### FILL CHARACTERIZATION REPORT

PartIff the June 1993 Woodward Coyde Committant Report

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CHEMICAL ANALYTICAL RESULTS

### 1.1 AUTHORIZATION AND SCOPE

This report presents the results of studies performed by Woodward-Clyde Consultants (WCC) to characterize soil conditions at City Center Parcels T5 and T6. These parcels are located on the western half of the block bounded by 11th Street, 12th Street, Clay Street and Broadway. This study was performed in accordance with the Contract for Professional Services between WCC and the Redevelopment Agency of the City of Oakland (Agency), dated January 19, 1990, and amended June 25, 1990, November 15, 1990, January 18, 1991 and January 18, 1992.

The purpose of this study is to chemically characterize the surficial fill material occurring on Parcels T5 and T6 to evaluate appropriate treatment and/or off-site disposal options for the fill. The work completed for this study included the following:

- Drilling and logging 21 soil borings ranging in depth from 1 to 13 feet;
- Laboratory analysis of 52 soil samples for total petroleum hydrocarbons (TPH)
  quantified as gasoline, diesel, and motor oil, oil and grease, total lead,
  polychlorinated biphenyls (PCBs), CAM 17 metals, and semi-volatile organic
  compounds; and
- Evaluation of the chemical analytical data and preparation of this report. This
  report includes discussions of the work performed, the chemical analytical results
  and disposal alternatives and costs for portions of the fill.

### 1.2 LIMITATIONS

This report was prepared in general accordance with the accepted standard of practice which exists in the San Francisco Bay Area at the time this investigation was performed. No other warranties are expressed or implied. The scope of this investigation is limited by time

constraints, expense, and practicality. A limited number of samples were taken at locations at the site and a limited number of laboratory chemical analyses were performed for those samples. Professional opinions concerning the presence of hazardous substances were developed based on the resulting data. It would be prohibitively expensive and time consuming to sample all locations at the site and analyze the samples for all substances which are now, or in the future might be, considered hazardous. Therefore, WCC cannot be held responsible should the investigation fail to detect the presence or quantity of all hazardous substances at all locations of the site. Also, additional analytical data may result in revisions to cost estimates and may require changes in the project plans, particularly with respect to the available options for off-site disposal.

#### 2.1 SOIL BORINGS

The soil borings were drilled on Parcels T5 and T6 under Groundwater Protection Ordinance Permit Number 90469 issued by the Alameda County Flood Control and Water Conservation District (Zone 7) to WCC on August 3, 1000.

WCC drilled soil borings at 21 locations on the site on August 16 and 17, 1990 using a truck-mounted hydraulic drill rig and a hand-held, gasoline-powered auger, both using 6-inch diameter solid-stem augers. Locations of these soil borings are shown on Figure 1. Borings were also because the steer for the purpose of evaluating the deput and physical and chemical the surficial file and the sortings were instanced driveways of other areas covered to apphale or consecutive. A does this comparative contents.

The depth of the borings varied from approximately 1 foot to approximately 13 feet. Drilling was generally stopped at or just below the base of the fill layer, although several of the shallower borings were terminated above the base of the fill because the hand-held auger could not be advanced through dense gravelly material.

Soil samples were collected in each boring at approximately 2-foot intervals. The depth of sample collection alternated from even-numbered depths to odd-numbered depths so that all levels of the fill would be relatively equally sampled. The number of samples per boring varied depending on the thickness of the fill at that location. Logs of the borings describing the materials encountered and the depth of soil samples are included in Appendix A.

The soil samples were obtained using a 2-inch inside-diameter drive sampler. The samples were retained in 2-inch-diameter by 4-inch-long brass tubes with plastic end caps. The soil sampler was cleaned between each sample and between borings by washing in an Alconox detergent and tap water solution, followed by water rinses. Following drilling, the borings were backfilled to the ground surface using the entire volume of drill cuttings such that no drill cuttings remained. Soil samples were immediately placed in an ice chest cooled with

"blue ice" for transport under chain-of-custody control to Eureka Laboratories, Inc., a State-certified analytical laboratory in Sacramento, California.

## 2.2 CHEMICAL ANALYTICAL RESULTS

Fifty-two soil samples of the surficial fill and native soil beneath the fill were analyzed for total lead using EPA Method 6010, total oil and grease using EPA Method 413.2 and the petroleum fraction of the total oil and grease using EPA Method 418.1. Five soil samples were analyzed for TPH as gasoline, diesel and motor oil using EPA Method 8015, modified. Nine discrete fill samples and one composite fill sample were analyzed for PCBs using EPA Method 8080. One composite fill sample and one discrete fill sample were analyzed for CAM 17 metals using EPA Method 6010, and semi-volatile organic compounds using EPA Method 8270.

The results of the laboratory analyses of the samples, shown in Tables 1 and 2 and Appendix B, are summarized as follows:

- The reported concentrations of tetal lead in the fill samples and the detection limit of 3 mg/kg (equivalents per partially 28 mg/kg). This average assumes a concentration of 1.5 mg/kg (one-half of the detection limit) for all samples in which the reported concentration of lead was below the detection limit;
- The concentrations of the petroleum fraction of the total oil and samples average concentration of 2 mg/kg (one-half of the detection limit) for all samples in which the concentration of oil and grease was reported below the detection limit;
- Five samples were analyzed for gasoline, diesel, and motor oil. The concentrations of gasoline and its of 5 mg/kg and 10 mg/kg respectively. Motor oil was reported to exceed the detection limit of 25 mg/kg in three of the five samples at concentrations of 57 mg/kg, 71 mg/kg, and 371 mg/kg;

- No PCPs were reported exceeding the detection limit of 0.1 mg/kg in the composite sample or in the nine discrete samples;
- The reported concentration of total lead exceeds the detection limit of 3.0 mg/kg in three of 11 native soil samples. In these three samples, the reported concentrations of lead are 3.1 mg/kg, 5.5 mg/kg, and 6.3 mg/kg;
- The reported total metal concentrations do not exceed the Total Threshold Limit Concentrations (TTLC) of the respective metals; and
- exceeding their respective detection limits in the analyzed composite sample. In the discrete sample of the discrete sample of their respective detection limits in the analyzed composite sample. In their respective detection limits in the analyzed composite sample. In their respective detection limits in the analyzed composite sample. In their respective detection limits in the analyzed composite sample. In their respective detection limits in the analyzed composite sample. In their respective detection limits in the analyzed composite sample. In their respective detection limits in the analyzed composite sample. In their respective detection limits in the analyzed composite sample. In their respective detection limits in the analyzed composite sample. In their respective detection limits in the analyzed composite sample. In the discrete sample of their respective detection limits in the analyzed composite sample. In their respective detection limits in the analyzed composite sample. In their respective detection limits in the analyzed composite sample. In their respective detection limits in the analyzed composite sample.

There is currently no State of California regulatory limit for these specific compounds. However, limiting acceptance criteria for disposal of soil containing PAH compounds do exist but vary between landfills. Forward landfill in Stockton will accept soil with a total PAH concentration of 10 mg/kg to 15 mg/kg depending on the particular compounds present. Vasco Road/BFI landfill does not have a specific limit for these individual compounds or for a total PAH concentration but considers the entire analytical data package on a case-by-case basis. This sample contains a total PAH concentration of about 0.9 mg/kg.

### 2.3 DISCUSSION

The thickness of the fill material was estimated in each boring based on visual examination of the drill cuttings and recovered soil samples and the results of the laboratory analyses of the soil samples. The estimated fill thickness at each boring location is shown on Figure 1. Fill is generally present as a layer varying from 3 to 6 feet thick. The fill layer appears to attain a maximum thickness of 10 feet on Parcel T5 at the southeast corner near boring F1 and a minimum thickness in the central area of Parcel T6 near borings F7 and F11. Based on the average thickness of the fill on each parcel as evaluated in the soil borings, the total

volume of 611 on the cite is estimated to be approximately 8.000 bank cubic yards, with about 4,700 banks about 3.700 ba

The fill has been subdivided into two classifications based on the concentrations of oil and grease and total lead. Coincidentally, the subdivision boundaries appear to approximately correspond with the parcel boundaries. In general, the fill on Parcel TS appears relatively clean without significant detected contentions. However, the Parcel TS contains elevated concentrations of all and pease, total lead; and other contaminants.

The samples taken in the fill on Parcel T5 do not contain concentrations of TPH or oil and grease which exceed their respective detection limits. Also, the T5 samples do not contain reported concentrations of total lead exceeding expected background concentrations for native soil, except for sample F1-4 taken in the southeast corner of the parcel with a reported total lead concentration of 29.8 mg/kg. The average concentration of total lead in samples of fill from Parcel T5 is 5.2 mg/kg, within the range expected for native soil in the downtown Oakland area.

On Parcel T6 the marks at the south end solves and 634 mg/kg at the south end solves analyzed from Parcel T6 is 154 mg/kg. The average concentration of motor oil in the three samples analyzed from this area is 166 mg/kg. The average concentration of motor oil in the three samples analyzed from this area is 88 mg/kg.

WCC expects that the development of Parcels T5 and T6 will require the removal and off-site disposal of large quantities of both fill and native soil in order to create space for high-rise building foundations and underground parking. Based on the results of this study, WCC estimates that, of the estimated 6,200 bank cubic yards of fill on both parcels, approximately oil grease that would be greated to the greated that would be greated that would be greated to the greated that the greate

WCC has developed these alternatives based on previous experience with cleanup projects on nearby sites in the City Center area. These projects, performed on behalf of the Redevelopment Agency of the City of Oakland, include the Oakland Federal Building, City Center Garage II, and 1155 Clay Street. Cleanup of these sites involved the off-site treatment and/or disposal of surficial fill material containing elevated concentrations of lead and petroleum hydrocarbons.

The removal of the fill from those sites was accomplished by a process of excavation, segregation, and stockpiling of the fill. The segregation operations were based on chemical characteristics of the fill which are pertinent to the selection of disposal alternatives. Experience has shown that it is generally possible to successfully segregate the fill based on a visual manifestation of the chemical characteristics.

All the cleanup alternatives for the T5/T6 parcel fundamentally consist of a process of excavation, segregation and stockpiling of the fill from the T6 parcel. The T6 fill would be segregated on the basis of relative petroleum hydrocarbon concentrations with the intent of developing a stockpile containing low concentrations of petroleum hydrocarbons, possibly suitable for direct disposal in a landfill, and one or more stockpiles with higher petroleum hydrocarbon concentrations. The stockpiles, as well as the in-situ fill on the T5 parcel, would be tested further to characterize the fill for more detailed assessment of off-site disposal alternatives and to comply with application requirements of potential disposal sites.

The cost estimates presented in this section are necessarily based on a number of assumptions: 1) the fill on the T5 parcel is not contaminated and may be disposed off-site without environmental restrictions; 2) the volume of fill to be treated and/or disposed from the T6 parcel is about 2,500 bank cubic yards, 4,000 bulk cubic yards or 6,000 tons; 3) Class III landfill disposal of the T6 fill without segregation is not feasible due to the elevated concentration of total lead; and 4) no additional contaminants are encountered. Additional assumptions used in developing these cost estimates are shown on Table 3.

Contractor, engineering and consulting costs, including fill characterization and project oversight, are estimated to be in the range of \$150,000 to \$250,000 for each alternative. A more detailed breakdown of the estimated costs, along with estimated excavation and disposal costs, is presented in Table 3.

# 3.1 ALTERNATIVE 1 - DIRECT CLASS II DISPOSAL

The quickest, simplest, and least expensive alternative for disposal of the T6 fill would probably involve disposal in a Class II or Class III landfill. Utilization of one, relatively low-cost disposal site would minimize the need for classification, sorting and hauling to multiple sites resulting in lower cost and faster completion of the site cleanup. The successful performance of this alternative depends on acceptable extractable lead concentrations for the soil considered for disposal as discussed below.

For this soil, the concentration of extractable lead, as measured by the Waste Extraction Test (WET), may be a limiting factor in the selection of a disposal site. Class III landfills generally have a limiting disposal criteria of 0.5 ppm extractable lead as analyzed by the WET method using a weak acetic acid extracting solution. Dased on our extractable lead may be equivalent to about 5 ppm, or greater, total Therefore, on the basis of the limited total-lead testing completed in this study, it appears unlikely the T6 fill could be disposed in a Class III landfill without segregation or other treatment.

averages

Class II landfills, such as Forward, Inc. or the BFI, Inc. landfill, now under construction in Pittsburg, California, generally have a less stringent disposal criteria for extractable lead. Forward, Inc. has a disposal criteria for extractable lead of 0.5 ppm as analyzed by the WET method using deionized water as the extracting solution. Based upon our experience with this

you're kidding

method, 0.5 ppm extractable lead may correlate to total lead concentrations of about 50 ppm or greater in soil. Also, we understand that the extractable lead disposal criteria may be raised to 5.0 ppm at Forward during Spring 1992. Therefore, the T6 fill, with an average total lead concentration of 88 ppm, may be acceptable for Class II disposal, depending upon the results of more extensive WET method testing using deionized water. — Work the risk.

If extractable lead concentrations within the fill are acceptable for Class II disposal, the landfill may still not accept the fill under current oil and grease disposal criteria. However, Forward, Inc. expects the Class II disposal criteria for petroleum hydrocarbons will be raised to within the range of about 700 ppm to 1000 ppm during the Spring of 1992. If that happens, and Forward's extractable lead criteria can be met, direct Class II disposal of the fill may become a feasible option.

Direct Class II disposal would require the excavation and stockpiling of all fill on the T6 parcel. The stockpiled fill would be sampled and analyzed in accordance with disposal application requirements of the prospective landfill. If the concentrations of contaminants are below the limiting disposal criteria of a landfill, the stockpiled fill would be directly disposed in that landfill. This alternative appears to be the least expensive alternative and may be feasible if the following conditions apply:

- The average concentration of oil and grease in the stockpiled fill is below 100 ppm (or the current Class II disposal criteria at the time of fill removal);
- The concentration of extractable lead is below the disposal criteria for extractable lead. Based on the available data, the concentration of total lead in the fill appears to be well below the limiting disposal criteria for total lead; and
- The fill is otherwise suitable for disposal in a Class II landfill (e. g., not ignitable, corrosive or reactive).

The excavation, hauling and disposal costs are estimated to be approximately \$204,000 or about \$51/cubic yard, assuming disposal at the Forward, Inc. landfill. The total project cost for this alternative, including a 50% contingency, is estimated to be about \$610,000.

