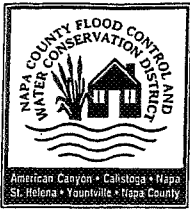


	Day 1			Day 2	
	Napa	Tesoro Golden Eagle Refinery	Valleywood Preserving Superfund Site	Modesto Superfund Site	Mather Air Force Base
Regulatory Agency	Cal EPA (DTSC)	RWQCB	EPA	EPA	EPA
Contaminants	petroleum-related constituents	petroleum-related constituents, volatile organic compounds VOCs, metals, others	hexavalent chromium, arsenic	tetrachloroethene (PCE)	volatile organic compounds (VOCs), petroleum-related constituents, metals, pesticides, others
Remediation/Methods Used	Soil: excavation, tried chemical oxidation, but failed	Soil: excavation, biodegradation, soil vapor extraction; Landfills: covered with low permeability caps	Soil: excavation; Groundwater: above ground electrochemical treatment followed by treatment with activated alumina (chemical reduction), in-situ treatment (below ground) with calcium polysulfide injection	Soil: soil vapor extraction and groundwater extraction and treatment	Soil: excavation, soil vapor extraction & bioventing, air sparging; Groundwater: groundwater extraction & air stripping (treated groundwater reinjected in groundwater system); Landfills: covered with low permeability caps
Tanks	9 oil terminals	X	--	--	Yes ?
Contaminated Soil Reuse	230,000 cubic yards (175,000 cubic meters)	X	--	--	--
Remediation of Metals	--	--	Yes	--	Yes Pb
Dioxins	--	--	--	--	--
Large Sites with Offsite Remediation	--	X	--	--	Yes
Cont. Affecting Residential Superfund	--	--	Yes	Yes	Yes
Data	Yes	? >300 wells	Yes	Yes	Yes
Photos	Yes	Yes with permit	Yes	Yes	?

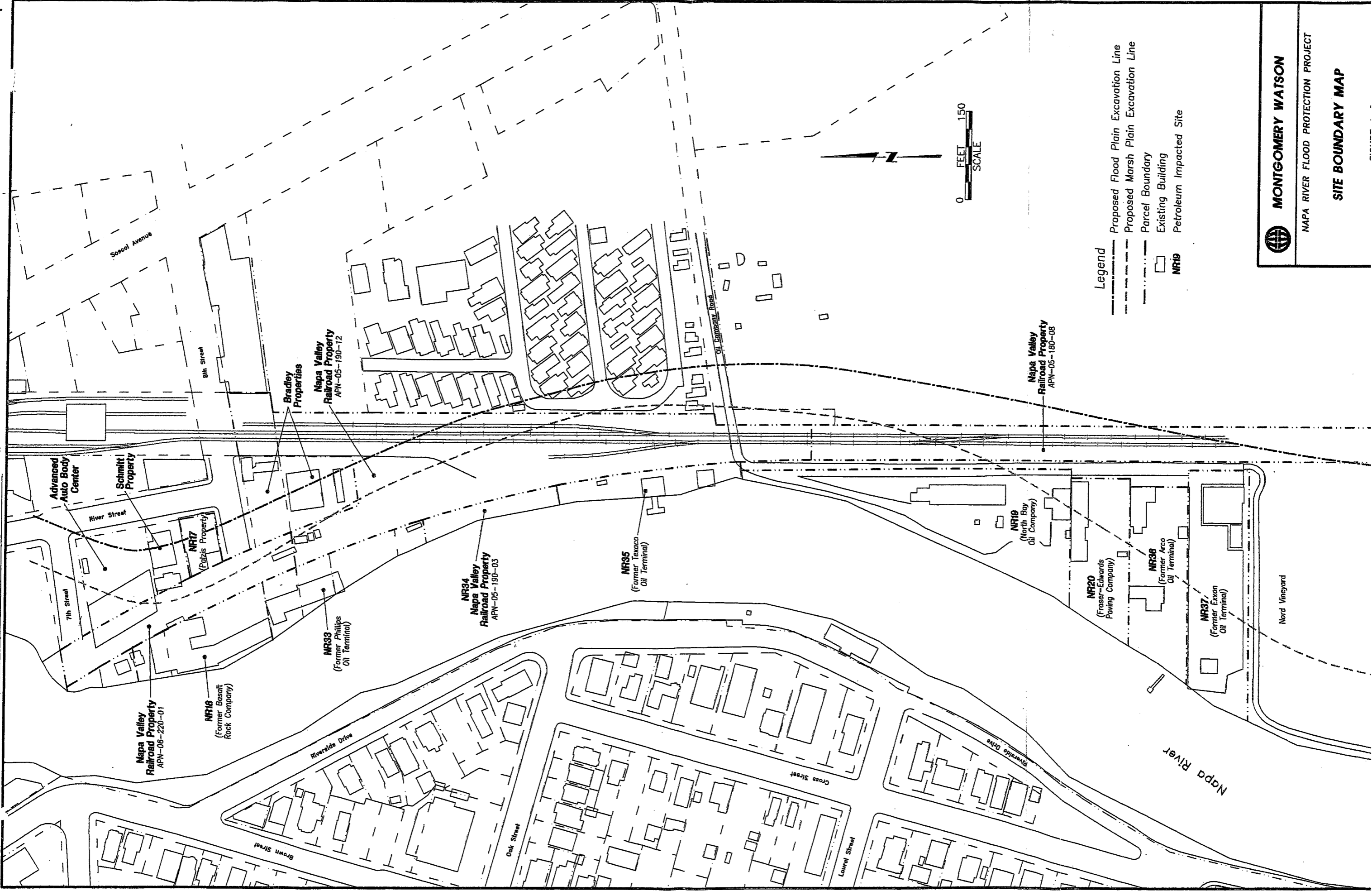


Napa River/Napa Creek Flood Protection Project

**Consolidated Remedial Action Plan for
Petroleum-Impacted Properties
Located Between Stations 737+00 and 756+00
Napa, California**

