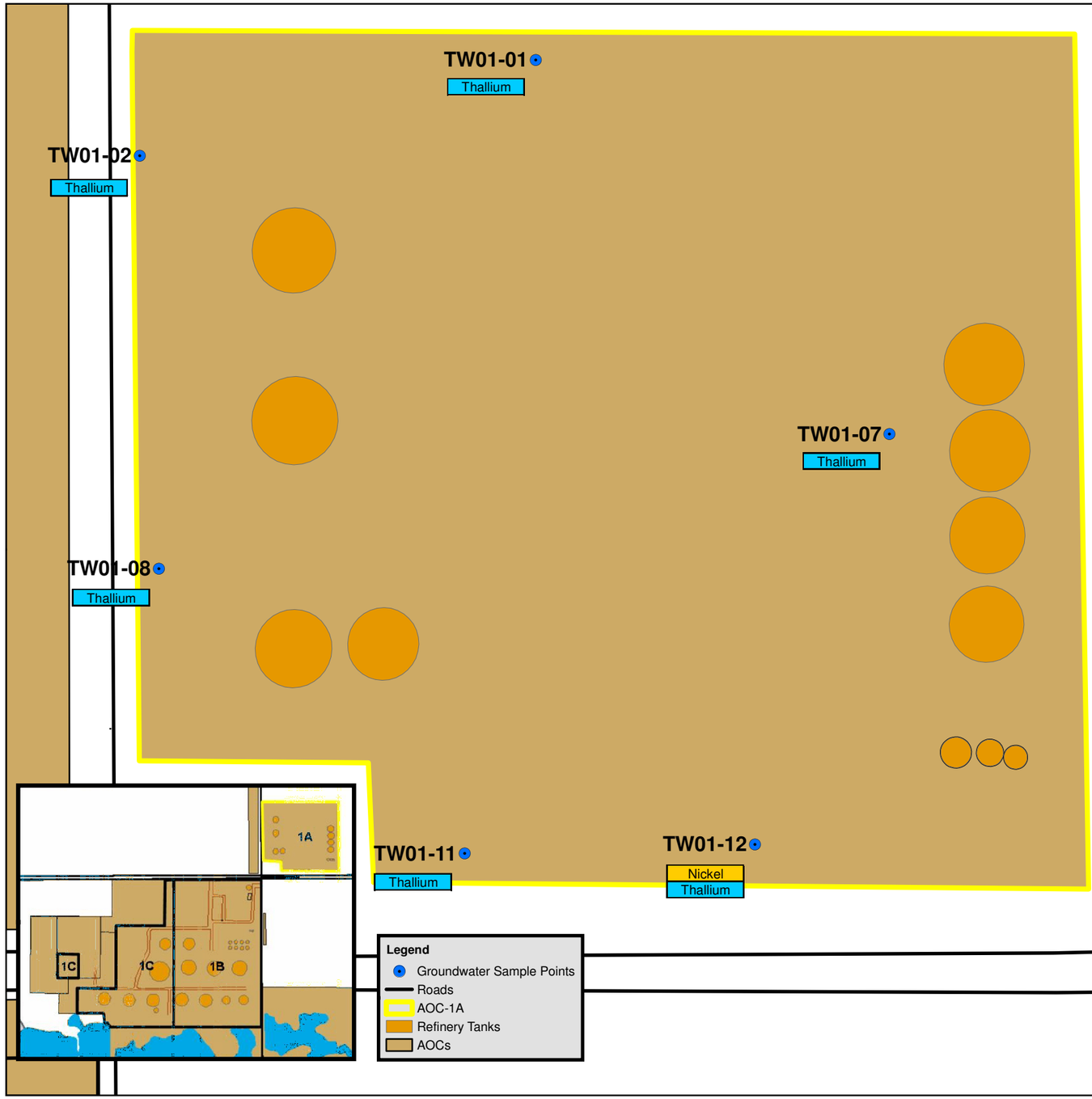


TW01-01 FR-015	
Aluminum	1630
Barium	54.3 B
Iron	1060
Manganese	139
Thallium	4.8 B
Vanadium	2.1 B
Zinc	14 B

TW01-02 FR-018	
Aluminum	372
Arsenic	2.8 B
Barium	18.6 B
Iron	578
Manganese	170
Thallium	5.1 B
Vanadium	1.2 B
Zinc	21.5

TW01-07 FR-032	
Aluminum	709
Barium	58 B
Iron	1540
Manganese	111
Thallium	5.1 B
Vanadium	2.5 B
Zinc	16.5 B

TW01-08 FR-024	
Aluminum	680
Arsenic	3.8 B
Barium	27.1 B
Iron	2150
Manganese	110
Thallium	6.2 B
Vanadium	1.5 B
Zinc	15.1 B

TW01-11 FR-003	
Aluminum	354
Arsenic	3.5 B
Barium	51.1 B
Iron	1720
Manganese	324
Thallium	6.7 B
Vanadium	1.9 B
Zinc	14.3 B

TW01-12 FR-006	
Aluminum	558
Barium	71.4 B
Chromium	7.9 B
Hex Chrom	0.005 B
Iron	1050
Manganese	146
Nickel	51.6
Thallium	4.8 B
Vanadium	1.1 B
Zinc	13.3 B

9596822

Notes:

1. Results are posted in µg/l
   Hex Chrom posted in mg/l
2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds EPA Region 6 MSSL or MCL If Available

Exceeds Both EPA and TCEQ Limit

N

0 100 200

Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1A
Human Health
Metal Groundwater Distribution Map

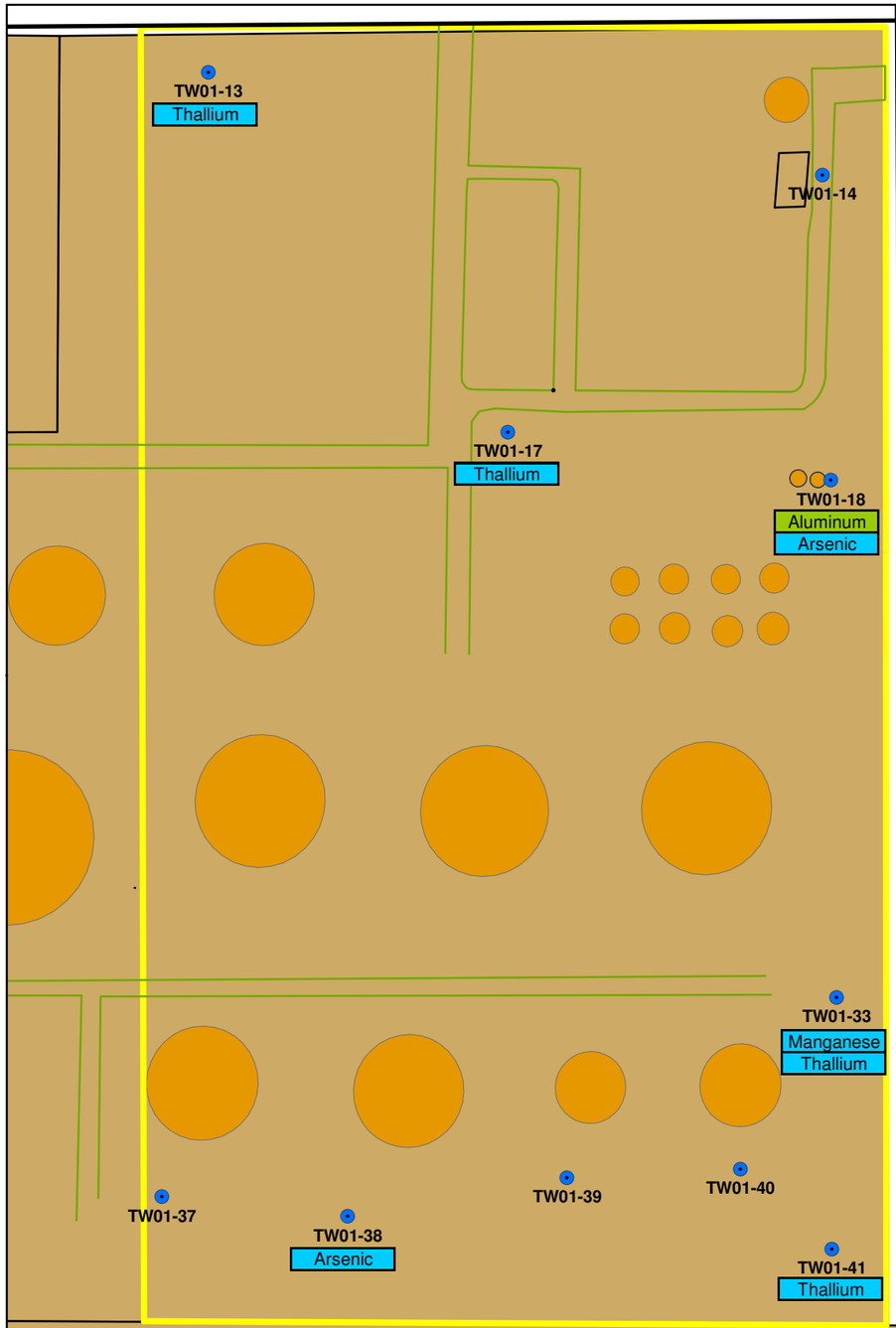
FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 FILE NAME: Falcon Refinery Base Map

KLEINFELDER
Bright People. Right Solutions.
3601 Manor Road, Austin, Texas 78723
Phone: 512-926-6650 Fax: 512-926-3312
www.kleinfelder.com

FIGURE

1A



TW01-13 FR-066	
Barium	238
Hex Chrom	0.059
Iron	115
Manganese	394
Thallium	3.5 B
Zinc	15.5 B

TW01-14 FR-063	
Aluminum	91.1 B
Arsenic	2.7 B
Barium	139 B
Iron	909
Manganese	276
Thallium	2.7 U
Vanadium	1.1 B
Zinc	21.6

TW01-17 FR-048A	
Arsenic	4.6
Barium	139 B
Iron	10150
Manganese	452.5
Selenium	2.35 J
Thallium	2.9 B
Vanadium	2.15 B
Zinc	16.65 B

TW01-18 FR-052	
Aluminum	4280
Arsenic	21.1
Barium	83.6 B
Chromium	4.8 B
Hex Chrom	0.023
Iron	3230
Lead	10
Manganese	118
Nickel	2.9 B
Thallium	2.7 U
Vanadium	13.6 B
Zinc	15.6 B

TW01-33 FR-107	
Arsenic	9.5
Barium	322
Iron	1960
Manganese	2150
Thallium	3.7 B
Zinc	12.8 B

TW01-37 FR-121	
Arsenic	6.6
Barium	557
Copper	6.7 B
Iron	2540
Lead	8.7
Manganese	994
Nickel	9.9 B
Selenium	2.7 B
Zinc	48.4

TW01-38 FR-118	
Arsenic	10.5
Barium	251
Copper	6.4 B
Iron	2970
Lead	5.7
Manganese	746
Nickel	6.3 B
Vanadium	1.3 B
Zinc	49.5

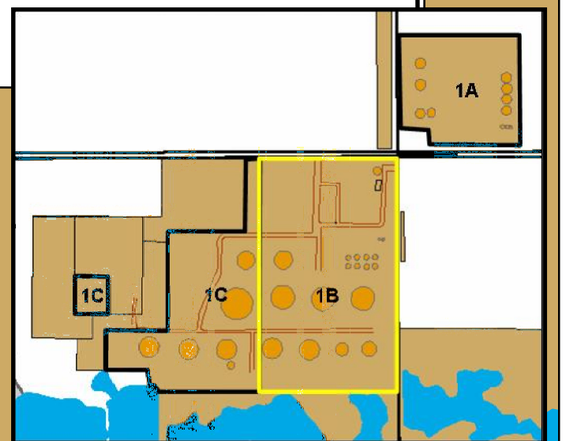
TW01-39 FR-115	
Aluminum	113 B
Barium	331
Iron	1040
Lead	7.2
Manganese	968
Zinc	55.2

TW01-40 FR-112	
Aluminum	777
Antimony	3.3 B
Barium	295
Iron	1390
Lead	4.4
Manganese	776
Nickel	3.5 B
Vanadium	1.1 B
Zinc	56.4

TW01-41 FR-104	
Antimony	5.3
Arsenic	7.5
Barium	137 B
Iron	372
Manganese	1010
Thallium	4.1 B
Zinc	12.3 B

Legend

- Groundwater Sample Points
- Roads
- Gravel/Dirt Road
- AOC-1B
- Refinery Tanks
- AOCs
- Wetland



Notes:

1. Results are posted in µg/l
   Hex Chrom posted in mg/l
2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

- Exceeds TCEQ Tier 1 Residential PCL
- Exceeds Both EPA and TCEQ Limit
- SDL Exceeds Both EPA and TCEQ Screening Level

N

0 150 300

Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1B
Human Health
Metal Groundwater Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

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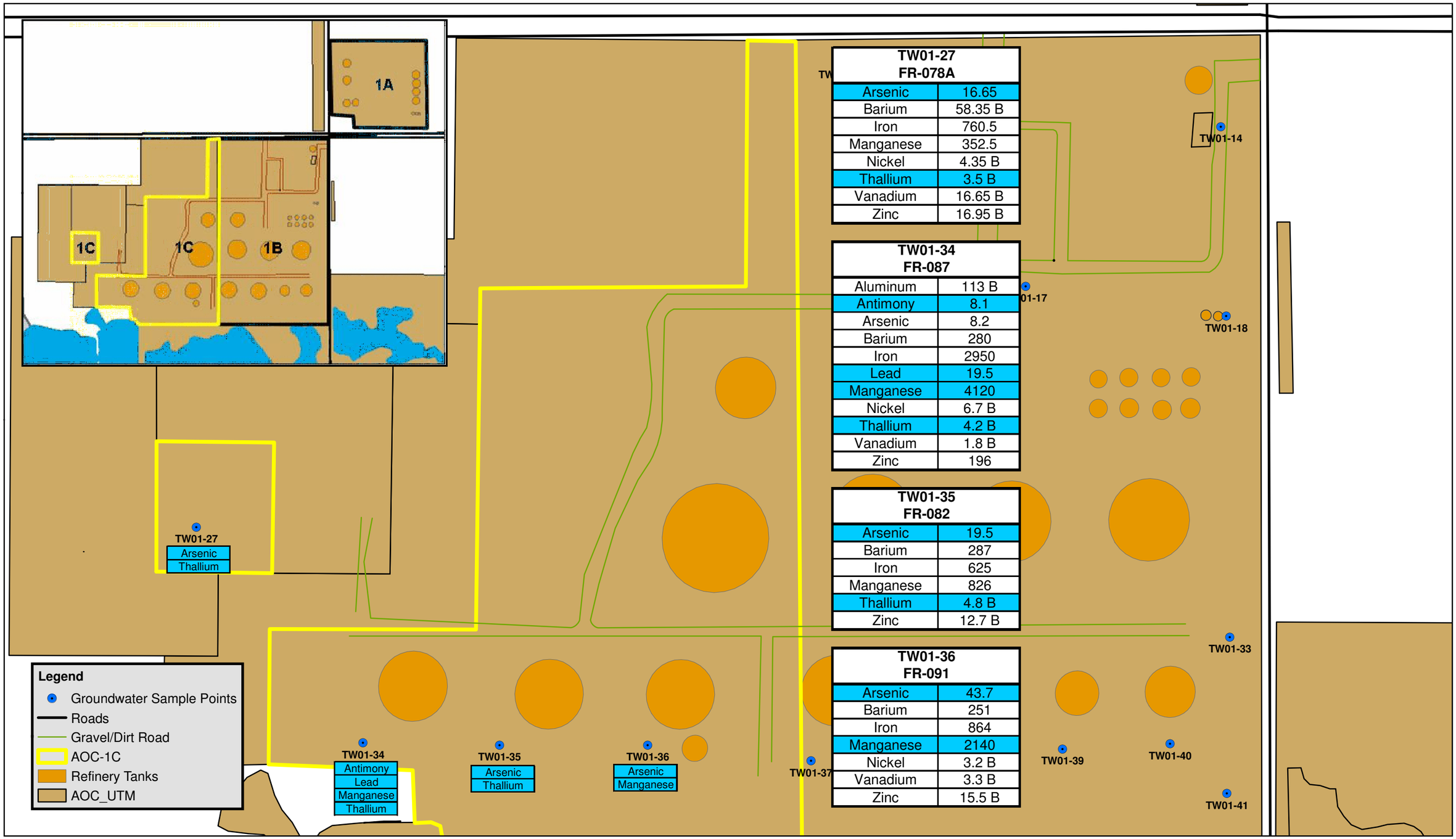
www.kleinfelder.com

FIGURE

1B



TW01-27 FR-078A	
Arsenic	16.65
Barium	58.35 B
Iron	760.5
Manganese	352.5
Nickel	4.35 B
Thallium	3.5 B
Vanadium	16.65 B
Zinc	16.95 B

TW01-34 FR-087	
Aluminum	113 B
Antimony	8.1
Arsenic	8.2
Barium	280
Iron	2950
Lead	19.5
Manganese	4120
Nickel	6.7 B
Thallium	4.2 B
Vanadium	1.8 B
Zinc	196

TW01-35 FR-082	
Arsenic	19.5
Barium	287
Iron	625
Manganese	826
Thallium	4.8 B
Zinc	12.7 B

TW01-36 FR-091	
Arsenic	43.7
Barium	251
Iron	864
Manganese	2140
Nickel	3.2 B
Vanadium	3.3 B
Zinc	15.5 B

Notes:

1. Results are posted in µg/l
2. Qualifiers:

B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds Both EPA and TCEQ Limit

0 150 300
Feet

DATE DRAWN: 7/8/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1C
Human Health
Metal Groundwater Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

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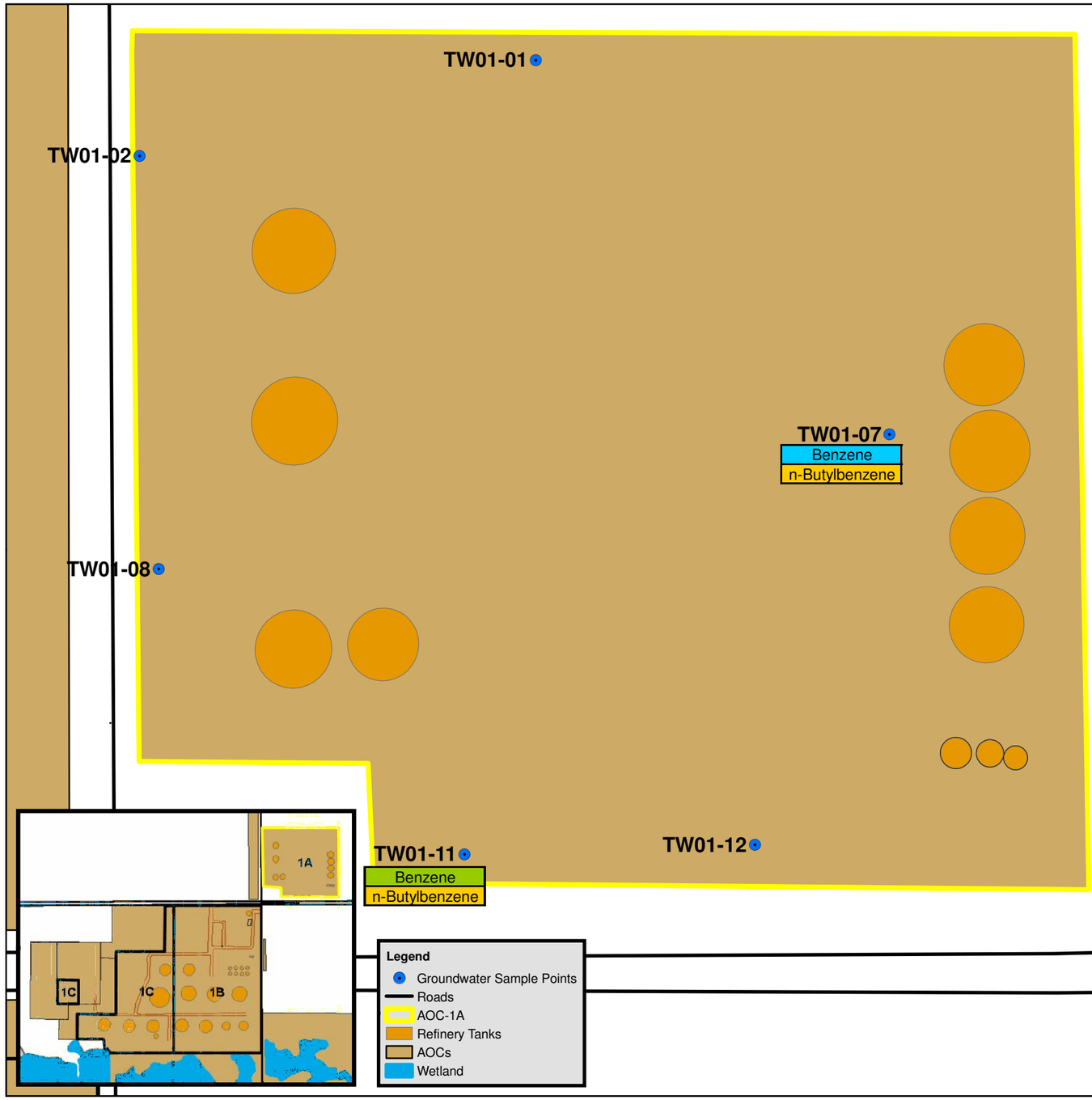
www.kleinfelder.com

FIGURE
1C



TW01-01 FR-015	
1,1,1,2-Tetrachloroethane	0.00052 U
1,1,2,2-Tetrachloroethane	0.00046 U
1,2,3-Trichloropropane	0.00052 U
1,2-Dibromo-3-chloropropane	0.0015 U
1,2-Dibromoethane	0.00068 U
1,4-Dioxane	0.024 U
Acetone	0.0055 J
Bromodichloromethane	0.00033 U
Carbon tetrachloride	0.00052 U
Chloroform	0.00066 U
Cyclohexane	0.0323
Dibromochloromethane	0.00068 U
Ethylbenzene	0.0038
Isopropylbenzene	0.0013 J
n-Propylbenzene	0.00077 J

TW01-02 FR-018	
1,1,1,2-Tetrachloroethane	0.00052 U
1,1,2,2-Tetrachloroethane	0.00046 U
1,2,3-Trichloropropane	0.00052 U
1,2-Dibromo-3-chloropropane	0.0015 U
1,2-Dibromoethane	0.00068 U
1,4-Dioxane	0.024 U
Acetone	0.0068 J
Benzene	0.00065 J
Bromodichloromethane	0.00033 U
Carbon tetrachloride	0.00052 U
Chloroform	0.00066 U
Dibromochloromethane	0.00068 U
Ethylbenzene	0.00058 J
Xylene (total)	0.0019 J

TW01-07 FR-032	
1,2,4-Trimethylbenzene	0.0017 J
1,3,5-Trimethylbenzene	0.00069 J
Acetone	0.0047 J
Benzene	0.0145
Cyclohexane	0.00058 J
Ethylbenzene	0.002
n-Butylbenzene	0.0016 J
p-Isopropyltoluene	0.0011 J
1,1,1,2-Tetrachloroethane	0.00052 U
1,1,2,2-Tetrachloroethane	0.00046 U
1,2,3-Trichloropropane	0.00052 U
1,2-Dibromo-3-chloropropane	0.0015 U
1,2-Dibromoethane	0.00068 U
1,4-Dioxane	0.024 U
Bromodichloromethane	0.00033 U
Carbon tetrachloride	0.00052 U
Chloroform	0.00066 U
Dibromochloromethane	0.00068 U

TW01-08 FR-024	
1,1,1,2-Tetrachloroethane	0.00052 U
1,1,2,2-Tetrachloroethane	0.00046 U
1,2,3-Trichloropropane	0.00052 U
1,2-Dibromo-3-chloropropane	0.0015 U
1,2-Dibromoethane	0.00068 U
1,4-Dioxane	0.024 U
Acetone	0.0082 J
Bromodichloromethane	0.00033 U
Carbon tetrachloride	0.00052 U
Chloroform	0.00066 U
Dibromochloromethane	0.00068 U

TW01-11 FR-003	
1,1,1,2-Tetrachloroethane	0.00052 U
1,1,2,2-Tetrachloroethane	0.00046 U
1,2,3-Trichloropropane	0.00052 U
1,2-Dibromo-3-chloropropane	0.0015 U
1,2-Dibromoethane	0.00068 U
1,4-Dioxane	0.024 U
Acetone	0.0087 J
Benzene	0.003
Bromodichloromethane	0.00033 U
Carbon tetrachloride	0.00052 U
Chloroform	0.00066 U
Cyclohexane	0.00068 J
Dibromochloromethane	0.00068 U
Ethylbenzene	0.008
Isopropylbenzene	0.0068
n-Butylbenzene	0.0087
n-Propylbenzene	0.0112
tert-Butylbenzene	0.0168
Toluene	0.00058 J

TW01-12 FR-006	
1,1,1,2-Tetrachloroethane	0.00052 U
1,1,2,2-Tetrachloroethane	0.00046 U
1,2,3-Trichloropropane	0.00052 U
1,2-Dibromo-3-chloropropane	0.0015 U
1,2-Dibromoethane	0.00068 U
1,4-Dioxane	0.024 U
Acetone	0.0073 J
Bromodichloromethane	0.00033 U
Carbon tetrachloride	0.00052 U
Chloroform	0.00066 U
Dibromochloromethane	0.00068 U
Isopropylbenzene	0.0056
n-Propylbenzene	0.0048
tert-Butylbenzene	0.0023

Notes:

1. Results are posted in mg/l
2. Qualifiers:

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   J = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

N

0 25 50

Feet

- Exceeds EPA Region 6 MSSL or MCL If Available
- Exceeds TCEQ Tier 1 Residential PCL
- Exceeds Both EPA and TCEQ Limit
- SDL Exceeds EPA Screening Level or MCL If Available
- SDL Exceeds Both EPA and TCEQ Screening Level

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1A
Human Health
VOC Groundwater Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

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3601 Manor Road, Austin, Texas 78723
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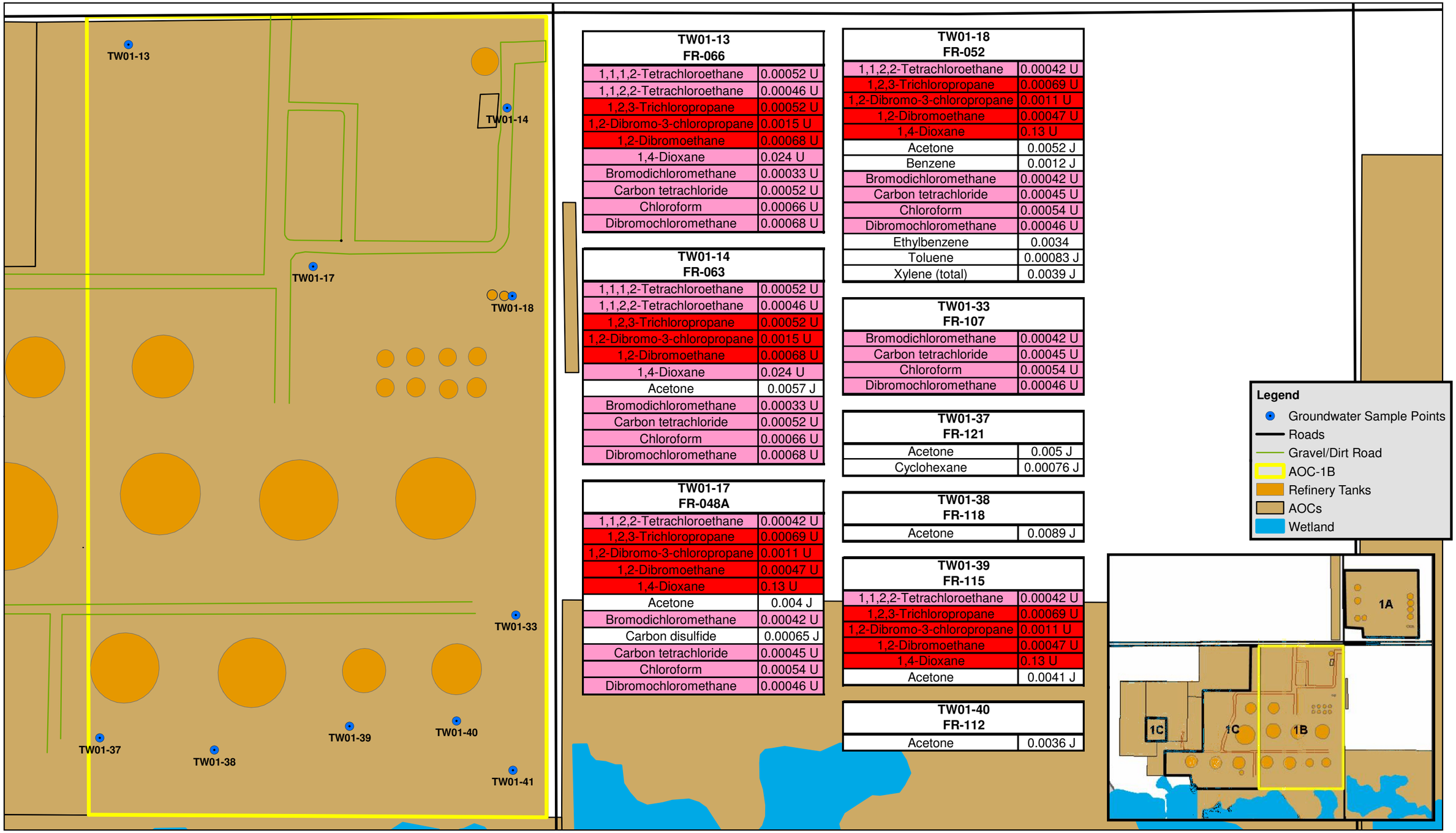
www.kleinfelder.com

FIGURE

1D



TW01-13 FR-066	
1,1,1,2-Tetrachloroethane	0.00052 U
1,1,2,2-Tetrachloroethane	0.00046 U
1,2,3-Trichloropropane	0.00052 U
1,2-Dibromo-3-chloropropane	0.0015 U
1,2-Dibromoethane	0.00068 U
1,4-Dioxane	0.024 U
Bromodichloromethane	0.00033 U
Carbon tetrachloride	0.00052 U
Chloroform	0.00066 U
Dibromochloromethane	0.00068 U

TW01-14 FR-063	
1,1,1,2-Tetrachloroethane	0.00052 U
1,1,2,2-Tetrachloroethane	0.00046 U
1,2,3-Trichloropropane	0.00052 U
1,2-Dibromo-3-chloropropane	0.0015 U
1,2-Dibromoethane	0.00068 U
1,4-Dioxane	0.024 U
Acetone	0.0057 J
Bromodichloromethane	0.00033 U
Carbon tetrachloride	0.00052 U
Chloroform	0.00066 U
Dibromochloromethane	0.00068 U

TW01-17 FR-048A	
1,1,2,2-Tetrachloroethane	0.00042 U
1,2,3-Trichloropropane	0.00069 U
1,2-Dibromo-3-chloropropane	0.0011 U
1,2-Dibromoethane	0.00047 U
1,4-Dioxane	0.13 U
Acetone	0.004 J
Bromodichloromethane	0.00042 U
Carbon disulfide	0.00065 J
Carbon tetrachloride	0.00045 U
Chloroform	0.00054 U
Dibromochloromethane	0.00046 U

TW01-18 FR-052	
1,1,2,2-Tetrachloroethane	0.00042 U
1,2,3-Trichloropropane	0.00069 U
1,2-Dibromo-3-chloropropane	0.0011 U
1,2-Dibromoethane	0.00047 U
1,4-Dioxane	0.13 U
Acetone	0.0052 J
Benzene	0.0012 J
Bromodichloromethane	0.00042 U
Carbon tetrachloride	0.00045 U
Chloroform	0.00054 U
Dibromochloromethane	0.00046 U
Ethylbenzene	0.0034
Toluene	0.00083 J
Xylene (total)	0.0039 J

TW01-33 FR-107	
Bromodichloromethane	0.00042 U
Carbon tetrachloride	0.00045 U
Chloroform	0.00054 U
Dibromochloromethane	0.00046 U

TW01-37 FR-121	
Acetone	0.005 J
Cyclohexane	0.00076 J

TW01-38 FR-118	
Acetone	0.0089 J

TW01-39 FR-115	
1,1,2,2-Tetrachloroethane	0.00042 U
1,2,3-Trichloropropane	0.00069 U
1,2-Dibromo-3-chloropropane	0.0011 U
1,2-Dibromoethane	0.00047 U
1,4-Dioxane	0.13 U
Acetone	0.0041 J

TW01-40 FR-112	
Acetone	0.0036 J

Notes:

1. Results are posted in mg/l
2. Qualifiers:

U = Undetected at the sample detection limit (SDL)

J = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

SDL Exceeds EPA Screening Level or MCL If Available

SDL Exceeds Both EPA and TCEQ Screening Level

N

0 150 300

Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1B
Human Health
VOC Groundwater Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

KLEINFELDER
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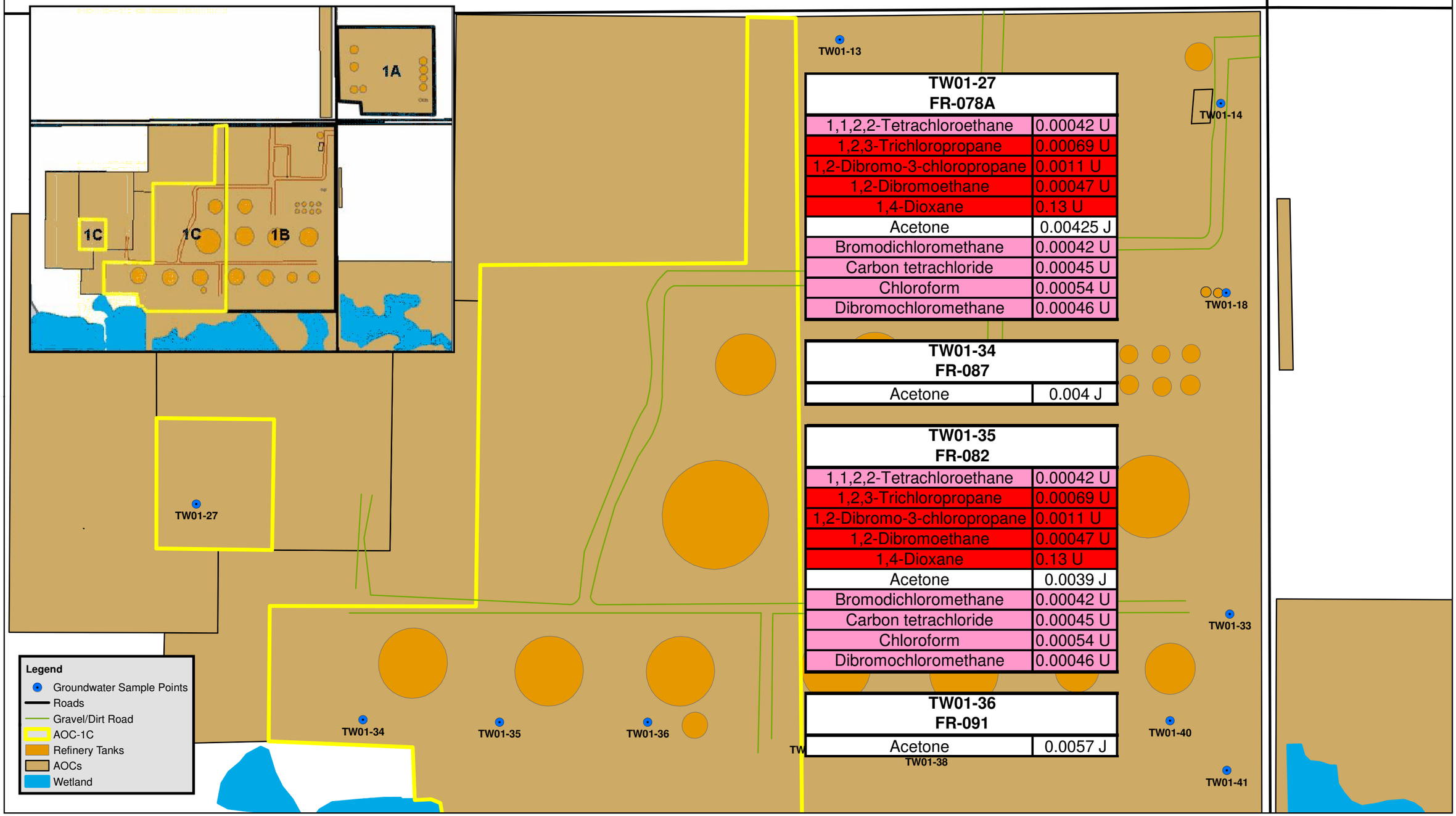
FIGURE

1E



TW01-27 FR-078A	
1,1,2,2-Tetrachloroethane	0.00042 U
1,2,3-Trichloropropane	0.00069 U
1,2-Dibromo-3-chloropropane	0.0011 U
1,2-Dibromoethane	0.00047 U
1,4-Dioxane	0.13 U
Acetone	0.00425 J
Bromodichloromethane	0.00042 U
Carbon tetrachloride	0.00045 U
Chloroform	0.00054 U
Dibromochloromethane	0.00046 U

TW01-34 FR-087	
Acetone	0.004 J

TW01-35 FR-082	
1,1,2,2-Tetrachloroethane	0.00042 U
1,2,3-Trichloropropane	0.00069 U
1,2-Dibromo-3-chloropropane	0.0011 U
1,2-Dibromoethane	0.00047 U
1,4-Dioxane	0.13 U
Acetone	0.0039 J
Bromodichloromethane	0.00042 U
Carbon tetrachloride	0.00045 U
Chloroform	0.00054 U
Dibromochloromethane	0.00046 U

TW01-36 FR-091	
Acetone	0.0057 J

Notes:

1. Results are posted in mg/l
2. Qualifiers:

U = Undetected at the sample detection limit (SDL)

J = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

SDL Exceeds EPA Screening Level or MCL If Available

SDL Exceeds Both EPA and TCEQ Screening Level

0 150 300

Feet

DATE DRAWN: 7/8/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1C
Human Health
VOC Groundwater Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

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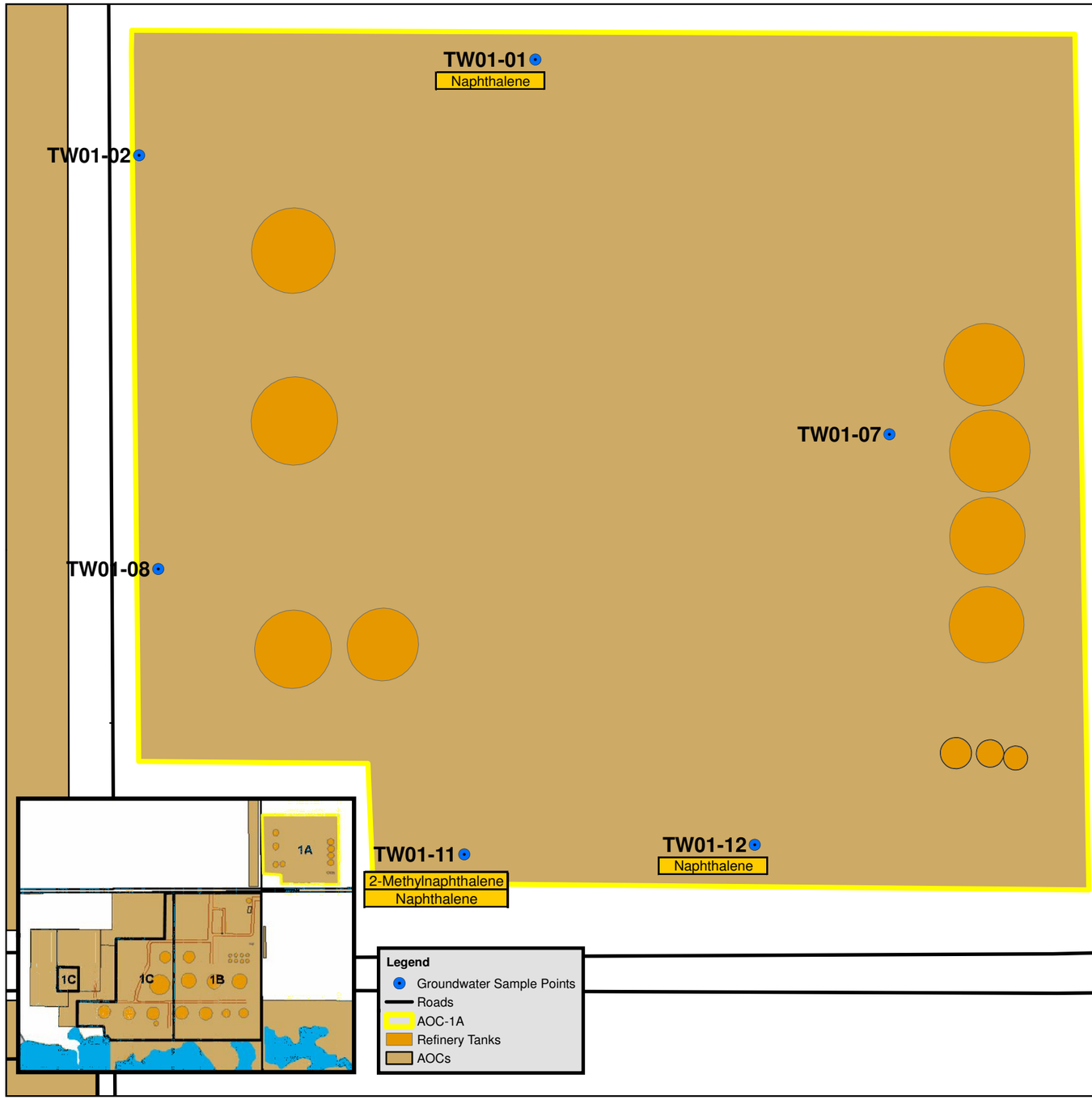
FIGURE

1F



TW01-01 FR-015	
1,4-Dichlorobenzene	0.0015 U
1-Methylnaphthalene	0.002 J
2,4-Dinitrotoluene	0.0024 U
2,6-Dinitrotoluene	0.0017 U
3,3'-Dichlorobenzidine	0.0037 U
4-Bromophenyl phenyl ether	0.0021 U
4-Chlorophenyl phenyl ether	0.0015 U
7,12-Dimethylbenz(a)anthracene	0.0050 U
Benzenethiol	0.010 U
Benzo(a)anthracene	0.000055 U
Benzo(b)fluoranthene	0.000056 U
Benzo(k)fluoranthene	0.000046 U
bis(2-Chloroethoxy)methane	0.0016 U
bis(2-Chloroethyl)ether	0.0012 U
bis(2-Ethylhexyl)phthalate	0.0015 J
Dibenzo(a,h)anthracene	0.0013 U
Hexachlorobenzene	0.0019 U
Hexachlorobutadiene	0.0019 U
Hexachlorobutadiene	0.0018 U
Indeno(1,2,3-cd)pyrene	0.0024 U
Naphthalene	0.0273
N-Nitroso-di-n-propylamine	0.0017 U
Pentachlorophenol	0.0040 U
Quinoline	0.0010 U

TW01-02 FR-018	
1,4-Dichlorobenzene	0.0015 U
2,4-Dinitrotoluene	0.0024 U
2,6-Dinitrotoluene	0.0017 U
3,3'-Dichlorobenzidine	0.0037 U
4-Bromophenyl phenyl ether	0.0021 U
4-Chlorophenyl phenyl ether	0.0015 U
7,12-Dimethylbenz(a)anthracene	0.0050 U
Benzenethiol	0.010 U
Benzo(a)anthracene	0.000055 U
Benzo(b)fluoranthene	0.000056 U
Benzo(k)fluoranthene	0.000046 U
bis(2-Chloroethoxy)methane	0.0016 U
bis(2-Chloroethyl)ether	0.0012 U
bis(2-Ethylhexyl)phthalate	0.0018 J
Dibenzo(a,h)anthracene	0.0013 U
Hexachlorobenzene	0.0019 U
Hexachlorobutadiene	0.0019 U
Hexachlorobutadiene	0.0018 U
Indeno(1,2,3-cd)pyrene	0.0024 U
Naphthalene	0.0021 J
N-Nitroso-di-n-propylamine	0.0017 U
Pentachlorophenol	0.0040 U
Quinoline	0.0010 U

TW01-07 FR-032	
1,4-Dichlorobenzene	0.0015 U
1-Methylnaphthalene	0.0155
2,4-Dinitrotoluene	0.0024 U
2,6-Dinitrotoluene	0.0017 U
2-Methylnaphthalene	0.0168
3,3'-Dichlorobenzidine	0.0037 U
4-Bromophenyl phenyl ether	0.0021 U
4-Chlorophenyl phenyl ether	0.0015 U
7,12-Dimethylbenz(a)anthracene	0.0050 U
Benzenethiol	0.010 U
Benzo(a)anthracene	0.000055 U
Benzo(b)fluoranthene	0.000056 U
Benzo(k)fluoranthene	0.000046 U
bis(2-Chloroethoxy)methane	0.0016 U
bis(2-Chloroethyl)ether	0.0012 U
Dibenzo(a,h)anthracene	0.0013 U
Diethyl phthalate	0.0025 J
Hexachlorobenzene	0.0019 U
Hexachlorobutadiene	0.0019 U
Hexachlorobutadiene	0.0018 U
Indeno(1,2,3-cd)pyrene	0.0024 U
Naphthalene	0.0053
N-Nitroso-di-n-propylamine	0.0017 U
Pentachlorophenol	0.0040 U
Quinoline	0.0010 U

TW01-08 FR-024	
1,4-Dichlorobenzene	0.0015 U
2,4-Dinitrotoluene	0.0024 U
2,6-Dinitrotoluene	0.0017 U
3,3'-Dichlorobenzidine	0.0037 U
4-Bromophenyl phenyl ether	0.0021 U
4-Chlorophenyl phenyl ether	0.0015 U
7,12-Dimethylbenz(a)anthracene	0.0050 U
Benzenethiol	0.010 U
Benzo(a)anthracene	0.000055 U
Benzo(b)fluoranthene	0.000056 U
Benzo(k)fluoranthene	0.000046 U
bis(2-Chloroethoxy)methane	0.0016 U
bis(2-Chloroethyl)ether	0.0012 U
bis(2-Ethylhexyl)phthalate	0.0016 J
Dibenzo(a,h)anthracene	0.0013 U
Hexachlorobenzene	0.0019 U
Hexachlorobutadiene	0.0019 U
Hexachlorobutadiene	0.0018 U
Indeno(1,2,3-cd)pyrene	0.0024 U
N-Nitroso-di-n-propylamine	0.0017 U
Pentachlorophenol	0.0040 U
Quinoline	0.0010 U

TW01-11 FR-003	
1,4-Dichlorobenzene	0.0015 U
1-Methylnaphthalene	0.0647
2,4-Dinitrotoluene	0.0024 U
2,6-Dinitrotoluene	0.0017 U
2-Methylnaphthalene	0.0625
3,3'-Dichlorobenzidine	0.0037 U
4-Bromophenyl phenyl ether	0.0021 U
4-Chlorophenyl phenyl ether	0.0015 U
7,12-Dimethylbenz(a)anthracene	0.0050 U
Benzenethiol	0.010 U
Benzo(a)anthracene	0.000055 U
Benzo(b)fluoranthene	0.000056 U
Benzo(k)fluoranthene	0.000046 U
bis(2-Chloroethoxy)methane	0.0016 U
bis(2-Chloroethyl)ether	0.0012 U
bis(2-Ethylhexyl)phthalate	0.0026 J
Dibenzo(a,h)anthracene	0.0013 U
Hexachlorobenzene	0.0019 U
Hexachlorobutadiene	0.0019 U
Hexachlorobutadiene	0.0018 U
Indeno(1,2,3-cd)pyrene	0.0024 U
Naphthalene	0.163
N-Nitroso-di-n-propylamine	0.0017 U
Pentachlorophenol	0.0040 U
Quinoline	0.0010 U

TW01-12 FR-006	
1,4-Dichlorobenzene	0.0015 U
1-Methylnaphthalene	0.0109
2,4-Dinitrotoluene	0.0024 U
2,6-Dinitrotoluene	0.0017 U
2-Methylnaphthalene	0.0102
3,3'-Dichlorobenzidine	0.0037 U
4-Bromophenyl phenyl ether	0.0021 U
4-Chlorophenyl phenyl ether	0.0015 U
7,12-Dimethylbenz(a)anthracene	0.0050 U
Benzenethiol	0.010 U
Benzo(a)anthracene	0.000055 U
Benzo(b)fluoranthene	0.000056 U
Benzo(k)fluoranthene	0.000046 U
bis(2-Chloroethoxy)methane	0.0016 U
bis(2-Chloroethyl)ether	0.0012 U
Dibenzo(a,h)anthracene	0.0013 U
Hexachlorobenzene	0.0019 U
Hexachlorobutadiene	0.0019 U
Hexachlorobutadiene	0.0018 U
Indeno(1,2,3-cd)pyrene	0.0024 U
Naphthalene	0.0256
N-Nitroso-di-n-propylamine	0.0017 U
Pentachlorophenol	0.0040 U
Quinoline	0.0010 U

Notes:

1. Results are posted in mg/l
2. Qualifiers:

U = Undetected at the sample detection limit (SDL)

J = Concentration greater than the sample detection limit (SDL) but less than the method

- Exceeds EPA Region 6 MSSL or MCL If Available
- SDL Exceeds EPA Screening Level or MCL If Available
- SDL Exceeds TCEQ Screening Level
- SDL Exceeds Both EPA and TCEQ Screening Level

0 90 180

Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1A
Human Health
SVOC Groundwater Distribution Map

