FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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March 27, 1997

James Ackerman, Project Manager
Terranext
PO Box 24374
Oakland, CA 94623-1374

RE: Project 05100680, PO #28128

Dear Mr. Ackerman:

Per your request, I have reviewed the chromatograms and information you provided for your 1450 Sherwin Avenue, Emeryville, CA site. The following are my observations and conclusions.

Samples LF-20, LF-21, and LF-23 were sampled on April 10th and 11th, 1996, and were analyzed by Quanterra. The FID chromatograms provided are of diesel extended analyses of the samples before and after a silica gel cleanup.

The analyses performed prior to silica gel cleanup for samples LF-20 and LF-23 indicate material that elutes in the diesel and motor oil range. The calculated concentration for each of these samples is 1,000 ug/L and 340 ug/L, respectively. The diesel range material is not indicative of diesel. It lacks the characteristic hump, *n*-alkanes, and isoprenoids such as pristane and phytane, that are associated with diesel and other middle distillates. The random pattern of individual peaks is suggestive of biological or biogenic materials such as terpenes, tannins, or other non-petroleum based material. The motor oil range material forms a hump. This can be indicative of either a lubricating oil or biogenic material.

The reanalysis of samples LF-20 and LF-23 after a silica gel cleanup removed much of the diesel range material, and completely removed the large hump in the motor oil range. The calculated concentration for each of these samples is 82 ug/L and <50 ug/L, respectively. This indicates that the material was not a petroleum hydrocarbon. The remaining material not removed by the silica gel is likely due to naturally occurring hydrocarbons. Again, the pattern of peaks is not indicative of diesel for the same reasons given above.

The analysis performed prior to silica gel cleanup of sample LF-21 indicates material that elutes in the motor oil range. The calculated concentration for this sample was 910 ug/L. The hydrocarbon distribution is similar to the motor oil range material found in sample LF-20 and LF-23. The reanalysis after silica gel cleanup completely removed the entire hump. The calculated concentration following silica gel cleanup was <50 ug/L. This indicates that the material was not a petroleum hydrocarbon.

We appreciate this opportunity to be of service. Please call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Kelley Wilt

Kelley Wilt
Chemist

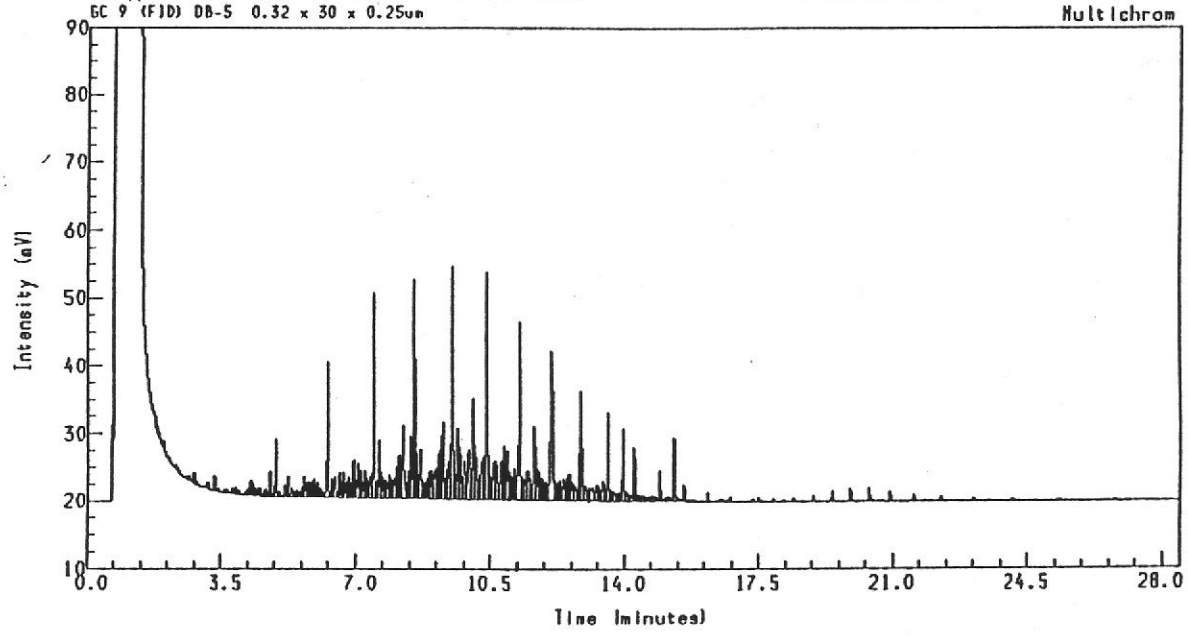
keh
Enclosures
NAA0327R.DOC

QUANTERRA - SACRAMENTO CHROMATOGRAPHY

DIESEL STANDARD

Analysis Name : [APR_SV] 89 9_29APR961100.3.1.
100 ppm Diesel HI214950 test Amount : 1.000
GC 9 (FID) DB-5 0.32 x 30 x 0.25um

Multichrom




Instrument : GC 9D9
Channel Title : Varian 3700 FID
Line ID :
Acquired on 29-APR-1996 at 13:01
Reported on 29-APR-1996 at 13:31

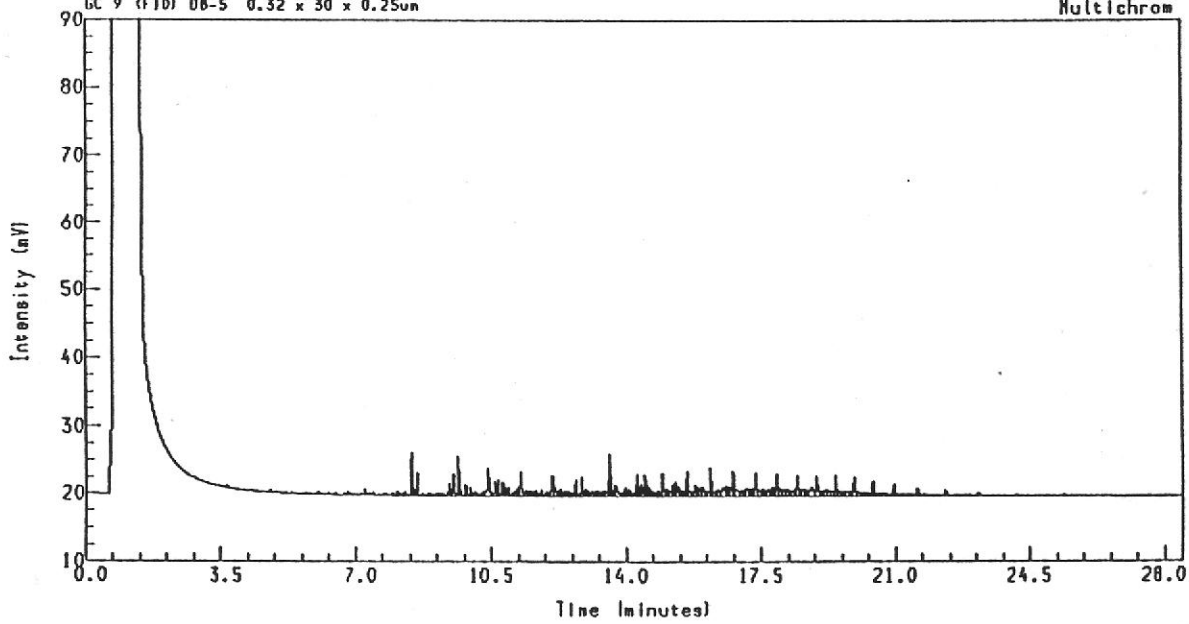
Method : GC9
Calibration : 25APR_XX
Run Sequence : GC9

