approximately \$200,000. Sediments would be sampled prior to disposal either onsite or in a landfill. Current sampling results do not indicate the presence of any chemicals at concentrations which would require hazardous waste disposal.

ARARs for the removal of the marsh sediments include the state coastal zone management program comprised of the McAteer-Petris Act and the San Francisco Bay Plan. The coastal zone management program is intended to halt indiscriminate filling of the bay and to help preserve and maintain the bay's ecological integrity. Section 307(c)(1) of the Coastal Zone Management Act requires that federal agencies conducting or supporting activities directly affecting the coastal zone, conduct or support those activities in a manner that is consistent with approved State coastal zone management programs. Any marsh remediation activities would have to comply with the substantive requirements of the state program. The California Department of Fish and Game regulations also prohibit actions which would allow petroleum constituents to enter state waters. The marsh

alternatives are not expected to cause release of any petroleum constituents.

#### 8. Summary of Comparative Analysis of Alternatives.

Each alternative has been analyzed with respect to the NCP's nine criteria. A detailed analysis is presented in the State's Remedial Action Plan. The comparative analysis will be summarized here for alternatives addressing soils, groundwater, and marsh drainage channels.

Soil: The no-action alternative was determined not to meet the NCP's primary criteria because contaminants remain at levels which do not permit completely unrestricted (i.e. residential) use of the site. Although future residential use is not allowable under current zoning and is not anticipated, a deed restriction prohibiting residential development is necessary to ensure long-term protection of human health.

The two capping alternatives analyzed, a hybrid landfill cap and a full RCRA cap, meet the relevant and appropriate requirements of hazardous waste closure regulations. However, in light of Site conditions, DTSC and EPA agreed that a full RCRA cap was unnecessary and did not provide additional protectiveness or risk reduction to justify the higher cost. The caps reduce potential exposure to contaminated soils and reduce the infiltration of rainwater which could potentially leach contaminants from the soil. The hybrid cap is as protective as the full RCRA cap because groundwater beneath the Site is not potable, and current monitoring does not indicate transport of chemicals off-site through groundwater. The hybrid cap will also cause fewer short-term impacts during construction and less interference with any future non-residential development of the site.

The excavation and treatment or disposal options are significantly more expensive than the options above but do not provide significant reductions in risk. These alternatives are not necessary because the interim remedial measures have reduced contaminant concentrations to protective levels for uses allowable under current zoning and reasonably expected future use.

Groundwater: Current groundwater monitoring data do not indicate that Site contaminants are being transported off-site at levels of concern. Therefore, the containment alternatives do not provide significant advantages over continued monitoring.

Marsh Drainage Channels: Based on the results of the ecological assessment, it appears that at least some sediments have been impacted by Site contaminants. Therefore some excavation is necessary for overall protection. Excavation of only the upper

end of transect 6 would result in the least short-term impact to existing biota in the drainages. However, the resource agencies have concluded that larger areas of both transects 1 and 6 have likely been impacted by the past operations of Liquid Gold, and that the existing biological populations in the drainages are indicative of a polluted environment. Excavation of both drainages would therefore provide greater long-term protection.

#### 9. Selected Remedy.

The major components of the selected remedy include:

- A deed restriction prohibiting residential development;
- Grading, addition of soil, and seeding to control runoff patterns;
- Groundwater monitoring for a minimum of five years; and
- Removal of sediments and debris from two drainage channels leading to the adjacent marsh to mitigate possible past adverse impacts from Liquid Gold.

The selected remedy provides overall protection of human health and the environment, complies with ARARs, and provides the best overall balance of alternatives under the nine selection criteria of the NCP. The analysis of the selected remedy with respect to the nine criteria is summarized below.

*Overall protection of human health and the environment:* The selected remedy provides appropriate overall protection of human health and the environment, given the low levels of contaminants which remain onsite. Interim response measures performed prior to the RI/FS removed all hazardous substances which may have presented principal threats to human health. The risk assessment indicated that Site conditions are acceptable for uses allowable under current zoning and reasonably expected future uses. A deed restriction will provide additional assurance that residential development will not occur. Groundwater monitoring indicates that Site contaminants are not being transported offsite. Site grading and continued monitoring will provide additional assurances that contaminants do not move offsite through groundwater. Removal of debris and sediments from potentially impacted marsh drainages will improve tidal action and permit long-term recolonization by marsh biota.

