groundwater resources inc.

MALIBU GRAND PRIX
8000 South Coliseum Way
Oakland, California

SITE ASSESSMENT WORKPLAN
July 3, 1989

ALAMEDA COUNTY
DEPT. OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS

groundwater resources inc.

MALIBU GRAND PRIX
8000 SOUTH COLISEUM WAY
OAKLAND, CALIFORNIA

SITE ASSESSMENT WORKPLAN
JULY 3, 1989

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MALIBU GRAND PRIX - Oakland

1.0 INTRODUCTION

This workplan presents the first step, in a phased approach, in determining the extent of soil and groundwater contamination present at the Malibu Grand Prix facility, 8000 South Coliseum Way, Oakland, California (Plate 1). Groundwater Resources, Inc. (GRI) has been retained by Malibu Grand Prix to perform the necessary assessment and site characterization required by the Alameda County Department of Environmental Health and the San Francisco Bay Regional Water Quality Control Board.

2.0 BACKGROUND

One 6,000 gallon underground storage tank containing marine mix gasoline was removed from the Malibu Grand Prix facility on March 29, 1989. During the removal, the water table was observed at approximately eight feet below grade. Floating product was observed on the water in the tank excavation. A soil sample was collected from each end of the tank excavation at the soil/water interface and a water sample was collected from the tank pit Laboratory analyses of the samples reported hydrocarbon contamination in the soil and groundwater. The soil sample from the south end of the excavation contained 33 ppm Benzene and 150 ppm TPH while the soil sample from the north end of the excavation was reported as having a TPH of 50 ppm and 7.3 ppm of Benzene The water sample contained 920 ppb Benzene and 15,000 ppb TPH. The excavation was backfilled, compacted and the site secured. A closure report was submitted to the Alameda County Department of Environmental Health on April 20, 1989, with all relevant waste manifests and analysis results. On June 29, 1989, a letter from Alameda County was sent to Malibu Grand Prix Corp. requiring an initial site investigation to determine the extent of soil and groundwater contamination present at the Malibu Grand Prix facility.

3.0 SCOPE OF FIRST PHASE ASSESSMENT

The initial phase of work will include the following:

- Construction of four groundwater monitoring wells
- Drilling of five to eight soil borings
- Collection of soil and water samples from the borings and wells
- Survey of the monitoring wells for location and elevation
- Calculation of shallow water table gradient
- Analysis of the samples for hydrocarbons

4.0 OBJECTIVES

The purpose of the proposed investigation will be to:

- Determine the presence or absence of hydrocarbon contamination in the water and/or soil at each boring location
- Determine the hydraulic gradient of the shallow water table
- Determine the presence of groundwater contamination
- Assess the lateral extent of vadose contamination

5.0 PROCEDURES

5.1 Monitoring Well and Boring Locations

Three groundwater monitoring wells designated MW-1, MW-2 and MW-3 will be placed at the pump end of the tank excavation, approximately 90 feet southwest and approximately 185 feet northwest of the tank location, respectively (Plate 2). These wells will be used to measure the direction of the groundwater gradient at the site. The elevations of the wells will be determined by a licensed surveyor and the depth to groundwater measured and calculated to mean sea level. The groundwater gradient will be calculated and a groundwater monitoring well (MW-4) will be placed ten feet down gradient from the tank excavation pursuant to Regional Board Staff Recommendations, June 2, 1988.

Approximately five to seven soil borings will be made around the tank excavation to assess the vertical and lateral extent of vadose contamination (Plate 2). Samples from each boring will be screened in the field with an HNU Photoionization Meter. Water samples will also be collected from the borings and used as a screening method to determine the limits of a groundwater plume. If the presence of hydrocarbons are detected in the soil or groundwater, borings will be made further from the tank location to determine the limits of the vadose or groundwater plume.

5.2 Augering and Soil Sampling Procedures

Drilling of the monitoring wells will be performed using an eight-inch, continuous flight, hollow-stem auger. Core samples will be obtained using a two and one-half inch diameter California splitspoon sampler containing three six-inch brass sleeves. The undisturbed cores selected for laboratory analysis will be immediately sealed in the brass sleeves with teflon lined plastic end-caps and integrity tape.

