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RESNA
Working to Restore Nature

1500 So. Union Avenue
Bakersfield, California 93307
Phone: (805) 835-7700
FAX: (805) 835-7717

#3813

LETTER OF TRANSMITTAL

TO: Mr. Barney Chan
Alameda Co. Dept. of Env. Health
80 Swan Way, Room 200
Oakland, California 94621

DATE: May 16, 1994

RE: Soil Remediation Work Plan
Malibu Grand Prix
8000 South Coliseum Way
Oakland, California

WE ARE SENDING YOU ☒ Enclosed ☐ Under separate cover via _____ the following:

- ☐ Site Assessment Report
- ☐ Closure Report
- ☐ Workplan for Site Assessment
- ☐ Proposal
- ☐ Preacquisition Site Assessment
- ☒ As above.

THESE ARE TRANSMITTED as checked below:

- ☐ For approval
- ☒ As requested
- ☐ For your use
- ☐ For review and comment
- ☐ FOR BIDS DUE_____19__
- ☐ _____

REMARKS

COPY TO: Mr. Rich Hiett, CRWQCB-San Francisco Bay Region

SIGNED: _____
Timothy C. Reed, R.G. 5999

RESNA
Working to Restore Nature

1500 So. Union Avenue
Bakersfield, California 93307
Phone: (805) 835-7700
FAX: (805) 835-7717

SOIL REMEDIATION WORK PLAN

MALIBU GRAND PRIX
8000 South Coliseum Way
Oakland, California

Bill Patterson

Prepared for

Malibu Grand Prix
7301 Topanga Canyon Boulevard
Suite 300
Canoga Park, California 91303

Timothy C. Reed, R.G. 5999
Project Manager

REGISTERED GEOLOGIST
TIMOTHY C. REED
No. 5999
Exp. 10/96
STATE OF CALIFORNIA

Robert J. Becker, R.G. 5076
Professional Services Supervisor

REGISTERED GEOLOGIST
ROBERT J. BECKER
No. 5076
REN. 6/30/94
STATE OF CALIFORNIA

May 2, 1994
RESNA Report 0B2481.41

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APPENDICES

Appendix A: Laboratory Analysis Reports

Appendix B: Aquifer Test Data and Calculations

RESNA
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1500 So. Union Avenue
Bakersfield, California 93307
Phone: (805) 835-7700
FAX: (805) 835-7717

SOIL REMEDIATION WORK PLAN

MALIBU GRAND PRIX
8000 South Coliseum Way
Oakland, California

For Malibu Grand Prix

1.0 INTRODUCTION

RESNA Industries Inc. (RESNA) has performed Fourth Quarter 1993, monitoring of the ground water at the Malibu Grand Prix (MGP) Race Track and Castle areas located at 8000 South Coliseum Way, Oakland, California (Plate 1). This report reviews the history of the site, gives the results of the analysis of ground water samples, and interpretation of findings. Ground water monitoring wells at the Race Track and at the Castle sites were sounded for depth to water and sampled on December 9, 1993. Water table elevations in monitoring wells MW-1 and MW-8, the wells farthest east in the two parking lots remain higher than elevations in the rest of the well array and continue to define a gradient toward the West. The plume of benzene-impacted ground water at the site is considerably smaller than last quarters analysis with only two wells having any detectable concentrations. The ground water plume containing total petroleum hydrocarbons (TPH) is also smaller in extent than last quarter. Only one well, MW-8, has detectable amounts of TPH in the Race Track lot while several of the wells in the Castle lot are now reported to have concentrations below detection.

2.0 BACKGROUND

Malibu Grand Prix operates two adjacent amusement park facilities, a Racetrack for midget cars and a Fun Center with miniature golf and batting cages on leased property at 8000 South Coliseum Way, Oakland, California (Plates 1 & 2). Prior to 1989, the MGP facility maintained two 6,000 gallon underground storage tanks containing marine mix gasoline. The tanks were located in the parking lots

adjacent to the MGP Castle and Race Track. The tanks were removed on March 29, 1989 and February 1, 1990, respectively. Closure reports were submitted to the Alameda County Department of Environmental Health with all relevant waste manifests and analysis results. On June 29, 1989 a letter from Alameda County was sent to MGP Corp. This letter requested an initial site investigation to determine the extent of soil and ground water contamination at the MGP Castle. A verbal request for an assessment at the Race Track was issued at the time of the tank removal. The site assessment at the Castle began on September 21, 1989 with the drilling of Borings B-1 through B-5 and the installation of Monitoring Wells MW-1 through B-4. An Assessment Report was issued on November 15, 1989 recommending further assessment work. The assessment work at the Race Track and the continued assessment at the Castle began on June 12, 1990 with the installation of MW-5 through MW-10 and Boring B-6 through B-17. Monitoring wells MW-1 through MW-10 were sampled July 17, 1991. Four additional monitoring wells (MW-11 through MW-14) at the Castle and four additional monitoring wells (MW-15 through MW-18) at the Race Track were constructed on August 27 through 30, 1991. All monitoring wells, MW-1 through MW-18, were sampled October 9, 10 and 11, 1991 for water analyses and pump tests and slug tests were performed on selected wells. Ground water table measurement-data are interpreted to reflect tidal effects and inhomogeneity of the backfill material underlying this site. The analyses of water and sludge samples collected December 2, 1992 from the drainage ditches on the north and west sides of the site indicate that the ditches are not affected adversely by effluent ground water from the MGP site. A total of eighteen borings (B-18 through B-35) were made February 9, 10 and 11, 1993 in the areas of the former Underground Storage Tanks (UST) to further define the extent of soil impaction and facilitate remediation plans for the soil. The Site Assessment Report dated July 30, 1993 presented the results from the samples collected. The report stated that the Race Track plume was sufficiently defined but additional borings were recommended at the Castle. — I dont agree -

3.0 DELINEATION OF SOIL PLUMES

3.1 Castle Plume

On August 19 and 20, 1993 three additional borings (B-36 through B-38) were sampled to complete the delineation of the Castle Plume. These borings were hand augured around the former dispenser and product line to further define the eastern extent of the soil plume (Plate 3). The results of the soil analysis have shown that the only significant levels of hydrocarbons were in B-37 (450 ppm TPH) at seven feet and B-38 (150 ppm TPH) at approximately five feet (see Laboratory Analysis, Appendix

A). Since the excavation for the boat pond is directly east of the former dispenser location, the soil plume is not expected to extent any farther east. With the addition of the last three borings, the soil plume at the Castle has been adequately defined.

The projected aerial extent of the plume has been estimated at 1,050 ft^2. From the results of the assessment borings it can be assumed that the top five feet of soil is clean. In addition, ground water in the area has been measured between six and nine feet below grade. Assuming an average depth to ground water of eight feet, the Castle soil plume has a volume of approximately 117 cubic yards.

3.2 Race Track Plume

$3 \times \frac{1000}{30} =$

As reported in the July 30, 1993 Site Assessment Report, the soil plume at the Race Track has been sufficiently defined. The projected aerial extent of the plume has been calculated to encompass approximately 4,000 ft^2 (Plate 4). Assuming a depth to ground water of seven feet, with four feet of clean over burden, the Race Track Plume is estimated to contain 444 cubic yards of soil.

assumption

4.0 SOIL REMEDIATION

1 ppm Total BTEX ?

4.1 Excavation

The impacted soil associated with the former underground tanks at the Race Track and Castle can most easily be remediated through excavation and surface treatment. The clean overburden is to be stockpiled on site while the impacted soil is excavated to the ground water table. Soil showing visible signs of staining or having a detectable odor will be removed. Sidewall samples are to be collected at a minimum of ~~30 foot~~ 20' intervals along the perimeter of the excavation. This sampling will confirm that the soil plume has been removed. Soil samples are to be analyzed for Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) using EPA 8020; Total Petroleum Hydrocarbons with gasoline distinction (TPHg) using CA LUFT modified 8015; and Oil and Grease using SMWW 5520. Cleanup levels are suggested at less than 50 ppm for TPHg, 0.5 ppm for Benzene and 500 ppm for Oil and Grease. Samples should be analyzed using a quick turn around or mobile lab so the excavation can be quickly backfilled, limiting the risk to public safety. Clean imported fill material should be placed in the excavation first with the previously excavated overburden material placed on top.

need to analyze also at some agreed upon frequency

4.2 Soil Bioremediation

4.2.1 Bioremedial Treatment Cell Construction

An appropriate bioremedial treatment cell is to be designed and constructed with sufficient dimensions to accommodate the expected 560 cubic yards of impacted soils plus an additional 200 yards if more soil must be excavated. The soil is to be placed in the cell and staged to a uniform depth of 18 inches. The bioremedial treatment cell should be lined with impermeable plastic (minimum 10 mil) to preclude vertical migration of any leachate that may be generated as a result of biomaterial treatment. It is recommended that a six inch layer of clean sand or soil be placed over the liner (prior to cell loading of impacted soil) in order to act as a buffer against tears that may occur as a result of mechanical soil mixing operations.

The treatment cell should be bermed around the perimeters with either lined soil or straw bales. Additionally, the treatment cell will contain interior, sloped, perimeter swales for the purpose of storm water control and collection. Such storm water, if encountered, will be delivered to a collection terminus where it will then be pumped to an on-site storage container for later reapplication to soil.

A perimeter hydraulic delivery system is to be constructed for aqueous bionutrient delivery to staged soils. Such a system requires appropriate hydraulic manifolding of sprinkler heads in a manner which will assure adequate delivery of the bionutrients and water. A biomaterials mixing tank and appropriately sized pump should be manifolded as an integral part of the biodelivery system. Depending on volume and pressure of available water, an injector system may be utilized for dilution of biomaterials into the main hydraulic delivery system. This cell should be of sufficient structural and operational integrity to be utilized for additional bioremedial treatment if necessary.

Upon completion of initial staging, and thereafter between bioremedial treatment visits, exposed soil should be covered with clear or dark plastic sheeting (depending on climatic conditions). Aside from minimizing volatile organic carbon emissions, this step assists in the development and maintenance of an optimal biological environment by minimizing evaporative loss of water (maintain desirable moisture levels with less cumulative water addition), and enhancing soil warming/heat retention.

4.2.2 Baseline Biotreatability

A comprehensive biotreatability evaluation should be performed on the hydrocarbon impacted soil to determine native physicochemical and microbiological conditions. It is necessary that these conditions be evaluated to formulate appropriate nutrient and biological protocol for site-specific bioremedial treatment. The information derived from this investigation dictates whether a biostimulation or bioaugmentation approach should be utilized, and further defines the types and quantities of bionutrients which should be required to establish and maintain optimal biodegradative activity.

For this project, three composite samples (from three discreet samples) will be collected from the soil in the treatment cell (each composite sample will weigh approximately 5-6 kilograms). Samples should be collected before soil remedial activities, and transported within 24 hours to a Biotreatability Laboratory for processing and analysis. The analyses should include the following:

- Baseline soil physiochemistry (pH, nitrate, nitrite, ammonium, phosphorous and potassium).
- General and contaminant-specific microbial enumeration and composition (establishes necessary microbiological criteria for optimized bioremedial activity).
- Nutrient and physiochemical optimization analyses (establishes necessary nutrient and environmental criteria for optimized bioremedial activity).