May 4, 2001





Legend

- Proposed Flood Plain Excavation Line
- Proposed Marsh Plain Excavation Line
- Parcel Boundary
- Existing Building
- Petroleum Impacted Site

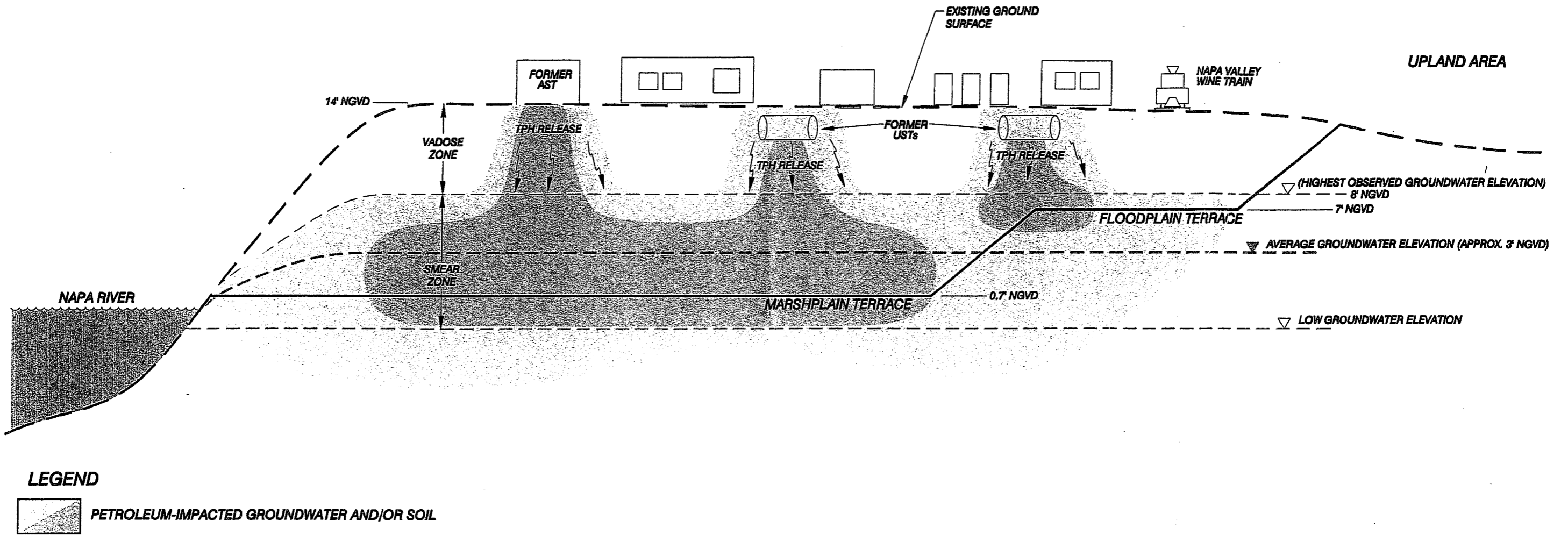


MONTGOMERY WATSON


NAPA RIVER FLOOD PROTECTION PROJECT

SITE BOUNDARY MAP

D:\PROJECTS\NAPA_RIVER\CONCEPTUAL_X_SECTION



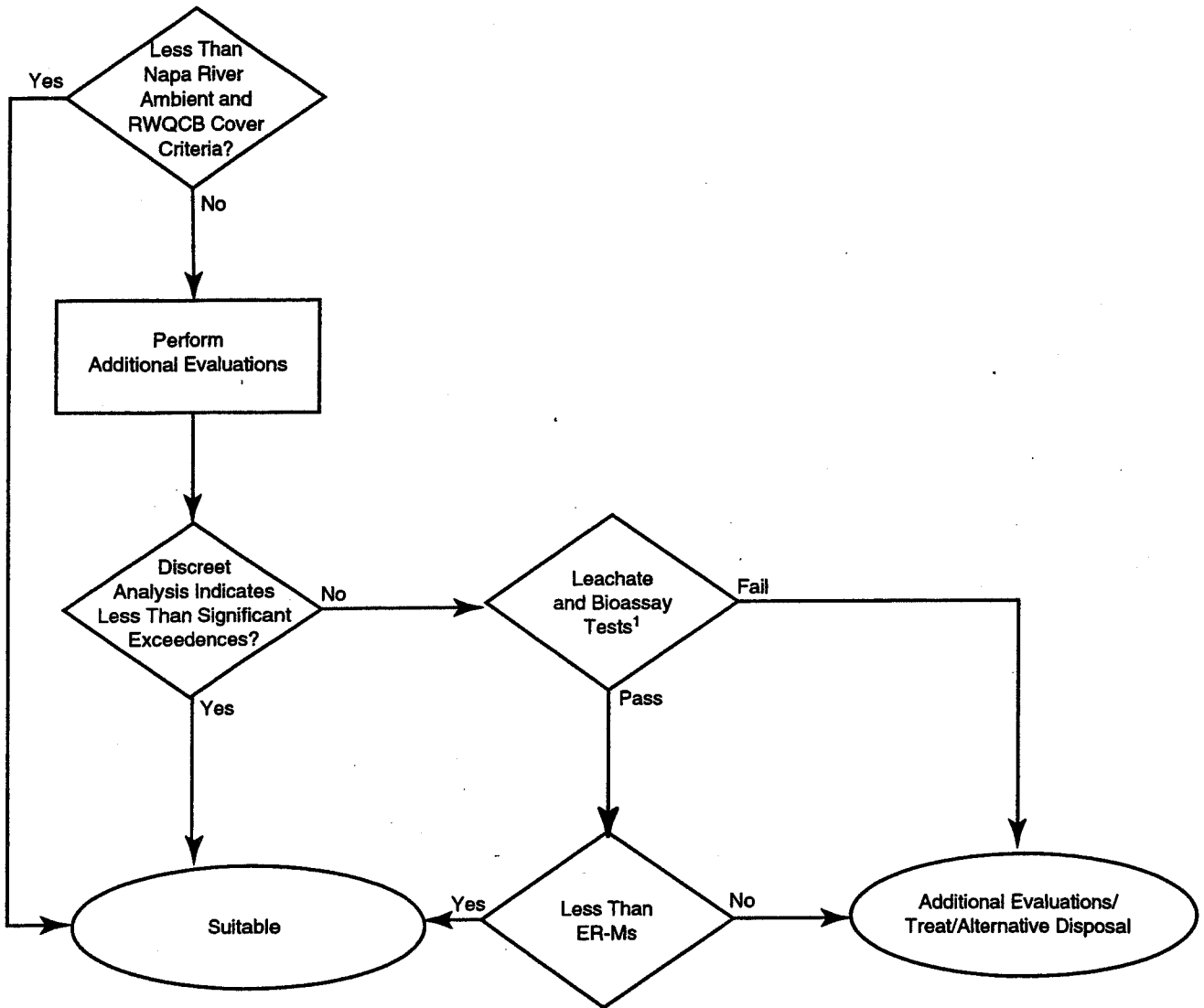
Profile obtained from Plate No. 53, Napa River Cross Sections,
 Sta 750+00 to 836+00, Napa River/Napa Creek Flood Protection Project,
 Final Supplemental General Design Memorandum,
 U.S. Army Corps of Engineers and Napa County Flood Control and
 Water Conservation District, October 1998.