The soil borings will be made using a DeepRock Hydra-Drill with two-inch, continuous-flight augers. Soil samples will be collected using a thinwall tube sampler driven by a slide-hammer. Since groundwater was observed at approximately eight feet, soil

samples will be collected at a depth of five feet below grade and at one foot above the water table. Other samples may be collected if information obtained during boring operations warrants it. Contaminated soil from the drill cuttings will be encapsulated in plastic and stored on site until proper disposal can be arranged.

During boring operations, all samples will be logged by a GRI geologist and immediately labeled and chilled at or below 4 degrees Celsius. A Chain of Custody will be maintained for the samples during transport to the laboratory for analysis. All augering equipment will be steam cleaned and the core samplers washed and rinsed after each use to avoid cross contamination, in accordance with the Sampling Protocol presented in Appendix A.

While conducting the borings, the personnel on site will be equipped with a Draeger PA-80 Air Pack, Gastech D-11 Vaportester or an equivalent, a photoionization meter, fire extinguishers and any additional equipment required for health and safety considerations.

5.3 Well Construction and Boring Abandonment

Based on the groundwater elevation observed during the tank removal, indicating a depth to groundwater of approximately eight feet, the monitoring wells will be drilled to a depth of fifteen feet. Slotted casing will be placed from five feet to fifteen feet and will have five feet of blank casing to the surface. The casing will be schedule 40 PVC pipe with flush-threaded joints. MW-1 and MW-4 will use four-inch casing while two-inch casing will be used on MW-2 and MW-3. The minimum slot size available, 0.010 inch, will be used due to the fine texture of the soil strata present. The filter pack will be placed one foot above the slotted section and will consist of #0/30 sand to restrict silt migration into the well. A two to three foot bentonite sanitary seal will be placed above the filter pack and then the annulus will be cemented to the surface. A locking cap will be placed on the well for security and the entire wellhead will be protected by a traffic box (Plate 3).

Due to the clayey nature of the soil present at the site, mudcaking along the sidewall of the borehole from the augering procedure may restrict water recovery in the well. To lessen this effect, an eighteen inch shaft will be produced at the bottom of the boring by driving the core sampling device into the bottom of the boring. This procedure will result in a relatively clean interface between the native soil and the filter pack. This will advance the total depth of each well to 16.5 feet.

The soil borings will be abandoned by placing a three foot bentonite seal at the bottom of the hole with clean fill to the

top. The borings will be capped with a two foot cement seal at the surface.

5.4 Well Purging and Water Sampling

Prior to sampling, all monitoring wells will be purged a minimum of three well volumes to ensure that the water samples are representative of the groundwater within the formation. Purged water will be collected in DOT-17-H steel drums and labeled as Hazardous Waste. The drums will be transported by GRI, under manifest , to Gibson Refinery, Bakersfield, California, for disposal. The water samples will be collected with a teflon bailer and poured directly into glass VOA bottles with teflon septa and screw-top lids. Duplicate samples will be obtained from each well. They will be labeled, chilled and transported under a Chain of Custody to the laboratory. Travel blanks, prepared by the laboratory, will accompany the water samples during transport.

5.5 Laboratory Analysis

All soil and water samples collected for analysis will be transported to a state certified laboratory and analyzed for Benzene, Toluene, Xylene, Ethylbenzene and Total Petroleum Hydrocarbons (Gasoline and Diesel) using DHS recommended methods. Additional samples may be collected for physical analysis.

6.0 SECOND PHASE OBJECTIVES

Upon review of the data obtained from the first phase of work, a plan will be developed to further define the groundwater contamination plume. Alternatives for remedial action will also be proposed if sufficient data is available. The second phase plan will propose a series of monitoring wells around and/or downgradient of the tank pit to determine the lateral extent of the groundwater contamination plume. The vertical extent of groundwater contamination will also be investigated. The second phase plan, along with the results and findings from the first phase assessment will be submitted to the Alameda County Department of Environmental Health for review.

All work will be supervised by Rex Young, State Registered Geologist #720.