*Compliance with ARARs:* The major ARARs identified for the selected remedy include the closure requirements of the California Hazardous Waste Control Law ("HWCL"), and the Coastal Zone Management Act ("CZMA"), 16 U.S.C. §1451, et seq. HWCL closure requirements are relevant and appropriate, rather than applicable to the Site. Because the Site is more closely analogous to a landfill unit than to any other type of RCRA unit, the relevant and appropriate analysis focused on the landfill closure requirements of 22 CCR 66264.310 and the "alternate-

landfill" or "hybrid" closure described in the proposed revisions to the NCP, 53 FR 51446, and in EPA's ARARs guidance (Volume I, p. 2-20).

The guidance describes the following conditions as appropriate for implementation of hybrid closure: residual waste material at a site poses a direct contact threat but does not pose a threat to groundwater; and, residual leachate contamination does not exceed health-based levels. The hybrid closure to address this scenario consists of a permeable cover to address the direct contact threat and limited long-term management, including site and cover maintenance, groundwater monitoring and institutional controls, including land use restrictions. Conditions at the Liquid Gold Site are such that hybrid closure is appropriate. The selected remedy for soil satisfies this ARAR.

The remedial activities considered for restoration of sloughs leading from the Site into Hoffman Marsh and the Bay would directly affect the coastal zone. Section 307(c)(1) of the CZMA requires that federal agencies conducting or supporting activities directly affecting the coastal zone, conduct or support those activities in a manner that is consistent with approved State coastal zone management programs. Under CERCLA, on-site activities are not subject to administrative review or permitting processes, but they must be consistent with the substantive requirements of the coastal zone management plan. The approved coastal zone management program for San Francisco Bay includes the McAteer-Petris Act and the San Francisco Bay Plan, and is administered by the San Francisco Bay Conservation and Development Commission.

The McAteer-Petris Act and the Bay Plan were developed primarily to halt uncontrolled development and filling of the Bay. Their broad goals include reducing bay fill and disposal of dredged materials in the Bay, and maintaining water quality and the ecological integrity of the Bay.

The remedial action selected for the marsh areas at the Site was designed by the agencies supporting DTSC, including the California Department of Fish and Game, the Regional Water Quality Control Board and the National Oceanic and Atmospheric Administration, after consideration of ecological studies of the Hoffman Marsh and drainage channels leading from the Site into the marsh. The selected remedial action includes removal of flotsam from the drainage channels, and excavation and disposal of roughly 1,000 cubic yards of sediments which may have been impacted by the Site. The sediments will be disposed of in a non-tidal location.

The purpose of the selected remedy is to improve the ecological value of the drainage channels leading into Hoffman

Marsh and to mitigate any adverse impacts which may have resulted from past Site activities. The actions will not reduce the area of the Bay or result in any filling of the Bay, and are consistent with the coastal zone management plan. Therefore, the selected remedy satisfies the requirements of Section 307(c)(1) of the CZMA.

**Long-term effectiveness and permanence:** Interim response actions at the Site have reduced contaminant concentrations to levels which are acceptable for direct human exposure under current zoning and reasonably expected future use. A deed restriction prohibiting residential development will provide additional assurance of long-term effectiveness. Site groundwater is naturally unpotable due to salinity. Groundwater monitoring results show slightly elevated levels of some metals with respect to San Francisco Bay standards, but do not indicate that contaminants are moving off-site through groundwater. Grading the Site to control runoff patterns and reduce ponding in areas with elevated metals concentrations will further reduce the potential for transport of contaminants through groundwater. Continued groundwater monitoring will provide additional assurance that offsite migration does not occur. Marsh sediments which may have been impacted by past Site operations will be excavated to improve tidal action and permit long-term recolonization by marsh biota.