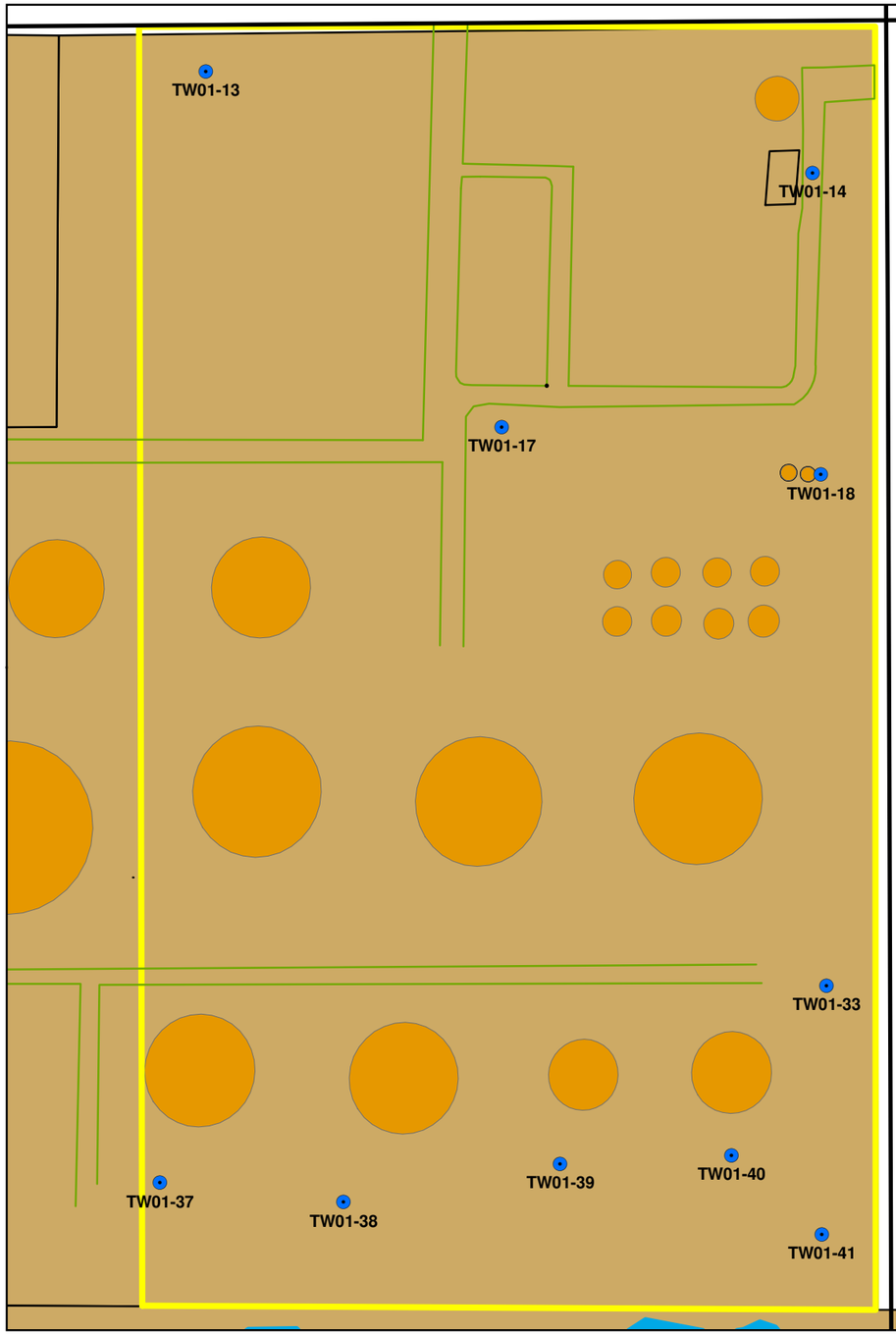
FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

KLEINFELDER
Bright People. Right Solutions.
3601 Manor Road, Austin, Texas 78723
Phone: 512-926-6650 Fax: 512-926-3312
www.kleinfelder.com

FIGURE

1G



TW01-13 FR-066	
1,4-Dichlorobenzene	0.0015 U
2,4-Dinitrotoluene	0.0024 U
2,6-Dinitrotoluene	0.0017 U
3,3'-Dichlorobenzidine	0.0037 U
4-Bromophenyl phenyl ether	0.0021 U
4-Chlorophenyl phenyl ether	0.0015 U
7,12-Dimethylbenz(a)anthracene	0.0050 U
Benzenethiol	0.010 U
Benzo(a)anthracene	0.000055 U
Benzo(b)fluoranthene	0.000056 U
Benzo(k)fluoranthene	0.000046 U
bis(2-Chloroethoxy)methane	0.0016 U
bis(2-Chloroethyl)ether	0.0012 U
Dibenzo(a,h)anthracene	0.0013 U
Hexachlorobenzene	0.0019 U
Hexachlorobutadiene	0.0019 U
Hexachlorobutadiene	0.0018 U
Indeno(1,2,3-cd)pyrene	0.0024 U
N-Nitroso-di-n-propylamine	0.0017 U
Pentachlorophenol	0.0040 U
Quinoline	0.0010 U

TW01-14 FR-063	
1,4-Dichlorobenzene	0.0016 U
2,4-Dinitrotoluene	0.0025 U
2,6-Dinitrotoluene	0.0017 U
3,3'-Dichlorobenzidine	0.0038 U
4-Bromophenyl phenyl ether	0.0022 U
4-Chlorophenyl phenyl ether	0.0015 U
7,12-Dimethylbenz(a)anthracene	0.0051 U
Benzenethiol	0.010 U
Benzo(a)anthracene	0.000056 U
Benzo(b)fluoranthene	0.000057 U
Benzo(k)fluoranthene	0.000047 U
bis(2-Chloroethoxy)methane	0.0016 U
bis(2-Chloroethyl)ether	0.0012 U
Dibenzo(a,h)anthracene	0.0013 U
Hexachlorobenzene	0.0019 U
Hexachlorobutadiene	0.0020 U
Hexachlorobutadiene	0.0018 U
Indeno(1,2,3-cd)pyrene	0.0024 U
N-Nitroso-di-n-propylamine	0.0017 U
Quinoline	0.0010 U

TW01-17 FR-048A	
1,4-Dichlorobenzene	0.0016 U
2,4-Dinitrotoluene	0.0025 U
2,6-Dinitrotoluene	0.0017 U
3,3'-Dichlorobenzidine	0.0038 U
4-Bromophenyl phenyl ether	0.0022 U
4-Chlorophenyl phenyl ether	0.0015 U
7,12-Dimethylbenz(a)anthracene	0.0052 U
Benzenethiol	0.010 U
Benzo(a)anthracene	0.00078 U
Benzo(a)pyrene	0.0016 U
Benzo(b)fluoranthene	0.00078 U
Benzo(k)fluoranthene	0.00082 U
bis(2-Chloroethoxy)methane	0.0016 U
bis(2-Chloroethyl)ether	0.0012 U
Dibenzo(a,h)anthracene	0.0013 U
Hexachlorobenzene	0.0019 U
Hexachlorobutadiene	0.0016 U
Indeno(1,2,3-cd)pyrene	0.0025 U
N-Nitroso-di-n-propylamine	0.0017 U
Pentachlorophenol	0.0041 U
Quinoline	0.0010 U

TW01-18 FR-052	
1,4-Dichlorobenzene	0.0016 U
2,4-Dinitrotoluene	0.0025 U
2,6-Dinitrotoluene	0.0017 U
3,3'-Dichlorobenzidine	0.0038 U
4-Bromophenyl phenyl ether	0.0022 U
4-Chlorophenyl phenyl ether	0.0015 U
7,12-Dimethylbenz(a)anthracene	0.0051 U
Benzenethiol	0.010 U
Benzo(a)anthracene	0.0014 U
Benzo(a)anthracene	0.000056 U
Benzo(a)pyrene	0.0016 U
Benzo(b)fluoranthene	0.0015 U
Benzo(b)fluoranthene	0.000057 U
Benzo(k)fluoranthene	0.0016 U
Benzo(k)fluoranthene	0.000047 U
bis(2-Chloroethoxy)methane	0.0016 U
bis(2-Chloroethyl)ether	0.0012 U
Dibenzo(a,h)anthracene	0.0013 U
Hexachlorobenzene	0.0019 U
Hexachlorobutadiene	0.0020 U
Hexachlorobutadiene	0.0012 U
Indeno(1,2,3-cd)pyrene	0.0024 U
N-Nitroso-di-n-propylamine	0.0017 U
Pentachlorophenol	0.0041 U
Quinoline	0.0010 U

TW01-33 FR-107	
7,12-Dimethylbenz(a)anthracene	0.0050 U
Benzenethiol	0.010 U
Benzo(a)anthracene	0.000055 U
Benzo(b)fluoranthene	0.000056 U
Benzo(k)fluoranthene	0.000046 U
bis(2-Chloroethoxy)methane	0.0016 U
bis(2-Chloroethyl)ether	0.0012 U
Dibenzo(a,h)anthracene	0.0013 U
Hexachlorobenzene	0.0019 U
Hexachlorobutadiene	0.0019 U
Hexachlorobutadiene	0.0012 U
Indeno(1,2,3-cd)pyrene	0.0024 U
N-Nitroso-di-n-propylamine	0.0017 U
Pentachlorophenol	0.0040 U
Quinoline	0.0010 U

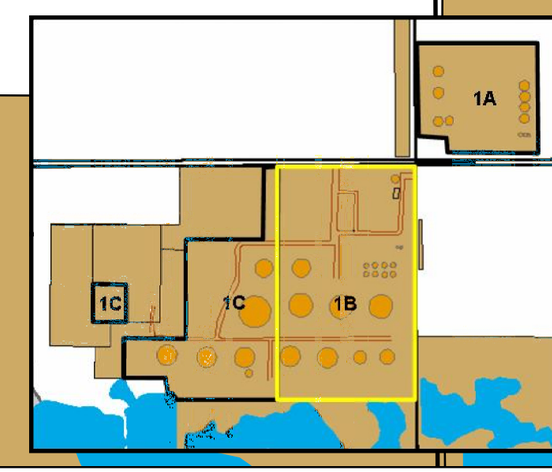
TW01-37 FR-121	
1-Phenylethanol	0.0026 J

TW01-39 FR-115	
1,4-Dichlorobenzene	0.0015 U
2,4-Dinitrotoluene	0.0024 U
2,6-Dinitrotoluene	0.0017 U
3,3'-Dichlorobenzidine	0.0037 U
4-Bromophenyl phenyl ether	0.0021 U
4-Chlorophenyl phenyl ether	0.0015 U
7,12-Dimethylbenz(a)anthracene	0.0050 U

TW01-41 FR-104	
Di-n-butyl phthalate	0.0063

Legend

- Groundwater Sample Points
- Roads
- Gravel/Dirt Road
- AOC-1B
- Refinery Tanks
- AOCs
- Wetland



Notes:

1. Results are posted in mg/l
2. Qualifiers:
   - U = Undetected at the sample detection limit (SDL)
   - J = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

SDL Exceeds EPA Screening Level or MCL If Available
SDL Exceeds TCEQ Screening Level
SDL Exceeds Both EPA and TCEQ Screening Level

N

0 150 300
Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

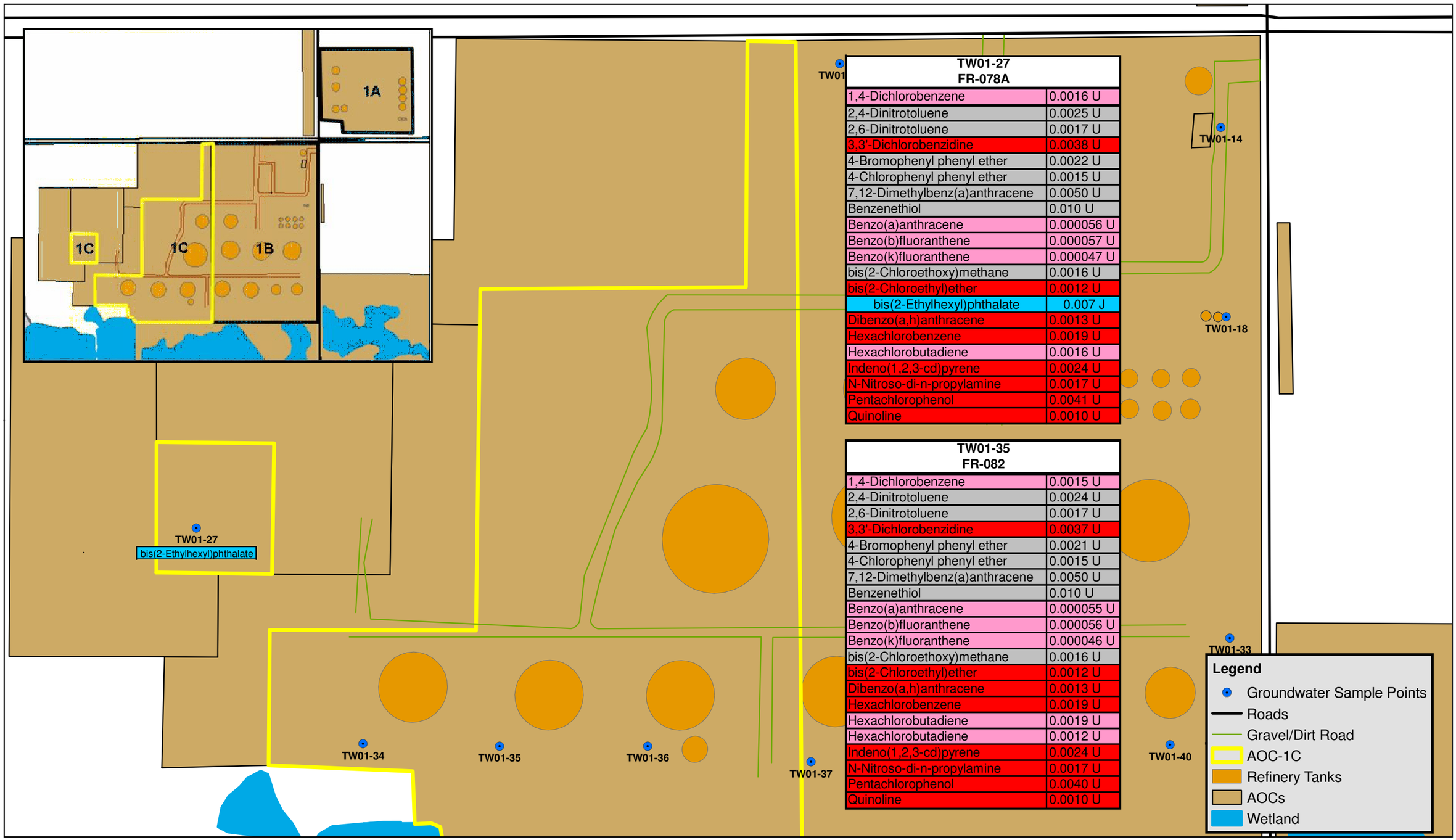
AOC-1B
Human Health
SVOC Groundwater Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

KLEINFELDER
Bright People. Right Solutions.
3601 Manor Road, Austin, Texas 78723
Phone: 512-926-6650 Fax: 512-926-3312
www.kleinfelder.com

FIGURE
1H



TW01-27 FR-078A	
1,4-Dichlorobenzene	0.0016 U
2,4-Dinitrotoluene	0.0025 U
2,6-Dinitrotoluene	0.0017 U
3,3'-Dichlorobenzidine	0.0038 U
4-Bromophenyl phenyl ether	0.0022 U
4-Chlorophenyl phenyl ether	0.0015 U
7,12-Dimethylbenz(a)anthracene	0.0050 U
Benzenethiol	0.010 U
Benzo(a)anthracene	0.000056 U
Benzo(b)fluoranthene	0.000057 U
Benzo(k)fluoranthene	0.000047 U
bis(2-Chloroethoxy)methane	0.0016 U
bis(2-Chloroethyl)ether	0.0012 U
bis(2-Ethylhexyl)phthalate	0.007 J
Dibenzo(a,h)anthracene	0.0013 U
Hexachlorobenzene	0.0019 U
Hexachlorobutadiene	0.0016 U
Indeno(1,2,3-cd)pyrene	0.0024 U
N-Nitroso-di-n-propylamine	0.0017 U
Pentachlorophenol	0.0041 U
Quinoline	0.0010 U

TW01-35 FR-082	
1,4-Dichlorobenzene	0.0015 U
2,4-Dinitrotoluene	0.0024 U
2,6-Dinitrotoluene	0.0017 U
3,3'-Dichlorobenzidine	0.0037 U
4-Bromophenyl phenyl ether	0.0021 U
4-Chlorophenyl phenyl ether	0.0015 U
7,12-Dimethylbenz(a)anthracene	0.0050 U
Benzenethiol	0.010 U
Benzo(a)anthracene	0.000055 U
Benzo(b)fluoranthene	0.000056 U
Benzo(k)fluoranthene	0.000046 U
bis(2-Chloroethoxy)methane	0.0016 U
bis(2-Chloroethyl)ether	0.0012 U
Dibenzo(a,h)anthracene	0.0013 U
Hexachlorobenzene	0.0019 U
Hexachlorobutadiene	0.0019 U
Hexachlorobutadiene	0.0012 U
Indeno(1,2,3-cd)pyrene	0.0024 U
N-Nitroso-di-n-propylamine	0.0017 U
Pentachlorophenol	0.0040 U
Quinoline	0.0010 U

Notes:

1. Results are posted in mg/l
2. Qualifiers:
   - U = Undetected at the sample detection limit (SDL)
   - J = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

- Exceeds Both EPA and TCEQ Limit
- SDL Exceeds EPA Screening Level or MCL If Available
- SDL Exceeds TCEQ Screening Level
- SDL Exceeds Both EPA and TCEQ Screening Level

N

0 150 300
Feet

DATE DRAWN: 7/8/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1C
Human Health
SVOC Groundwater Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

KLEINFELDER
Bright People. Right Solutions.
3601 Manor Road, Austin, Texas 78723
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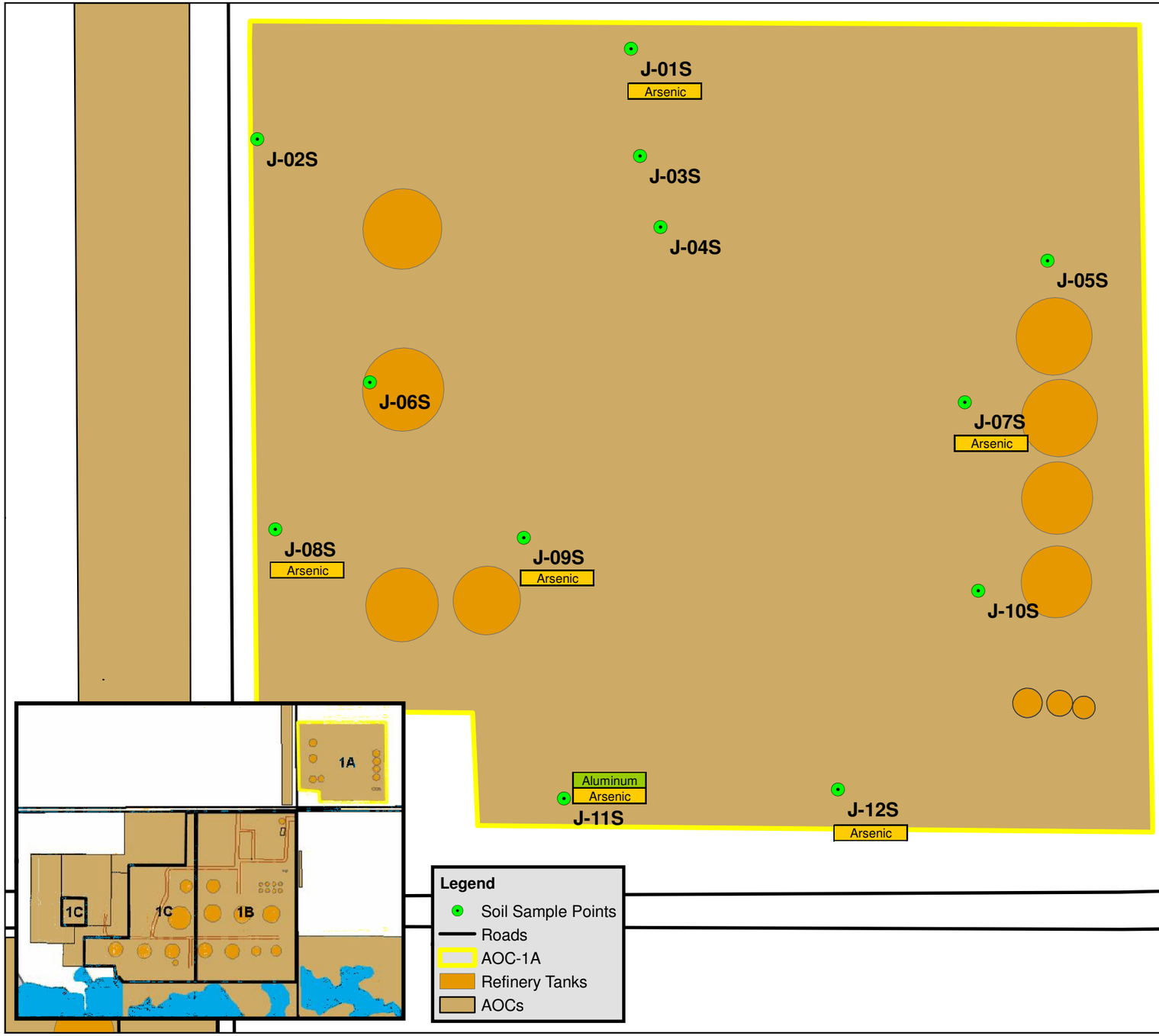
FIGURE
11



J-01 S FR-013	
Aluminum	3010
Arsenic	0.51 B
Barium	86.4
Beryllium	0.1 B
Chromium	2.8
Cobalt	0.74 B
Copper	1.7 B
Iron	1760
Lead	7
Manganese	66.4
Mercury	0.0083 B
Nickel	1 B
Vanadium	4.7 B
Zinc	40.7

J-02 S FR-016	
Aluminum	820
Barium	31.4
Beryllium	0.023 B
Chromium	0.9
Hex Chrom	1.3
Copper	0.99 B
Iron	540
Lead	4.6
Manganese	21.1
Mercury	0.0069 B
Nickel	0.29 B
Selenium	0.26 B
Vanadium	1.1 B
Zinc	23.6

J-03 S FR-009A	
Aluminum	509.5
Barium	24.3 B
Chromium	1.25
Copper	1.025 B
Iron	444.5
Lead	4.4
Manganese	11.9
Mercury	0.0096 B
Nickel	0.33 B
Selenium	0.305 B
Vanadium	1.15 B
Zinc	11.8

J-04 S FR-007	
Aluminum	786
Arsenic	0.23 B
Barium	23.4
Chromium	0.92 B
Copper	0.93 B
Iron	480
Lead	3.6
Manganese	15.7
Mercury	0.007 B
Nickel	0.35 B
Vanadium	1.3 B
Zinc	8.7

J-05 S FR-033	
Aluminum	1250
Arsenic	0.29 B
Barium	19 B
Beryllium	0.087 B
Chromium	0.77 B
Cobalt	0.47 B
Copper	0.93 B
Iron	1740
Lead	4.8
Manganese	11.5
Mercury	0.0014 B
Nickel	0.56 B
Vanadium	1.7 B
Zinc	10.4

J-06 S FR-019A	
Aluminum	609
Barium	6.25 B
Chromium	50.5 B
Copper	0.685 B
Iron	331
Lead	2.15
Manganese	9.3
Mercury	0.00535 B
Vanadium	0.985 B
Zinc	3.1

J-07 S FR-030	
Aluminum	2900
Antimony	0.54 B
Arsenic	2
Barium	1250
Beryllium	0.13 B
Cadmium	0.56
Chromium	13.3
Cobalt	2.5 B
Copper	23.5
Iron	4500
Lead	80.6
Manganese	39.6
Mercury	0.74
Nickel	4.3 B
Vanadium	5.1 B
Zinc	232

J-08 S FR-022	
Aluminum	5020
Arsenic	0.83 B
Barium	91.8
Beryllium	0.2 B
Chromium	3.6
Cobalt	1.3 B
Copper	3.2
Iron	3560
Lead	8.3
Manganese	102
Mercury	0.0014 B
Nickel	2.1 B
Vanadium	6.1
Zinc	80.3

J-09 S FR-025	
Aluminum	5460
Arsenic	1.2
Barium	25.9
Beryllium	0.24 B
Chromium	4.5
Hex Chrom	1.4
Cobalt	1.3 B
Copper	2.7
Iron	4280
Lead	8.9
Manganese	43.6
Mercury	0.013 B
Nickel	2.2 B
Vanadium	7.7
Zinc	16.6

J-10 S FR-027	
Aluminum	1670
Arsenic	0.31 B
Barium	13.9 B
Beryllium	0.094 B
Chromium	2.9
Hex Chrom	1.9
Cobalt	0.43 B
Copper	0.86 B
Iron	2170
Lead	6.9
Manganese	21.5
Mercury	0.0047 B
Nickel	0.76 B
Vanadium	2.4 B
Zinc	22.8

J-11 S FR-001	
Aluminum	14300
Arsenic	2.6
Barium	165
Beryllium	0.49
Chromium	11.3
Hex Chrom	3.1
Cobalt	3.3 B
Copper	5.1
Iron	7560
Lead	6
Manganese	121
Mercury	0.0037 B
Nickel	5.1
Selenium	0.37 B
Vanadium	22.3
Zinc	25.2

J-12 S FR-004	
Aluminum	3550
Arsenic	0.57 B
Barium	36
Beryllium	0.092 B
Chromium	2.3
Cobalt	0.61 B
Copper	1.1 B
Iron	1860
Lead	3.4
Manganese	37.3
Mercury	0.0065 B
Nickel	1.3 B
Vanadium	5.1
Zinc	6.1

Notes:

1. Results are posted in mg/kg
   Hex Chrom posted in mg/l
2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds EPA Region 6 MSSL

Exceeds TCEQ Tier 1 Residential PCL

0 50 100

Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1A
Human Health
Metal Surface Soil Distribution Map

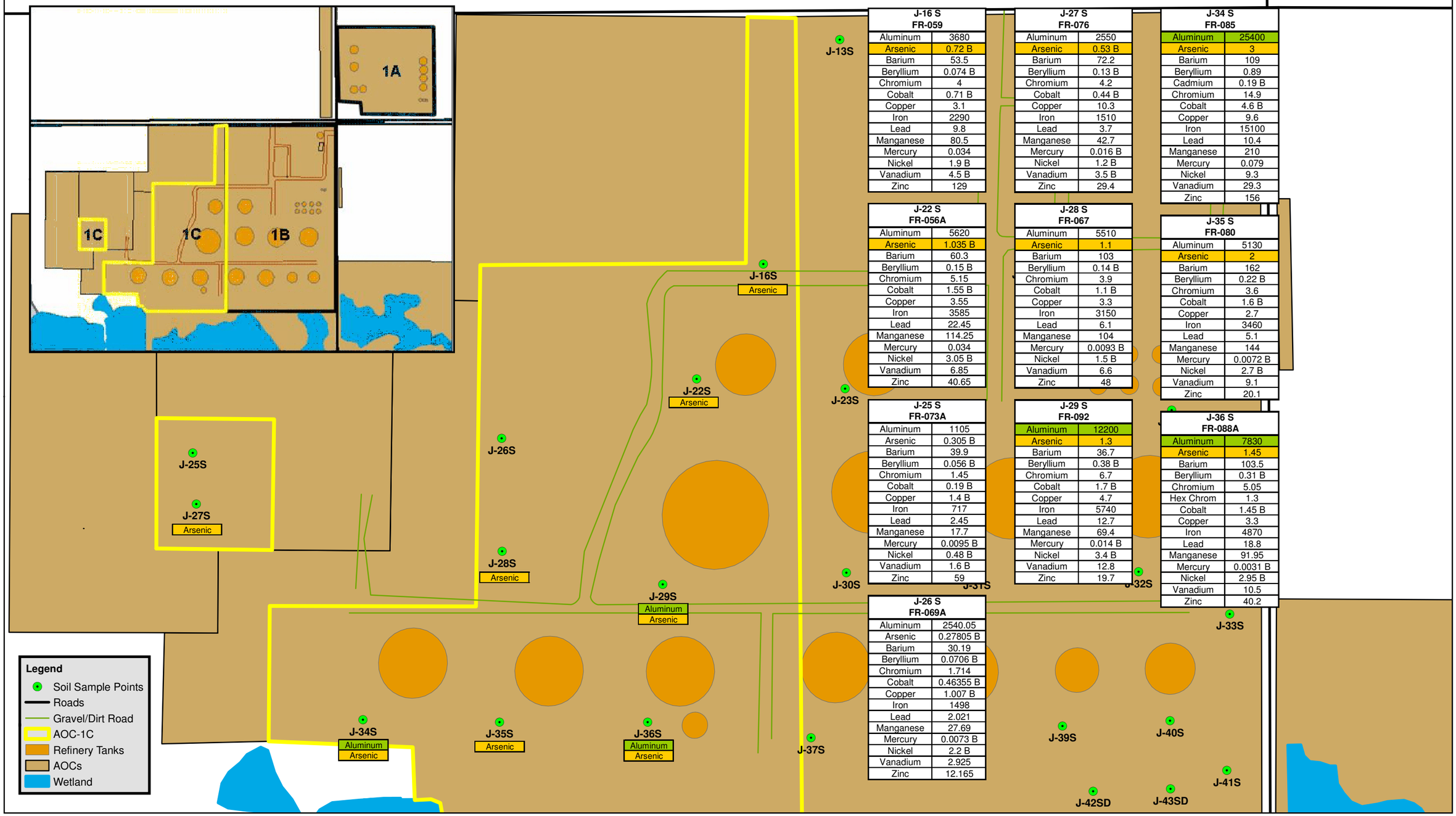
FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 FILE NAME: Falcon Refinery Base Map

KLEINFELDER
Bright People. Right Solutions.
3601 Manor Road, Austin, Texas 78723
Phone: 512-926-6650 Fax: 512-926-3312
www.kleinfelder.com

FIGURE

2A



J-16 S FR-059	
Aluminum	3680
Arsenic	0.72 B
Barium	53.5
Beryllium	0.074 B
Chromium	4
Cobalt	0.71 B
Copper	3.1
Iron	2290
Lead	9.8
Manganese	80.5
Mercury	0.034
Nickel	1.9 B
Vanadium	4.5 B
Zinc	129

J-22 S FR-056A	
Aluminum	5620
Arsenic	1.035 B
Barium	60.3
Beryllium	0.15 B
Chromium	5.15
Cobalt	1.55 B
Copper	3.55
Iron	3585
Lead	22.45
Manganese	114.25
Mercury	0.034
Nickel	3.05 B
Vanadium	6.85
Zinc	40.65

J-25 S FR-073A	
Aluminum	1105
Arsenic	0.305 B
Barium	39.9
Beryllium	0.056 B
Chromium	1.45
Cobalt	0.19 B
Copper	1.4 B
Iron	717
Lead	2.45
Manganese	17.7
Mercury	0.0095 B
Nickel	0.48 B
Vanadium	1.6 B
Zinc	59

J-26 S FR-069A	
Aluminum	2540.05
Arsenic	0.27805 B
Barium	30.19
Beryllium	0.0706 B
Chromium	1.714
Cobalt	0.46355 B
Copper	1.007 B
Iron	1498
Lead	2.021
Manganese	27.69
Mercury	0.0073 B
Nickel	2.2 B
Vanadium	2.925
Zinc	12.165

J-27 S FR-076	
Aluminum	2550
Arsenic	0.53 B
Barium	72.2
Beryllium	0.13 B
Chromium	4.2
Cobalt	0.44 B
Copper	10.3
Iron	1510
Lead	3.7
Manganese	42.7
Mercury	0.016 B
Nickel	1.2 B
Vanadium	3.5 B
Zinc	29.4

J-28 S FR-067	
Aluminum	5510
Arsenic	1.1
Barium	103
Beryllium	0.14 B
Chromium	3.9
Cobalt	1.1 B
Copper	3.3
Iron	3150
Lead	6.1
Manganese	104
Mercury	0.0093 B
Nickel	1.5 B
Vanadium	6.6
Zinc	48

J-29 S FR-092	
Aluminum	12200
Arsenic	1.3
Barium	36.7
Beryllium	0.38 B
Chromium	6.7
Cobalt	1.7 B
Copper	4.7
Iron	5740
Lead	12.7
Manganese	69.4
Mercury	0.014 B
Nickel	3.4 B
Vanadium	12.8
Zinc	19.7

J-34 S FR-085	
Aluminum	25400
Arsenic	3
Barium	109
Beryllium	0.89
Cadmium	0.19 B
Chromium	14.9
Cobalt	4.6 B
Copper	9.6
Iron	15100
Lead	10.4
Manganese	210
Mercury	0.079
Nickel	9.3
Vanadium	29.3
Zinc	156

J-35 S FR-080	
Aluminum	5130
Arsenic	2
Barium	162
Beryllium	0.22 B
Chromium	3.6
Cobalt	1.6 B
Copper	2.7
Iron	3460
Lead	5.1
Manganese	144
Mercury	0.0072 B
Nickel	2.7 B
Vanadium	9.1
Zinc	20.1

J-36 S FR-088A	
Aluminum	7830
Arsenic	1.45
Barium	103.5
Beryllium	0.31 B
Chromium	5.05
Hex Chrom	1.3
Cobalt	1.45 B
Copper	3.3
Iron	4870
Lead	18.8
Manganese	91.95
Mercury	0.0031 B
Nickel	2.95 B
Vanadium	10.5
Zinc	40.2

Notes:

1. Results are posted in mg/kg
   Hex Chrom posted in mg/l
2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds EPA Region 6 MSSL

Exceeds TCEQ Tier 1 Residential PCL

0 90 180
Feet

DATE DRAWN: 7/8/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

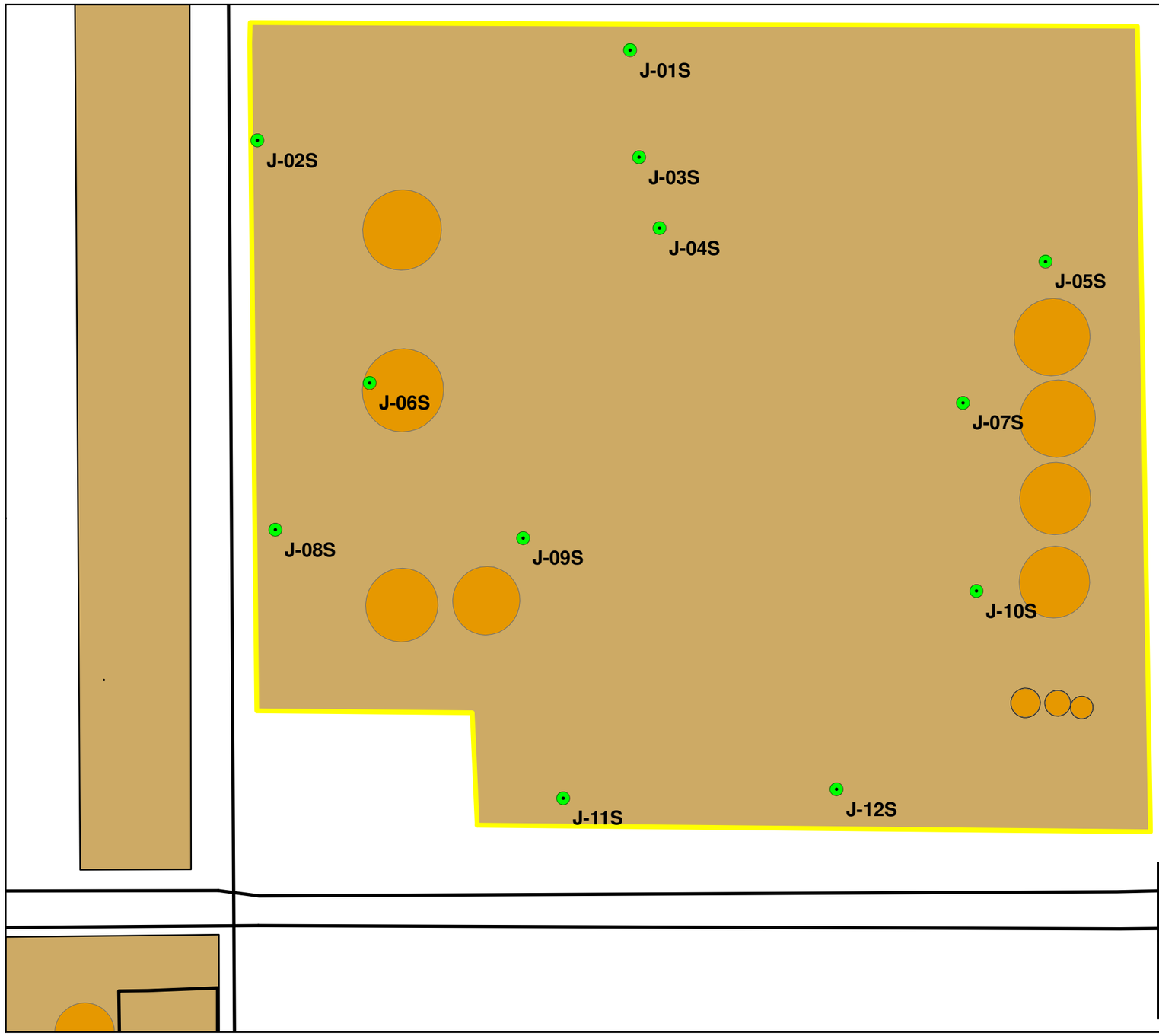
AOC-1C
Human Health
Metal Surface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

KLEINFELDER
Bright People. Right Solutions.
3601 Manor Road, Austin, Texas 78723
Phone: 512-926-6650 Fax: 512-926-3312
www.kleinfelder.com

FIGURE
2B



J-01 S FR-013	
1,2,3-Trichloropropane	0.0019 U
Methylene chloride	0.0038 J

J-02 S FR-016	
1,2,3-Trichloropropane	0.0015 U
Methylene chloride	0.0034 J

J-03 S FR-009A	
1,2,3-Trichloropropane	0.0018 U
Methylene chloride	0.00555 J

J-04 S FR-007	
1,2,3-Trichloropropane	0.0019 U
Methylene chloride	0.0134

J-05 S FR-033	
1,2,3-Trichloropropane	0.0017 U
Acetone	0.0963
Methylene chloride	0.0069 J

J-06 S FR-019A	
1,2,3-Trichloropropane	0.0016 U
Methylene chloride	0.0048 J

J-07 S FR-030	
1,2,3-Trichloropropane	0.0016 U
1,2,4-Trimethylbenzene	0.0025 J
Acetone	0.0099 J
Methylene chloride	0.0235
Toluene	0.0039 J
Xylene (total)	0.005 J

J-08 S FR-022	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0099 J
Methylene chloride	0.004 J

J-09 S FR-025	
1,2,3-Trichloropropane	0.0016 U
Methylene chloride	0.0043 J

J-10 S FR-027	
1,2,3-Trichloropropane	0.0016 U
1,2,4-Trimethylbenzene	0.0015 J
Methylene chloride	0.0035 J

J-11 S FR-001	
1,2,3-Trichloropropane	0.0018 U
Methylene chloride	0.0176

J-12 S FR-004	
1,2,3-Trichloropropane	0.0015 U
Acetone	0.0401 J
Methylene chloride	0.0117

Legend
- Soil Sample Points
- Roads
- AOC-1A
- Refinery Tanks
- AOCs

Notes:

1. Results are posted in mg/kg
2. Qualifiers:
   - U = Undetected at the sample detection limit (SDL)
   - J = Concentration greater than the SDL but less than the method quantitation limit (MQL)

SDL Exceeds TCEQ Screening Level

N

0 50 100
Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1A
Human Health
VOC Surface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

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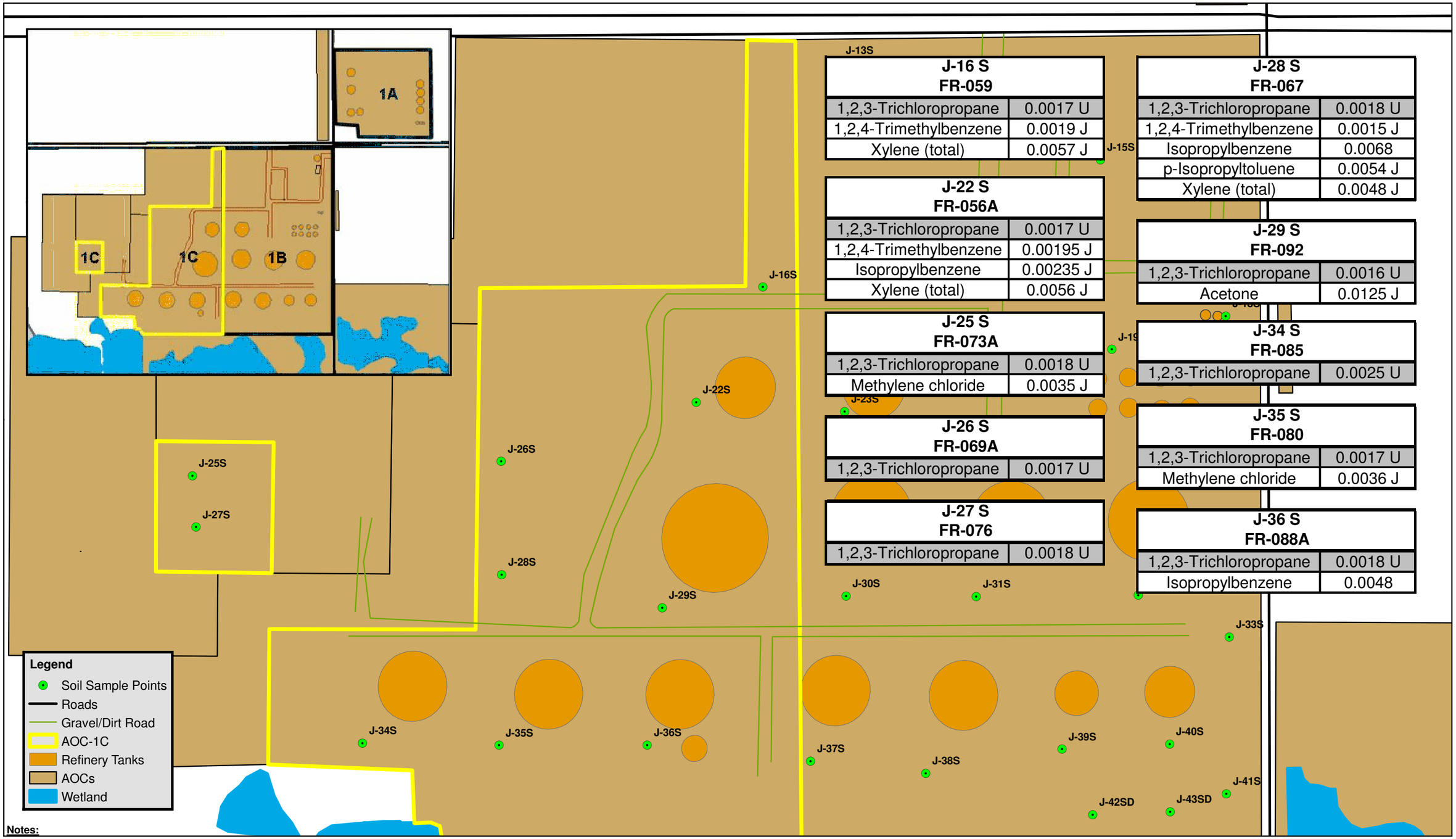
FIGURE
2C



J-16 S FR-059	
1,2,3-Trichloropropane	0.0017 U
1,2,4-Trimethylbenzene	0.0019 J
Xylene (total)	0.0057 J

J-22 S FR-056A	
1,2,3-Trichloropropane	0.0017 U
1,2,4-Trimethylbenzene	0.00195 J
Isopropylbenzene	0.00235 J
Xylene (total)	0.0056 J

J-25 S FR-073A	
1,2,3-Trichloropropane	0.0018 U
Methylene chloride	0.0035 J

J-26 S FR-069A	
1,2,3-Trichloropropane	0.0017 U

J-27 S FR-076	
1,2,3-Trichloropropane	0.0018 U

J-28 S FR-067	
1,2,3-Trichloropropane	0.0018 U
1,2,4-Trimethylbenzene	0.0015 J
Isopropylbenzene	0.0068
p-Isopropyltoluene	0.0054 J
Xylene (total)	0.0048 J

J-29 S FR-092	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0125 J

J-34 S FR-085	
1,2,3-Trichloropropane	0.0025 U

J-35 S FR-080	
1,2,3-Trichloropropane	0.0017 U
Methylene chloride	0.0036 J

J-36 S FR-088A	
1,2,3-Trichloropropane	0.0018 U
Isopropylbenzene	0.0048

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

U = Undetected at the sample detection limit (SDL)

J = Concentration greater than the SDL but less than the method quantitation limit (MQL)

SDL Exceeds TCEQ Screening Level

0 100 200
Feet

DATE DRAWN: 7/8/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1C
Human Health
VOC Surface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

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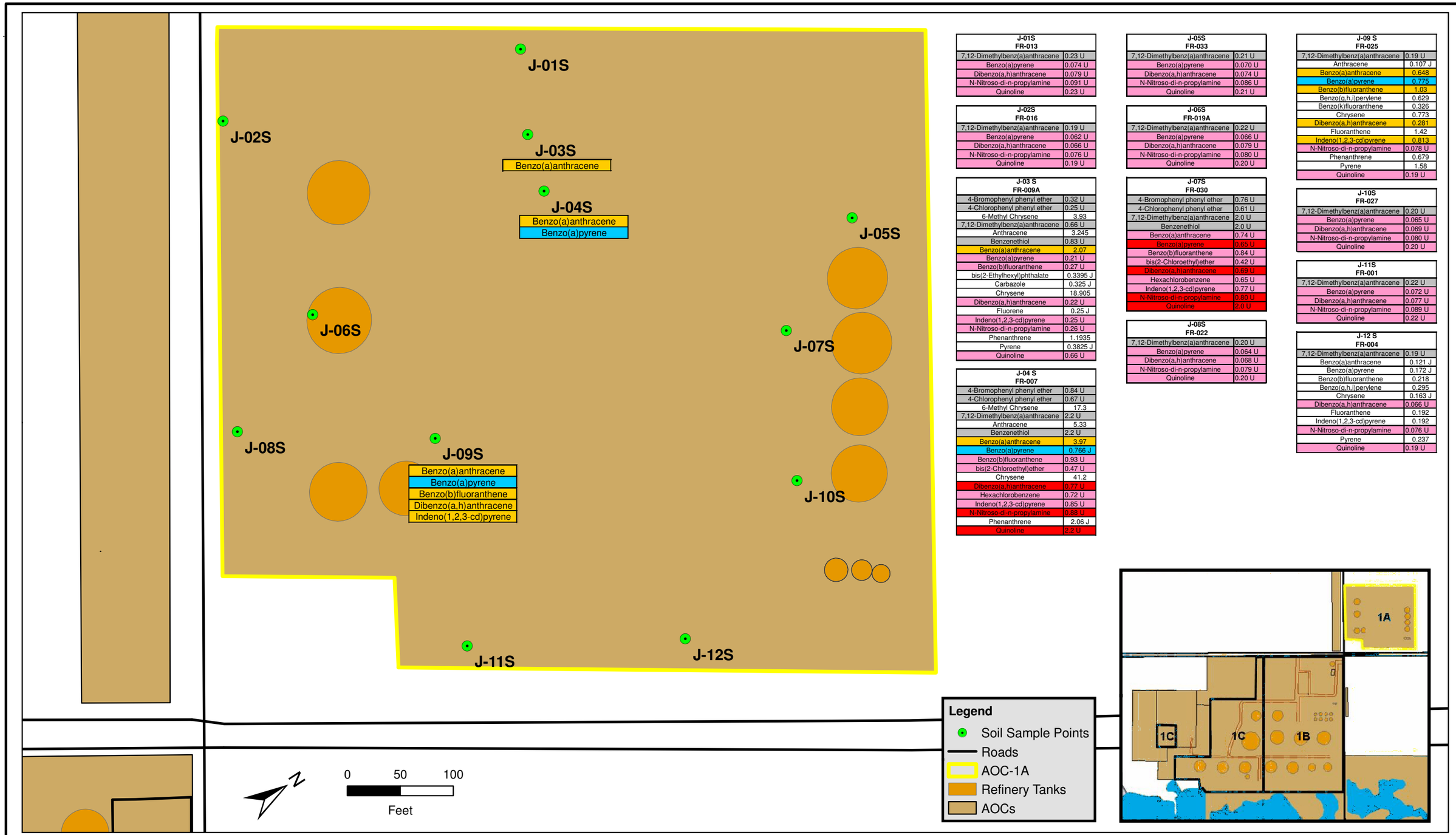
FIGURE
2D



J-01S FR-013	
7,12-Dimethylbenz(a)anthracene	0.23 U
Benzo(a)pyrene	0.074 U
Dibenzo(a,h)anthracene	0.079 U
N-Nitroso-di-n-propylamine	0.091 U
Quinoline	0.23 U

J-02S FR-016	
7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.062 U
Dibenzo(a,h)anthracene	0.066 U
N-Nitroso-di-n-propylamine	0.076 U
Quinoline	0.19 U

J-03 S FR-009A	
4-Bromophenyl phenyl ether	0.32 U
4-Chlorophenyl phenyl ether	0.25 U
6-Methyl Chrysene	3.93
7,12-Dimethylbenz(a)anthracene	0.66 U
Anthracene	3.245
Benzenethiol	0.83 U
Benzo(a)anthracene	2.07
Benzo(a)pyrene	0.21 U
Benzo(b)fluoranthene	0.27 U
bis(2-Ethylhexyl)phthalate	0.3395 J
Carbazole	0.325 J
Chrysene	18.905
Dibenzo(a,h)anthracene	0.22 U
Fluorene	0.25 J
Indeno(1,2,3-cd)pyrene	0.25 U
N-Nitroso-di-n-propylamine	0.26 U
Phenanthrene	1.1935
Pyrene	0.3825 J
Quinoline	0.66 U