QUANTERRA - SACRAMENTO CHROMATOGRAPHY

FUEL OIL #6 STANDARD

Analysis Name : [APR_SV] 89 9_29APR961100.5.1.
100 ppm Fuel Oil #6 HD42496A test Amount : 1.000
GC 9 (FID) DB-5 0.32 x 30 x 0.25um

Multichrom



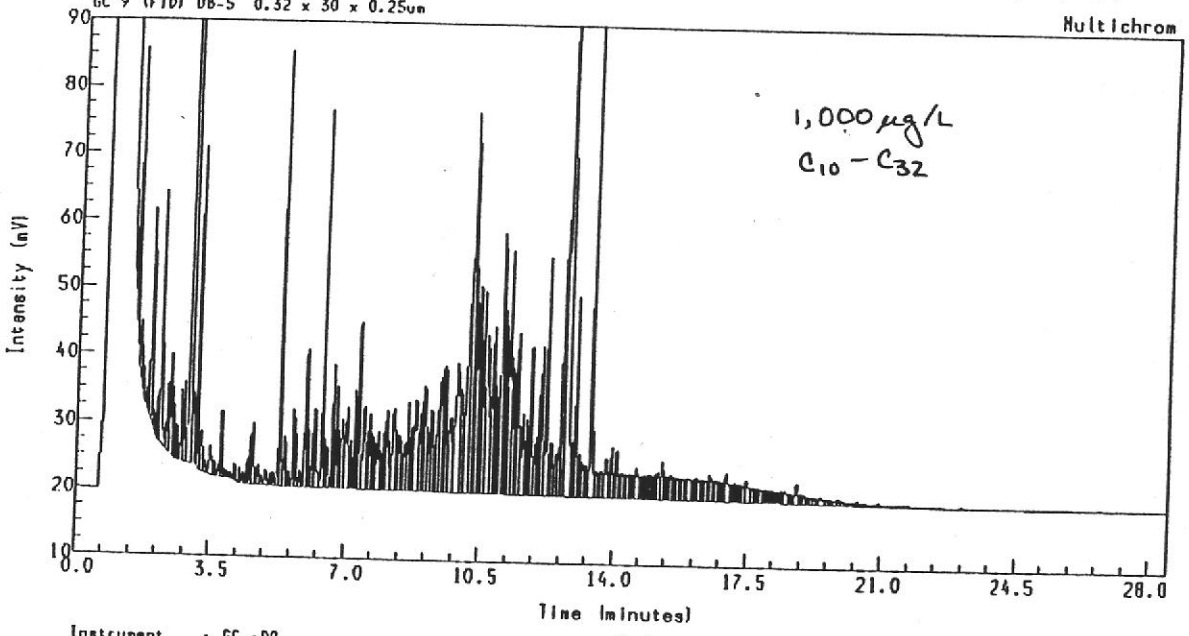

Instrument : GC 9D9
Channel Title : Varian 3700 FID
Line ID :
Acquired on 29-APR-1996 at 14:21
Reported on 29-APR-1996 at 14:52

Method : GC9
Calibration : 25APR_XX
Run Sequence : GC9

QUANTERRA - SACRAMENTO CHROMATOGRAPHY LF-20

SAMPLED 4/11/96

Analysis Name : [APR_SV] 89 9_29APR961100.25.1.
B7235-3 (TR) D.994/3 T=SR Amount : 1.000
GC 9 (FID) DB-5 0.32 x 30 x 0.25um

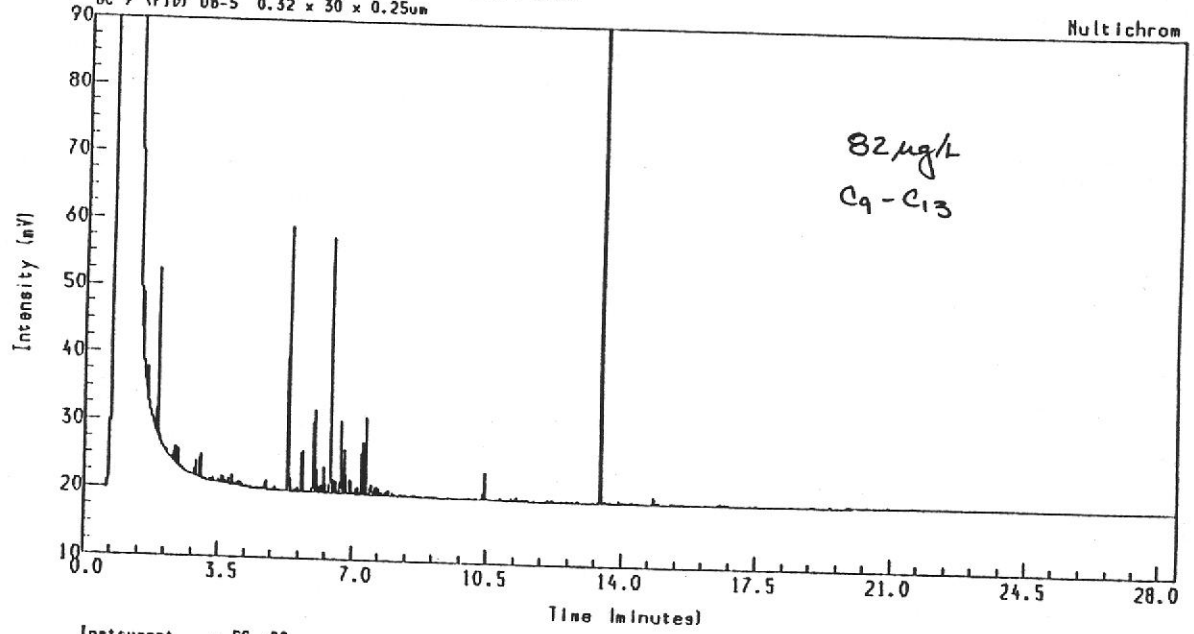



Instrument : GC 9D9
Channel Title : Varian 3700 FID
Line ID :
Acquired on 30-APR-1996 at 03:54
Reported on 30-APR-1996 at 04:26

