



**WALLACE • KUHL & ASSOCIATES, INC.**

GEO TECHNICAL CONSULTANTS • CONSTRUCTION TESTING

90 MAY -7 AM 10:50

June 6, 1990

Alameda County Department of Environmental Health  
Hazardous Materials Division  
Attention: Dennis Byrne  
80 Swan Way, Room 200  
Oakland, California 94621

**WORK PLAN FOR SITE EVALUATION**

*"FELIX" TANK EXCAVATION SITE*

6202 Christie Avenue  
Emeryville, California 95608  
WKA No. 1301.01

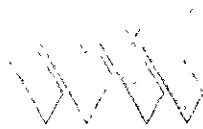
Enclosed please find two copies of our work plan for the subject property, Felix Tank Excavation Site, No. 1301.01.

Thank you for this opportunity to be of service.

Wallace - Kuhl & Associates, Inc.

Richard Premzic  
Senior Staff Geologist

RP:sdm  
Enclosure



**WALLACE • KUHL & ASSOCIATES, INC.**

CONSULTING ENGINEERS • ENVIRONMENTAL SCIENTISTS • CONSTRUCTION INSPECTING

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We are submitting this work plan for a soils and ground water investigation at 6202 Christie Avenue, Emeryville, California. The investigation is based on findings from previous laboratory testing that revealed fuel hydrocarbon contamination of ground water in the vicinity of former underground tanks and product piping.

**Subsurface Fuel Tanks**

One 1,000-gallon diesel and one 550-gallon underground waste oil tank were removed from the property in February, 1990. Analytical results of ground water samples taken from the tank excavation indicate ground water contamination as total petroleum hydrocarbons (TPH) and oil at a depth of three feet to be 12,000  $\mu\text{g/L}$  and 14,000  $\mu\text{g/L}$ , respectively. Soil and ground water quality has not been fully assessed.

**Proposed Scope of Work**

The purpose of our work for the subject property is to define the extent of hydrocarbon contaminated soils and ground water encountered during previous testing.

To determine the lateral and vertical extent of soil contamination in the vicinity of the former underground storage tanks and product piping, we will drill and sample four soil borings (B1 through B4) at the locations shown on Plate 1 using a truck-mounted drill rig equipped with hollow-stem augers.

Borings B1, B2, and B3 will be converted to ground water monitoring wells for determining ground water quality, flow direction and hydraulic gradient. Boring B4 will be sealed upon completion with bentonite grout from total depth to ground surface.

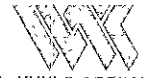
# WORK PLAN FOR SITE EVALUATION

## FELIX TANK EXCAVATION

WKA No. 1301.01

June 6, 1990

Page 2



WALLACE - KUHL ASSOCIATES, INC.

Ground water is expected to be encountered at a depth of five feet below grade. The ground water monitoring wells will extend a minimum of ten feet below the first encounter of ground water (Plate 2 for construction diagram). Subsequent to installation, the wells will be developed, sampled and surveyed to a USGS benchmark. Appendix A contains a complete description of field procedures, including well completion and development details.


All contaminated soil generated during drilling, as well as ground water purged during well development and sampling, will be stored in sealed 55-gallon drums until laboratory tests are completed. We will then make provisions for the appropriate disposal of any contaminated soil and/or ground water.

The materials encountered during drilling will be logged by a field geologist and all work will be performed under the direct supervision of a certified engineering geologist. Subsequent to field investigation, all analytical data will be evaluated and a report prepared which will include:

- a site plan showing locations of field tests
- logs of borings and monitoring wells
- laboratory test results with chain-of-custody
- conclusions regarding the extent of soil and/or ground water contamination
- recommendations for site remediation, and/or additional investigation, as required.

Please feel free to contact us should you have any questions regarding the proposed work.