 **MONTGOMERY WATSON**

NAPA RIVER FLOOD PROTECTION PROJECT

**CONCEPTUAL CROSS SECTION OF
 NAPA RIVER FLOOD CONTROL PROJECT**

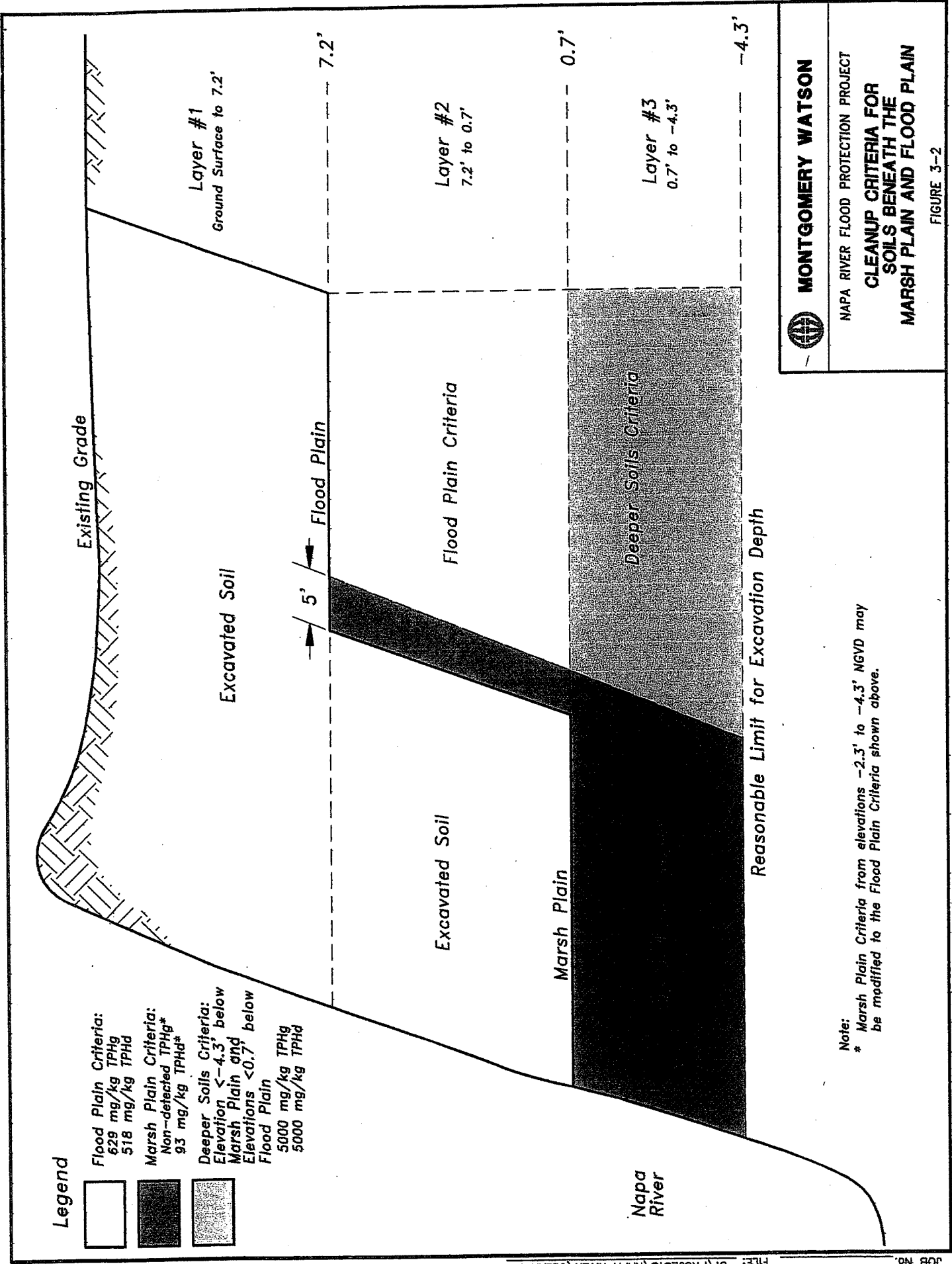
FIGURE 1-4



SOIL SUITABILITY EVALUATION FLOWCHART FOR MARSH PLAIN AND FLOOD PLAIN TERRACES

FIGURE 3-1

¹ Bioaccumulation Tests for Hg, Se and organics



Legend

- Flood Plain Criteria:
629 mg/kg TPHg
518 mg/kg TPHd
- Marsh Plain Criteria:
Non-detected TPHg*
93 mg/kg TPHd*
- Deeper Soils Criteria:
Elevation <-4.3' below
Marsh Plain and
Elevations <0.7' below
Flood Plain
5000 mg/kg TPHg
5000 mg/kg TPHd