4.2.3 Bioremedial Treatment

Consistent with the results of the baseline biotreatability investigation, appropriate bionutrients (and microorganisms if a bioaugmentation approach is required) within the water should be applied uniformly to staged soils. Application rates and volumes will be those which will provide sufficient levels of bionutrients in an environment of 30-40% field capacity moisture levels. Frequency of bioremedial treatment should be based upon several factors (moisture retention, microbial nutrient utilization rates, etc.) but may generally be required on a once per week basis. Subsequent to each treatment application, soil mixing/scarification should be conducted through tractor-drawn ripper or similar method. Such mixing is essential in order to ensure relative nutrient homogeneity within soils, maximized subsurface oxygenation, and optimal interaction among microorganisms, nutrients and contaminants.

Nutrient types and volumes will be dictated by the results of the baseline biotreatability investigation, but should in no case exceed 0.5% organic material addition. Nutrients that may likely be included are ammonium nitrate (provide both oxidized and reduced forms of nitrogen) and potassium phosphate. Additional inorganic cofactors may be required in trace amounts (such as calcium and/or iron). Bioremedial treatment in this manner shall continue until target cleanup levels have been achieved.

4.2.4 Bioprocess Monitoring

Bioprocess monitoring for microbiological, physicochemical and analytical parameters should be performed every two weeks (once a month for analytical). One composite sample (derived form three discreet samples) should be collected and transported to a Biotreatability Laboratory every two weeks (two samples per month). A split from the composite sample will be transported for analytical testing using Environmental Protection Agency (EPA) Method 8015m by a state certified analytical laboratory on a monthly basis (one sample per month).

4.2.5 Closure Sampling and Report

Upon evidence that bioremedial treatment has successfully reduced contaminant concentrations to appropriate levels (based on previous bioprocess monitoring results), soil sampling and analysis should be performed. Unless otherwise directed, one representative soil sample should be collected for every one hundred cubic yards of treated contaminated soil. Each representative sample shall be a composite derived from three discreet soil samples. All samples will be analyzed in a state-certified laboratory using EPA Method 8015m, EPA Method 8020 and Oil and Grease. Cleanup levels for the treated soil should be less than 50 ppm for TPHg, 0.5 ppm for Benzene and 500 ppm for Oil and Grease.

4.2.6 Disposition Of Treated Soil

After completion of remedial activities, the biocell will be dismantled and the remediated soil either used on-site as additional fill material or removed from the site to a suitable location.

5.0 GROUND WATER

5.1 Ground Water Quality

Eighteen ground water monitoring wells have been constructed at the Race Track and Castle site to assess the extent of the ground water plumes. As shown in Table 1, ground water monitoring at the site has been in progress since November 1989. A review of the analysis for the ground water shows that the hydrocarbon concentrations in the wells have either remained relatively constant or declined since monitoring began four and a half years ago.

TABLE 1

MALIBU GRAND PRIX – OAKLAND, CALIFORNIA
WATER SAMPLE ANALYSIS RESULTS, ppb

Well #	Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg
MW-1	09/22/89	410	1800	1100	7100	35000
	06/14/90	.66	<.05	1.3	2.3	210
	07/17/91	<.05	.06	<.05	<.05	270
	10/09/91	<.05	<.05	<.05	<.05	370
	08/05/92	<0.5	<0.5	<0.5	<0.5	600
	12/02/92	<0.5	<0.5	<0.5	<0.5	190
	02/11/93	<0.5	<0.5	<0.5	<0.5	75
	05/26/93	<0.5	<0.5	<0.5	<1.0	110
	08/20/93	<0.5	<0.5	<0.5	<1.0	70
	12/09/93	<0.5	<0.5	<0.5	<0.5	310
	3/23/94	<0.5	<0.5	<0.5	<0.5	<50
MW-2	09/22/89	<.05	<.05	<.05	<.05	<50
	06/14/90	<.05	<.05	<.05	<.05	<50
	07/17/91	<.05	<.05	<.05	<.05	<50
	10/09/91	<.05	<.05	<.05	<.05	<50
	08/05/92	<0.5	<0.5	<0.5	<0.5	<50
	12/01/92	<0.5	<0.5	<0.5	<0.5	<50
	02/11/93	<0.5	0.8	<0.5	0.6	<50
	05/26/93	<0.5	<0.5	<0.5	<1.0	<50
	08/20/93	<0.5	<0.5	1.5	<1.0	<50
	12/09/93	<0.5	<0.5	<0.5	<0.5	<50
	3/23/94	<0.5	<0.5	<0.5	<0.5	<50
MW-3	09/22/89	1.2	<.05	<.05	<.05	<50
	06/14/90	0.90	4	<.05	<.05	<50
	07/17/91	3.8	<.05	<.05	<.05	<50

TABLE 1 (continued)

MALIBU GRAND PRIX – OAKLAND, CALIFORNIA
WATER SAMPLE ANALYSIS RESULTS, ppb

Well #	Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg
MW-3	10/10/91	<.05	<.05	<.05	<.05	<50
(cont.)	08/05/92	9.7	1.4	1.0	0.9	110
	12/02/92	1.3	ND	ND	0.84	<50
	02/11/93	<0.5	<0.5	<0.5	<0.5	<50
	05/26/93	2.6	<0.5	<0.5	<1.0	<50
	08/20/93	0.7	0.5	<0.5	1.6	<50
	12/09/93	0.87	<0.5	<0.5	<0.5	<50
	3/23/94	<0.5	<0.5	<0.5	<0.5	<50
MW-4	09/22/89	410	430	78	324	4000
	06/14/90	200	3.7	1.2	9.5	660
	07/17/91	49	4.3	1.5	38	1100
duplicate	07/17/91	45	2.7	1.0	33	1000
	10/09/91	0.8	<.05	<.05	<.05	88
	08/05/92	11	8.9	2.4	4.7	5800
	12/02/92	6.5	4.3	0.6	1.4	1500
	02/11/93	6.6	1.1	0.8	2.4	2000
	05/26/93	<0.5	<0.5	13	49	1500
	08/20/93	1.8	<0.5	<0.5	1.4	1100
	12/09/93	<0.5	<0.5	0.61	<0.5	1400
	3/23/94	100	<0.5	42	64	3100
MW-5	06/14/90	<.05	<.05	<.05	<.05	<50
	07/17/91	<.05	<.05	<.05	<.05	<50
	10/09/91	<.05	<.05	<.05	<.05	110
	08/05/92	<0.5	<0.5	2.0	0.9	210
	12/02/92	<0.5	<0.5	<0.5	<0.5	<50
	02/11/93	<0.5	<0.5	<0.5	<0.5	<50
	05/26/93	<0.5	<0.5	<0.5	<1.0	72
	08/20/93	<0.5	<0.5	<0.5	1.0	61
	12/09/93	<0.5	<0.5	<0.5	<0.5	<50
	3/23/94	<0.5	<0.5	<0.5	<0.5	<50
MW-6	06/14/90	73	<.05	17	29.7	1800
	07/17/91	7.4	<.05	<.05	5.6	1200
	10/09/91	<.05	<.05	<.05	<.05	<50
	08/05/92	1.4	<0.5	12	4.1	1900
	12/01/92	<0.5	<0.5	2.5	1.3	140
	02/11/93	1.1	<0.5	<0.5	1.9	970
	05/26/93	0.6	<0.5	1.9	10.0	230
	08/20/93	<0.5	<0.5	0.91	4.9	140
	12/09/93	4.7	<0.5	<0.5	<0.5	270
	3/25/94	1.2	<0.5	<0.5	1.9	230

TABLE 1 (continued)

MALIBU GRAND PRIX – OAKLAND, CALIFORNIA
WATER SAMPLE ANALYSIS RESULTS, ppb

Well #	Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg
MW-7	06/14/90	0.84	<.05	1.2	1.8	58
	07/17/91	12	1.7	4.7	3.8	120
	10/09/91	<.05	<.05	<.05	<.05	<50
	08/05/92	<0.5	<0.5	0.6	<0.5	<50
	12/01/92	0.9	<0.5	<0.5	<0.5	<50
	02/11/93	<0.5	<0.5	3.6	<0.5	200
	05/26/93	<0.5	0.7	<0.5	3.5	78
	08/20/93	7.2	1.2	<0.5	2.1	63
	12/09/93	<0.5	<0.5	<0.5	<0.5	<50
	3/25/94	<0.5	<0.5	<0.5	<0.5	<50
MW-8	06/14/90	680	36	150	1060	13000
	07/17/91	330	1.8	1.7	3.6	1300
	10/10/91	3.1	0.6	0.7	<.05	76
duplicate	10/10/91	3.2	0.6	0.7	<.05	72
	08/05/92	35	1.2	0.6	2.4	1700
	12/02/92	5.5	0.9	<0.5	1.8	450
	02/11/93	77	<0.5	11	11	2000
	05/26/93	130	4.8	1.9	<1.0	670
	08/20/93	0.71	<0.5	<0.5	<0.5	230
	12/09/93	<0.5	<0.5	<0.5	0.55	210
	3/24/94	4.0	<0.5	<0.5	0.69	320
MW-9	06/14/90	12	0.78	4.5	2.54	3200
	07/17/91	3.4	<.05	<.05	<.05	87
	10/10/91	1.8	<.05	<.05	<.05	100
	08/05/92	1.7	<0.5	<0.5	1.3	150
	12/02/92	1.3	<0.5	<0.5	<0.5	62
	02/11/93	0.7	ND	ND	ND	55
	05/26/93	0.6	<0.5	<0.5	<1.0	<50
	08/20/93	<0.5	<0.5	<0.5	<1.0	<50
	12/09/93	<0.5	<0.5	<0.5	<0.5	<50
	3/24/94	<0.5	<0.5	<0.5	<0.5	<50
MW-10	06/14/90	20	.69	4.3	7.7	400
	07/17/91	4.2	<.05	<.05	<.05	290
	10/10/91	<.05	<.05	<.05	<.05	90
	08/05/92	<0.5	<0.5	<0.5	<0.5	790
	12/02/92	<0.5	<0.5	<0.5	<0.5	85
	02/11/93	23	ND	14	11	1000
	05/26/93	<0.5	<0.5	<0.5	<1.0	130
	08/20/93	<0.5	0.5	<0.5	<1.0	180
	12/09/93	<0.5	<0.5	<0.5	<0.5	<50
	3/24/94	0.68	<0.5	<0.5	<0.5	130

TABLE 1 (continued)