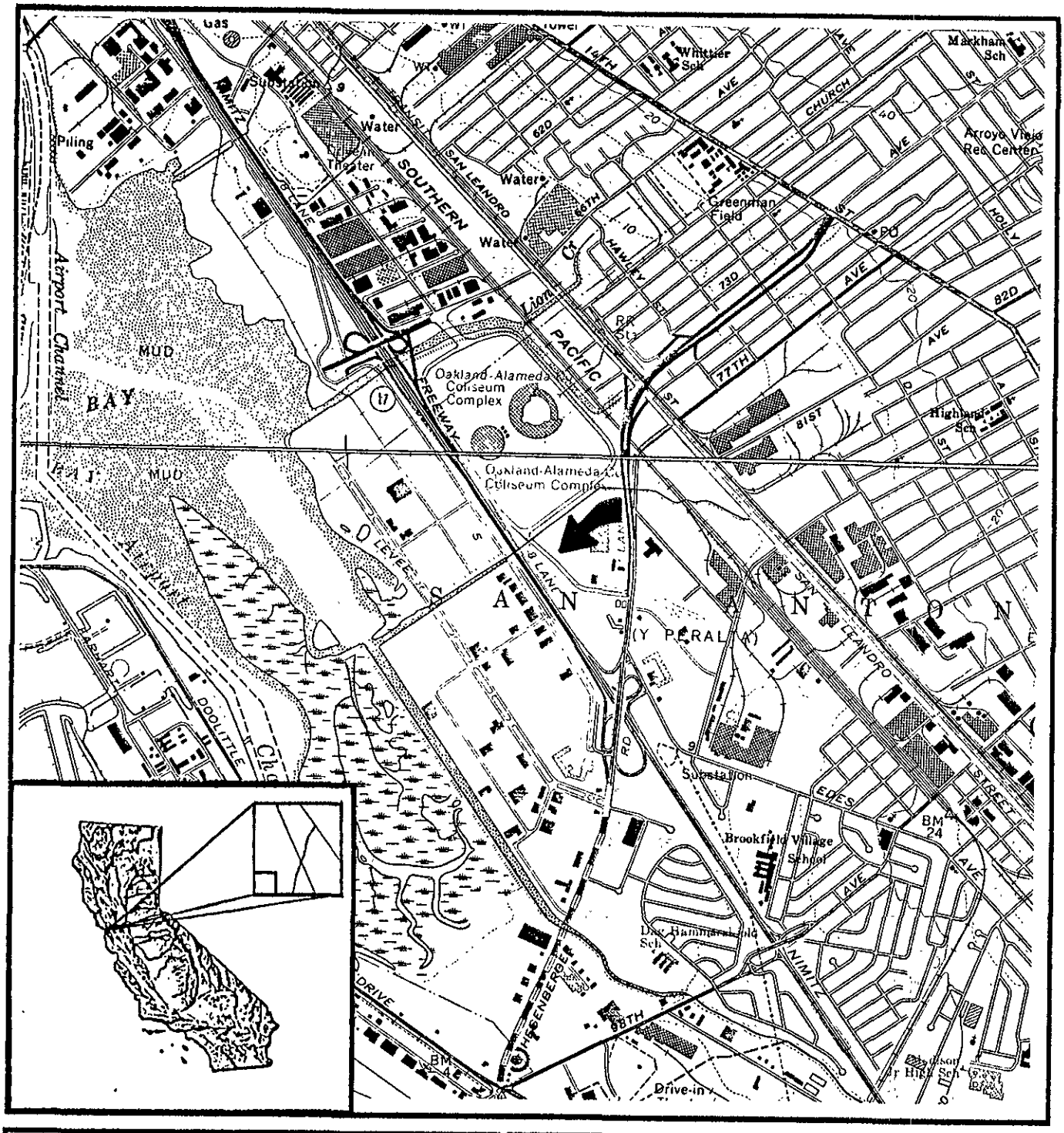
Respectfully submitted,

Groundwater Resources, Inc.