J-04 S FR-007	
4-Bromophenyl phenyl ether	0.84 U
4-Chlorophenyl phenyl ether	0.67 U
6-Methyl Chrysene	17.3
7,12-Dimethylbenz(a)anthracene	2.2 U
Anthracene	5.33
Benzenethiol	2.2 U
Benzo(a)anthracene	3.97
Benzo(a)pyrene	0.766 J
Benzo(b)fluoranthene	0.93 U
bis(2-Chloroethyl)ether	0.47 U
Chrysene	41.2
Dibenzo(a,h)anthracene	0.77 U
Hexachlorobenzene	0.72 U
Indeno(1,2,3-cd)pyrene	0.85 U
N-Nitroso-di-n-propylamine	0.88 U
Phenanthrene	2.06 J
Quinoline	2.2 U

J-05S FR-033	
7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.070 U
Dibenzo(a,h)anthracene	0.074 U
N-Nitroso-di-n-propylamine	0.086 U
Quinoline	0.21 U

J-06S FR-019A	
7,12-Dimethylbenz(a)anthracene	0.22 U
Benzo(a)pyrene	0.066 U
Dibenzo(a,h)anthracene	0.079 U
N-Nitroso-di-n-propylamine	0.080 U
Quinoline	0.20 U

J-07S FR-030	
4-Bromophenyl phenyl ether	0.76 U
4-Chlorophenyl phenyl ether	0.61 U
7,12-Dimethylbenz(a)anthracene	2.0 U
Benzenethiol	2.0 U
Benzo(a)anthracene	0.74 U
Benzo(a)pyrene	0.65 U
Benzo(b)fluoranthene	0.84 U
bis(2-Chloroethyl)ether	0.42 U
Dibenzo(a,h)anthracene	0.69 U
Hexachlorobenzene	0.65 U
Indeno(1,2,3-cd)pyrene	0.77 U
N-Nitroso-di-n-propylamine	0.80 U
Quinoline	2.0 U

J-08S FR-022	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.064 U
Dibenzo(a,h)anthracene	0.068 U
N-Nitroso-di-n-propylamine	0.079 U
Quinoline	0.20 U

J-09 S FR-025	
7,12-Dimethylbenz(a)anthracene	0.19 U
Anthracene	0.107 J
Benzo(a)anthracene	0.648
Benzo(a)pyrene	0.775
Benzo(b)fluoranthene	1.03
Benzo(g,h,i)perylene	0.629
Benzo(k)fluoranthene	0.326
Chrysene	0.773
Dibenzo(a,h)anthracene	0.281
Fluoranthene	1.42
Indeno(1,2,3-cd)pyrene	0.813
N-Nitroso-di-n-propylamine	0.078 U
Phenanthrene	0.679
Pyrene	1.58
Quinoline	0.19 U

J-10S FR-027	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.065 U
Dibenzo(a,h)anthracene	0.069 U
N-Nitroso-di-n-propylamine	0.080 U
Quinoline	0.20 U

J-11S FR-001	
7,12-Dimethylbenz(a)anthracene	0.22 U
Benzo(a)pyrene	0.072 U
Dibenzo(a,h)anthracene	0.077 U
N-Nitroso-di-n-propylamine	0.089 U
Quinoline	0.22 U

J-12 S FR-004	
7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)anthracene	0.121 J
Benzo(a)pyrene	0.172 J
Benzo(b)fluoranthene	0.218
Benzo(g,h,i)perylene	0.295
Chrysene	0.163 J
Dibenzo(a,h)anthracene	0.066 U
Fluoranthene	0.192
Indeno(1,2,3-cd)pyrene	0.192
N-Nitroso-di-n-propylamine	0.076 U
Pyrene	0.237
Quinoline	0.19 U

Notes:

1. **Results are posted in mg/kg**
2. **Qualifiers:**
   - **U = Undetected at the sample detection limit (SDL)**
   - **J = Concentration greater than the SDL but less than the method quantitation limit (MQL)**

- Exceeds EPA Region 6 MSSL
- Exceeds Both EPA and TCEQ Limit
- SDL Exceeds EPA Screening Level
- SDL Exceeds TCEQ Screening Level
- SDL Exceeds Both EPA and TCEQ Screening Level

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1A
Human Health
SVOC Surface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

KLEINFELDER
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3601 Manor Road, Austin, Texas 78723
Phone: 512-926-6650 Fax: 512-926-3312
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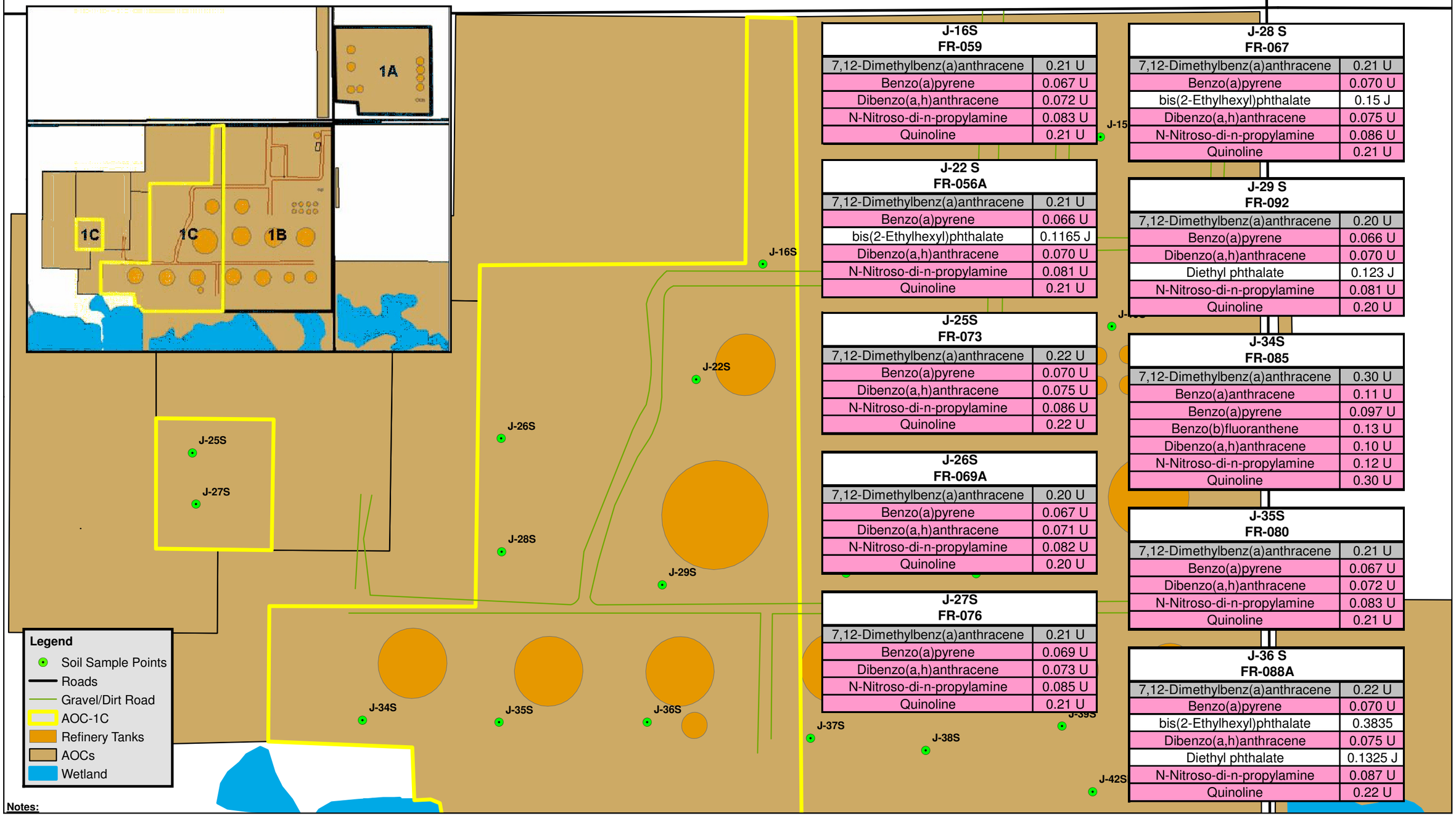
FIGURE
2E



J-16S FR-059	
7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.072 U
N-Nitroso-di-n-propylamine	0.083 U
Quinoline	0.21 U

J-22 S FR-056A	
7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.066 U
bis(2-Ethylhexyl)phthalate	0.1165 J
Dibenzo(a,h)anthracene	0.070 U
N-Nitroso-di-n-propylamine	0.081 U
Quinoline	0.21 U

J-25S FR-073	
7,12-Dimethylbenz(a)anthracene	0.22 U
Benzo(a)pyrene	0.070 U
Dibenzo(a,h)anthracene	0.075 U
N-Nitroso-di-n-propylamine	0.086 U
Quinoline	0.22 U

J-26S FR-069A	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.071 U
N-Nitroso-di-n-propylamine	0.082 U
Quinoline	0.20 U

J-27S FR-076	
7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.069 U
Dibenzo(a,h)anthracene	0.073 U
N-Nitroso-di-n-propylamine	0.085 U
Quinoline	0.21 U

J-28 S FR-067	
7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.070 U
bis(2-Ethylhexyl)phthalate	0.15 J
Dibenzo(a,h)anthracene	0.075 U
N-Nitroso-di-n-propylamine	0.086 U
Quinoline	0.21 U

J-29 S FR-092	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.066 U
Dibenzo(a,h)anthracene	0.070 U
Diethyl phthalate	0.123 J
N-Nitroso-di-n-propylamine	0.081 U
Quinoline	0.20 U

J-34S FR-085	
7,12-Dimethylbenz(a)anthracene	0.30 U
Benzo(a)anthracene	0.11 U
Benzo(a)pyrene	0.097 U
Benzo(b)fluoranthene	0.13 U
Dibenzo(a,h)anthracene	0.10 U
N-Nitroso-di-n-propylamine	0.12 U
Quinoline	0.30 U

J-35S FR-080	
7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.072 U
N-Nitroso-di-n-propylamine	0.083 U
Quinoline	0.21 U

J-36 S FR-088A	
7,12-Dimethylbenz(a)anthracene	0.22 U
Benzo(a)pyrene	0.070 U
bis(2-Ethylhexyl)phthalate	0.3835
Dibenzo(a,h)anthracene	0.075 U
Diethyl phthalate	0.1325 J
N-Nitroso-di-n-propylamine	0.087 U
Quinoline	0.22 U

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

U = Undetected at the sample detection limit (SDL)

J = Concentration greater than the SDL but less than the method quantitation limit (MQL)

SDL Exceeds EPA Screening Level

SDL Exceeds TCEQ Screening Level

0 100 200 Feet

DATE DRAWN: 7/8/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1C
Human Health
SVOC Surface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 FILE NAME: Falcon Refinery Base Map

KLEINFELDER
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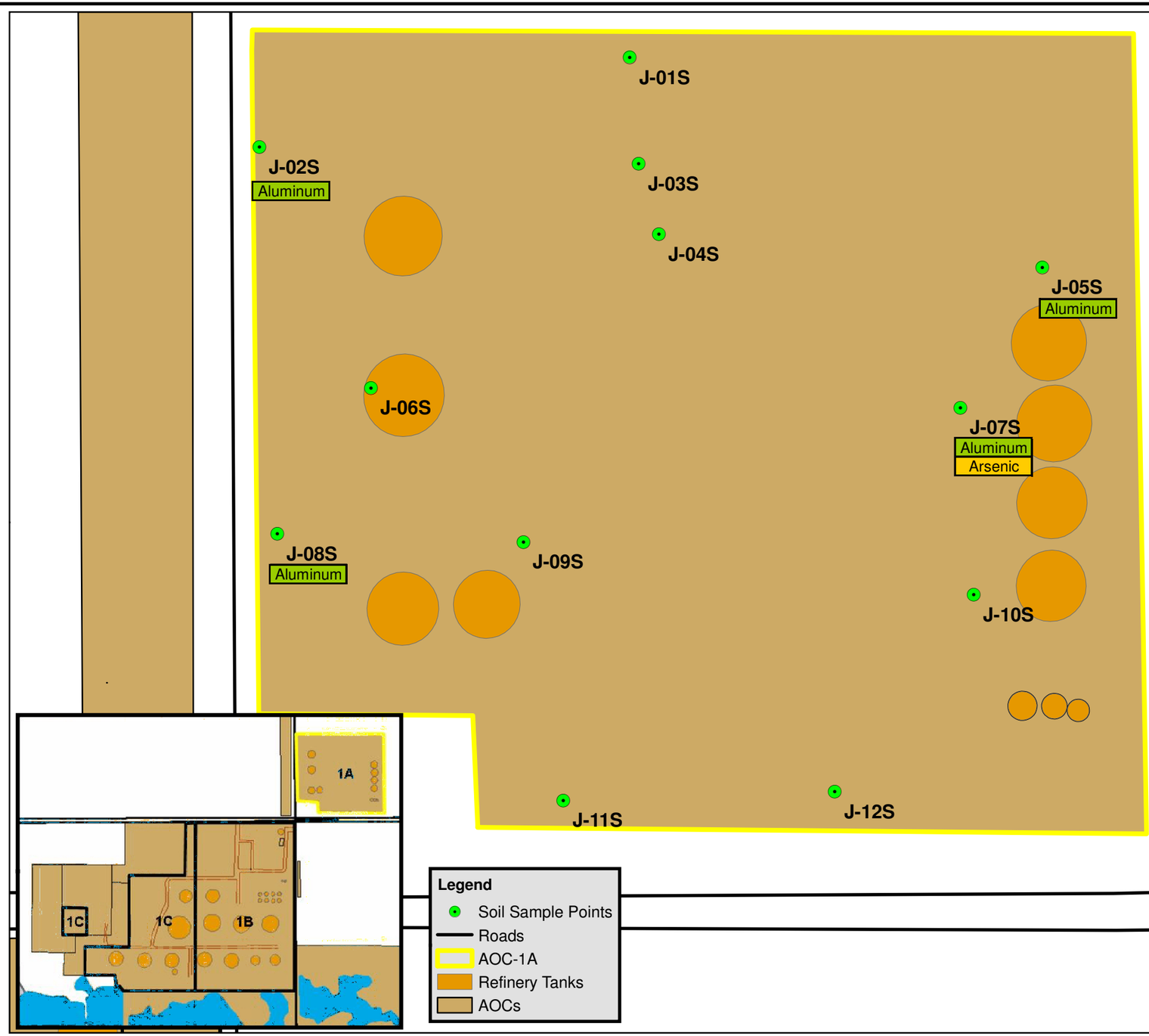
FIGURE
2F



J-01 S FR-014	
Aluminum	1200
Barium	7.7 B
Chromium	0.63 B
Copper	0.59 B
Iron	235
Lead	1.9
Manganese	4.4
Mercury	0.055
Nickel	0.18 B
Vanadium	0.97 B
Zinc	1.6 B

J-02 S FR-017	
Aluminum	7690
Arsenic	0.34 B
Barium	31.1
Beryllium	0.15 B
Chromium	3.9
Cobalt	0.44 B
Copper	1.5 B
Iron	1900
Lead	3.8
Manganese	12.9
Mercury	0.019
Nickel	1.8 B
Vanadium	5
Zinc	7.3

J-03 S FR-011	
Aluminum	2250
Barium	11.8 B
Beryllium	0.035 B
Chromium	1.2
Copper	0.58 B
Iron	494
Lead	2.4
Manganese	5.1
Mercury	0.0051 B
Nickel	0.46 B
Vanadium	1.7 B
Zinc	2.2

J-04 S FR-008	
Aluminum	747
Barium	8.6 B
Chromium	2.1
Copper	0.79 B
Iron	363
Lead	2.3
Manganese	6.2
Nickel	0.32 B
Vanadium	1 B
Zinc	2.9

J-05 S FR-034	
Aluminum	959
Barium	8.5 B
Beryllium	0.042 B
Chromium	0.8
Copper	0.44 B
Iron	624
Lead	2.7
Manganese	4.6
Mercury	0.0021 B
Nickel	0.28 B
Vanadium	0.77 B
Zinc	3.6

J-06 S FR-021	
Aluminum	6880
Arsenic	0.23 B
Barium	23.1
Beryllium	0.13 B
Chromium	3.7
Cobalt	0.35 B
Copper	1.3 B
Iron	2000
Lead	3.2
Manganese	9.9
Mercury	0.033
Nickel	1.3 B
Vanadium	5.3
Zinc	7

J-07 S FR-031	
Aluminum	11400
Arsenic	0.47 B
Barium	52.4
Beryllium	0.28 B
Chromium	4.3
Cobalt	0.56 B
Copper	1.6 B
Iron	2680
Lead	4.3
Manganese	10.8
Mercury	0.012 B
Nickel	1.8 B
Vanadium	7.1
Zinc	10.3

J-08 S FR-023	
Aluminum	10900
Arsenic	0.29 B
Barium	29.3
Beryllium	0.25 B
Chromium	5.2
Cobalt	0.72 B
Copper	2
Iron	4410
Lead	4.1
Manganese	13.9
Mercury	0.048
Nickel	1.8 B
Vanadium	5.7
Zinc	15

J-09 S FR-026	
Aluminum	858
Barium	5.4 B
Beryllium	0.035 B
Chromium	1.8
Copper	0.48 B
Iron	341
Lead	1.5
Manganese	4.1
Nickel	0.22 B
Vanadium	0.95 B
Zinc	1.6 B

J-10 S FR-028	
Aluminum	1090
Barium	6.7 B
Beryllium	0.047 B
Chromium	1
Copper	0.35 B
Iron	258
Lead	1.7
Manganese	3.1
Nickel	0.21 B
Vanadium	0.83 B
Zinc	3.1

J-11 S FR-002	
Aluminum	1110
Arsenic	0.26 B
Barium	10.2 B
Beryllium	0.1 B
Chromium	0.98 B
Copper	0.49 B
Iron	224
Lead	2.3
Manganese	3.5
Mercury	0.0017 B
Nickel	0.26 B
Vanadium	0.89 B
Zinc	1.5 B

J-12 S FR-005	
Aluminum	748
Barium	4.2 B
Chromium	0.58 B
Copper	0.47 B
Iron	174
Lead	1.3
Manganese	2.7
Mercury	0.59
Selenium	0.22 B
Vanadium	0.65 B
Zinc	1.5 B

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds EPA Region 6 MSSL

Exceeds TCEQ Tier 1 Residential PCL

0 50 100

Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1A
Human Health
Metal Subsurface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

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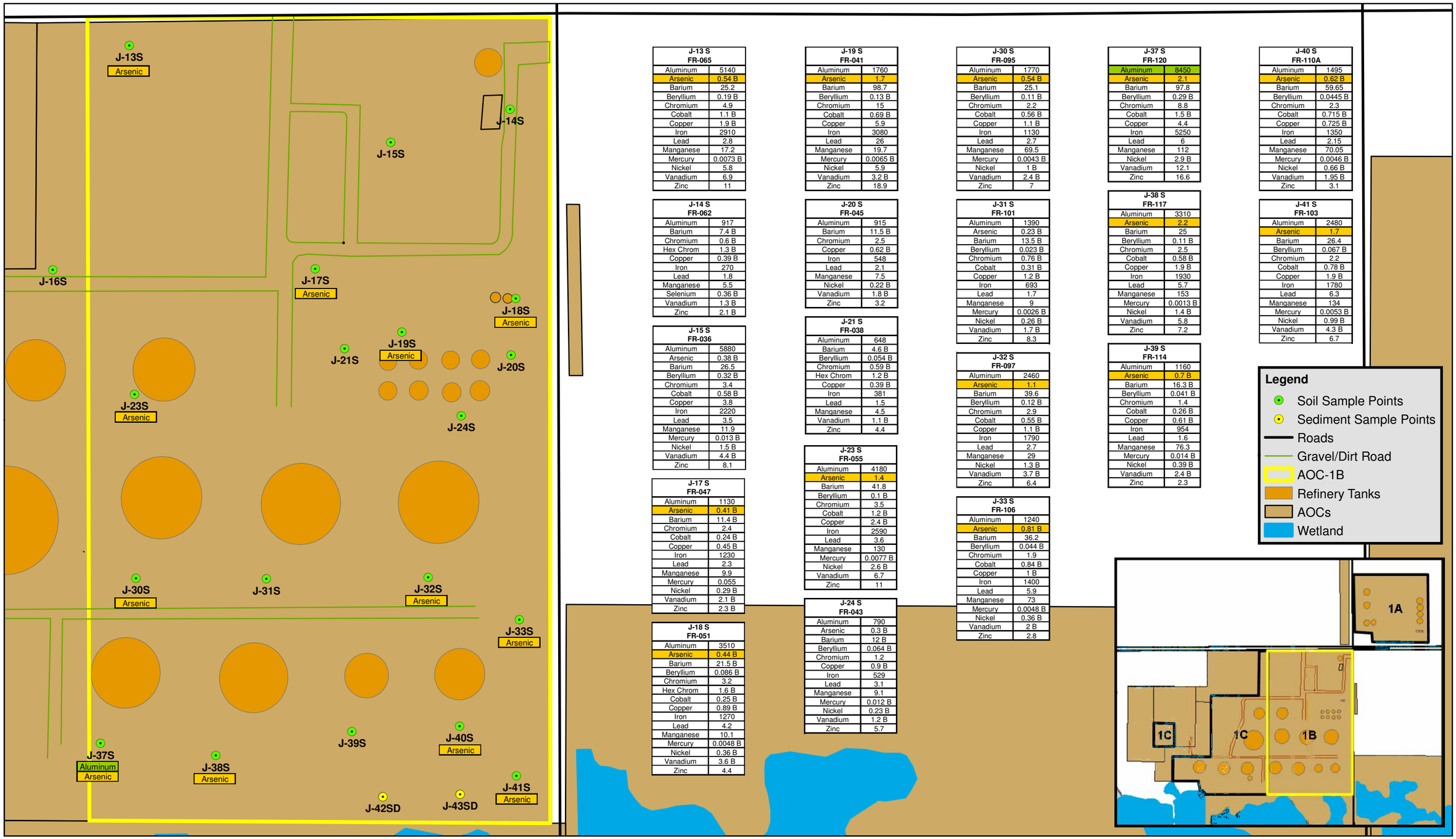
FIGURE

3A



J-13 S FR-065	
Aluminum	5140
Arsenic	0.54 B
Barium	25.2
Beryllium	0.19 B
Chromium	4.9
Cobalt	1.1 B
Copper	1.9 B
Iron	2910
Lead	2.8
Manganese	17.2
Mercury	0.0073 B
Nickel	5.8
Vanadium	6.9
Zinc	11

J-14 S FR-062	
Aluminum	917
Barium	7.4 B
Chromium	0.6 B
Hex Chrom	1.3 B
Copper	0.39 B
Iron	270
Lead	1.8
Manganese	5.5
Selenium	0.36 B
Vanadium	1.3 B
Zinc	2.1 B

J-15 S FR-036	
Aluminum	5880
Arsenic	0.38 B
Barium	26.5
Beryllium	0.32 B
Chromium	3.4
Cobalt	0.58 B
Copper	3.8
Iron	2220
Lead	3.5
Manganese	11.9
Mercury	0.013 B
Nickel	1.5 B
Vanadium	4.4 B
Zinc	8.1

J-17 S FR-047	
Aluminum	1130
Arsenic	0.41 B
Barium	11.4 B
Chromium	2.4
Cobalt	0.24 B
Copper	0.45 B
Iron	1230
Lead	2.3
Manganese	9.9
Mercury	0.055
Nickel	0.29 B
Vanadium	2.1 B
Zinc	2.3 B

J-18 S FR-051	
Aluminum	3510
Arsenic	0.44 B
Barium	21.5 B
Beryllium	0.086 B
Chromium	3.2
Hex Chrom	1.6 B
Cobalt	0.25 B
Copper	0.89 B
Iron	1270
Lead	4.2
Manganese	10.1
Mercury	0.0048 B
Nickel	0.36 B
Vanadium	3.6 B
Zinc	4.4

J-19 S FR-041	
Aluminum	1760
Arsenic	1.7
Barium	98.7
Beryllium	0.13 B
Chromium	15
Cobalt	0.69 B
Copper	5.9
Iron	3080
Lead	26
Manganese	19.7
Mercury	0.0065 B
Nickel	5.9
Vanadium	3.2 B
Zinc	18.9

J-20 S FR-045	
Aluminum	915
Barium	11.5 B
Chromium	2.5
Copper	0.62 B
Iron	548
Lead	2.1
Manganese	7.5
Nickel	0.22 B
Vanadium	1.8 B
Zinc	3.2

J-21 S FR-038	
Aluminum	648
Barium	4.6 B
Beryllium	0.054 B
Chromium	0.59 B
Hex Chrom	1.2 B
Copper	0.39 B
Iron	381
Lead	1.5
Manganese	4.5
Vanadium	1.1 B
Zinc	4.4

J-23 S FR-055	
Aluminum	4180
Arsenic	1.4
Barium	41.8
Beryllium	0.1 B
Chromium	3.5
Cobalt	1.2 B
Copper	2.4 B
Iron	2590
Lead	3.6
Manganese	130
Mercury	0.0077 B
Nickel	2.6 B
Vanadium	6.7
Zinc	11

J-24 S FR-043	
Aluminum	790
Arsenic	0.3 B
Barium	12 B
Beryllium	0.064 B
Chromium	1.2
Copper	0.9 B
Iron	529
Lead	3.1
Manganese	9.1
Mercury	0.012 B
Nickel	0.23 B
Vanadium	1.2 B
Zinc	5.7

J-30 S FR-095	
Aluminum	1770
Arsenic	0.54 B
Barium	25.1
Beryllium	0.11 B
Chromium	2.2
Cobalt	0.56 B
Copper	1.1 B
Iron	1130
Lead	2.7
Manganese	69.5
Mercury	0.0043 B
Nickel	1 B
Vanadium	2.4 B
Zinc	7

J-31 S FR-101	
Aluminum	1390
Arsenic	0.23 B
Barium	13.5 B
Beryllium	0.023 B
Chromium	0.76 B
Cobalt	0.31 B
Copper	1.2 B
Iron	693
Lead	1.7
Manganese	9
Mercury	0.0026 B
Nickel	0.26 B
Vanadium	1.7 B
Zinc	8.3

J-32 S FR-097	
Aluminum	2460
Arsenic	1.1
Barium	39.6
Beryllium	0.12 B
Chromium	2.9
Cobalt	0.55 B
Copper	1.1 B
Iron	1790
Lead	2.7
Manganese	29
Nickel	1.3 B
Vanadium	3.7 B
Zinc	6.4

J-33 S FR-106	
Aluminum	1240
Arsenic	0.81 B
Barium	36.2
Beryllium	0.044 B
Chromium	1.9
Cobalt	0.84 B
Copper	1 B
Iron	1400
Lead	5.9
Manganese	73
Mercury	0.0048 B
Nickel	0.36 B
Vanadium	2 B
Zinc	2.8

J-37 S FR-120	
Aluminum	8450
Arsenic	2.1
Barium	97.8
Beryllium	0.29 B
Chromium	8.8
Cobalt	1.5 B
Copper	4.4
Iron	5250
Lead	6
Manganese	112
Nickel	2.9 B
Vanadium	12.1
Zinc	16.6

J-38 S FR-117	
Aluminum	3310
Arsenic	2.2
Barium	25
Beryllium	0.11 B
Chromium	2.5
Cobalt	0.58 B
Copper	1.9 B
Iron	1930
Lead	5.7
Manganese	153
Mercury	0.0013 B
Nickel	1.4 B
Vanadium	5.8
Zinc	7.2

J-39 S FR-114	
Aluminum	1160
Arsenic	0.7 B
Barium	16.3 B
Beryllium	0.041 B
Chromium	1.4
Cobalt	0.26 B
Copper	0.61 B
Iron	954
Lead	1.6
Manganese	76.3
Mercury	0.014 B
Nickel	0.39 B
Vanadium	2.4 B
Zinc	2.3

J-40 S FR-110A	
Aluminum	1495
Arsenic	0.62 B
Barium	59.65
Beryllium	0.0445 B
Chromium	2.3
Cobalt	0.715 B
Copper	0.725 B
Iron	1350
Lead	2.15
Manganese	70.05
Mercury	0.0046 B
Nickel	0.66 B
Vanadium	1.95 B
Zinc	3.1

J-41 S FR-103	
Aluminum	2480
Arsenic	1.7
Barium	26.4
Beryllium	0.067 B
Chromium	2.2
Cobalt	0.78 B
Copper	1.9 B
Iron	1780
Lead	6.3
Manganese	134
Mercury	0.0053 B
Nickel	0.99 B
Vanadium	4.3 B
Zinc	6.7

Notes:

1. Results are posted in mg/kg
   Hex Chrom posted in mg/l
2. Qualifiers:

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Exceeds EPA Region 6 MSSL

Exceeds TCEQ Tier 1 Residential PCL

0 90 180

Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1B
Human Health
Metal Subsurface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

KLEINFELDER
Bright People. Right Solutions.
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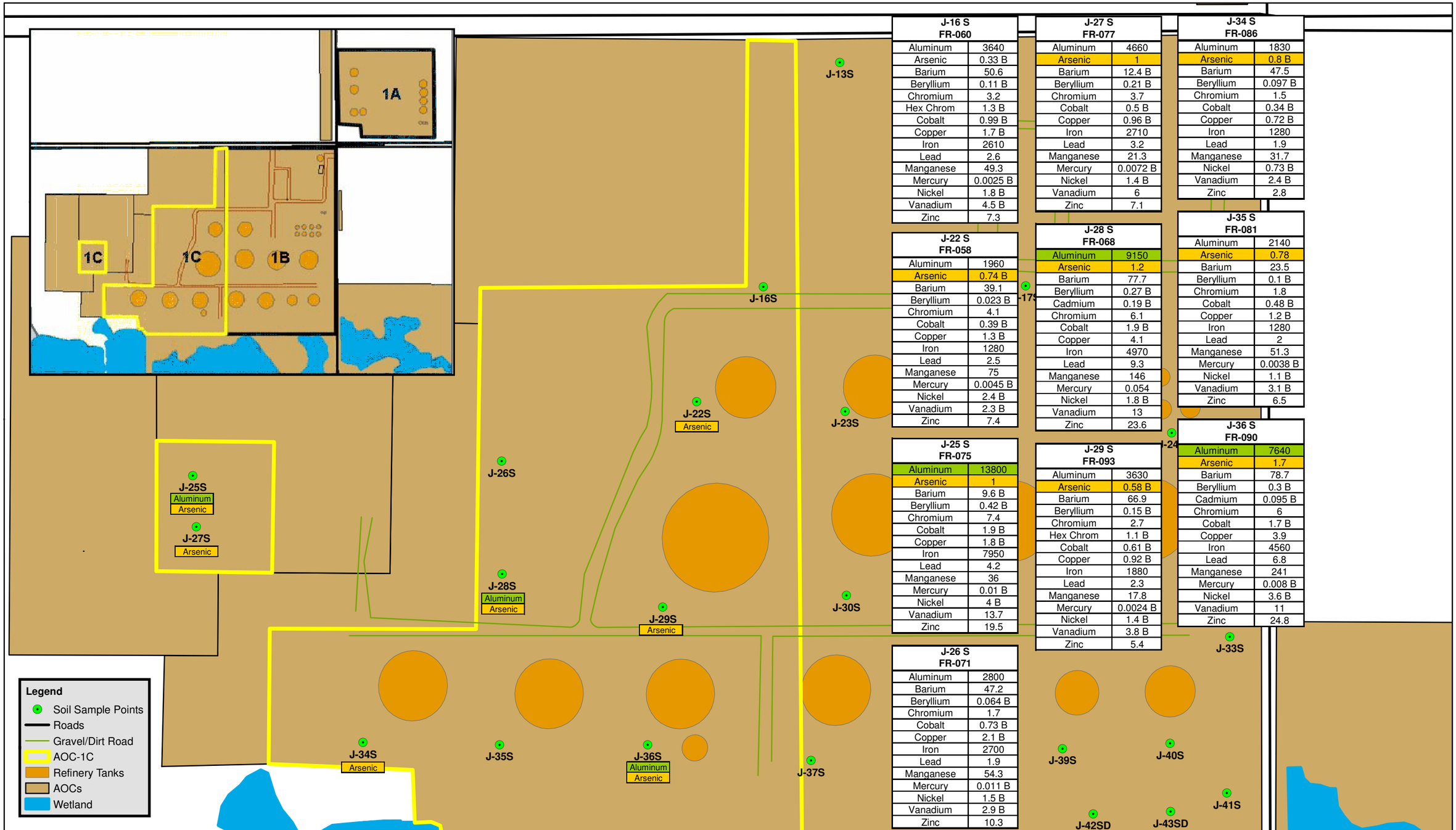
www.kleinfelder.com

FIGURE

3B



J-16 S FR-060	
Aluminum	3640
Arsenic	0.33 B
Barium	50.6
Beryllium	0.11 B
Chromium	3.2
Hex Chrom	1.3 B
Cobalt	0.99 B
Copper	1.7 B
Iron	2610
Lead	2.6
Manganese	49.3
Mercury	0.0025 B
Nickel	1.8 B
Vanadium	4.5 B
Zinc	7.3

J-22 S FR-058	
Aluminum	1960
Arsenic	0.74 B
Barium	39.1
Beryllium	0.023 B
Chromium	4.1
Cobalt	0.39 B
Copper	1.3 B
Iron	1280
Lead	2.5
Manganese	75
Mercury	0.0045 B
Nickel	2.4 B
Vanadium	2.3 B
Zinc	7.4

J-25 S FR-075	
Aluminum	13800
Arsenic	1
Barium	9.6 B
Beryllium	0.42 B
Chromium	7.4
Cobalt	1.9 B
Copper	1.8 B
Iron	7950
Lead	4.2
Manganese	36
Mercury	0.01 B
Nickel	4 B
Vanadium	13.7
Zinc	19.5

J-26 S FR-071	
Aluminum	2800
Barium	47.2
Beryllium	0.064 B
Chromium	1.7
Cobalt	0.73 B
Copper	2.1 B
Iron	2700
Lead	1.9
Manganese	54.3
Mercury	0.011 B
Nickel	1.5 B
Vanadium	2.9 B
Zinc	10.3

J-27 S FR-077	
Aluminum	4660
Arsenic	1
Barium	12.4 B
Beryllium	0.21 B
Chromium	3.7
Cobalt	0.5 B
Copper	0.96 B
Iron	2710
Lead	3.2
Manganese	21.3
Mercury	0.0072 B
Nickel	1.4 B
Vanadium	6
Zinc	7.1

J-28 S FR-068	
Aluminum	9150
Arsenic	1.2
Barium	77.7
Beryllium	0.27 B
Cadmium	0.19 B
Chromium	6.1
Cobalt	1.9 B
Copper	4.1
Iron	4970
Lead	9.3
Manganese	146
Mercury	0.054
Nickel	1.8 B
Vanadium	13
Zinc	23.6

J-29 S FR-093	
Aluminum	3630
Arsenic	0.58 B
Barium	66.9
Beryllium	0.15 B
Chromium	2.7
Hex Chrom	1.1 B
Cobalt	0.61 B
Copper	0.92 B
Iron	1880
Lead	2.3
Manganese	17.8
Mercury	0.0024 B
Nickel	1.4 B
Vanadium	3.8 B
Zinc	5.4

J-34 S FR-086	
Aluminum	1830
Arsenic	0.8 B
Barium	47.5
Beryllium	0.097 B
Chromium	1.5
Cobalt	0.34 B
Copper	0.72 B
Iron	1280
Lead	1.9
Manganese	31.7
Nickel	0.73 B
Vanadium	2.4 B
Zinc	2.8

J-35 S FR-081	
Aluminum	2140
Arsenic	0.78
Barium	23.5
Beryllium	0.1 B
Chromium	1.8
Cobalt	0.48 B
Copper	1.2 B
Iron	1280
Lead	2
Manganese	51.3
Mercury	0.0038 B
Nickel	1.1 B
Vanadium	3.1 B
Zinc	6.5

J-36 S FR-090	
Aluminum	7640
Arsenic	1.7
Barium	78.7
Beryllium	0.3 B
Cadmium	0.095 B
Chromium	6
Cobalt	1.7 B
Copper	3.9
Iron	4560
Lead	6.8
Manganese	241
Mercury	0.008 B
Nickel	3.6 B
Vanadium	11
Zinc	24.8

Notes:

1. Results are posted in mg/kg
   Hex Chrom posted in mg/l
2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds EPA Region 6 MSSL

Exceeds TCEQ Tier 1 Residential PCL

0 100 200

Feet

DATE DRAWN: 7/8/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1C
Human Health
Metal Subsurface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

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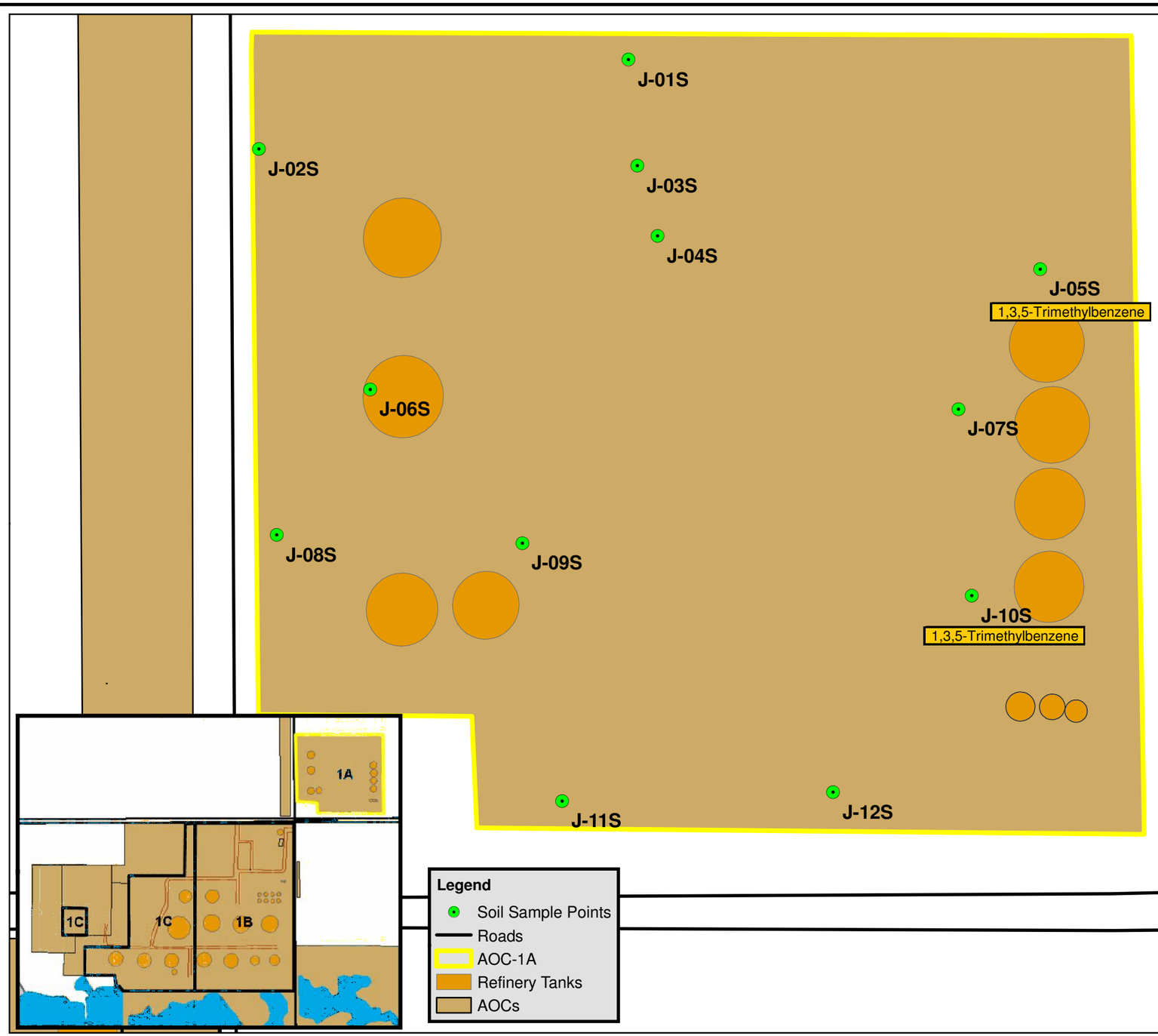
FIGURE
3C



J-01 S FR-014	
1,2,3-Trichloropropane	0.0019 U
Acetone	0.0155 J
Cyclohexane	0.0054 J
Methylene chloride	0.0078 J

J-02 S FR-017	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0234 J
Methylene chloride	0.0039 J

J-03 S FR-011	
1,2,3-Trichloropropane	0.0018 U
Acetone	0.027 J
Methylene chloride	0.0072 J

J-04 S FR-008	
1,2,3-Trichloropropane	0.0018 U
Ethylbenzene	0.0026 J
Methylene chloride	0.0101 J
Xylene (total)	0.0064 J

J-05 S FR-034	
1,2,3-Trichloropropane	0.0017 U
1,2,4-Trimethylbenzene	0.0796
1,3,5-Trimethylbenzene	0.0175
Acetone	0.0697
Ethylbenzene	0.0275
Isopropylbenzene	0.0109
Methylene chloride	0.016
n-Butylbenzene	0.0149
n-Propylbenzene	0.0085
p-Isopropyltoluene	0.0032 J
Toluene	0.002 J
Xylene (total)	0.0217

J-06 S FR-021	
1,2,3-Trichloropropane	0.0015 U
1,3,5-Trimethylbenzene	0.0051 J
Acetone	0.109
Methylene chloride	0.0048 J

J-07 S FR-031	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0324 J
Methylene chloride	0.0143

J-08 S FR-023	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.249

J-09 S FR-026	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0163 J
Methylene chloride	0.0042 J

J-10 S FR-028	
1,2,3-Trichloropropane	0.0016 U
1,2,4-Trimethylbenzene	0.14
1,3,5-Trimethylbenzene	0.0667
Acetone	0.035 J
Ethylbenzene	0.0061
Isopropylbenzene	0.007
Methylene chloride	0.0076 J
n-Butylbenzene	0.0799
p-Isopropyltoluene	0.108
tert-Butylbenzene	0.152
Toluene	0.0035 J
Xylene (total)	0.0119 J

J-11 S FR-002	
1,2,3-Trichloropropane	0.0018 U
Methylene chloride	0.0146

Notes:

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Exceeds EPA Region 6 MSSL

SDL Exceeds TCEQ Screening Level

N

0 50 100

Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1A
Human Health
VOC Subsurface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

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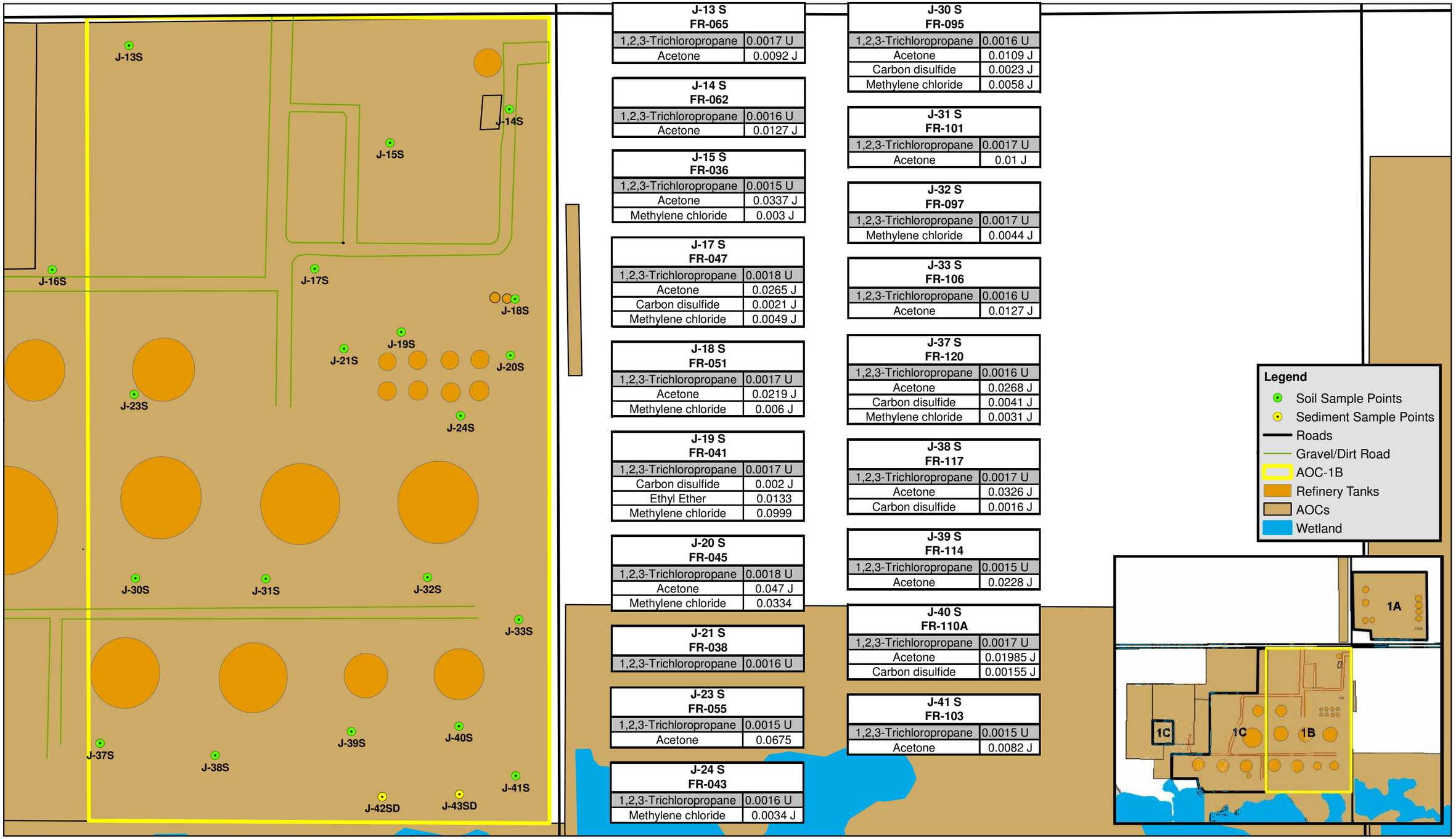
FIGURE

3D



J-13 S FR-065	
1,2,3-Trichloropropane	0.0017 U
Acetone	0.0092 J

J-14 S FR-062	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0127 J

J-15 S FR-036	
1,2,3-Trichloropropane	0.0015 U
Acetone	0.0337 J
Methylene chloride	0.003 J

J-17 S FR-047	
1,2,3-Trichloropropane	0.0018 U
Acetone	0.0265 J
Carbon disulfide	0.0021 J
Methylene chloride	0.0049 J

J-18 S FR-051	
1,2,3-Trichloropropane	0.0017 U
Acetone	0.0219 J
Methylene chloride	0.006 J

J-19 S FR-041	
1,2,3-Trichloropropane	0.0017 U
Carbon disulfide	0.002 J
Ethyl Ether	0.0133
Methylene chloride	0.0999

J-20 S FR-045	
1,2,3-Trichloropropane	0.0018 U
Acetone	0.047 J
Methylene chloride	0.0334

J-21 S FR-038	
1,2,3-Trichloropropane	0.0016 U

J-23 S FR-055	
1,2,3-Trichloropropane	0.0015 U
Acetone	0.0675

J-24 S FR-043	
1,2,3-Trichloropropane	0.0016 U
Methylene chloride	0.0034 J

J-30 S FR-095	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0109 J
Carbon disulfide	0.0023 J
Methylene chloride	0.0058 J

J-31 S FR-101	
1,2,3-Trichloropropane	0.0017 U
Acetone	0.01 J

J-32 S FR-097	
1,2,3-Trichloropropane	0.0017 U
Methylene chloride	0.0044 J

J-33 S FR-106	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0127 J

J-37 S FR-120	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0268 J
Carbon disulfide	0.0041 J
Methylene chloride	0.0031 J

J-38 S FR-117	
1,2,3-Trichloropropane	0.0017 U
Acetone	0.0326 J
Carbon disulfide	0.0016 J

J-39 S FR-114	
1,2,3-Trichloropropane	0.0015 U
Acetone	0.0228 J

J-40 S FR-110A	
1,2,3-Trichloropropane	0.0017 U
Acetone	0.01985 J
Carbon disulfide	0.00155 J

J-41 S FR-103	
1,2,3-Trichloropropane	0.0015 U
Acetone	0.0082 J

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

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   J = Concentration greater than the SDL but less than the method quantitation limit (MQL)

SDL Exceeds TCEQ Screening Level

0 100 200
Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1B
Human Health
VOC Subsurface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