MALIBU GRAND PRIX – OAKLAND, CALIFORNIA
WATER SAMPLE ANALYSIS RESULTS, ppb

Well #	Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg
MW-11	10/09/91	<.05	1.2	1.0	6.4	430
	08/05/92	<0.5	<0.5	3.2	3.2	580
	12/01/92	<0.5	<0.5	2.2	1.5	140
	02/11/93	1.2	<0.5	3.0	1.8	340
	05/26/93	<0.5	<0.5	<0.5	<1.0	<50
	08/20/93	<0.5	<0.5	<0.5	<1.0	<50
	12/09/93	<0.5	<0.5	<0.5	<0.5	<50
	3/25/94	<0.5	<0.5	<0.5	<0.5	<50
MW-12	10/09/91	<.05	2.6	0.8	5.1	1500
	08/05/92	<0.5	<0.5	9.1	1.1	53
	12/01/92	<0.5	<0.5	<0.5	<0.5	<50
	05/26/93	<0.5	<0.5	<0.5	<1.0	210
	08/20/93	<0.5	<0.5	<0.5	1.7	540
	12/09/93	<0.5	<0.5	<0.5	<0.5	<50
	3/25/94	<0.5	<0.5	<0.5	<0.5	<50
MW-13	10/09/91	<.05	0.9	0.6	3.0	720
	08/05/92	<0.5	2.7	<0.5	0.69	1400
duplicate	08/05/92	<0.5	3.0	<0.5	0.7	1100
	12/01/92	<0.5	2.9	<0.5	0.9	670
	02/11/93	4.1	0.9	<0.5	<0.5	600
	05/26/93	<0.5	<0.5	<0.5	<1.0	220
	08/20/93	0.6	0.5	<0.5	<1.0	230
	12/09/93	<0.5	<0.5	<0.5	<0.5	160
	3/25/94	<0.5	<0.5	<0.5	<0.5	110
MW-14	08/27/91	<.05	<.05	<.05	<.05	<50
hydropunch	10/09/91	<.05	<.05	<.05	0.9	<50
	08/05/92	<0.5	<0.5	<0.5	<0.5	<50
	12/01/92	<0.5	<0.5	<0.5	<0.5	<50
	02/11/93	<0.5	<0.5	<0.5	<0.5	<50
	05/26/93	<0.5	<0.5	<0.5	<1.0	<50
	08/20/93	<0.5	0.5	<0.5	<1.0	<50
	12/09/93	<0.5	<0.5	<0.5	<0.5	<50
	3/25/94	<0.5	<0.5	<0.5	<0.5	<50
MW-15	10/10/91	<.05	<.05	<.05	<.05	<50
	08/05/92	0.8	<0.5	<0.5	<0.5	<50
	12/02/92	<0.5	<0.5	<0.5	<0.5	<50
	02/11/93	<0.5	<0.5	<0.5	<0.5	<50
	05/26/93	<0.5	<0.5	<0.5	<1.0	77
	08/20/93	<0.5	<0.5	<0.5	<1.0	56
	12/09/93	<0.5	<0.5	<0.5	<0.5	<50
	3/24/94	<0.5	<0.5	<0.5	<0.5	<50

TABLE 1 (continued)

MALIBU GRAND PRIX – OAKLAND, CALIFORNIA
WATER SAMPLE ANALYSIS RESULTS, ppb

Well #	Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg
MW-16	10/09/91	<.05	<.05	<.05	<.05	78
	08/05/92	<0.5	<0.5	<0.5	<0.5	<50
	12/02/92	<0.5	<0.5	<0.5	<0.5	<50
	02/11/93	<0.5	<0.5	<0.5	<0.5	<50
	05/26/93	<0.5	<0.5	<0.5	<1.0	<50
	08/20/93	<0.5	<0.5	<0.5	<1.0	<50
	12/09/93	<0.5	<0.5	<0.5	<0.5	<50
	3/24/94	<0.5	<0.5	<0.5	<0.5	<50
MW-17	10/09/91	<.05	<.05	<.05	<.05	<50
	08/05/92	<0.5	<0.5	<0.5	<0.5	<50
	12/02/92	<0.5	<0.5	<0.5	<0.5	<50
	02/11/93	<0.5	<0.5	<0.5	<0.5	<50
	05/26/93	<0.5	<0.5	<0.5	<1.0	<50
	08/20/93	<0.5	<0.5	<0.5	<1.0	<50
	12/09/93	<0.5	<0.5	<0.5	<0.5	<50
	3/24/94	<0.5	<0.5	<0.5	<0.5	<50
MW-18	10/09/91	<.05	<.05	<.05	<.05	<50
	08/05/92	<0.5	<0.5	<0.5	<0.5	<50
	12/02/92	<0.5	<0.5	<0.5	<0.5	<50
	02/11/93	<0.5	<0.5	<0.5	<0.5	<50
	05/26/93	<0.5	<0.5	<0.5	<1.0	<50
	08/20/93	<0.5	<0.5	<0.5	<1.0	<50
	12/09/93	<0.5	<0.5	<0.5	<0.5	<0.5
	3/24/94	<0.5	<0.5	<0.5	<0.5	<0.5

Samples collected in November 1989 were analyzed for Total Dissolved Solids (TDS). Four wells, MW's 1 through 4, were analyzed with TDS results ranging from 1,590 ppm to 7,490 ppm, averaging 3,075 ppm. These relatively high concentrations indicate that the ground water is brackish and would not generally be suitable as a public drinking water source.

The extents of both ground water plumes have been delineated (Plates 5 & 6). With the exception of MW-6 and MW-10, all downgradient perimeter wells have not had detectable amounts of hydrocarbons for the last two quarters. Concentrations for MW-6 and MW-10 have been stable for the

last year. On the last quarterly monitoring event, MW-10 was reported to have no detectable hydrocarbons. This would indicate that this well is on the edge of the plume.

5.2 Hydrogeology

The ground water at the site is unconfined and occurs at a depth averaging eight feet below grade. The top of the ground water occurs in fill material described from soil borings to consist mainly of a black to grayish black silty clay matrix with miscellaneous fill debris including rocks, bricks, glass, metal fragments and wood fragments (including old railroad ties). Below approximately ten feet, the soil is predominately black to grayish black clay and clayey silt (bay mud).

The aquifer is subject to tidal fluctuations, making ground water gradient determinations imprecise. Generally, the ground water slopes from east to west with an average gradient estimated at 0.002 (Plate 7).

Slug tests were performed on four of the monitoring wells in October 1991. The four wells, MW-7, MW-10, MW-17 and MW-18 were tested to provide information regarding the hydraulic conductivity and transmissivity of the shallow unconfined aquifer. The results of the slug tests are presented in Appendix B. Using the average hydraulic conductivity from the tested wells, the discharge velocity of the ground water has been calculated (Appendix B). On the basis of the slug test data, the discharge velocity of the ground water was calculated to be 0.019 feet per day or 6.9 feet per year. Using the existing plume boundaries as a reference and assuming an average plume migration rate of 6.9 feet per year, it is estimated that the plume boundaries have traveled from the tank locations to their present location in a time span of approximately twelve years or more. Verification of this migration rate has not been verified during the past years of ground water monitoring. No previously clean wells have become contaminated even though there are clean wells within 20 feet of contaminated wells. It is therefore likely that the actual plume migration rate is less than that predicted by the slug test models.

5.3 Alternative Compliance Points Qualification

The ground water conditions have been assessed as to whether the site meets the criteria to qualify for alternative compliance points according to the California Regional Water Quality Control Board, San Francisco Bay Region "Tentative Resolution Amending the Water Quality Control Plan for the San Francisco Bay Basin to Modify Criteria and Incorporate Guidance for Implementation of Alternative

Compliance Points for Ground Water Cleanup," hereafter referred to as the "Alternative Compliance Points Guidance Document." Based on these guidelines, the perimeter wells at the site should qualify as alternative compliance points.

5.3.1 Plume Migration

The site has been shown to meet the criteria stipulated in section Ia of the Alternative Compliance Points Guidance Document concerning significant pollutant migration, as shown below.

- The plume is slow-moving (less than seven feet per year) due to the occurrence of low permeability geologic materials (clays and silts).
- No significant potential horizontal migration pathways exist. None of the soil borings indicated the presence of higher permeability soil types.
- The plume occurs in the upper water bearing zone and is limited to a maximum horizontal extent of 100 feet.
- No significant vertical conduits exist within the plume area or the area between the plume and the compliance points.

5.3.2 Source Removal

The criteria for Section Ib of the Alternative Compliance Points Guidance Document requiring adequate source removal will be met upon completion of the soil excavation described in Section 4.0 above.

5.3.3 Best Available Technologies for Ground Water Remediation

Due to the nature of the soil type described at the site, the best available technologies for ground water remediation are not appropriate nor cost-effective. Conventional pump and treat methods of removal would be of limited value due to the abundance of adsorptive clays. Only a localized effect on the plume would be realized with little effect on the capillary zone or areas between wells. Enhanced in situ biological treatment of the ground water would also prove inefficient since the clayey soil would deter adequate nutrient delivery and control.

5.3.4 Risk Management and Ground Water Monitoring

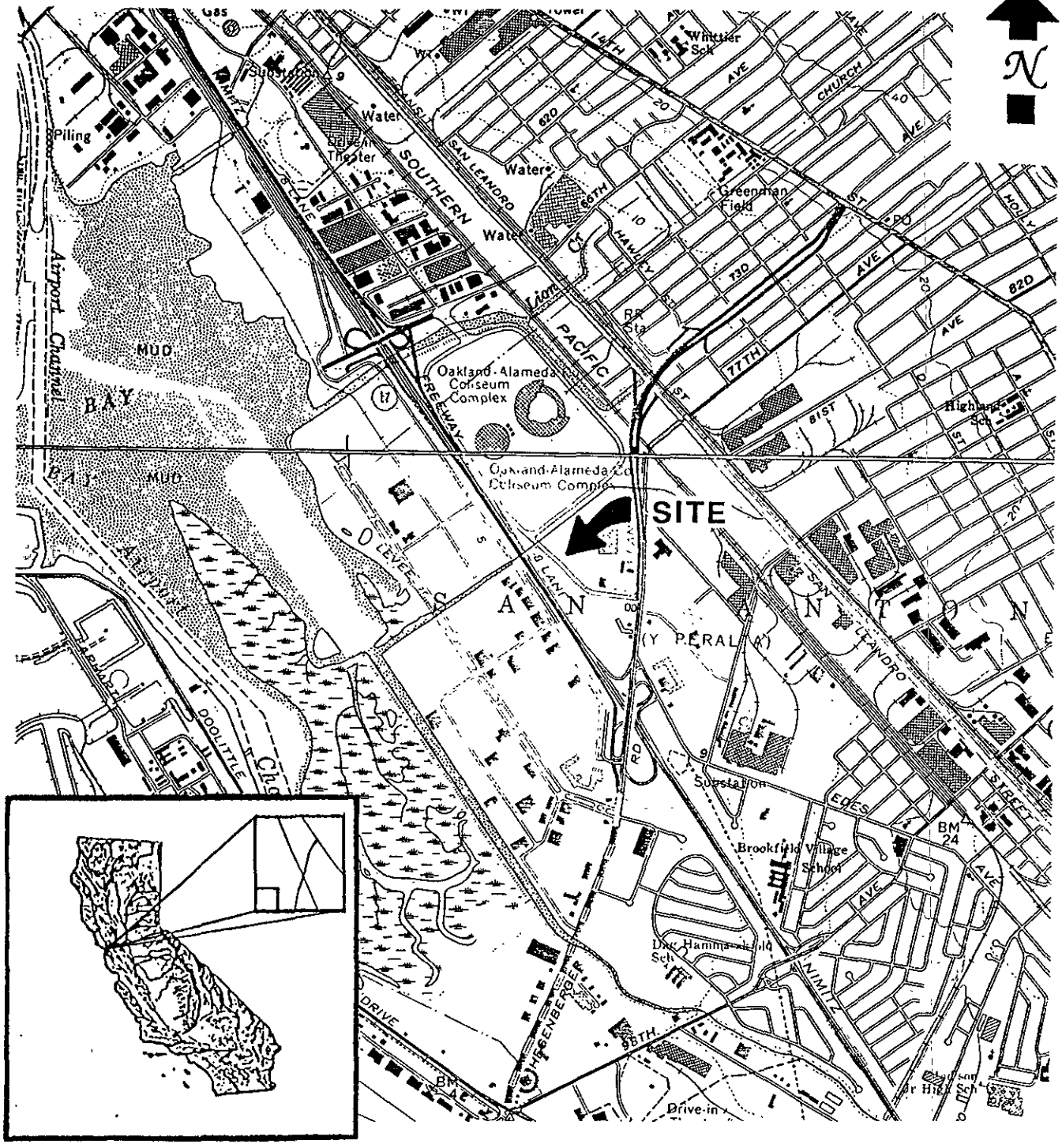
The presence of the ground water plume should not pose a significant risk to public health with the present and anticipated future use of the site. The areas above both ground water plumes are asphalt parking lots that extend from the source, downgradient to the large paved road (South Coliseum Way) located west of the site. West of the road is a planted median a drainage ditch and then the 880 Freeway. Based on the ground water velocity calculated in Section 5.2, an additional seventeen years will elapse before the plume could reach the drainage ditch. This is assuming present conditions will continue. Since the source of pollutants will have been removed, ground water hydrocarbon levels will continue to decline through natural microbial degradation. It is likely that detectable amounts of hydrocarbons may not reach the ditch or extend much past its present location. Additional chemical fate transport modeling would be required to accurately determine the maximum plume terminus.