Timothy C. Reed
Project Geologist

Rex J. Young
State Registered Geologist #720

REGISTERED GEOLOGIST
REX J. YOUNG
No. 720
STATE OF CALIFORNIA



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Project Number: 28069

7-6-89

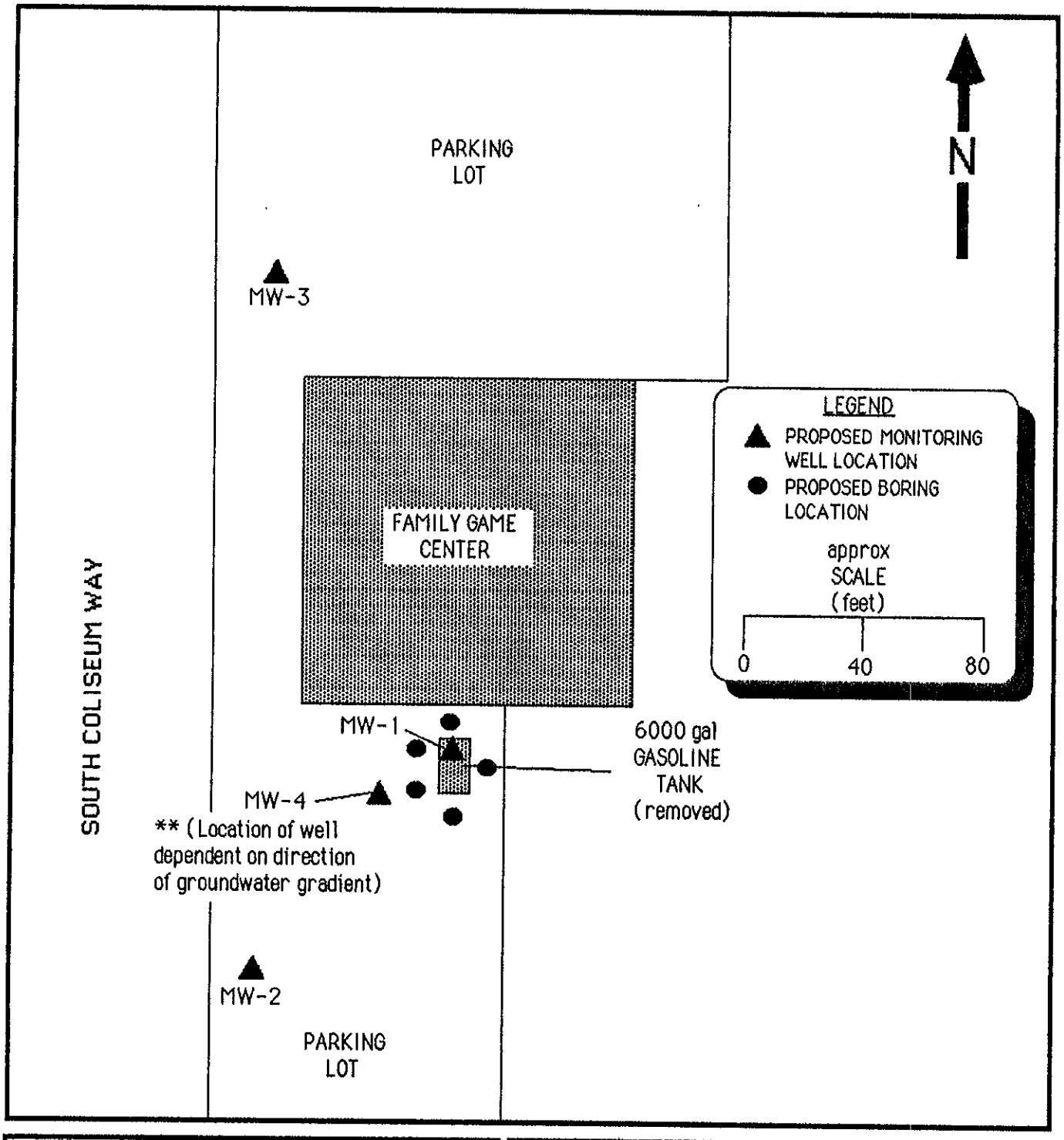
MALIBU FUN CENTER

8000 S. COLISEUM DR
OAKLAND, CA

LOCATION MAP

PLATE

1



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Project Number: 28069

6-28-89

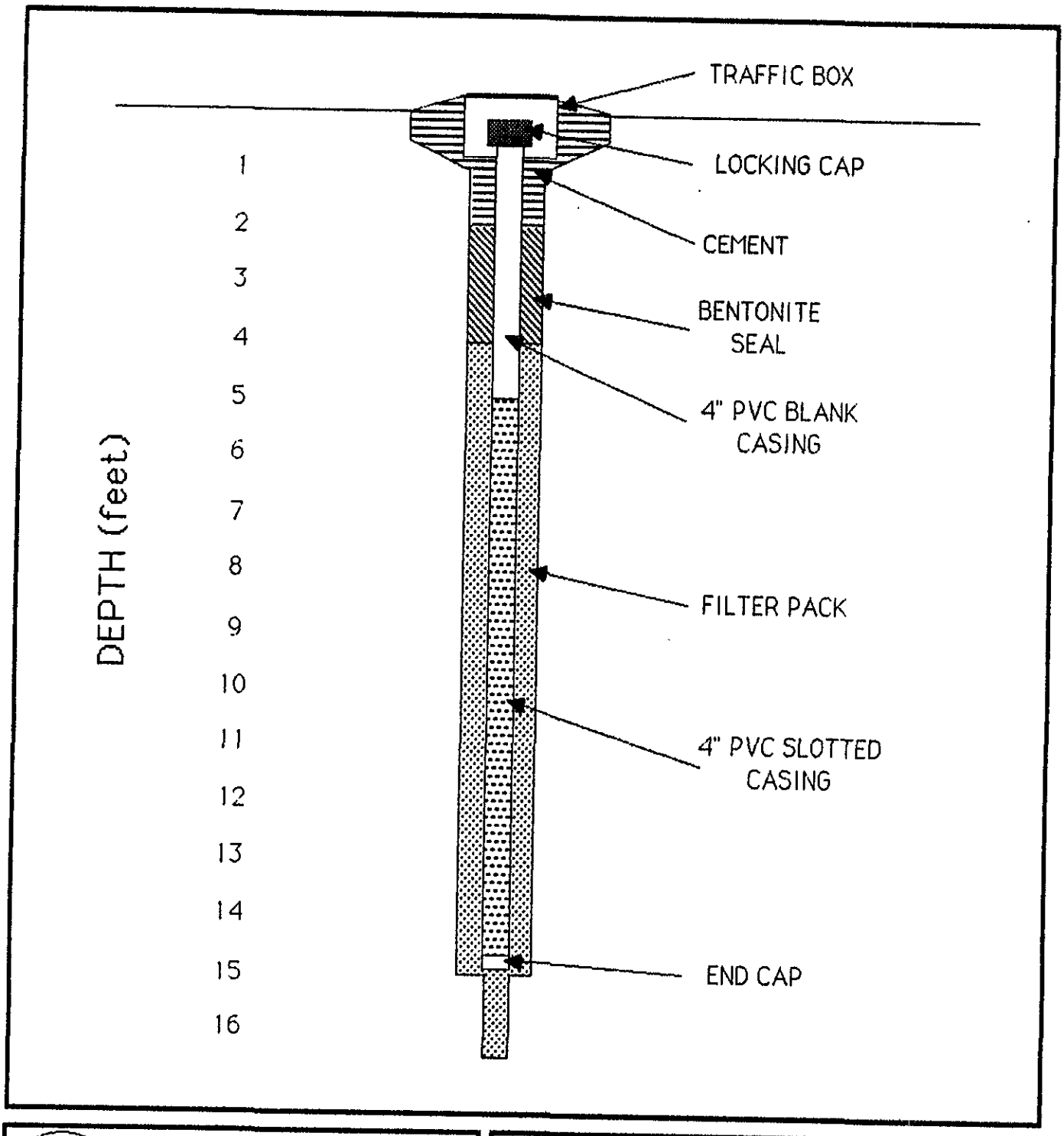
MALIBU FUN CENTER

8000 S. COLISEUM DR
OAKLAND, CA

PLOT PLAN

PLATE

2



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6-28-89

MALIBU GRAND PRIX
OAKLAND

WELL CONSTRUCTION DIAGRAM

PLATE 3

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A P P E N D I X A

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S A M P L I N G P R O T O C O L

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TEST BORING PROCEDURES

I. Soil Sampling Protocol

The following are procedures for soil sampling operations operations utilizing the hollow stem auger drilling technique.

A. Hollow Stem Auger

1. Soil borings drilled by the hollow stem auger utilize continuous flight hollow stem augers.

2. Augers, samplers and all downhole equipment are steam cleaned prior to use. In the field steam cleaning is done between borings to minimize the potential for cross-contamination.

3. A G.R.I. geologist observes the work, visually logs the soils, and collects samples at appropriate intervals.

4. The Unified Soils Classification System is utilized to classify soils encountered. Additional geological observations are noted as appropriate.

5. Soil samples destined for laboratory analysis are collected by a modified California Split Spoon. This sampler uses three, six inch long, by two and one-half inch diameter (o.d.) tubes.

