

KAPREALIAN ENGINEERING, INC.

Consulting Engineers

P.O. BOX 996 • BENICIA, CA 94510 90 DEC 12 PM 11: 01 (707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581

December 10, 1990

Mr. Dennis J. Byrne Alameda County Health Care Services 80 Swan Way, Room 200 Oakland, CA 94621

RE: Unocal Service Station #3538

411 W. MacArthur Blvd. Oakland, California

Dear Mr. Byrne:

This letter is submitted in response to your letter dated December 5, 1990, to Mr. Rick Sisk of Unocal Corporation.

Per your request, enclosed please find Kaprealian Engineering, Inc's. proposal KEI-P89-0703.P2 dated October 23, 1989 for the referenced site, as well as Boring Logs and Well Completion Diagrams for wells MW1 through MW4.

Should you have any questions regarding this matter, please do not hesitate to call me at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.

Molo Kerlo

Mardo Kaprealian

President

MK: jad\DJB

Encs.

cc: Rick Sisk, Unocal Corporation



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KEI-P89-0703.P2
October 23, 1989

PROPOSAL TO
UNOCAL CORPORATION
for the
Unocal Service Station #3538
411 W. MacArthur Blvd.
Oakland, California

GROUND WATER MONITORING, SAMPLING AND ANALYSIS

INTRODUCTION

Preliminary investigation of the ground water conducted in September, 1989 at the referenced site showed the presence of detectable levels of hydrocarbons in the monitoring wells. Per our recommendations described in KEI's report KEI-P89-0703.R5 dated October 23, 1989, Kaprealian Engineering, Inc. (KEI) proposes the following work plan.

PROPOSED TASK

- Monitor all existing wells (MW1 through MW4) on a monthly basis. Record the elevation of the water table and any abnormal conditions noted during inspection, including presence of product and sheen.
- 2. Purge and sample ground water from all monitoring wells on a quarterly basis, and analyze for total petroleum hydrocarbons (TPH) as gasoline and benzene, toluene, xylenes and ethylbenzene (BTX&E) on a quarterly basis. In addition, ground water from MW1 (adjacent to the waste oil tank), will be analyzed for TPH as diesel, total oil and grease, and 601 constituents. Prior to sampling, water table elevation will be recorded as well as the presence of any free product.
- 3. Prepare quarterly technical reports summarizing the field activity water sampling and analyses with discussion and recommendations.

The purging of ground water and sampling should continue for 12 months. This proposed monitoring and sampling program should be re-evaluated after each quarter if necessary.

				ВОР	IN	G 1	OG		
Project No KEI-P89-07			Bor 9		Cas	ing Di 2'	ameter	Logged By D.L.	
Project Na Oakland/Ma		cal,	Wel		d Ele N/A	evatio	on	Date Drilled 9/7/89	
Boring No.	•		Dri Met	lling hod	Hollow-stem Auger			Drilling Company EGI	
Penetra- tion blows/6"	G. W. level		oth (Stra gray USC:		Description		
			— U ·	_			A.C. Pave Sand and	ement Gravel: fill.	
11/17/22 32/17/20			10		СН		Gravelly moist, Sand clay stiff, gravel. Clay, hid stiff, greenish holes.	clay with sand, stiff, dark yellowish brown. clay with sand, stiff, dark yellowish brown. y, high plasticity, moist, olive, trace gh plasticity, very moist, pale olive, with gray stained root ay, moderate to high ity, stiff, moist, olive tyellowish brown.	
10/17/20	<u>¥</u>		20		sc			and, dense, very moist yellowish brown.	

BORING LOG										
Project No. KEI-P89-0703		Boring 8	Cas:	ing Di	iameter	Logged By D.L.				
Project Name Un Oakland/MacArthu		Well Hea	ad Ele N/A	evatio	on	Date Drilled 9/7/89				
Boring No. MW1		Drilling Method	3	Hollo Auge	ow-stem	Drilling Company EGI				
Penetra- G. W. tion level	De Sa	pth (ft) mples	Stra graj USC			Description				
		25	SP CH		Poorly brown.	graded sand, yellowish igh plasticity, very moist, yellowish brown.				

WELL COMPLETION DIAGRAM

PROJECT	NAME:	Unocal - Oakland, MacArthur	BORING/WELL	NO. MW1
PROJECT	NUMBER:	KEI-P89-0703		
WELL PE	RMIT NO.:	·		

Flush-mounted Well Cover A. в. c. D. Ε. F.

- A. Total Depth: 29'
- B. Boring Diameter*: 9"

 Drilling Method: Hollow Stem

 Auger
- C. Casing Length: 29'

 Material: Schedule 40 PVC
- E. Depth to Perforations: 5!
- F. Perforated Length: 24'

 Machined
 Perforation Type: Slot

 Perforation Size: 0.020"
- G. Surface Seal: 31
 - Seal Material: Concrete
- H. Seal: 1'
 - Seal Material: <u>Bentonite</u>
- I. Gravel Pack: 25'
 RMC Lonestar
 Pack Material: Sand
 Size: #3
- J. Bottom Seal: None

 Seal Material: N/A
- *Boring diameter can vary from 8-1/4" to 9" depending on bit wear.