To monitor the progress of the plume degradation, it is recommended that ground water monitoring continue. Since there is at present four and a half years of data available showing stable or declining hydrocarbon levels, quarterly monitoring should continue for two years after removal of the impacted soil. If after two years of monitoring the hydrocarbon concentrations show a definite decreasing trend, site closure could be recommended. An additional year of semi-annual monitoring may be required to establish a trend.

I agree with this approach

6.0 CONCLUSIONS

On the basis of the information presented in this report and previous assessment and monitoring reports for this site, consideration of this site as a candidate for the implementation of alternative compliance points seems appropriate if the resolution is adopted by the San Francisco Bay Regional Water Quality Control Board. Excavation of the soil plumes is recommended. Removal of the soil will help mitigate further impact to the ground water. Quarterly ground water sampling should continue so that ground water plume conditions could be monitored.



RESNA

Working to Restore Nature

DATE: 3/12/93
PROJECT NUMBER: B4281.42

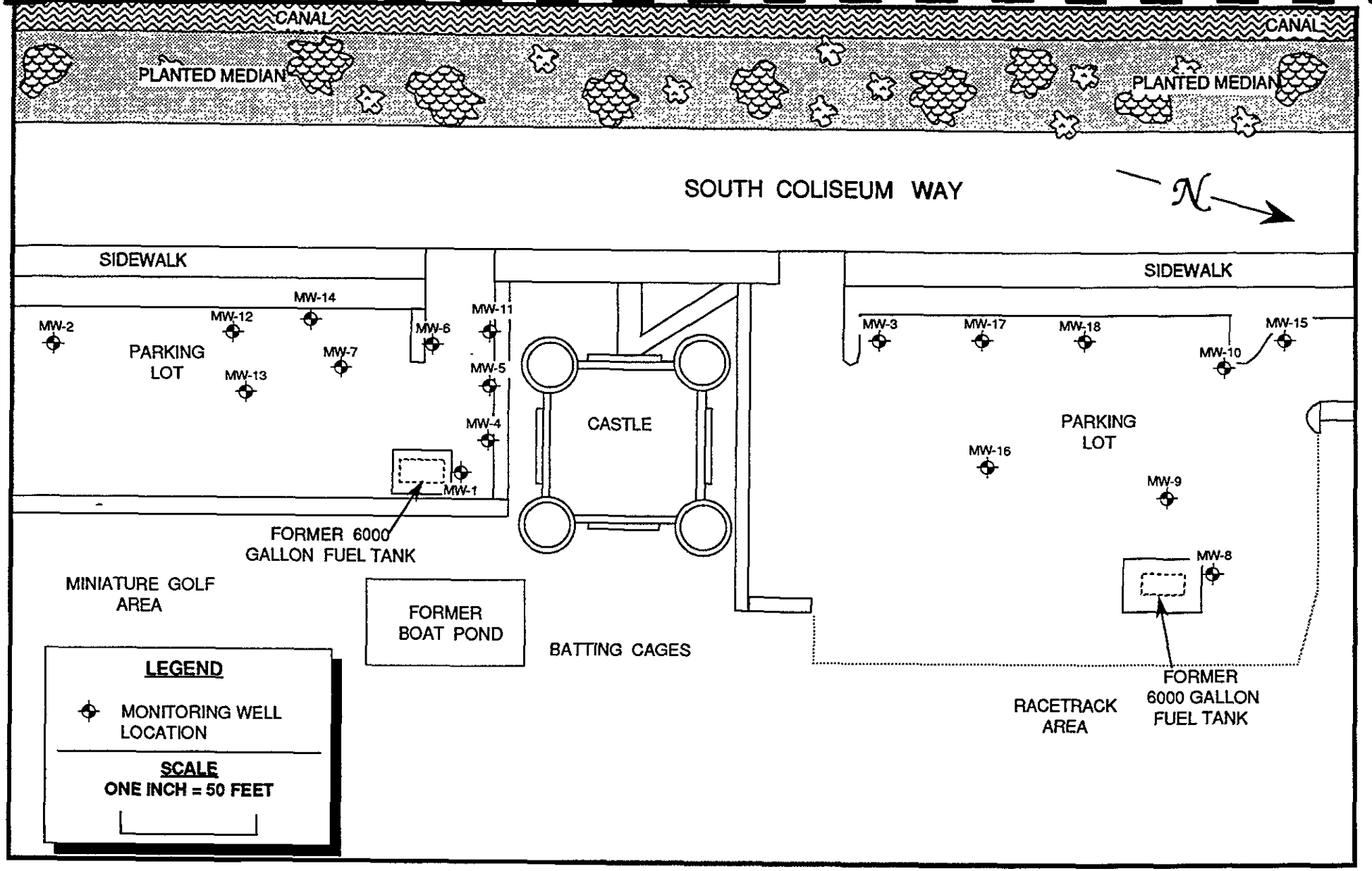
MALIBU GRAND PRIX

8000 SOUTH COLISEUM WAY
OAKLAND, CALIFORNIA

LOCATION MAP

PLATE

1



RESNA
Working to Restore Nature

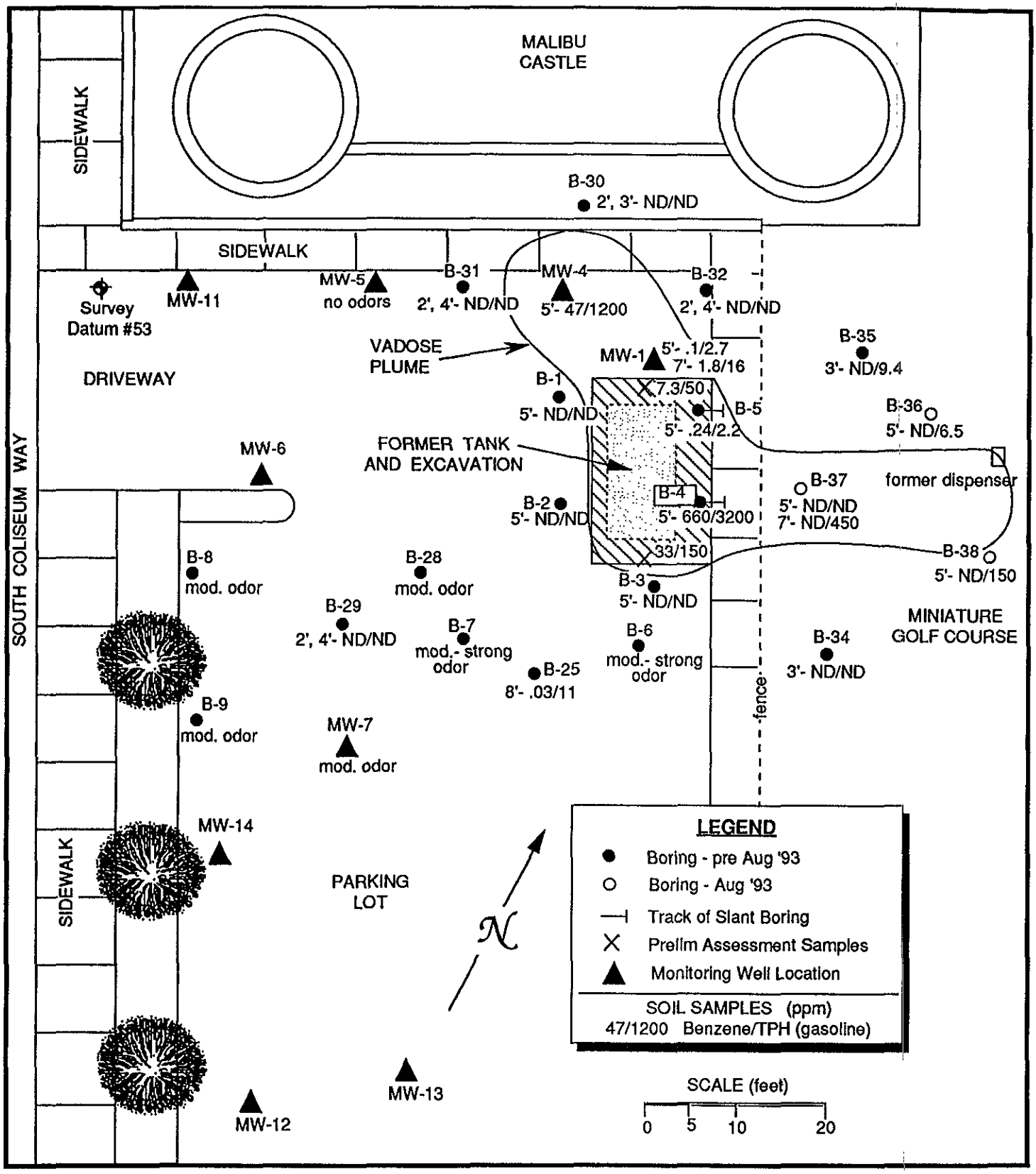
DATE: 10/6/93
PROJECT NUMBER: B 2481-41

MALIBU GRAND PRIX

8000 SOUTH COLISEUM WAY
OAKLAND, CALIFORNIA

PLOT PLAN

PLATE
2



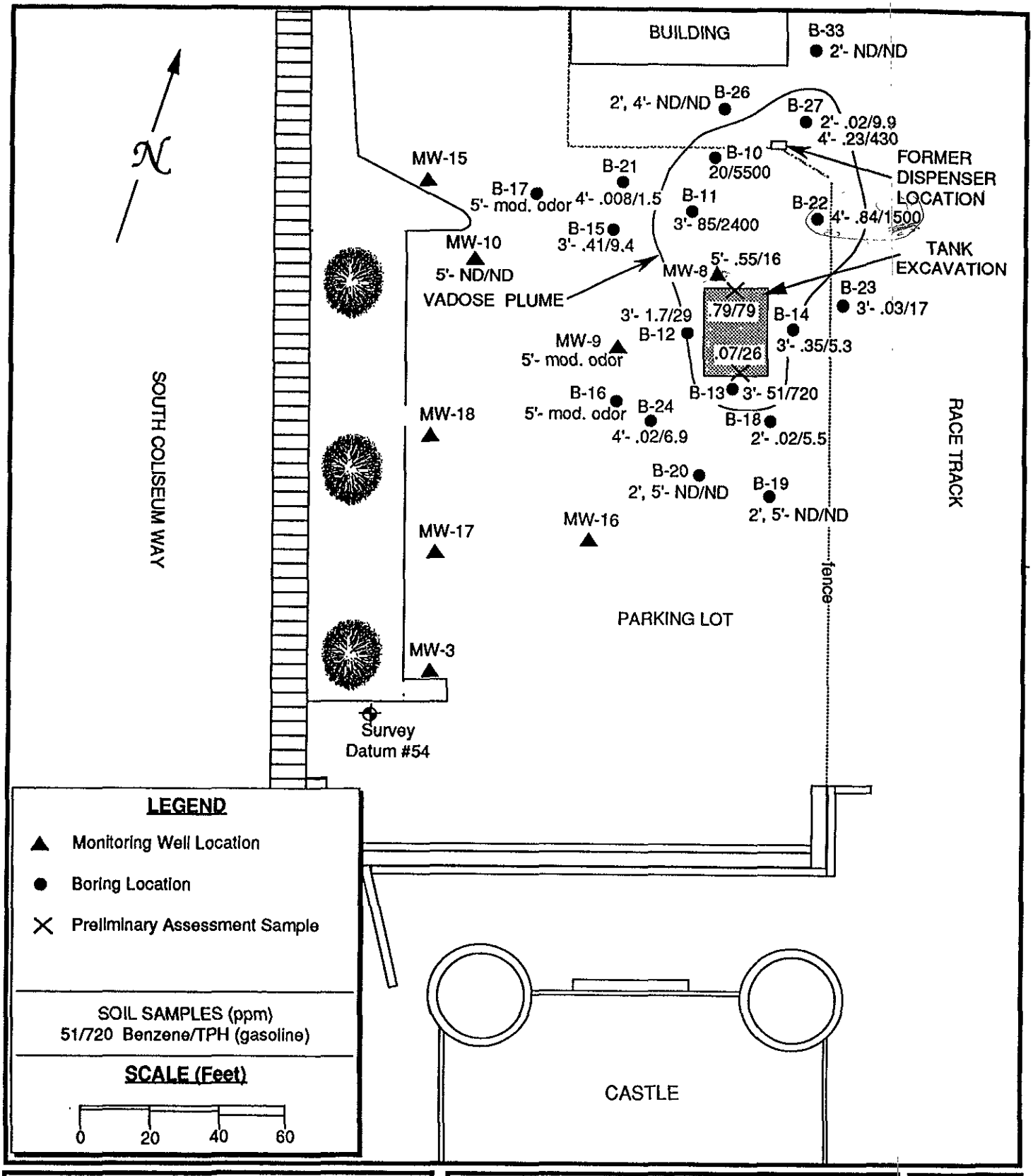
RESNA
Working to Restore Nature

DATE: 07/15/92; rev 7/22/93; 11/10/93; 4/20/94
PROJECT NUMBER: B 2481.41

MALIBU GRAND PRIX
8000 SOUTH COLISEUM WAY
OAKLAND, CALIFORNIA

AREAL EXTENT OF CASTLE SOIL PLUME

PLATE
3



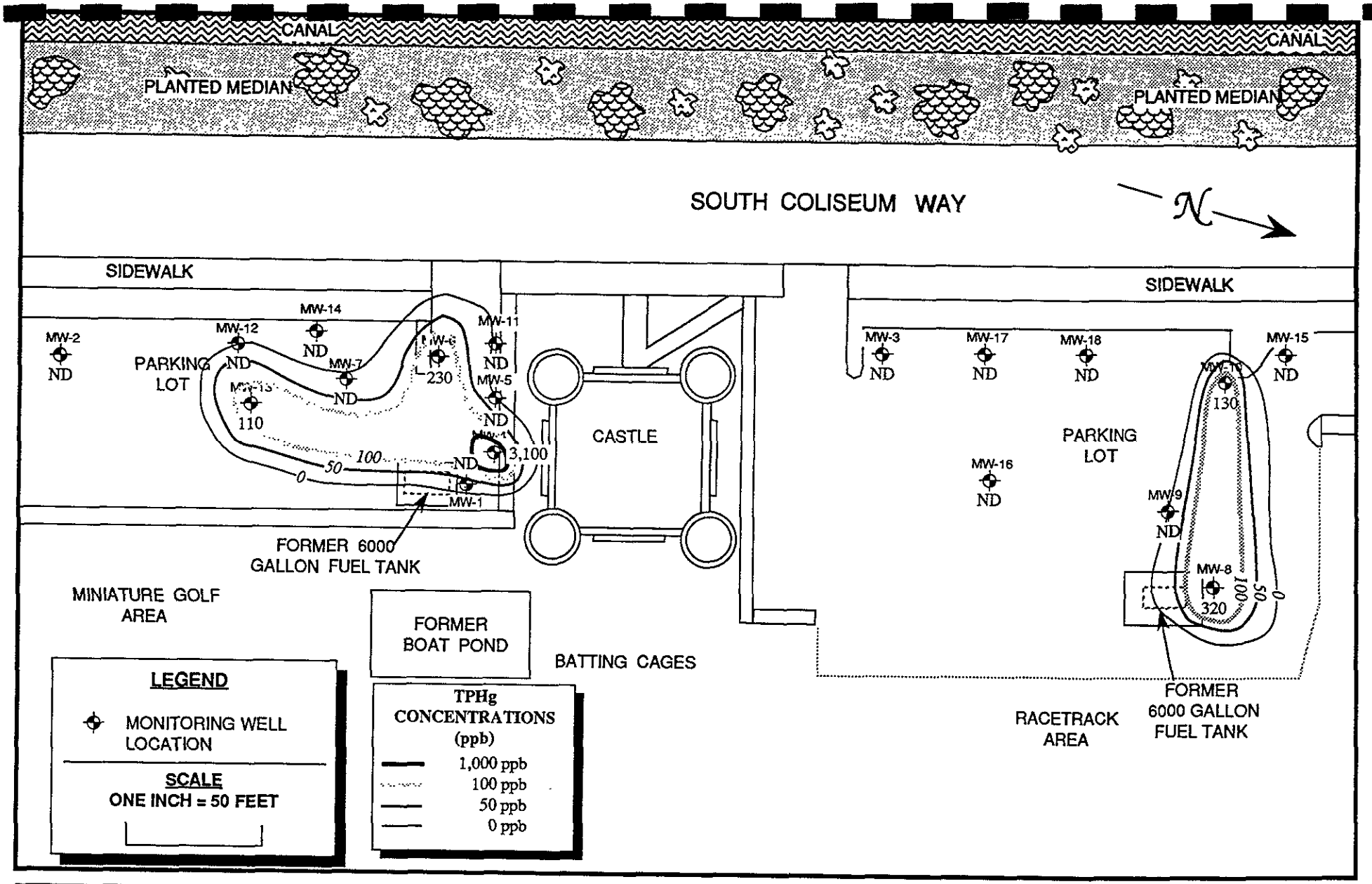
RESNA
Working to Restore Nature

DATE: 07/15/92; rev 7/22/93
PROJECT NUMBER: B 2481-41

MALIBU GRAND PRIX
8000 SOUTH COLISEUM WAY
OAKLAND, CALIFORNIA

AREAL EXTENT OF RACE TRACK SOIL PLUME

PLATE
4



RESNA
Working to Restore Nature

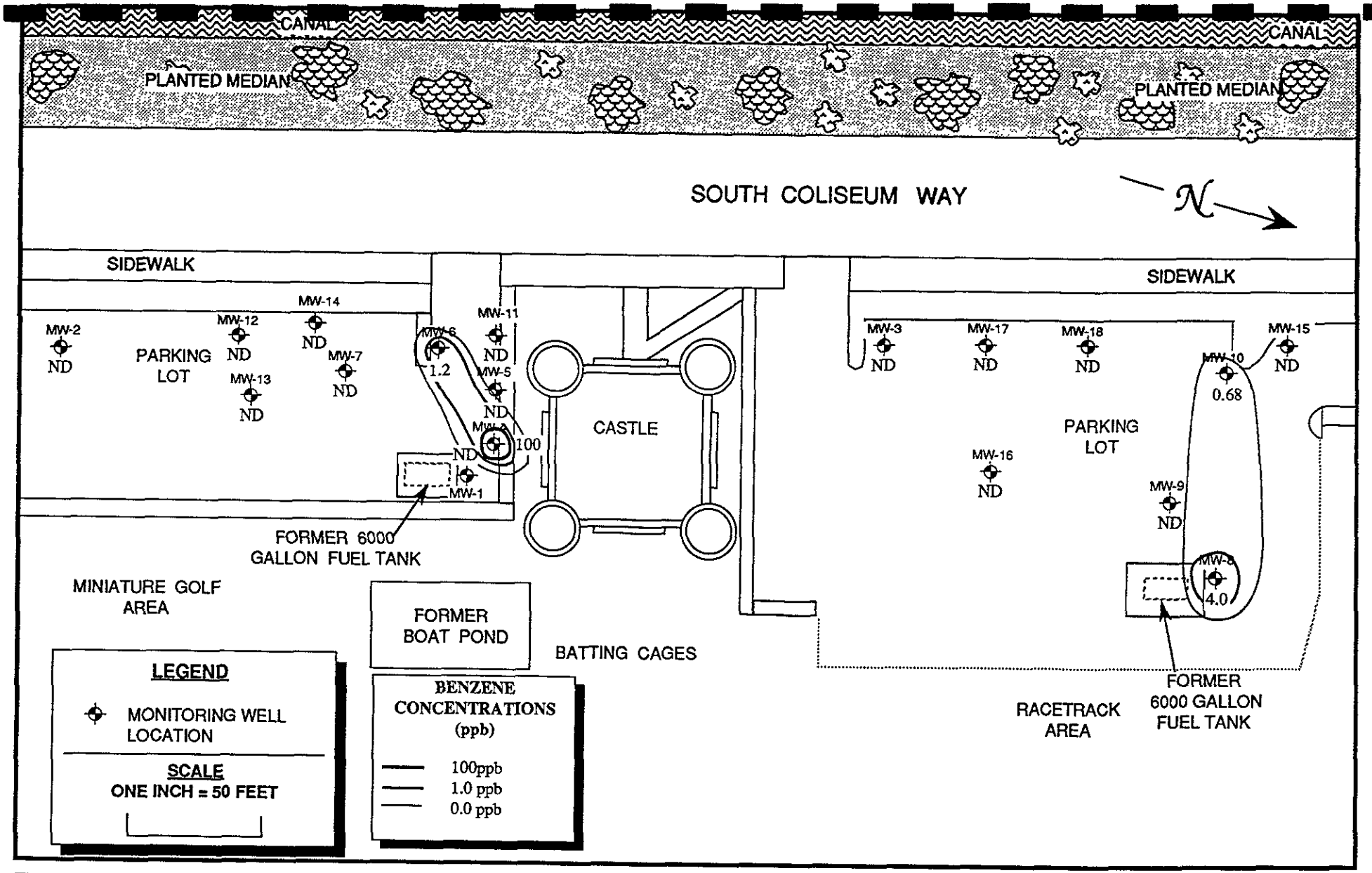
DATE: 10/6/93
PROJECT NUMBER: B 2481-41

MALIBU GRAND PRIX

8000 SOUTH COLISEUM WAY
OAKLAND, CALIFORNIA

TPHg GROUNDWATER CONCENTRATIONS (ppb)