Various tubes can be utilized to accommodate the type of analysis necessary:

Brass	-	All organics and general analyses (not to be used for copper or zinc analysis)
Stainless Steel	-	All organics and metals analyses for copper and zinc (not to be used for chrome or nickel analyses)
Plastic	-	All metals analyses (not to be used for organics)

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TEST BORING PROCEDURES
(Cont'd)

6. The tubes are cleaned and prepared in the G.R.I. laboratory. Tubes are scrubbed, inside and outside, with a brush and TSP, rinsed, dryed, and packed in clean containers with seals. Tubes are delivered to the drilling site in these closed containers to preserve the state of cleanliness.

7. After the sample(s) have been removed from the sampler, the sampler is completely disassembled and scrubbed in TSP and tap water. It is then rinsed in clean tapwater and reassembled with three clean tubes.

8. Dirty tubes are field washed in TSP solution, rinsed with water, and reused.

9. The sampler is driven by a 140 pound hammer with a 30 inch free fall. Blow counts are recorded as number of blows per inch of drive.

10. The sampler is driven 18 inches at each sampling interval. The first (or lowest) tube is generally retained as the sample for analysis. The other two tubes are retained for back-up or split samples.

11. A sand catcher is used in the sampler where loose soils are anticipated. This will prevent the soil from falling out of the sampler.

12. After retrieval, the sample is visually logged and immediately sealed with aluminum foil lined caps, labeled, and chilled. Clean ice chests and chemical ice ("blue ice") are used to keep the samples cold until delivered to the chemical laboratory. Teflon seals are also available for field samples.

13. Samples are delivered to the laboratory the same day they are taken, if physically possible. If the samples must be held until the next day, they are kept frozen in a secure freezer at the G.R.I. facility.

14. Sample control is maintained by a Chain of Custody form which accompanies the sample. The form documents the time, date, and responsible person during each step in the transportation process.

MONITORING WELL SAMPLING PROTOCOL

II. Groundwater Sampling

A. All equipment that is used in a monitoring well for purging, sampling, or depth measurement is decontaminated by steam cleaning or a TSP wash and rinse procedure prior to use and before re-using when more than one sample is collected.

B. Purge Volume Determination

The following procedure is followed to determine the appropriate purging volume prior to well sampling.

1. The depth-to-water is measured by a clean, electric level indicator. Measurement datum is the top of well protector.

2. Depth to the bottom of the well is measured by a clean tape and plumb bob. If possible, this is compared to the well construction log to determine inconsistencies, i.e. damaged casing, sediment in casing, etc.

3. Water volume is calculated by using the total water depth and the inside diameter of the casing.

C. Well Purging and Sampling

1. Prior to sampling, a minimum of three to five well volumes are purged from each well to ensure that water sampled is representative of the groundwater within the formation.

2. Measurements of pH, conductivity and temperature are taken at frequent intervals during the purge. Stabilization of these values indicates that representative formation fluids are being removed from the well.

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MONITORING WELL SAMPLING PROTOCOL
(Cont'd)

3. In the event that the well is pumped dry, and alternate procedure will be followed. Once a well is pumped dry, the water that enters the well during recovery is, by definition, representative formation water. The well will, therefore, be pumped dry and allowed to recover to 80% or more of the original water level.

4. Purge water is pumped directly into barrels on site until the proper method of disposal is determined.

5. Samples are pumped or poured from a bailer into sampling bottles prepared by a state certified laboratory contracted for the particular job and placed in refrigerated coolers for transport to the laboratory.

6. Samples are delivered by courier, directly to the lab on the same day of sampling, whenever practical. If next day delivery is necessary, the samples are kept refrigerated at 4 degrees C overnight and delivered to the laboratory the following morning.

7. Samples are accompanied by a Chain of Custody form which documents the time, date and responsible person during each step of the transportation process.

8. The G.R.I. coded sample numbering system allows identification of sample and client to G.R.I., while not revealing the client to anyone else.

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APPENDIX B

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GROUNDWATER RESOURCES INC.

HEALTH AND SAFETY PLAN

1.0 PURPOSE

The purpose of this Plan is to assign responsibilities, establish personnel protection standards and mandatory safety procedures, and provide for contingencies that may arise while operations are being conducted at the site.