KLEINFELDER
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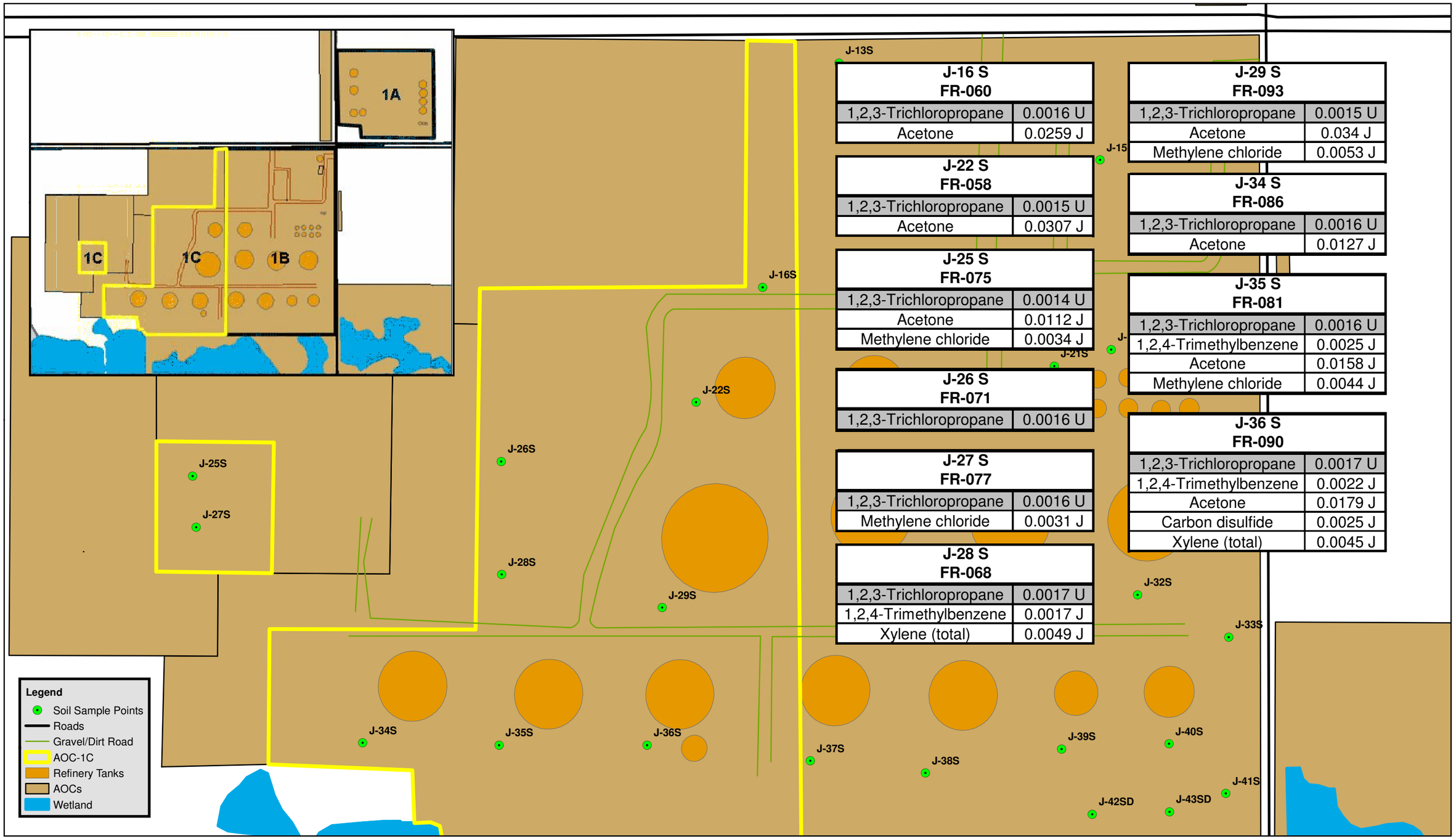
FIGURE
3E



J-16 S FR-060	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0259 J

J-22 S FR-058	
1,2,3-Trichloropropane	0.0015 U
Acetone	0.0307 J

J-25 S FR-075	
1,2,3-Trichloropropane	0.0014 U
Acetone	0.0112 J
Methylene chloride	0.0034 J

J-26 S FR-071	
1,2,3-Trichloropropane	0.0016 U

J-27 S FR-077	
1,2,3-Trichloropropane	0.0016 U
Methylene chloride	0.0031 J

J-28 S FR-068	
1,2,3-Trichloropropane	0.0017 U
1,2,4-Trimethylbenzene	0.0017 J
Xylene (total)	0.0049 J

J-29 S FR-093	
1,2,3-Trichloropropane	0.0015 U
Acetone	0.034 J
Methylene chloride	0.0053 J

J-34 S FR-086	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0127 J

J-35 S FR-081	
1,2,3-Trichloropropane	0.0016 U
1,2,4-Trimethylbenzene	0.0025 J
Acetone	0.0158 J
Methylene chloride	0.0044 J

J-36 S FR-090	
1,2,3-Trichloropropane	0.0017 U
1,2,4-Trimethylbenzene	0.0022 J
Acetone	0.0179 J
Carbon disulfide	0.0025 J
Xylene (total)	0.0045 J

Notes:

1. Results are posted in mg/kg
2. Qualifiers:
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SDL Exceeds TCEQ Screening Level

0 100 200
Feet

DATE DRAWN: 7/8/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1C
Human Health
VOC Subsurface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 FILE NAME: Falcon Refinery Base Map

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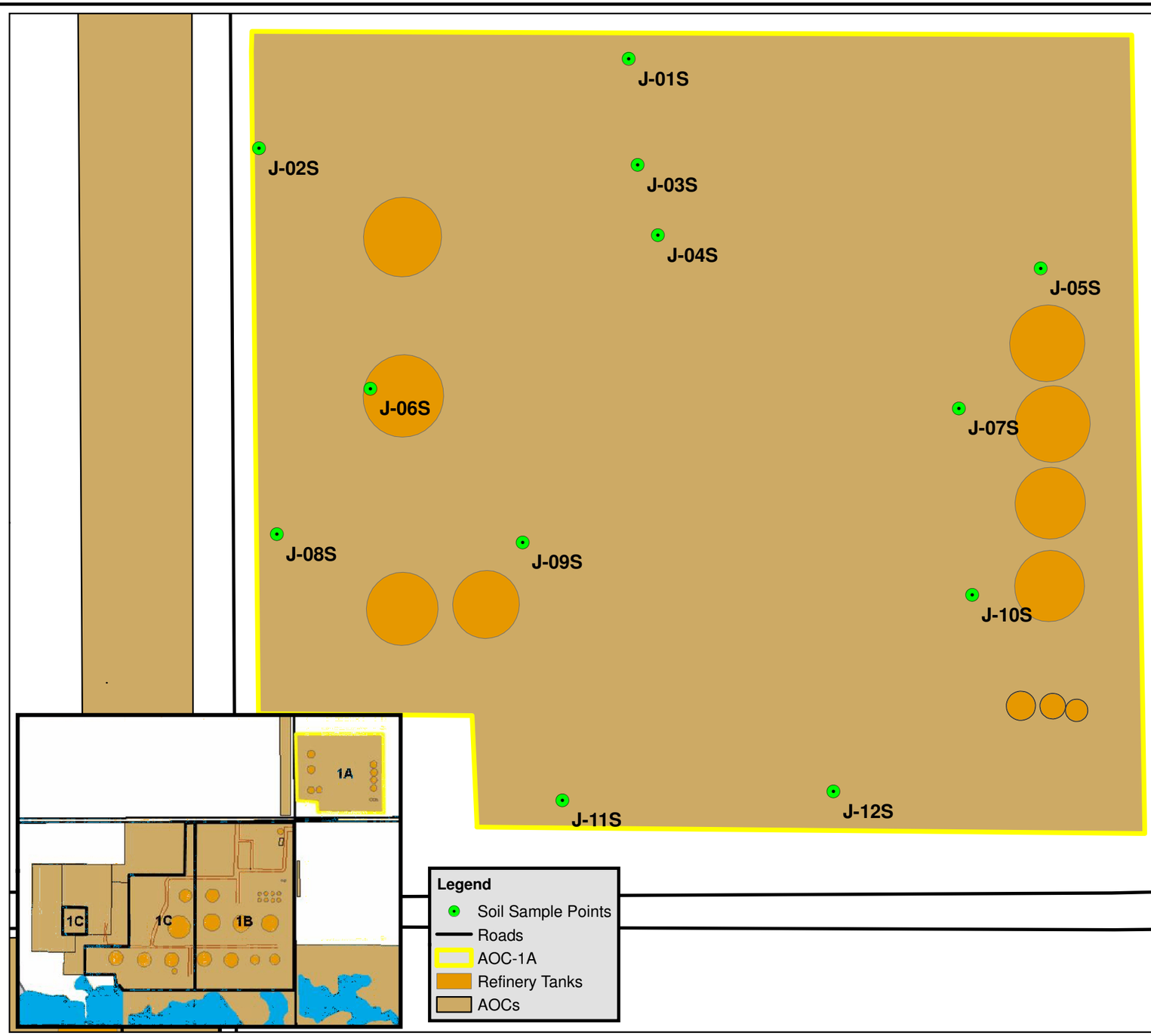
FIGURE
3F



J-01S FR-014	
7,12-Dimethylbenz(a)anthracene	0.22 U
Benzo(a)pyrene	0.074 U
Dibenzo(a,h)anthracene	0.079 U
N-Nitroso-di-n-propylamine	0.092 U
Quinoline	0.22 U

J-02S FR-017	
7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.061 U
Dibenzo(a,h)anthracene	0.066 U
N-Nitroso-di-n-propylamine	0.076 U
Quinoline	0.19 U

J-03S FR-011	
7,12-Dimethylbenz(a)anthracene	0.22 U
Benzo(a)pyrene	0.072 U
Dibenzo(a,h)anthracene	0.077 U
N-Nitroso-di-n-propylamine	0.089 U
Quinoline	0.22 U

J-04 S FR-008	
4-Bromophenyl phenyl ether	0.34 U
4-Chlorophenyl phenyl ether	0.27 U
7,12-Dimethylbenz(a)anthracene	0.88 U
Benzenethiol	0.88 U
Benzo(a)anthracene	0.33 U
Benzo(a)pyrene	0.29 U
Benzo(b)fluoranthene	0.37 U
Dibenzo(a,h)anthracene	0.31 U
Indeno(1,2,3-cd)pyrene	0.34 U
N-Nitroso-di-n-propylamine	0.35 U
Pyrene	0.683 J
Quinoline	0.88 U

J-05 S FR-034	
1-Methylnaphthalene	0.0835 J
2-Methylnaphthalene	0.0977 J
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.066 U
Dibenzo(a,h)anthracene	0.070 U
Naphthalene	0.41
N-Nitroso-di-n-propylamine	0.081 U
Quinoline	0.20 U

J-06S FR-021	
7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.061 U
Dibenzo(a,h)anthracene	0.066 U
N-Nitroso-di-n-propylamine	0.076 U
Quinoline	0.19 U

J-07S FR-031	
7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.062 U
Dibenzo(a,h)anthracene	0.066 U
N-Nitroso-di-n-propylamine	0.076 U
Quinoline	0.19 U

J-08S FR-023	
7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.062 U
Dibenzo(a,h)anthracene	0.066 U
N-Nitroso-di-n-propylamine	0.076 U
Quinoline	0.19 U

J-09S FR-026	
7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.063 U
Dibenzo(a,h)anthracene	0.067 U
N-Nitroso-di-n-propylamine	0.077 U
Quinoline	0.19 U

J-10 S FR-028	
1-Methylnaphthalene	0.447
2-Methylnaphthalene	0.708
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.064 U
Dibenzo(a,h)anthracene	0.068 U
Naphthalene	0.177 J
N-Nitroso-di-n-propylamine	0.079 U
Phenanthrene	0.734
Quinoline	0.20 U

J-11S FR-002	
7,12-Dimethylbenz(a)anthracene	0.22 U
Benzo(a)pyrene	0.072 U
Dibenzo(a,h)anthracene	0.077 U
N-Nitroso-di-n-propylamine	0.089 U
Quinoline	0.22 U

J-12 S FR-005	
1-Methylnaphthalene	0.046 J
7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.063 U
Dibenzo(a,h)anthracene	0.068 U
N-Nitroso-di-n-propylamine	0.078 U
Quinoline	0.19 U

Notes:

1. Results are posted in mg/kg
2. Qualifiers:
   - U = Undetected at the sample detection limit (SDL)
   - J = Concentration greater than the SDL but less than the method quantitation limit (MQL)

SDL Exceeds EPA Screening Level

SDL Exceeds TCEQ Screening Level

N

0 50 100

Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1A
Human Health
SVOC Subsurface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

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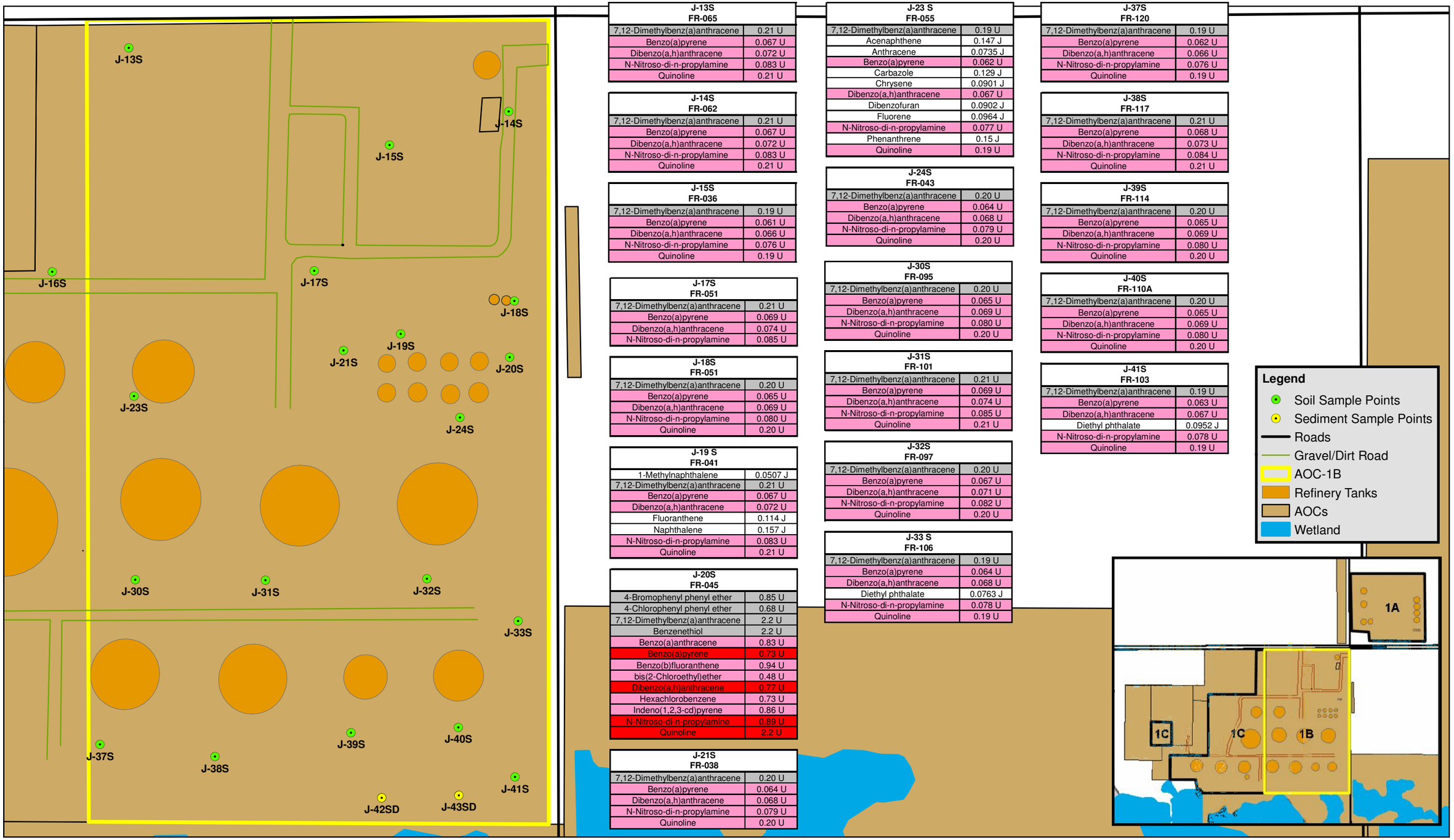
FIGURE

3G



J-13S
FR-065

7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.072 U
N-Nitroso-di-n-propylamine	0.083 U
Quinoline	0.21 U

J-14S
FR-062

7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.072 U
N-Nitroso-di-n-propylamine	0.083 U
Quinoline	0.21 U

J-15S
FR-036

7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.061 U
Dibenzo(a,h)anthracene	0.066 U
N-Nitroso-di-n-propylamine	0.076 U
Quinoline	0.19 U

J-17S
FR-051

7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.069 U
Dibenzo(a,h)anthracene	0.074 U
N-Nitroso-di-n-propylamine	0.085 U

J-18S
FR-051

7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.065 U
Dibenzo(a,h)anthracene	0.069 U
N-Nitroso-di-n-propylamine	0.080 U
Quinoline	0.20 U

J-19 S
FR-041

1-Methylnaphthalene	0.0507 J
7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.072 U
Fluoranthene	0.114 J
Naphthalene	0.157 J
N-Nitroso-di-n-propylamine	0.083 U
Quinoline	0.21 U

J-20S
FR-045

4-Bromophenyl phenyl ether	0.85 U
4-Chlorophenyl phenyl ether	0.68 U
7,12-Dimethylbenz(a)anthracene	2.2 U
Benzenethiol	2.2 U
Benzo(a)anthracene	0.83 U
Benzo(a)pyrene	0.73 U
Benzo(b)fluoranthene	0.94 U
bis(2-Chloroethyl)ether	0.48 U
Dibenzo(a,h)anthracene	0.77 U
Hexachlorobenzene	0.73 U
Indeno(1,2,3-cd)pyrene	0.86 U
N-Nitroso-di-n-propylamine	0.89 U
Quinoline	2.2 U

J-21S
FR-038

7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.064 U
Dibenzo(a,h)anthracene	0.068 U
N-Nitroso-di-n-propylamine	0.079 U
Quinoline	0.20 U

J-23 S
FR-055

7,12-Dimethylbenz(a)anthracene	0.19 U
Acenaphthene	0.147 J
Anthracene	0.0735 J
Benzo(a)pyrene	0.062 U
Carbazole	0.129 J
Chrysene	0.0901 J
Dibenzo(a,h)anthracene	0.067 U
Dibenzofuran	0.0902 J
Fluorene	0.0964 J
N-Nitroso-di-n-propylamine	0.077 U
Phenanthrene	0.15 J
Quinoline	0.19 U

J-24S
FR-043

7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.064 U
Dibenzo(a,h)anthracene	0.068 U
N-Nitroso-di-n-propylamine	0.079 U
Quinoline	0.20 U

J-30S
FR-095

7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.065 U
Dibenzo(a,h)anthracene	0.069 U
N-Nitroso-di-n-propylamine	0.080 U
Quinoline	0.20 U

J-31S
FR-101

7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.069 U
Dibenzo(a,h)anthracene	0.074 U
N-Nitroso-di-n-propylamine	0.085 U
Quinoline	0.21 U

J-32S
FR-097

7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.071 U
N-Nitroso-di-n-propylamine	0.082 U
Quinoline	0.20 U

J-33 S
FR-106

7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.064 U
Dibenzo(a,h)anthracene	0.068 U
Diethyl phthalate	0.0763 J
N-Nitroso-di-n-propylamine	0.078 U
Quinoline	0.19 U

J-37S
FR-120

7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.062 U
Dibenzo(a,h)anthracene	0.066 U
N-Nitroso-di-n-propylamine	0.076 U
Quinoline	0.19 U

J-38S
FR-117

7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.068 U
Dibenzo(a,h)anthracene	0.073 U
N-Nitroso-di-n-propylamine	0.084 U
Quinoline	0.21 U

J-39S
FR-114

7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.065 U
Dibenzo(a,h)anthracene	0.069 U
N-Nitroso-di-n-propylamine	0.080 U
Quinoline	0.20 U

J-40S
FR-110A

7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.065 U
Dibenzo(a,h)anthracene	0.069 U
N-Nitroso-di-n-propylamine	0.080 U
Quinoline	0.20 U

J-41S
FR-103

7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.063 U
Dibenzo(a,h)anthracene	0.067 U
Diethyl phthalate	0.0952 J
N-Nitroso-di-n-propylamine	0.078 U
Quinoline	0.19 U

Notes:

1. Results are posted in mg/kg
2. Qualifiers:
   - U = Undetected at the sample detection limit (SDL)
   - J = Concentration greater than the SDL but less than the method quantitation limit (MQL)

SDL Exceeds EPA Screening Level
SDL Exceeds TCEQ Screening Level
SDL Exceeds Both EPA and TCEQ Screening Level

0 90 180
Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1B
Human Health
SVOC Subsurface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

KLEINFELDER
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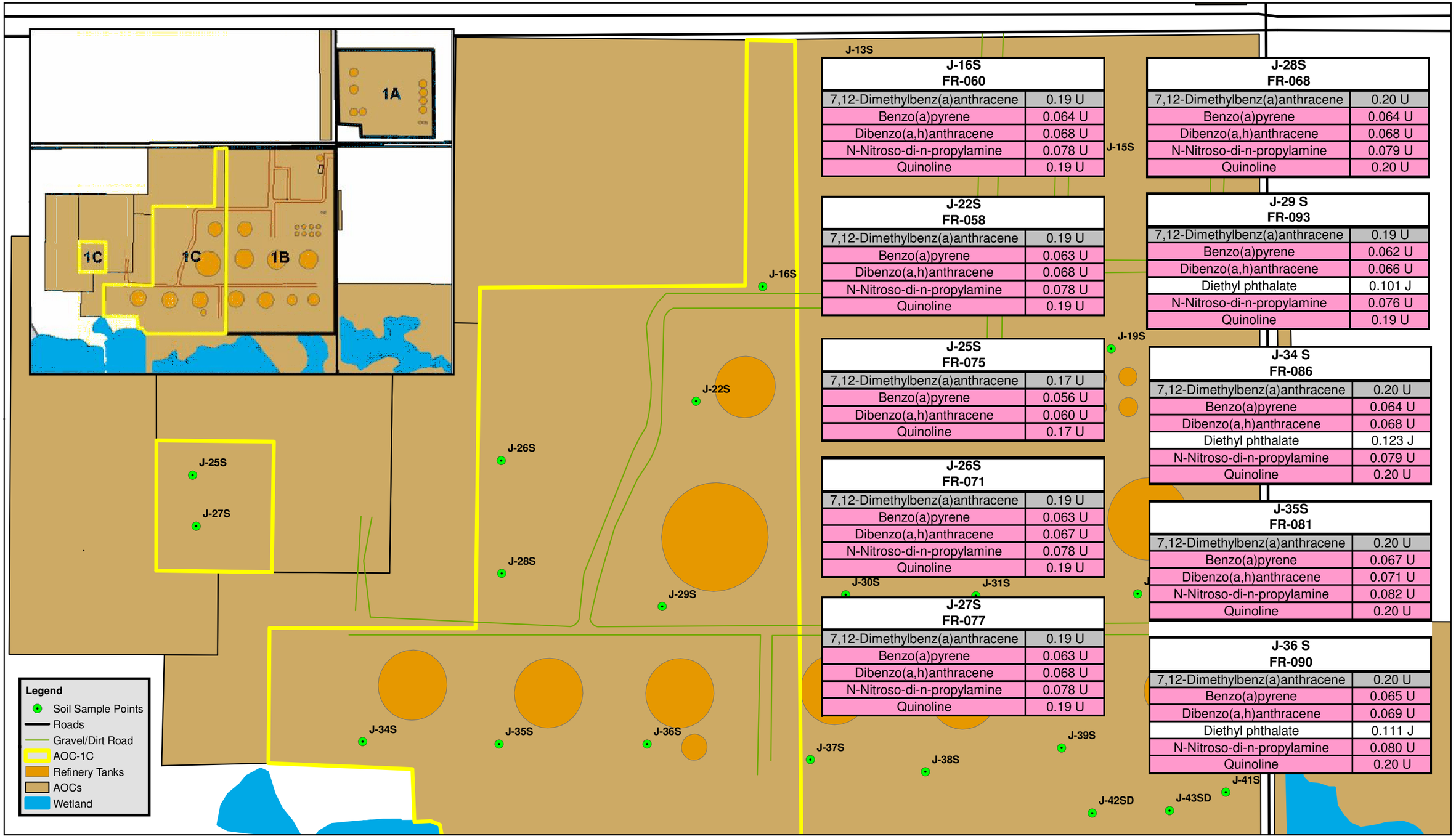
FIGURE
3H



J-16S FR-060	
7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.064 U
Dibenzo(a,h)anthracene	0.068 U
N-Nitroso-di-n-propylamine	0.078 U
Quinoline	0.19 U

J-22S FR-058	
7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.063 U
Dibenzo(a,h)anthracene	0.068 U
N-Nitroso-di-n-propylamine	0.078 U
Quinoline	0.19 U

J-25S FR-075	
7,12-Dimethylbenz(a)anthracene	0.17 U
Benzo(a)pyrene	0.056 U
Dibenzo(a,h)anthracene	0.060 U
Quinoline	0.17 U

J-26S FR-071	
7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.063 U
Dibenzo(a,h)anthracene	0.067 U
N-Nitroso-di-n-propylamine	0.078 U
Quinoline	0.19 U

J-27S FR-077	
7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.063 U
Dibenzo(a,h)anthracene	0.068 U
N-Nitroso-di-n-propylamine	0.078 U
Quinoline	0.19 U

J-28S FR-068	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.064 U
Dibenzo(a,h)anthracene	0.068 U
N-Nitroso-di-n-propylamine	0.079 U
Quinoline	0.20 U

J-29 S FR-093	
7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.062 U
Dibenzo(a,h)anthracene	0.066 U
Diethyl phthalate	0.101 J
N-Nitroso-di-n-propylamine	0.076 U
Quinoline	0.19 U

J-34 S FR-086	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.064 U
Dibenzo(a,h)anthracene	0.068 U
Diethyl phthalate	0.123 J
N-Nitroso-di-n-propylamine	0.079 U
Quinoline	0.20 U

J-35S FR-081	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.071 U
N-Nitroso-di-n-propylamine	0.082 U
Quinoline	0.20 U

J-36 S FR-090	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.065 U
Dibenzo(a,h)anthracene	0.069 U
Diethyl phthalate	0.111 J
N-Nitroso-di-n-propylamine	0.080 U
Quinoline	0.20 U

Notes:

1. Results are posted in mg/kg
2. Qualifiers:
   - U = Undetected at the sample detection limit (SDL)
   - J = Concentration greater than the SDL but less than the method quantitation limit (MQL)

SDL Exceeds EPA Screening Level

SDL Exceeds TCEQ Screening Level

0 90 180

Feet

DATE DRAWN: 7/8/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1C
Human Health
SVOC Subsurface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

KLEINFELDER
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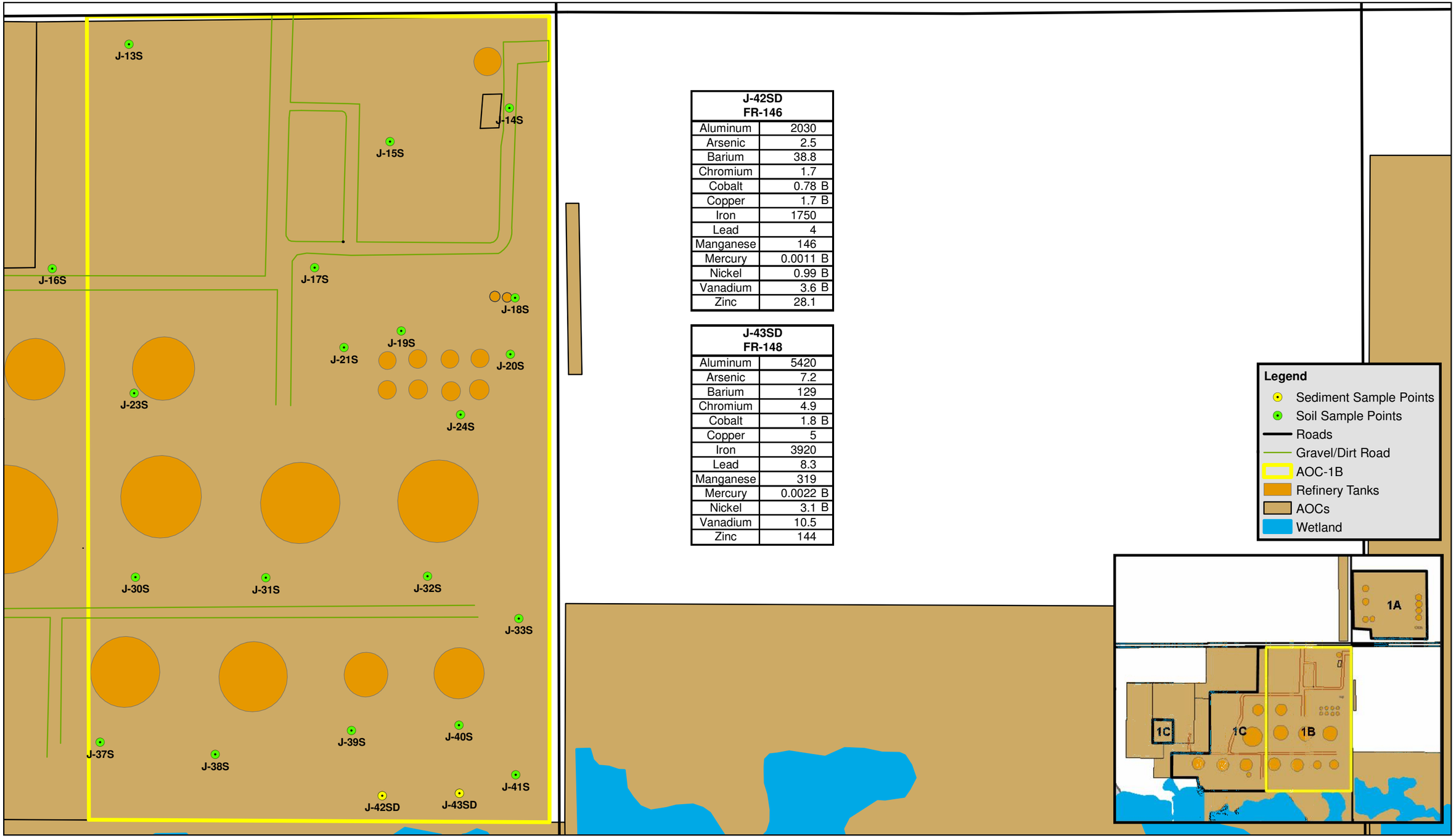
FIGURE
3I



J-42SD FR-146	
Aluminum	2030
Arsenic	2.5
Barium	38.8
Chromium	1.7
Cobalt	0.78 B
Copper	1.7 B
Iron	1750
Lead	4
Manganese	146
Mercury	0.0011 B
Nickel	0.99 B
Vanadium	3.6 B
Zinc	28.1

J-43SD FR-148	
Aluminum	5420
Arsenic	7.2
Barium	129
Chromium	4.9
Cobalt	1.8 B
Copper	5
Iron	3920
Lead	8.3
Manganese	319
Mercury	0.0022 B
Nickel	3.1 B
Vanadium	10.5
Zinc	144

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

N

0 100 200
Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1B
Human Health
Metal Sediment Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

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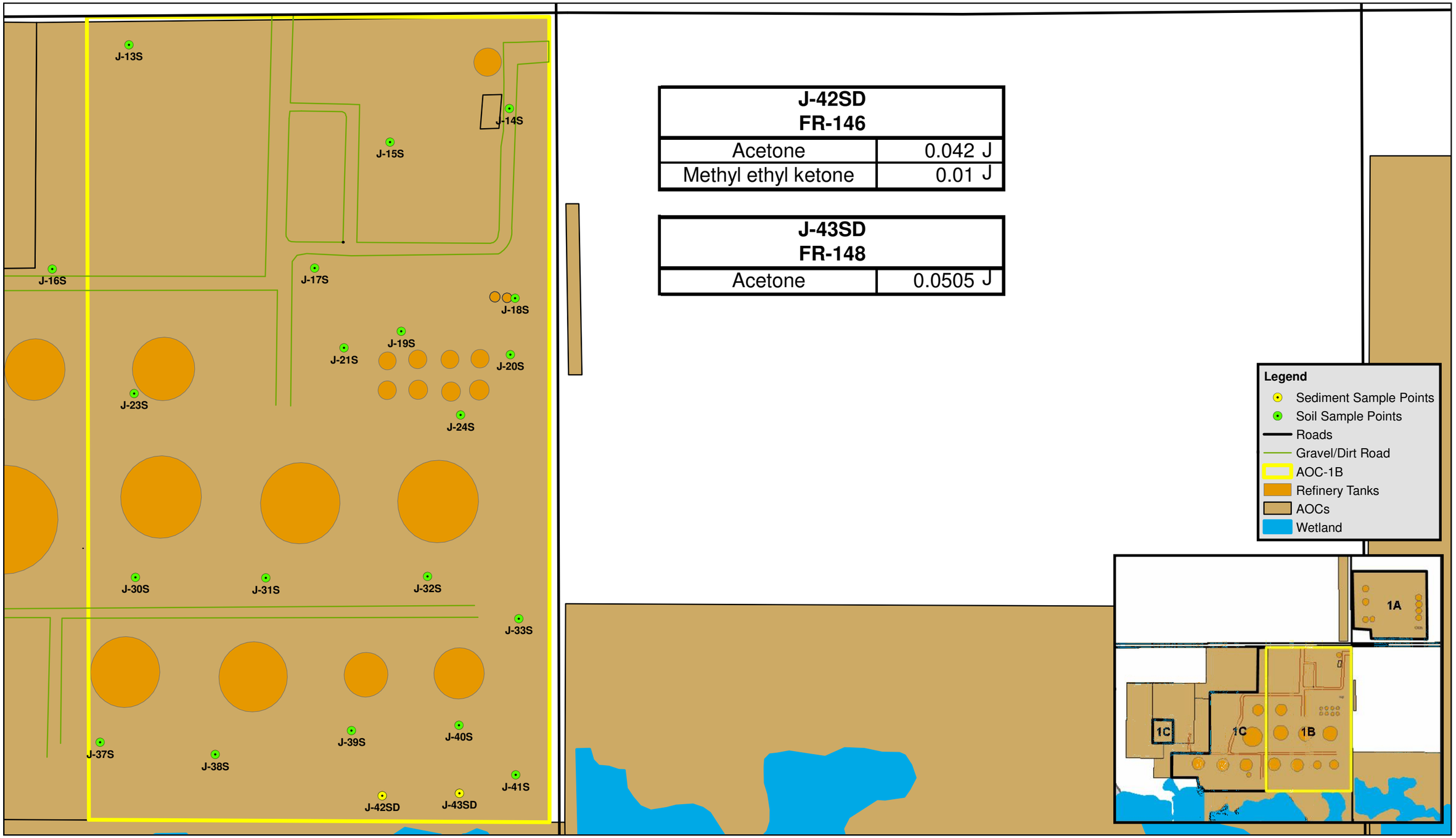
FIGURE
4A



J-42SD FR-146	
Acetone	0.042 J
Methyl ethyl ketone	0.01 J

J-43SD FR-148	
Acetone	0.0505 J

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

   U = Undetected at the sample detection limit (SDL)

   J = Concentration greater than the SDL but less than the method quantitation limit (MQL)

N

0 100 200

Feet

DATE DRAWN: 4/30/08	DATE REVISED:
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CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1B
Human Health
VOC Sediment Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

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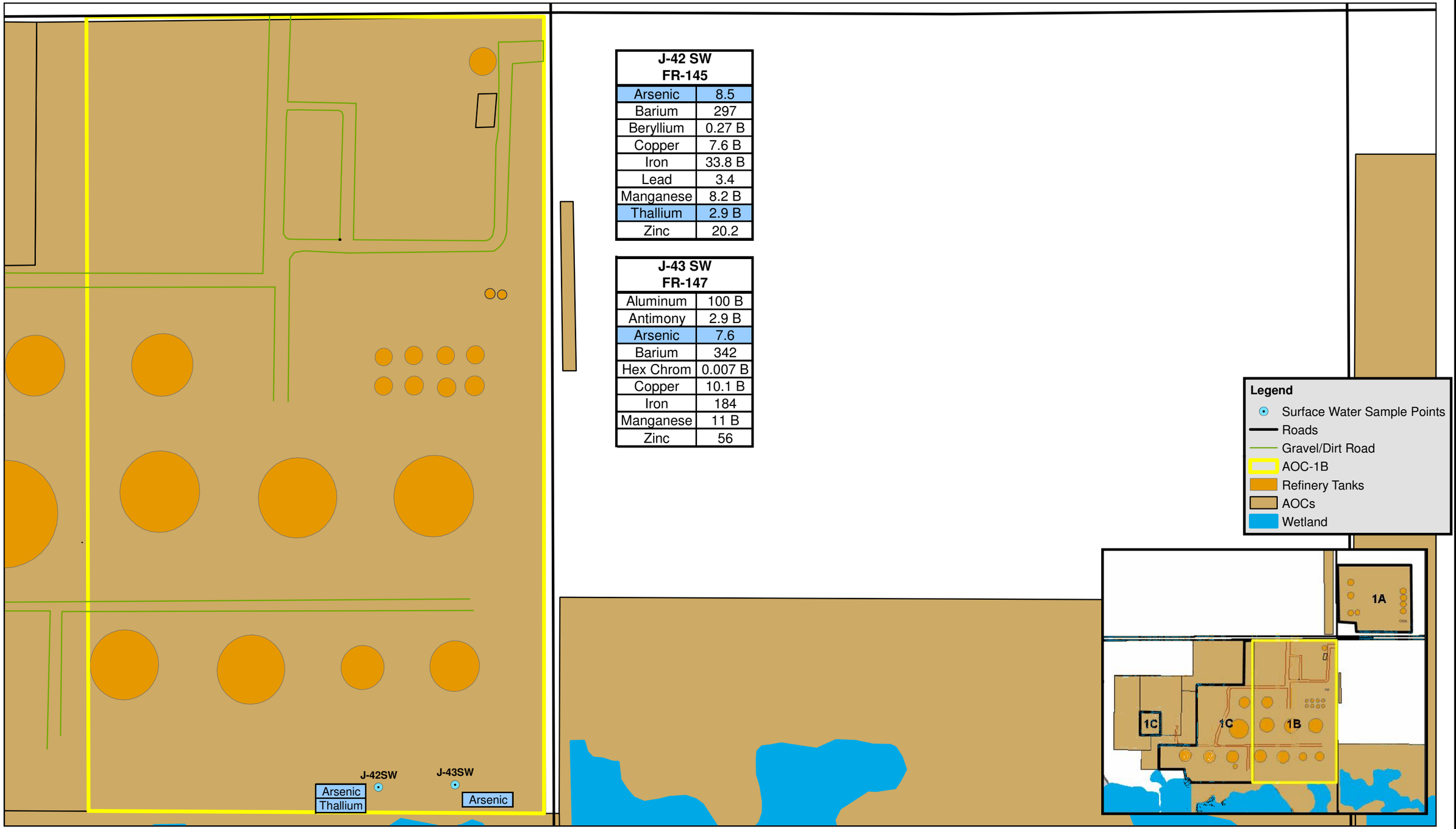
FIGURE

4B



J-42 SW FR-145	
Arsenic	8.5
Barium	297
Beryllium	0.27 B
Copper	7.6 B
Iron	33.8 B
Lead	3.4
Manganese	8.2 B
Thallium	2.9 B
Zinc	20.2

J-43 SW FR-147	
Aluminum	100 B
Antimony	2.9 B
Arsenic	7.6
Barium	342
Hex Chrom	0.007 B
Copper	10.1 B
Iron	184
Manganese	11 B
Zinc	56

Notes:

1. Results are posted in µg/l
   Hex Chrom posted in mg/l
2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds SW RBELs

N

0 90 180

Feet

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DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-1B
Human Health
Metal Surface Water Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 FILE NAME: Falcon Refinery Base Map

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FIGURE

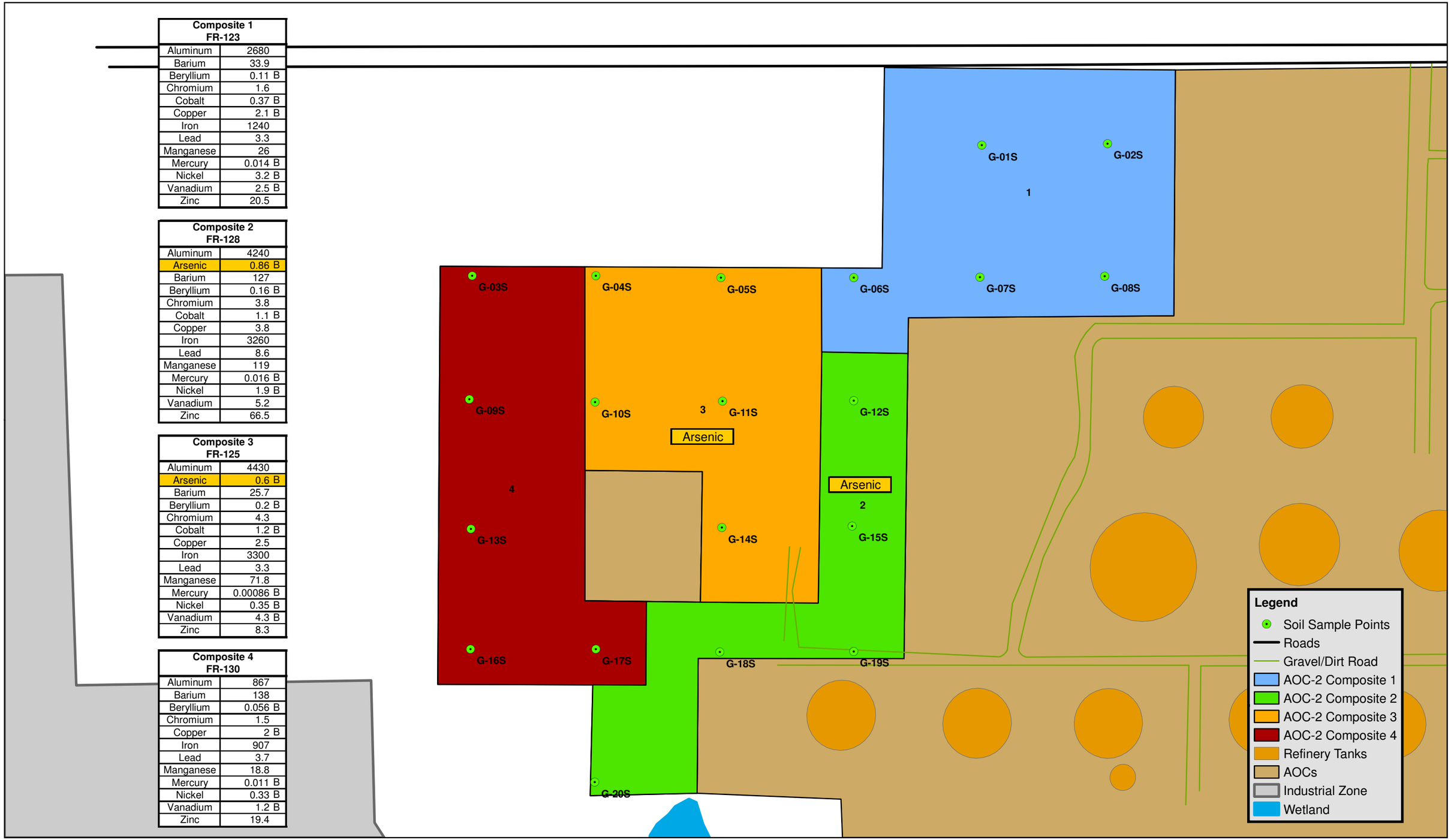
5

Composite 1 FR-123	
Aluminum	2680
Barium	33.9
Beryllium	0.11 B
Chromium	1.6
Cobalt	0.37 B
Copper	2.1 B
Iron	1240
Lead	3.3
Manganese	26
Mercury	0.014 B
Nickel	3.2 B
Vanadium	2.5 B
Zinc	20.5

Composite 2 FR-128	
Aluminum	4240
Arsenic	0.86 B
Barium	127
Beryllium	0.16 B
Chromium	3.8
Cobalt	1.1 B
Copper	3.8
Iron	3260
Lead	8.6
Manganese	119
Mercury	0.016 B
Nickel	1.9 B
Vanadium	5.2
Zinc	66.5

Composite 3 FR-125	
Aluminum	4430
Arsenic	0.6 B
Barium	25.7
Beryllium	0.2 B
Chromium	4.3
Cobalt	1.2 B
Copper	2.5
Iron	3300
Lead	3.3
Manganese	71.8
Mercury	0.00086 B
Nickel	0.35 B
Vanadium	4.3 B
Zinc	8.3

Composite 4 FR-130	
Aluminum	867
Barium	138
Beryllium	0.056 B
Chromium	1.5
Copper	2 B
Iron	907
Lead	3.7
Manganese	18.8
Mercury	0.011 B
Nickel	0.33 B
Vanadium	1.2 B
Zinc	19.4



Notes:

1. Results are posted in mg/kg

Exceeds EPA Region 6 MSSL

2. Qualifiers:

B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

N

0 100 200

Feet

DATE DRAWN: 4/30/08	DATE REVISED:
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CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-2
Human Health
Metal Surface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 FILE NAME: Falcon Refinery Base Map

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FIGURE

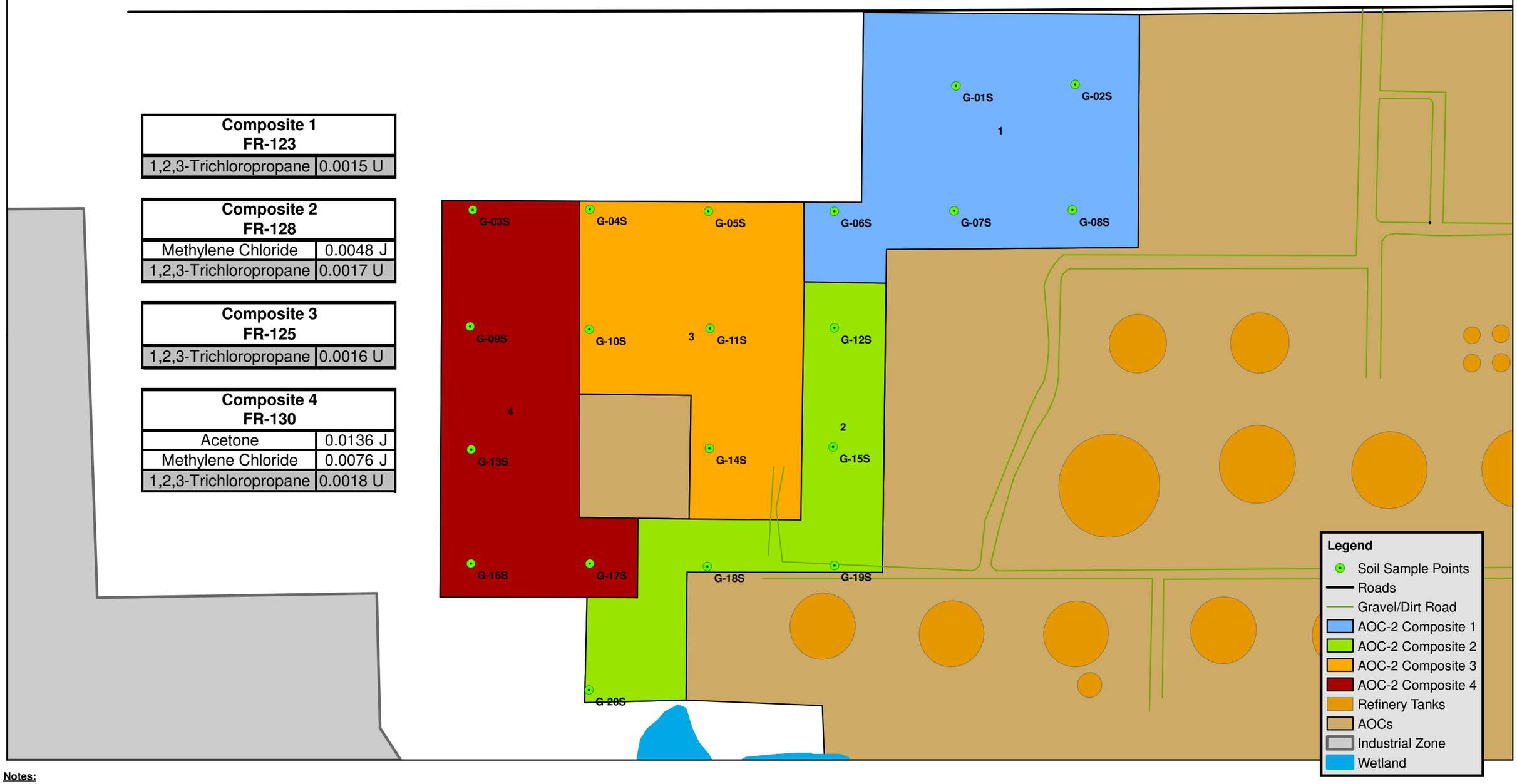
6A

Composite 1 FR-123	
1,2,3-Trichloropropane	0.0015 U

Composite 2 FR-128	
Methylene Chloride	0.0048 J
1,2,3-Trichloropropane	0.0017 U

Composite 3 FR-125	
1,2,3-Trichloropropane	0.0016 U

Composite 4 FR-130	
Acetone	0.0136 J
Methylene Chloride	0.0076 J
1,2,3-Trichloropropane	0.0018 U



Notes:

1. Results are posted in mg/kg
2. Qualifiers:

   U = Undetected at the sample detection limit (SDL)

   J = Concentration greater than the SDL but less than the method quantitation limit (MQL)

SDL Exceeds TCEQ Screening Level

N

0 90 180

Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-2
Human Health
VOC Surface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