Disposal costs and acceptance criteria for the BFI, Inc. landfill now under construction in Pittsburg are not available at this time.

If, at the time of fill removal, the chemical characteristics of the T6 fill do not meet the acceptance criteria for disposal at Class II or III landfills, Alternative 2 should be considered.

# 3.2 ALTERNATIVE 2 - SEGREGATION, BIOREMEDIATION, AND CLASS II DISPOSAL

If it is found that portions of the stockpiled fill contain petroleum concentrations which are too high for direct Class II disposal, bioremedial treatment of that portion of the fill to reduce petroleum hydrocarbon concentrations may be the next least expensive alternative. The bioremediation process is a treatment in which the soil is irrigated and fertilized to enhance the activity of naturally-occurring soil bacteria. The bacteria break down the petroleum hydrocarbons through digestive processes into innocuous material. This process may be performed in various ways, including landfarming, biologic reactors or in-situ bioremediation.

Based on our previous experience working in the City Center area, and the relatively shallow depth of the fill, we believe that the most efficient way to perform this alternative would be to excavate and segregate the fill on the T6 parcel prior to undertaking bioremediation of the fill. The fill would be segregated into at least two stockpiles on the basis of relative oil and grease concentrations. If the segregation technique is successful, one of the stockpiles would be directly disposed in a Class II landfill and one stockpile would be treated prior to disposal by a method such as bioremediation to reduce the oil and grease to a concentration acceptable for Class II disposal.

This alternative would be feasible if the following conditions apply:

- The average concentration of petroleum hydrocarbons in a portion of the stockpiled fill exceeds the Class II limiting disposal criteria for oil and grease (or other petroleum hydrocarbons);
- Bioremediation is a feasible process for reducing the petroleum hydrocarbon concentrations in the material:

- The concentration of extractable lead in the fill does not exceed the Class II disposal criteria for extractable lead; and
- The remaining portion of the stockpiled fill, and the bioremediated fill, is suitable for direct disposal in a Class II landfill.

The excavation, hauling, bioremedial treatment and disposal costs are estimated to be approximately \$303,000 or about \$76/cubic yard. The total project cost for this alternative, including a 50% contingency, is estimated to be about \$760,000. This estimate assumes that one half of the contaminated fill would require bioremediation, and that the bioremediation would be performed as a landfarming-type operation.

## 3.3 ALTERNATIVE 3 - INCINERATION

If it is found that the stockpiled fill contains extractable lead which exceeds Class II landfill disposal criteria, incineration of all or a portion of the fill at a facility such as Port Costa Materials, Inc. (PCM) may be the next least expensive alternative. PCM's current acceptance criteria for WET-method lead is 5.0 ppm, ten times that of Forward, Inc.

As before, this alternative involves the excavation and segregation of the fill into at least two stockpiles based on the relative concentrations of oil and grease. This process may also result in the creation of stockpiles of relatively higher and lower concentrations of lead because, in the past on nearby sites, elevated concentrations of oil and grease have been associated with elevated concentrations of total lead.

Therefore, although the average concentration of extractable lead throughout the T6 fill may exceed the disposal criteria for a Class II landfill, it is possible that one of the stockpiles may qualify for direct Class II disposal. The "high lead" stockpile would be incinerated at PCM's facility in Port Costa, California or an equivalent facility if others are operating at the time the work is performed. This alternative would be feasible if the fill meets the acceptance criteria of PCM as suggested by the analytical results of this study.

The excavation, hauling and disposal costs for Alternative 3 are estimated to be approximately \$432,000 or about \$108/cubic yard. The total project cost for this alternative,

including a 50% contingency, is estimated to be about \$960,000. This estimated cost assumes that all of the contaminated T6 fill would require incineration.

# 3.4 ALTERNATIVE 4 - ON-SITE LEAD FIXING AND CLASS II DISPOSAL

If it is found that the stockpiled fill contains extractable lead concentrations which exceed the acceptance criteria of nonhazardous incinerator facilities, treatment involving chemical fixation of lead within all, or a portion, of the fill may be the next least expensive alternative. Lead fixation is a treatment of the soil which uses a chemical process to reduce the solubility of the lead. The goal of the treatment would be to render the fill acceptable for disposal in a Class II landfill.

As before, this alternative involves the excavation of all fill on the T6 parcel and segregation of the fill into at least two stockpiles based on the relative concentrations of oil and grease. If additional analyses indicate total and/or extractable lead concentrations exceed the disposal criteria at Class II/III landfills and incinerators such that lead fixation appears to be a cost-effective disposal option, WCC would recommend that this option be pursued.

In order to perform on-site chemical treatment of the soil to reduce the solubility of lead, permits are required from various state and local agencies. At least several months would be required to apply for the relevant permits, selection of a treatment contractor, and preparation of the site. A significant uncertainty of this alternative is that permits for the on-site treatment of waste may not be granted by the State of California, Alameda County, and/or the Regional Water Quality Control Board. Also, Class II/III landfills may not accept the treated soil for disposal.

If the necessary permits are acquired, the stockpiles containing higher lead concentrations would be treated on-site by the lead fixation process. Following treatment, the fill would be disposed in a Class II or III landfill.

This alternative would be feasible if the following conditions apply:

 The concentration of extractable lead exceeds the disposal criteria for extractable lead at both a Class II landfill and an incineration facility;

- A chemical lead fixation process will reduce the concentration of soluble lead to a concentration below the disposal criteria for extractable lead at a Class II landfill; and
- The treated fill is otherwise suitable for direct disposal at a Class II landfill.

The excavation, hauling and disposal costs for this alternative are estimated to be approximately \$516,000 or about \$129/cubic yard. The total project cost for this alternative, including a 50% contingency, is estimated to be about \$1,080,000.

# 3.5 ALTERNATIVE 5 - DIRECT CLASS I DISPOSAL

Direct Class I landfill disposal may be the only available option if it is found that the stockpiled fill contains extractable lead which exceeds the acceptance criteria at incineration facilities, and treatment involving lead fixation is insufficient to achieve Class II/III landfill disposal, or is not permitted by regulatory agencies.

This alternative is the most expensive alternative and may be necessary if the following conditions apply:

- The concentration of extractable lead exceeds the acceptance criteria for extractable lead at incineration facilities; and
- A chemical lead fixation process is either not cost-effective or will not reduce the concentration of soluble lead to a concentration below the acceptance criteria for extractable lead at incineration facilities; or
- The treated fill is not suitable for direct disposal at an incineration facility or a
  Class II landfill due to the concentration of some other contaminant unknown at
  this time.

The excavation, hauling and disposal costs are estimated to be approximately \$720,000 or about \$180/cubic yard. The total project cost for this alternative, including a 50% contingency, is estimated to be about \$1,380,000.

## 3.6 UNCERTAINTY IN COST ESTIMATES

The cost estimates provided for each of the soil removal and disposal alternatives have been developed using the information available, the limited analytical results of this study, and assumptions which are believed to be reasonable and conservative. Although the estimated costs must be considered approximate, we believe they correctly show the relative cost ranking for each alternative. The actual remedial cost will depend on a host of variables, including: 1) the quantity of soil moved, 2) the chemical characteristics of the soil encountered, 3) contracting and disposal market conditions at the time the excavation is performed, 4) the need, if any, to accelerate the work schedule; and 5) various contingencies which may arise during the course of the project.

The development of Parcels T5 and T6 may require the excavation, removal and off-site disposal of large quantities of surficial fill and native soil. Based on the chemical analytical results of this study, the surficial fill on the T5 parcel appears to be free of significant contamination and probably may be disposed off-site without restriction. However, during excavation for construction on the parcel, localized areas of contaminated fill may become apparent which may require special handling or restricted disposal.

The analytical results of this study suggest that disposal options for the fill on Parcel T6 may be limited due to elevated concentrations of oil and grease and lead in the fill. In the opinion of WCC, the lowest cost alternative for disposal of the fill available at this time may involve bioremedial treatment of some or all of the fill and disposal at a Class II landfill (Alternative 2 discussed above). However, if the disposal criteria are raised for oil and grease at the Forward, Inc. landfill or another Class II disposal facility prior to commencement of the remediation project, Alternative 1, direct disposal at a Class II landfill, may become the lowest cost alternative.

Table 1. Summary of Selected Chemical Analytical Results of Fill Material\*, City Center Parcels T5 and T6, Oakland, California.

SAMPLE	OE AND TOLEUM HYDROCARBONS			PCB	SEMI-VOLATILE			
NUMBER	(fcet)	LEAD	GREASE	GASOLINI		MOTOR OIL		COMPOUNDS
D. Down								COMPOUNDS
PARCEL TS	-					•		
FI-1	2	3.2	ND	ND	ND	ND		
F1-2	4	3.5					••	
F1-3	6	9.2						
F1-4	9	29.8		• -				
F1-1,2,3,4	comp.						ND	ND
F2-1	1	3.9	ND					
F2-2	3	5.3			••			**
F2-3	5	ND -	ND					••
F3-1	1	ND						
F3-2	3	3.2						••
F4-1	2	ND	• -	- <b>-</b>				
F4-2	4	ND						
F5-1	2	ND	ND	ND	<b>NT</b>			
F5-2	4	ND.	112	NU	ND	ND	ND	**
F13-1	2	ND	ND					
F14-1	1	4.4	ND		••		ND	
F14-2	3	6.5					ND	
F14-3	. 5	11.0	• •		• •			
F15-1	1			•-				
F15-2	3	4.1						
F15-3	4	5.7						
F16-1		4.2			• ••			
F16-2	1	5.8				• • •		
F16-3	3	4.5		• -				• •
	6	3.9						• •
Average **		5.2	ND	ND	ND	ND	ND	ND
DADOTT TO		•						
PARCEL T6		1						
F7-1	1	177.0	143		••			
F7-2	3	11.9				••		
F8-1	2	391.0	14	ND	ND	57	ND	note 1
F8-2	4	ND				••	••	more 1
F9-1	2	3.0	ND		••	4-	ND	
F10-1	2	4.0	ND				ND	
F12-1A	1.5	1720	126	ND	ND	71	ND ·	
F12-1B	2	9.3					MD	
F12-2	5	43	·	•				. ••
F17-1	1	263.0			••			
F17-2	3	15.8	· · · · · · · · · · · · · · · · · · ·					
F18-1	1	83.9						••
F18-2	5	21.7			• • •			* ••
F19-1	1	69.1		* •	·			
F20-1	1	105.0	624	ND	ND	371	ND	
F21-1	4	80.6	634					
Average **	•	88.3	151.5		••	•-	ND	
		00.3	153 <i>.</i> 5	ND	ND	166.3	ND	••
Detection Limit		3.0						
nalytical Method:		3.0	4	5	10	25	0.1	varies
EPA Method		6010						
4 FARGUARE		6010	418.1	. 80	15 (Modifica)		8080	8270

<sup>\*</sup> all results reported as mg/kg (parts per million), ND = not detected, dashed where no analysis performed

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<sup>\*\*</sup> averages computed assuming ND values = 1/2 detection limit values note 1. phenanthrene = 0.153 pppm, fluoranthene = 0.293 ppm, pyrene = 0.271 ppm, chrysene = 0.175 ppm

Table 2. Summary of Chemical Analytical Results for Metals in Fill Material City Center Parcels T5 and T6, Oakland, California.

METAL	DETECTION LIMIT	SAMPLE F8-1	SAMPLE F1-1,2,3,4 (composite)	TTLC	
Silver	0.5	ND	ND	500	_
Arsenic	1.0	14.7	(17.6)	500	
Barium	0.1	70.5	42.0	10,000	
Beryllium	0.5	ND	ND	75	
Cadmium	1.0	ND	ND	100	
Cobalt	1.0	4.0	5.7	8,000	
Chromium	0.5	36.6	33.3	2,500	
Copper	0.5	24.9	8.2	2,500	
Mercury	1.0	2.6	1.9	20	
Molybdenum	1.0	ND	ND	3,500	
Nickel	1.0	16.7	27.7	2,000	
Lead	3.0	386.0	27.5	1,000	
Antimony	3.0	3.3	3.6	500	
Selenium	3.0	4.2	5.1	100	
Thallium	1.0	36.4	44.7	700	
Vanadium	0.5	17.4	22.3	2,400	
Zinc	0.5	113.0	36.5	5,000	
				·	

<sup>\*</sup> all results reported as mg/kg (parts per million), ND = not detected, TTLC = Total Threshold Limit Concentration

Table 3. Summary of Selected Chemical Analytical Results of Native Soil\*, City Center Parcels T5 and T6, Oakland, California.