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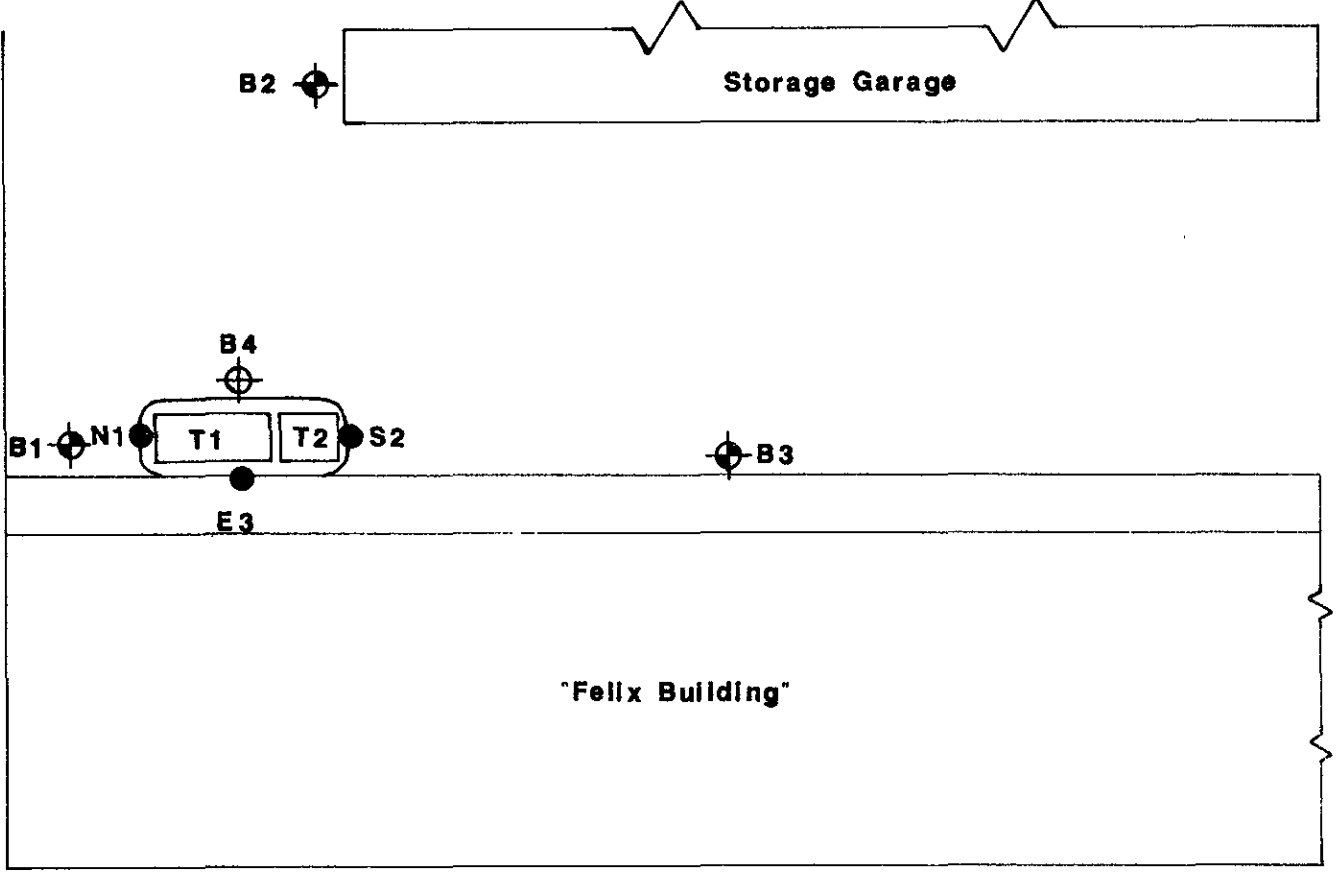
  
Anthony Saracino  
Senior Geologist



  
Richard Premzic  
Senior Staff Geologist

AS:RP:sdm


Encl: Plate 1 - Site Plan  
Plate 2 - Well Construction Diagram  
Appendix - Field Procedures





LEGEND:

T1 = 1,000 Gallon diesel tank

T2 = 550 Gallon waste oil tank

B1  = proposed ground water monitoring well

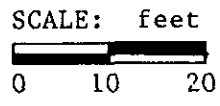
B4  = proposed soil boring

N1  = soil sample

NOTES:

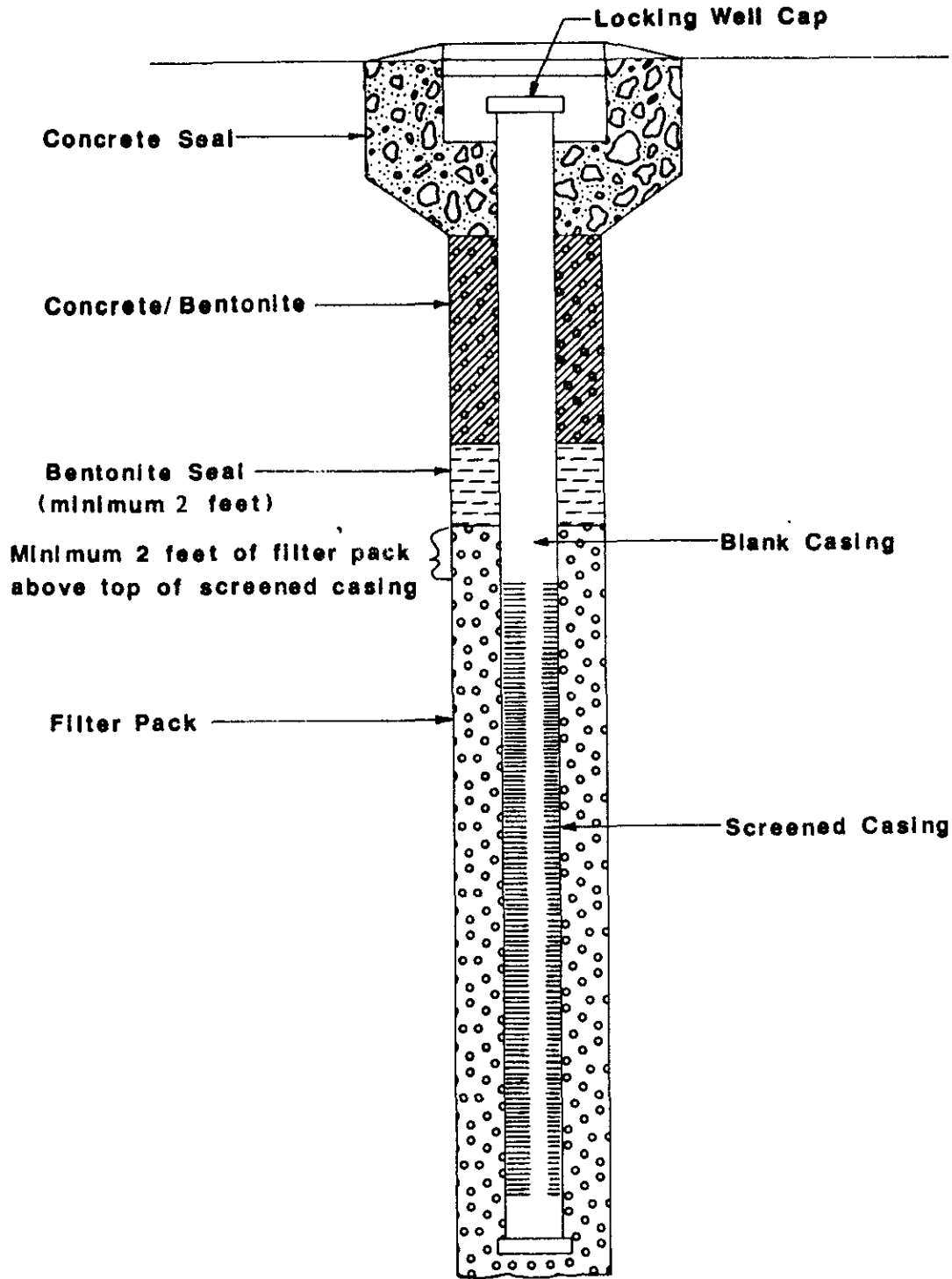
1. Adapted from a 1"=20' site plan prepared by Scott Company.