Method : GC9
Calibration : 25APR_XX
Run Sequence : GC9

QUANTERRA - SACRAMENTO CHROMATOGRAPHY

Analysis Name : [APR_SV] 89 9_29APR961100.19.1.
B7235-3 (SILI 0.996/5 T=SR Amount : 1.000
GC 9 (FID) DB-5 0.32 x 30 x 0.25um




Instrument : GC 9D9
Channel Title : Varian 3700 FID
Line ID :
Acquired on 29-APR-1996 at 23:52
Reported on 30-APR-1996 at 00:23

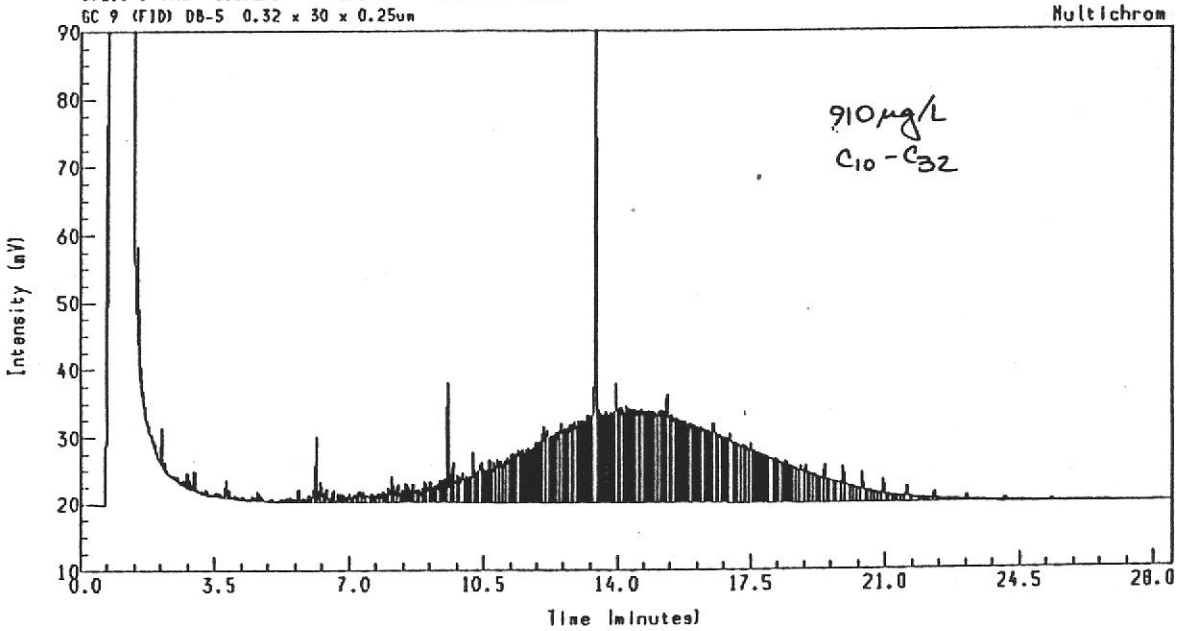
Method : GC9
Calibration : 25APR_XX
Run Sequence : GC9

QUANTERRA - SACRAMENTO

CHRONATOGRAPHY LF-21
SAMPLED 4/11/96

Analysis Name : [APR_SV] 89 9_29APR961100,7,1.
87215-1 (TR) D.892/3 T=SR Amount : 1.000
GC 9 (FID) DB-5 0.32 x 30 x 0.25um

Multichrom




Instrument : GC «D9
Channel Title : Varian 3700 FID
Line ID :
Acquired on 29-APR-1996 at 15:47
Reported on 29-APR-1996 at 16:18

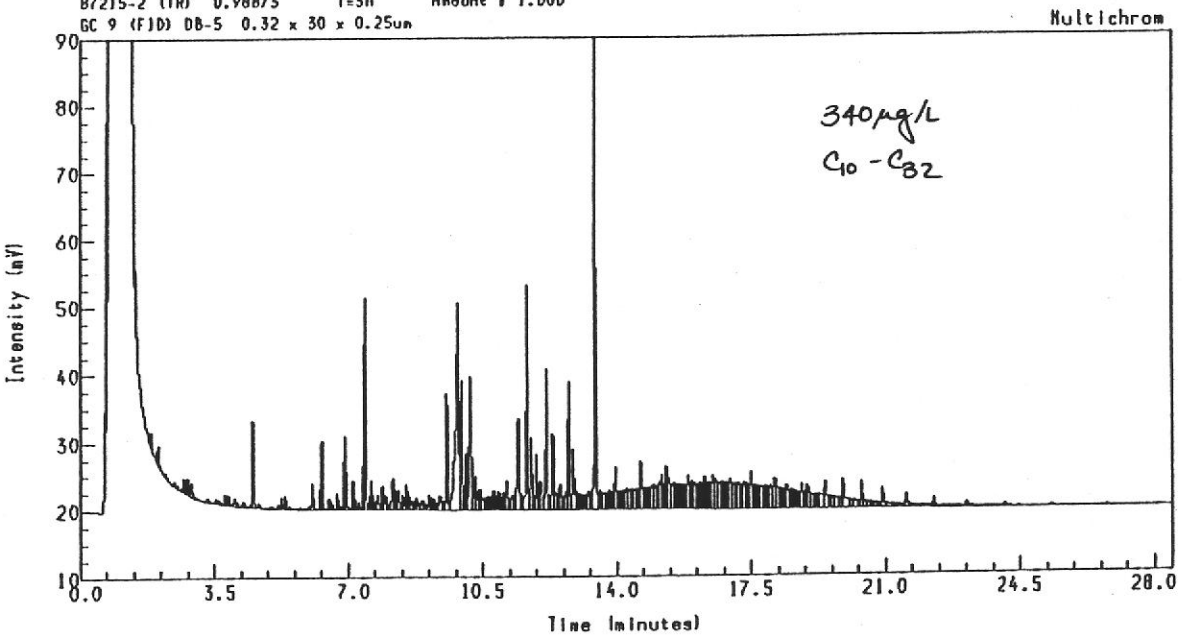
Method : GC9
Calibration : 25APR_XX
Run Sequence : GC9

Appendix E

-23
SAMPLED 4/10/96

QUANTERRA - SACRAMENTO CHROMATOGRAPHY

Analysis Name : [APR_SV] 09 9_29APR961100.8.1.
B7215-2 (TR) D.98B/3 T=SA Amount : 1.000
GC 9 (FID) DB-5 0.32 x 30 x 0.25um




Instrument : GC #09
Channel Title : Varian 3700 FID
Line ID :
Acquired on 29-APR-1996 at 16:28
Reported on 29-APR-1996 at 16:58