SAMPLE	DEPTH	TOTAL	OIL AND
NUMBER	(feet)	LEAD	GREASE
F1-5	13	5.5	ND
F3-3	5	ND	
F5-3	6	ND	
F6-1	2	ND	
F7-3	5	3.1	
F8-3	6	ND	
F9-3	6	ND	·
F10-3	6	6.3	
F11-1	2	ND	
F13-2	4	ND ND	···
F15-4	6		
		ND	~ =
AVERAGE **		A 4	
		2.4	
Detection Limit		3.0	
Analytical Metho	d٠	3.0	. 4
EPA Method	••	6010	
		6010	412 1

<sup>\*</sup> all results reported as mg/kg (parts per million), ND = not detected, dashed where no analysis performed

<sup>\*\*</sup> averages computed assuming ND values = 1/2 detection limit values

Table 4. Cost Estimate for Remedial Alternatives, City Center Parcels T5 and T6

Alternative	1	2	3	4	5
Evenyation and Discourt	Class II Direct Disp.	Bioremediate Class II Disp.	Incinerate	Lead Fixation Class II Disp.	Class I Direct Disp.
Excavation and Disposal				-1-	ост 2 лар.
Excavate Haul	62,000	62,000	47,000	62,000	145,000
	46,000	46,000	25,000	46,000	95,000
Bioremediation (3000 c.y.)	_	45,000	•	, , ,	22,000
Bioremediation Space Rents	al	54,000			
Lead Fixing Process				312,000	
Disposal	96,000	96,000	360,000	96,000	480,000
EXC. AND DISP. SUBTOTA	L \$204,000	\$303,000	\$432,000	\$516,000	\$720,000
Contractor			***************************************		
Mobe/Demobe		* * *			
	6,000	6,000	6,000	6,000	6,000
Site Preparation	40,000	40,000	40,000	40,000	40,000
Traffic Control	9,000	9,000	9,000	9,000	9,000
Health and Safety	2,200	2,200	2,200	2,200	2,200
CONTRACTOR SUBTOTAL	\$57,200	<b>\$</b> 57,200	\$57,200	\$57,200	2,200 \$57,200
WOO F					
WCC - Engineering and Consu	lting				
Contractor Selection	16,000	16,000	16,000	16,000	16,000
Soil Characterization	25,000	25,000	30,000	25,000	25,000
Project Management	30,000	30,000	30,000	30,000	30,000
Field Monitoring	20,000	20,000	20,000	20,000	20,000
Landfill and Reg. Corresp.	25,000	25,000	25,000	25,000	25,000
Closure	10,000	10,000	10,000	10,000	10,000
Reporting	20,000	20,000	20,000	20,000	20,000
WCC SUBTOTAL	\$146,000	\$146,000	\$151,000	\$146,000	\$146,000
50m a .					#1401000
50% Contingency	\$203,600	\$253,100	\$320,100	\$359.600	\$461,600
Thomas a second					o-wi.uas
ESTIMATED PROJECT	Trans.				
TOTAL COST	\$610,800	<b>\$</b> 759,300	\$960,300	\$1,078,800	\$1,384,800

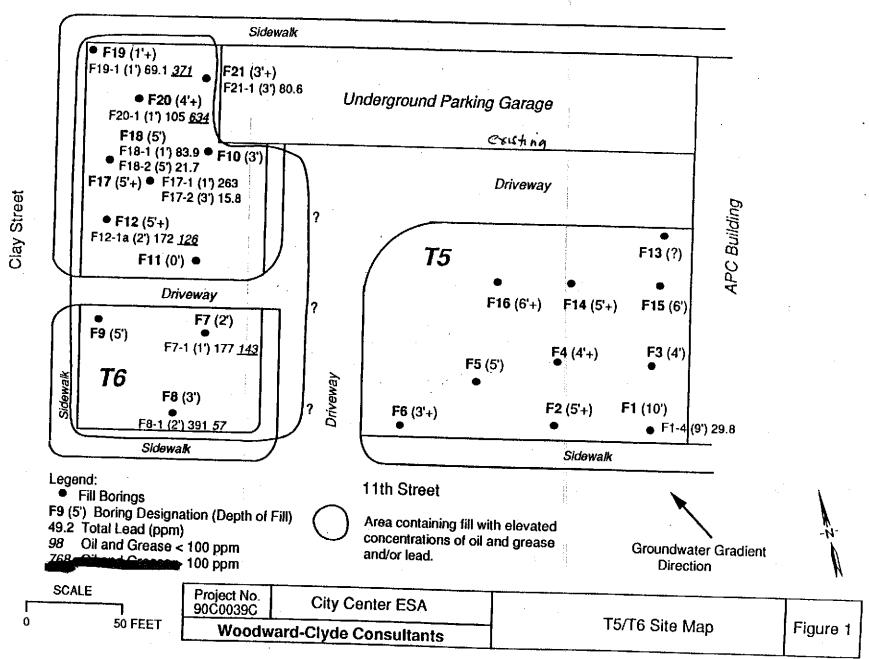
### ASSUMPTIONS:

- 1) No additional contamination is encountered.
- 2) The landfill acceptance criteria do not change substantially from those currently in effect.
- 3) On-site segregation of soil can be accomplished effectively.
- 4) Estimated 2500 cubic yard volume of in-place contaminated fill is expected to yield 4000 bulk yards of material to be disposed weighing approximately 6000 tons.
- 5) The disposal and haul rates are based on 1991 rates and are not adjusted for inflation.

#### NOTES:

1) Zanker Landfill, San Jose no longer accepts materials from outside Santa Clara County,

12th Street



# APPENDIX A SOIL BORING LOGS

BORING	NUMBER	F1					E_CI	E ST	ARI	ED		No. 90C0039
ELING	AGENCY		M Dettine	Innu			DAT	E FIN	IISH	ED		ST 16, 1990
	EQUIPMEN		V Drilling	DRILLER		·		VATIO			DATU	
	METHOD		id Auger	DRILL BIT	T NA		DEP	APLET TH		ı 3 Ft.		SAMPLER
SIZE AND	TYPE OF				144		NO.	OF			ST.	2" Modified Calif. Typ
	PERFORAT		NA	FROM	TO	Pt.		IPLES	5		9	5
SIZE AND	TYPE OF	PACK	NA	FROM	ТО	R.	WAT		* I A	FIRS	T	COMPL. 24 HRS.
TYPE	NO. 1	NA.		FROM	TO	FŁ	LEV	EL GED	NA RV			CHECKED BY
OF SEAL	NO. 2	NA		FROM	то	Ft.		W. C		land		CHECKED BY
(feet)			DESCRIF	TION			DEPTH (feet)		recov. (ft) To	blow Gounts	(D	REMARKS brill rate, Fluid Loss, odor, etc.)
	contains contains	tragmer wood ch	nts of brick, r	bris ed brown and gra- nortar, and grave and few gravels to	(fili)			1 F1-2 F1-3 F1-3 F1-5 F1-5		7 8 3 3		no visual evidence of contamination

	ard-Clyde Cor			PROJEC	- ISAM	E	110	= IN I E	H 1:		No	90C0039C
	NUMBER F2				<del>-</del>		TE S'			AUG	JST 16, 19	90
		EW Drilling	DRILLER			ELE	VAT	ON	AND	DATL	IM NA	
<del></del>	EQUIPMENT						MPLE	TION	1		SAMPLE	R
	·	olid Auger	DRILL BI	T NA		DEF	'TH	5	Ft.		2" Modifi	ed Calif. Typ
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SEAL	NO. 2 NA	· · · · · · · · · · · · · · · · · · ·	FROM	ТО	Ft.		W.	Соре	land			
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(feet)		DESCRIPT	TION .			₽₽				,,	REMAR	
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grass SAND (SP) mottled gray and reddish brown, moist (native soil)  encountered pipe (?), stopped drilling Bottom of Boring at 3 ft.  10 - 15 - 15 - 15 - 15 - 15 - 15 - 15 -	E						_	•	MPL	ES		DEMAG	
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grass GRAVELLY SAND (SP) dark brown, moist, gravel to SAND (SP) dry		MADED					
DRILLING METHOD 6' Solid Auger SIZE AND TYPE OF CASING NA TYPE OF PERFORATION NA SIZE AND TYPE OF PACK NA  TYPE NO. 1 NA OF SEAL NO. 2 NA  DESCR  GRAVELLY SAND (SP) dark brown, moist, gravel to SAND (SP) dry becomes light brown, dame Bottom of Boring at 5 ft.					DATE STARTED	AUGU	No. 90C0039
DRILLING METHOD 6" Solid Auger SIZE AND TYPE OF CASING NA TYPE OF PERFORATION NA SIZE AND TYPE OF PACK NA TYPE NO. 1 NA OF SEAL NO. 2 NA  DESCR  GRAVELLY SAND (SP) dark brown, moist, gravel to SAND (SP) dry becomes light brown, dame Bottom of Boring at 5 ft.	DRILLER				ELEVATION AN		M NA
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SIZE AND TYPE OF PACK NA  TYPE NO. 1 NA NO. 2 NA  Bostom of Boring at 5 ft.  SIZE AND TYPE OF PACK NA  TYPE NO. 1 NA NO. 2 NA  DESCR  GRAVELLY SAND (SP) dark brown, moist, gravel to SAND (SP) dry becomes light brown, dame Bottom of Boring at 5 ft.					NO. OF	DIST.	UNDIST.
TYPE NO. 1 NA  OF SEAL NO. 2 NA  DESCR  GRAVELLY SAND (SP) dark brown, moist, gravel to SAND (SP) dry becomes light brown, dame Bottom of Boring at 5 ft.	FROM	VDE OF BAOK	то	Ft.	SAMPLES 3	. 0	3
DESCR  GRAVELLY SAND (SP) dark brown, moist, gravel to SAND (SP) dry becomes light brown, dame Bottom of Boring at 5 ft.	FROM	NA 'F	TO	Pt.	WATER F	RST	COMPL 24 HRS.
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grass GRAVELLY SAND (SP) dark brown, moist, gravel to SAND (SP) dry becomes light brown, dame Bottom of Boring at 5 ft.	FROM	10.2 NA 'FF	TO	Pt.	W. Copelan	d	
GRAVELLY SAND (SP) dark brown, moist, gravel to SAND (SP) dry becomes light brown, dame Bottom of Boring at 5 ft.	IPTION	DESCRIPTION			CEPTH (1981)  drive no.  sample no.  recov. (ff) blow		REMARKS rill rate, Fluid Loss, odor, etc.)
25 —		RAVELLY SAND (SP) dark brown, moist, gravel up to 3/4" ( ND (SP) dry becomes light brown, damp, no grave	oil)		1 F7-1 2 F7-2 55 3 F7-3 11	<del></del>	shed sampler

Woodu				The State of						-		
BORING			sultants	<u> </u>	PROJEC	T NAM					5	No. 90C00390
ł		<del></del>			<del></del>	-	DAT	E STA	IRT ISH	ED ED	AUGU	IST 16, 1990
	AGENCY		W Drilling	DRILLER							DATU	M NA
<u> </u>	METHOD		H . A	1			DEP	IPLET				SAMPLER
SIZE AND			lid Auger	DRILL BIT	NA .				61			2" Modified Calif. Typ
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<b>E</b> ≘							_	SAN	$\mathbf{I}$			REMARKS
(feet)			DESCRI	PTION			DEPTH (feet)	sample no	acov. (ft)	biow counts	(D	rill rate, Fluid Loss, Odor, etc.)
	grass							is,	=		<u> </u>	
4	SAND (SP		no trace of	fine gravel and bri	-1. d			1 F8-1	d	20 14		
-	(fill)		, uace of	me graver and bri	x iragme	nts	4					
	SAND (SP						4	<sup>2</sup> F8-2	4	11 7		
• —	light bro	wn, dry, ative soi!	fine grained	d, black spots with	orange	1	5	3 <b>F</b> 8-3	Ы	10 17		
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DRILLING	EQUIPME							APLETI		DATU	M NA	
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RILLING	AGENCY	HE'	LER			DAT	_					o, 195	<u> </u>				
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DRILLING	METHOD	6° Soi	id Auger	Dett	L BIT N			DEF						•	<b>IPLE</b>		
1	TYPE OF			·	C DIT NO	· .		<u> </u>			5	FL		2" 1		ed Calif	. Туре
	PERFORA		NA NA	FROM	<del></del>			NO. SAN			9	1	DIST.		UND		
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SEAL	NO. 2	NA	<del></del>	FROM	T-	D 	Pt.					land					-
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Wo	odwa	rd-Clyd	e Cons	ultants	<b>e</b>	•	CT NAM	E_C	TY CE	NTER 1	5_	No. 90000390
!		NUMBER	F13	1 * * *				DAT	E ST.	ARTED	AUGU	JST 16, 1990
		AGENCY		V Drilling	DRILLER					N AND		
<del> </del>		EQUIPME	TV					CO	<b>IPLET</b>			SAMPLER
		METHOD		d Auger	DRILL BI	T NA		DEP	אדי	4 Ft.		2" Modified Calif. Typ
		TYPE OF	_	) NA		**************************************	-	NO.			DIST.	UNDIST.
		PERFORAT		NA	IFROM	TO	R	SAN	IPLES	2	. 0	2
<u> </u>		TYPE OF	PACK	NA.	FROM	ТО	Ft.	WAT		NA FIF	RST	COMPL. 24 HRS.
TY	PE F	NO. 1	NA		FROM	ТО	Pt.		GED	BY		CHECKED BY
	AL	NO. 2	NA		FROM	TO	Ft.		W. C	opeland	1	
DEPTH (feet)		Orace		DESCRIP	TION			DEPTH (feet)	9	blow Sounts	([	REMARKS Orill rate, Fluid Loss, Odor, etc.)
1 1		becomes	slightly	mottled brow	trace of gravel t	o 1/4" dia. n (native s	(fill?) oil)	1 1 1	<sup>1</sup> F13 <sub>-1</sub> 2 F13 <sub>-2</sub>	7 15	no evi	idence of contamination
5 1 1 1	. •	Bottom o	f Boring	at 4 ft.				5 1 1 1 1 1	-2	23		
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1	LING	AGENCY			155		· ·	····	DA	TE F	INIS	HED		IST 17, 19	90	
				all hand-hei		ILLER							DATU			_
		METHOD		id Auger						MPLE PTH				SAMPLE		_
		TYPE OF			IDHI	ILL BIT	NA		<u> </u>			FL		2° hand	driven type	
TYPE	OF	PERFORA	TION	G NA NA	TFRO	OM .	ТО	Ft.		OF WPLE		3	DIST. 0	UN	DIST. 3	
<u> </u>		TYPE OF	PACK	NA '	FRO	DM	TO	FL	WA	TER /FI	NA	FIF	RST	COMPL	24 HRS.	
TY	PE	NO. 1	NA		FRC	M	TO	Ft.		GED	BY			CHECKE	D BY	_
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DEPTH (feet)		frace	 	DESCRI	PTION				DEPTH (leet)	drive no.	recov (III)	blow counts	E	REMAF Prill rate, FI Odor, etc.)	uid Loss,	
		grass SAND (SP) light bro fragmen	wn, mois	t, little clay,	trace of gr	avel to 1/	′4" dia.,	brick	_	1 F1 2 F1	4 <sub>1</sub> 2	2	samp	ler hand-d ch sample	riven 6 inche	is
5 1 1 1 1		Bottom o	of Boring	at 5 ft.					5 1 1 1	3 F1	4 .3					
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<i>-</i>	NUMBER						E STA			AUGU	ST 17, 1990	390
	AGENCY		DRILLER	<del></del>		_				DATU	M NA	
	EQUIPME		ld rotary auger				IPLET	Ю	i		SAMPLER	_
	METHOD		DRILL BIT	NA		DEP		6	FL		2" hand driven typ	е
TYPE OF	TYPE OF					NO.	OF PLES			TEK	UNDIST.	
	TYPE OF		FROM	ТО	Pt.			4		ó	4	
	<b></b>	NA NA	FROM	TO	Ft.	WAT		NA.	FIR	ST	COMPL 24 HRS	<u>.</u>
TYPE OF	NO. 1	NA	FROM	TO	Pt.		GED I	BY			CHECKED BY	
SEAL	NO. 2	NA -	FROM	то	Pt.		D. Si	mps	son			
Ŧ e						_	SAN	$\mathbf{r}$			REMARKS	
DEPTH (feet)		DESCRI	PTION			DEPTH (leet)	arrye no. sample no	recov. (III)	blow counts		rill rate, Fluid Loss, Idor, etc.)	
5 —	SILTY SAM	wn, little clay, gravel la. (fill)			its to	1	F15-1 2 F15-2 3 F15-3 5 F15-4			samp for ea	er hand-driven 6 inc ch sample	he
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	NUMBE		sultants	<u> </u>	PROJEC	T NAM		Y CEI			5	N	o. <u>900003</u>	<u> 3C</u>
*	G AGENCY							E FIN			AUGU	IST 17, 19	90	
			mall hand had	DRILLER d rotary auger		-	1				DATU	M NA		<u> </u>
	G METHOD						DEP.	PLET			<u> </u>	SAMPL		
	D TYPE O		olid Auger	DRILL BI	T NA		<u> </u>		6 i	Ft.		2" hand	driven type	
	F PERFOR		IG NA NA	FROM			NO. SAM	OF PLES	2	I	NST.	UN	DIST.	_
	D TYPE O				ТО	Pt.							3	
TYPE	NO. 1		NA	FROM	TO	Pt.	LEVE	EL !	VA.	FIR	SI	COMPL	24 HRS.	
OF	<b>—</b> —	NA NA		FROM	TO	Pt.	LOG	SED E				CHECKE	D BY	
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DEPTH (feet)						ı	<b>=</b>	SAN	_			REMAF	iks	
			DESCRIP	TION			DEPTH (feet)	sample no	3	blow	(D	rill rate, Fl kdor, etc.)	uid Loss,	
	grass	<del></del>		en en en en en general de gant en en en en en en en en en en en en en			[`		ě					
	CLAYEY S	SAND (S	C)				<b>-</b>  1	F16	7	`	sampi	er hand-d	riven 6 inche	<b>3</b> S
	light bo	own, cont	tains brick and	d asphaltic conc	rete fragme	nts	Ⅎℴ	F16			ior ea	ch sample		
4	10 1-1/2	2" dia. (fill	9)			ĺ		-2	4					
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	Bottom	of Boring	at 6 ft.		<del></del>		<sup>3</sup>	F16	7	ĺ				•
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Wo	odwa	rd-Clyd	e Consultants			*	E CITY CENTER T5 No. 90C0039C
ļ		NUMBER	F17				DATE STARTED AUGUST 17, 1990
		AGENCY		DRILLER			ELEVATION AND DATUM NA
DHIL	LLING	EQUIPME	NT small hand-h	eld rotary auger			COMPLETION SAMPLER
<del></del>		METHOD	6" Solid Auger	DRILL BIT	NA		DEPTH 5-1/2 Pt. 2" hand driven type
<del></del>		TYPE OF				···	NO. OF DIST. UNDIST.
		PERFORA		FROM	TO	PŁ.	SAMPLES 2 0 2
<u> </u>		TYPE OF	PACK NA	FROM	то	PL	WATER FIRST COMPL. 24 HRS.
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	OF EAL	NO. 2	NA -	FROM	то	Pt.	D. Simpson
DEPTH (feet)			DESCRIP	PTION			SAMPLES REMARKS (Drill rate, Fluid Loss, Odor, etc.)
	viri sarbus	grass	e, e e e e e e e e e e e e e e e e e e	- Language of the			1 F17 sampler hand-driven 6 inches