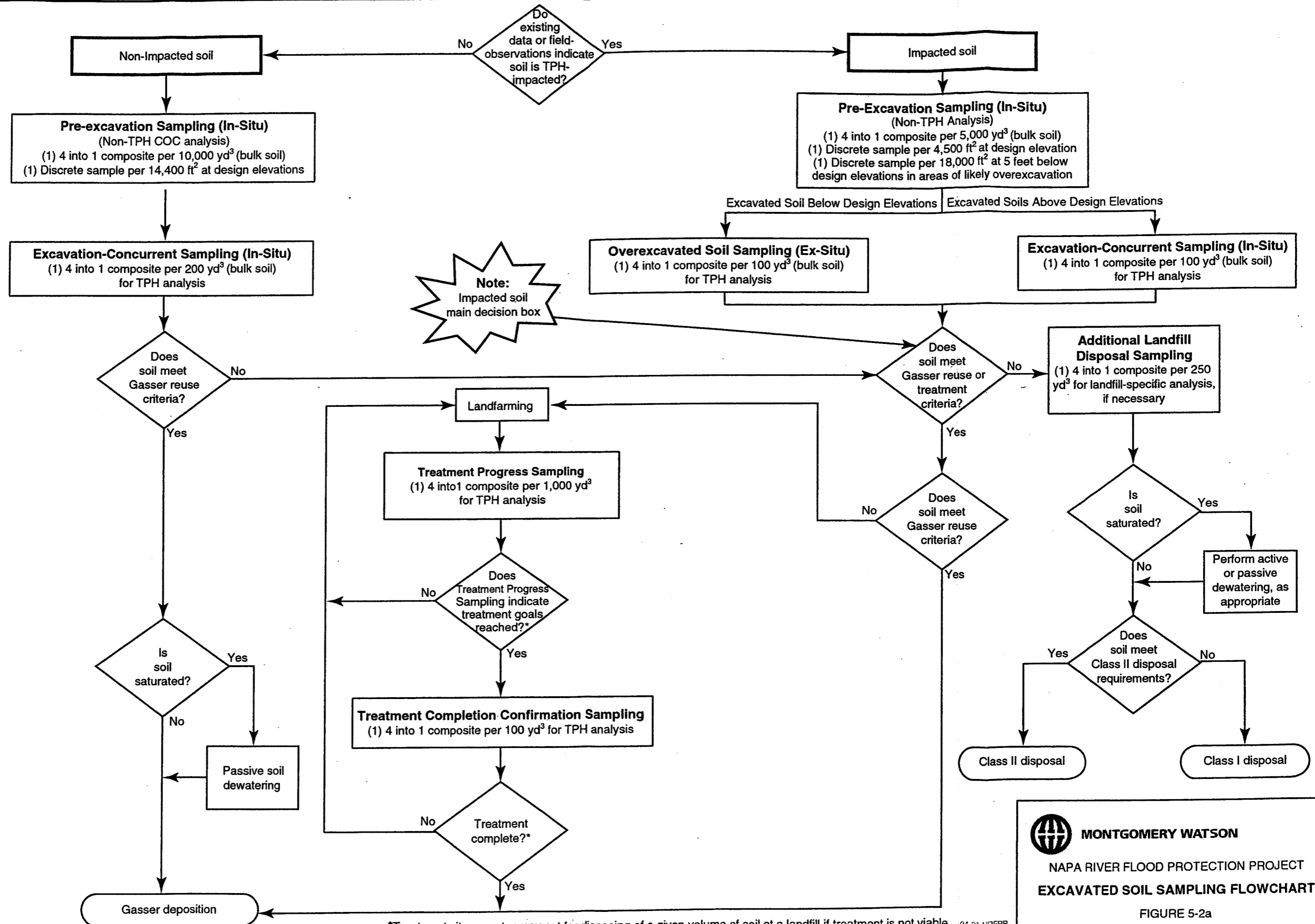


NAPA RIVER FLOOD PROTECTION PROJECT
CLEANUP CRITERIA FOR SOILS BENEATH THE MARSH PLAIN AND FLOOD PLAIN

FIGURE 3--2

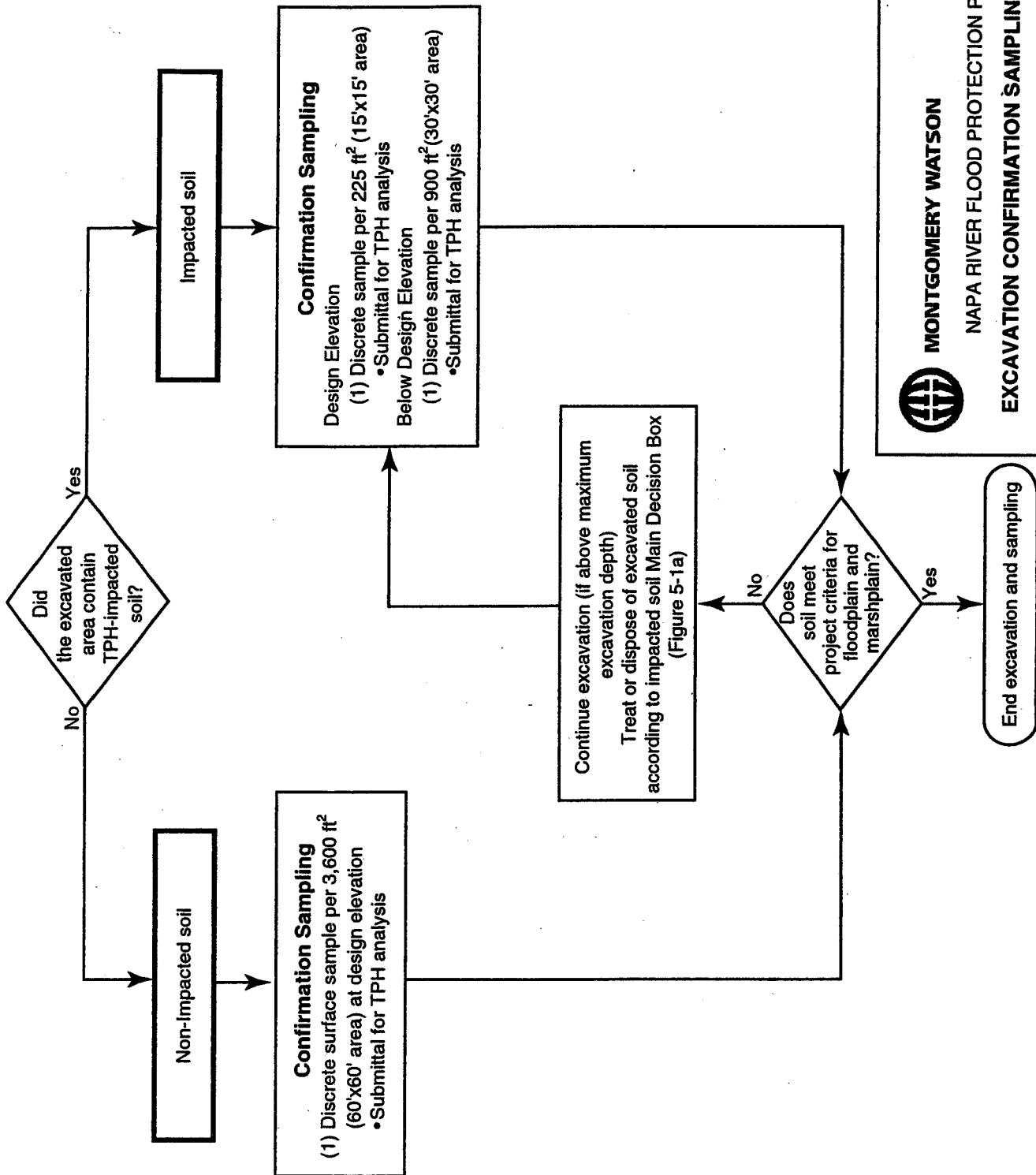
Note:
 * Marsh Plain Criteria from elevations -2.3' to -4.3' NGVD may be modified to the Flood Plain Criteria shown above.

Reasonable Limit for Excavation Depth



Note:
Impacted soil
main decision box

*Treatment site operator may opt for disposing of a given volume of soil at a landfill if treatment is not viable