March 1994

PLATE
5



RESNA
Working to Restore Nature

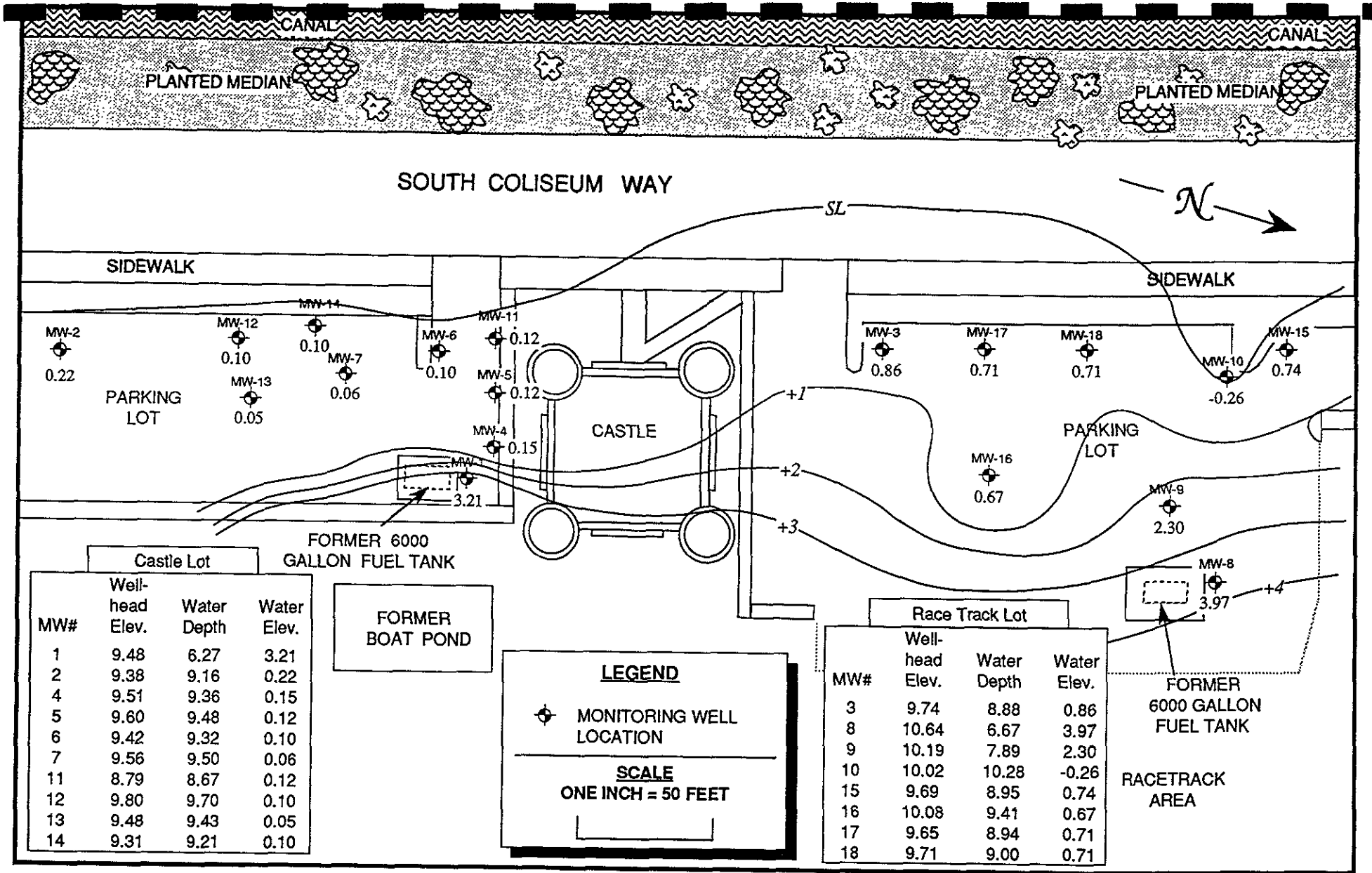
DATE: 10/6/93
PROJECT NUMBER: B 2481-41

MALIBU GRAND PRIX

8000 SOUTH COLISEUM WAY
OAKLAND, CALIFORNIA

BENZENE GROUNDWATER CONCENTRATIONS (ppb)
March 1994

PLATE
6



Castle Lot

MW#	Well-head Elev.	Water Depth	Water Elev.
1	9.48	6.27	3.21
2	9.38	9.16	0.22
4	9.51	9.36	0.15
5	9.60	9.48	0.12
6	9.42	9.32	0.10
7	9.56	9.50	0.06
11	8.79	8.67	0.12
12	9.80	9.70	0.10
13	9.48	9.43	0.05
14	9.31	9.21	0.10

Race Track Lot

MW#	Well-head Elev.	Water Depth	Water Elev.
3	9.74	8.88	0.86
8	10.64	6.67	3.97
9	10.19	7.89	2.30
10	10.02	10.28	-0.26
15	9.69	8.95	0.74
16	10.08	9.41	0.67
17	9.65	8.94	0.71
18	9.71	9.00	0.71

RESNA
Working to Restore Nature

DATE: 10/6/93
PROJECT NUMBER: B 2481-41

MALIBU GRAND PRIX

8000 SOUTH COLISEUM WAY
OAKLAND, CALIFORNIA

GROUNDWATER ELEVATION CONTOUR MAP

December 1993

PLATE
7

APPENDIX A

LABORATORY ANALYSIS REPORTS

BC LABORATORIES

RECEIVED
APR 21 1994

Purgeable Aromatics

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: REX YOUNG 805-835-7700

Date of Report: 08/31/93
Lab #: 93-08502-20

Sample Description: PROJECT #B2481.41 PROJECT MGP OAKLAND: B-36-5, SAMPLED ON 08-19-93 @ 11:40AM BY MARK G. VORIS.

TEST METHOD: TPH by D.O.H.S. / L.U.F.T. Manual Method - Modified EPA 8015
Individual constituents by EPA Method 5030/8020.

Sample Matrix: Soil

Date Sample Collected:	Date Sample Received @ Lab:	Date Analysis Completed:
08/19/93	08/23/93	

Constituents	Analysis Results	Reporting Units	Minimum Reporting Level
Benzene	None Detected	mg/kg	0.005
Toluene	None Detected	mg/kg	0.005
Ethyl Benzene	0.087	mg/kg	0.005
Total Xylenes	None Detected	mg/kg	0.01
Total Petroleum Hydrocarbons (gas)	6.5	mg/kg	1.

California D.O.H.S. Cert. #1186

Stuart S. Buttram
Department Supervisor

4100 Atlas Ct. • Bakersfield, CA 93308 • (805) 327-4911 • FAX (805) 327-1918

BC LABORATORIES

Purgeable Aromatics

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: REX YOUNG 805-835-7700

Date of Report: 08/31/93
Lab #: 93-08502-21

Sample Description: PROJECT #B2481.41 PROJECT MGP OAKLAND: B-37-5, SAMPLED ON 08-19-93 @ 11:55AM BY MARK G. VORIS.

TEST METHOD: TPH by D.O.H.S. / L.U.F.T. Manual Method - Modified EPA 8015