Method : GC9
Calibration : 25APR_XX
Run Sequence : GC9

Appendix E

QUANTERRA - SACRAMENTO

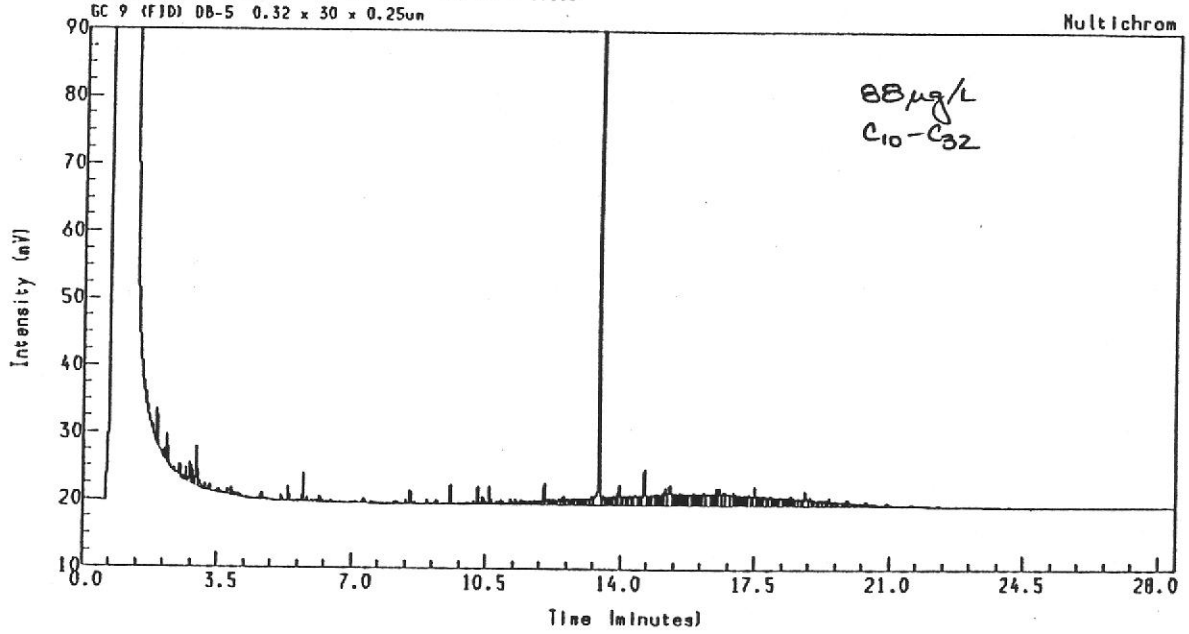
CHROMATOGRAPHY LF-25

SAMPLED 4/11/96

Analysis Name : [APR_SV] 89 9_29APR961100.23.1.
B7235-1 (TR) D.965/3 T=SA Amount = 1.000
GC 9 (FID) DB-5 0.32 x 30 x 0.25um

Multichrom

88 µg/L
$C_{10}-C_{32}$




Instrument : GC #D9
Channel Title : Varian 3700 FID
Line ID :
Acquired on 30-APR-1996 at 02:33
Reported on 30-APR-1996 at 03:04

Method : GC9
Calibration : 25APR_XX
Run Sequence : GC9

# diesel analysis

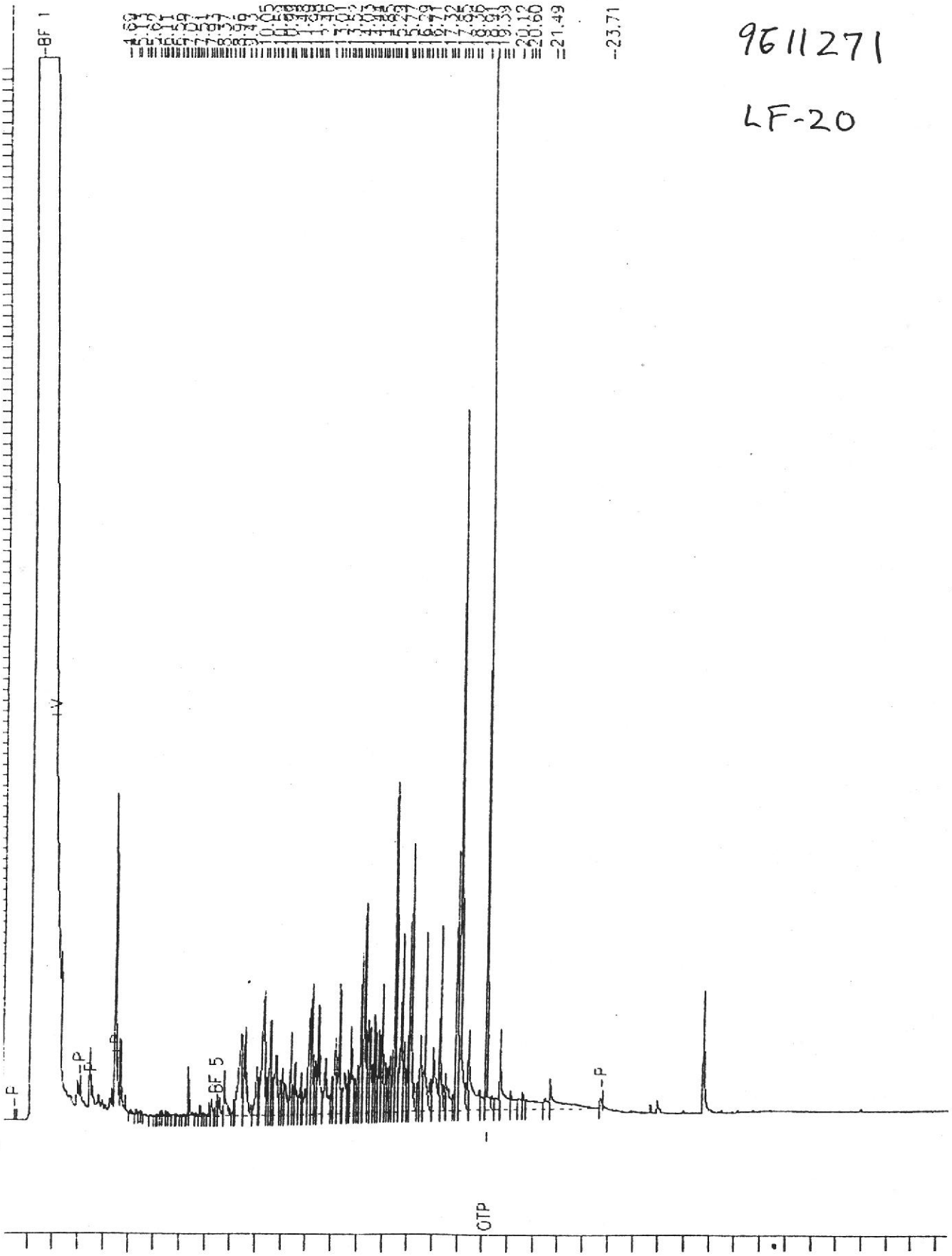
: 11271/LF20
: N:\TN27024.raw
: 2D1115
: 0.00 min  End Time : 37.50 min
: 0.0  Plot Offset: 0 mV