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	G AGENCY			DRILLER			ELE	VATIO	N A		DATU	M NA	
<del></del>	G EQUIPME			d rotary auger				WPLET	ION			SAMPLE	R
<del></del>	G METHOD		id Auger	DRILL BI	T NA		DEF		5-1	/2 F	ì	2" hand	driven type
	D TYPE OF			l=====				OF IPLES			TRK	UNI	так.
	D TYPE OF		NA	FROM	TO	PŁ.					ō		2
		FACR	NA	FROM	то	PL.	WA1	EL	NA	FIR	ST	COMPL	24 HRS.
TYPE	NO. 1	NA	<u>.                                    </u>	FROM	TO	Pt.	LOG	GED	BY	_		CHECKE	D BY
SEAL	NO. 2	NA		FROM	TO	PJ.		D. Si	impso	u		ļ	
DEPTH (feet)	orass	1	DESCRIPT	TON			DEPTH (feet)	20.	recov. (ft) do	counts		REMAR Orill rate, Flu Odor, etc.)	
	GRAVELL dark bri SAND with light bro	own, very CLAY (Sown and o	SP-SC)	I) contains brick tly moist, conta		(filt)	٦	4 1047			for ea	ler hand-dr ich sample recovery fro	
5			at 5-1/2 ft.	· · · · · · · · · · · · · · · · · · ·			5	3					
1 4		or Donning	at 5-1/2 IL			İ	]						
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Woodw	ard-Clyd	e Con	sultants <b>&lt;</b>	2	PROJEC	•					No. 90C00390
BORING	NUMBER	F18		,			DAT	ST/	RTED		ST 17, 1990
LLING	AGENCY	<u>-</u>		DRILLER			<del></del>			DATU	M NA
DRILLING	EQUIPME	NT SI	nail hand-held	rotary auger				PLETI			SAMPLER
DRILLING	METHOD	6° Sol	id Auger	DRILL BO	T NA		DEPT	Н	5-1/2	FL	2" hand driven type
SIZE ANI	D TYPE OF	CASIN	G NA	<del></del>		<del></del>	NO.	OF		DIST.	UNDIST.
TYPE OF	PERFORA	TION	NA	FROM	TO	Ft.	SAM		2	0	2
SIZE ANI	D TYPE OF	PACK	NA	FROM	то	Pt.	WAT		NA FI	RST	COMPL 24 HRS.
TYPE	NO. 1	NA		FROM	10	Ft.	LOGO		¥Υ		CHECKED BY
OF SEAL	NO. 2	NA		FROM	TO	FL		D. Si	mpson		
(feet)			DESCRIPT				DEPTH (feet)	1 -	blow blow	(0	REMARKS Orill rate, Fluid Loss, Odor, etc.)
	GRAVELL dark bri	Y SILTY own, moi	SAND (SP-SM st, contains brid	) ≭ fragments a		s (fill)	- 1	F18		samp	ler hand-driven 6 inche ch sample
										0% re samp	ecovery from F18-1, le was hand-packed
5 +	SAND with	CLAY (S	SP-SC) (native soil)	····			5 - 2	F18 -2	2		
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Wo		ard-Clyd	e Con	sultants (		PROJEC	T NAM	F CT	Y CE	 VTEF	 3 T	5		
BO	RING	NUMBER						DAT	E STA	RTE	D		No. 90C0039 ST 17, 1990	<u>)C</u>
_		AGENCY			DRILLER							DATU		
UHIII	LUNG	EQUIPME	NT sm	all hand-heid r	patary auger				IPLET				SAMPLER	
DRIL	LING	METHOD	6" So	lid Auger	DRILL BE	T NA		DEP		1 F	ì.		2" hand driven type	
SIZE	AND	TYPE OF	CASIN	IG NA			<del></del>	NO.	OF			XST.	UNDIST.	
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<u> </u>		TYPE OF	PACK		FROM	ТО	Pt.	WAT		VA.	FIR		COMPL 24 HRS.	
	(PE	NO. 1	NA		FROM	TO	Pt.		GED I	3 <b>Y</b>			CHECKED BY	
	F EAL	NO. 2	NA .	~	FROM	TO	Pt.		D. Si		n			
DEPTH (feet)				DESCRIPT	· · · · · · · · · · · · · · · · · · ·			DEPTH (feet)		recov. (ff)	s spunos		REMARKS rill rate, Fluid Loss, idor, etc.)	
5 10 15 20 25 10		Bottom	dark br		SW-GC) hard drilling (fil	1)	2		1 F19			sampi	covery from F19-1, e was hand-packed ifusal at 1 ft. depth	
5						t		111						

PODING	AUMADED				1 =					No. 90C00
	NUMBER F20				DAT	E ST	AR USI	TED HED	AUGU	JST 17, 1990
	G AGENCY	DRILLER	_						DATU	M NA
	S EQUIPMENT small hand-he		·			APLE?	ПОІ	4		SAMPLER
	METHOD 6 Solid Auger	DRILL BIT	NA		DEP	114	4	FL		2" hand driven typ
	D TYPE OF CASING NA				NO.				TZK	UNDIST.
	PERFORATION NA	FROM	ТО	PŁ.	SAM	IPLES	1		_0	1
	D TYPE OF PACK NA	FROM	то	Pt.	WA7		NA	FIR	ST	COMPL 24 HRS
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SEAL	NO. 2 NA	FROM	TO	Pt.		D. S	imp	SON		
Ξ .							ΜPI	LES		
(feet)	DESCR	IPTION	٠		E⊋	g 2	E	25	/_	REMARKS Frill rate, Fluid Loss,
اعد					DEPTH (feet)	drive no. sample no	Š	blow	,,	Odor, etc.)
	GRAVEL with SILT and SANI	) (GP.GM)				- 07	<del></del>			
	dark brown and gray, very	slightly moist, contain	ins large		│	1 F20	1		0% re	ecovery from F20-1, ele was hand-packed
]	cobbles (fill)				4				94.14	io was namu-packed
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: -	Bottom of Boring at 4 ft.				ا ۔					
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Wood	lward-Cly	de Cor	nsultants (		PROJEC	T NA 14	E CIT	Y CFI	VT-	:рт			and the second second	-
BORIN	IG NUMBE	R . F21	· · · · · · · · · · · · · · · · · · ·			- 144.00	DATE	E ST/	\R7	ED		ST 17, 1	No. <u>900003</u>	39C
PRILLI	NG AGENC	Y	,	DRILLER			+				DATU		<u> </u>	
<b>VILLI</b>	NG EQUIPA	IENT sn	nali hand-heid r	otary auger	<del></del>	·	COM				DAID			
DRILLI	NG METHO		olid Auger	DRILL BE	T NA		DEPT			Ft.		SAMPI		
SIZE A	ND TYPE				- 107	<del></del>	NO.	)F			DIST.		d driven type	<u> </u>
TYPE (	OF PERFOR	ATION	NA	FROM	TO	Ft.	SAME		1	'	U N 3 1	U	NDIST.	
	ND TYPE (	PACK	NA	FROM	ТО	Ft.	WATE			FIR	ST	COMPL	24 HRS.	
TYPE	NO. 1	NA		FROM	TO	FL.	LOGG		3Y			CHECK	ED BY	
SEAL	NO. 2	NA		FROM	ТО	FL		D. Sir		on		O. I.E.O.		
(feet)			DESCRIPT		<del></del>	· · · · ·	DEPTH (feet)	sample no.		blow counts	60	REMA rill rate, f	Fluid Loss.	
	(181)	n of Sorin		te fragments, vi	ery naro on			F21			0% resampl	covery fr	om F21-1, and-packed	
	· · ·				•	30					-			

# APPENDIX B CHEMICAL ANALYTICAL RESULTS



# EUREKA LABORATORIES, INC.

Corporate Office: 6790 FLORIN PERKINS ROAD SACRAMENTO, CA 95828 TEL: (916) 381-7953 FAX: (916) 381-4013

Branch 'Office: 12121 NORTHUP WAY, SUITE 212 BELLEVUE, WA 98005 TEL: (206) 885-0284 FAX: (206) 885-6162

Air Pollution Chemical Analysis, Research & Testing Environmental Studies Robotics Toxicology

September 6, 1990

Bill Copeland WOODWARD-CLYDE CONSULTANTS 500 12th Street, Suite 100 Oakland, CA 94607

ANALYSIS

Reference: ELI No: 90-08-215

Project #: 90C0039C

Dear Mr. Copeland:

Eureka Laboratories, Inc. is pleased to submit a laboratory report for the subject project. This report presents analytical results for fifty-three (53) soil samples for the following analyses:

ANALYSIS	METHOD	SAMPLE ID.
TTLC/CAM Metals	EPA 6010	F1-1,2,3,4 COMPOSITE, F8-1
Semi-Volatile Compound	EPA 8270	same as above
Polychlorinated Biphenyls (PCB)	EPA 8080	FI-1,2,3,4 COMPOSITE, F5-1, F8-1, F9-1, F10-1, F12-1A, F13-1, F14-1, F19-1, F21-1
Oil & Grease (G	EPA 413.2 ravimetric)	F1-1, F1-5, F2-1, F2-3, F5-1, F7-1, F8-1, F9-1, F10-1, F12-1A, F13-1, F20-1
Total Recoverable Hydrocarbons	EPA 418.1	same as above
Lead	EPA 6010	F1-1, F1-2, F1-3, F1-4, F1-5, F2-1, F2-2, F2-3, F3-3, F4-1, F4-2, F5-1, F5-2, F5-3, F6-1, F7-1, F7-2, F7-3, F8-1, F8-2, F8-3, F9-1, F9-2, F9-3, F10-1, F10-2*, F10-3, F11-1, F12-1A, F12-1B, F12-2, F13-2, F14-1, F14-2, F14-3, F15-1, F15-2, F15-3, F15-4, F16-1, F16-2, F16-3, F17-1, F17-2, F18-1, F18-2, F19-1, F20-1, F21-1, F3-1, F3-2, F13-1

WOODWARD-CLYDE PAGE 2 September 6, 1990

METHOD

SAMPLE ID.

Total Petroleum Hydrocarbons

EPA 8015 (Modified)

F1-1, F5-1, F8-1, F12-1A, F19-1

Sincerely, EUREKA LABORATORIES, INC.

By: Shao-Pin Yo, Ph.D. Laboratory Director

SPY/jj

Attachment

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: <u>E765</u>

CLIENT: WOODWARD-CLYDE PROJECT #: 90C0039D SAMPLE ID: BLANK

DATE RECEIVED: 08/22/1990 DATE EXTRACTED: 09/04/1990 DATE COMPLETED: 09/05/1990

	CONCENTRATION [mg/Kg (ppm)]	DETECTION LIMIT [mg/Kg (ppm)]
Silver Arsenic Barium Beryllium Cadmium Cobalt Chromium Copper Mercury Molybdenum Nickel Lead Antimony Selenium Thallium	<0.5 <1.0 <0.1 <0.5 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	0.5 1.0
Vanadium Zinc	<0.5 <0.5	0.5 0.5

This detection limit for soil is based on the dilution factor of 50.