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FIGURE

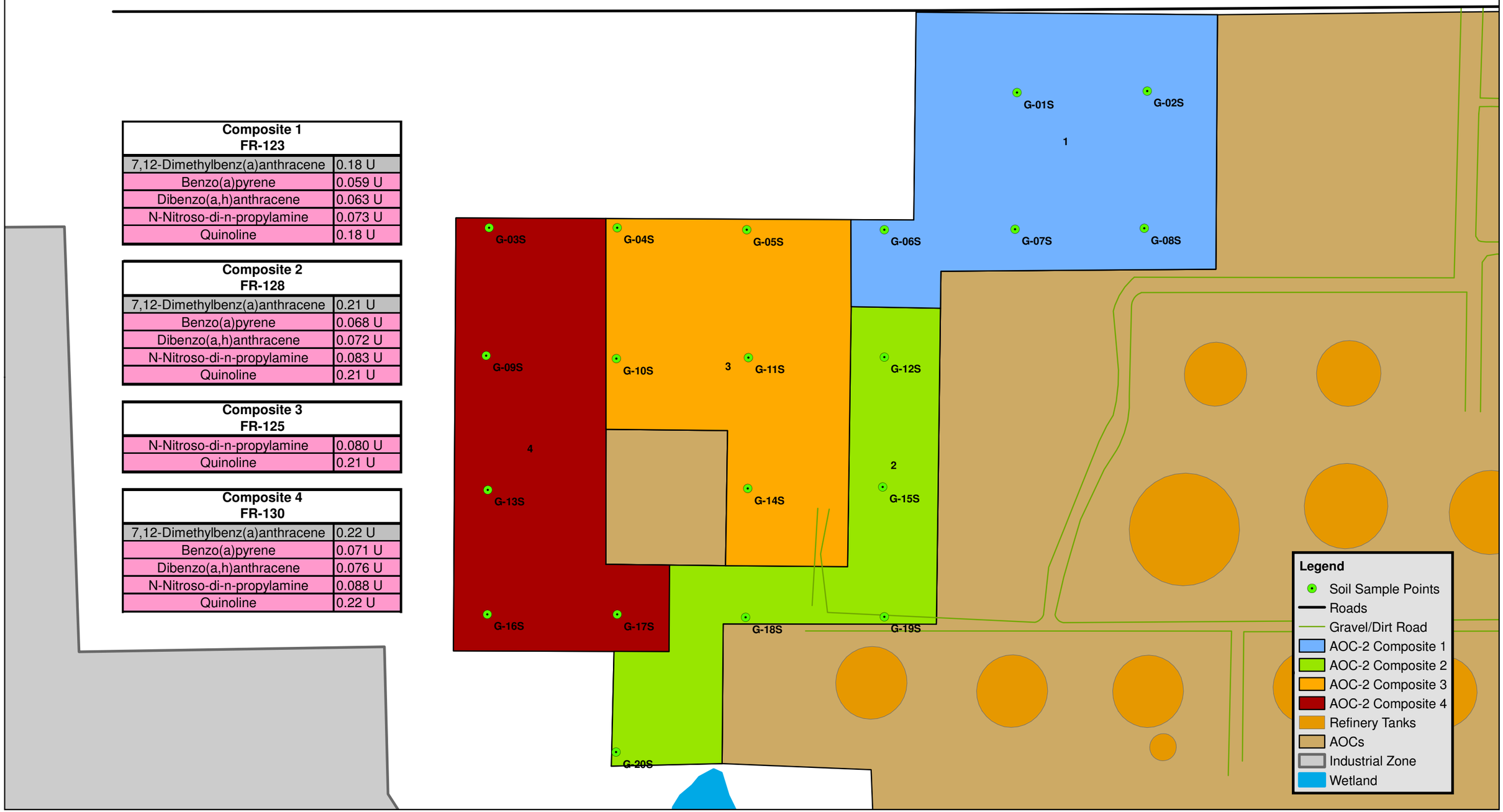
6B

Composite 1 FR-123	
7,12-Dimethylbenz(a)anthracene	0.18 U
Benzo(a)pyrene	0.059 U
Dibenzo(a,h)anthracene	0.063 U
N-Nitroso-di-n-propylamine	0.073 U
Quinoline	0.18 U

Composite 2 FR-128	
7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.068 U
Dibenzo(a,h)anthracene	0.072 U
N-Nitroso-di-n-propylamine	0.083 U
Quinoline	0.21 U

Composite 3 FR-125	
N-Nitroso-di-n-propylamine	0.080 U
Quinoline	0.21 U

Composite 4 FR-130	
7,12-Dimethylbenz(a)anthracene	0.22 U
Benzo(a)pyrene	0.071 U
Dibenzo(a,h)anthracene	0.076 U
N-Nitroso-di-n-propylamine	0.088 U
Quinoline	0.22 U



Notes:

1. Results are posted in mg/kg
2. Qualifiers:

   U = Undetected at the sample detection limit (SDL)

SDL Exceeds EPA Screening Level

SDL Exceeds TCEQ Screening Level

N

0 100 200

Feet

DATE DRAWN: 4/30/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-2
Human Health
SVOC Surface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 FILE NAME: Falcon Refinery Base Map

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FIGURE

6C

Composite 1 FR-124	
Aluminum	1430
Barium	49.4
Beryllium	0.076 B
Chromium	1.6
Cobalt	0.27 B
Copper	1.9 B
Iron	985
Lead	2.9
Manganese	51.8
Mercury	0.016 B
Nickel	1.4 B
Vanadium	1.6 B
Zinc	47.8

Composite 2 FR-129	
Aluminum	2680
Arsenic	1.6
Barium	64.1
Beryllium	0.14 B
Chromium	3
Cobalt	0.95 B
Copper	1.8 B
Iron	2690
Lead	2.5
Manganese	186
Mercury	0.0044 B
Nickel	1.6 B
Vanadium	5.2 B
Zinc	7.6

Composite 3 FR-126	
Aluminum	2130
Barium	14.4 B
Beryllium	0.15 B
Chromium	2.1
Hex Chrom	1.7 B
Cobalt	0.87 B
Copper	1.9 B
Iron	1680
Lead	2
Manganese	64.3
Mercury	0.0055 B
Nickel	0.94 B
Vanadium	3.1 B
Zinc	5.4

Composite 4 FR-131	
Aluminum	1380
Arsenic	0.44 B
Barium	9.6 B
Beryllium	0.074 B
Chromium	1.6
Copper	1.1 B
Iron	1020
Lead	1.5
Manganese	6.1
Mercury	0.0048 B
Nickel	0.27 B
Vanadium	2.2 B
Zinc	3

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds EPA Region 6 MSSL

N

0 150 300

Feet

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AOC-2
Human Health
Metal Subsurface Soil Distribution Map

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FIGURE

7A

Composite 1 FR-124	
Acetone	0.0298 J
1,2,3-Trichloropropane	0.0017 U

Composite 2 FR-129	
Acetone	0.0256 J
Methylene Chloride	0.0066 J
1,2,3-Trichloropropane	0.0017 U

Composite 3 FR-126	
Acetone	0.011 J
1,2,3-Trichloropropane	0.0017 U

Composite 4 FR-131	
Acetone	0.0202 J
Methylene Chloride	0.0062 J
1,2,3-Trichloropropane	0.0016 U

Notes:

1. Results are posted in mg/kg
2. Qualifiers:
   - U = Undetected at the sample detection limit (SDL)
   - J = Concentration greater than the SDL but less than the method quantitation limit (MQL)

SDL Exceeds TCEQ Screening Level

N

0 100 200
Feet

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APPROVED BY:	

AOC-2
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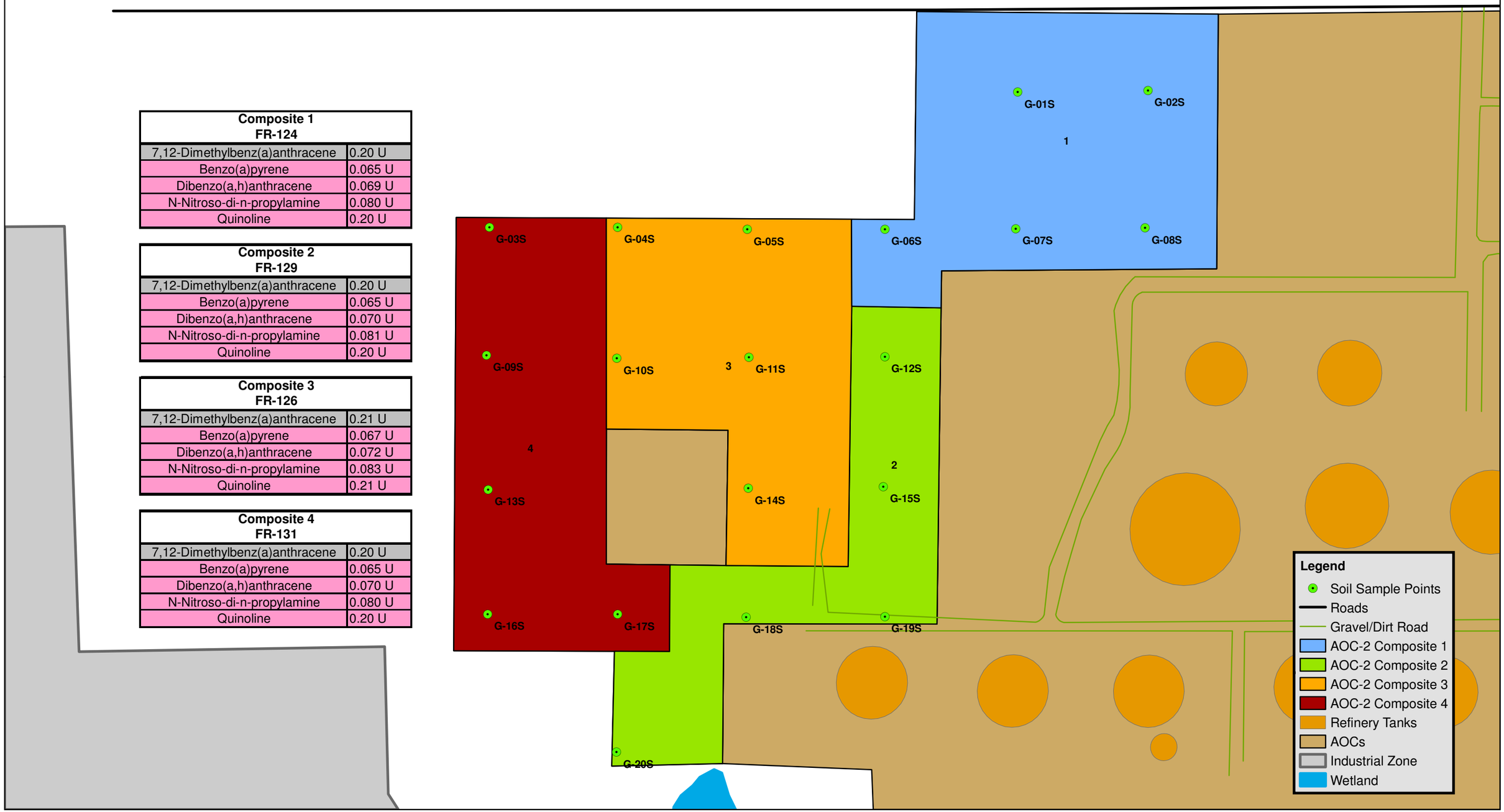
FIGURE
7B

Composite 1 FR-124	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.065 U
Dibenzo(a,h)anthracene	0.069 U
N-Nitroso-di-n-propylamine	0.080 U
Quinoline	0.20 U

Composite 2 FR-129	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.065 U
Dibenzo(a,h)anthracene	0.070 U
N-Nitroso-di-n-propylamine	0.081 U
Quinoline	0.20 U

Composite 3 FR-126	
7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.072 U
N-Nitroso-di-n-propylamine	0.083 U
Quinoline	0.21 U

Composite 4 FR-131	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.065 U
Dibenzo(a,h)anthracene	0.070 U
N-Nitroso-di-n-propylamine	0.080 U
Quinoline	0.20 U



Notes:

1. Results are posted in mg/kg
2. Qualifiers:

   U = Undetected at the sample detection limit (SDL)

SDL Exceeds EPA Screening Level

SDL Exceeds TCEQ Screening Level

N

0 100 200

Feet

DATE DRAWN: 4/30/08	DATE REVISED:
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APPROVED BY:	

AOC-2
Human Health
SVOC Subsurface Soil Distribution Map

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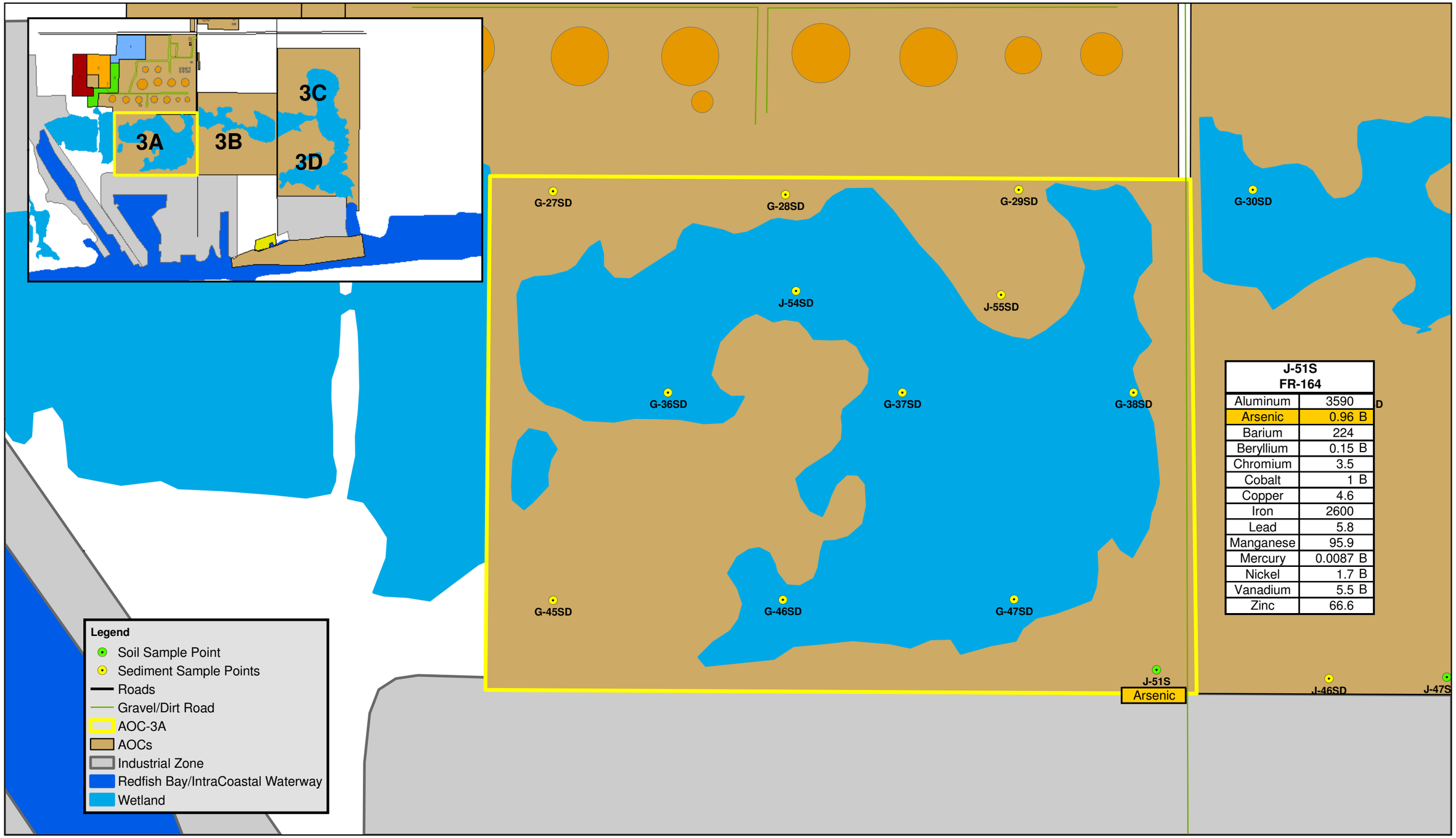
FIGURE

7C



J-51S FR-164	
Aluminum	3590
Arsenic	0.96 B
Barium	224
Beryllium	0.15 B
Chromium	3.5
Cobalt	1 B
Copper	4.6
Iron	2600
Lead	5.8
Manganese	95.9
Mercury	0.0087 B
Nickel	1.7 B
Vanadium	5.5 B
Zinc	66.6

Notes:

1. Results are posted in mg/kg

2. Qualifiers:

B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds EPA Region 6 MSSL

N

0 100 200

Feet

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AOC-3A
Human Health
Metal Surface Soil Distribution Map

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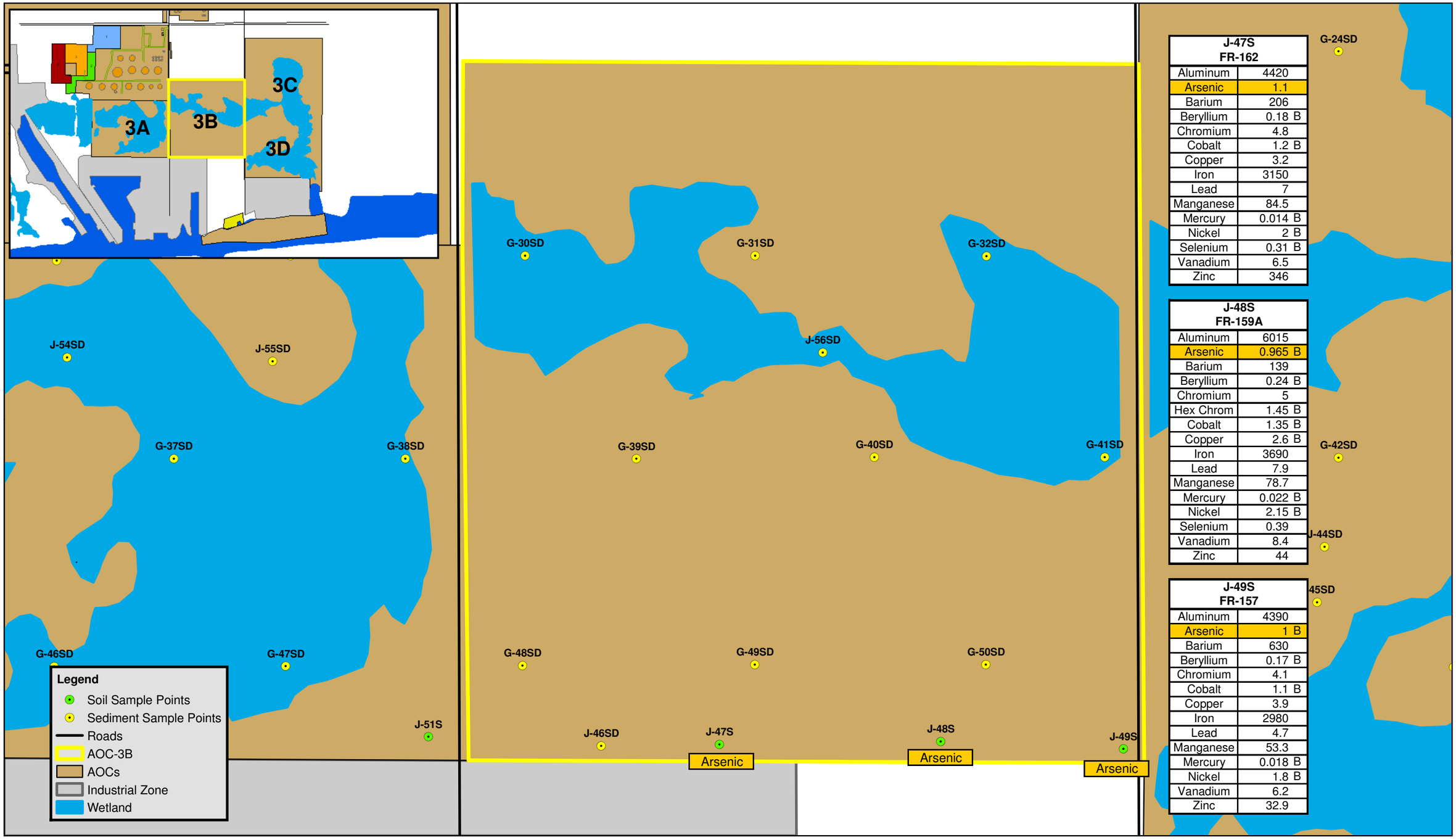
FIGURE

8A



J-47S FR-162	
Aluminum	4420
Arsenic	1.1
Barium	206
Beryllium	0.18 B
Chromium	4.8
Cobalt	1.2 B
Copper	3.2
Iron	3150
Lead	7
Manganese	84.5
Mercury	0.014 B
Nickel	2 B
Selenium	0.31 B
Vanadium	6.5
Zinc	346

J-48S FR-159A	
Aluminum	6015
Arsenic	0.965 B
Barium	139
Beryllium	0.24 B
Chromium	5
Hex Chrom	1.45 B
Cobalt	1.35 B
Copper	2.6 B
Iron	3690
Lead	7.9
Manganese	78.7
Mercury	0.022 B
Nickel	2.15 B
Selenium	0.39
Vanadium	8.4
Zinc	44

J-49S FR-157	
Aluminum	4390
Arsenic	1 B
Barium	630
Beryllium	0.17 B
Chromium	4.1
Cobalt	1.1 B
Copper	3.9
Iron	2980
Lead	4.7
Manganese	53.3
Mercury	0.018 B
Nickel	1.8 B
Vanadium	6.2
Zinc	32.9

Notes:

1. Results are posted in mg/kg
   Hex Chrom posted in mg/l
2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds EPA Region 6 MSSL

0 100 200
Feet

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AOC-3B
Human Health
Metal Surface Soil Distribution Map

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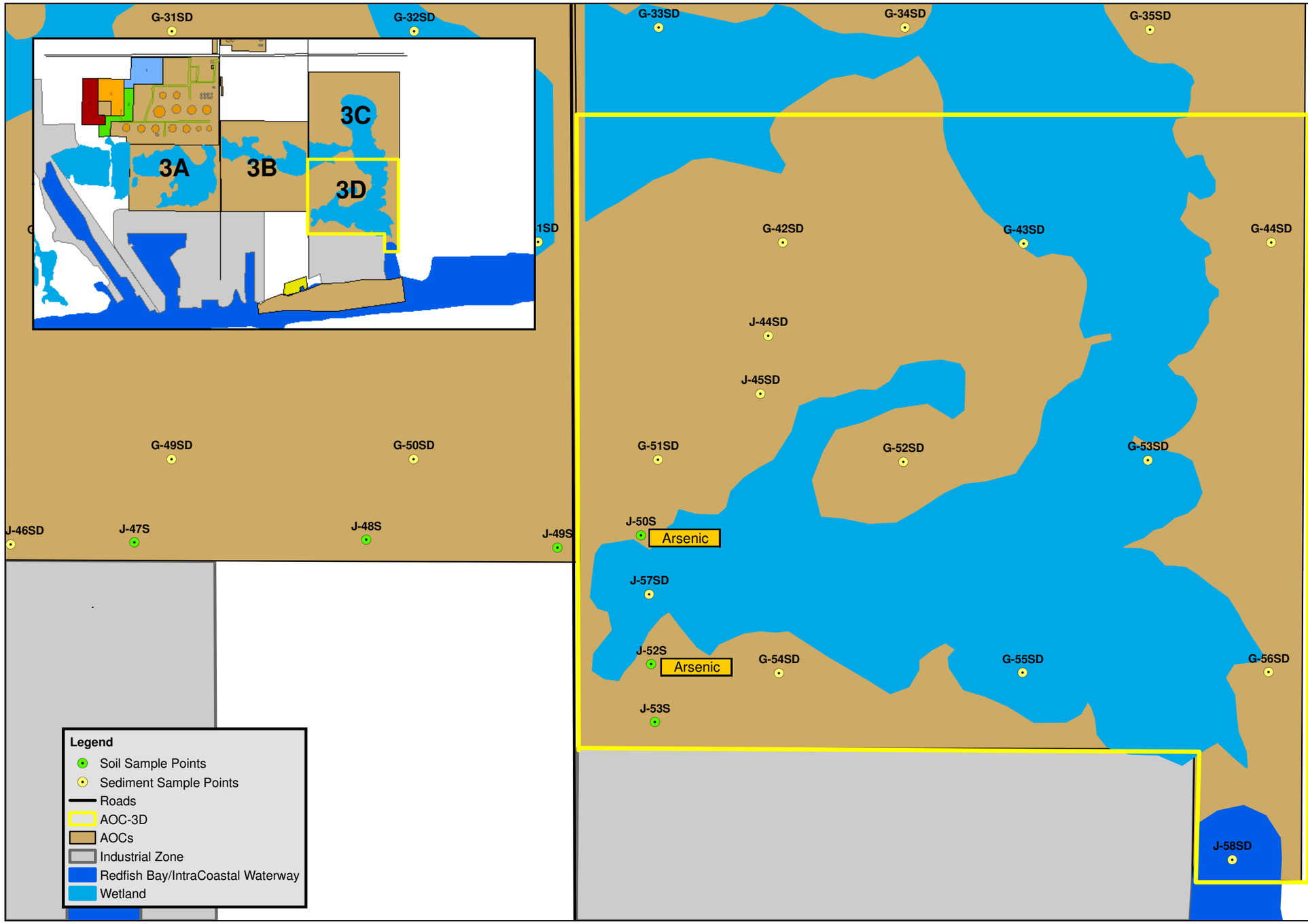
FIGURE
8B



J-50S FR-155	
Aluminum	1760
Arsenic	0.72 B
Barium	16.6 B
Beryllium	0.074 B
Chromium	1.4
Cobalt	0.36 B
Copper	2.5 B
Iron	1160
Lead	3.3
Manganese	226
Mercury	0.008 B
Nickel	0.59 B
Vanadium	2.5 B
Zinc	23.9

J-52S FR-138	
Aluminum	4590
Arsenic	1 B
Barium	37.9
Beryllium	0.23 B
Chromium	3.6
Cobalt	0.92 B
Copper	4.2
Iron	2450
Lead	4.5
Manganese	100
Mercury	0.008 B
Nickel	2.1 B
Vanadium	6.1 B
Zinc	32.8

J-53S FR-136	
Aluminum	3420
Arsenic	2.5
Barium	74.4
Beryllium	0.21 B
Chromium	5.9
Cobalt	0.93 B
Copper	3.9
Iron	3050
Lead	13.5
Manganese	113
Mercury	0.0049 B
Nickel	2.5 B
Vanadium	6.3
Zinc	279

Notes:

1. Results are posted in mg/kg

2. Qualifiers:

B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds EPA Region 6 MSSL

N

0 100 200

Feet

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AOC-3D
Human Health
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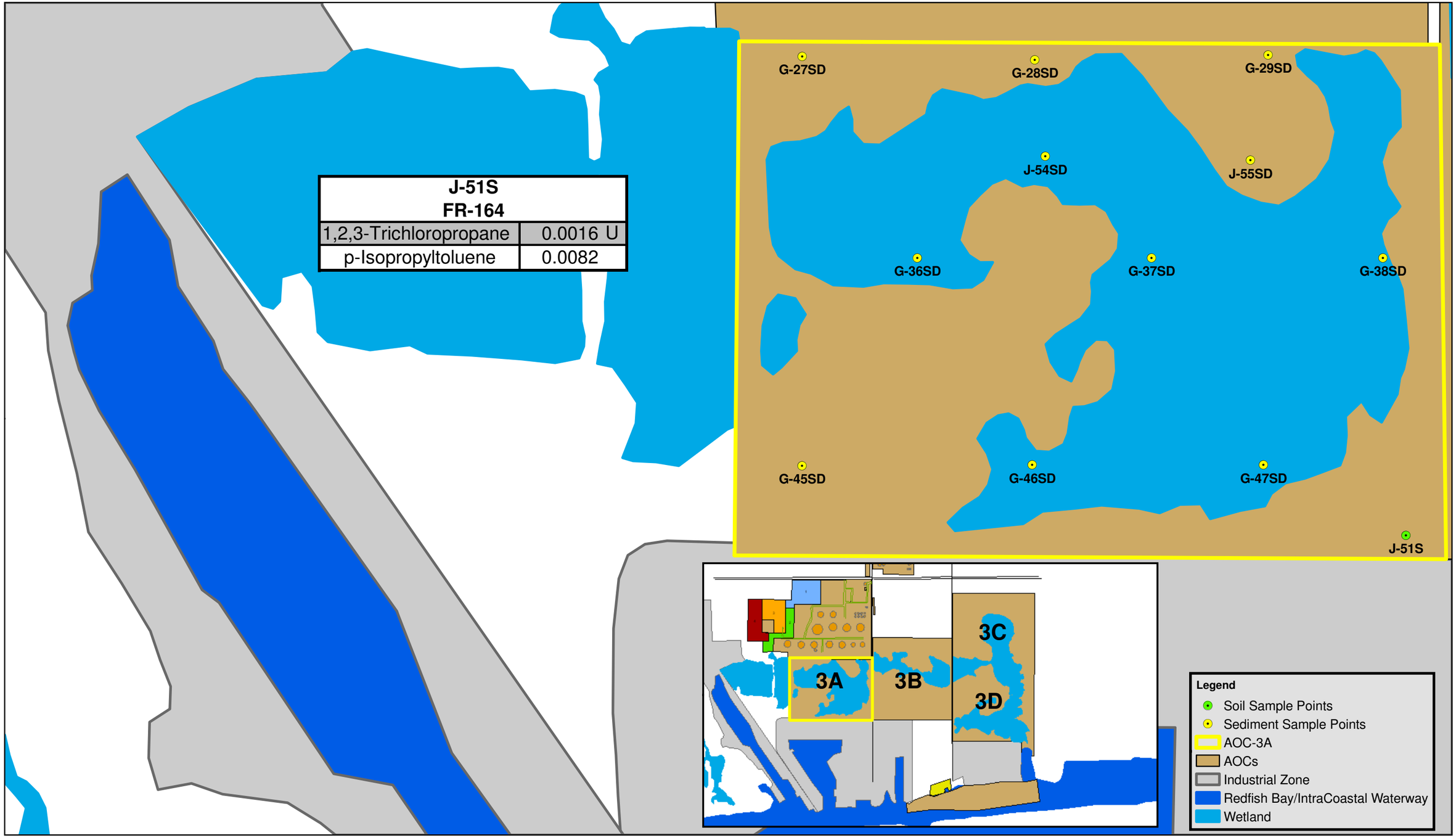
FIGURE

8C



J-51S FR-164	
1,2,3-Trichloropropane	0.0016 U
p-Isopropyltoluene	0.0082

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

   U = Undetected at the sample detection limit (SDL)

SDL Exceeds TCEQ Screening Level

0 150 300
Feet

DATE DRAWN: 7/8/08	DATE REVISED:
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APPROVED BY:	

AOC-3A
Human Health
VOC Surface Soil Distribution Map

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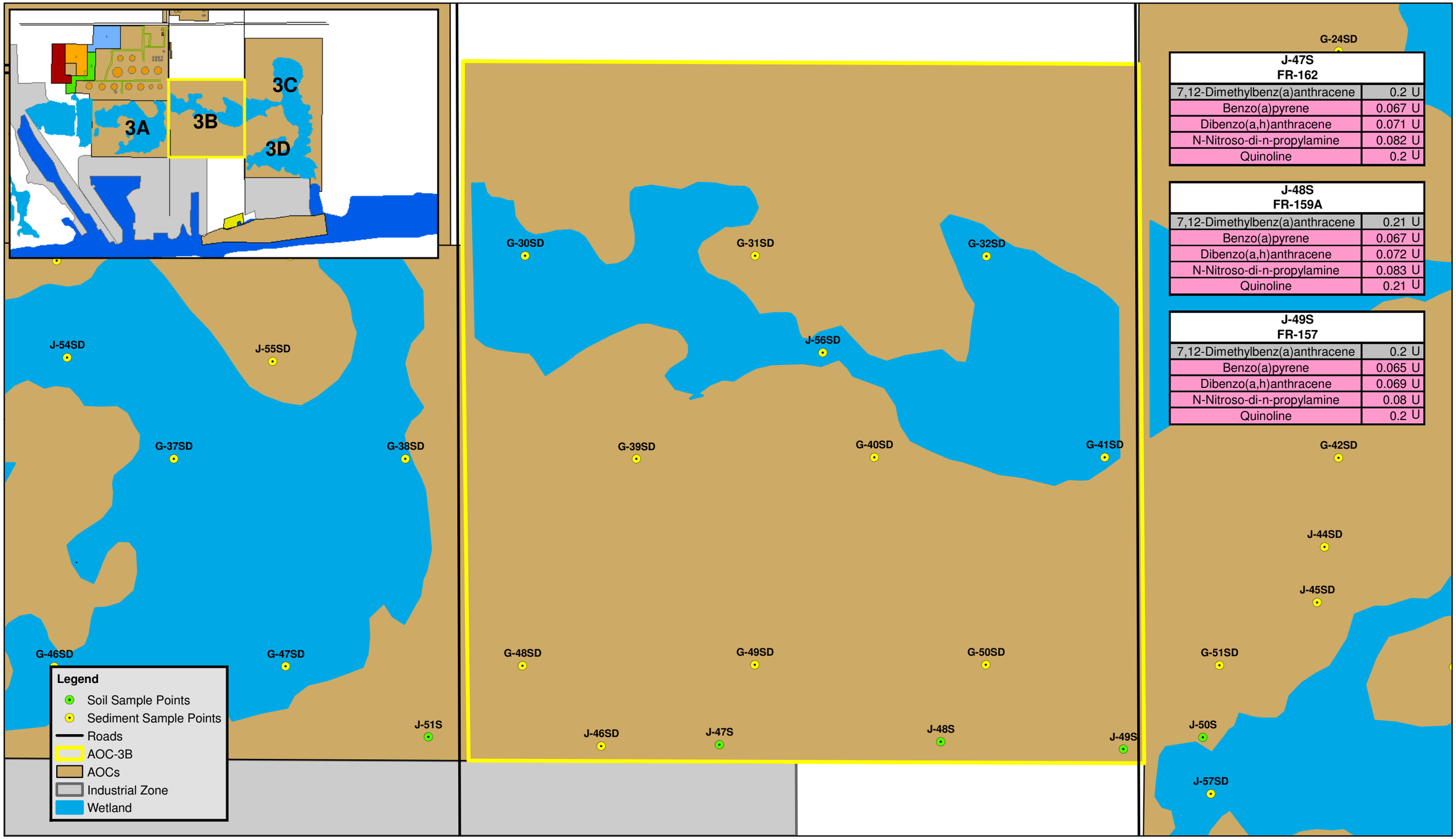
FIGURE
8D



J-47S FR-162	
7,12-Dimethylbenz(a)anthracene	0.2 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.071 U
N-Nitroso-di-n-propylamine	0.082 U
Quinoline	0.2 U

J-48S FR-159A	
7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.072 U
N-Nitroso-di-n-propylamine	0.083 U
Quinoline	0.21 U

J-49S FR-157	
7,12-Dimethylbenz(a)anthracene	0.2 U
Benzo(a)pyrene	0.065 U
Dibenzo(a,h)anthracene	0.069 U
N-Nitroso-di-n-propylamine	0.08 U
Quinoline	0.2 U

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

U = Undetected at the sample detection limit (SDL)

SDL Exceeds EPA Screening Level

SDL Exceeds TCEQ Screening Level

N

0 150 300

Feet

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APPROVED BY:	

AOC-3B
Human Health
SVOC Surface Soil Distribution Map

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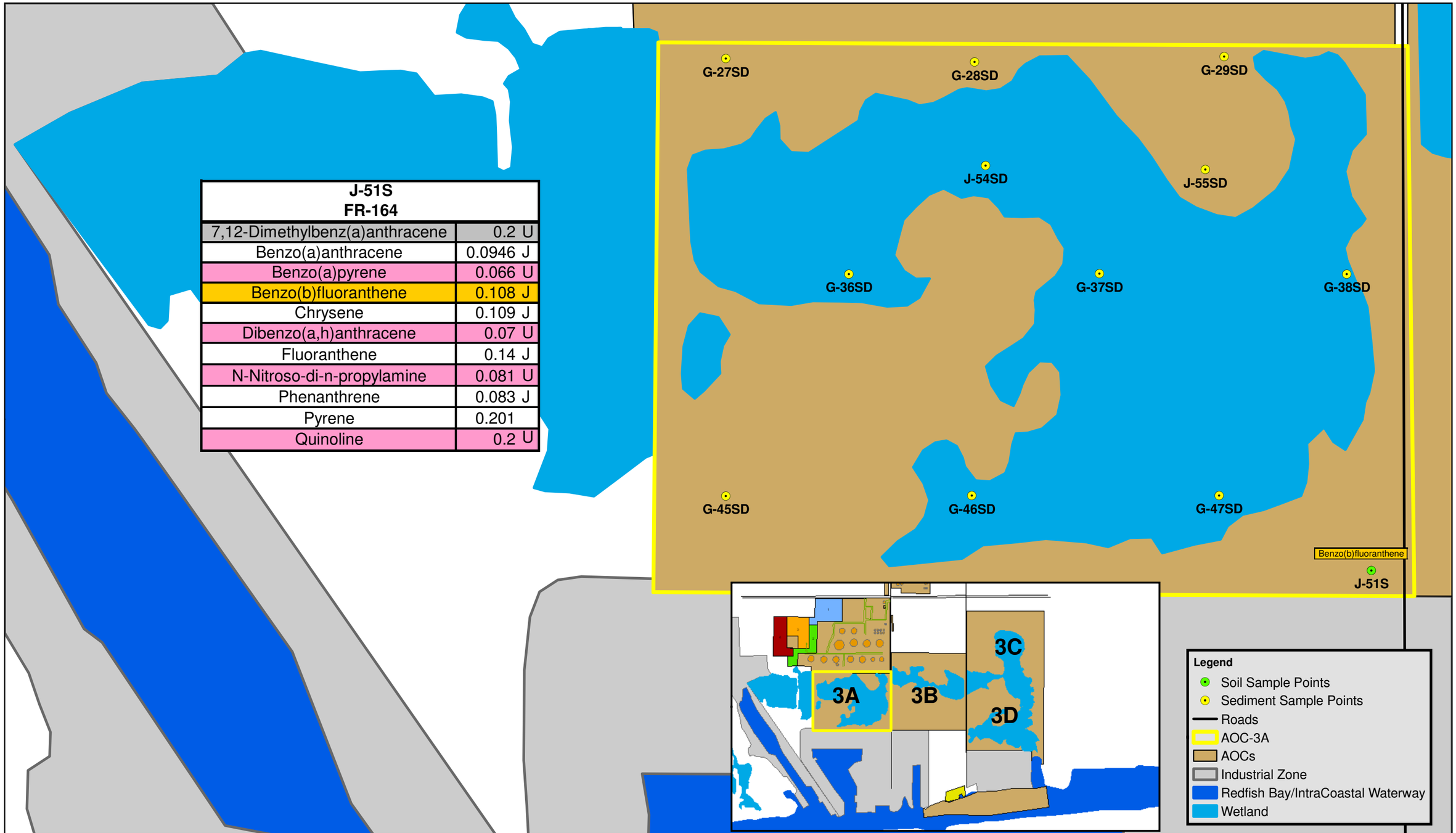
FIGURE

8E



J-51S FR-164	
7,12-Dimethylbenz(a)anthracene	0.2 U
Benzo(a)anthracene	0.0946 J
Benzo(a)pyrene	0.066 U
Benzo(b)fluoranthene	0.108 J
Chrysene	0.109 J
Dibenzo(a,h)anthracene	0.07 U
Fluoranthene	0.14 J
N-Nitroso-di-n-propylamine	0.081 U
Phenanthrene	0.083 J
Pyrene	0.201
Quinoline	0.2 U

Notes:

1. Results are posted in mg/kg
2. Qualifiers:
   - U = Undetected at the sample detection limit (SDL)
   - J = Concentration greater than the SDL but less than the method quantitation limit (MQL)

Exceeds EPA Region 6 MSSL
SDL Exceeds EPA Screening Level
SDL Exceeds TCEQ Screening Level

N

0 140 280
Feet

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AOC-3A
Human Health
SVOC Surface Soil Distribution Map

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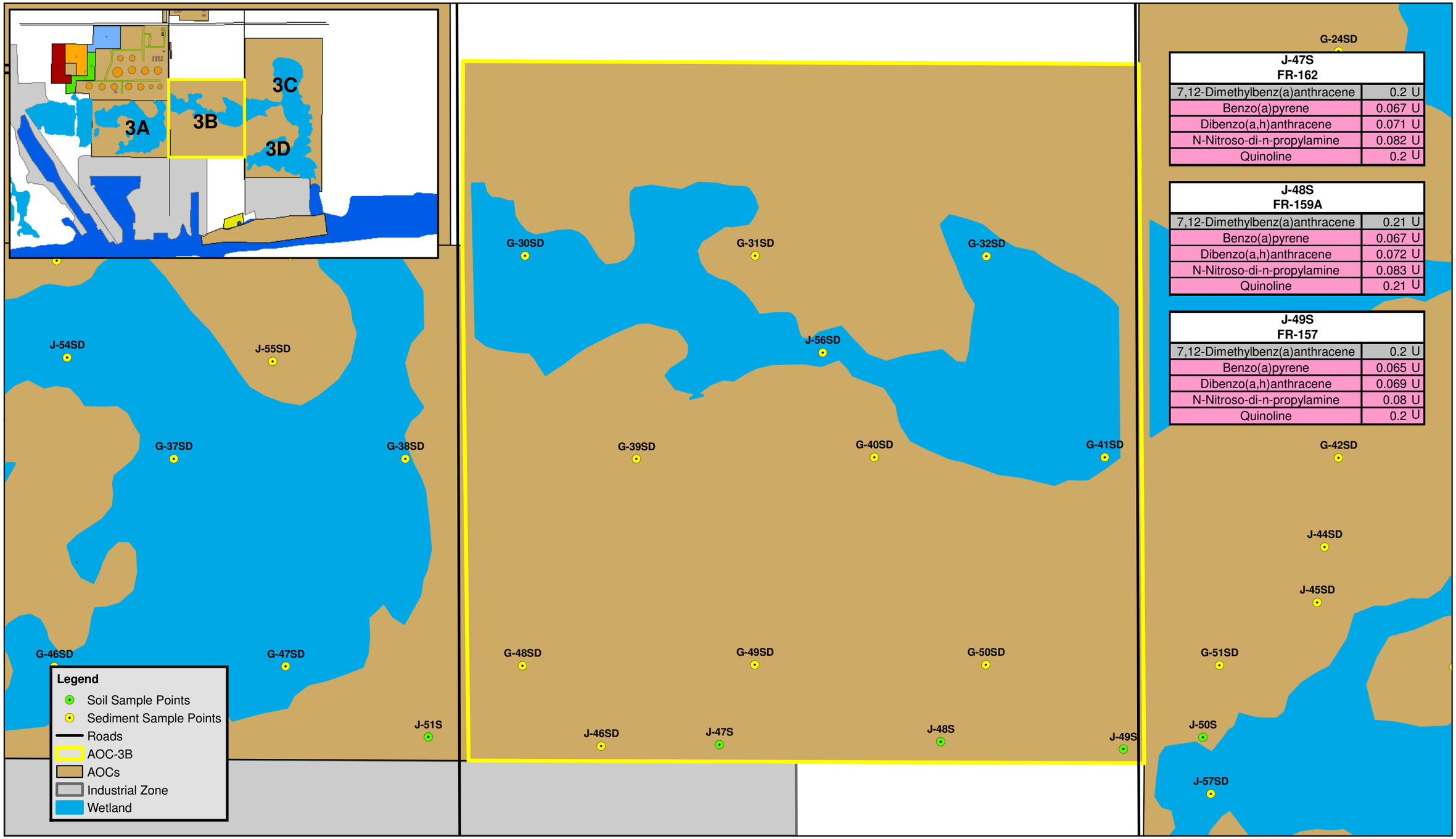
FIGURE
8F



J-47S FR-162	
7,12-Dimethylbenz(a)anthracene	0.2 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.071 U
N-Nitroso-di-n-propylamine	0.082 U
Quinoline	0.2 U

J-48S FR-159A	
7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.072 U
N-Nitroso-di-n-propylamine	0.083 U
Quinoline	0.21 U

J-49S FR-157	
7,12-Dimethylbenz(a)anthracene	0.2 U
Benzo(a)pyrene	0.065 U
Dibenzo(a,h)anthracene	0.069 U
N-Nitroso-di-n-propylamine	0.08 U
Quinoline	0.2 U

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

U = Undetected at the sample detection limit (SDL)

SDL Exceeds EPA Screening Level

SDL Exceeds TCEQ Screening Level

N

0 150 300

Feet

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AOC-3B
Human Health
SVOC Surface Soil Distribution Map

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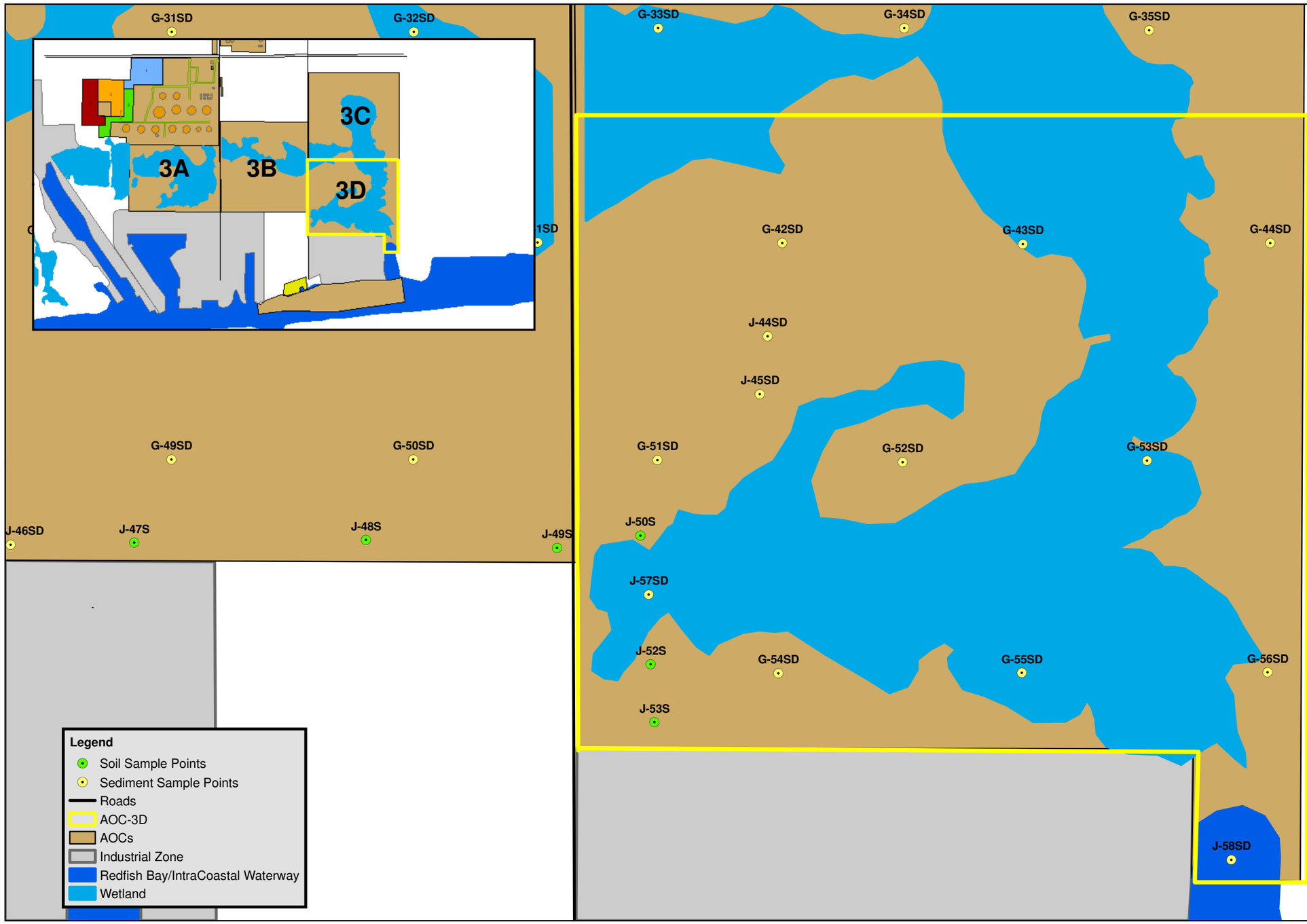
FIGURE

8G



J-50S FR-155	
7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.068 U
Dibenzo(a,h)anthracene	0.072 U
N-Nitroso-di-n-propylamine	0.084 U
Quinoline	0.21 U

J-52S FR-138	
7,12-Dimethylbenz(a)anthracene	0.24 U
Benzo(a)pyrene	0.078 U
Dibenzo(a,h)anthracene	0.083 U
N-Nitroso-di-n-propylamine	0.096 U
Quinoline	0.24 U

J-53S FR-136	
7,12-Dimethylbenz(a)anthracene	0.2 U
Benzo(a)pyrene	0.066 U
Dibenzo(a,h)anthracene	0.071 U
N-Nitroso-di-n-propylamine	0.081 U
Quinoline	0.2 U

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

U = Undetected at the sample detection limit (SDL)

SDL Exceeds EPA Screening Level

SDL Exceeds TCEQ Screening Level

N

0 150 300

Feet

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AOC-3D
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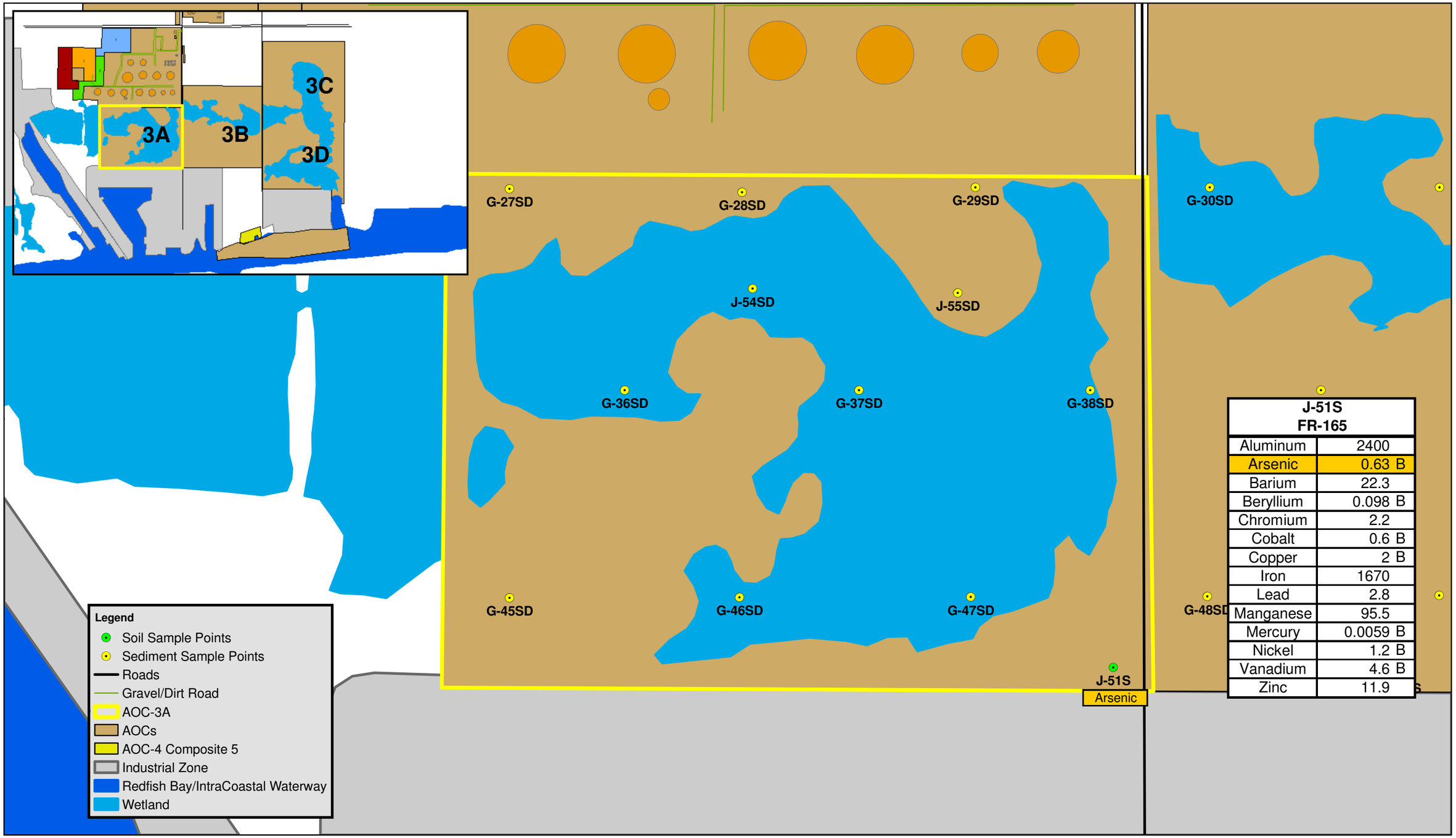
FIGURE