2. Sample locations are approximate.



"Felix" Tank Excavation Site  
 6202 Christie Avenue  
 Emeryville, California 95608

PROJECT NO: 1301.01  
 DATE: 6 / 90  
 PLATE NO: 1



(Not to Scale)

### Groundwater Monitoring Well



"Felix" Tank Excavation Site  
6202 Christie Avenue  
Emeryville, California 95608

PROJECT NO: 1301.01  
DATE: 6/90  
PLATE NO: 2



## APPENDIX

### FIELD PROCEDURES

#### Soil Borings and Monitoring Wells

A total of four soil borings (B1 through B4) will be drilled and sampled to ground water using a truck-mounted drill rig equipped with hollow-stem augers. Three of the borings will be converted to monitoring wells (B1, B2 and B3). Boring B4 will be sealed upon completion with bentonite grout from total depth to ground surface.

Well construction will utilize two-inch diameter PVC casing with a screened interval extending from a minimum ~~of ten feet below water table~~ ~~to a minimum of three feet above the water level~~. The slot size of the two-inch casing will be ~~0.02 inches~~. Number 3 sand will be used as the filter pack and will extend from the bottom of the screened interval to a minimum of three feet above the top of the screened interval. A minimum two-foot bentonite seal will be placed above the filter pack and a grout seal placed from the bentonite seal to the surface. ~~A locking well cap~~ will be installed along with a flush-mounted traffic-rated well cover. After installation and completion of the ground water monitoring wells, they will be surveyed to a USGS benchmark for determination of the hydraulic gradient and flow direction. Please see Plate 2 for a construction diagram of the well.

#### Soil Sampling

Soil samples will be collected from each boring using a modified California sampler containing two-inch diameter, six-inch long brass tubes, cleaned with trisodium phosphate. Samples will be screened in the field using an organic vapor analyzer (OVA) at a maximum of ~~five foot intervals from surface to total depth~~. Additional samples will be collected if the OVA indicates hydrocarbons are present or if lithological boundaries are encountered. Sample tubes will be sealed with aluminum foil, plastic caps and wrapped with tape. All samples will be preserved on ice and selected samples submitted to a California certified laboratory for analysis. Soil samples will be analyzed according to EPA test methods ~~8015 modified and 8080~~ for detection of ~~total petroleum hydrocarbons~~ and for aromatics (benzene, toluene, xylene and ethyl benzene).

#### Ground Water Development, Purging and Sampling

Upon well completion, the water level will be measured using an electrical tape (E-tape), and the well checked for free product using a clear bailer. If no free product is observed, the wells will then be developed using a surging block for a minimum of ten minutes per well. Three to five borehole volumes of water will then be removed by use of a positive displacement



pump or until the parameters of pH, turbidity, and conductivity have stabilized. After a minimum of 24 hours from the time of development, the water level in the wells will be measured again and the water checked for visual signs of free product using a clear bailer. The wells will then be purged of an additional three to five borehole volumes using the positive displacement pump. The development parameters, pH, turbidity, and conductivity will be monitored until they have stabilized or until fines have been removed from the water. Water samples will then be collected using a new polyethylene disposable bailer. A ground water sample will be obtained from wells B1, B2 and B3 following development procedures.

Pumping equipment will be cleaned prior to use with a tri-sodium phosphate cleanser to minimize the potential for cross contamination. All water removed during development and purging operations will be stored in sealed 55-gallon drums.



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# WORK PLAN FOR SITE EVALUATION

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WKA No. 1301.01

June 6, 1990

Page 2



WALLACE - KUHL & ASSOCIATES, INC.