MONTGOMERY WATSON

NAPA RIVER FLOOD PROTECTION PROJECT

EXCAVATION CONFIRMATION SAMPLING FLOWCHART

FIGURE 5-2b

04-01 NREPP

TABLE 3-1

**CRITERIA FOR FLOOD PROJECT SOIL
AND SOIL AND GROUNDWATER CLEANUP**

Chemical	Flood Project Soil Criteria (mg/kg) (unless otherwise noted)				Soil TPH Cleanup Criteria (mg/kg)			Groundwater TPH Cleanup Criteria (µg/L)
	Napa River Ambient ¹	Wetland Cover	ER-M	WQCs ³ Soil Leachability (µg/L)	Marshplain ⁵	Floodplain ⁴	Subsurface TPH (>5' design elev.)	RWQCB TPH Criteria ⁴
Inorganic								
Arsenic	11	33	70	72				
Cadmium	0.6	5	9.6	2.2 ⁶				
Chromium	92	220	370	360/22 hex-Cr				
Copper	53	90	270	4.8				
Lead	32	50	218	6.4 ⁵				
Mercury	0.47	0.35	0.71	0.024				
Nickel	91	140	200	16.4				
Selenium	0.3	0.7	NA	10				
Silver	0.3	1.0	3.7	0.24				
Zinc	110	160	410	46				
Organic								
PAHs, total	0.26	4	44.792	NA				
PAHs, HMW	NA	NA	9.6	NA				
PAHs, LMW	NA	NA	3.16	NA				
PCBs total	0.033	0.05	0.18	0.028				
Chlordane	0.013	NA	NA	0.008				
DDTs total	0.013	0.003	0.046	0.002				
TPH gasoline	ND (<10)				ND (<10)	629	5000/950 ⁸	3,700
TPH diesel	93				93	518	5000/950 ⁸	640
TPH oil	650				93	518	5000/950 ⁸	
Total TPH	93				93	518	5000/950 ⁸	
Benzene	ND (<1)					2.73 ⁷		71
Ethylbenzene	ND (<1)					13 ^{2,5}		86
Toluene	ND (<1)					930 ²		5000
Xylene	ND (<1)					358 ²		2200

Notes:

¹ 85th percentile concentrations derived from Napa River sediment testing and evaluation reports (Corps 1979; Kleinfelder 1994; Toxscan/Kinnetic Laboratories 1994; MEC 1996)

² Cleanup criteria protective of saltwater ecological protection zone, from RWQCB Tentative Order for SFO (RWQCB 1999).

³ Water Quality Criteria (WQC) are two times the lower of either USEPA Ambient Water Quality Criteria (AWQCs), San Francisco Basin Water Quality Control Plan, or California Toxics Rule WQC using most stringent criteria in either fresh or saltwater environments. Higher multipliers (up to 10 times WQC) may be applied if site-specific evaluations indicate that aquatic resources would be protected.

⁴ Cleanup criteria from RWQCB Tentative Order for HTRW Sites.

⁵ Cleanup Criteria from RWQCB Orders for Consolidated Remedial Action Sites: 12 mg/kg TPHg and 144 mg/kg for heavier TPH. However lower Napa River Ambient Criteria are proposed based on CDFG comments.

⁶ Based on water hardness of 100 mg/L as CaCO₃

⁷ Because the Ni ER-M (51.6mg/kg) is substantially below background, RWQCB noncover is used instead.

⁸ For fine-grained soil and coarse-grained soil, respectively.

Background Criteria (no further evaluations or testing)

Further evaluations or testing may be required (e.g., discretes, bioassay, leachability)

Not-to-exceed criteria for Marsh/Floodplain

TABLE 4-1

ESTIMATED SOIL VOLUMES

Description Napa Flood Project/ Over Excavation	Layer/Elevation Description	Impacted Area (ft ²)	Layer Thickness (ft)	Approximate Volume of Excavated Petroleum- Impacted Soil (bank cy)	Approximate Volume of Excavated Clean Soil (bank cy)	Total Excavated Volume (bank cy)
Removed During Napa Flood Project:	Layer #1 Elevation Range 14' to 7.2' Flood & Marsh Plain	121,880	6.8	30,700	76,800	107,500
	Layer #2 Elevation Range 7.2' to 0.7' Marsh Plain	131,152	6.5	31,600	36,900	68,500
Subtotal Flood Project		253,032	6.5 to 6.8	62,300	113,700	176,000
Removed By Over Excavation:	Layer #2 Elevation Range 7.2' to 0.7' Flood Plain	33,298	6.5	8,000	0	8,000
	Layer #3 Elevation Range 0.7' to -4.3' Flood & Marsh Plain	132,950	5.0	24,600	0	24,600
Subtotal Over Excavation		268,098	5.0 to 11.5	32,600	0	32,600
TOTALS:				94,900	113,700	208,600

check bottom row

Notes:

¹ Water table assumed to be located at +3 elevation.

Other Assessments:

- a Volume Saturated Petroleum-Impacted Soil: 50,188 cy
- b Volume Unsaturated Petroleum-Impacted Soil: 44,712 cy
- c Percentage of Saturated Petroleum-Impacted Soil: 53%
- d Percentage of Unsaturated Petroleum-Impacted Soil: 47%
- e Percentage of petroleum-impacted soil volume removed during: 66%
- f Percentage of petroleum-impacted soil volume removed by overexcavation: 34%

"Impacted" = 710,000 kg

Add Note

TABLE 4-2
SOIL TREATMENT TECHNOLOGY SCREENING
(Page 1 of 2)