8H



J-51S FR-165	
Aluminum	2400
Arsenic	0.63 B
Barium	22.3
Beryllium	0.098 B
Chromium	2.2
Cobalt	0.6 B
Copper	2 B
Iron	1670
Lead	2.8
Manganese	95.5
Mercury	0.0059 B
Nickel	1.2 B
Vanadium	4.6 B
Zinc	11.9

Notes:

1. Results are posted in mg/kg

2. Qualifiers:

B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds EPA Region 6 MSSL

N

0 150 300

Feet

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AOC-3A
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FIGURE

9A

J-47S FR-163	
Aluminum	3290
Arsenic	1.3
Barium	45.7
Beryllium	0.14 B
Chromium	2.7
Cobalt	1.1 B
Copper	1.9 B
Iron	2250
Lead	3.1
Manganese	41.4
Mercury	0.034
Nickel	1.4 B
Vanadium	4.4 B
Zinc	35.8

J-48S FR-161	
Aluminum	4210
Arsenic	1.2
Barium	24.3
Beryllium	0.18 B
Chromium	3.4
Cobalt	0.63 B
Copper	1.3 B
Iron	2750
Lead	3.1
Manganese	26.9
Mercury	0.012 B
Nickel	1.2 B
Vanadium	5.5 B
Zinc	10.2

J-49S FR-158	
Aluminum	3070
Arsenic	0.69 B
Barium	209
Beryllium	0.13 B
Chromium	3.6
Hex Chrom	1.4 B
Cobalt	0.81 B
Copper	5
Iron	2900
Lead	4.3
Manganese	42.2
Mercury	0.033
Nickel	1.6 B
Vanadium	4.5 B
Zinc	18.2

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds EPA Region 6 MSSL

N

0 100 200

Feet

DATE DRAWN: 7/8/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-3B
Human Health
Metal Subsurface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 | FILE NAME: Falcon Refinery Base Map

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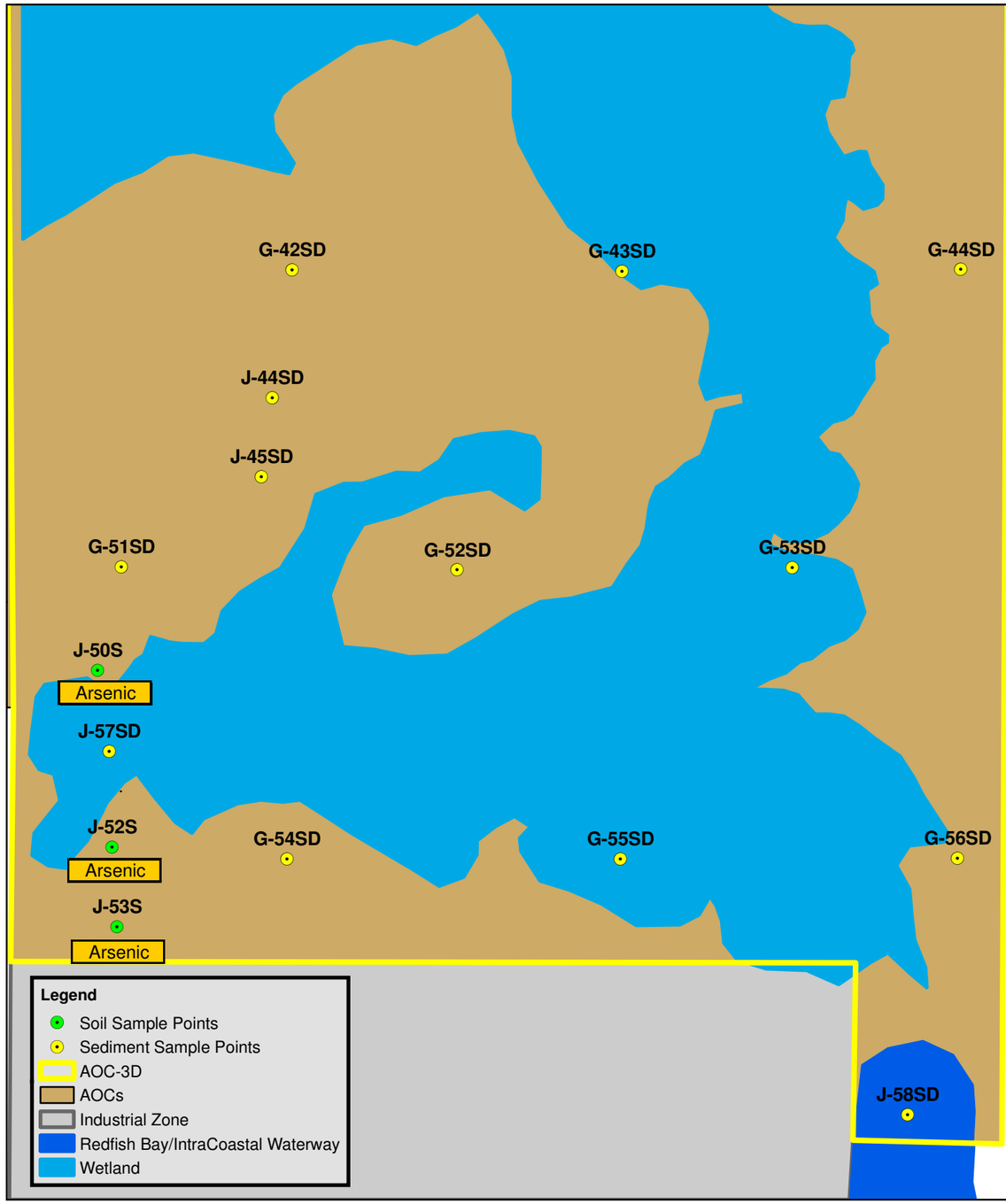
FIGURE

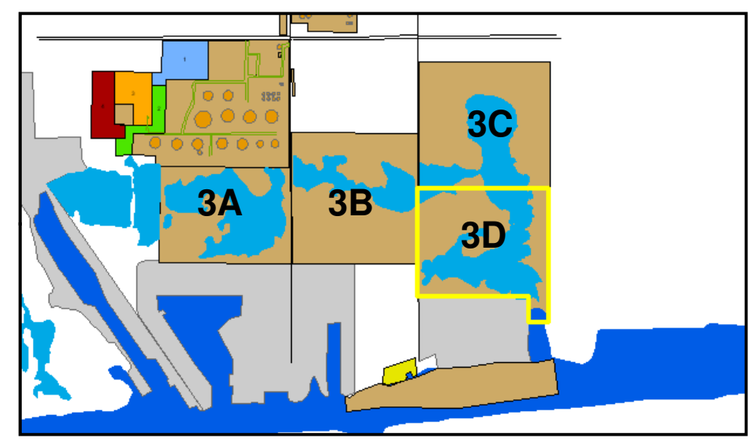
9B



J-50S FR-156	
Aluminum	4600
Arsenic	0.52 B
Barium	45.5
Beryllium	0.19 B
Chromium	3.2
Cobalt	1.1 B
Copper	2.6 B
Iron	3060
Lead	2.7
Manganese	76.3
Mercury	0.0065 B
Nickel	1.8 B
Vanadium	5.1 B
Zinc	13.7

J-53S FR-137	
Aluminum	4260
Arsenic	2.4
Barium	17.9 B
Beryllium	0.2 B
Chromium	3.9
Cobalt	0.88 B
Copper	2.3 B
Iron	2680
Lead	2.5
Manganese	113
Mercury	0.002 B
Nickel	2.3 B
Vanadium	7.9
Zinc	17.5

J-52S FR-139	
Aluminum	3570
Arsenic	1.1 B
Barium	21.6 B
Beryllium	0.19 B
Chromium	4
Cobalt	0.8 B
Copper	2 B
Iron	2300
Lead	2.4
Manganese	114
Mercury	0.0023 B
Nickel	1.9 B
Vanadium	5.3 B
Zinc	8.9



Notes:

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Exceeds EPA Region 6 MSSL

N

0 100 200

Feet

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AOC-3D
Human Health
Metal Subsurface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

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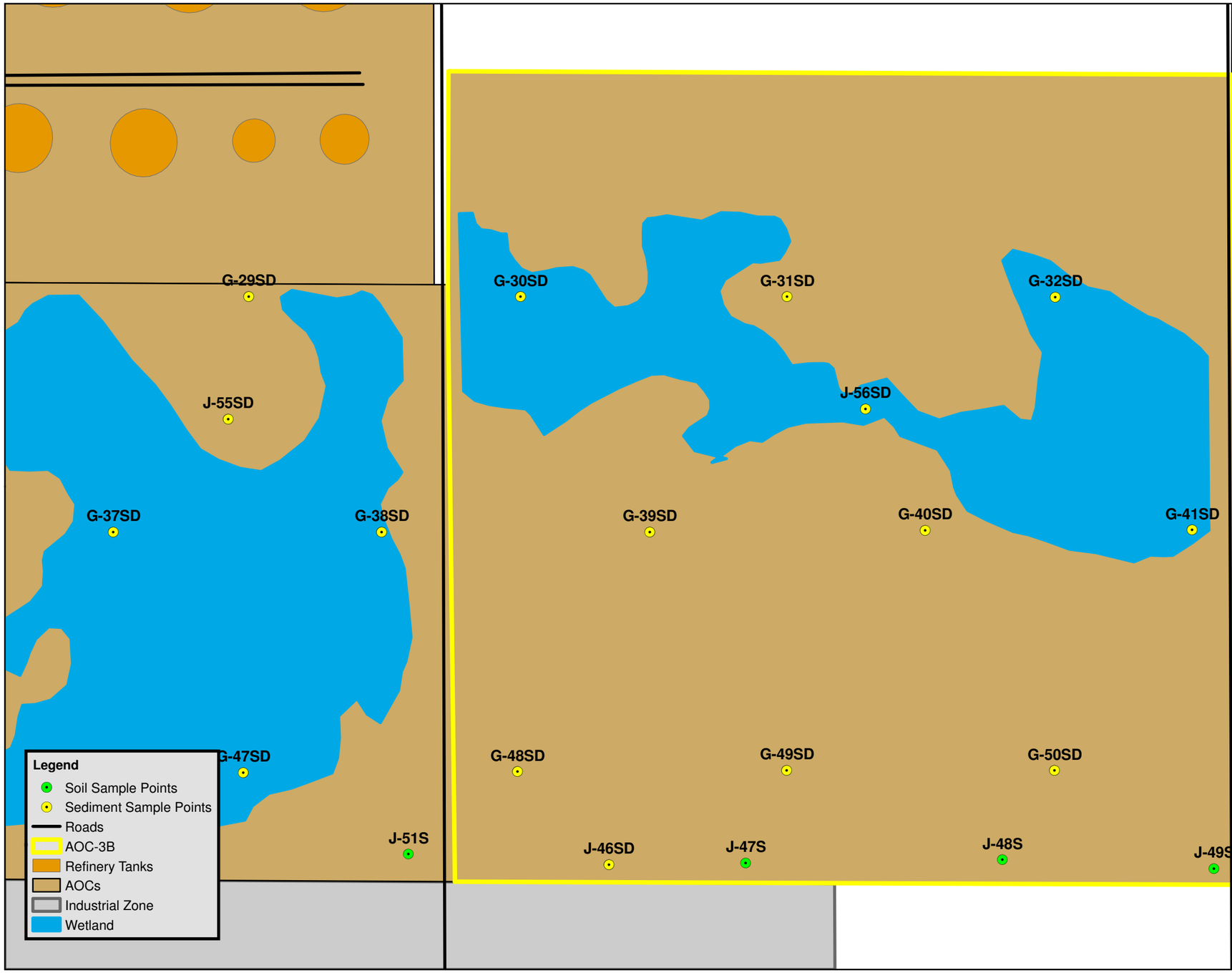
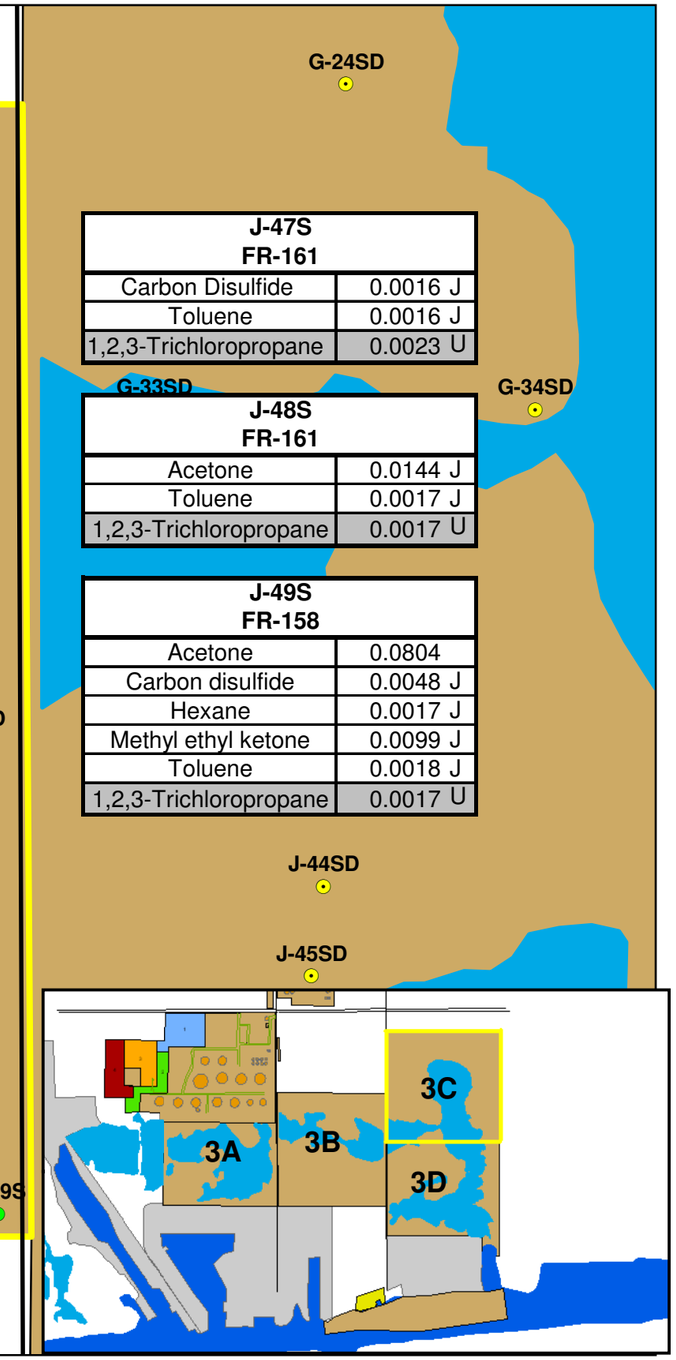
FIGURE

9C





J-47S FR-161	
Carbon Disulfide	0.0016 J
Toluene	0.0016 J
1,2,3-Trichloropropane	0.0023 U

J-48S FR-161	
Acetone	0.0144 J
Toluene	0.0017 J
1,2,3-Trichloropropane	0.0017 U

J-49S FR-158	
Acetone	0.0804
Carbon disulfide	0.0048 J
Hexane	0.0017 J
Methyl ethyl ketone	0.0099 J
Toluene	0.0018 J
1,2,3-Trichloropropane	0.0017 U

Notes:

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U = Undetected at the sample detection limit (SDL)

J = Concentration greater than the SDL but less than the method quantitation limit (MQL)

SDL Exceeds TCEQ Screening Level

N

0 150 300

Feet

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AOC-3B
Human Health
VOC Subsurface Soil Distribution Map

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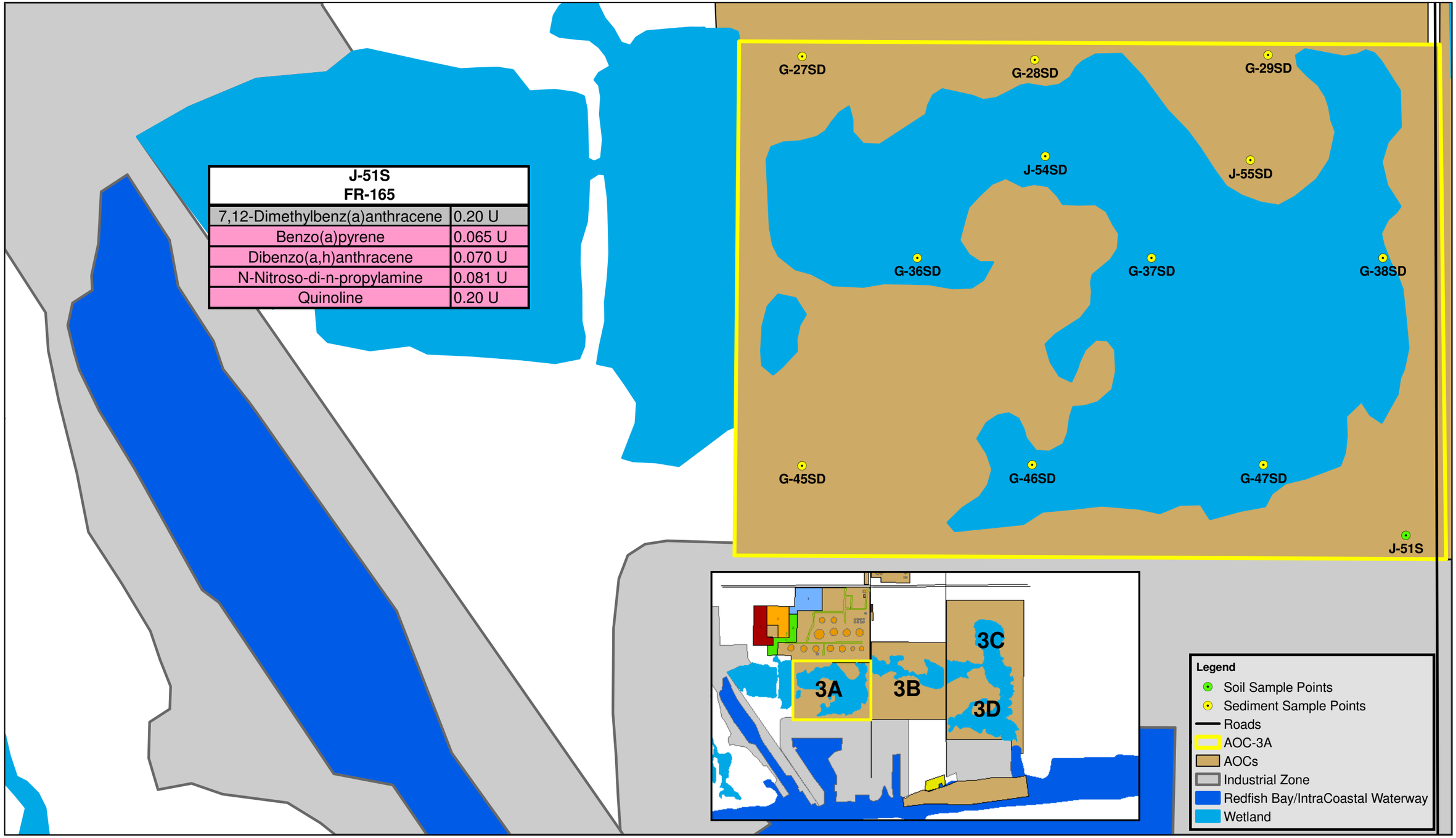
FIGURE

9D



J-51S FR-165	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.065 U
Dibenzo(a,h)anthracene	0.070 U
N-Nitroso-di-n-propylamine	0.081 U
Quinoline	0.20 U

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

U = Undetected at the sample detection limit (SDL)

SDL Exceeds EPA Screening Level

SDL Exceeds TCEQ Screening Level

N

0 150 300

Feet

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Human Health
SVOC Subsurface Soil Distribution Map

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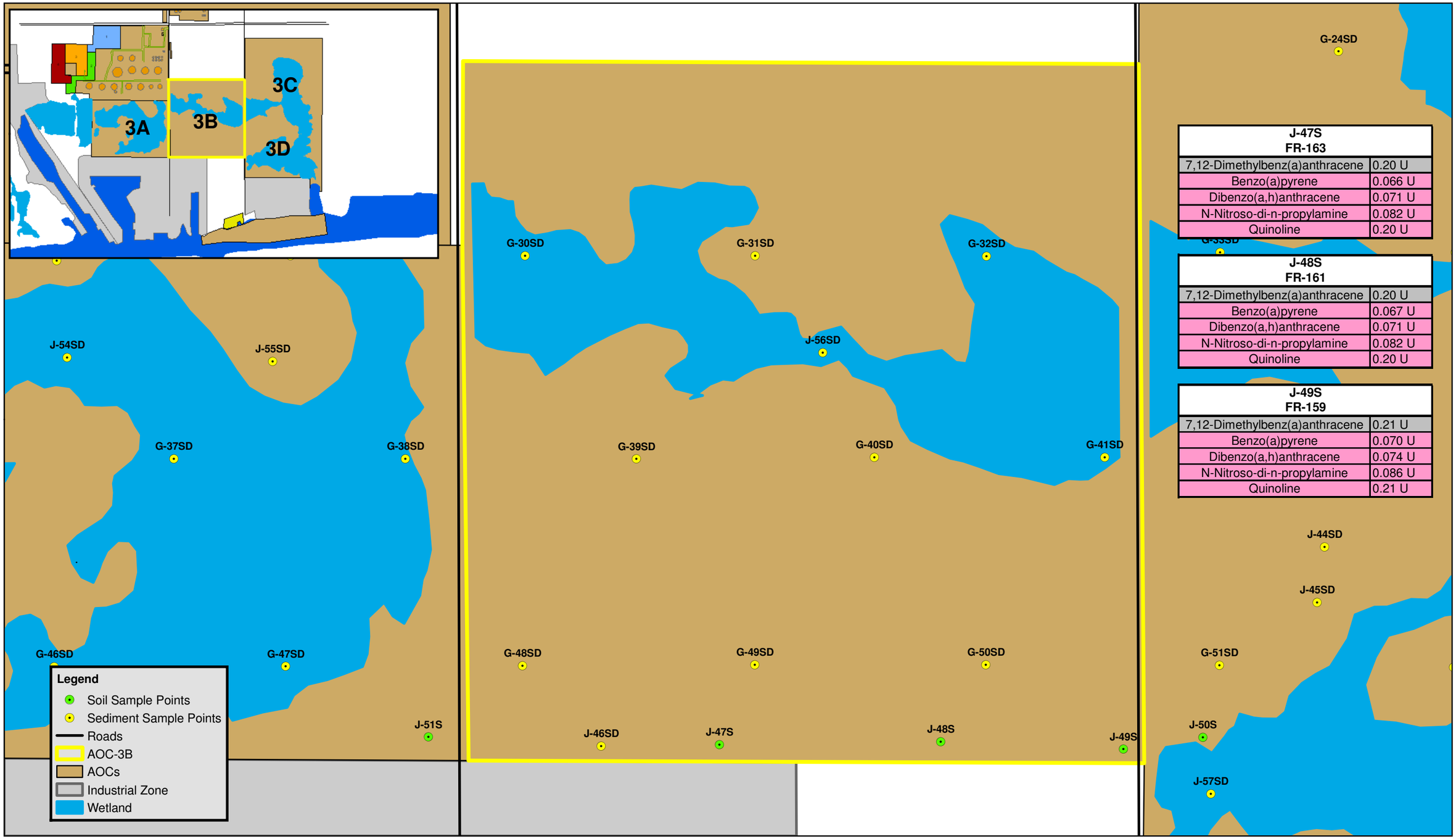
FIGURE

9E



J-47S FR-163	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.066 U
Dibenzo(a,h)anthracene	0.071 U
N-Nitroso-di-n-propylamine	0.082 U
Quinoline	0.20 U

J-48S FR-161	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.071 U
N-Nitroso-di-n-propylamine	0.082 U
Quinoline	0.20 U

J-49S FR-159	
7,12-Dimethylbenz(a)anthracene	0.21 U
Benzo(a)pyrene	0.070 U
Dibenzo(a,h)anthracene	0.074 U
N-Nitroso-di-n-propylamine	0.086 U
Quinoline	0.21 U

Notes:

1. Results are posted in mg/kg
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U = Undetected at the sample detection limit (SDL)

SDL Exceeds EPA Screening Level

SDL Exceeds TCEQ Screening Level

N

0 150 300

Feet

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AOC-3B
Human Health
SVOC Subsurface Soil Distribution Map

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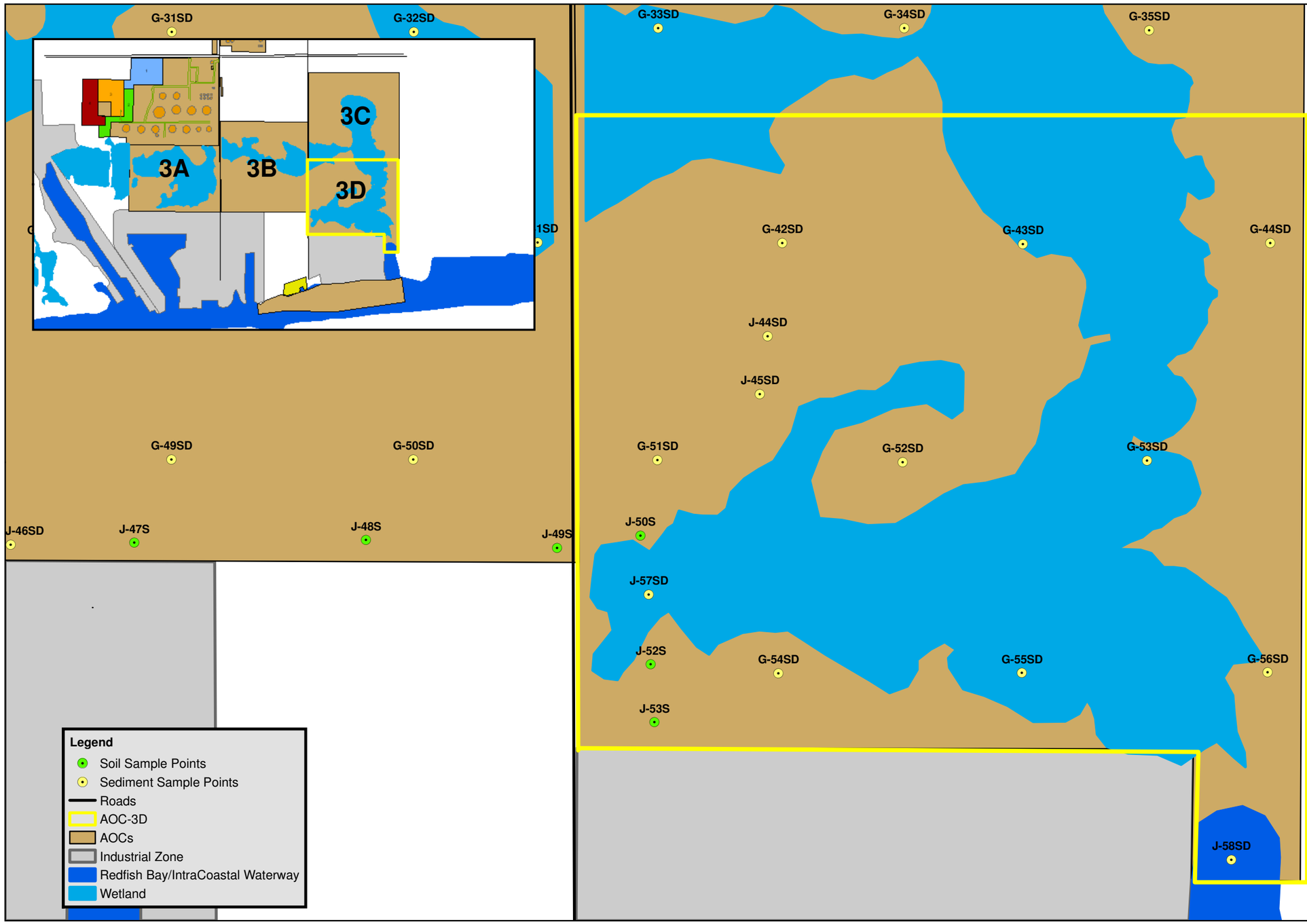
FIGURE

9F



J-50S FR-156	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.066 U
Dibenzo(a,h)anthracene	0.071 U
N-Nitroso-di-n-propylamine	0.082 U
Quinoline	0.20 U

J-52S FR-139	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.067 U
Dibenzo(a,h)anthracene	0.071 U
N-Nitroso-di-n-propylamine	0.082 U
Quinoline	0.20 U

J-53S FR-137	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.066 U
Dibenzo(a,h)anthracene	0.070 U
N-Nitroso-di-n-propylamine	0.081 U
Quinoline	0.20 U

Notes:

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SDL Exceeds EPA Screening Level

SDL Exceeds TCEQ Screening Level

N

0 150 300

Feet

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AOC-3D
Human Health
SVOC Subsurface Soil Distribution Map

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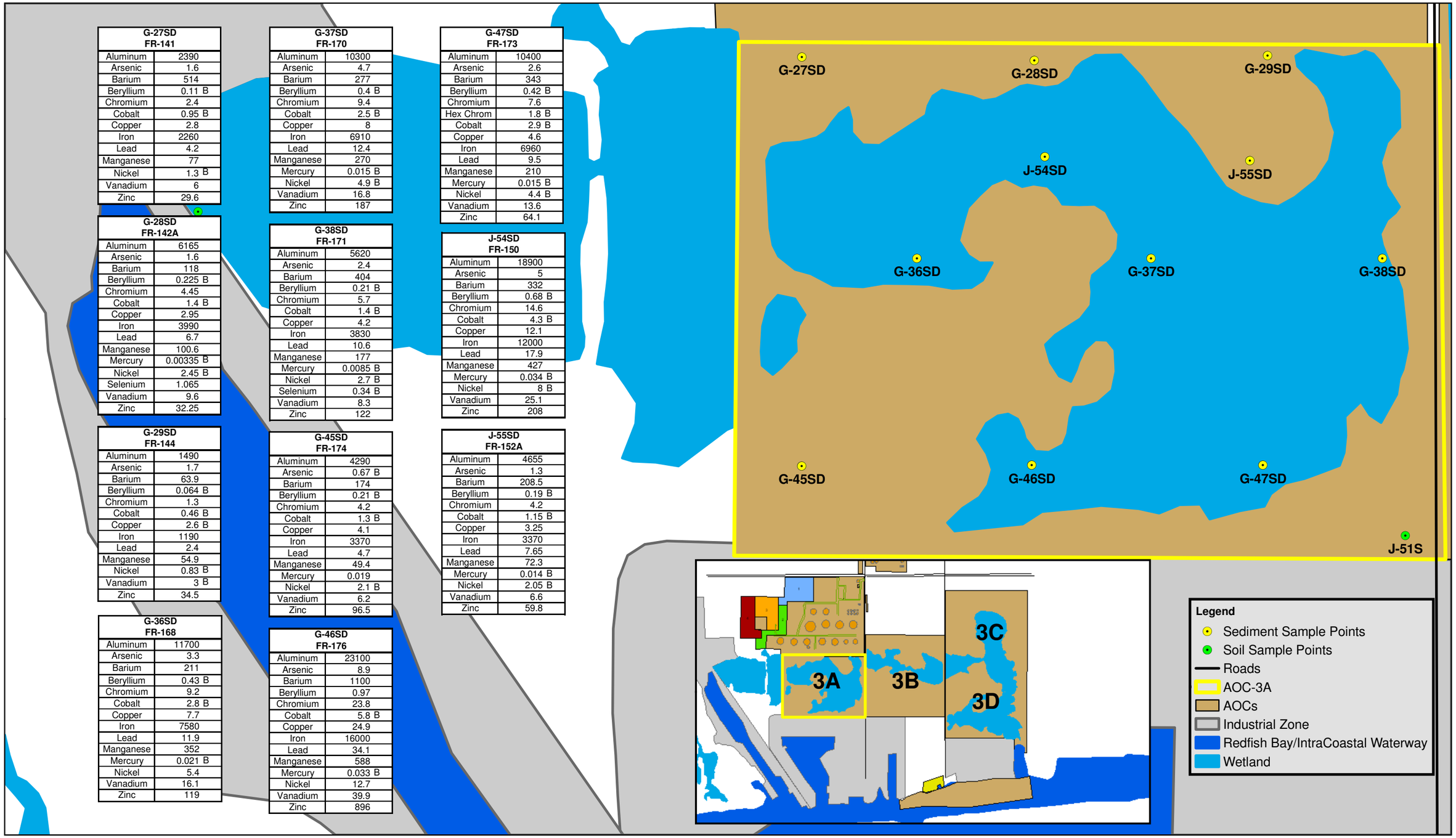
FIGURE

9G



G-27SD FR-141	
Aluminum	2390
Arsenic	1.6
Barium	514
Beryllium	0.11 B
Chromium	2.4
Cobalt	0.95 B
Copper	2.8
Iron	2260
Lead	4.2
Manganese	77
Nickel	1.3 B
Vanadium	6
Zinc	29.6

G-28SD FR-142A	
Aluminum	6165
Arsenic	1.6
Barium	118
Beryllium	0.225 B
Chromium	4.45
Cobalt	1.4 B
Copper	2.95
Iron	3990
Lead	6.7
Manganese	100.6
Mercury	0.00335 B
Nickel	2.45 B
Selenium	1.065
Vanadium	9.6
Zinc	32.25

G-29SD FR-144	
Aluminum	1490
Arsenic	1.7
Barium	63.9
Beryllium	0.064 B
Chromium	1.3
Cobalt	0.46 B
Copper	2.6 B
Iron	1190
Lead	2.4
Manganese	54.9
Nickel	0.83 B
Vanadium	3 B
Zinc	34.5

G-36SD FR-168	
Aluminum	11700
Arsenic	3.3
Barium	211
Beryllium	0.43 B
Chromium	9.2
Cobalt	2.8 B
Copper	7.7
Iron	7580
Lead	11.9
Manganese	352
Mercury	0.021 B
Nickel	5.4
Vanadium	16.1
Zinc	119

G-37SD FR-170	
Aluminum	10300
Arsenic	4.7
Barium	277
Beryllium	0.4 B
Chromium	9.4
Cobalt	2.5 B
Copper	8
Iron	6910
Lead	12.4
Manganese	270
Mercury	0.015 B
Nickel	4.9 B
Vanadium	16.8
Zinc	187

G-38SD FR-171	
Aluminum	5620
Arsenic	2.4
Barium	404
Beryllium	0.21 B
Chromium	5.7
Cobalt	1.4 B
Copper	4.2
Iron	3830
Lead	10.6
Manganese	177
Mercury	0.0085 B
Nickel	2.7 B
Selenium	0.34 B
Vanadium	8.3
Zinc	122

G-45SD FR-174	
Aluminum	4290
Arsenic	0.67 B
Barium	174
Beryllium	0.21 B
Chromium	4.2
Cobalt	1.3 B
Copper	4.1
Iron	3370
Lead	4.7
Manganese	49.4
Mercury	0.019
Nickel	2.1 B
Vanadium	6.2
Zinc	96.5

G-46SD FR-176	
Aluminum	23100
Arsenic	8.9
Barium	1100
Beryllium	0.97
Chromium	23.8
Cobalt	5.8 B
Copper	24.9
Iron	16000
Lead	34.1
Manganese	588
Mercury	0.033 B
Nickel	12.7
Vanadium	39.9
Zinc	896

G-47SD FR-173	
Aluminum	10400
Arsenic	2.6
Barium	343
Beryllium	0.42 B
Chromium	7.6
Hex Chrom	1.8 B
Cobalt	2.9 B
Copper	4.6
Iron	6960
Lead	9.5
Manganese	210
Mercury	0.015 B
Nickel	4.4 B
Vanadium	13.6
Zinc	64.1

J-54SD FR-150	
Aluminum	18900
Arsenic	5
Barium	332
Beryllium	0.68 B
Chromium	14.6
Cobalt	4.3 B
Copper	12.1
Iron	12000
Lead	17.9
Manganese	427
Mercury	0.034 B
Nickel	8 B
Vanadium	25.1
Zinc	208

J-55SD FR-152A	
Aluminum	4655
Arsenic	1.3
Barium	208.5
Beryllium	0.19 B
Chromium	4.2
Cobalt	1.15 B
Copper	3.25
Iron	3370
Lead	7.65
Manganese	72.3
Mercury	0.014 B
Nickel	2.05 B
Vanadium	6.6
Zinc	59.8

Notes:

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0 100 200
Feet

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DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-3A
Human Health
Metal Sediment Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

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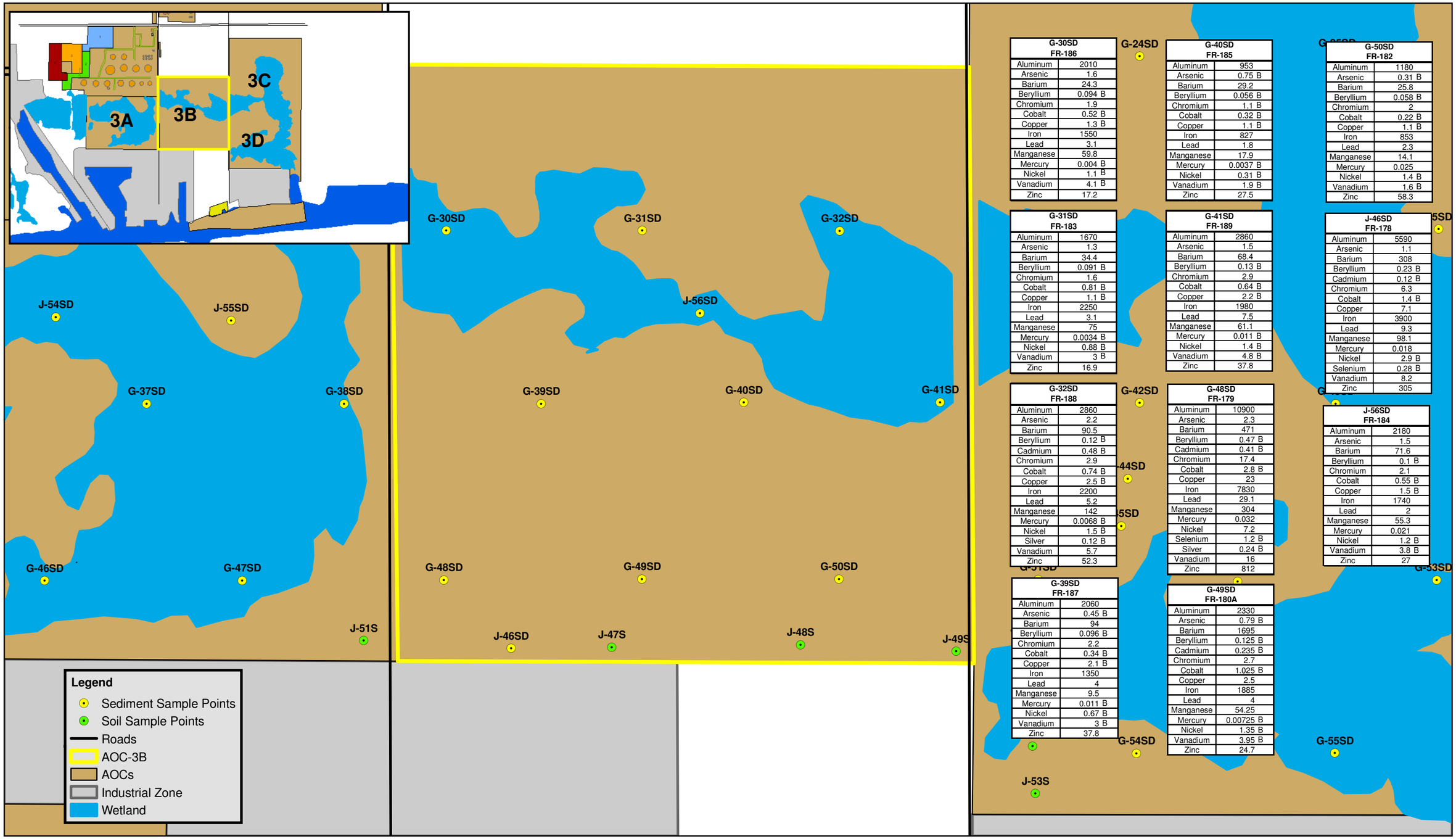
FIGURE
10A



G-30SD FR-186	
Aluminum	2010
Arsenic	1.6
Barium	24.3
Beryllium	0.094 B
Chromium	1.9
Cobalt	0.52 B
Copper	1.3 B
Iron	1550
Lead	3.1
Manganese	59.8
Mercury	0.004 B
Nickel	1.1 B
Vanadium	4.1 B
Zinc	17.2

G-40SD FR-185	
Aluminum	953
Arsenic	0.75 B
Barium	29.2
Beryllium	0.056 B
Chromium	1.1 B
Cobalt	0.32 B
Copper	1.1 B
Iron	827
Lead	1.8
Manganese	17.9
Mercury	0.0037 B
Nickel	0.31 B
Vanadium	1.9 B
Zinc	27.5

G-50SD FR-182	
Aluminum	1180
Arsenic	0.31 B
Barium	25.8
Beryllium	0.058 B
Chromium	2
Cobalt	0.22 B
Copper	1.1 B
Iron	853
Lead	2.3
Manganese	14.1
Mercury	0.025
Nickel	1.4 B
Vanadium	1.6 B
Zinc	58.3

G-31SD FR-183	
Aluminum	1670
Arsenic	1.3
Barium	34.4
Beryllium	0.091 B
Chromium	1.6
Cobalt	0.81 B
Copper	1.1 B
Iron	2250
Lead	3.1
Manganese	75
Mercury	0.0034 B
Nickel	0.88 B
Vanadium	3 B
Zinc	16.9

G-41SD FR-189	
Aluminum	2860
Arsenic	1.5
Barium	68.4
Beryllium	0.13 B
Chromium	2.9
Cobalt	0.64 B
Copper	2.2 B
Iron	1980
Lead	7.5
Manganese	61.1
Mercury	0.011 B
Nickel	1.4 B
Vanadium	4.8 B
Zinc	37.8

J-46SD FR-178	
Aluminum	5590
Arsenic	1.1
Barium	308
Beryllium	0.23 B
Cadmium	0.12 B
Chromium	6.3
Cobalt	1.4 B
Copper	7.1
Iron	3900
Lead	9.3
Manganese	98.1
Mercury	0.018
Nickel	2.9 B
Selenium	0.28 B
Vanadium	8.2
Zinc	305

G-32SD FR-188	
Aluminum	2860
Arsenic	2.2
Barium	90.5
Beryllium	0.12 B
Cadmium	0.48 B
Chromium	2.9
Cobalt	0.74 B
Copper	2.5 B
Iron	2200
Lead	5.2
Manganese	142
Mercury	0.0068 B
Nickel	1.5 B
Silver	0.12 B
Vanadium	5.7
Zinc	52.3

G-48SD FR-179	
Aluminum	10900
Arsenic	2.3
Barium	471
Beryllium	0.47 B
Cadmium	0.41 B
Chromium	17.4
Cobalt	2.8 B
Copper	23
Iron	7830
Lead	29.1
Manganese	304
Mercury	0.032
Nickel	7.2
Selenium	1.2 B
Silver	0.24 B
Vanadium	16
Zinc	812

J-56SD FR-184	
Aluminum	2180
Arsenic	1.5
Barium	71.6
Beryllium	0.1 B
Chromium	2.1
Cobalt	0.55 B
Copper	1.5 B
Iron	1740
Lead	2
Manganese	55.3
Mercury	0.021
Nickel	1.2 B
Vanadium	3.8 B
Zinc	27

G-39SD FR-187	
Aluminum	2060
Arsenic	0.45 B
Barium	94
Beryllium	0.096 B
Chromium	2.2
Cobalt	0.34 B
Copper	2.1 B
Iron	1350
Lead	4
Manganese	9.5
Mercury	0.011 B
Nickel	0.67 B
Vanadium	3 B
Zinc	37.8

G-49SD FR-180A	
Aluminum	2330
Arsenic	0.79 B
Barium	1695
Beryllium	0.125 B
Cadmium	0.235 B
Chromium	2.7
Cobalt	1.025 B
Copper	2.5
Iron	1885
Lead	4
Manganese	54.25
Mercury	0.00725 B
Nickel	1.35 B
Vanadium	3.95 B
Zinc	24.7

Notes:

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N

0 180 360
Feet

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CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-3B
Human Health
Metal Sediment Distribution Map

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INGLESIDE, SAN PATRICIO COUNTY, TEXAS

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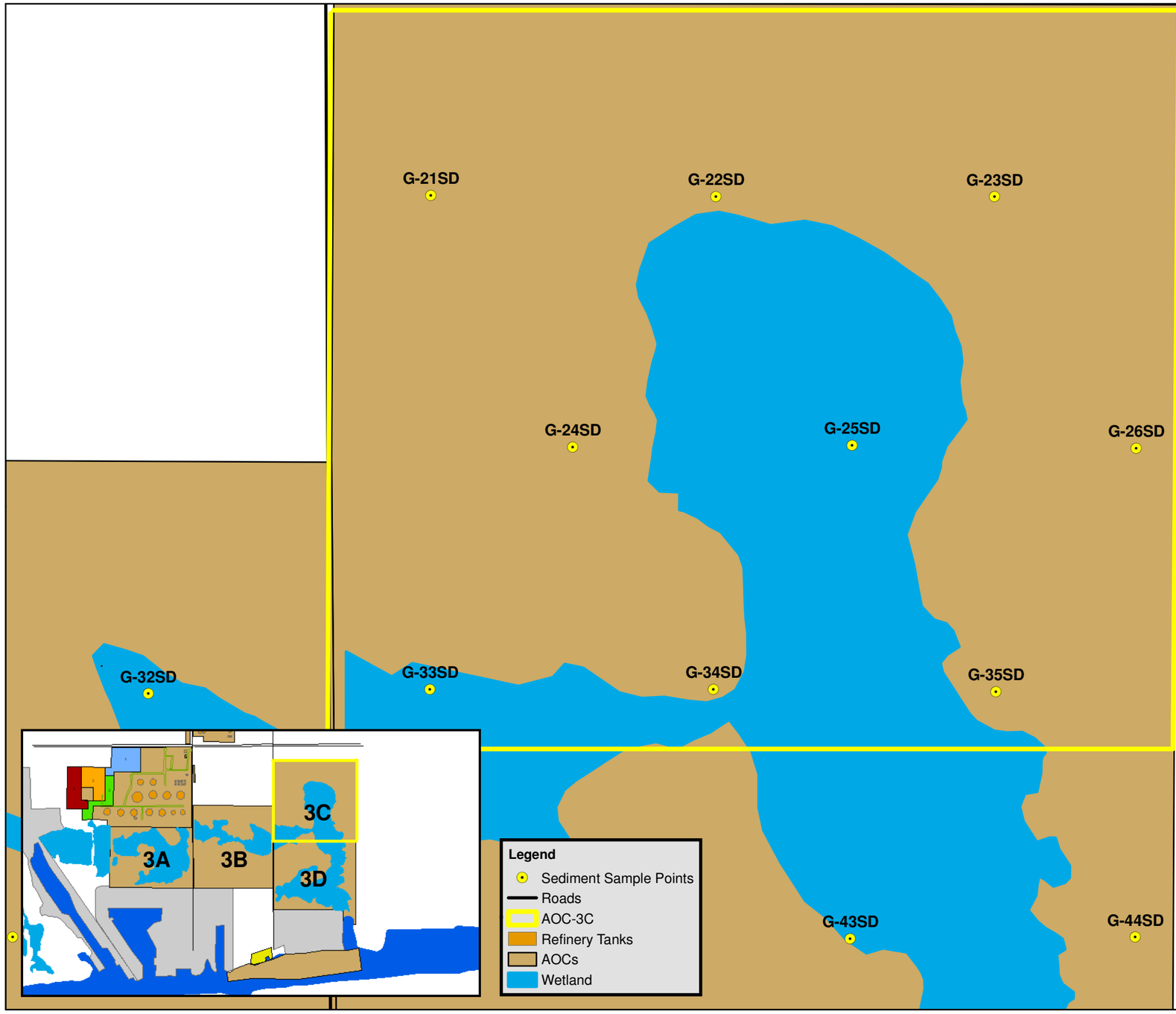
FIGURE
10B