2.0 APPLICABILITY

The provisions of the Plan are mandatory for all on-site Groundwater Resources Inc. (GRI) employees and subcontractors engaged in hazardous material management activities including, but not limited to, initial site reconnaissance, preliminary field investigation, mobilization, project operations, and demobilization.

Subcontractors shall provide a Health and Safety Plan for their employees covering any exposure to hazardous materials and shall complete all work in accordance with that plan. The subcontractor may choose to use the GRI Health and Safety Plan as a guide in developing its own plan or may chose to adopt GRI's plan. In either case, the subcontractor shall hold GRI harmless from, and indemnify it against, all liabilities in the case of any injury. GRI reserves the right to review and approve the subcontractor's plan at any time.

Grossly inadequate Health and Safety practices on the part of the subcontractor or the belief that the subcontractor's personnel are or may be exposed to an immediate health hazard, shall be cause for GRI to suspend the subcontractors site work and ask the subcontractor's personnel to evacuate the hazard area.

The subcontractor shall provide its own safety equipment in accordance with Health and Safety Plan requirements. The subcontractor shall comply with all regulations including OSHA 29 CFR 1910.134 (Respiratory Protection).

3.0 RESPONSIBILITIES

3.1 SAFETY COORDINATOR

The Safety Coordinator (SC) generally shall not be involved directly in onsite activities. However, the SC shall provide the following functions in support of the field activities:

1. Maintain an adequate inventory of equipment in good working order.

2. Maintain all necessary files and records.

3. Ensure that all monitoring equipment is calibrated on a regular basis and that the results are properly recorded and filed.

4. Ensure monitoring equipment is operating correctly and provide for maintenance if it is not.

5. Be available for consultation by the Project Manager or Safety Officer.

3.2 PROJECT MANAGER

The Project Manager (PM) shall direct on-site investigation operational efforts. At the site the PM, assisted by the Safety Officer (SO), shall have the primary responsibility for:

1. Ensuring that appropriate personal protective equipment is available and properly utilized by all on-site personnel.

2. Ensuring that personnel are aware of the provisions of this plan, are instructed in the work practices necessary to insure safety, and in planned procedures for dealing with emergencies.

3. Ensuring that personnel are aware of the potential hazards associated with on-site operations.

4. Monitoring the safety performance of all personnel to ensure that the required work practices are employed.

5. Correcting any work practices or conditions that may result in injury or exposure to hazardous substances.

3.3 SAFETY OFFICER

The Safety Officer (SO) shall:

1. Implement project Health and Safety Plans, and report any deviations from the anticipated conditions described in the plan.

2. Ensure that all on-site personnel have a minimum of 24 hours safety training.

3. Ensure that all monitoring equipment is recently calibrated.

4. Ensure monitoring equipment is operating correctly. (Report to Safety Coordinator if it is not.)

5. Be responsible for identifying all site personnel with special medical problems.

6. Preparing any accident/incident report.

7. Assume any other duties as directed by the PM.

3.4 PROJECT PERSONNEL

Project personnel involved in on-site operations shall be responsible for:

1. Taking all reasonable precautions to prevent injury to themselves and to their fellow employees.

2. Performing only those tasks that they believe can be done safely, and immediately reporting any accidents and\or unsafe conditions to the SO or PM.

3. Implementing the procedures set forth in the Health and Safety Plan, and reporting any deviations from the procedures described in the Plan to the SO or PM for action.

4.0 BACKGROUND

All personnel shall be knowledgeable concerning the following topics on a site specific basis including, but not limited to:

Site History
Prior Activity
Suspected Hazards

5.0 EMERGENCY CONTACTS AND PROCEDURES

5.1 CONTACTS

Should any situation or unplanned occurrence require outside or support services, the appropriate contact from the following list should be made:

Agency	Contact Person	Telephone
Police	_____	_____
Fire	_____	_____
Ambulance	_____	_____
Hospital	_____	_____
Project Manager	_____	_____
Safety Coordinator	_____	_____
Safety Officer	_____	_____
Client Contact	_____	_____

5.2 PROCEDURES

In the event that an emergency develops on site, the procedures described below are to be immediately followed. Emergency conditions are considered to exist if:

--Any of the project personnel are involved in an accident or experiences any adverse effects or symptoms of exposure while on site; or

--A condition is discovered that suggests the existence of a situation more hazardous than anticipated.