The determinations of Mercury, Arsenic, and Selenium by methods 6010 or 200.7 are subjected to many interferences. For more accurate determinations for the above three metals, Atomic Absorption Spectrometric methods are recommended. ICP may be used for scanning or for reference purposes for the three metals only.

Josie Quiambao September 6, 1990
Chemist

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: <u>E765</u>

CLIENT: WOODWARD-CLYDE PROJECT #: 90C0039D

SAMPLE ID: F1-1,F1-2,F1-3,F1-4 COMPOSITE

DATE RECEIVED: 08/22/1990
DATE EXTRACTED: 09/04/1990
DATE COMPLETED: 09/05/1990
DATE SAMPLED: 08/16/1990

	CONCENTRATION [mg/Kg (ppm)]	DETECTION LIMIT
	Tinal Va Thhin) I	<pre>Img/Kg (ppm)]</pre>
Silver Arsenic Barium Beryllium Cadmium Cobalt Chromium Copper Mercury Molybdenum Nickel Lead Antimony Selenium Thallium	<0.5 17.6 42.0 <0.5 <1.0 5.7 33.3 8.2 1.9 <1.0 27.7 27.5 3.6 5.1	[mg/Kg (ppm)]  0.5 1.0 0.1 0.5 1.0 1.0 1.0 1.0 0.5 0.5 0.5 0.5 1.0 1.0 3.0 3.0 3.0
Vanadium Zinc	44.7 22.3 36.5	1.0 0.5 0.5

This detection limit for soil is based on the dilution factor of 50.

The determinations of Mercury, Arsenic, and Selenium by methods 6010 or 200.7 are subjected to many interferences. For more accurate determinations for the above three metals, Atomic Absorption Spectrometric methods are recommended. ICP may be used for scanning or for reference purposes for the three metals only.

Josie Quiambao September 6, 1990 Chemist

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing

Certification: <u>E765</u>

CLIENT: WOODWARD-CLYDE PROJECT #: 90C0039D SAMPLE ID: F8-1

DATE RECEIVED: 08/22/1990 DATE EXTRACTED: 09/04/1990 DATE COMPLETED: 09/05/1990 DATE SAMPLED: 08/16/1990

<del></del>		•
	CONCENTRATION [mg/Kg (ppm)]	DETECTION LIMIT [mg/Kg (ppm)]
Silver Arsenic Barium Beryllium Cadmium Cobalt Chromium Copper Mercury Molybdenum Nickel Lead Antimony Selenium Thallium Vanadium Zinc	<0.5 14.7 70.5 <0.5 <1.0 4.0 36.6 24.9 2.6 <1.0 16.7 386 3.3 4.2 36.4 17.4 113	0.5 1.0 0.1 0.5 1.0 1.0 0.5 0.5 1.0 1.0 3.0 3.0 3.0 3.0
		<b>0.</b> 5

This detection limit for soil is based on the dilution factor of 50.

The determinations of Mercury, Arsenic, and Selenium by methods 6010 or 200.7 are subjected to many interferences. For more accurate determinations for the above three metals, Atomic Absorption Spectrometric methods are recommended. ICP may be used for scanning or for reference purposes for the three metals only.

> Josie Luiambao September 6, 1990 Josie Quiambao Date Chemist

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: E765

WOODWARD-CLYDE CLIENT:

PROJECT #: 90C0039D

SAMPLE ID: MATRIX SPIKE RECOVERY

DATE RECEIVED: 08/22/1990 DATE EXTRACTED: 09/04/1990 DATE COMPLETED: 09/05/1990

SPIKE	RECOVERY

· ·	
Silver	72%
Arsenic	81%
Barium	75%
Beryllium	85%
Cadmium	
Cobalt	77%
Chromium	71%
Copper	74%
	90%
Mercury	75%
Molybdenum	78%
Nickel	74%
Lead	77%
Antimony	72%
Selenium	84%
Thallium	72%
Vanadium	
Zinc	75%
	75%

Josie Quiambao September 6, 1990 Chemist

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: <u>E765</u>

CLIENT: WOODWARD-CLYDE

PROJECT #: 90C00390 SAMPLE ID: MATRIX SP

MATRIX SPIKE RECOVERY

DUPLICATE

DATE RECEIVED: 08/22/1990

DATE EXTRACTED: 09/04/1990 DATE COMPLETED: 09/05/1990

	SPIKE RECOVERY	
Silver Arsenic Barium	72% 77% 74%	
Beryllium Cadmium Cobalt Chromium Copper Mercury Molybdenum Nickel Lead Antimony Selenium Thallium Vanadium Zinc	84% 75% 70% 73% 88% 73% 74% 74% 76% 71% 82% 69% 72%	

Josie Quiambao September 6, 1990 Chemist

EUREKA LABOR 6790 Florin Sacramento, (916)381-795	CA 95828	Order No.: 90-0 Hazardous Waste Certification No	Testina
CLIENT: WOOD SAMPLE ID: REPORT UNIT: SAMPLE LOCAT	DWARD-CLYDE CONSULTANTS F1-1,F1-2,F1-3,F1-4 COMP ppb (ug/Kg) ION:		8/16/90 08/22/90 08/28/90 08/29/90 1.00
CAS#	COMPOUND	RESULT	DET.LIMIT
1. PRIORITY	POLLUTANT ACID COMPOUNDS		
108-95-2 95-57-8 88-75-5 105-67-9 120-83-2 59-50-7 88-06-2 51-28-5 100-02-7 534-52-1 87-86-5	Phenol 2-Chlorophenol 2-Nitrophenol 2,4-Dimethylphenol 2,4-Dichlorophenol 4-Choro-3-methylphenol 2,4,6-Trichlorophenol 2,4-Dinitrophenol 4-Nitrophenol 2-Methyl-4,6-Dinitrophenol Pentachlorophenol	ND	150 150 150 150 150 150 150 800 800 800
<u>II. PRIORI</u>	TY POLLUTANT BASE/NEUTRAL	<u>COMPOUNDS</u>	
67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9	N-Nitrosodimethylamine Bis (2-Chloroethyl) ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene	ND ND ND ND ND	150 150 150 150 150 150 150 150 150 150
121-14-2 606-20-2 86-73-7 84-66-2 7005-72-3 86-30-6 101-55-3	2,4-Dinitrotoluene 2,6-Dinitrotoluene Fluorene Diethyl phthalate 4-Chlorophenyl phenyl eth N-Nitrosodiphenylamine 4-Bromophenyl phenyl ethe	ND ND ND ND	300 300 150 150 150 300

39618-32-9   Bis(2-Chloroisopropyl) ether   ND   150	CLIENT: WOOI SAMPLE ID: I	OWARD-CLYDE CONSULTANTS Order F1-1,F1-2,F1-3,F1-4 COMP	No.: 90-08-	215
### Shoots  ### Shoots  ### Shoots  ### Shoots  ### Shoots  ## Shoots  ### Sho				
120-12-7	39638-32-9	Bis(2-Chloroisopropyl)ether	N.T.	
120-12-7   Anthracene	85-01-8	Phenanthrene		
150	120-12-7	Anthracene		
205-44-0   Fluoranthene   ND   150				
Senaldine   Ni		Fluoranthene		
111-91   S15(2-Chloroethoxy) methane				
159-00-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-		Bis(2-Chloroethoxy)methane		
Simple		Pyrene		
3,1-94-1   3,3-Dichlorobenzidine   ND   300		Butyl benzyl phthalate		
218-01-9   Chrysene	. —	3,3-Dichlorobenzidine		
Benzo (a) anthracene   ND   150		Chrysene		
117-018-9   Benzo (k) fluoranthene   ND   1500		Benzo(a)anthracene	removed a result of the contract of the contra	
207-09-9 Benzo(k) fluoranthene 205-99-2 Benzo(b) fluoranthene ND 150 50-32-8 Benzo(a) pyrene ND 150 193-39-5 Indeno(1,2,3-cd) pyrene ND 150 191-24-2 Benzo(a,h) anthracene ND 150 191-24-2 Benzo(g,h,i) perylene ND 150 180 180 180 180 180 180 180 180 180 18		Bis(2-Ethylhexyl)phthalate		
Senzo(B) fluoranthene		Benzo(k)fluoranthene		
193-39-5		Benzo(b)fluoranthene		
153-370-3		Benzo(a)pyrene		
191-24-2		Indeno(1,2,3-cd)pyrene		
Table   Tabl		Dibenzo(a,h)anthracene	ND	
Table   Tabl		Benzo(g,h,i)perylene	ND	
319-84-6   a-BHC   ND   500	. 70 33-1	Isopnorone	ND	
58-89-9	III. PESTIC	<u>Ides</u>		
58-89-9 g-BHC ND 500 319-85-7 b-BHC ND 500 319-86-8 d-BHC ND 500 76-44-8 Heptachlor ND 500 309-00-2 Aldrin ND 500 60-57-1 Dieldrin ND 500 72-55-9 4,4'-DDE ND 500 959-98-8 Endosulfan I ND 1000 72-20-8 Endorin ND 1000 72-54-8 4,4'-DDD ND 1000 50-29-3 4,4'-DDT ND 500 1031-07-8 Endosulfan sulfate ND 500 50-29-3 Toxaphene ND 500 8001-35-2 Toxaphene ND 1000 VV. HAZARDOUS SUBSTANCES LIST  62-53-3 Aniline ND 150 95-48-7 0-Cresol ND 150 95-48-7 0-Cresol ND 150 106-44-5 p-Cresol ND 150 65-85-0 Benzoic acid ND 150 106-47-8 4-Chlorogniling ND 150 106-47-8 4-Chlorogniling ND 150 106-47-8 4-Chlorogniling ND 150 106-47-8 4-Chlorogniling ND 150 ND 150	319-84-6	a-BHC		
319-85-7   b-BHC   ND   500	58-89-9			
319-86-8 d-BHC ND 500 76-44-8 Heptachlor ND 500 309-00-2 Aldrin ND 500 1024-57-3 Heptachlor epoxide ND 500 60-57-1 Dieldrin ND 500 72-55-9 4,4'-DDE ND 500 959-98-8 Endosulfan I ND 1000 72-20-8 Endrin ND 1000 72-20-8 Endrin ND 1000 72-54-8 4,4'-DDD ND 500 50-29-3 4,4'-DDT ND 500 50-29-3 4,4'-DDT ND 500 57-74-9 Chlorodane ND 500 8001-35-2 Toxaphene ND 5000 PCB ND 10000 PCB ND 1500  IV. HAZARDOUS SUBSTANCES LIST  62-53-3 Aniline ND 150 95-48-7 0-Cresol ND 150 95-48-7 0-Cresol ND 150 106-44-5 p-Cresol ND 150 106-47-8 4-Chlorogapiling	319-85-7	•		
76-44-8 Heptachlor 309-00-2 Aldrin 1024-57-3 Heptachlor epoxide ND 500 60-57-1 Dieldrin 72-55-9 4,4'-DDE 959-98-8 Endosulfan I 33213-65-9 Endosulfan II ND 72-20-8 Endrin ND 500 50-29-3 4,4'-DDT 1031-07-8 Endosulfan sulfate ND 500 57-74-9 Chlorodane ND 500 ND 500 ND 1000 ND 1000 ND 1000 ND 1000 ND 1000 ND 1000 ND 1000 ND 1000 ND 10000 ND 10000 ND 10000 ND 10000 ND 10000 ND 10000 ND 10000 ND 10000 ND 10000 ND 150 150 165-85-0 Benzoic acid ND 150 150 166-47-8 4-Chlorogniling				
309-00-2 Aldrin 1024-57-3 Heptachlor epoxide ND 500 60-57-1 Dieldrin 72-55-9 4,4'-DDE 959-98-8 Endosulfan I 33213-65-9 Endosulfan II ND 1000 72-20-8 Endrin 72-54-8 4,4'-DDD 1000 50-29-3 4,4'-DDT 1031-07-8 Endosulfan sulfate ND 500 57-74-9 Chlorodane ND 8001-35-2 Toxaphene PCB ND 1000  IV. HAZARDOUS SUBSTANCES LIST   62-53-3 Aniline 100-51-6 Benzyl alcohol 95-48-7 o-Cresol 106-44-5 p-Cresol 106-47-8 4-Chlorogniline ND 150 800 150 800 150 800 800 800 800 800 800 800 800 800 8		Heptachlor		
1024-57-3 Heptachlor epoxide 60-57-1 Dieldrin 72-55-9 4,4'-DDE 959-98-8 Endosulfan I 33213-65-9 Endosulfan II ND 1000 72-20-8 Endrin 72-54-8 4,4'-DDD 500 500-29-3 4,4'-DDT 1031-07-8 Endosulfan sulfate 1031-07-8 Endosulfan sulfate 1000 1000 1000 1000 1000 1000 1000 10				A contract of the contract of
Dieldrin	1024-57-3			
72-55-9 4,4'-DDE 500 959-98-8 Endosulfan I ND 500 33213-65-9 Endosulfan II ND 1000 72-20-8 Endrin ND 1000 50-29-3 4,4'-DDD ND 500 1031-07-8 Endosulfan sulfate ND 1000 8001-35-2 Toxaphene ND 10000 PCB ND 10000  IV. HAZARDOUS SUBSTANCES LIST  62-53-3 Aniline ND 150 100-51-6 Benzyl alcohol ND 150 95-48-7 0-Cresol ND 150 106-44-5 p-Cresol ND 150 150 106-47-8 4-Chlorogniling		Dieldrin	•	
33213-65-9 Endosulfan II  33213-65-9 Endosulfan II  72-20-8 Endrin  72-54-8 4,4'-DDD  50-29-3 4,4'-DDT  1031-07-8 Endosulfan sulfate  57-74-9 Chlorodane  8001-35-2 Toxaphene  PCB  ND  10000  IV. HAZARDOUS SUBSTANCES LIST   62-53-3 Aniline  100-51-6 Benzyl alcohol  95-48-7 o-Cresol  106-44-5 p-Cresol  65-85-0 Benzoic acid  106-47-8 4-Chlorogniling				
33213-65-9 Endosulfan II 72-20-8 Endrin 72-54-8 4,4'-DDD 50-29-3 4,4'-DDT 1031-07-8 Endosulfan sulfate 57-74-9 Chlorodane 8001-35-2 Toxaphene PCB  100-51-6 Benzyl alcohol 95-48-7 o-Cresol 106-44-5 p-Cresol 65-85-0 Benzoic acid 106-47-8 4-Chloroganiling				
72-20-8 Endrin 72-54-8 4,4'-DDD ND 1000 50-29-3 4,4'-DDT ND 500 1031-07-8 Endosulfan sulfate ND 1000 57-74-9 Chlorodane ND 5000 8001-35-2 Toxaphene ND 10000 PCB ND 10000  IV. HAZARDOUS SUBSTANCES LIST  62-53-3 Aniline ND 150 95-48-7 o-Cresol ND 150 150 106-44-5 p-Cresol ND 150 150 150 150 150 150 150 150 150 150		Endosulfan II		
ND   500   1031-07-8   Endosulfan sulfate   ND   1000   1000   1000   1000   1000   1000   1000   1000   1000   100000   1000000   1000000   1000000   1000000   1000000   10000000   100000000		Endrin		
1031-07-8 Endosulfan sulfate 57-74-9 Chlorodane 8001-35-2 Toxaphene PCB  1031-07-8 Endosulfan sulfate ND 1000 1000 1000 1000 100000 10000 10000 100000		4,4'-DDD		
### 1031-07-8				
S7-74-9   Chlorodane   ND   5000		Endosulfan sulfate		
Toxaphene PCB  Toxaphene PCB  ND  10000  IV. HAZARDOUS SUBSTANCES LIST  62-53-3  Aniline 100-51-6  Benzyl alcohol 95-48-7  0-Cresol 106-44-5  P-Cresol 65-85-0  Benzoic acid 106-47-8  4-Chloroaniline ND  150 ND  150 ND  150 ND  150 ND  150 ND  150 ND  150 ND  150 ND  150 ND  150 ND  150 ND  150 ND  150 ND  150 ND		Chlorodane		
PCB ND 10000  IV. HAZARDOUS SUBSTANCES LIST  62-53-3 Aniline ND 150 100-51-6 Benzyl alcohol ND 150 95-48-7 o-Cresol ND 150 106-44-5 p-Cresol ND 150 65-85-0 Benzoic acid ND 150 106-47-8 4-Chloroaniline	8001-35-2	Toxaphene		
IV. HAZARDOUS SUBSTANCES LIST         62-53-3       Aniline       ND       150         100-51-6       Benzyl alcohol       ND       150         95-48-7       o-Cresol       ND       150         106-44-5       p-Cresol       ND       150         65-85-0       Benzoic acid       ND       150         106-47-8       4-Chlorogniling       ND       800				
62-53-3 Aniline ND 150 100-51-6 Benzyl alcohol ND 150 95-48-7 o-Cresol ND 150 106-44-5 p-Cresol ND 150 65-85-0 Benzoic acid ND 150 106-47-8 4-Chlorospiline	IV. HAZARDOU	S SUBSTANCES LIST		10000
100-51-6 Benzyl alcohol ND 150 95-48-7 o-Cresol ND 150 106-44-5 p-Cresol ND 150 65-85-0 Benzoic acid ND 150 106-47-8 4-Chloroaniline				
95-48-7 o-Cresol ND 150 106-44-5 p-Cresol ND 150 65-85-0 Benzoic acid ND 150 106-47-8 4-Chlorospiling			ND	150
106-44-5 p-Cresol ND 150 65-85-0 Benzoic acid ND 150 106-47-8 4-Chlorospiline		penzyl alconol	ND	
65-85-0 Benzoic acid ND 150 106-47-8 4-Chlorospiline 800			ND	
106-47-8 4-Chloroaniline		Procesor	ND	
nd 150		4=Chloroppilie		800
		- curotoquitile	ND	150