Individual constituents by EPA Method 5030/8020.

Sample Matrix: Soil

Date Sample Collected:	Date Sample Received @ Lab:	Date Analysis Completed:
08/19/93	08/23/93	

Constituents	Analysis Results	Reporting Units	Minimum Reporting Level
Benzene	None Detected	mg/kg	0.005
Toluene	None Detected	mg/kg	0.005
Ethyl Benzene	None Detected	mg/kg	0.005
Total Xylenes	None Detected	mg/kg	0.01
Total Petroleum Hydrocarbons (gas)	None Detected	mg/kg	1.

California D.O.H.S. Cert. #1186

Stuart S. Latham
Department Supervisor

BC

Purgeable Aromatics

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: REX YOUNG 805-835-7700

Date of Report: 08/31/93
Lab #: 93-08502-22

Sample Description: PROJECT #B2481.41 PROJECT MGP OAKLAND: B-37-7, SAMPLED ON 08-19-93 @ 12:20PM BY MARK G. VORIS.

TEST METHOD: TPH by D.O.H.S. / L.U.F.T. Manual Method - Modified EPA 8015
Individual constituents by EPA Method 5030/8020.

Sample Matrix: Soil

Date Sample Collected:	Date Sample Received @ Lab:	Date Analysis Completed:
08/19/93	08/23/93	

Constituents	Analysis Results	Reporting Units	Minimum Reporting Level
Benzene	None Detected	mg/kg	0.9
Toluene	1.5	mg/kg	0.9
Ethyl Benzene	18.	mg/kg	0.9
Total Xylenes	88.	mg/kg	2.
Total Petroleum Hydrocarbons (gas)	450.	mg/kg	200.

Note: High reported PQL's due to high concentration of target analytes.

California D.O.H.S. Cert. #1186

Stuart S. Cattram
Department Supervisor

4100 Atlas Ct. · Bakersfield, CA 93308 · (805) 327-4911 · FAX (805) 327-1918

BC LABORATORIES

Purgeable Aromatics

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: REX YOUNG 805-835-7700

Date of Report: 08/31/93
Lab #: 93-08502-23

Sample Description: PROJECT #B2481.41 PROJECT MGP OAKLAND: B-38-5, SAMPLED ON 08-20-93 @ 10:00AM BY MARK G. VORIS.

TEST METHOD: TPH by D.O.H.S. / L.U.F.T. Manual Method - Modified EPA 8015
Individual constituents by EPA Method 5030/8020.

Sample Matrix: Soil

Date Sample Collected:	Date Sample Received @ Lab:	Date Analysis Completed:
08/20/93	08/23/93	

Constituents	Analysis Results	Reporting Units	Minimum Reporting Level
Benzene	None Detected	mg/kg	0.05
Toluene	None Detected	mg/kg	0.05
Ethyl Benzene	3.7	mg/kg	0.05
Total Xylenes	2.8	mg/kg	0.09
Total Petroleum Hydrocarbons (gas)	150.	mg/kg	9.