The following emergency procedures shall be followed:

1. Personnel onsite shall use the "buddy" system (pairs). Personnel shall pre-arrange hand signals or other means of emergency signals for communication in case of lack of radios or radio breakdown. The following hand signals are suggested:

   -- Hand gripping throat: out of air, can't breathe

   -- Grip partner's wrist or place both hands around own waist: leave area immediately

   -- Hands on top of head: need assistance

   -- Thumbs up: OK, I'm all right, I understand

   -- Thumbs down: No, negative

2. The Safety Officer shall establish emergency evacuation routes and shall make all project personnel aware of these routes prior to the first onsite activities. In the event of an emergency, selection of the escape route shall be based on the nature of the emergency and wind direction.

3. Visual contact shall be maintained between on-site personnel. Support personnel shall remain in close proximity in order to assist in case of emergencies.

4. In the event that any of the personnel experiences any adverse effects or symptoms of exposure while on site all personnel shall immediately halt work and act according to the instructions provided by the Safety Officer.

5. Wind indicators, visible to all on-site personnel, shall be provided by the Safety Officer to indicate possible routes for upwind escape.

6. The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated shall result in the evacuation of the on-site personnel and re-evaluation of the hazard and the level of protection required.

7. In the event that an accident occurs, the SO shall complete an Accident Report Form for submittal to the Safety Coordinator (SC). The SC shall initiate action to correct the situation that caused the accident.

6.0 HAZARD CHARACTERISTICS, MONITORING METHODS AND PROTECTION REQUIRED

All personnel shall be knowledgeable concerning the following topics on a site specific basis including, but not limited to:

Exposure Limits
Recognizable Characteristics
Symptoms of Overexposure
Potential Chronic Effects
First Aid Treatment
Monitoring Methods
Action Levels
Protection Measures

7.0 STANDARD SAFE WORK PRACTICES

7.1 GENERAL

1. Eating, drinking, chewing gum or tobacco, and smoking shall be prohibited in the contaminated or potentially contaminated area or where the possibility for the transfer of contamination exists.

2. Avoid contact with potentially contaminated substances. Do not walk through puddles, pools, mud, etc. Avoid, whenever possible, kneeling on the ground, leaning or sitting on equipment or ground. Do not place monitoring equipment on potentially contaminated surface (i.e., ground, etc.).

3. All field personnel shall make use of all their senses to alert them to potentially dangerous situations which they should avoid (i.e. presence of strong, irritating or nauseating odors).

4. Prevent spillages to the extent possible. In the event that a spillage occurs, contain liquid immediately.

5. Prevent splashing of the contaminated materials.

6. Field personnel shall be familiar with the physical characteristics of the investigation site, including:

   --Wind direction

   --Accessibility to associates, equipment, vehicles

   --Communications

   --Hot zone (areas of known or suspected contamination)

   --Site access

   --Nearest clean water sources

7. The number of personnel and equipment in the contaminated area shall be minimized, but only to the extent consistent with workforce requirements of safe site operations.

8. All wastes generated during on-site activities shall be disposed of in accordance with all applicable laws and regulations.

7.2 EXCAVATION AND WELL INSTALLATION PRACTICES

For all excavation and well installation activities, the following standard safety procedures shall be employed:

1. All equipment shall be cleaned before proceeding to site, and after the excavation and/or well installation has been completed.

2. Only the minimum number of personnel necessary to achieve the objectives shall be within 25 feet of the excavation and/or drilling activity.

3. If the emergency and backup subcontracted personnel are at the site, they shall remain 25 feet from the excavation and/or drilling activity, where practical.

4. Exclusion zones shall be established with designated hot lines. Delineation of a hot line shall reflect the interface between areas at and below a predetermined threshold contaminant concentration based on available data. This determination shall be made by the Safety Officer.

5. All unauthorized personnel shall remain outside exclusion zones at all times.

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7.0 Certifications

11-30-89

General Engineering "A" Contractor in the State of California

General Engineering Contractor in the State of Nevada

California State Hazardous Substance Removal and Remedial Actions Certification License State of Ca

California State Registered Geologists

California State Registered Environmental Assessors

Member of Kern County Hazardous Material Emergency Response Team

Qualified Field Service Technicians

Certified Advance Petro-Tite Technicians

Certified Installer for Various Hazardous Substance Storage Equipment and Monitoring Equipments