CLIENT: WOOL SAMPLE ID: F	DWARD-CLYDE CONSULTANTS F1-1,F1-2,F1-3,F1-4 COMP	Order No.:	90-08-215	
95-95-4 88-74-4 99-09-2 132-64-9 100-01-6	2,4,5-Trichlorophenol 2-Nitroaniline 3-Nitroaniline Dibenzofuran 4-Nitroaniline		ND ND ND ND	800 800 800 150 800

Chemist

Chung P. Li, Ph.D.

09/01/90

Date

ND=NOT DETECTED AT OR BELOW DETECTION LIMIT NA=NOT AVAILABLE

EUREKA LABOR	RATORIES, INC.	Order No		
6790 Florin Perkins Road Sacramento, CA 95828		Order No.: 90-08-215		
		Hazardous Waste Te	sting	
(916)381-795	53	Certification No.:	E765	
CLIENT: WOO	DWARD-CLYDE CONSULTANTS	_		
	F8-1	DATE SAMPLED: 08/	16/90	
REPORT UNIT:		DATE RECEIVED: 08	/22/90	
SAMPLE LOCAT		DATE EXTRACTED: 0	8/28/90	
DAME TO TOCK!	TON:	DATE COMPLETED: 0	8/29/90	
		DILUTION FACTOR:	1.00	
CAS#	COMPOUND	RESULT	DET.LIMIT	
I. PRIORIT	Y POLLUTANT ACID COMPOUNDS			
			-	
108-95-2	Phenol	ND	150	
95-57-8	2-Chlorophenol	ND	150	
88-75-5	2-Nitrophenol	ND	150	
105-67-9	2,4-Dimethylphenol		150	
120-83-2	2,4-Dichlorophenol	ND	150	
59-50-7	4-Choro-3-methylphenol	ND	150	
88-06-2	2 4 6-Weighland	ND	150	
51-28-5	2,4,6-Trichlorophenol	ND	150	
100-02-7	2,4-Dinitrophenol	ND	800	
534-52-1	4-Nitrophenol	ND	800	
	2-Methyl-4,6-Dinitropheno	l ND	800	
87-86-5	Pentachlorophenol	ND	150	
II. PRIORI	TY POLLUTANT BASE/NEUTRAL CO	OMPOUNDS		
62-75-9	N-Nitrosodimethylamine	·		
111-44-4	Bis(2-Chlorothylamine	ND	150	
541-73-1	Bis(2-Chloroethy1)ether	ND	150	
95-50-1	1,3-Dichlorobenzene	ND	150	
106-46-7	1,2-Dichlorobenzene	ND	150	
	1,4-Dichlorobenzene	ND	150	
118-74-1	Hexachlorobenzene	· · · · · · · · · · · · · · · · · · ·		
67-72-1	Hexachloroethane	ND	150	
621-64-7	N-Nitrosodi-n-propylamine		150	
98-95-3	Nitrobenzene	ND	150	
117-84-0	Di-n-octyl phthalate	ND	150	
120-82-1	1,2,4-Trichlorobenzene	ND	150	
91-20-3	Naphthalene	ND	150	
87-68-3	Hexachlorobutadiene	ND	150	
91-57-6	2-Mothard months	ND	150	
77-47-4	2-Methylnaphthalene	ND	150	
91-58-7	Hexachlorocyclopentadiene	ND	150	
	2-Chloronaphthalene	ND	150	
131-11-3	Dimethyl phthalate	ND	150	
208-96-8	Acenaphthylene	ND		
83-32-9	Acenaphthene	ND	150	
121-14-2	2,4-Dinitrotoluene	ND	150	
606-20-2	2,6-Dinitrotoluene		300	
86-73-7	Fluorene	ND	300	
84-66-2	Diethyl phthalate	ND	150	
7005-72-3	4-Chlorophania	ND	150	
86-30-6	4-Chlorophenyl phenyl ethe		150	
101-55-3	M-Nitrosodiphenvlamine	ND	300	
T0T-00-0	4-Bromophenyl phenyl ether	ND	150	
			<del>-</del>	

CLIENT: WOOL SAMPLE ID: F	DWARD-CLYDE CONSULTANTS 8-1	Order	No.: 90-08-215	5
39638-32-9 85-01-8 120-12-7	Phenanthrene Anthracene	er	ND 153 ND	150 150 150
84-74-2 206-44-0 92-87-5	Di-n-butyl phthalate Fluoranthene Benzidine		ND 293	150 150
111-91-1 129-00-0 85-68-7	Bis(2-Chloroethoxy)methand Pyrene Butyl benzyl phthalate	8	ND ND 271	1200 300 150
91-94-1 218-01-9 56-55-3	3,3-Dichlorobenzidine Chrysene Benzo(a)anthracene	e an ann an an an an an an an an an an an	ND ND 175	150 300 150
117-81-7 207-08-9 205-99-2	Bis(2-Ethylhexyl)phthalate Benzo(k)fluoranthene Benzo(b)fluoranthene	3	ND ND ND ND	150 1000 150
50-32-8 193-39-5 53-70-3	Benzo(a) pyrene Indeno(1,2,3-cd) pyrene Dibenzo(a,h) anthracene		ND ND ND	150 150 150
191-24-2 78-59-1	Benzo(g,h,i)perylene Isophorone	·	ND ND	150 150 150
III. PESTIC	<u>IDES</u>			
319-84-6 58-89-9 319-85-7 319-86-8 76-44-8 309-00-2 1024-57-3 60-57-1	a-BHC g-BHC b-BHC d-BHC Heptachlor Aldrin Heptachlor epoxide Dieldrin		ND ND ND ND ND ND	500 500 500 500 500 500
72-55-9 959-98-8 33213-65-9 72-20-8 72-54-8 50-29-3 1031-07-8	4,4'-DDE Endosulfan I Endosulfan II Endrin 4,4'-DDD 4,4'-DDT		ND ND ND ND ND ND	500 500 1000 1000 1000 500 500
57-74-9 8001-35-2	Endosulfan sulfate Chlorodane Toxaphene PCB			1000 5000 10000
IV. HAZARDOU	S SUBSTANCES LIST			
62-53-3 100-51-6 95-48-7 106-44-5 65-85-0 106-47-8	Aniline Benzyl alcohol o-Cresol p-Cresol Benzoic acid 4-Chloroaniline		ND ND ND ND	150 150 150 150 800
<b></b>	· outoroguttius		ND	150

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE ID: F8-1	Order No.:	90-08-215	
95-95-4 2,4,5-Trichlorophenol		ND	800
88-74-4 2-Nitroaniline		ND	800
99-09-2 3-Nitroaniline		ND	800
132-64-9 Dibenzofuran		ND	150
100-01-6 4-Nitroaniline		ND	800

Chemist Chung

09/01/90

Chung P. Li, Ph.D.

Date

ND=NOT DETECTED AT OR BELOW DETECTION LIMIT NA=NOT AVAILABLE

EUREKA LABORATORIES, INC. 6790 Florin Perkins Road Sacramento, CA 95828 (916)381-7953		Order No.: 90-08-215 Hazardous Waste Testing Certification No.: E765	
CLIENT: WOO SAMPLE ID: REPORT UNIT: SAMPLE LOCAT	DWARD-CLYDE CONSULTANTS METHOD BLANK ppb (ug/Kg) ION:	DATE SAMPLED: DATE RECEIVED: DATE EXTRACTED: DATE COMPLETED: DILUTION FACTOR:	08/22/90 08/28/90 08/29/90 1.00
CAS#	COMPOUND	RESULT	DET.LIMIT
I. PRIORIT	Y POLLUTANT ACID COMPOUNDS	·	
108-95-2 95-57-8 88-75-5 105-67-9 120-83-2 59-50-7 88-06-2 51-28-5 100-02-7 534-52-1 87-86-5	Phenol 2-Chlorophenol 2-Nitrophenol 2,4-Dimethylphenol 2,4-Dichlorophenol 4-Choro-3-methylphenol 2,4,6-Trichlorophenol 2,4-Dinitrophenol 4-Nitrophenol 2-Methyl-4,6-Dinitrophenol Pentachlorophenol TY POLLUTANT BASE/NEUTRAL	ND	150 150 150 150 150 150 800 800 800
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene	ND ND ND ND	150 150 150 150 150
67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9 121-14-2 606-20-2 86-73-7 84-66-2 7005-72-3 86-30-6	Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene 2,4-Dinitrotoluene 2,6-Dinitrotoluene Fluorene Diethyl phthalate 4-Chlorophenyl phenyl et	ND ND ND ND ND ND ND ND ND ND ND ND ND N	150 150 150 150 150 150 150 150 150 150
101-55-3	N-Nitrosodiphenylamine 4-Bromophenyl phenyl ethe	ND ND	300 150

CLIENT: WOOI SAMPLE ID: N	OWARD-CLYDE CONSULTANTS METHOD BLANK	Order No.:	90-08-21	5
39638-32-9 85-01-8 120-12-7 84-74-2 206-44-0 92-87-5 111-91-1 129-00-0 85-68-7 91-94-1 218-01-9 56-55-3 117-81-7 207-08-9 205-99-2 50-32-8 193-39-5 53-70-3 191-24-2 78-59-1	Bis(2-Chloroisopropyl)eth Phenanthrene Anthracene Di-n-butyl phthalate Fluoranthene Benzidine Bis(2-Chloroethoxy)methan Pyrene Butyl benzyl phthalate 3,3-Dichlorobenzidine Chrysene Benzo(a)anthracene Bis(2-Ethylhexyl)phthalate Benzo(k)fluoranthene Benzo(b)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene Benzo(g,h,i)perylene Isophorone	<b>e</b>	ND ND ND ND ND ND ND ND ND ND ND ND ND N	150 150 150 150 150 1200 300 150 150 150 150 150 150 150 150
III. PESTIC	DES			
319-84-6 58-89-9 319-85-7 319-86-8 76-44-8 309-00-2 1024-57-3 60-57-1 72-55-9 959-98-8 33213-65-9 72-20-8 72-20-8 72-54-8 50-29-3 1031-07-8 57-74-9 8001-35-2	a-BHC g-BHC b-BHC d-BHC Heptachlor Aldrin Heptachlor epoxide Dieldrin 4,4'-DDE Endosulfan I Endosulfan II Endrin 4,4'-DDD 4,4'-DDT Endosulfan sulfate Chlorodane Toxaphene PCB			500 500 500 500 500 500 500 1000 1000 500 1000 1000 1000
	S SUBSTANCES LIST			
62-53-3 100-51-6 95-48-7 106-44-5 65-85-0 106-47-8	Aniline Benzyl alcohol o-Cresol p-Cresol Benzoic acid 4-Chloroaniline	1 1 1 1	ND ND ND ND ND ND	150 150 150 150 800 150

CLIENT: WOOL SAMPLE ID: M	WARD-CLYDE CONSULTANTS ETHOD BLANK	Order No.:	90-08-215	
95-95-4 88-74-4 99-09-2 132-64-9 100-01-6	2,4,5-Trichlorophenol 2-Nitroaniline 3-Nitroaniline Dibenzofuran 4-Nitroaniline		ND ND ND ND	800 800 800 150 800

Chemist

Chung P. Li, Ph.D.