G-21SD FR-210	
Aluminum	971
Arsenic	0.33 B
Barium	22.8
Beryllium	0.051 B
Chromium	1.2
Cobalt	0.2 B
Copper	1.1 B
Iron	676
Lead	9.1
Manganese	21.7
Mercury	0.0081 B
Nickel	0.72 B
Silver	0.093 B
Vanadium	1.2 B
Zinc	134

G-22SD FR-209	
Aluminum	34700
Arsenic	17.3
Barium	95.2 B
Beryllium	1.3 B
Cadmium	0.67 B
Chromium	29.9
Cobalt	10.4 B
Copper	57.1
Iron	23200
Lead	30.5
Manganese	171
Mercury	0.11
Nickel	23.5
Selenium	2.2 B
Silver	1.3 B
Vanadium	58.9
Zinc	611

G-23SD FR-208	
Aluminum	35900
Arsenic	6.3
Barium	310
Beryllium	1.4
Cadmium	0.32 B
Chromium	28.9
Cobalt	9
Copper	21.2
Iron	23700
Lead	18.1
Manganese	398
Mercury	0.046
Nickel	18.1
Selenium	1 B
Silver	1.1 B
Vanadium	48.2
Zinc	207

G-24SD FR-204	
Aluminum	2600
Arsenic	1.4
Barium	47.4
Beryllium	0.14 B
Chromium	2.4
Cobalt	1.1 B
Copper	3.3
Iron	2120
Lead	4.9
Manganese	79.6
Mercury	0.0021 B
Nickel	1.8 B
Vanadium	4.8 B
Zinc	53.4

G-25SD FR-205	
Aluminum	5490
Arsenic	2.4
Barium	45.1
Beryllium	0.22 B
Chromium	4.7
Cobalt	1.6 B
Copper	5.3
Iron	3870
Lead	6.2
Manganese	162
Mercury	0.0097 B
Nickel	3.1 B
Silver	0.27 B
Vanadium	8.5
Zinc	68.2

G-26SD FR-206A	
Aluminum	6525
Arsenic	2.13 B
Barium	133.15
Beryllium	0.2565 B
Cadmium	0.21 B
Chromium	7.55
Cobalt	1.72 B
Copper	15.85 B
Iron	5635
Lead	6.55
Manganese	240.85
Mercury	0.0072 B
Nickel	8.735 B
Selenium	0.445 B
Silver	0.175 B
Vanadium	10.25
Zinc	257.6

G-33SD FR-190	
Aluminum	3810
Arsenic	2.8
Barium	72.4
Beryllium	0.15 B
Chromium	3.5
Cobalt	0.93 B
Copper	4.4
Iron	2780
Lead	14
Manganese	95.9
Mercury	0.0071 B
Nickel	2.1 B
Vanadium	6.4
Zinc	91.2

G-34SD FR-191	
Aluminum	4560
Arsenic	0.86 B
Barium	7.8 B
Beryllium	0.19 B
Chromium	3.3
Cobalt	0.91 B
Copper	1.1 B
Iron	2880
Lead	2.5
Manganese	32.2
Mercury	0.0029 B
Nickel	1.3 B
Vanadium	5.1 B
Zinc	11.2

G-35SD FR-192	
Aluminum	2220
Arsenic	1.4
Barium	10.4 B
Beryllium	0.1 B
Chromium	2
Cobalt	0.57 B
Copper	1.9 B
Iron	1490
Lead	3.9
Manganese	91.5
Mercury	0.0051 B
Nickel	1.1 B
Silver	0.11 B
Vanadium	3.6 B
Zinc	40

Notes:

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N

0 100 200
Feet

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CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-3C
Human Health
Metal Sediment Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

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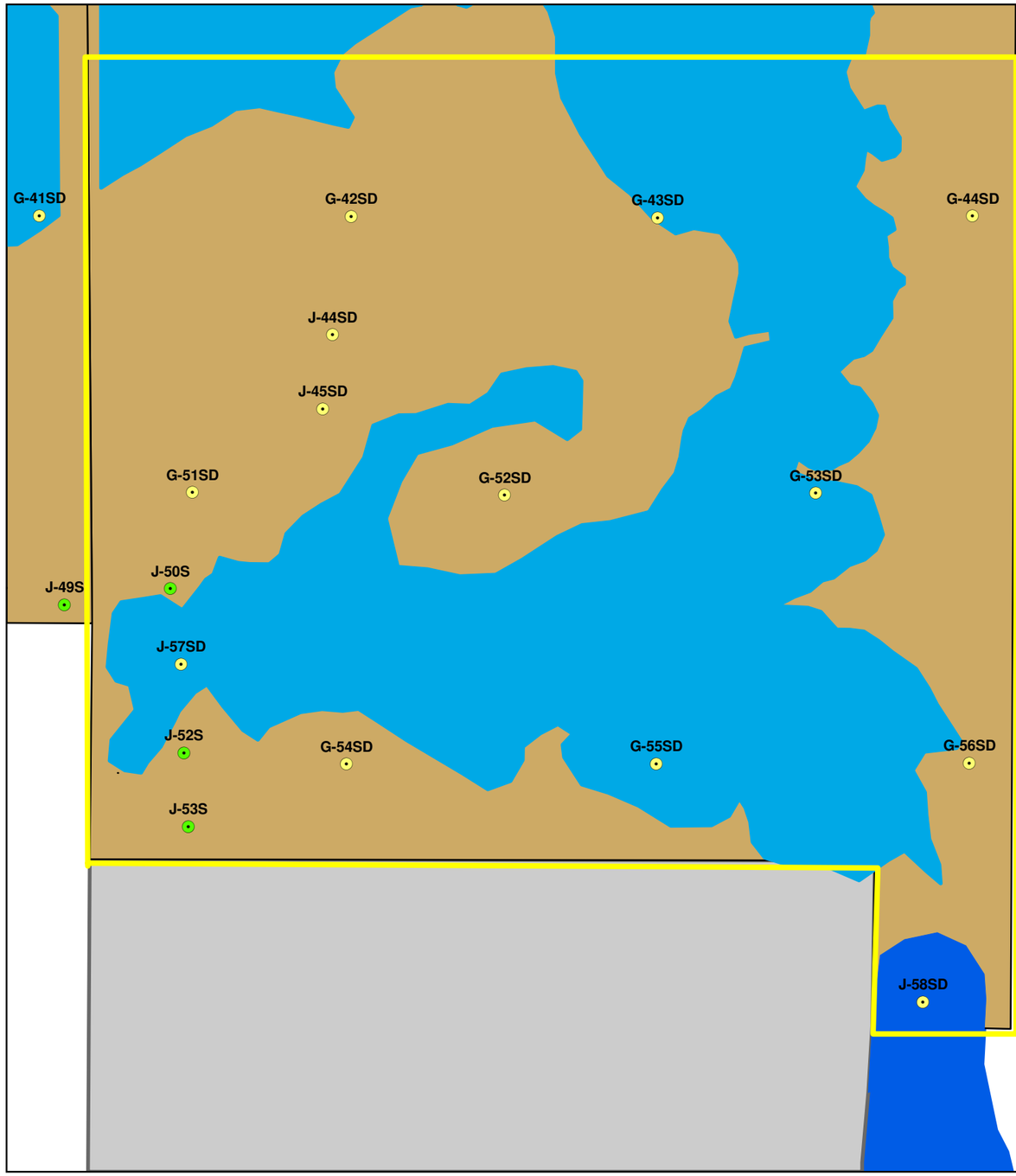
FIGURE
10C



G-42SD FR-198	
Aluminum	1080
Arsenic	0.43 B
Barium	23.1
Beryllium	0.055 B
Chromium	1.2
Cobalt	0.27 B
Copper	1.5 B
Iron	842
Lead	3.1
Manganese	16.4
Mercury	0.0019 B
Nickel	0.47 B
Vanadium	1.5 B
Zinc	26.7

G-43SD FR-199	
Aluminum	13400
Arsenic	6.3
Barium	176
Beryllium	0.52 B
Cadmium	0.25 B
Chromium	13.6
Cobalt	3.1 B
Copper	19.3
Iron	9650
Lead	14.1
Manganese	483
Mercury	0.022 B
Nickel	9.4
Selenium	0.47 B
Silver	0.32 B
Vanadium	19.8
Zinc	463

G-44SD FR-200	
Aluminum	1790
Arsenic	1.7
Barium	48.4
Beryllium	0.1 B
Chromium	2.4
Cobalt	0.67 B
Copper	2.5 B
Iron	1810
Lead	2.1
Manganese	47.7
Nickel	1.7 B
Vanadium	3.6 B
Zinc	88.2

G-51SD FR-193A	
Aluminum	2060
Arsenic	0.625 B
Barium	88.95
Beryllium	0.0965 B
Chromium	2.35
Cobalt	0.42 B
Copper	3.3
Iron	1480
Lead	4.9
Manganese	34.65
Mercury	0.015 B
Nickel	1.3 B
Vanadium	2.65 B
Zinc	92.5

G-52SD FR-195	
Aluminum	1900
Arsenic	0.75 B
Barium	47.8
Beryllium	0.098 B
Chromium	2.3
Cobalt	0.56 B
Copper	1.9 B
Iron	1580
Lead	3.1
Manganese	61.6
Mercury	0.0051 B
Nickel	1.1 B
Vanadium	3.5 B
Zinc	95.9

G-53SD FR-196	
Aluminum	5000
Arsenic	1.5
Barium	66.2
Beryllium	0.21 B
Chromium	4.5
Cobalt	1.4 B
Copper	3.6
Iron	3440
Lead	5.4
Manganese	168
Mercury	0.018 B
Nickel	2.7 B
Vanadium	6.7
Zinc	104

G-54SD FR-213	
Aluminum	2870
Arsenic	2.8
Barium	67.1
Beryllium	0.15 B
Chromium	3.3
Cobalt	0.62 B
Copper	2.9
Iron	2460
Lead	4.7
Manganese	72.7
Mercury	0.029
Nickel	2.4 B
Vanadium	6.1
Zinc	128

G-55SD FR-215	
Aluminum	12300
Arsenic	4.8
Barium	62.5
Beryllium	0.49 B
Cadmium	0.2 B
Chromium	11.8
Hex Chrom	7.3
Cobalt	3.2 B
Copper	20.7
Iron	8200
Lead	13.5
Manganese	97.3
Mercury	0.027 B
Nickel	8.6
Silver	0.15 B
Vanadium	18.8
Zinc	569

G-56SD FR-216	
Aluminum	2750
Arsenic	1.4
Barium	78.5
Beryllium	0.14 B
Chromium	3.3
Cobalt	0.79 B
Copper	2.8
Iron	2270
Lead	8.1
Manganese	60
Mercury	0.0034 B
Nickel	2.1 B
Selenium	0.34 B
Vanadium	5.4
Zinc	86.4

J-44SD FR-201A	
Aluminum	1205
Arsenic	0.455 B
Barium	36.8
Beryllium	0.0061 B
Chromium	1.35
Cobalt	0.235
Copper	1.8 B
Iron	857
Lead	3.55
Manganese	20.15
Mercury	0.015 B
Nickel	0.515 B
Vanadium	1.65 B
Zinc	42.45

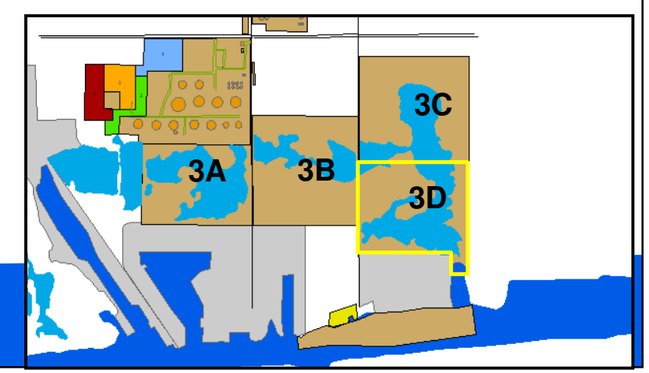
J-45SD FR-203	
Aluminum	1960
Arsenic	0.74 B
Barium	80.9
Beryllium	0.092 B
Chromium	2.4
Cobalt	0.56 B
Copper	2.1 B
Iron	1540
Lead	4.7
Manganese	58.9
Mercury	0.0061 B
Nickel	1.4 B
Silver	0.089 B
Vanadium	2.5 B
Zinc	91.4

J-57SD FR-212	
Aluminum	14500
Arsenic	6.5
Barium	134
Beryllium	0.58 B
Cadmium	0.33 B
Chromium	14.9
Hex Chrom	1.4 B
Cobalt	4.1 B
Copper	32.2
Iron	11000
Lead	17.9
Manganese	504
Mercury	0.031
Nickel	11.4
Selenium	0.39 B
Silver	0.24 B
Vanadium	20.7
Zinc	802

J-58SD FR-218	
Aluminum	2240
Arsenic	0.86 B
Barium	22.8 B
Beryllium	0.11 B
Chromium	2.5
Cobalt	0.67 B
Copper	3.5
Iron	2190
Lead	2.5
Manganese	65.1
Mercury	0.0047 B
Nickel	1.6 B
Selenium	0.31 B
Vanadium	3.8 B
Zinc	96

Legend

- Sediment Sample Points
- Soil Sample Points
- AOC-3D
- AOCs
- Industrial Zone
- Redfish Bay/IntraCoastal Waterway
- Wetland



Notes:

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N

0 100 200
Feet

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APPROVED BY:	

AOC-3D
Human Health
Metal Sediment Distribution Map

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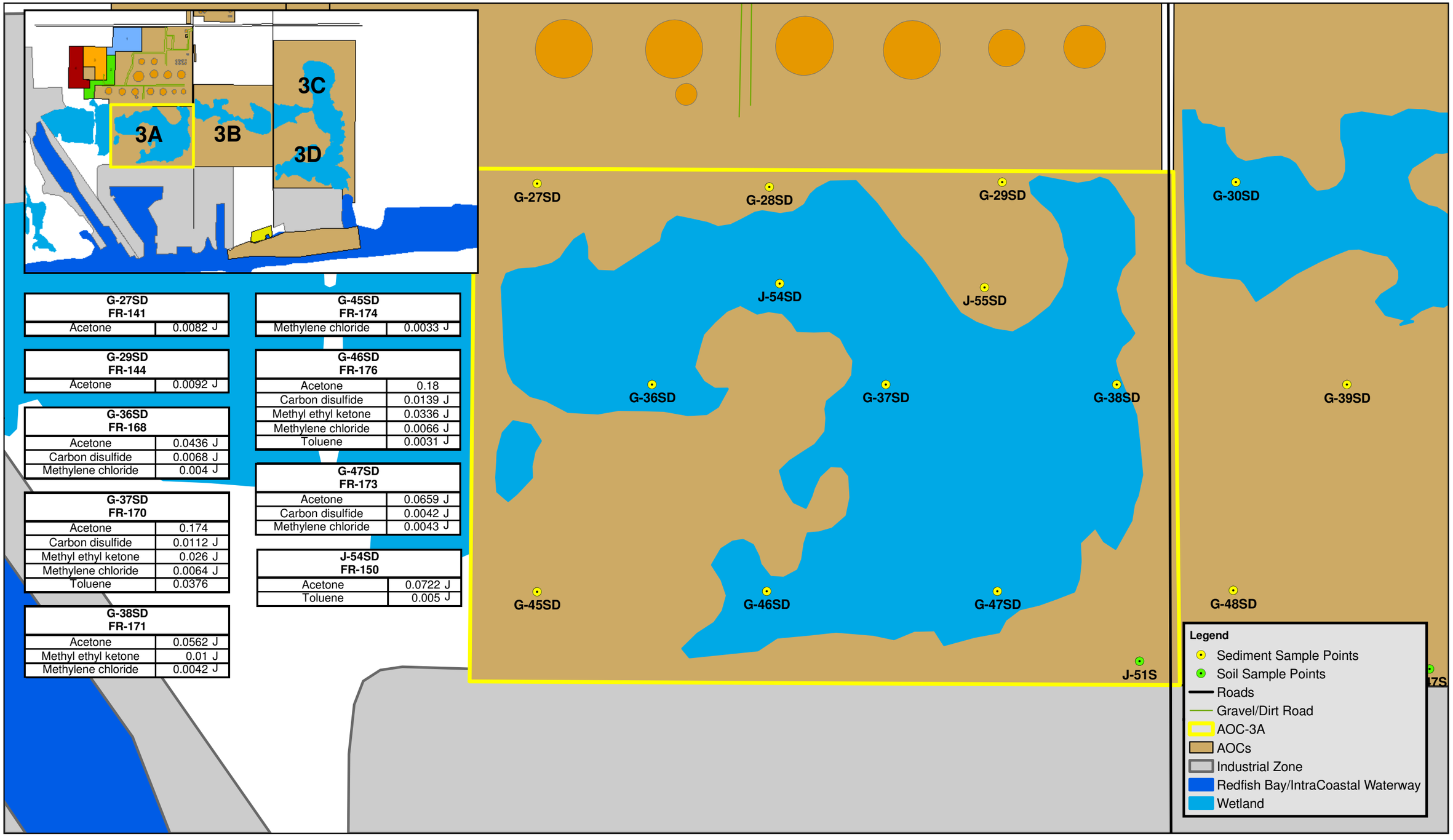
FIGURE
10D



G-27SD FR-141	
Acetone	0.0082 J

G-29SD FR-144	
Acetone	0.0092 J

G-36SD FR-168	
Acetone	0.0436 J
Carbon disulfide	0.0068 J
Methylene chloride	0.004 J

G-37SD FR-170	
Acetone	0.174
Carbon disulfide	0.0112 J
Methyl ethyl ketone	0.026 J
Methylene chloride	0.0064 J
Toluene	0.0376

G-38SD FR-171	
Acetone	0.0562 J
Methyl ethyl ketone	0.01 J
Methylene chloride	0.0042 J

G-45SD FR-174	
Methylene chloride	0.0033 J

G-46SD FR-176	
Acetone	0.18
Carbon disulfide	0.0139 J
Methyl ethyl ketone	0.0336 J
Methylene chloride	0.0066 J
Toluene	0.0031 J

G-47SD FR-173	
Acetone	0.0659 J
Carbon disulfide	0.0042 J
Methylene chloride	0.0043 J

J-54SD FR-150	
Acetone	0.0722 J
Toluene	0.005 J

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N

0 150 300
Feet

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AOC-3A
Human Health
VOC Sediment Distribution Map

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FIGURE
10E

G-30SD FR-186	
Methylene chloride (b)	0.0052 JB

G-31SD FR-183	
Hexane	0.0019 J
Methylene chloride (b)	0.0043 JB

G-32SD FR-188	
Acetone	0.0265 J
Hexane	0.0023 J
Methylene chloride (b)	0.0071 JB

G-33SD

G-39SD FR-187	
Hexane	0.0022 J
Methylene chloride	0.0054 JB

G-40SD FR-185	
Methylene chloride (b)	0.0055 JB

G-41SD FR-189	
Acetone	0.107
Carbon disulfide	0.0041 J
Hexane	0.0026 J
Methyl ethyl ketone	0.0165 J
Methylene chloride (b)	0.008 JB

G-48SD FR-179	
Acetone	0.123
Hexane	0.0033 J
Methyl ethyl ketone	0.0182 J
Methylene chloride (b)	0.007 JB

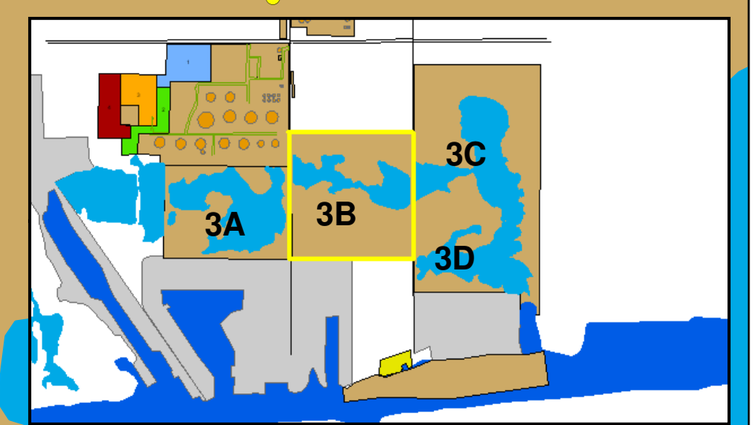
G-49SD FR-180A	
1,2,4-Trimethylbenzene	0.0015 J
Hexane	0.0013
Methylene chloride (b)	0.0037 JB
Toluene	0.00145 J

G-50SD FR-182	
Acetone	0.0173 J
Methylene chloride	0.0046 JB

J-46SD FR-178	
Acetone	0.0189 J
Hexane	0.0023 J
Methylene chloride (b)	0.0048 JB

J-56SD FR-184	
Acetone	0.0196 J
Hexane	0.0022 J
Methylene chloride (b)	0.0057 JB

J-44SD



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N

0 100 200

Feet

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AOC-3B
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FIGURE

10F

G-21SD FR-210	
Acetone	0.048 J
Methylene chloride (b)	0.0038 JB

G-22SD FR-209	
Acetone	0.668
Carbon disulfide	0.0241 J
Hexane	0.0086 J
Methyl ethyl ketone	0.135 J
Methylene chloride (b)	0.0199 JB

G-23SD FR-208	
Methylene chloride (b)	0.0079 JB

G-24SD FR-204	
Methylene chloride	0.0058 J

G-25SD FR-205	
Acetone	0.0135 J
Methylene chloride	0.0037 J

G-26SD FR-206A	
Methylene chloride	0.0057 J

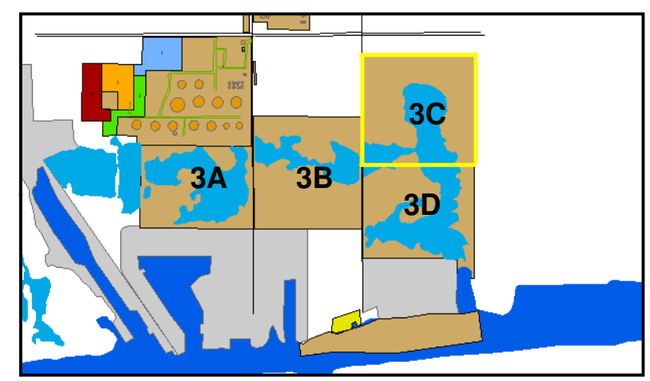
G-33SD FR-190	
Acetone	0.151
Carbon disulfide	0.0029 J
Hexane	0.0026 J
Methyl ethyl ketone	0.029 J
Methylene chloride (b)	0.0063 JB

G-34SD FR-191	
Methylene chloride (b)	0.0059 JB

G-35SD FR-192	
Methylene chloride (b)	0.0064 JB

Legend

- Sediment Sample Points
- Roads
- AOC-3C
- Refinery Tanks
- AOCs
- Wetland



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N

0 150 300

Feet

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AOC-3C
Human Health
VOC Sediment Distribution Map

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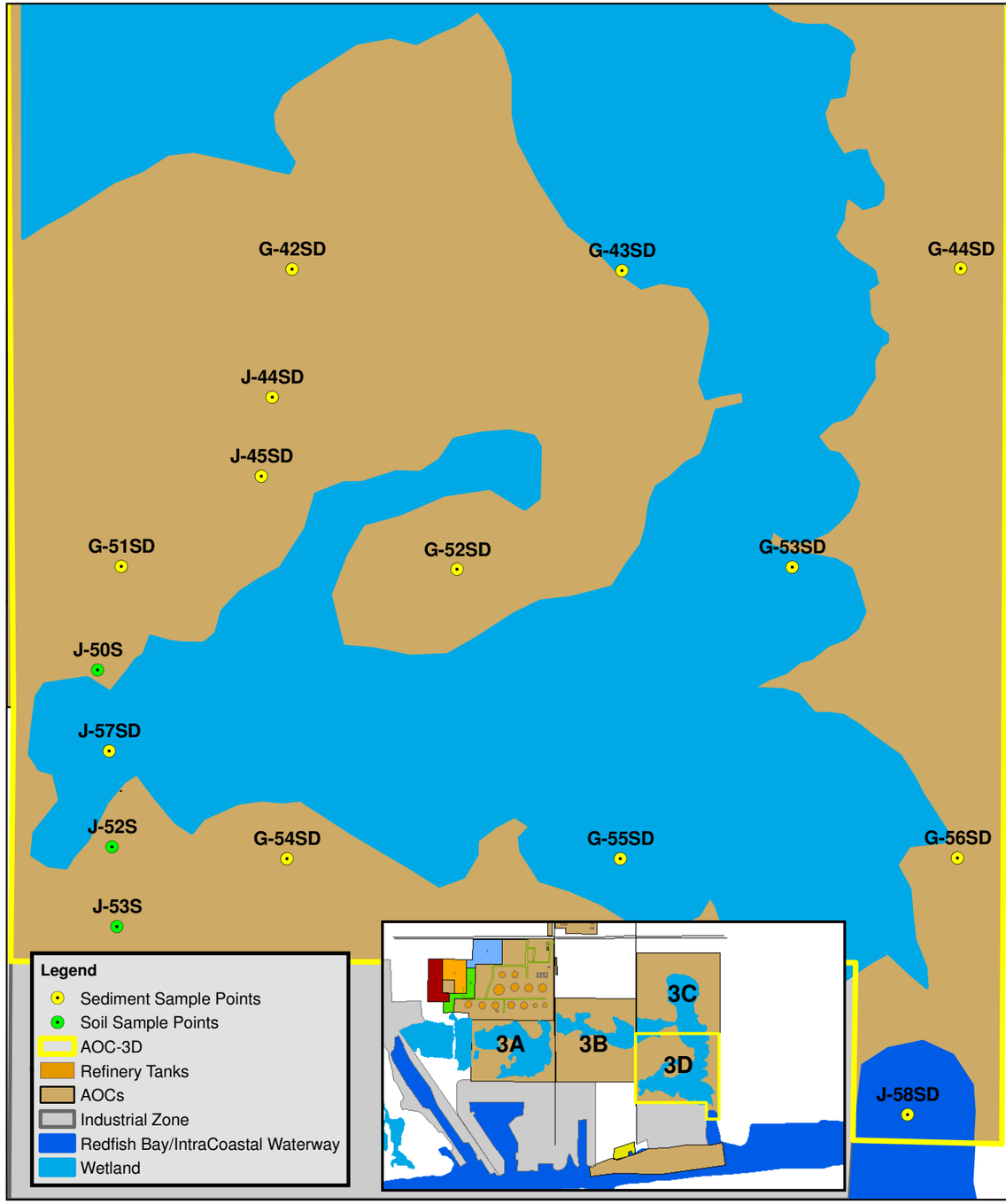
FIGURE

10G



G-42SD FR-198	
1,2,4-Trimethylbenzene	0.0014 J
Acetone	0.0336 J

G-43SD FR-199	
Acetone	0.0698 J
Hexane	0.0063 J
Methyl ethyl ketone	0.0154 J
Methylene chloride	0.0043 J

G-44SD FR-200	
1,2,4-Trimethylbenzene	0.0045 J
Ethylbenzene	0.0015 J
Methylene chloride	0.0048 J
Toluene	0.0027 J
Xylene (total)	0.0061 J

G-51SD FR-193A	
1,2,4-Trimethylbenzene	0.0049
Acetone	0.0492
Benzene	0.0016 J
Ethylbenzene	0.00305 J
Isopropylbenzene	0.0015 J
Methylene chloride	0.0057 J
n-Propylbenzene	0.0024 J
Toluene	0.00415
Xylene (total)	0.0099 J

G-52SD FR-196	
Methylene chloride	0.005 JB

G-53SD FR-196	
Acetone	0.0111 J
Methylene chloride (b)	0.0058 JB

G-54SD FR-213	
1,2,4-Trimethylbenzene	0.0018 J
Methylene chloride	0.0055 J
Toluene	0.0022 J

G-55SD FR-215	
Acetone	0.128
Carbon disulfide	0.009 J
Methyl ethyl ketone	0.0255 J
Methylene chloride (b)	0.0069 JB

G-56SD FR-216	
Methylene chloride (b)	0.0042 JB

J-44SD FR-201A	
Acetone	0.088
Methylene chloride	0.00295

J-45SD FR-203	
Acetone	0.0112 J
Methylene chloride	0.0047 J

J-57SD FR-212	
Acetone	0.15
Carbon disulfide	0.0048 J
Methyl ethyl ketone	0.0264 J
Methylene chloride (b)	0.0057 JB

J-58SD FR-218	
Acetone	0.0499 J
Carbon disulfide	0.0032 J
Methyl ethyl ketone (b)	0.0119 JB
Methylene chloride	0.0036 J

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N

0 150 300

Feet

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AOC-3D
Human Health
VOC Sediment Distribution Map

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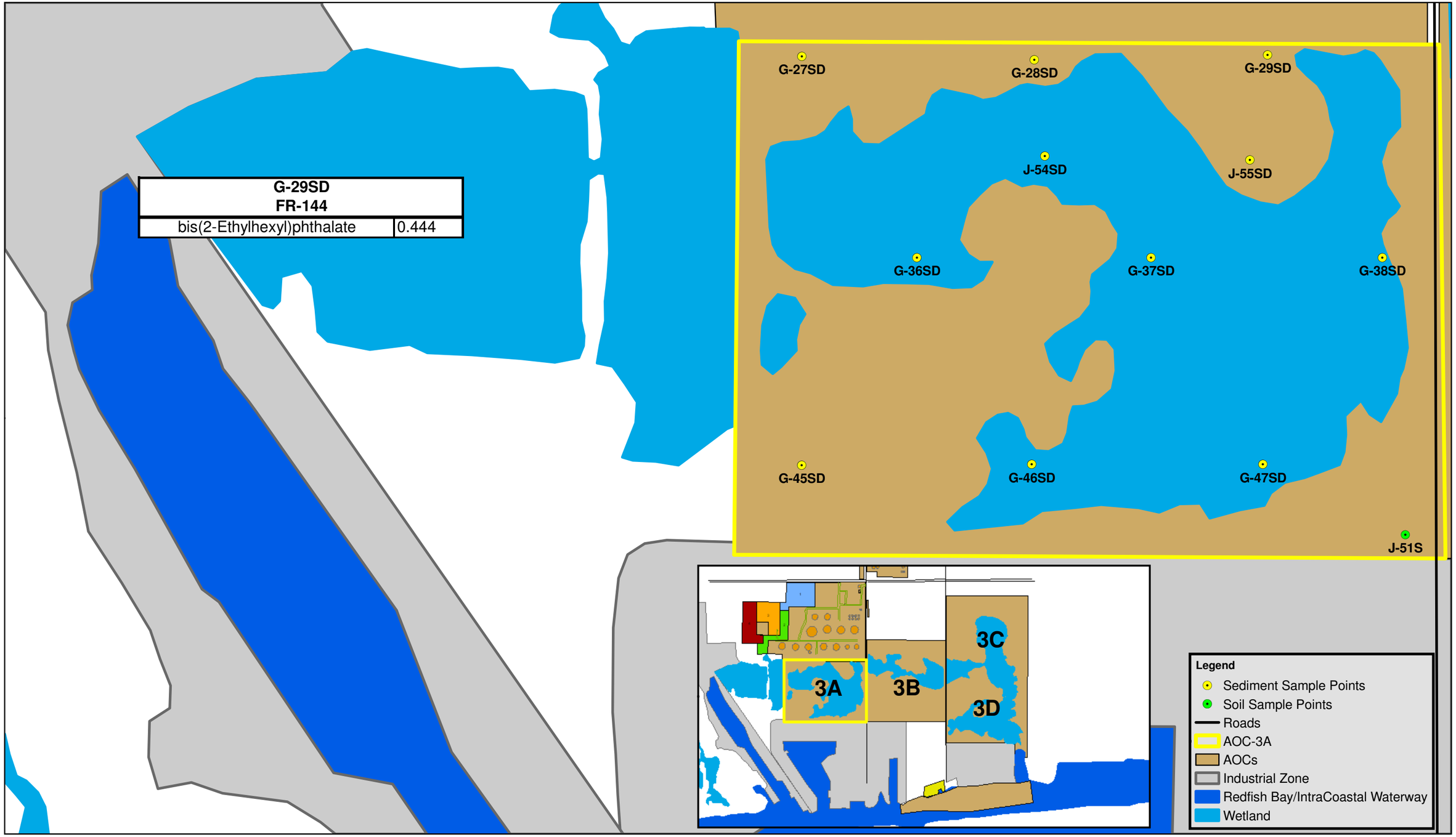
FIGURE

10H



Notes:

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N

0 150 300

Feet

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AOC-3A
Human Health
SVOC Sediment Distribution Map

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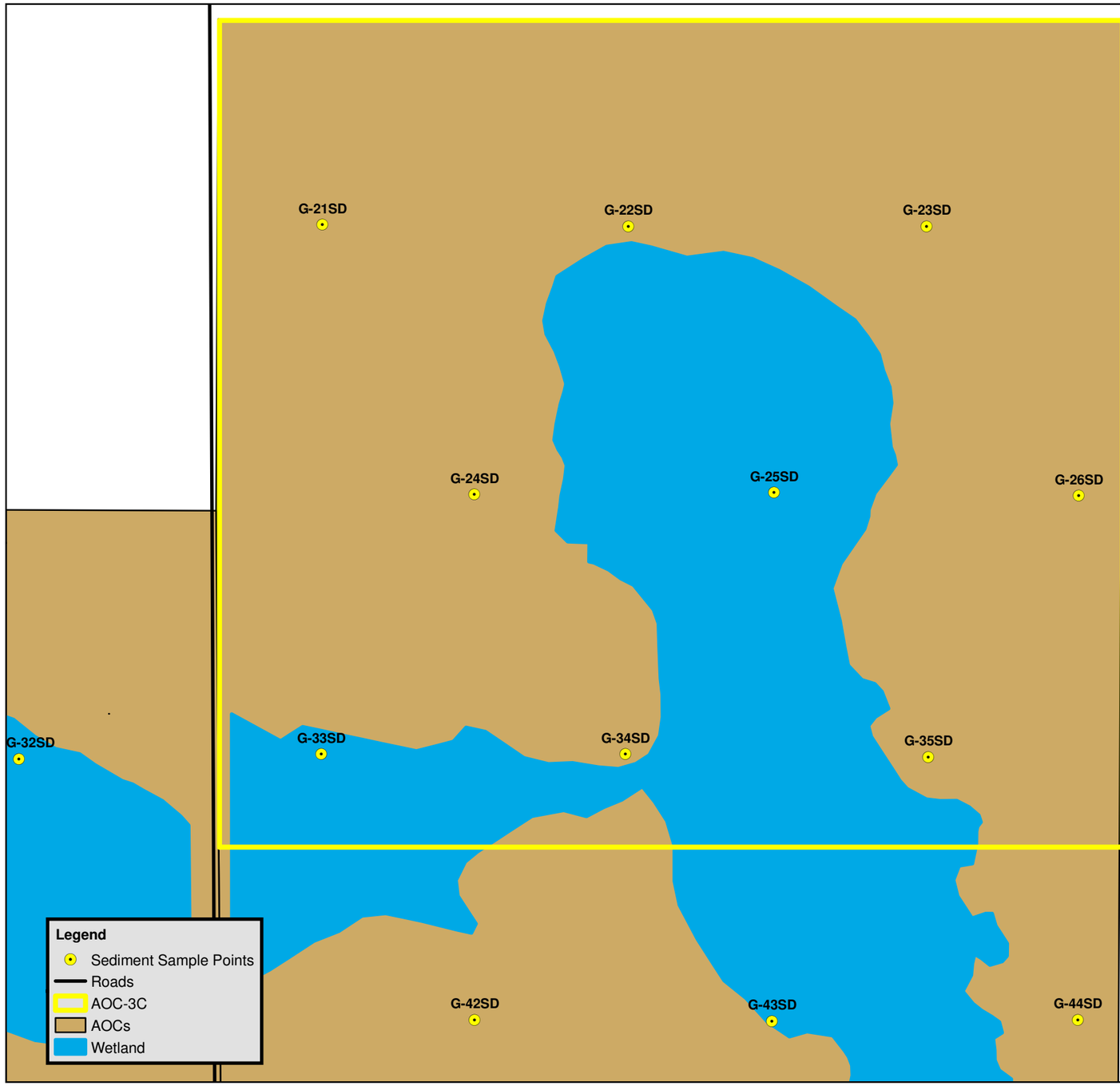
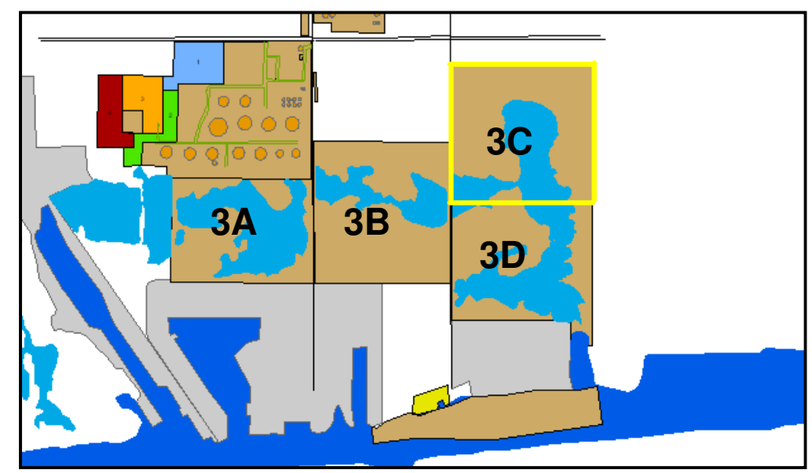
FIGURE

10I



G-21SD FR-210	
bis(2-Ethylhexyl)phthalate	0.153 J



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N

0 100 200
Feet

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AOC-3C
Human Health
SVOC Sediment Distribution Map

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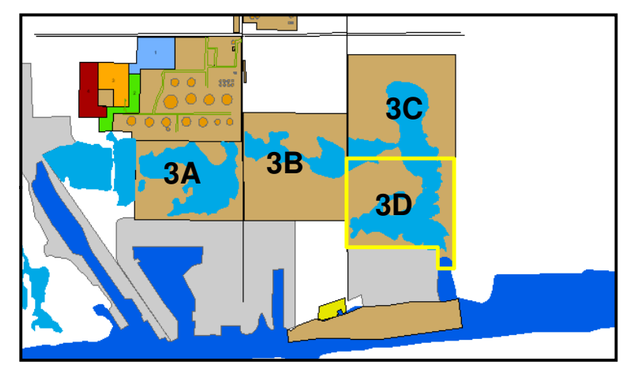
FIGURE
10J

G-51SD FR-193A	
bis(2-Ethylhexyl)phthalate	0.136

Legend

- Sediment Sample Points
- Soil Sample Points
- AOC-3D
- AOCs
- Industrial Zone
- Redfish Bay/IntraCoastal Waterway
- Wetland



Notes:

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0 100 200
Feet

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AOC-3D
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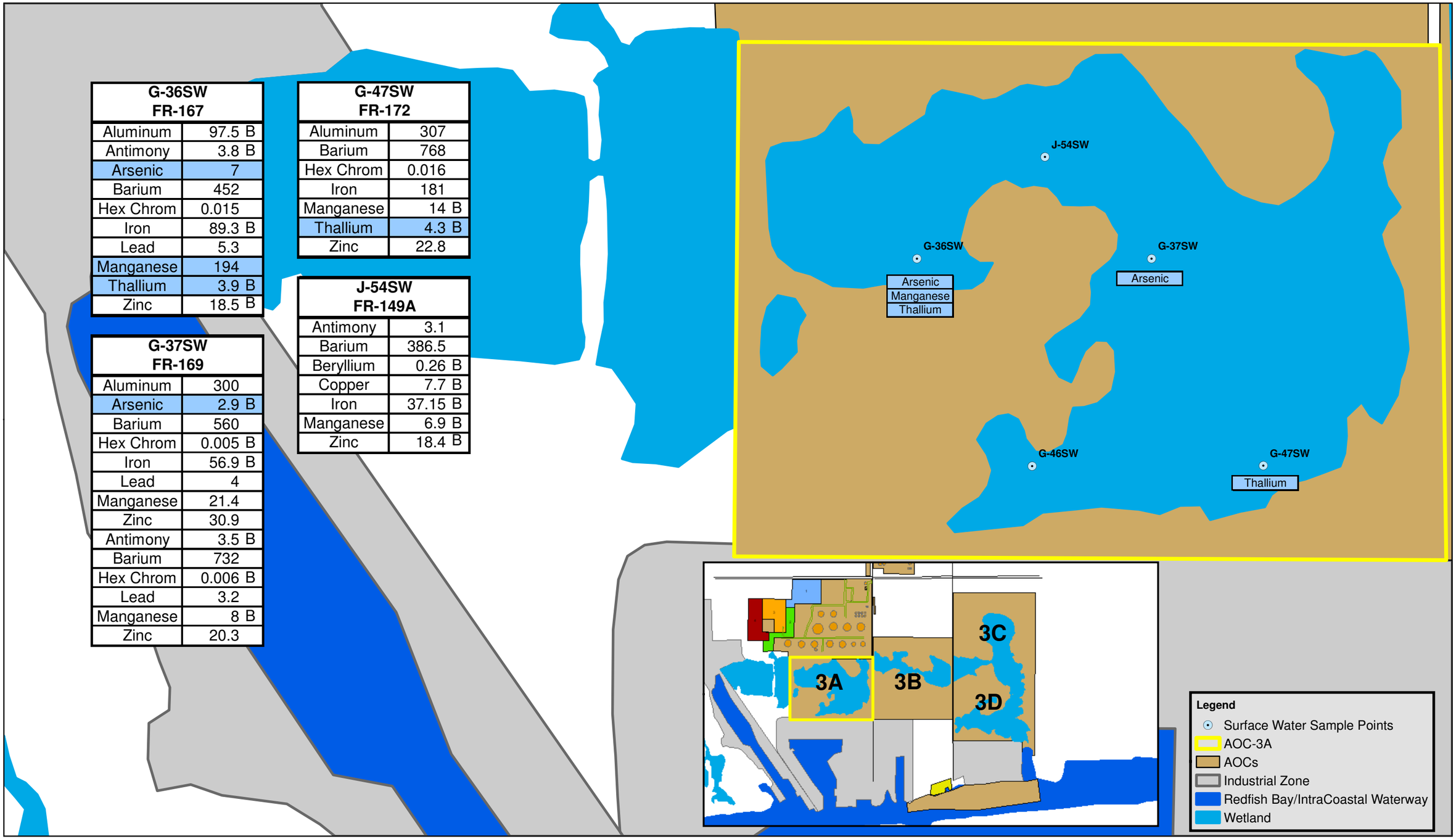
FIGURE
10K



G-36SW FR-167	
Aluminum	97.5 B
Antimony	3.8 B
Arsenic	7
Barium	452
Hex Chrom	0.015
Iron	89.3 B
Lead	5.3
Manganese	194
Thallium	3.9 B
Zinc	18.5 B

G-47SW FR-172	
Aluminum	307
Barium	768
Hex Chrom	0.016
Iron	181
Manganese	14 B
Thallium	4.3 B
Zinc	22.8

J-54SW FR-149A	
Antimony	3.1
Barium	386.5
Beryllium	0.26 B
Copper	7.7 B
Iron	37.15 B
Manganese	6.9 B
Zinc	18.4 B

G-37SW FR-169	
Aluminum	300
Arsenic	2.9 B
Barium	560
Hex Chrom	0.005 B
Iron	56.9 B
Lead	4
Manganese	21.4
Zinc	30.9
Antimony	3.5 B
Barium	732
Hex Chrom	0.006 B
Lead	3.2
Manganese	8 B
Zinc	20.3

Notes:

1. Results are posted in µg/l
   Hex Chrom posted in mg/l
2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds ^{SW}RBELs

0 100 200
Feet

DATE DRAWN: 7/8/08	DATE REVISED:
DRAFTED BY:	C. SEATON
CHECKED BY:	S. HALASZ
APPROVED BY:	

AOC-3A
Human Health
Metal Surface Water Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 FILE NAME: Falcon Refinery Base Map

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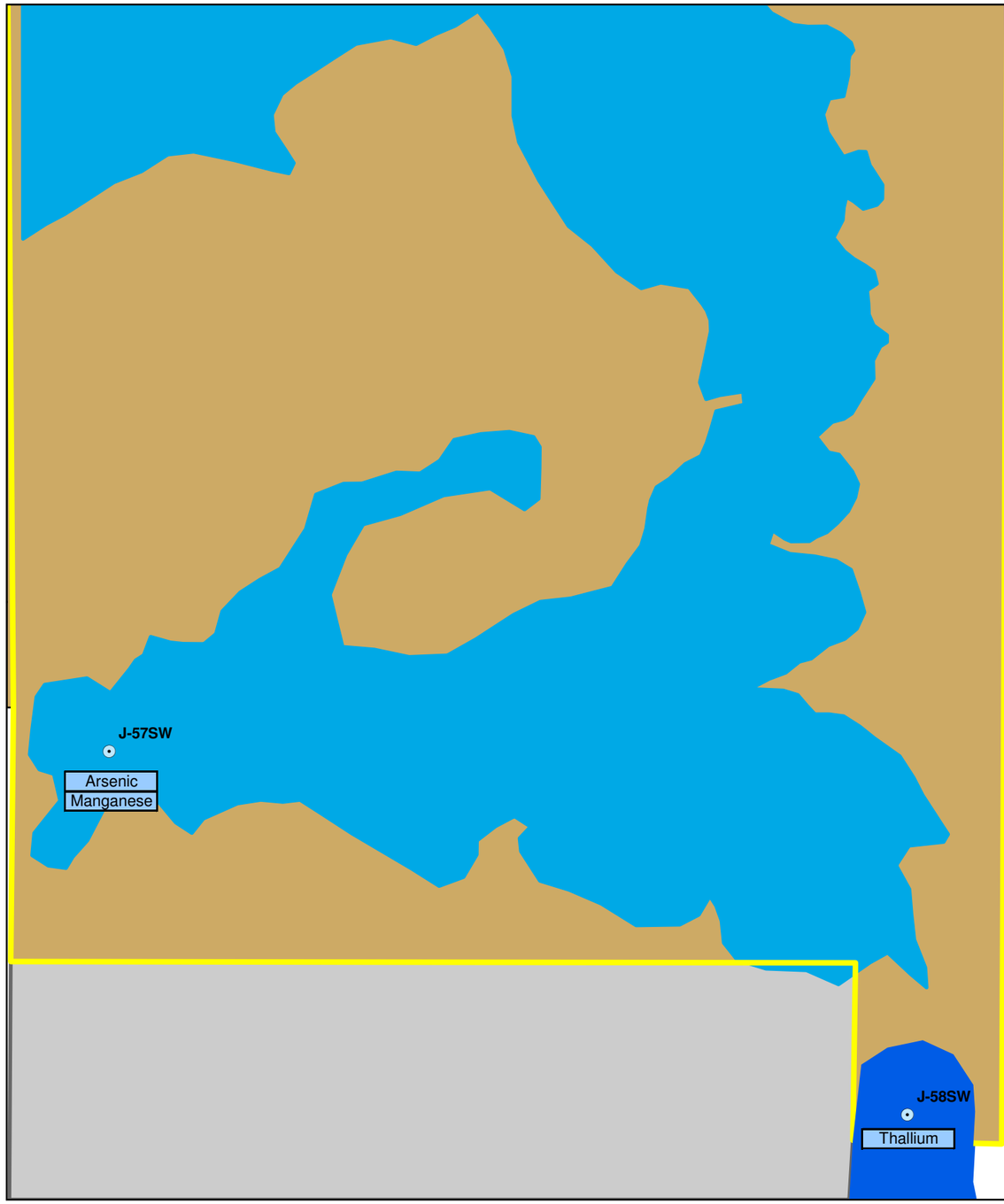
FIGURE
10A

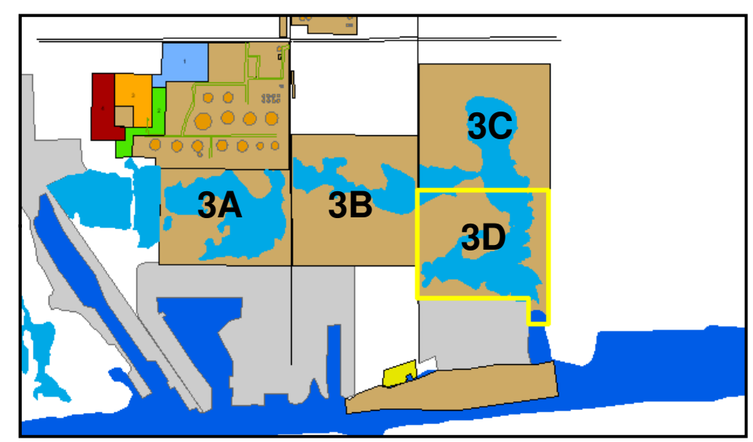


J-57SW FR-211	
Aluminum	699
Antimony	4.1 B
Arsenic	10.6
Barium	393
Iron	576
Lead	4.8
Manganese	151
Nickel	3.7 B
Vanadium	5.1 B
Zinc	75.8

J-58SW FR-217	
Aluminum	128 B
Antimony	4.2 B
Barium	49.1 B
Iron	104
Lead	10.2
Manganese	14.5 B
Thallium	9.2 B
Vanadium	1.6 B
Zinc	21.7

Legend

- Surface Water Sample Points
- AOC-3D
- AOCs
- Industrial Zone
- Redfish Bay/IntraCoastal Waterway
- Wetland



Notes:

1. Results are posted in µg/l
2. Qualifiers:

B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds ^{SW}RBELs

0 100 200
Feet

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APPROVED BY:	