**Reduction of toxicity, mobility, or volume through treatment:** The selected remedy does not include treatment. The NCP (55 FR 8846, March 8, 1990) indicates that "EPA expects to use treatment to address the principal threat posed by a site, whenever practicable" and "...to use engineering controls, such as containment, for waste that poses a relatively low long term threat or where treatment is impracticable." The interim response measures, which addressed the concentrated wastes which may have presented principal threats at the Site, were performed prior to SARA and the inclusion of the statutory preference for treatment in CERCLA §121. The selected remedy for the low levels of hazardous substances remaining onsite meets the NCP expectation for engineering controls rather than treatment of wastes that pose low level long term threats.

**Short-term effectiveness:** The selected remedy will not pose any risk to the community during implementation. Potential risks to onsite workers will only be those physical hazards associated with earth grading operations. Environmental impacts during remediation should also be minimal. The RCRA-hybrid cap selected for onsite soils will cause much less disturbance of existing vegetation than would either the full RCRA cap, or excavation and treatment or disposal options. The selected marsh remediation by excavation of sediments from drainage channels 1 and 6 will cause loss of existing biota in the short term. However, the resource agencies believe that the existing biota is dominated by

pollution-tolerant species and that a more diverse benthic population will recolonize the channels after remediation. The selected remedy is expected to take 120 days to implement.

**Implementability:** The selected remedy is readily implementable. The selected remedial activities for Site soils and marsh drainage sediments will be accomplished using conventional earth-moving equipment. The effectiveness of continued containment of hazardous substances in soils will be determined using existing groundwater monitoring wells.

**Cost:** The selected remedy is cost effective. The cost of the proposed RCRA-hybrid cap will be approximately \$600,000 (capital and 30-year O&M). Other alternatives, such as a full RCRA cap and excavation and treatment and disposal, have much higher costs without providing increased protectiveness given the low levels of hazardous substances remaining onsite and the reasonably expected future Site uses. The cost of excavation of marsh drainages 1 and 6 is approximately \$200,000 (capital and O&M). Although this is higher than the cost of the other marsh alternatives analyzed, the selected alternative provides greater assurance of long-term effectiveness at a reasonable cost.

**State acceptance:** DTSC is the lead agency which has been responsible for overseeing the RI/FS for the Site. After considering comments from the public, potentially responsible parties, and other state agencies, all of which are included in the attached Analysis of Public Comments, DTSC finalized its selection of a remedial action for the Site in its RAP. A copy of the State's Remedial Action Plan Approval Record, dated June 3, 1993, is attached. EPA selects and concurs with the remedy chosen in the State's RAP.

**Community acceptance:** A public meeting to discuss and receive comment on the proposed remedy was held on March 30, 1993. Community members appeared satisfied with agency responses to questions and with the selected remedy. The two written comments from members of the community were favorable. Most of the comments in the attached Analysis of Public Comments, prepared by the lead State agency, DTSC, were made by other State agencies rather than members of the community.

#### 10. Statutory Determinations

The selected remedy is protective of human health and the environment, complies with ARARs, and is cost effective. The principal threats at the Site were addressed by interim remedial measures. Because this remedy will result in hazardous materials remaining on-site, a review will be conducted five years after the commencement of remedial action, and every five years thereafter, to ensure that the remedy continues to provide adequate protection of human health and the environment.



#### 11. Documentation of Significant Changes.

The proposed plan for the Site was released for public comment in February, 1993. The proposed plan identified alternatives A-3 (surface soils), B-3 (subsurface soils and groundwater), and C-4 (marsh drainages) together as the preferred alternative. DTSC reviewed all written and oral comments submitted during the comment period. Upon review of these comments, DTSC determined that no significant changes to the remedy, as it was originally identified in the proposed plan, were necessary. EPA has reviewed the comments and the responsiveness summary and concurs with DTSC's determination.