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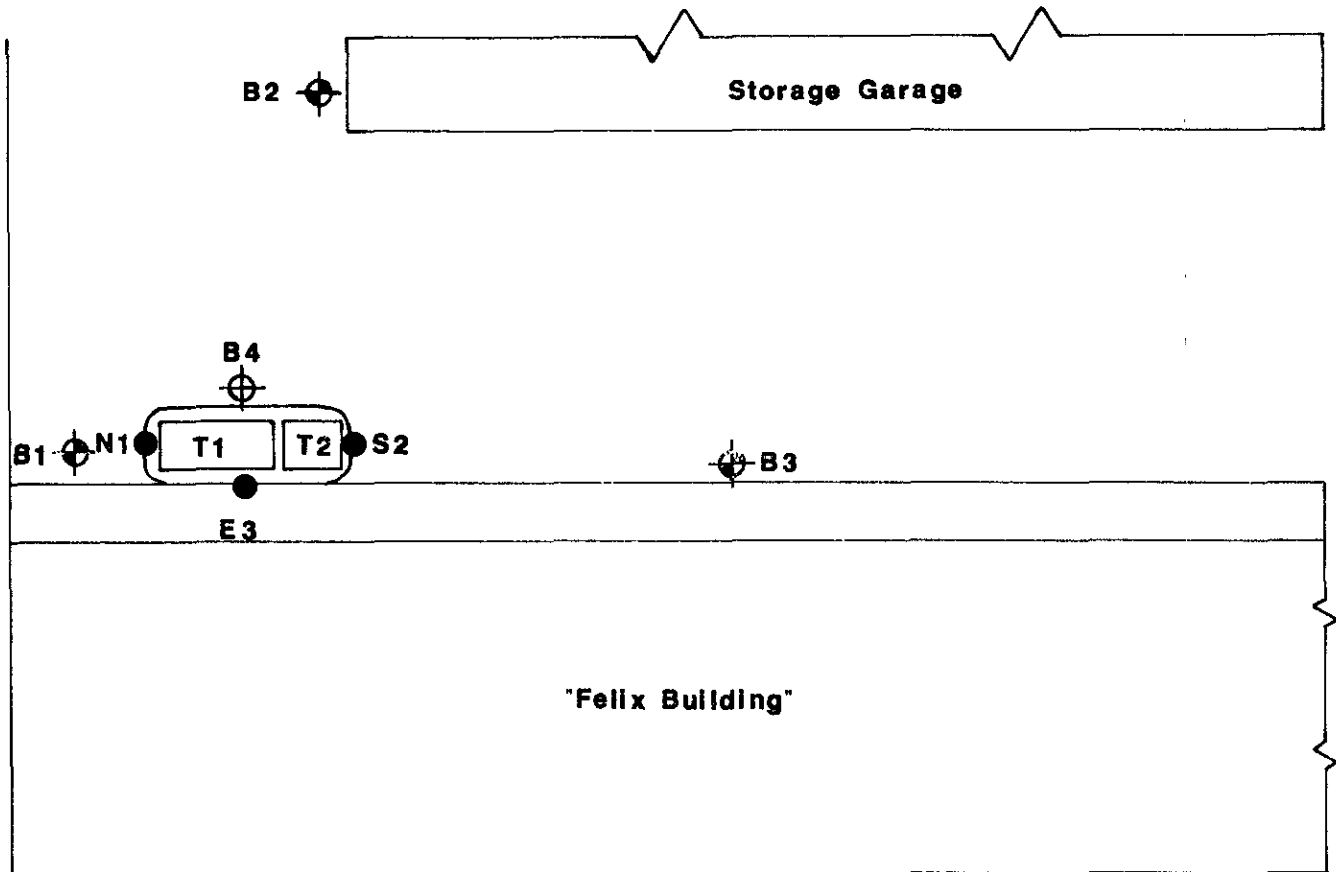
  
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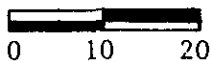
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SCALE: feet