Note: High reported PQL's due to high concentration of target analytes.

California D.O.H.S. Cert. #1186

Stuart S. Latham
Department Supervisor

4100 Atlas Ct. · Bakersfield, CA 93308 · (805) 327-4911 · FAX (805) 327-1918

RESNA

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PROJECT NO.	PROJECT NAME/SITE	P.O. #:
B248141	MGP OAKLAND	A9654

SAMPLERS (SIGN) Mark A. Voris (PRINT) MARK A. VORIS

SAMPLE IDENTIFICATION	DATE	TIME	COMP	GRAB	PRES. USED	ICED	NO. CONTAINERS	SAMPLE TYPE	BTEX (602/8020)	TPHg (8015)	TPHd (8015)	TOG 418.1/5520	601/8010	624/8240	625/8270	REMARKS
MW-16	8-20-93	8:05		X	HCl	Y	2	W	X	X						
MW-17	"	7:47		"	"	"	2	"	"	"						
MW-18	"	8:00		"	"	"	2	"	"	"						
TRAVEL BLANK					"	"	1	"								
B-36-5	8-19-93	11:40		X		"	1	S								
B-37-5	"	12:55		X		"	"	"								
B-37-7	"	~~12:55~~ 12:25		X		"	"	"								
B-38-5	8-20-93	10:00		X		"	"	"								

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	LABORATORY:	PLEASE SEND RESULTS TO:
Mark A. Voris	8/20/93	5:00	T. Neal	BC LAB	RESNA BAKERSFIELD
RELINQUISHED BY: T. Neal	DATE 8-23 93	TIME 12:41	RECEIVED BY:		
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	REQUESTED TURNAROUND TIME: NORMAL	
RELINQUISHED BY:	DATE 8-23-93	TIME 12:41	RECEIVED BY LABORATORY:	RECEIPT CONDITION:	PROJECT MANAGER: REX YOUNG

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

RECEIVED
APR 15 1994

RESNA Industries
1500 South Union Avenue
Bakersfield, CA 93307
Attention: Tim Reed

Client Project ID: B2481.41 Malibu Grand Prix
Sample Matrix: Water
Analysis Method: EPA 5030/8015 Mod./8020
First Sample #: 4CG7501

Sampled: Mar 23-25, 1994
Received: Mar 28, 1994
Reported: Apr 12, 1994

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 4CG7501 MW-1	Sample I.D. 4CG7502 MW-2	Sample I.D. 4CG7503 MW-3	Sample I.D. 4CG7504 MW-4	Sample I.D. 4CG7505 MW-5	Sample I.D. 4CG7506 MW-8
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.	3,100	N.D.	320
Benzene	0.50	N.D.	N.D.	N.D.	100	N.D.	4.0
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	42	N.D.	N.D.
Total Xylenes	0.50	N.D.	N.D.	N.D.	64	N.D.	0.69
Chromatogram Pattern:		--	--	--	Gas	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	20	1.0	1.0
Date Analyzed:	4/7/94	4/7/94	4/7/94	4/7/94	4/7/94	4/7/94
Instrument Identification:	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	88	86	87	82	86	73

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL, ELAP #1894

MT Clark

Vickie Tague Clark
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

RESNA Industries	Client Project ID:	B2481.41 Malibu Grand Prix	Sampled: Mar 23-25, 1994
1500 South Union Avenue	Sample Matrix:	Water	Received: Mar 28, 1994
Bakersfield, CA 93307	Analysis Method:	EPA 5030/8015 Mod./8020	Reported: Apr 12, 1994
Attention: Tim Reed	First Sample #:	4CG7507	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 4CG7507 MW-9	Sample I.D. 4CG7508 MW-10	Sample I.D. 4CG7509 MW-15	Sample I.D. 4CG7510 MW-16	Sample I.D. 4CG7511 MW-17	Sample I.D. 4CG7512 MW-18
Purgeable Hydrocarbons	50	N.D.	130	N.D.	N.D.	N.D.	N.D.
Benzene	0.50	N.D.	0.68	N.D.	N.D.	N.D.	N.D.
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		--	Gas	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	4/7/94	4/7/94	4/7/94	4/7/94	4/7/94	4/7/94
Instrument Identification:	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	89	83	88	91	89	91

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL, ELAP #1894

VMTClark

Vickie Tague Clark
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

RECEIVED
APR 15 1994

RESNA Industries	Client Project ID:	B2481.41 Malibu Grand Prix	Sampled:	Mar 23-25, 1994
1500 South Union Avenue	Sample Matrix:	Water	Received:	Mar 28, 1994
Bakersfield, CA 93307	Analysis Method:	EPA 5030/8015 Mod./8020	Reported:	Apr 12, 1994
Attention: Tim Reed	First Sample #:	4CG7513		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 4CG7513 MW-6	Sample I.D. 4CG7514 MW-7	Sample I.D. 4CG7515 MW-11	Sample I.D. 4CG7516 MW-12	Sample I.D. 4CG7517 MW-13	Sample I.D. 4CG7518 MW-14
Purgeable Hydrocarbons	50	230	N.D.	N.D.	N.D.	110	N.D.
Benzene	0.50	1.2	N.D.	N.D.	N.D.	N.D.	N.D.
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.50	1.9	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		Gas	--	--	--	Gas	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	4/7/94	4/7/94	4/7/94	4/7/94	4/7/94	4/7/94
Instrument Identification:	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	81	84	86	123	106	96

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL, ELAP #1894

VMT Clark

Vickie Tague Clark
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

RESNA Industries
1500 South Union Avenue
Bakersfield, CA 93307
Attention: Tim Reed

Client Project ID: B2481.41 Malibu Grand Prix
Matrix: Water
QC Sample Group: 4CG7501-18

Reported: Apr 12, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	P. Madden	P. Madden	P. Madden	P. Madden
MS/MSD Batch#:	4030819MS	4030819MS	4030819MS	4030819MS
Date Prepared:	4/7/94	4/7/94	4/7/94	4/7/94
Date Analyzed:	4/7/94	4/7/94	4/7/94	4/7/94
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	20 µg/L
Matrix Spike % Recovery:	108	90	97	112
Matrix Spike Duplicate % Recovery:	107	88	91	103
Relative % Difference:	0.93	2.2	6.4	8.4
LCS Batch#:	MB040794	MB040794	MB040794	MB040794
Date Prepared:	4/7/94	4/7/94	4/7/94	4/7/94
Date Analyzed:	4/7/94	4/7/94	4/7/94	4/7/94
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
LCS % Recovery:	82	101	88	94
% Recovery Control Limits:	71-133	72-128	72-130	71-120

SEQUOIA ANALYTICAL
ELAP #1894

Vickie Tague Clark
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

RESNA

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PROJECT NO.	PROJECT NAME/SITE	P.O. #
B2481.41	Malibu Grand Prix, Oakland	1971

SAMPLERS (SIGN) (PRINT) Stephen

RECEIVED
APR 15 1994

SAMPLE IDENTIFICATION	DATE	TIME	COMP	GRAB	PRES. USED	ICED	NO. CONTAINERS	SAMPLE TYPE	BTEX (602/8020)	TPHg (8015)	TPHd (8015)	TOG 418.1/5520	601/8010	624/8240	625/8270	REMARKS
MW-1	3/23/94	3:10			HCL	X	3	V	X	X						9403G75-01
MW-2	3/23	3:19							X	X						-02
MW-3	3/23	3:25							X	X						-03
MW-4	3/23	4:00							X	X						-04
MW-5	3/23	4:25							X	X						-05
MW-8	3/24	11:45							X	X						-06
MW-9	3/24	12:15							X	X						-07
MW-10	3/24	11:20							X	X						08
MW-15	3/24	10:45							X	X						09
MW-16	3/24	11:15							X	X						-10
MW-17	3/24	13:40							X	X						11
MW-18	3/24	12:55							X	X						12
MW-6	3/25	12:45							X	X						13
MW-7	3/25	12:20							X	X						14
MW-11	3/25	10:20			V	V	V		X	X						15

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE 3-28-94	TIME 9:30	RECEIVED BY: O'Phillips
RELINQUISHED BY: O'Phillips	DATE 3-28-94	TIME 12:45	RECEIVED BY:
RELINQUISHED BY:	DATE 3/28	TIME 12:45	RECEIVED BY LABORATORY:

LABORATORY: Sequoia Analytical

REQUESTED TURNAROUND TIME: Normal

RECEIPT CONDITION:

PLEASE SEND RESULTS TO: Tim Reed
Resna
Bakersfield

PROJECT MANAGER: Tim Reed

RESNA

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PROJECT NO.	PROJECT NAME/SITE	P.O. #:
B2481.41	Malibu Grand Prix, Oakland	11971

SAMPLERS (SIGN) _____ (PRINT) Stephen Lech

RECEIVED
APR 15 1994

	SAMPLE IDENTIFICATION	DATE	TIME	COMP	GRAB	PRES. USED	ICED	NO. CONTAINERS	SAMPLE TYPE	BTEX (602/8020)	TPHg (8015)	TPHd (8015)	TOG 418.1/5520	601/8010	624/8240	625/8270	REMARKS
A	MW-12	3/25	10:45			HCL	X	3	V	X	X						9403G75.-16
F	MW-13	3/25	11:30			HCL	X	3	V	X	X						-17
X	MW-14	3/25	11:55			HCL	X	3	V	X	X						-18

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	LABORATORY:	PLEASE SEND RESULTS TO:
[signature]	3-28-94	9:30	D Phillips 3-28-94 9:30	Sequoia Analytical	Tim Reed, RESNA, Bakersfield
RELINQUISHED BY: D Phillips	DATE 3-28	TIME 12:45	RECEIVED BY:		
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	REQUESTED TURNAROUND TIME: Normal	
RELINQUISHED BY:	DATE 3/28	TIME 1245	RECEIVED BY LABORATORY: [signature]	RECEIPT CONDITION:	PROJECT MANAGER: Tim Reed

APPENDIX B

AQUIFER TEST DATA AND CALCULATIONS

Calculations for Groundwater Discharge Velocity
Malibu Grand Prix - Oakland, California

Where:

V_d = Discharge Velocity

K = Hydraulic Conductivity

i = Gradient

And:

K = 9.42 ft/day (average)

i = .002 (average)

Therefore:

$V_d = Ki$

$V_d = (9.42 \text{ ft/day}) (0.002)$

$V_d = 0.0188 \text{ ft/day}$

$V_d = (0.0188 \text{ ft/day}) (365 \text{ days/yr}) =$

$V_d = 6.9 \text{ ft/yr}$

DATA SET: MW-7

CLIENT:	MGPOAKLAND	DATE:	10/09/91
LOCATION:	OAKLAND	WELL NO.:	MW-7
COUNTY:	ALAMEDA	WELL DEPTH:	21.00 ft
PROJECT:	Well Slug Test Data	WATER TABLE:	10.170 ft
AQUIFER:	UNCONFINED	THICKNESS:	9.33 ft
INTAKE RADIUS:	0.167 ft	CASING RADIUS:	0.167 ft
SCREEN TOP:	5.500 ft	SCREEN BASE:	19.50 ft
INITIAL HEAD:	9.330 ft	TRANS. RATIO:	1.0000