Sample #: 108249
Date : 11/28/96 06:20
Time of Injection: 11/28/96 05:43
Low Point : 0.00 mV  High Point : 1000.00 mV
Plot Scale: 1000.0 mV



9611271

LF-20



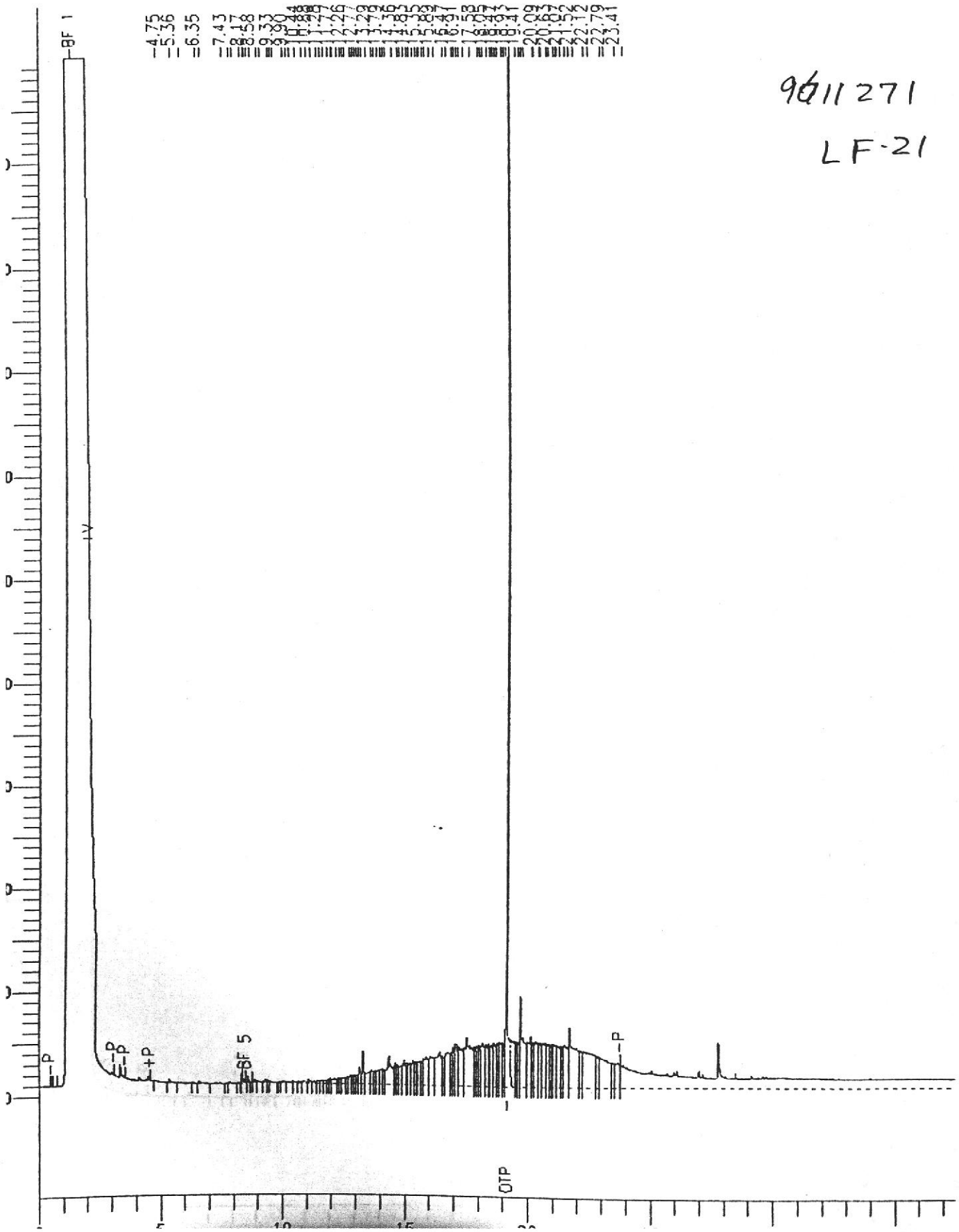
# diesel analysis

me : 11271/LF21
: D:\NIBSEL2\TN27023.RAW
: 2D1115.MTH
e : 0.00 min End Time : 37.50 min
tor: 0.0 Plot Offset: 0 mV

Sample #: 108248
Date : 2/14/97 13:32
Time of Injection: 11/28/96 04:59
Low Point : 0.00 mV High Point : 1000.00 mV
Plot Scale: 1000.0 mV



9611271
LF-21



# diesel analysis

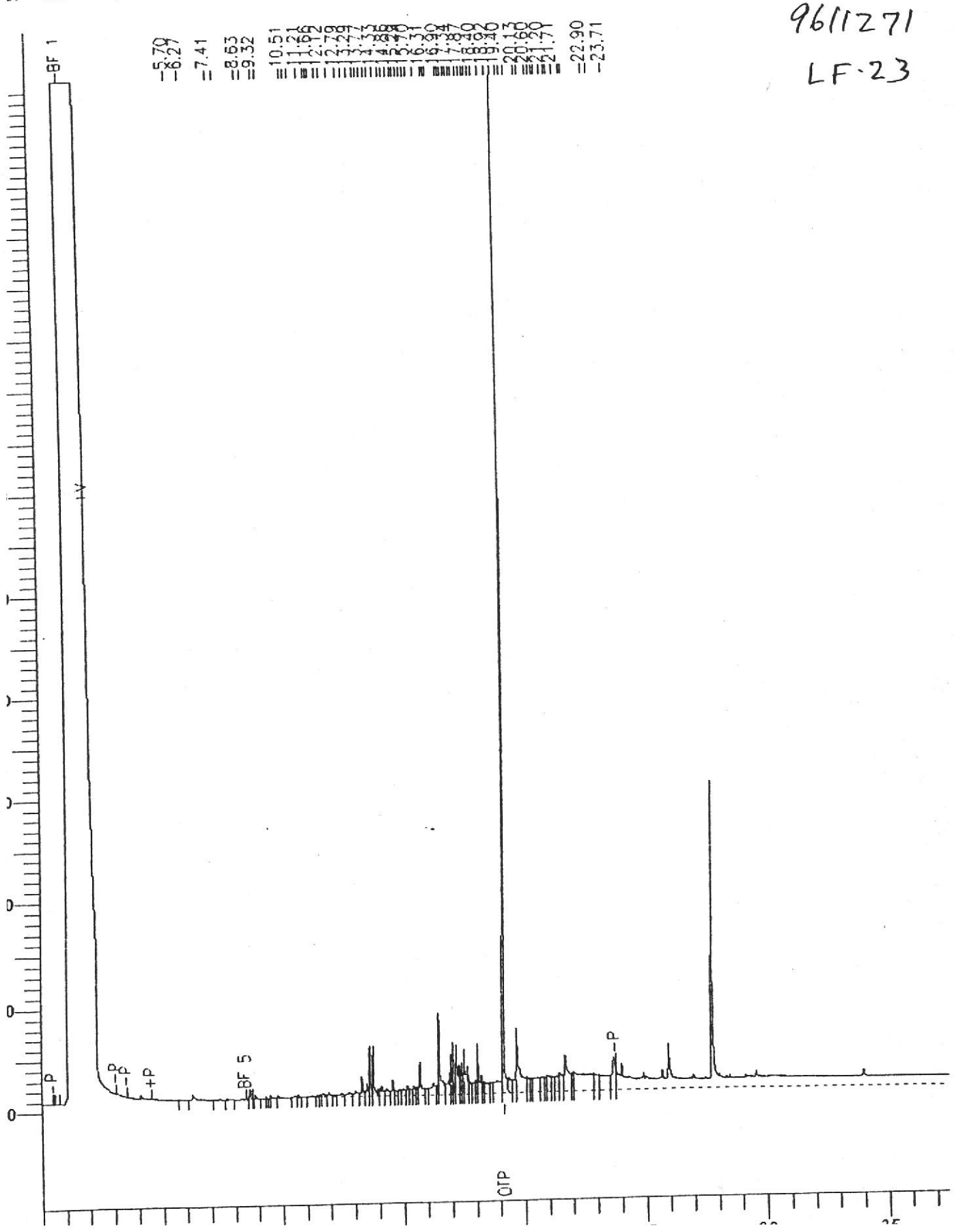
: 11271/LF-23
: D:\DIESEL2\TN27027.RAW
: 2D1115.MTH
: 0.00 min
r: 0.0