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Project No KEI-P89-07			Bor.		Cas	ing Di	ameter	Logged By D.L.
Project Na Oakland/Ma		al,	Wel		d Ele N/A	evatio	on	Date Drilled 9/6/89
Boring No.	•		Dri Met	lling hod	Ī	Hollo Auger	ow-stem	Drilling Company EGI
Penetra- tion blows/6"	G. W. level		th (inples		Strati- graphy USCS		1	Description
9/14/21 13/15/28 9/15/19 10/15/23 8/10/15			= 0 = 5		CH CH		Clay, his silt, for dark of to 4 feet to 3/4" Sandy clayey gray, moist, to 3/4" Sandy clayey sillowing gray, more clayers sillowing gray sillowing	ravel with sand, dense, yellowish brown, gravel. ay, high plasticity, 15-d, stiff, moist, light sh brown and greenish ottled, lensed with sand. and, dense to very moist, olive and green-
9/12/16	-	- 			СН			ay, moderate to high ity, firm, moist, olive.
13/37/46	<u> </u>	<u>-</u> -	20		SW			ded sand with gravel, wet, brown, silty from et.

, .			·			
		ВО	RING	I	. O G	
Project No KEI-P89-0		Boring 9"	& Casing	g Di 2"		Logged By D.L.
Project Na Oakland/Ma	ame Unoca acArthur	1, Well He	ad Eleva N/A	atio	on	Date Drilled 9/6/89
Boring No MW2	•	Drillin Method	-	ollo uger	w-stem	Drilling Company EGI
Penetra- tion blows/6"		Depth (ft) Samples	Strat: graphy USCS		I	Description
25/37/45		25	GP- GM		Poorly greery der ish brown	raded gravel with silt d, very dense, wet, llowish brown. raded gravel with sand, use, wet, dark, yellow-wn. gh plasticity, trace ery stiff, moist, sh brown.
		35				TOTAL DEPTH 30.5'

Page 2 of 2

WELL COMPLETION DIAGRAM

PROJECT	NAME:	Unocal	_	Oakland,	MacArthur	 BORING/WELL	NO	MW2
	-					•	_	

PROJECT NUMBER: KEI-P89-0703

WELL PERMIT NO.:____

Tusn-moi	unted Well Cover	
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C		
F		
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<u> </u>		

- A. Total Depth: 30'
- Boring Diameter*: 9" в. Drilling Method: Hollow Stem

Auger

- C. Casing Length: 28.5' Material: Schedule 40 PVC
- Casing Diameter: OD = 2.375" D. ID = 2.067"
- Ε. Depth to Perforations: 3.5'
- F. Perforated Length: 25' Machined Perforation Type: Slot

Perforation Size: 0.020"

- G. Surface Seal: 2' Seal Material: Concrete
- H. Seal: 1'

Seal Material: Bentonite

I. Gravel Pack: 27' RMC Lonestar Pack Material: Sand

Size:<u>#3</u>

J. Bottom Seal: None Seal Material: N/A

*Boring diameter can vary from 8-1/4" to 9" depending on bit wear.

			ВО	RI	N G	LOG	
Project No KEI-P89-0			Boring 9"	& C	asing D:		Logged By D.L.
Project Na Oakland/Ma		cal,	Well H	ead :	Elevatio A	on	Date Drilled 9/7/89
Boring No MW3	•		Drilli Method		Hollo Auge	ow-stem	Drilling Company EGI
Penetra- tion blows/6"	G. W. level		oth (ft) mples	g	trati- raphy scs	1	Description
9/15/21 14/17/23 15/23/33			10	C		Clay, hic silt, so gray, vo above 4 Clay, hic stiff, to dark gray holes. Sandy clay plastic	gh plasticity, very moist, pale olive, with eenish gray stained root ay, low to moderate ity, 25-40% sand, stiff,
10/17/24	Y		20 —	c	H	moist, mottled sand.	olive and greenish gray, , lensed with clayey ay, moderate to high ity, stiff, moist,