Technology	Development Status	Residuals Produced	O&M or Capital Intensive	Availability	System Reliability/ Maintainability	Cleanup Time	Overall Cost	COCs			Retained/Eliminated	
								Nonhalogenated SVOCs	Fuels	Inorganics		
In Situ Biological Treatment												
Natural Attenuation	F	N	N	●	○	○	●	○	○	○	○	Retained.
Ex Situ Biological Treatment (assuming excavation)												
Biopiles	F	N	N	●	●	○	●	○	○	○	○	Retained.
Composting	F	N	N	●	●	○	●	○	○	○	○	Eliminated because composting results in a volumetric increase in material.
Fungal Biodegradation	F	N	O&M	○	○	○	●	○	○	○	○	Eliminated due to poor availability and reliability, and long cleanup time.
Landfarming	F	N	N	●	●	○	●	○	○	○	○	Retained.
Slurry-Phase Biological Treatment	F	N	Cap O&M	○	○	○	○	○	○	○	○	Eliminated because capital and O&M intensive; also dewatering soil fines after treatment is expensive.
Ex Situ Physical/Chemical Treatment (assuming excavation)												
Chemical Extraction	F	L	Cap O&M	○	○	○	○	○	○	○	○	Eliminated due to high cost and long cleanup time.
Chemical Reduction/Oxidation	F	S	N	●	●	●	○	○	○	○	○	Eliminated because oil-grease in soil media can limit efficiency.
Dehalogenation	F	V	Cap O&M	○	○	○	○	○	○	○	○	Eliminated due to poor reliability and availability, high cost, long cleanup time, and limited effectiveness for COCs.
Separation	F	S	O&M	●	○	●	○	○	○	○	○	Eliminated because high moisture content increases costs, and a large volume of soil will be saturated. Also, once soil is separated, the fines would require treatment and/or disposal which also increases costs.
Soil Washing	F	S,L	Cap O&M	●	○	●	○	○	○	○	○	Eliminated because capital and O&M intensive.

TABLE 4-2
SOIL TREATMENT TECHNOLOGY SCREENING
(Page 2 of 2)

Technology	Development Status	Residuals Produced	O&M or Capital Intensive	Availability	System Reliability/ Maintainability	Cleanup Time	Overall Cost	COCs				Retained/Eliminated	
								Nonhalogenated SVOCs	Fuels	Inorganics			
Ex Situ Physical/Chemical Treatment (assuming excavation) (continued)													
Soil Vapor Extraction	F	L, V	N	•	•	•	•	•	•	•	•	•	Eliminated because cleanup would require 12 to 36 months which would not meet project requirements (treatment of liquid and vapor would raise costs).
Solar Detoxification	P	N	Cap.	•	•	•	•	•	•	•	•	•	Eliminated because not a fully developed technology.
Solidification/Stabilization	F	S	Cap.	•	•	•	•	•	•	•	•	•	Eliminated because not effective for fuels.
Ex Situ Thermal Treatment (assuming excavation)													
Hot Gas Decontamination	P	N	Cap O&M	•	•	•	•	•	•	•	•	•	Eliminated because not effective for COCs, and not a fully developed technology.
Incineration	F	L, S, V	Cap O&M	•	•	•	•	•	•	•	•	•	Eliminated due to high cost.
Open Burn/Open Detonation	F	S	Cap O&M	•	•	•	•	•	•	•	•	•	Eliminated because not effective for COCs.
Pyrolysis	F	L, S	Cap O&M	•	I	•	•	•	•	•	•	•	Eliminated due to poor availability and reliability, and high cost.
Thermal Desorption	F	L, S	Cap O&M	•	•	•	•	•	•	•	•	•	Retained.
Other Treatment													
Excavation, Retrieval, and Off-Site Disposal	NA	NA	N	•	•	•	•	•	•	•	•	•	Retained.

Source: Modified from the Federal Technologies Roundtable, Treatment Technologies Screening Matrix (www.ftrr.gov).

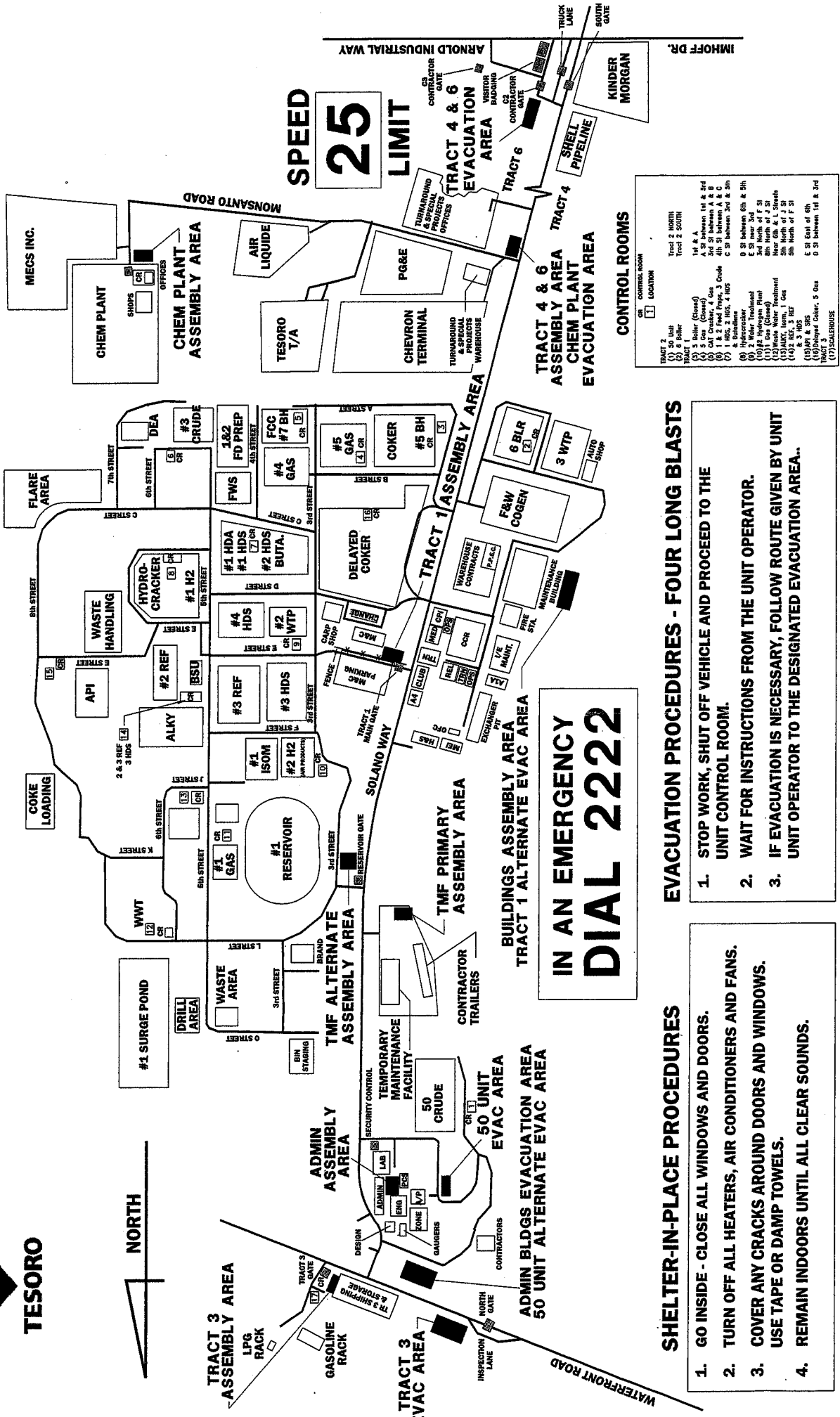
Notes:

- Better
- Average
- Worse
- I Inadequate
- F Full
- P Pilot
- Cap. Capital
- O&M Operations and Maintenance



TESORO

GOLDEN EAGLE REFINERY - EVACUATION MAP



**SPEED
LIMIT
25**

**IN AN EMERGENCY
DIAL 2222**

SHELTER-IN-PLACE PROCEDURES

1. GO INSIDE - CLOSE ALL WINDOWS AND DOORS.
2. TURN OFF ALL HEATERS, AIR CONDITIONERS AND FANS.
3. COVER ANY CRACKS AROUND DOORS AND WINDOWS. USE TAPE OR DAMP TOWELS.
4. REMAIN INDOORS UNTIL ALL CLEAR SOUNDS.

EVACUATION PROCEDURES - FOUR LONG BLASTS

1. STOP WORK, SHUT OFF VEHICLE AND PROCEED TO THE UNIT CONTROL ROOM.
2. WAIT FOR INSTRUCTIONS FROM THE UNIT OPERATOR.
3. IF EVACUATION IS NECESSARY, FOLLOW ROUTE GIVEN BY UNIT OPERATOR TO THE DESIGNATED EVACUATION AREA.

CONTROL ROOM

UNIT	LOCATION
TRACT 2	
(1) 50 Unit	Tract 2 NORTH
(2) 50 Boller	Tract 2 SOUTH
TRACT 1	
(1) 50 Unit	1st & A
(2) 50 Boller (Class)	A, 50 between 1st & 2nd
(3) 50 Gas (Class)	3rd St between A & B
(4) CAT Coker, 4 Gas	3rd St between A & C
(5) 50 Unit	C, 50 between 2nd & 5th
(6) 1 502, 2 502, 4 502 & 502	
(7) Hydrocracker	D St between 4th & 5th
(8) Hydrocracker	5th North of F St
(9) 50 Unit	5th North of J St
(10) 50 Unit	5th North of L Street
(11) 50 Unit	5th North of F St
(12) 50 Unit	5th North of F St
(13) 50 Unit	5th North of F St
(14) 50 Unit	5th North of F St
(15) 50 Unit	5th North of F St
(16) 50 Unit	5th North of F St
(17) 50 Unit	5th North of F St
(18) 50 Unit	5th North of F St
(19) 50 Unit	5th North of F St
(20) 50 Unit	5th North of F St
(21) 50 Unit	5th North of F St
(22) 50 Unit	5th North of F St
(23) 50 Unit	5th North of F St
(24) 50 Unit	5th North of F St
(25) 50 Unit	5th North of F St
(26) 50 Unit	5th North of F St
(27) 50 Unit	5th North of F St
(28) 50 Unit	5th North of F St
(29) 50 Unit	5th North of F St
(30) 50 Unit	5th North of F St
(31) 50 Unit	5th North of F St
(32) 50 Unit	5th North of F St
(33) 50 Unit	5th North of F St
(34) 50 Unit	5th North of F St
(35) 50 Unit	5th North of F St
(36) 50 Unit	5th North of F St
(37) 50 Unit	5th North of F St
(38) 50 Unit	5th North of F St
(39) 50 Unit	5th North of F St
(40) 50 Unit	5th North of F St
(41) 50 Unit	5th North of F St
(42) 50 Unit	5th North of F St
(43) 50 Unit	5th North of F St
(44) 50 Unit	5th North of F St
(45) 50 Unit	5th North of F St
(46) 50 Unit	5th North of F St
(47) 50 Unit	5th North of F St
(48) 50 Unit	5th North of F St
(49) 50 Unit	5th North of F St
(50) 50 Unit	5th North of F St