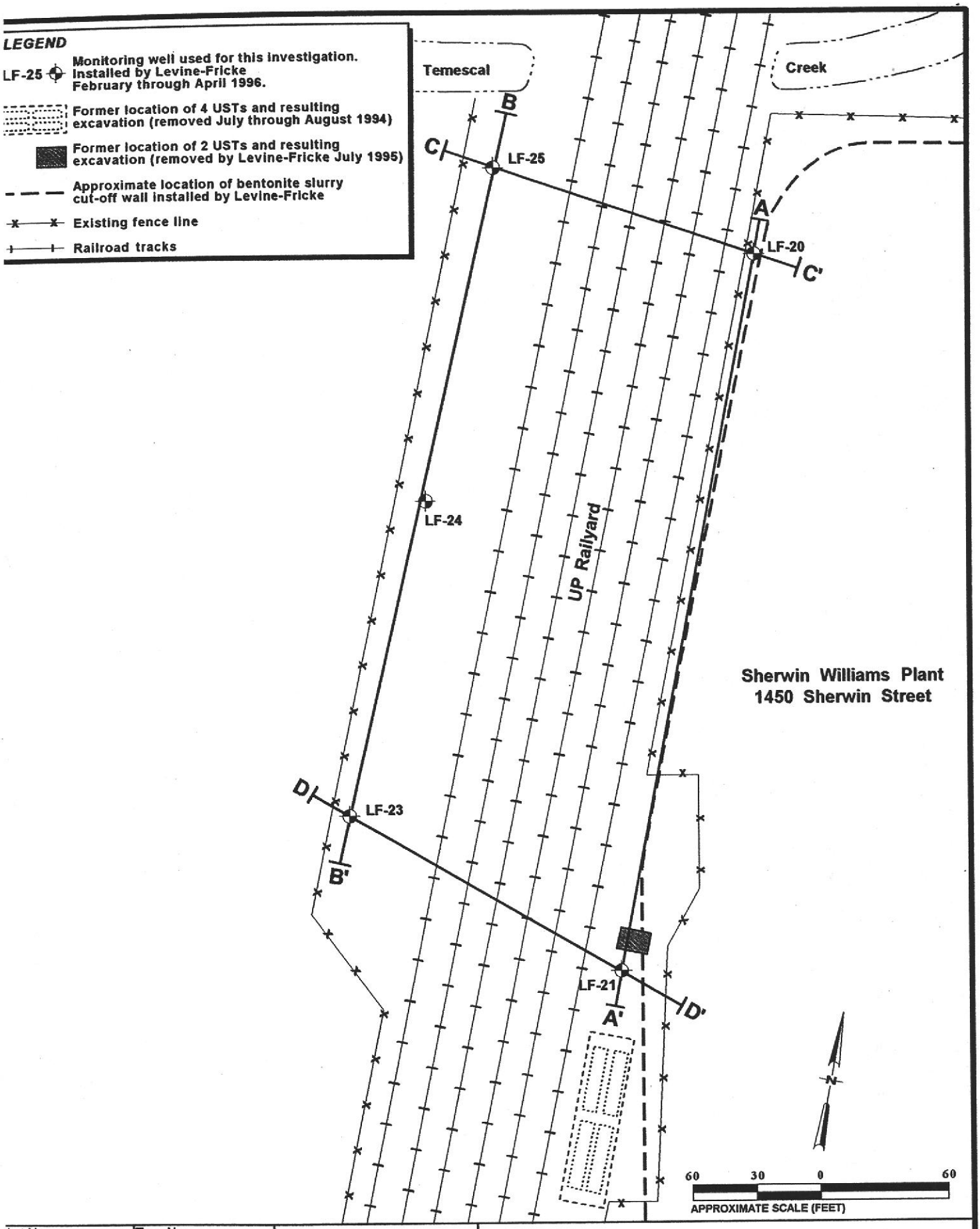
End Time : 37.50 min
Plot Offset: 0 mV

Sample #: 108252
Date : 2/14/97 13:33
Time of Injection: 11/28/96 07:55
Low Point : 0.00 mV
Plot Scale: 1000.0 mV