WALLACE · KUHL & ASSOCIATES  
INCORPORATED

"Felix" Tank Excavation Site

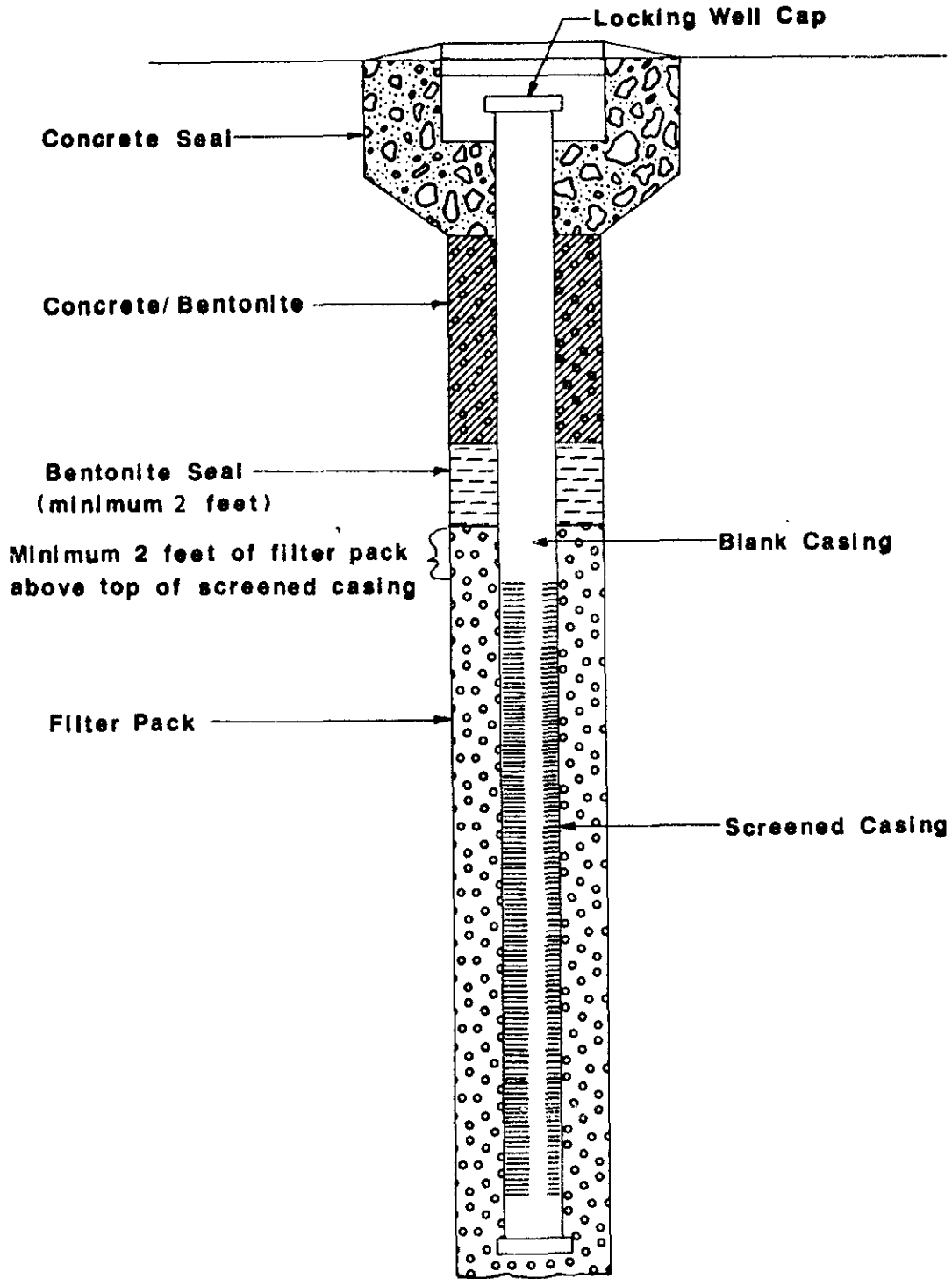
6202 Christie Avenue

Emeryville, California 95608

PROJECT NO: 1301.01

DATE: 6/90

PLATE NO: 1



(Not to Scale)

### Groundwater Monitoring Well



"Felix" Tank Excavation Site

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Emeryville, California 95608

PROJECT NO: 1301.01

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PLATE NO: 2

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