**TABLE 1**  
**REMEDIAL ALTERNATIVE SELECTION**  
**LIQUID GOLD SITE, RICHMOND, CALIFORNIA**

Alternative		Key Components	Primary Reasons for Selection or Rejection
<b>SURFACE SOILS</b>			
A-1	No Action	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate assurance of future protection of human health if allowable land use were to change</li> </ul>
A-2	Institutional Controls	<ul style="list-style-type: none"> <li>• Deed restriction</li> <li>• Fencing</li> </ul>	<ul style="list-style-type: none"> <li>• Does not provide the additional assurances or the environmental benefits of the proposed alternative</li> </ul>
A-3	Vegetated Soil Cover	<ul style="list-style-type: none"> <li>• Grading to control runoff patterns</li> <li>• Placement of up to 2 feet of clean fill</li> <li>• Provide vegetated cover by seeding area with native plants</li> <li>• Institutional controls</li> </ul>	<p align="center"><b>PROPOSED ALTERNATIVE (with B-3)</b></p> <ul style="list-style-type: none"> <li>• Appropriately remediates potential exposure to surface soils</li> <li>• Provides protection of human health and environment</li> </ul>
A-4	Capping	<ul style="list-style-type: none"> <li>• 5-foot thick cap over 0.7-acre portion of site</li> <li>• Institutional controls</li> </ul>	<ul style="list-style-type: none"> <li>• No significant benefits over less expensive proposed alternative</li> </ul>
A-5	Chemical Treatment	<ul style="list-style-type: none"> <li>• Excavation of surface soils in 0.7-acre portion of site</li> <li>• Soil washing to remove chemicals</li> <li>• Replacement of soil</li> </ul>	<ul style="list-style-type: none"> <li>• Additional reductions in contaminant concentrations are not necessary to protect human health or the environment under current and expected zoning and allowable land use</li> </ul>
A-6	Physical Treatment	<ul style="list-style-type: none"> <li>• Excavation of surface soils in 0.7-acre portion of site</li> <li>• Soil solidification to immobilize chemicals</li> <li>• Replacement of solidified soil</li> </ul>	<ul style="list-style-type: none"> <li>• Not necessary to protect human health or the environment under current and expected zoning and allowable land use</li> <li>• Concrete-like mass permanently limits future use of site</li> <li>• Potential impact on wildlife habitat</li> </ul>
A-7	Excavation	<ul style="list-style-type: none"> <li>• Excavation of surface soils in 0.7-acre portion of site</li> <li>• Offsite disposal of excavated soil</li> <li>• Placement of clean soil</li> </ul>	<ul style="list-style-type: none"> <li>• Additional reductions in contaminant concentrations are not necessary to protect human health or the environment under current and expected zoning and allowable land use</li> </ul>
<b>SUBSURFACE SOILS AND GROUNDWATER</b>			
B-1	No Action	<ul style="list-style-type: none"> <li>• Groundwater monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate assurance of future protection of human health if allowable land use were to change</li> </ul>
B-2	Institutional Controls	<ul style="list-style-type: none"> <li>• Groundwater monitoring</li> <li>• Deed restriction</li> <li>• Fencing</li> </ul>	<ul style="list-style-type: none"> <li>• Does not provide the additional assurances or the environmental benefits of the proposed alternative</li> </ul>
B-3	Vegetated Soil Cover	<ul style="list-style-type: none"> <li>• Grading to control runoff patterns</li> <li>• Placement of up to 2 feet of clean fill</li> <li>• Provide vegetated cover by seeding area with native plants</li> <li>• Groundwater monitoring</li> <li>• Institutional controls</li> </ul>	<p align="center"><b>PROPOSED ALTERNATIVE (with A-3)</b></p> <ul style="list-style-type: none"> <li>• Appropriately remediates potential exposure to subsurface soils</li> <li>• Provides protection of human health and environment</li> </ul>
B-4	Capping	<ul style="list-style-type: none"> <li>• 5-foot thick cap over 5-acre portion of site</li> <li>• Groundwater monitoring</li> <li>• Institutional controls</li> </ul>	<ul style="list-style-type: none"> <li>• No significant benefits over less expensive proposed alternative</li> </ul>