9611271
LF-23

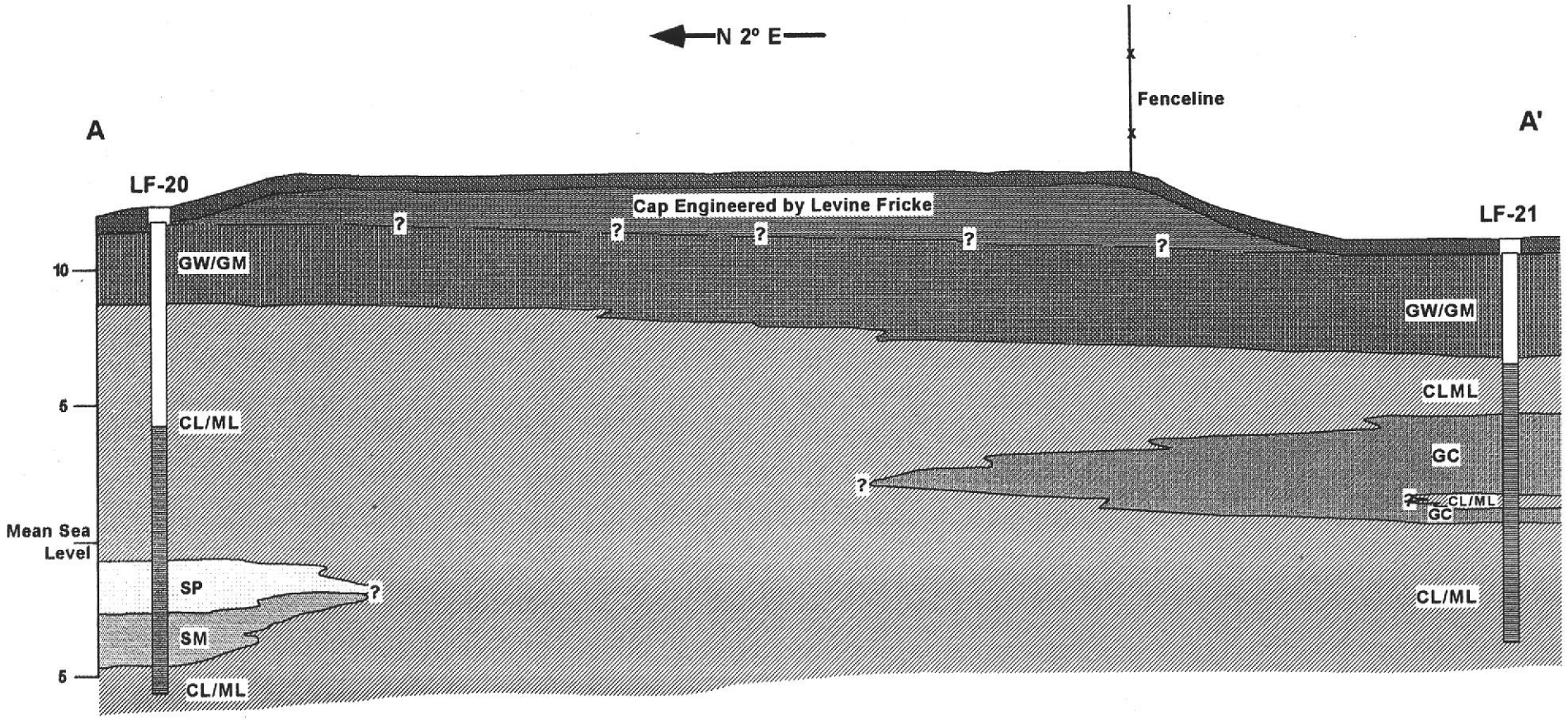





| | |
|---|---|
| Project No.: 05100680 | Figure No: 3 |
| Scale: 1" = 60' | Page No.: - |
| File No.: D5001177 | Drawn By: Janelle Hurtado |
| Date: 03/03/97 | Approved By: James Ackerman |

TerraNext

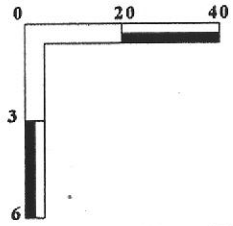
**INDEX MAP FOR CROSS-SECTIONS**
**A-A', B-B', C-C', D-D'**
UNION PACIFIC RAILROAD COMPANY
1450 SHERWIN STREET
EMERYVILLE, CALIFORNIA




**LEGEND**

- Asphalt
- GW/GM — Silty Gravel to Well Graded Gravel Fill
- CL/ML — Silty Clay to Clayey Silt
- GC — Clayey Gravel
- SP — Poorly Graded Sand
- SM — Silty Sand

Note: All soil lithology and well information from Levine-Fricke well boring/construction logs.




APPROXIMATE HORIZONTAL SCALE: 1" = 40'
APPROXIMATE VERTICAL SCALE: 1" = 6'

| | |
|---|---|
| Project No.: 05100680 | Figure No: 4 |
| Scale: As Above | Page No.: - |
| File No.: D5001179 | Drawn By: Janelle Hurtado |
| Date: 03/04/97 | Approved By: James Ackerman |

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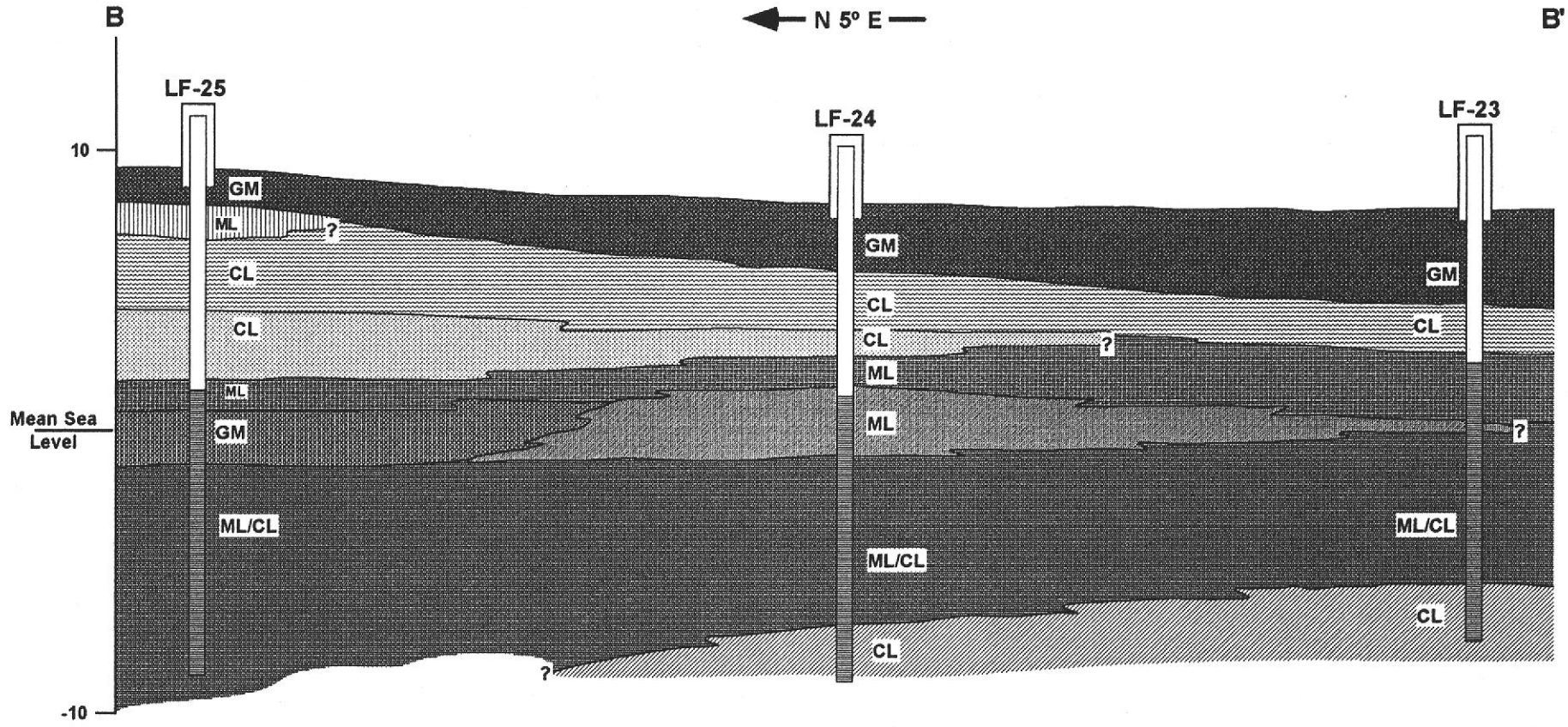
**CROSS-SECTION THROUGH LINE A-A'**