09/01/90

Date

ND=NOT DETECTED AT OR BELOW DETECTION LIMIT NA=NOT AVAILABLE

UREKA LABOR	ATORIES, INC.	Order No.: 90-08-215		
	Perkins Road	Hazardous Waste Testing		
acramento,		Certification No.: E765		
916)381-795	3			
LIENT: WOO	DWARD-CLYDE CONSULTANTS	DATE SAMPLED:		
	SPIKE RECOVERY	DATE RECEIVED: 08/22/90		
EPORT UNIT:	<b>%</b>	DATE EXTRACTED: 08/28/90		
AMPLE LOCAT	ION:	DATE COMPLETED: 08/29/90		
CAS#	COMPOUND	RESULT		
I. PRIORIT	Y POLLUTANT ACID COMPOUNDS			
		<b>4</b>		
108-95-2	Phenol	82%		
95-57-8	2-Chlorophenol	95%		
88-75-5	2-Nitrophenol	NA		
105-67-9	2,4-Dimethylphenol	NA		
120-83-2	2,4-Dichlorophenol	NA		
59-50-7	4-Choro-3-methylphenol	97%		
88-06-2	2,4,6-Trichlorophenol	NA		
51-28 <b>-</b> 5	2,4-Dinitrophenol	NA NA		
100-02-7	4-Nitrophenol	81%		
534-52-1 2-Methyl-4,6-Dinitroph		nol NA		
87-86-5	Pentachlorophenol	102%		
II. PRIORI	TY POLLUTANT BASE/NEUTRAL	COMPOUNDS		
CO 775 6				
62-75-9	N-Nitrosodimethylamine	NA		
111-44-4	Bis(2-Chloroethyl)ether	NA NA		
111-44-4 541-73-1	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene	NA NA NA		
111-44-4 541-73-1 95-50-1	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene	NA		
111-44-4 541-73-1 95-50-1 106-46-7	Bis(2-Chloroethy1)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene	NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene	NA NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane	NA NA NA 87% NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin	NA NA NA 87% NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin	NA NA NA 87% NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate	NA NA NA 87% NA NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene	NA NA NA 87% NA NA NA NA NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene	NA NA 87% NA NA NA NA NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene	NA NA 87% NA NA NA NA NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6	Bis(2-Chloroethyl) ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene	NA NA NA 87% NA NA NA NA NA NA NA NA NA NA NA NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadien	NA NA NA 87% NA NA NA NA NA NA NA NA NA NA NA NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadien 2-Chloronaphthalene	NA NA 87% NA NA NA NA NA 76% NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadier 2-Chloronaphthalene Dimethyl phthalate	NA NA NA 87% NA NA NA NA NA NA NA NA NA NA NA NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadier 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene	NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadier 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene	NA NA NA 87% NA NA NA NA NA NA NA NA NA NA NA NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9 121-14-2	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadier 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene 2,4-Dinitrotoluene	NA NA NA 87% NA NA NA NA NA NA 76% NA NA NA NA NA NA NA NA NA NA NA NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9 121-14-2 606-20-2	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadien 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene 2,4-Dinitrotoluene 2,6-Dinitrotoluene	NA NA NA 87% NA NA NA NA NA NA NA NA NA NA NA NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9 121-14-2 606-20-2 86-73-7	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadier 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene 2,4-Dinitrotoluene Fluorene	NA NA NA 87% NA NA NA NA NA NA NA NA NA NA NA NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9 121-14-2 606-20-2 86-73-7 84-66-2	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadier 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene 2,4-Dinitrotoluene Fluorene Diethyl phthalate	NA NA NA 87% NA NA NA NA NA 76% NA NA NA NA NA NA NA NA NA NA NA NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9 121-14-2 606-20-2 86-73-7 84-66-2 7005-72-3	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadier 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene 2,4-Dinitrotoluene Fluorene Diethyl phthalate 4-Chlorophenyl phenyl et	NA NA NA 87% NA NA NA NA NA 76% NA NA NA NA NA NA NA NA NA NA NA NA NA		
111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9 121-14-2 606-20-2 86-73-7 84-66-2	Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamin Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadier 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene 2,4-Dinitrotoluene Fluorene	NA		

CLIENT: WOOD	WARD-CLYDE CONSULTANTS Order No.	90-08-215
SAMPLE ID: S	PIKE RECOVERY	
•		
39638-32-9	Bis(2-Chloroisopropyl)ether	. 313
85-01 <b>-</b> 8	Phenanthrene	NA NA
120-12-7	Anthracene	NA NA
84-74-2	Di-n-butyl phthalate	NA
206-44-0	Fluoranthene	NA
92-87-5	Benzidine	NA
111-91-1	Bis(2-Chloroethoxy)methane	NA
129-00-0	Pyrene	85%
85-68-7	Butyl benzyl phthalate	NA
91-94-1	3,3-Dichlorobenzidine	NA
218-01-9	Chrysene	NA
56 <b>-55-</b> 3	Benzo(a)anthracene	NA
117-81-7	Bis(2-Ethylhexyl)phthalate	NA
207-08-9	Benzo(k)fluoranthene	NA
205-99-2	Benzo(b) fluoranthene	NA
50-32-8	Benzo(a)pyrene	NA
193-39-5	Indeno(1,2,3-cd)pyrene	NA
53-70-3	Dibenzo(a,h)anthracene	NA
191-24-2	Benzo(g,h,i)perylene	NA
78-59-1	Isophorone	NA
III DEGETAT		
III. PESTICI	DES	
319-84-6	a-BHC	
58-89-9	g-BHC	NA
319-85-7	b-BHC	NA
319-86-8	d-BHC	NA
76-44-8	Heptachlor	NA
309-00-2	Aldrin	NA
1024-57-3	Heptachlor epoxide	NA
60-57-1	Dieldrin	NA
72-55-9	4,4'-DDE	" NA
959-98-8	Endosulfan I	NA
33213-65-9	Endosulfan II	NA
72-20-8	Endrin	NA Na
72-54-8	4,4'-DDD	NA Na
50-29-3	4,4'-DDT	NA NA
1031-07-8	Endosulfan sulfate	NA NA
57-74-9	Chlorodane	NA NA
8001-35-2	Toxaphene	NA NA
	PCB .	NA NA
		***
IV. HAZARDOU	S SUBSTANCES LIST	
62-53-3	Aniline	313
100-51-6	Benzyl alcohol	NA NA
95-48-7	o-Cresol	NA NA
106-44-5	p-Cresol	NA NA
65-85-0	Benzoic acid	NA NA
106-47-8	4-Chloroaniline	NA NA
	",	

CLIENT: WOODWARD-CLYDE CONSULTA SAMPLE ID: SPIKE RECOVERY	ANTS Order No.: 90-08-215
95-95-4 88-74-4 99-09-2 132-64-9 100-01-6 2,4,5-Trichloroph 2-Nitroaniline 3-Nitroaniline 4-Nitroaniline	nenol NA NA NA NA NA

Chemist

Chung P. Li, Ph.D.

09/01/90

Date

ND=NOT DETECTED AT OR BELOW DETECTION LIMIT NA=NOT AVAILABLE

790 Florin E acramento, C		Order No.: 90- Hazardous Waste Certification N	: Testing
916)381-7953	3	00101110001011	J. 2705
	WARD-CLYDE CONSULTANTS	DATE SAMPLED:	
AMPLE ID: S	SPIKE RECOVERY DUPLICATE	DATE RECEIVED:	08/22/90
EPORT UNIT:	<b>%</b>	DATE EXTRACTED:	
AMPLE LOCATI	CON:	DATE COMPLETED:	
CAS#	COMPOUND	RESULT	
I. PRIORITY	POLLUTANT ACID COMPOUNDS		
108-95-2	Phenol	89%	
95-57-8	2-Chlorophenol	102%	
88-75-5	2-Nitrophenol		
105-67-9	2,4-Dimethylphenol	NA NA	
120-83-2	2,4-Dichlorophenol		
59-50-7	4-Choro-3-methylphenol	NA OO%	
88-06-2	2,4,6-Trichlorophenol	98%	
51-28-5	2,4-Dinitrophenol	NA NA	
100-02-7	4-Nitrophenol	90%	
534-52-1	2-Methyl-4,6-Dinitropheno	ol NA	•
87-86-5	Pentachlorophenol	110%	
II. PRIORI	TY POLLUTANT BASE/NEUTRAL C	COMPOUNDS	
62-75-9	N-Nitrosodimethylamine	OMPOUNDS	
62-75 <b>-</b> 9 111-44-4	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether	NA	
62-75-9 111-44-4 541-73-1	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene	NA NA	
62-75-9 111-44-4 541-73-1 95-50-1	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene	NA NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene	NA NA NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene	NA NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane	NA NA NA NA 89% NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine	NA NA NA NA 89% NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene	NA NA NA NA 89% NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate	NA NA NA NA 89% NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene	NA NA NA NA 89% NA NA 101%	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene	NA NA NA NA 89% NA NA 101% NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene	NA NA NA NA 89% NA NA 101% NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene	NA NA NA 89% NA NA 101% NA NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadiene	NA NA NA 89% NA NA 101% NA NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene	NA NA NA 89% NA NA 101% NA NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene Dimethyl phthalate	NA NA NA 89% NA NA 101% NA NA NA NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene	NA NA NA 89% NA NA 101% NA NA NA NA NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene	NA NA NA 89% NA NA 101% NA NA NA NA NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9 121-14-2	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene 2,4-Dinitrotoluene	NA NA NA 89% NA NA 101% NA NA 77% NA NA NA NA NA NA NA NA NA NA NA NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9 121-14-2 606-20-2	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene Dimethyl phthalate Acenaphthene Acenaphthene 2,4-Dinitrotoluene 2,6-Dinitrotoluene	NA NA NA 89% NA NA 101% NA NA 77% NA NA NA NA NA NA NA NA NA NA NA NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9 121-14-2 606-20-2 86-73-7	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene 2,4-Dinitrotoluene 2,6-Dinitrotoluene Fluorene	NA NA NA 89% NA NA 101% NA NA 77% NA NA NA NA NA NA NA NA NA NA NA NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9 121-14-2 606-20-2 86-73-7 84-66-2	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene 2,4-Dinitrotoluene Fluorene Diethyl phthalate	NA NA NA 89% NA NA 101% NA NA 77% NA NA NA NA NA NA NA NA NA NA NA NA NA	
62-75-9 111-44-4 541-73-1 95-50-1 106-46-7 118-74-1 67-72-1 621-64-7 98-95-3 117-84-0 120-82-1 91-20-3 87-68-3 91-57-6 77-47-4 91-58-7 131-11-3 208-96-8 83-32-9 121-14-2 606-20-2 86-73-7	N-Nitrosodimethylamine Bis(2-Chloroethyl)ether 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobenzene Hexachloroethane N-Nitrosodi-n-propylamine Nitrobenzene Di-n-octyl phthalate 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene 2,4-Dinitrotoluene 2,6-Dinitrotoluene Fluorene	NA NA NA 89% NA NA 101% NA NA 77% NA NA NA NA NA NA NA NA NA NA NA NA NA	

4-Bromophenyl phenyl ether

NA

CLIENT: WOO SAMPLE ID:	DWARD-CLYDE CONSULTANTS Order SPIKE RECOVERY DUPLICATE	r No.: 90-08-215
39638-32- 85-01-8 120-12-7 84-74-2 206-44-0 92-87-5 111-91-1 129-00-0 85-68-7 91-94-1 218-01-9 56-55-3 117-81-7 207-08-9 205-99-2 50-32-8 193-39-5 53-70-3 191-24-2	Bis(2-Chloroisopropyl)ether Phenanthrene Anthracene Di-n-butyl phthalate Fluoranthene Benzidine Bis(2-Chloroethoxy)methane Pyrene Butyl benzyl phthalate 3,3-Dichlorobenzidine Chrysene Benzo(a)anthracene Bis(2-Ethylhexyl)phthalate Benzo(k)fluoranthene Benzo(b)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene Benzo(g,h,i)perylene	NA NA NA NA NA NA NA NA NA NA NA NA NA N
78-59-1	Isophorone	NA NA
III. PESTIC	IDES	
319-84-6 58-89-9 319-85-7 319-86-8 76-44-8 309-00-2 1024-57-3 60-57-1 72-55-9 959-98-8 33213-65-9 72-20-8 72-54-8 50-29-3 1031-07-8 57-74-9 8001-35-2	Endrin 4,4'-DDD 4,4'-DDT Endosulfan sulfate Chlorodane Toxaphene PCB	NA NA NA NA NA NA NA NA NA NA NA NA NA N
	S SUBSTANCES LIST	
62-53-3 100-51-6 95-48-7 106-44-5 65-85-0 106-47-8	Aniline Benzyl alcohol o-Cresol p-Cresol Benzoic acid 4-Chloroaniline	NA NA NA NA NA

			<u></u>	
CLIENT: WOO SAMPLE ID:	DWARD-CLYDE CONSULTANTS SPIKE RECOVERY DUPLICATE	Order No.:	90-08-215	
95-95-4 88-74-4 99-09-2 132-64-9 100-01-6	2,4,5-Trichlorophenol 2-Nitroaniline 3-Nitroaniline Dibenzofuran 4-Nitroaniline		NA NA NA NA	

Chemist

Chung P. Li, Ph.D.