MODEL PARAMETERS:

TRANSMISSIVITY: 122. square ft/day

CONDUCTIVITY: 13.1 ft/day

MODEL TYPE: UNCONFINED PARTIALLY PENETRATED AQUIFER (Bouwer & Rice)

No.	TIME (secs)	Head, H (ft) DATA	SYNTHETIC	DIFFERENCE (percent)
1	10.00	0.630		
2	20.00	0.450		
3	30.00	0.330	0.324	1.64
4	40.00	0.260	0.262	-1.04
5	50.00	0.210	0.212	-1.25
6	60.00	0.170	0.172	-1.23
7	70.00	0.140	0.139	0.507
8	80.00	0.110	0.112	-2.48
9	90.00	0.100	0.0912	8.75
10	100.0	0.0700	0.0738	-5.50
11	110.0	0.0600		
12	120.0	0.0600		
13	140.0	0.0500		
14	160.0	0.0300		
15	180.0	0.0200		
16	200.0	0.0200		
17	220.0	0.0200		
18	240.0	0.0100		
19	260.0	0.0100		
20	280.0	0.0100		
21	300.0	0.0100		

CURRENT RESOLUTION MATRIIX NOT AVAILABLE

DATA SET: MW-10

CLIENT:	MGPOAKLAND	DATE:	10/08/91
LOCATION:	OAKLAND	WELL NO.:	MW-10
COUNTY:	ALAMEDA	WELL DEPTH:	19.00 ft
PROJECT:	Well Slug Test Data	WATER TABLE:	9.710 ft
AQUIFER:	UNCONFINED	THICKNESS:	9.30 ft
INTAKE RADIUS:	0.167 ft	CASING RADIUS:	0.167 ft
SCREEN TOP:	5.500 ft	SCREEN BASE:	19.50 ft
INITIAL HEAD:	9.330 ft	TRANS. RATIO:	1.0000

MODEL PARAMETERS:

TRANSMISSIVITY: 114. square ft/day

CONDUCTIVITY: 12.3 ft/day

MODEL TYPE: UNCONFINED PARTIALLY PENETRATED AQUIFER (Bouwer & Rice)

No.	TIME (secs)	Head, H (ft) DATA	SYNTHETIC	DIFFERENCE (percent)
1	1.00	1.17		
2	3.00	0.970		
3	5.00	0.800		
4	7.00	0.660		
5	9.00	0.580		
6	11.00	0.510		
7	21.00	0.340	0.313	7.66
8	31.00	0.270	0.271	-0.565
9	41.00	0.230	0.234	-2.11
10	51.00	0.190	0.203	-6.91
11	61.00	0.170	0.175	-3.35
12	71.00	0.150	0.151	-1.31
13	81.00	0.130	0.131	-1.11
14	91.00	0.120	0.113	5.25
15	101.0	0.100	0.0983	1.66
16	111.0	0.100		
17	121.0	0.0900		
18	131.0	0.0800		
19	141.0	0.0800		
20	151.0	0.0800		
21	161.0	0.0800		
22	171.0	0.0800		
23	191.0	0.0700		

No.	TIME (secs)	Head, H (ft) DATA	SYNTHETIC	DIFFERENCE (percent)
24	211.0	0.0500		

CURRENT RESOLUTION MATRIIX NOT AVAILABLE

DATA SET: MW-17

CLIENT: MALIBU GRAND PRIX
LOCATION: OAKLAND, CA
COUNTY: ALAMEDA
PROJECT: Well Slug Test Data
AQUIFER: UNCONFINED
INTAKE RADIUS: 0.167 ft
SCREEN TOP: 7.550 ft
INITIAL HEAD: 7.630 ft

DATE: 08-OCT-91
WELL NO.: MW-17
WELL DEPTH: 18.50 ft
WATER TABLE: 7.550 ft
THICKNESS: 7.63 ft
CASING RADIUS: 0.167 ft
SCREEN BASE: 18.50 ft
TRANS. RATIO: 1.0000

MODEL PARAMETERS:

TRANSMISSIVITY: 37.3 square ft/day

CONDUCTIVITY: 4.89 ft/day

MODEL TYPE: UNCONFINED PARTIALLY PENETRATED AQUIFER (Bouwer & Rice)

No.	TIME (secs)	Head, H (ft) DATA	SYNTHETIC	DIFFERENCE (percent)
1	1.00	2.38	2.35	0.852
2	3.00	2.35	2.33	0.569
3	5.00	2.33	2.31	0.696
4	7.00	2.30	2.29	0.385
5	9.00	2.28	2.26	0.494
6	11.00	2.25	2.24	0.153
7	13.00	2.23	2.22	0.243
8	15.00	2.20	2.20	-0.127
9	19.00	2.16	2.15	0.00291
10	21.00	2.15	2.13	0.520
11	23.00	2.11	2.11	-0.374
12	25.00	2.09	2.09	-0.343
13	27.00	2.07	2.07	-0.322
14	29.00	2.04	2.05	-0.801
15	31.00	2.03	2.03	-0.307
16	33.00	2.01	2.01	-0.314
17	35.00	2.00	1.99	0.169
18	37.00	1.97	1.97	-0.359
19	39.00	1.95	1.95	-0.397
20	49.00	1.86	1.86	-0.207
21	59.00	1.76	1.77	-0.822
22	69.00	1.68	1.68	-0.558
23	79.00	1.60	1.60	-0.523

No.	TIME (secs)	Head, H (ft) DATA	SYNTHETIC	DIFFERENCE (percent)
24	89.00	1.52	1.53	-0.739
25	99.00	1.46	1.45	0.150
26	131.0	1.27	1.24	1.91
27	161.0	1.13		
28	191.0	1.02		
29	221.0	0.910		
30	251.0	0.810		
31	281.0	0.700		
32	311.0	0.610		
33	341.0	0.520		
34	362.0	0.470		

CURRENT RESOLUTION MATRIIX NOT AVAILABLE

DATA SET: MW-18

CLIENT:	MGPOAKLAND	DATE:	10/08/91
LOCATION:	OAKLAND	WELL NO.:	MW-18
COUNTY:	ALAMEDA	WELL DEPTH:	21.00 ft
PROJECT:	Well Slug Test Data	WATER TABLE:	12.860 ft
AQUIFER:	UNCONFINED	THICKNESS:	7.64 ft
INTAKE RADIUS:	0.167 ft	CASING RADIUS:	0.167 ft
SCREEN TOP:	5.500 ft	SCREEN BASE:	20.50 ft
INITIAL HEAD:	7.640 ft	TRANS. RATIO:	1.0000

MODEL PARAMETERS:

TRANSMISSIVITY: 56.5 square ft/day

CONDUCTIVITY: 7.39 ft/day

MODEL TYPE: UNCONFINED PARTIALLY PENETRATED AQUIFER (Bouwer & Rice)

No.	TIME (secs)	Head, H (ft) DATA	SYNTHETIC	DIFFERENCE (percent)
1	2.00	1.91		
2	10.00	1.51		
3	20.00	1.12		
4	30.00	0.840		
5	40.00	0.640		
6	50.00	0.500		
7	60.00	0.390		
8	70.00	0.310		
9	80.00	0.240	0.230	4.00
10	90.00	0.200	0.193	3.04
11	100.0	0.160	0.163	-2.00
12	110.0	0.130	0.137	-5.66
13	120.0	0.110	0.115	-5.10
14	130.0	0.1000	0.0973	2.69
15	140.0	0.0800	0.0819	-2.37
16	150.0	0.0700	0.0689	1.53
17	160.0	0.0600	0.0580	3.30
18	170.0	0.0500		
19	180.0	0.0500		
20	190.0	0.0400		
21	200.0	0.0400		
22	300.0	0.0200		
23	390.0	0.0100		

No.	TIME (secs)	Head, H (ft) DATA	SYNTHETIC	DIFFERENCE (percent)
24	420.0	0.0100		
25	480.0	0.0100		

CURRENT RESOLUTION MATRIIX NOT AVAILABLE

Bakersfield Office

WEEKLY Schd. 5/2-5/13

Bakersfield Office

WORK SCHEDULE: WEEK OF 5/9/94

EMPLOYEE	PROJECT	PROJECT #	9-May MON	10-May TUES	11-May WED	12-May THUR	13-May FRI	TOTAL HRS.	BILLABLE	NON-BILLABLE	BILLABILITY
PAUL BRANSON (Tech)	WAREHOUSE	Open	8	8	8	8	8	40	30	10	
	ARIZONA OFFICE	VARIOUS	0	0	0	0	0	0	0	0	75%
SCOTT DICKSON (BK. Of	Post Office/GSA		8	8	8	8	8	40	40		100%
JOHN FARELAS (Tech)	ARIZONA OFFICE	VARIOUS	0	0	0	0	0	0	40		100%
	POST OFFICE		8	8	8	8	8	40			
RICK MCKINNEY (Tech)	Post Office	VARIOUS	8	8	8	8	8	40	40		100%
RON JACKSON (operator	Robinson May	VARIOUS	8	8	8	8	8	40	40		100%
RUBEN DORAME (tech)	Robinson May	VARIOUS	8	8	8	8	8	40	40		100%
	Ft. Irwin	Ob7332.	0	0	0	0	0	0			
RAY WESSON (operator)	~~GMF~~ ARIZ		8	8	8	8	8	40	40		100%
DENNIS McCOLLUM (PM)	FT. IRWIN	OB7332	0	0	0	0	0	0	0		
	Robinson May		8	8	8	8	8	40	40		100%
TOM HOLLENBECK (F.S.	Post Office/GSA		8	8	8	8	8	40	30	10	75%
BOB BECKER (P.S. Sup)	OFFICE		8	8	8	8	8	40	30	10	85%
MARK VORIS (driller/Tecl	Office	Various	0	0	0	0	0	0	0		
		Vacation	8	8	8	8	8	40	0	40	0%
TIM REED (Proj. II)	OFFICE		8	8	8	8	8	40	36	4	
	CALABASA INST	770133.42	0	0	0	0		0			90%
	0		0					0	0		
TEM MOORE (Asst. Proj I	OFFICE	Phase I's	8	8	8	8	8	40	0		100%
	Office	770133.42	0	0	0	0	0	0	40		
JOE O'DELL (Tech/Rig He	USDA	VARIOUS	8	8	8	8	8	40	40	0	0%
MONA RODRIGUEZ	OFFICE		8	8	8	8	8	40	20	20	50%
Teri Barabe	Office		8	8	8	8	8	40	10	30	25%
Gayle Shakleford	office		8	8	8	8	8	40	20	20	50%
T. RAMIREZ	OFFICE VARIOUS		8	8	8	8	8	40	0	40	0%
Drill Rig B-53			Closed	Closed	Closed	Closed	Closed	0	0	0	0%
	TOTALS =		144	144	144	144	144	720	536	184	74%