B-5	Capping Extended Activity Area	<ul style="list-style-type: none"> <li>• 5-foot thick cap over extended activity area</li> <li>• Groundwater monitoring</li> <li>• Institutional controls</li> </ul>	<ul style="list-style-type: none"> <li>• No significant benefits over less expensive proposed alternative</li> </ul>
B-6	Chemical Treatment	<ul style="list-style-type: none"> <li>• Excavation of subsurface soils in 5-acre portion of site</li> <li>• Soil washing to remove chemicals</li> <li>• Replacement of soil</li> <li>• Groundwater monitoring</li> <li>• Institutional controls</li> </ul>	<ul style="list-style-type: none"> <li>• Additional reductions in contaminant concentrations are not necessary to protect human health or the environment under current and expected zoning and allowable land use</li> </ul>
B-7	Physical Treatment	<ul style="list-style-type: none"> <li>• Excavation of subsurface soils in 5-acre portion of site</li> <li>• Soil solidification to immobilize chemicals</li> <li>• Replacement of solidified soil</li> <li>• Groundwater monitoring</li> <li>• Institutional controls</li> </ul>	<ul style="list-style-type: none"> <li>• Not necessary to protect human health or the environment under current and expected zoning and allowable land use</li> <li>• Concrete-like mass permanently limits future uses of the site</li> <li>• Potential impact on wildlife habitat</li> </ul>
B-8	Excavation	<ul style="list-style-type: none"> <li>• Excavation of subsurface soils in 5-acre portion of site</li> <li>• Offsite disposal of excavated soil</li> <li>• Placement of clean soil</li> <li>• Groundwater monitoring</li> <li>• Institutional controls</li> </ul>	<ul style="list-style-type: none"> <li>• Additional reductions in contaminant concentrations are not necessary to protect human health or the environment under current and expected zoning and allowable land use</li> </ul>
B-9	Groundwater Slurry Wall	<ul style="list-style-type: none"> <li>• Construction of slurry wall</li> <li>• Groundwater monitoring</li> <li>• Institutional controls</li> </ul>	<ul style="list-style-type: none"> <li>• Groundwater containment does not appear necessary to protect human health or the environment given existing groundwater data. Groundwater monitoring will continue under the proposed alternative</li> </ul>
B-10	Groundwater Interceptor Trench	<ul style="list-style-type: none"> <li>• Construction of trench</li> <li>• Groundwater monitoring</li> <li>• Institutional controls</li> </ul>	<ul style="list-style-type: none"> <li>• Groundwater containment does not appear necessary to protect human health or the environment given existing groundwater data. Groundwater monitoring will continue under the proposed alternative</li> </ul>
<b>MARSH</b>			
C-1	No Action	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Does not meet regulatory requirements (ARARs)</li> <li>• Not protective of environment</li> </ul>
C-2	Institutional Controls and Mitigation	<ul style="list-style-type: none"> <li>• Access controls to prevent disturbance of marsh</li> <li>• Removal of debris to improve tidal action in upper ends of drainage channels</li> </ul>	<ul style="list-style-type: none"> <li>• Does not remediate area of marsh (southwest drainage channel) that may be affected by chemicals from Liquid Gold activities</li> </ul>
C-3	Excavation of Upper End of Southwest Drainage Channel	<ul style="list-style-type: none"> <li>• Excavation of upper end of southwest drainage channel</li> <li>• Removal of debris to improve tidal action in upper ends of drainage channels</li> </ul>	<ul style="list-style-type: none"> <li>• May not mitigate impacts to marsh in southeast drainage channel</li> </ul>
C-4	Removal of Sediments from Southwest Drainage Channel and Upper End of Southeast Drainage Channel	<ul style="list-style-type: none"> <li>• Removal of sediments from southwest drainage channel and upper end of southeast drainage channel</li> <li>• Removal of debris to improve tidal action in upper ends of drainage channels</li> <li>• Post clean-up sampling of remaining sediments</li> </ul>	<p align="center"><b>PROPOSED ALTERNATIVE</b></p> <ul style="list-style-type: none"> <li>• Remediates areas of marsh that may be affected by chemicals from Liquid Gold activities</li> </ul>