09/01/90

Date

ND=NOT DETECTED AT OR BELOW DETECTION LIMIT NA=NOT AVAILABLE

# POLYCHLORINATED BIPHENYLS (PCB) EPA METHOD 8080

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing

Certification: <u>E765</u>

CLIENT: WOODWARD-CLYDE PROJECT #: 90C0039D

DATE RECEIVED: 08/22/1990 DATE EXTRACTED: 08/24/1990 DATE COMPLETED: 08/29/1990

SAMPLE ID.	DATE SAMPLED	PCB CONTENT	AROCHLOR TYPE	D/L [mg/Kg(ppm)]
F1-1,2,3,4 COMP F5-1 F8-1 F9-I F10-1 F12-1A F13-1 F14-1 F19-1 F21-1	8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/17/90 8/17/90	<0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1		0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1
BLANK		<0.1		0.1
F13-1 MATRIX SPIN F13-1 MATRIX SPIN	KE RECOVERY - 8: KE RECOVERY DUP.	7% - 89%	1254 1254	

Jeannette Chen

September 6, 1990

Chemist

# OIL AND GREASE EPA METHOD 413.2

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: <u>E765</u>

CLIENT: WOODWARD-CLYDE PROJECT #: 90C0039C

DATE RECEIVED: 08/22/1990 DATE EXTRACTED: 08/30/1990 DATE COMPLETED: 09/01/1990

SAMPLE ID.	DATE SAMPLED	CONCENTRATION [mg/	(g (ppm)] D/L
BLANK	The state of the s	<4	4
F1-1 F1-5 F2-1 F2-3 F5-1 F7-1 F8-1 F9-1 F10-1 F12-1A F13-1 F20-1	08/16/1990 08/16/1990 08/16/1990 08/16/1990 08/16/1990 08/16/1990 08/16/1990 08/16/1990 08/16/1990 08/16/1990 08/16/1990	<4 <4 <4 <9.0 174 28 <4 <4 210 <4 780	4 4 4 4 4 4 4 4 4

F10-1 MATRIX SPIKE RECOVERY - 101% F10-1 MATRIX SPIKE RECOVERY DUP. - 103%

Samir Samaan

<u>September 6, 1990</u> Date

Chemist

#### TOTAL LEAD EPA 6010

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: <u>E765</u>

CLIENT: WOODWARD-CLYDE

PROJECT #: 90C0039D

DATE RECEIVED: 08/22/1990 DATE EXTRACTED: 08/23/1990 DATE COMPLETED: 09/04/1990

#### SAMPLE ID.

#### LEAD [mg/Kg(ppm)]

## DATE SAMPLED

				4.94
F1-1 F1-2 F1-3 F1-4 F1-5 F2-2 F3-3 F4-1 F5-2 F5-3 F6-1 F7-3 F8-3 F9-3 F9-3		8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90 8/16/90		3.5 9.2 29.8 5.5 3.9 5.3 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0 <3.0
F8-2	·	8/16/90		391
F9-1	The second secon	8/16/90	The Control of Control	<3.0
	•			
F9-3 F10-1		8/16/90	•	<3.0
F10-2		8/16/90		4.0
F10-3		8/16/90 8/16/90	N	O SAMPLE
F11-1		8/16/90		6.3 <3.0
F12-1A F12-1B		8/16/90		172
F12-2		8/16/90		9.3
F13-2		8/16/90 8/16/90		4.3
F14-1		8/17/90		<3.0 4.4
F14-2 F14-3	•	8/17/90	•	6.5
L14-3		8/17/90		11.0

WOODWARD-CLYDE September 6, 1990 Page 2 of 2

F15-1 F15-2 F15-3 F15-4 F16-1 F16-2 F16-3 F17-1 F17-2 F18-1 F18-2 F19-1 F20-1 F20-1 F3-1 F3-2 F13-1	8/17/90 8/17/90 8/17/90 8/17/90 8/17/90 8/17/90 8/17/90 8/17/90 8/17/90 8/17/90 8/17/90 8/17/90 8/17/90 8/17/90 8/16/90 8/16/90	4.1 5.7 4.2 <3.0 5.8 4.5 3.9 263 15.8 83.9 21.7 69.1 105 80.6 <3.0 3.2 <3.0
BLANK		<3.0

F15-4 MATRIX SPIKE RECOVERY - 95% F15-4 MATRIX SPIKE RECOVERY DUP. - 91%

F3-2 MATRIX SPIKE RECOVERY - 90% F3-2 MATRIX SPIKE RECOVERY DUP. - 89%

F8-2 MATRIX SPIKE RECOVERY - 87% F8-2 MATRIX SPIKE RECOVERY DUP. - 75%

DETECTION LIMIT: 3.0 [mg/Kg(ppm)]

This detection limit is based on dilution factor of 50.

Josie Quiambao September 6, 1990 Chemist

# TOTAL RECOVERABLE HYDROCARBONS EPA METHOD 418.1

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: <u>E765</u>

CLIENT: WOODWARD-CLYDE PROJECT #: 90C0039C

DATE RECEIVED: 08/22/1990 DATE EXTRACTED: 08/30/1990 DATE COMPLETED: 09/01/1990

SAMPLE ID.	DATE SAMPLED	CONCENTRATION [mg/k	(g (ppm)] D/L
BLANK	· <u>-</u>	<4	4
F1-1 F1-5 F2-1 F2-3 F5-1 F7-1 F8-1 F9-1 F10-1 F12-1A F13-1 F20-1		<4 <4 <4 <4 143 14 <4 <4 4 634	4 4 4 4 4 4 4 4 4 4 4

F10-1 MATRIX SPIKE RECOVERY - 103% F10-1 MATRIX SPIKE RECOVERY DUP. - 106%

Samir Samaan Chemist

September 6, 1990

Date

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: E765

CLIENT: WOODWARD-CLYDE PROJECT #: 90C0039C SAMPLE ID: BLANK

DATE RECEIVED: 08/22/1990 DATE EXTRACTED: 08/30/1990 DATE COMPLETED: 08/31/1990

PETROLEUM HYDROCARBONS	CONCENTRATION [mg/Kg (ppm)]	DETECTION LIMIT [mg/Kg (ppm)]
Gasoline Range Diesel Range Motor Oil Range Total Petroleum Hydrocarbons	<5 <10 <25	5 10 25
CARBON NO. RANGE		
Gasoline Range Diesel Range Motor Oil Range	- -	· · · · · · · · · · · · · · · · · · ·
PEAK CARBON NO		
Gasoline Range Diesel Range Motor Oil Range	• •	<u>-</u> -

Sandia Kao Senior Chemist, Organic Group

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: E765

CLIENT: WOODWARD-CLYDE PROJECT #: 90C0039C SAMPLE ID: F1-1

DATE EXTRACTED: 08/22/1990
DATE EXTRACTED: 08/30/1990
DATE COMPLETED: 08/31/1990
DATE SAMPLED: 08/16/1990

PETROLEUM HYDROCARBONS	CONCENTRATION [mg/Kg (ppm)]	DETECTION LIMIT [mg/Kg (ppm)]
Gasoline Range Diesel Range Motor Oil Range Total Petroleum Hydrocarbons	<5 <10 <25	5 10 25
CARBON NO. RANGE		•
Gasoline Range Diesel Range Motor Oil Range	- -	- - -
PEAK CARBON NO		•
Gasoline Range Diesel Range Motor Oil Range	- -	<del>-</del> -

Sandia Kao

September 6, 1990 Date

Senior Chemist, Organic Group

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: E765

CLIENT: WOODWARD-CLYDE PROJECT #: 90C0039C SAMPLE ID: F5-1

DATE RECEIVED: 08/22/1990
DATE EXTRACTED: 08/30/1990
DATE COMPLETED: 08/31/1990
DATE SAMPLED: 08/16/1990

PETROLEUM HYDROCARBONS	CONCENTRATION [mg/Kg (ppm)]	DETECTION LIMIT [mg/Kg (ppm)]
Gasoline Range Diesel Range Motor Oil Range Total Petroleum Hydrocarbons	<5 <10 <25	5 10 25
CARBON NO. RANGE		
Gasoline Range Diesel Range Motor Oil Range	- -	- -
PEAK CARBON NO		
Gasoline Range Diesel Range Motor Oil Range	· - •	- - -

Sandia Kao Senior Chemist, Organic Group

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: <u>E765</u>

CLIENT: WOODWARD-CLYDE PROJECT #: 90C0039C SAMPLE ID: F8-I

DATE RECEIVED: 08/22/1990 DATE EXTRACTED: 08/30/1990 DATE COMPLETED: 08/31/1990 DATE SAMPLED: 08/16/1990

PETROLEUM HYDROCARBONS	CONCENTRATION [mg/Kg (ppm)]	DETECTION LIMIT [mg/Kg (ppm)]
Gasoline Range Diesel Range Motor Oil Range Total Petroleum Hydrocarbons	<5 <10 57 57	5 10 25
CARBON NO. RANGE		
Gasoline Range Diesel Range Motor Oil Range	- - C18-C28	• · · · · · · · · · · · · · · · · · · ·
PEAK CARBON NO		
Gasoline Range Diesel Range Motor Oil Range	- - C24	- - -

Sandia Kao Senior Chemist, Organic Group

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: <u>E765</u>

CLIENT: WOODWARD-CLYDE PROJECT #: 90C0039C SAMPLE ID: F12-1A

DATE RECEIVED: 08/22/1990 DATE EXTRACTED: 08/30/1990 DATE COMPLETED: 08/31/1990 DATE SAMPLED: 08/16/1990

PETROLEUM HYDROCARBONS	CONCENTRATION [mg/Kg (ppm)]	DETECTION LIMIT [mg/Kg (ppm)]
Gasoline Range Diesel Range Motor Oil Range Total Petroleum Hydrocarbons	<5 <10 71 71	5 10 25
CARBON NO. RANGE		
Gasoline Range Diesel Range Motor Oil Range	- C18-C28	- -
PEAK CARBON NO	-	
Gasoline Range Diesel Range Motor Oil Range	- C24	

Sandia Kao Senior Chemist, Organic Group

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: E765

CLIENT: WOODWARD-CLYDE PROJECT #: 90C0039C SAMPLE ID: F19-1

DATE RECEIVED: 08/22/1990 DATE EXTRACTED: 08/30/1990 DATE COMPLETED: 08/31/1990 DATE SAMPLED: 08/17/1990

PETROLEUM HYDROCARBONS	CONCENTRATION	DETERMINE.
	[mg/Kg (ppm)]	DETECTION LIMIT
	Tanal wa Thomas	[mg/Kg (ppm)]
Gasoline Range	<5	5
Diesel Range Motor Oil Range	<10	10
Total Petroleum Hydrocarbons	371	25
1941 Colleged Hydrocar Dons	371	-
CARBON NO. RANGE		
Gasoline Range	-	<u>_</u>
Diesel Range	•	- -
Motor Oil Range	C18-C28	<del>_</del>
PEAK CARBON NO		
Gasoline Range		
Diesel Range	- -	-
Motor Oil Range	C24	<del>-</del> -

Sandia Kao Senior Chemist, Organic Group September 6, 1990

Date

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: E765

CLIENT: WOODWARD-CLYDE PROJECT #: 90C0039C SAMPLE ID: MATRIX SPIKE RECOVERY \*

DATE RECEIVED: 08/22/1990 DATE EXTRACTED: 08/30/1990 DATE COMPLETED: 08/31/1990

PETROLEUM HYDRO	CARBONS	SPIKE RECOVERY	
Gasoline Range Diesel Range Motor Oil Range Total Petroleum	and the second s	87% - 79%	

#### CARBON NO. RANGE

Gasoline Range Diesel Range Motor Oil Range

## PEAK CARBON NO

Gasoline Range Diesel Range Motor Oil Range

This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

> Sandia Kao Senior Chemist, Organic Group

EUREKA LABORATORIES, INC. 6790 Florin-Perkins Road Sacramento, CA 95828 (916) 381-7953

Order No: 90-08-215 Hazardous Waste Testing Certification: E765

CLIENT: WOODWARD-CLYDE
PROJECT #: 90C0039C
SAMPLE ID: MATRIX SPIKE RECOVERY DUP. \*

DATE RECEIVED: 08/22/1990 DATE EXTRACTED: 08/30/1990 DATE COMPLETED: 08/31/1990

# PETROLEUM HYDROCARBONS SPIKE RECOVERY Gasoline Range Diesel Range Motor Oil Range Total Petroleum Hydrocarbons

#### CARBON NO. RANGE

Gasoline Range Diesel Range Motor Oil Range

#### PEAK CARBON NO

Gasoline Range Diesel Range Motor Oil Range

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Sandia Kao Senior Chemist, Organic Group

Wood 500 12th	ward-Clyde Co Street, Suite 100, Oakland, (415) 893-3600	nsultants CA 94607-4041		Chain o	of Cust	ody Record
PACJECT NO.		···	1 M	ر الراق 	77	
11100001110.	90000390		AC ALYS	}	<del></del>	·
SAMPLERS	Signature) /		1 7	10c 10c 3080-12	(-{	0514040
20.	Ofecland.	— ⊊ <u>₹</u>	352	7 Meta 0 VOC 8080	Contai	REMARKS (Sample
DATE TIME	SAMPLE NUMBER	Sampa Hatiix (Sjoil (W)aine, (Apr EPA Method	Era Wolfog Col a Grease Total B-1	8270 VOC 8290	1914 - Acasel - E	preservation, handling procedures, etc.)
8-16-90	F -	S	XX		X	
	F1-2		T Z	XXX		
)	. fl-3,		X	XXX		
	F1-4		$\lambda$			
	f1-5 notice		XX	1 1 1		
	F2-1		x x			
<del>                                     </del>	F2-2		[公门]	- <del>                                    </del>		
	f2-3		XX			
	<u>F3=1_5</u>			<del></del>		
<del>-/</del>	F3-2 /		X	1125		
-(	F3-3 PETUL		X	0		*
	F4-1		T ×	1-1-1-		
	F4-2		×		1 /	
(   -	_FS-1		XX	X		
	F5-2		1 1 2		* + + -	·
/	F5-3 mit 16		X			
(	F6-1 12.		5/	'    ''' <b> </b> -		
	<u> F7-1</u>		IXX			
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	_ F7-3				1 7 7	
	F8-J		XXX	XXX		
	F8-2		X			:
)-  -	F8-3 +2-11			<del>                                     </del>	1	
-{	F9-1		XX	X	7	
	F9-2		X			
V	59-3 native		X			
) // as	F10-1		XX	X		
7-16-9d	F10-2	<b>V</b>	X			
				TO' NUMBER	of 20	
ELINOUISHED 8Y :	DATE/TIME RECEIN (Signals	/EDBY: ure)	RELINQUISHED (Signature)	CONTAINE BY ;	DATE/TIME	RECEIVED BY : (Signature)
IETHOD OF SHIPME	NIT .					
· PINER OF SHIRMS	SHIPPE (Signati		COURIER : (Signature)		RECEIVED FO	DA LAB BY : DATE/TIME
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