UNION PACIFIC RAILROAD COMPANY
1450 SHERWIN STREET
EMERYVILLE, CALIFORNIA




**LEGEND**

| | | | |
|---|---|---|---|
| GM | Silty Gravel (FILL) | ML ML/CL | Silt to Clayey Silt |
| ML | Sandy Silt | GM | Silty Gravel (Native) |
| CL/ML | Silty Clay with Organic Rich Zones | ML | Sandy to Gravelly Silt |
| CL | Gravelly Clay | CL | Very Stiff Silty Clay |

0 20 40

3

6

APPROXIMATE HORIZONTAL SCALE: 1" = 40'
APPROXIMATE VERTICAL SCALE: 1" = 6'

| | |
|---|---|
| Project No.: 05100680 | Figure No: 5 |
| Scale: As Above | Page No.: - |
| File No.: D5001181 | Drawn By: Janelle Hurtado |
| Date: 03/04/97 | Approved By: James Ackerman |

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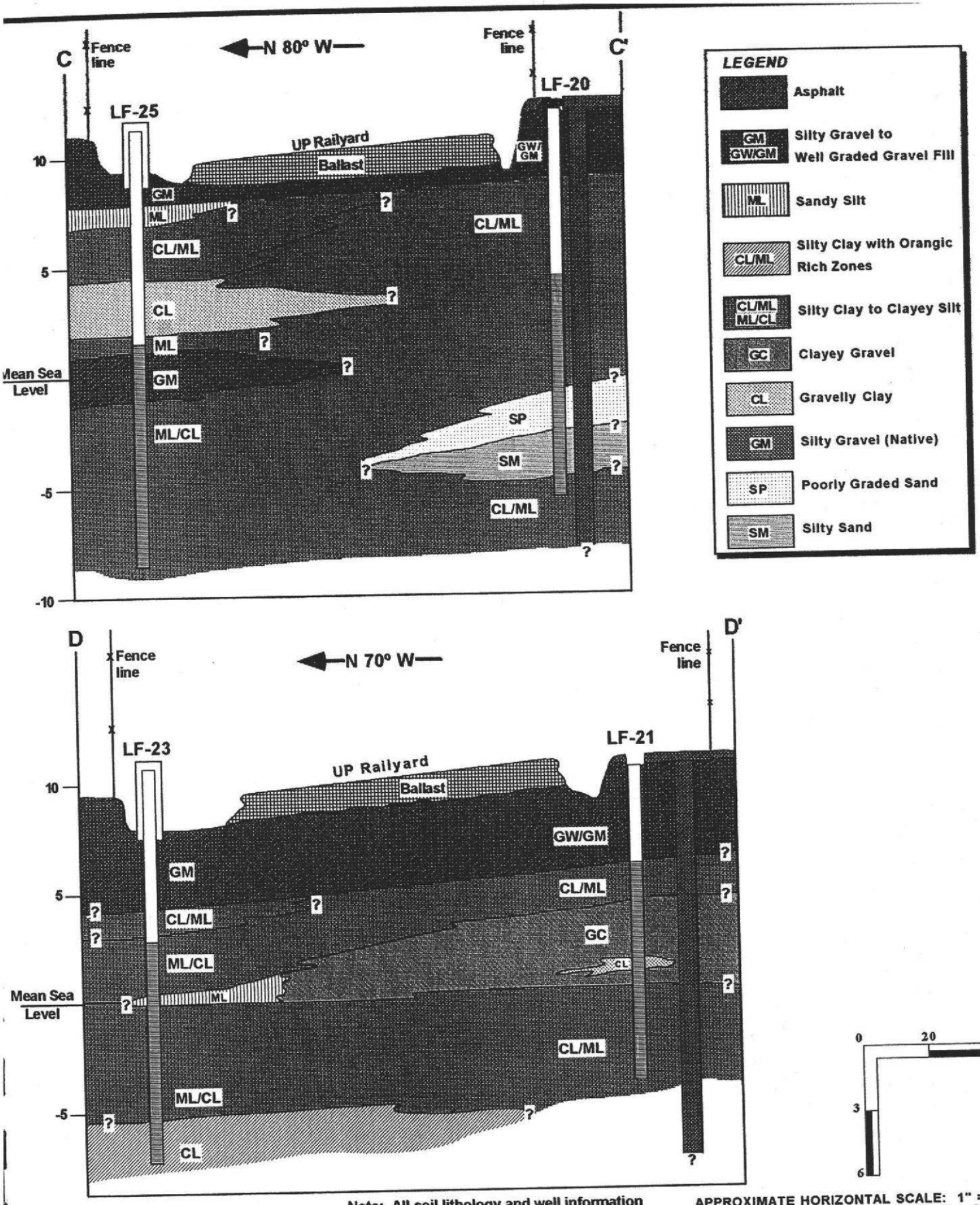
**CROSS-SECTION THROUGH LINE B-B'**
UNION PACIFIC RAILROAD COMPANY
1450 SHERWIN STREET
EMERYVILLE, CALIFORNIA

Note: All soil lithology and well information from Levine-Fricke well boring/construction logs.




Note: All soil lithology and well information from Levine-Fricke well boring/construction logs.

APPROXIMATE HORIZONTAL SCALE: 1" = 40'
APPROXIMATE VERTICAL SCALE: 1" = 6'

| | |
|---|---|
| Project No.: 05100680 | Figure No.: 6 |
| Scale: As Above | Page No.: - |
| File No.: D5001183 | Drawn By: Janelle Hurtado |
| Date: 03/04/97 | Approved By: James Ackerman |

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## CROSS-SECTIONS THROUGH LINES C-C' AND D-D'

UNION PACIFIC RAILROAD COMPANY
1450 SHERWIN STREET
EMERYVILLE, CALIFORNIA