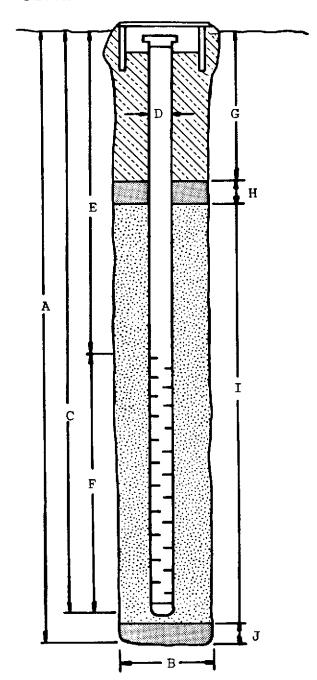
			во	RIN	G 1	LOG		
Project No KEI-P89-0		·	Boring 9"	& Cas	ing D:	iameter	Logged By D.L.	
Project Na Oakland/Ma		cal,	Well H	ead El N/A	evati	on	Date Drilled 9/7/89	
Boring No MW3	•		Drilli Method	ng	Hollo Auge	ow-stem r	Drilling Company EGI	
Penetra- tion blows/6"	G. W. level		oth (ft) nples		ati- phy S	Description		
37/50-5-1/2"			25 — 30 — 40 —	GP- GC		Poorly grand sand yellowis	raded gravel with clay d, very dense, wet, dark sh brown. ravel, very dense, yellowish brown.	

Page 2 of 2

W	F	T.	Т.	C	Ω	M	D	T.	R	T	T	O	N	D	Т	A	G	R	A	. 1	М
-	г.					_	_		· ·			•			_	-	•				٠.

PROJECT	NAME: U	nocal - Oa	kland, Mad	Arthur	BORING/WELL	мо	MW3
PROJECT	NUMBER:	KEI-P89-	0703				
WELL PE	RMIT NO.:_						

Flush-mounted Well Cover



- A. Total Depth: 29'
- B. Boring Diameter*: 9"

 Drilling Method: Hollow Stem

Auger

- C. Casing Length: 29!

 Material: Schedule 40 PVC
- D. Casing Diameter: OD = 2.375" ID = 2.067"
- E. Depth to Perforations: 5'
- F. Perforated Length: 24'

 Machined

 Perforation Type: Slot
- Perforation Size: 0.020"

 G. Surface Seal: 3'
 - Seal Material: Concrete
- H. Seal:_____1'

Seal Material: Bentonite

I. Gravel Pack: 25'
RMC Lonestar
Pack Material: Sand

Size: #3_____

J. Bottom Seal: None

Seal Material: N/A

*Boring diameter can vary from 8-1/4" to 9" depending on bit wear.

		_	ВО	RIN	G I	OG		
Project No KEI-P89-07			Boring 9"	& Cas	ing Di 2'		Logged By D.L.	
Project Na Oakland/Ma		al,	Well He	ad Ele	evatio	on	Date Drilled 9/6/89	
Boring No.			Drillin Method	g	Holld Auger	ow-stem	Drilling Company EGI	
Penetra- tion blows/6"	G. W. level		oth (ft)	stra gra USC		I	Description	
12/16/25			5	СН		Clay, hid stiff, rebrown. Gravelly stiff, rebrown. Clay, hid stiff, st	ement Gravel: Fill gh plasticity, very moist, very dark grayish brown below 5'. clay with sand, very moist, dark yellowish gh plasticity, very slightly moist, light sh brown.	
14/17/29 15/15/23	▼		15	SM		Silty cla 15%, fin moist, p Silty san very mon	ay, high plasticity, 10- ne sand, very stiff, pale olive. nd, dense to very dense, ist to wet, light sh brown.	
		_	20 —	SW		well grad	ded sand, trace to 10%	

WELL COMPLETION DIAGRAM

PROJECT	NAME:	Unocal - Oakland,	MacArthur	BORING/WELL	мо	MW4
PROJECT	NUMBER:_	KEI-P89-0703			<u> </u>	
MELT DE	DMTM NO .					

Flush-mounted Well Cover

•	makal	Donth	291
Α.	'l'ota i	Depth:	29.

- B. Boring Diameter*: 9"

 Drilling Method: Hollow Stem

 Auger
- C. Casing Length: 29'

 Material: Schedule 40 PVC
- E. Depth to Perforations: 5'
- F. Perforated Length: 24'

 Machined
 Perforation Type: Slot
- G. Surface Seal: 3'
 Seal Material: Concrete

Perforation Size: 0.020"

- H. Seal: 1'
 Seal Material: Bentonite
- I. Gravel Pack: 25'

 RMC Lonestar

 Pack Material: Sand

 Size: #3
- J. Bottom Seal: None

 Seal Material: N/A

*Boring diameter can vary from 8-1/4" to 9" depending on bit wear.

BORING LOG								
Project No. KEI-P89-0703	Boring	& Casing D:		Logged By D.L.				
Project Name Unocal Oakland/MacArthur	, Well He	Well Head Elevation N/A		Date Drilled 9/6/89				
Boring No. MW4	Drilling Method	g Holle Auge	ow-stem r	Drilling Company EGI				
	epth (ft) amples	Strati- graphy USCS	Description					
	30	GP-GC	Poorly grand sand yellowis increas: Gravelly 5-10% sand yellowis increas:	raded gravel with clay d, dense, wet, dark sh brown, clay content, ing with depth. clay, high plasticity, and, very stiff, moist, llowish brown.				