AOC-3D
Human Health
Metal Surface Water Soil Distribution Map

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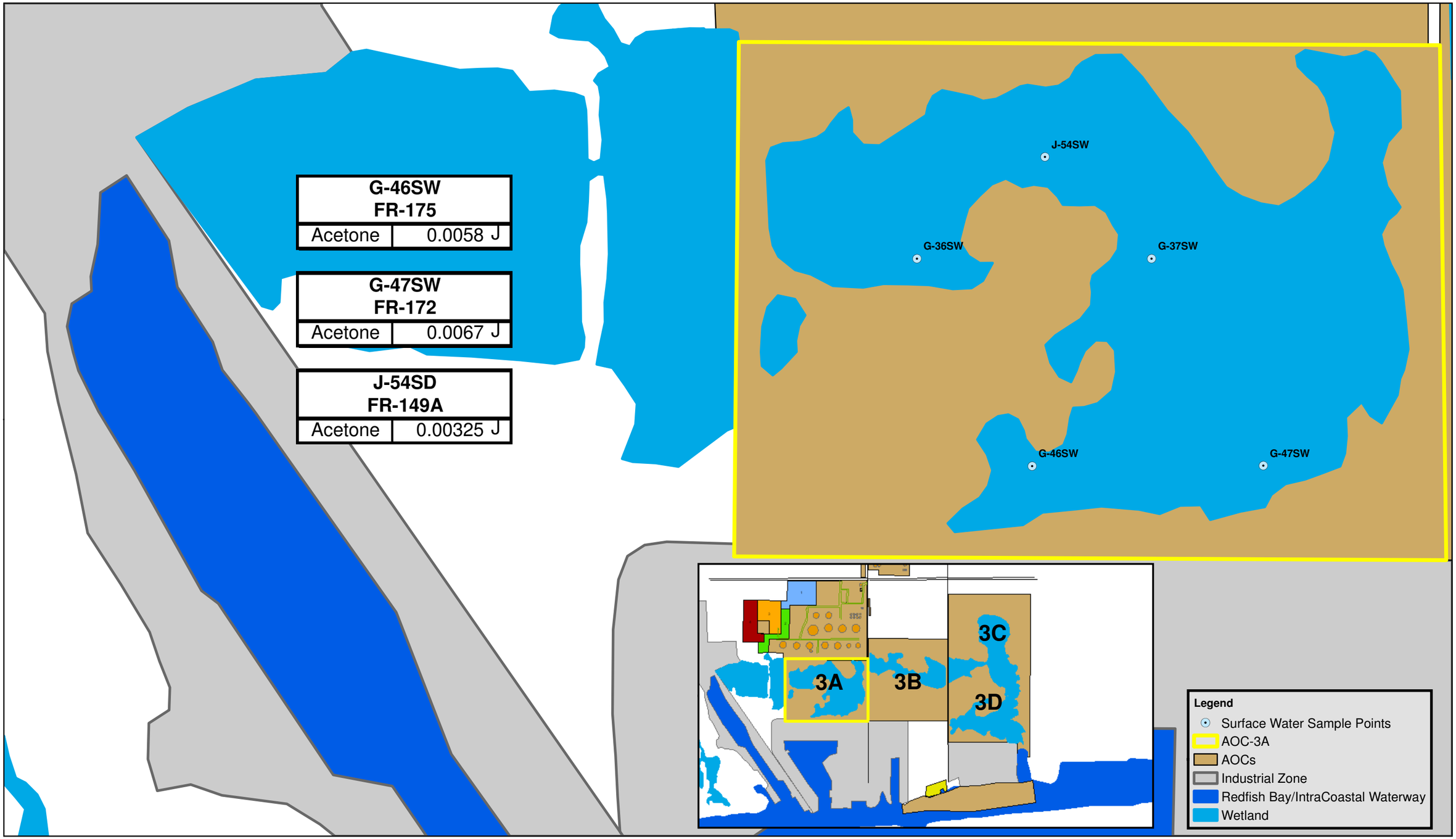
FIGURE
11B



Notes:

1. Results are posted in mg/l

2. Qualifiers:

J = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

N

0 100 200

Feet

DATE DRAWN: 7/8/08	DATE REVISED:
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AOC-3A
Human Health
VOC Surface Water Distribution Map

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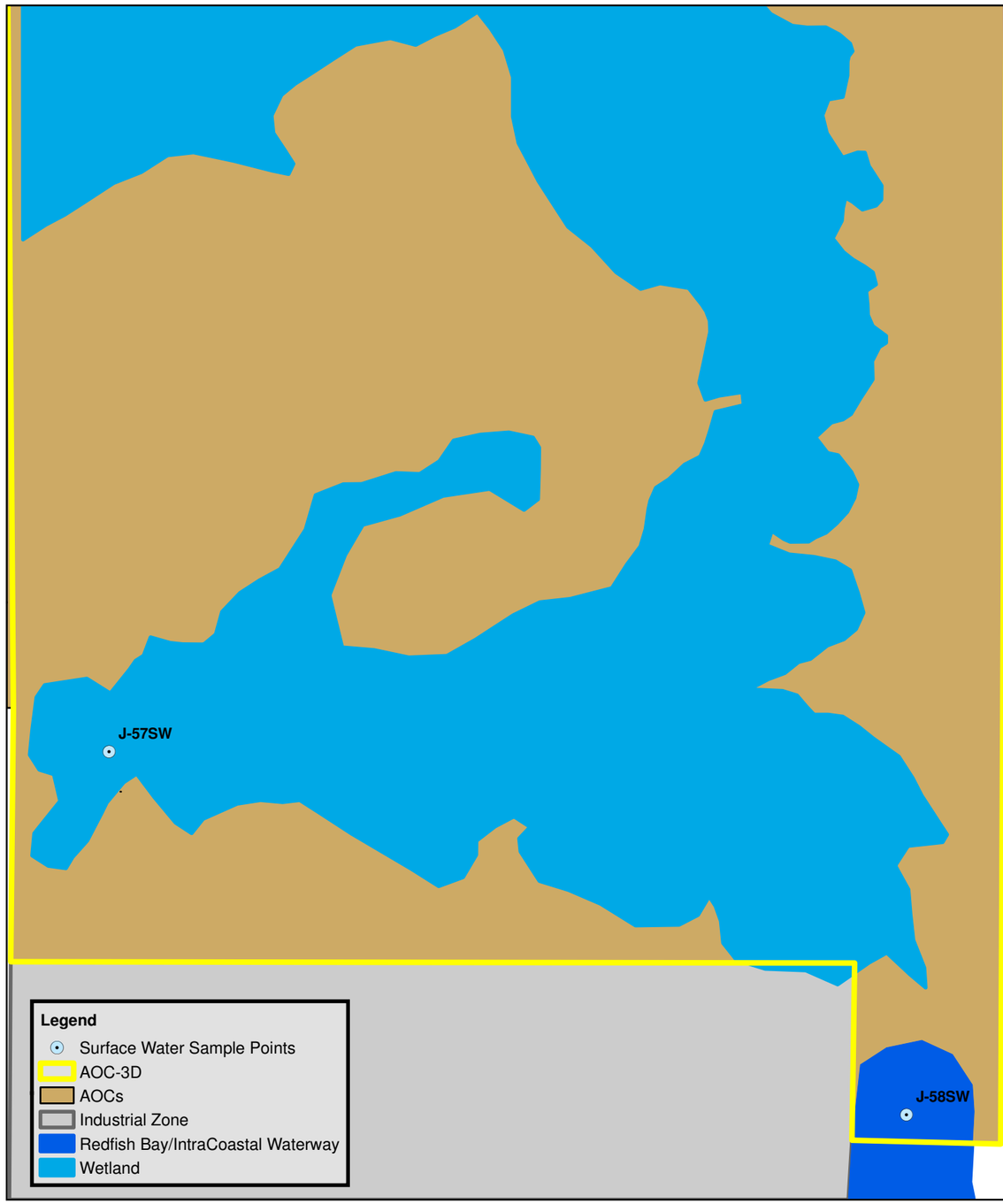
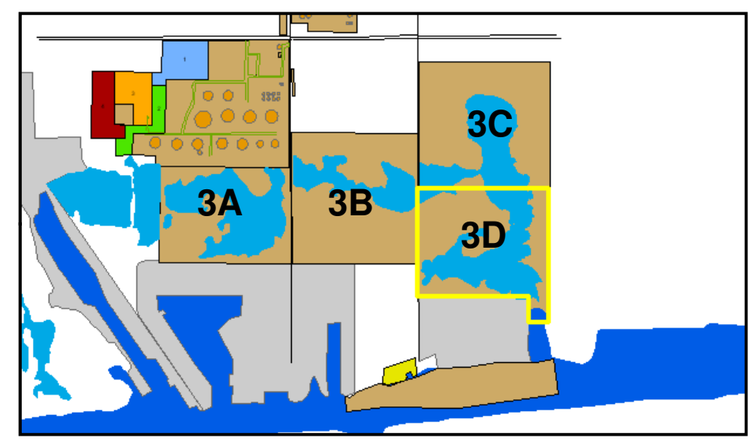
FIGURE
11C



J-57SW FR-211	
Acetone	0.0056 J



Notes:

1. Results are posted in mg/l
2. Qualifiers:

J = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

0 100 200
Feet

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AOC-3D
Human Health
VOC Surface Water Soil Distribution Map

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FIGURE
11D

Notes:

1. Results are posted in mg/l

2. Qualifiers:

J = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

N

0 100 200

Feet

DATE DRAWN: 7/8/08	DATE REVISED:
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AOC-3A
Human Health
SVOC Surface Water Distribution Map

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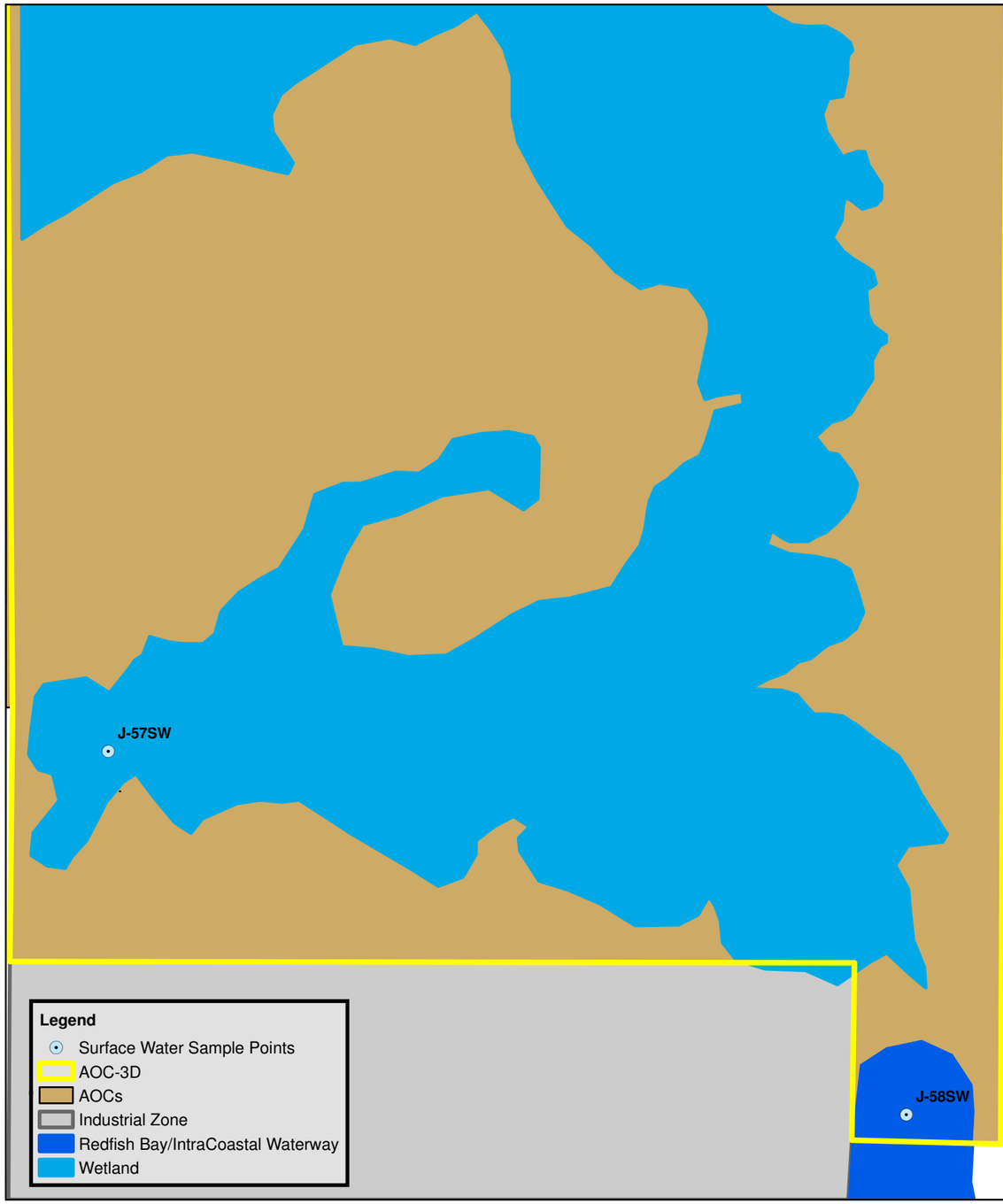
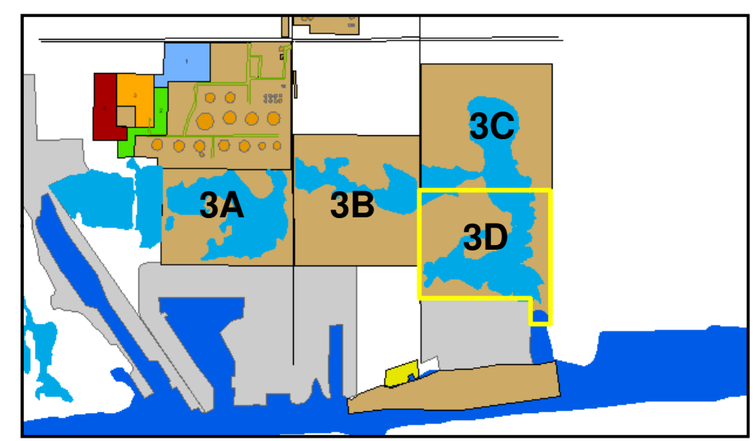
FIGURE
11E



J-57SW FR-211	
bis(2-Ethylhexyl)phthalate	0.0026 J



Notes:

1. Results are posted in mg/l
2. Qualifiers:

J = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

N

0 100 200
Feet

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APPROVED BY:	

AOC-3D
Human Health
SVOC Surface Water Soil Distribution Map

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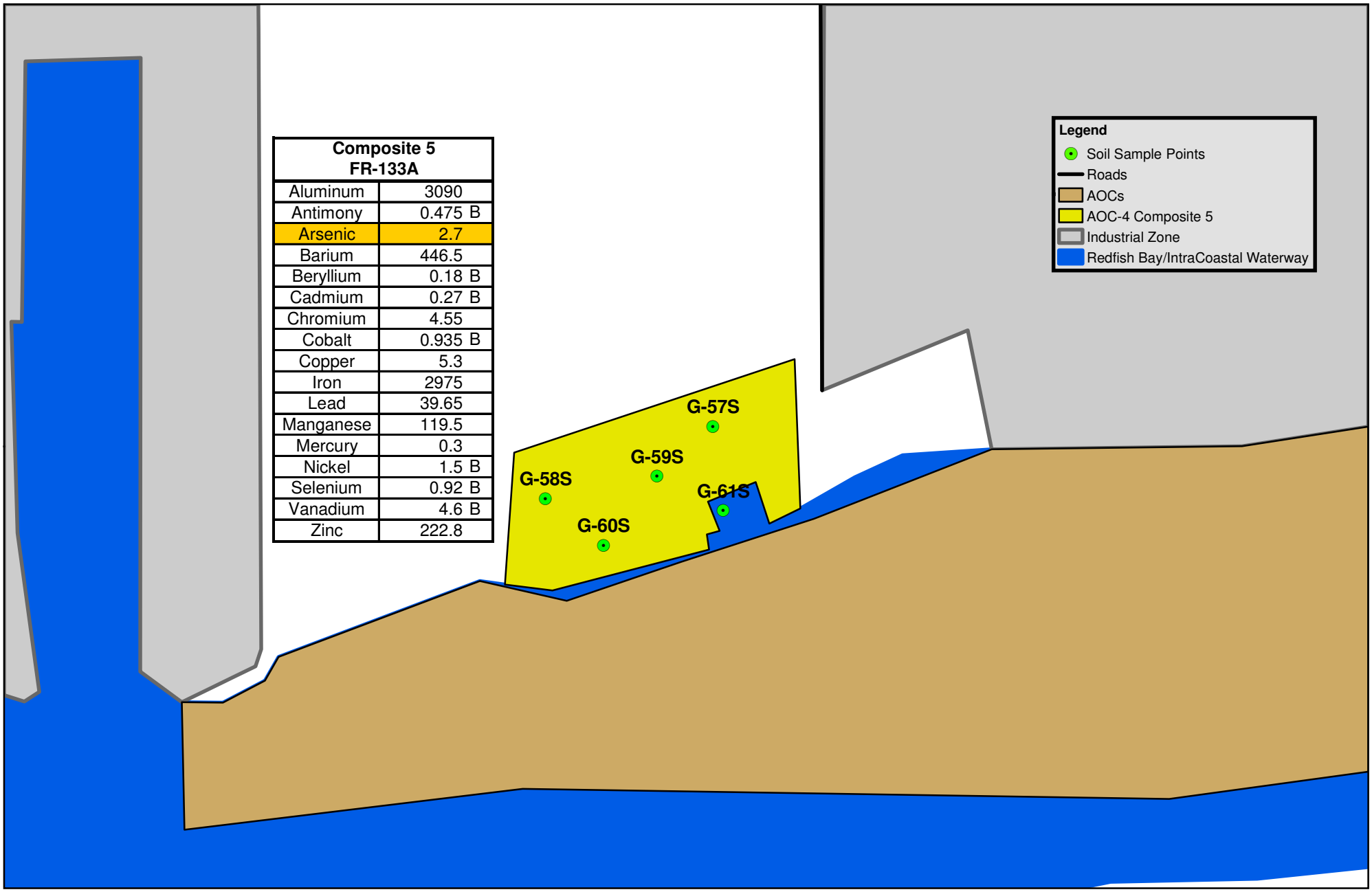
FIGURE
11F



Composite 5 FR-133A	
Aluminum	3090
Antimony	0.475 B
Arsenic	2.7
Barium	446.5
Beryllium	0.18 B
Cadmium	0.27 B
Chromium	4.55
Cobalt	0.935 B
Copper	5.3
Iron	2975
Lead	39.65
Manganese	119.5
Mercury	0.3
Nickel	1.5 B
Selenium	0.92 B
Vanadium	4.6 B
Zinc	222.8

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Above EPA MSSL

0 100 200
Feet

DATE DRAWN: 5/7/08	DATE REVISED:
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APPROVED BY:	

AOC-4
Human Health
Metal Surface Soil Distribution Map

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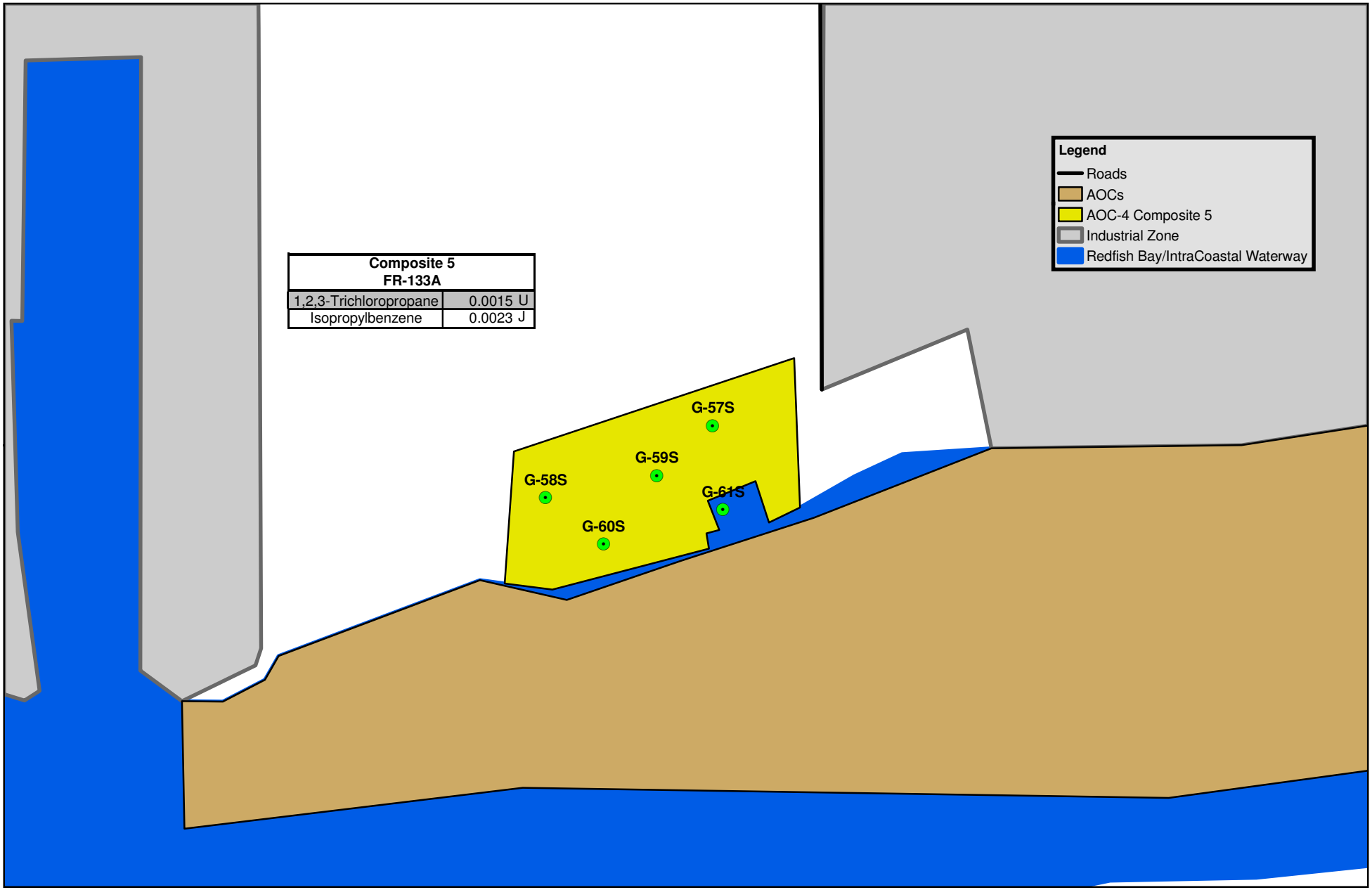
FIGURE
12A



Composite 5 FR-133A	
1,2,3-Trichloropropane	0.0015 U
Isopropylbenzene	0.0023 J

Notes:

1. Results are posted in mg/kg
2. Qualifiers:
   - U = Undetected at the sample detection limit (SDL)
   - J = Concentration greater than the sample detection limit (SDL) but less than the method

SDL Exceeds TCEQ Screening Level

N

0 80 160

Feet

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AOC-4
Human Health
VOC Surface Soil Distribution Map

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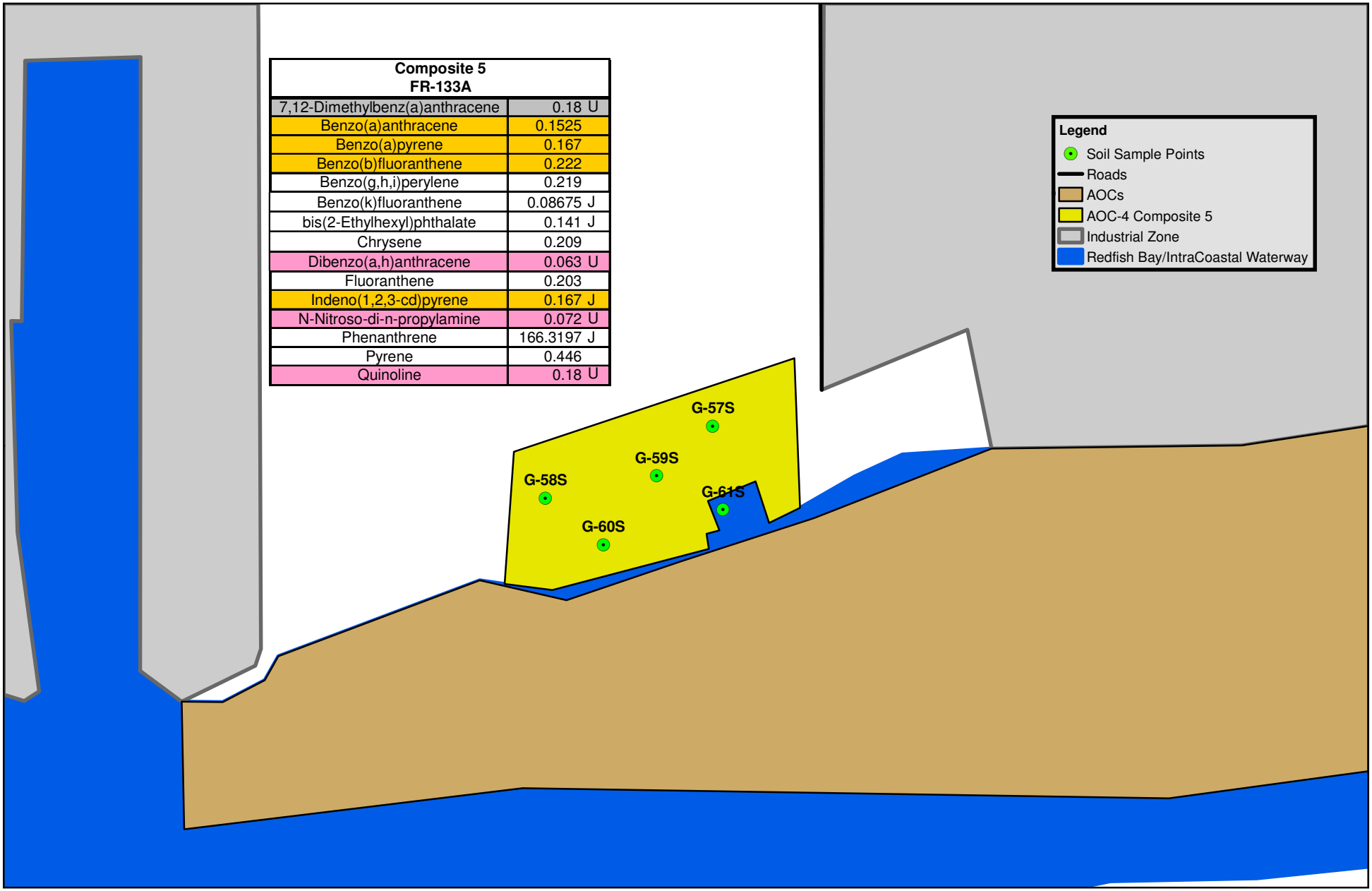
FIGURE

12B

Composite 5 FR-133A	
7,12-Dimethylbenz(a)anthracene	0.18 U
Benzo(a)anthracene	0.1525
Benzo(a)pyrene	0.167
Benzo(b)fluoranthene	0.222
Benzo(g,h,i)perylene	0.219
Benzo(k)fluoranthene	0.08675 J
bis(2-Ethylhexyl)phthalate	0.141 J
Chrysene	0.209
Dibenzo(a,h)anthracene	0.063 U
Fluoranthene	0.203
Indeno(1,2,3-cd)pyrene	0.167 J
N-Nitroso-di-n-propylamine	0.072 U
Phenanthrene	166.3197 J
Pyrene	0.446
Quinoline	0.18 U



Notes:

1. Results are posted in mg/kg
2. Qualifiers:
   - U = Undetected at the sample detection limit (SDL)
   - J = Concentration greater than the sample detection limit (SDL) but less than the method

Exceeds EPA Region 6 MSSL
SDL Exceeds EPA Screening Level
SDL Exceeds TCEQ Screening Level

0 100 200
Feet

DATE DRAWN: 5/7/08	DATE REVISED:
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CHECKED BY: S. HALASZ	
APPROVED BY:	

AOC-4
Human Health
SVOC Surface Soil Distribution Map

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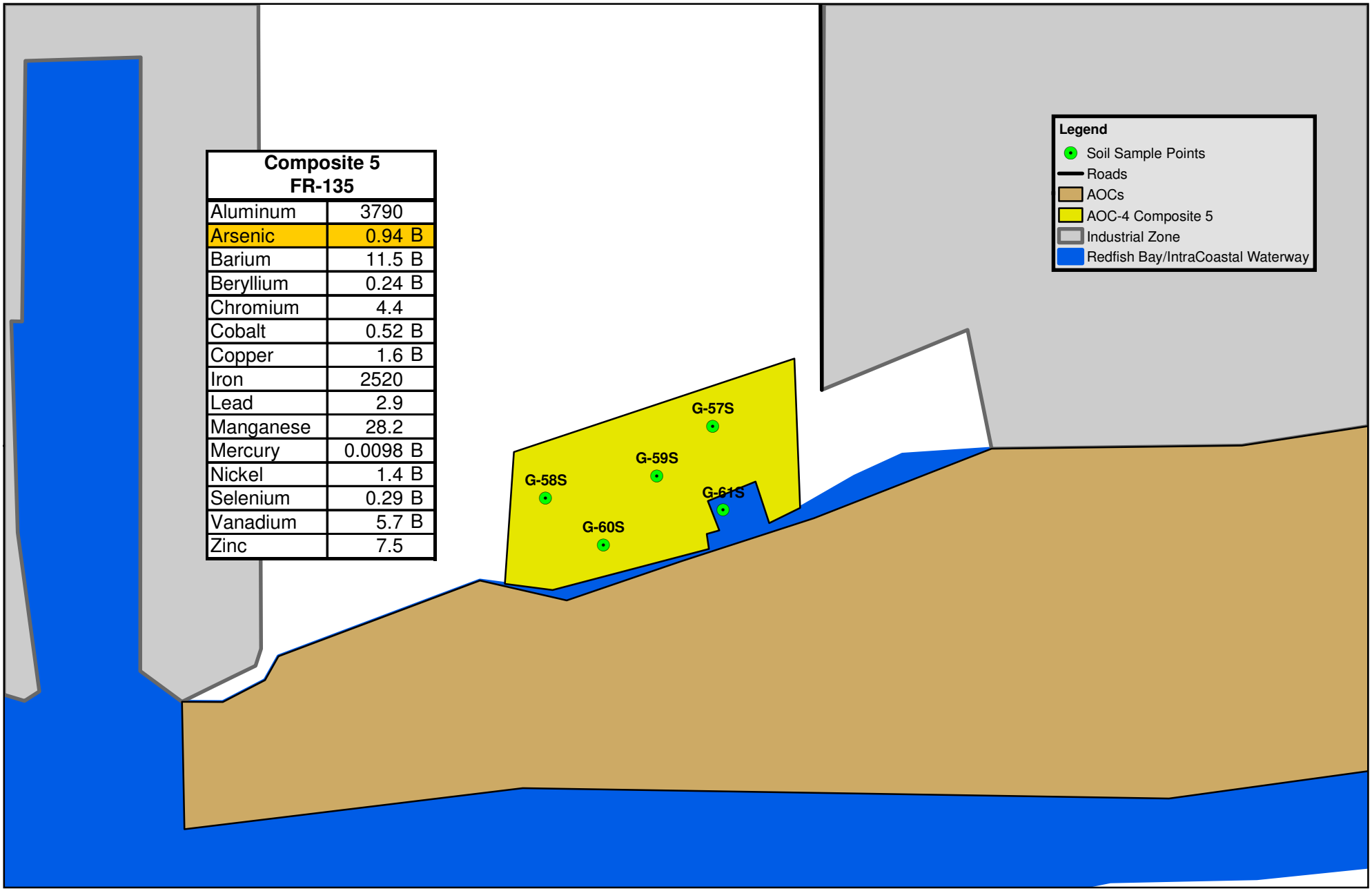
FIGURE
12C



Composite 5 FR-135	
Aluminum	3790
Arsenic	0.94 B
Barium	11.5 B
Beryllium	0.24 B
Chromium	4.4
Cobalt	0.52 B
Copper	1.6 B
Iron	2520
Lead	2.9
Manganese	28.2
Mercury	0.0098 B
Nickel	1.4 B
Selenium	0.29 B
Vanadium	5.7 B
Zinc	7.5

Notes:

1. Results are posted in mg/kg

2. Qualifiers:

B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Above EPA MSSL

N

0 100 200

Feet

DATE DRAWN: 5/7/08	DATE REVISED:
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APPROVED BY:	

AOC-4
Human Health
Metal Subsurface Soil Distribution Map

FALCON REFINERY
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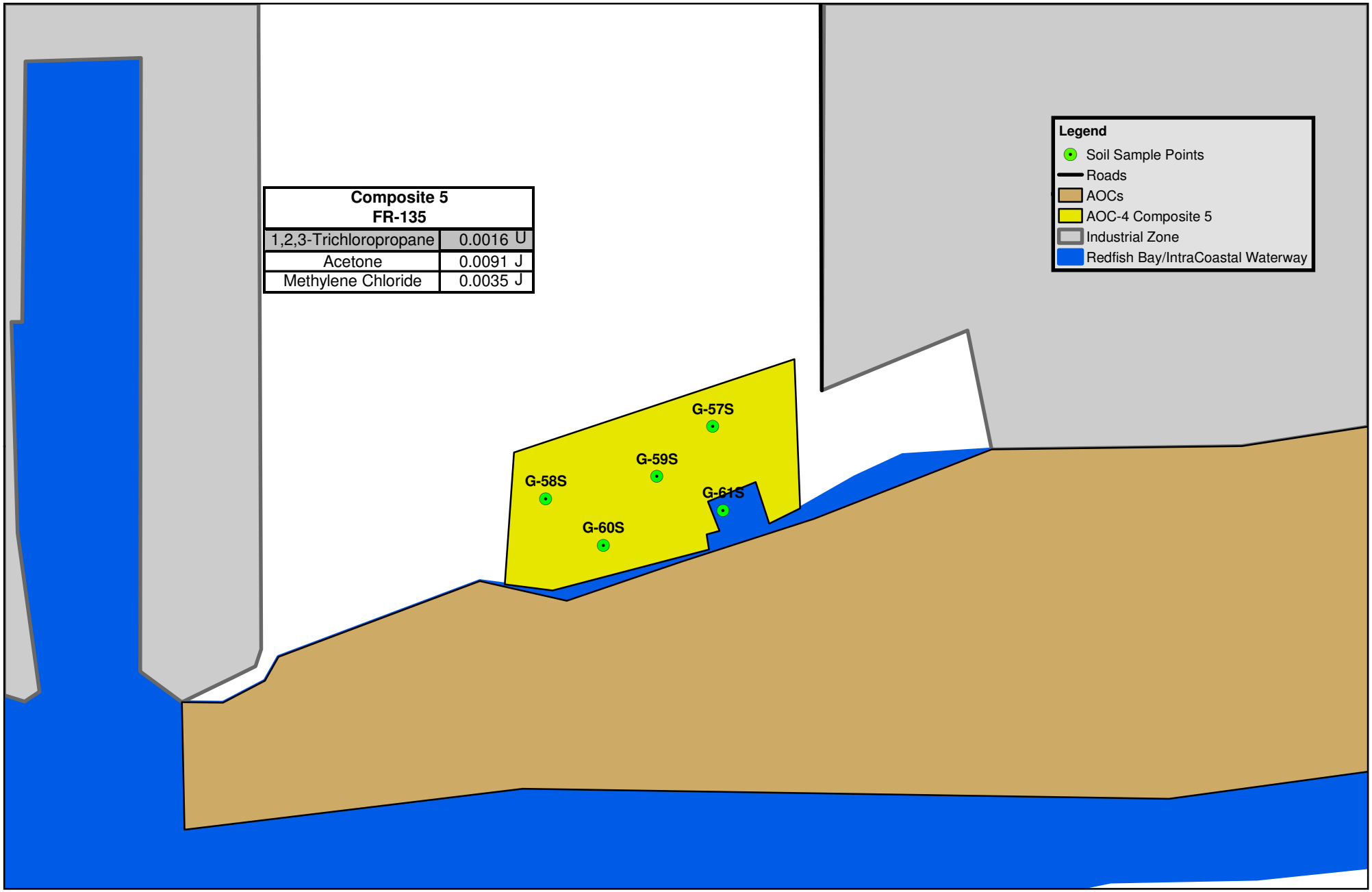
FIGURE

13A



Composite 5 FR-135	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0091 J
Methylene Chloride	0.0035 J

Notes:

1. Results are posted in mg/kg
2. Qualifiers:
   - U = Undetected at the sample detection limit (SDL)
   - J = Concentration greater than the sample detection limit (SDL) but less than the method

SDL Exceeds TCEQ Screening Level

N

0 90 180
Feet

DATE DRAWN: 5/7/08	DATE REVISED:
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APPROVED BY:	

AOC-4
Human Health
VOC Subsurface Soil Distribution Map

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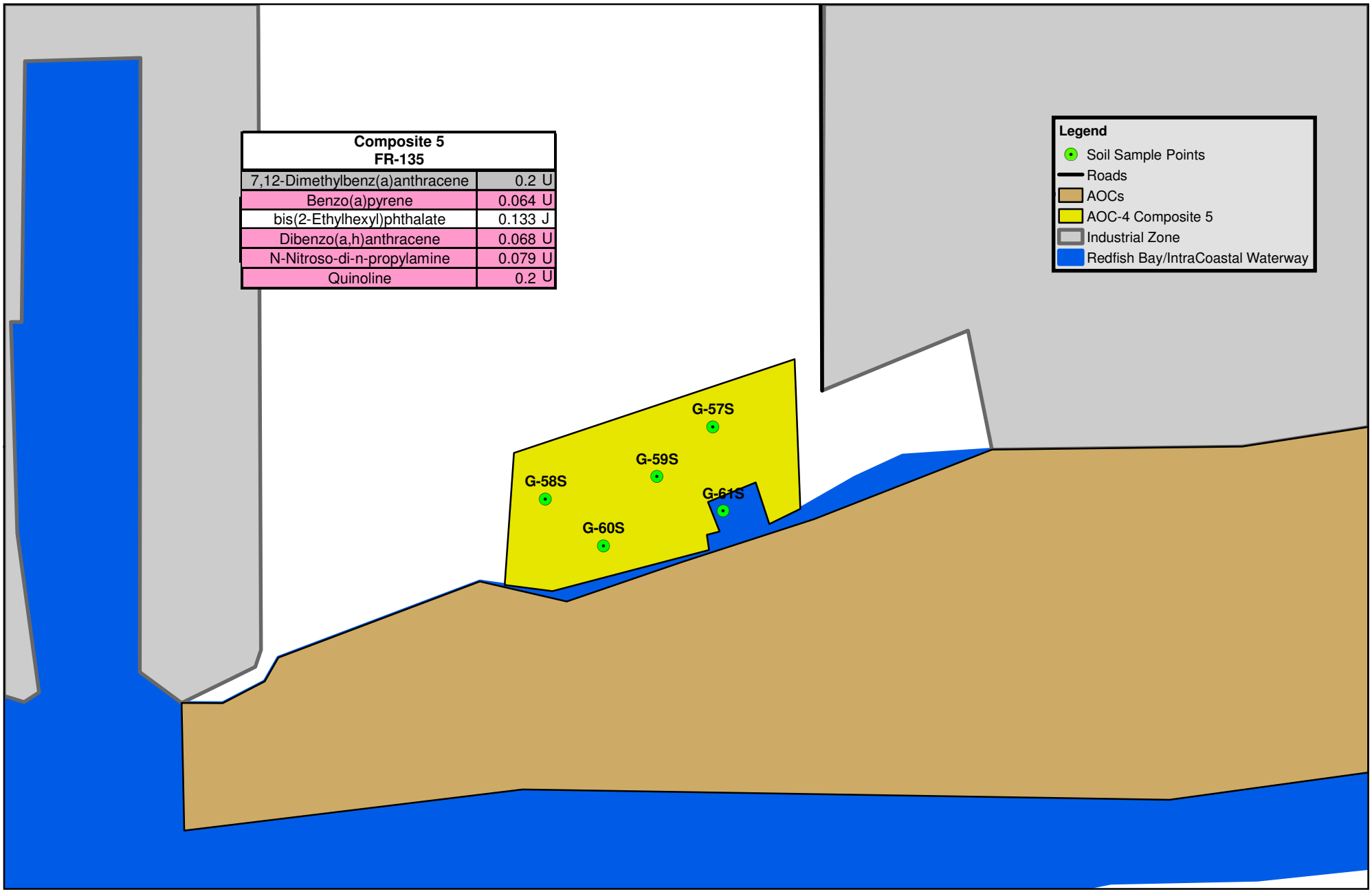
FIGURE
13B



Composite 5 FR-135	
7,12-Dimethylbenz(a)anthracene	0.2 U
Benzo(a)pyrene	0.064 U
bis(2-Ethylhexyl)phthalate	0.133 J
Dibenzo(a,h)anthracene	0.068 U
N-Nitroso-di-n-propylamine	0.079 U
Quinoline	0.2 U

Notes:

1. Results are posted in mg/kg
2. Qualifiers:
   - U = Undetected at the sample detection limit (SDL)
   - J = Concentration greater than the sample detection limit (SDL) but less than the method

SDL Exceeds EPA Screening Level

SDL Exceeds TCEQ Screening Level

N

0 100 200

Feet

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APPROVED BY:	

AOC-4
Human Health
SVOC Subsurface Soil Distribution Map

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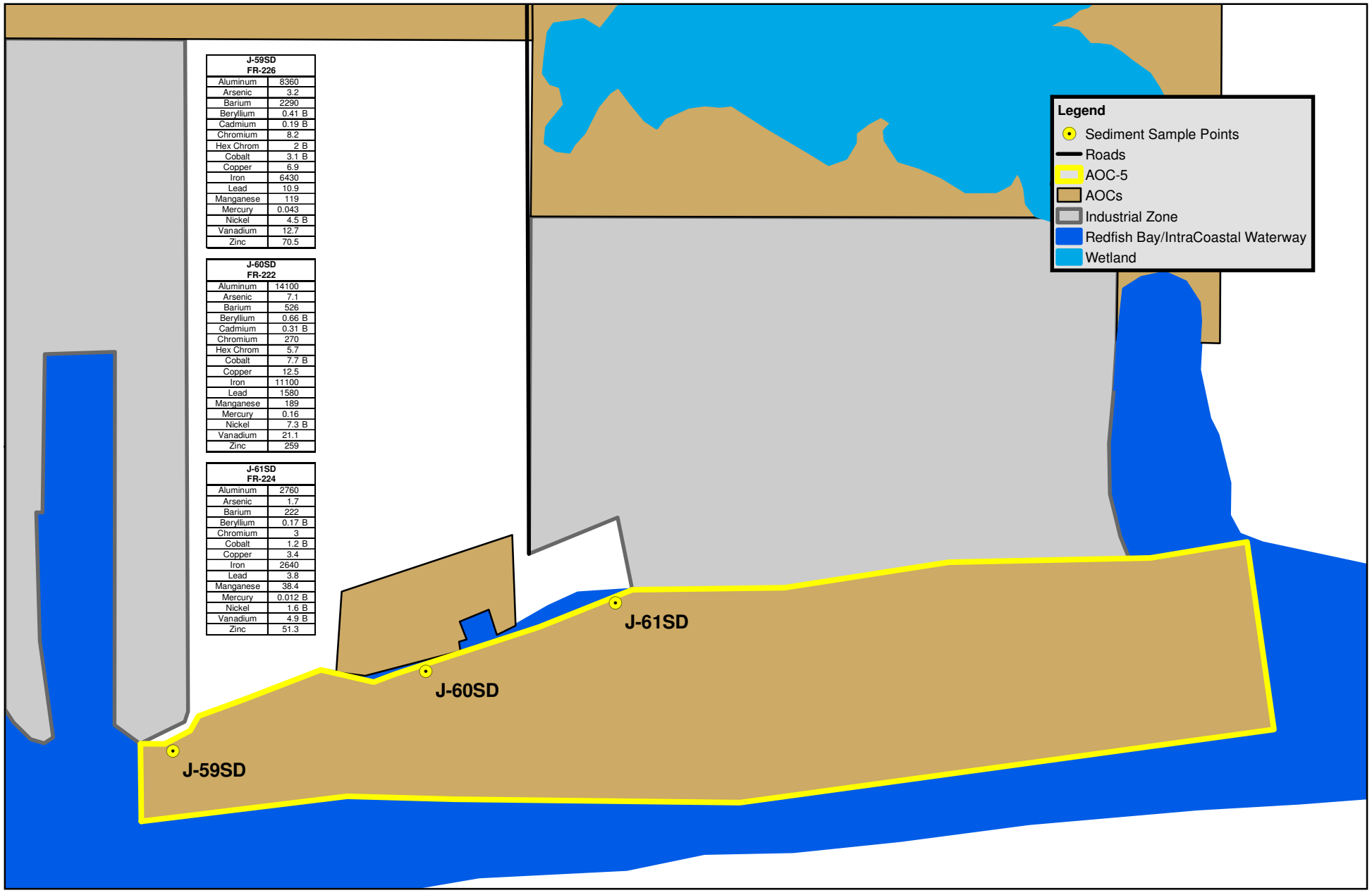
FIGURES

13C



J-59SD FR-226	
Aluminum	8360
Arsenic	3.2
Barium	2290
Beryllium	0.41 B
Cadmium	0.19 B
Chromium	8.2
Hex Chrom	2 B
Cobalt	3.1 B
Copper	6.9
Iron	6430
Lead	10.9
Manganese	119
Mercury	0.043
Nickel	4.5 B
Vanadium	12.7
Zinc	70.5

J-60SD FR-222	
Aluminum	14100
Arsenic	7.1
Barium	526
Beryllium	0.66 B
Cadmium	0.31 B
Chromium	270
Hex Chrom	5.7
Cobalt	7.7 B
Copper	12.5
Iron	11100
Lead	1580
Manganese	189
Mercury	0.16
Nickel	7.3 B
Vanadium	21.1
Zinc	259

J-61SD FR-224	
Aluminum	2760
Arsenic	1.7
Barium	222
Beryllium	0.17 B
Chromium	3
Cobalt	1.2 B
Copper	3.4
Iron	2640
Lead	3.8
Manganese	38.4
Mercury	0.012 B
Nickel	1.6 B
Vanadium	4.9 B
Zinc	51.3

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

N

0 150 300
Feet

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AOC-5
Human Health
Metal Sediment Distribution Map

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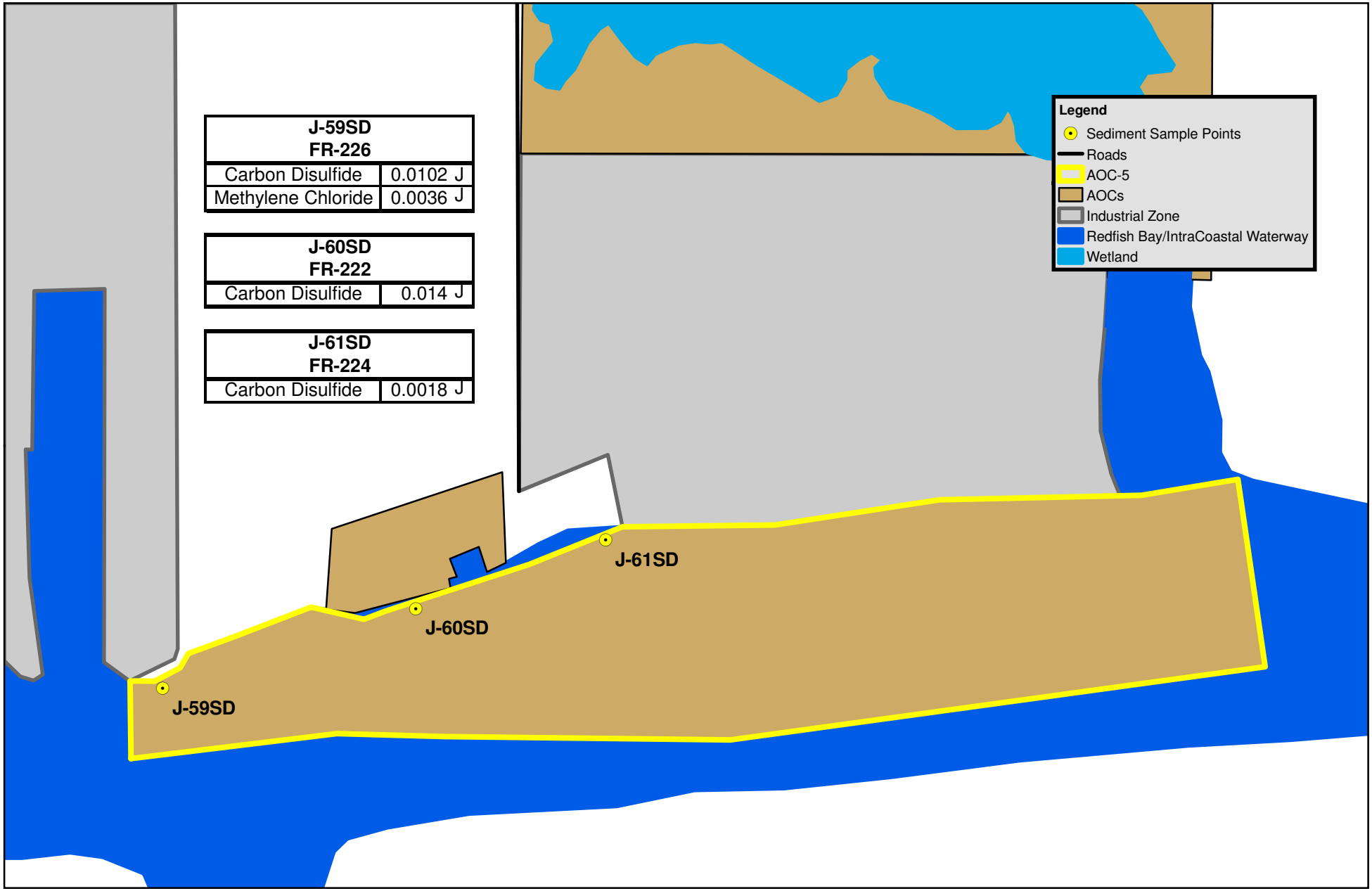
FIGURE
14A



Notes:

1. Results are posted in mg/kg
2. Qualifiers:

   J = Concentration greater than the sample detection limit (SDL) but less than the method

N

0 150 300

Feet

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AOC-5
Human Health
VOC Sediment Distribution Map

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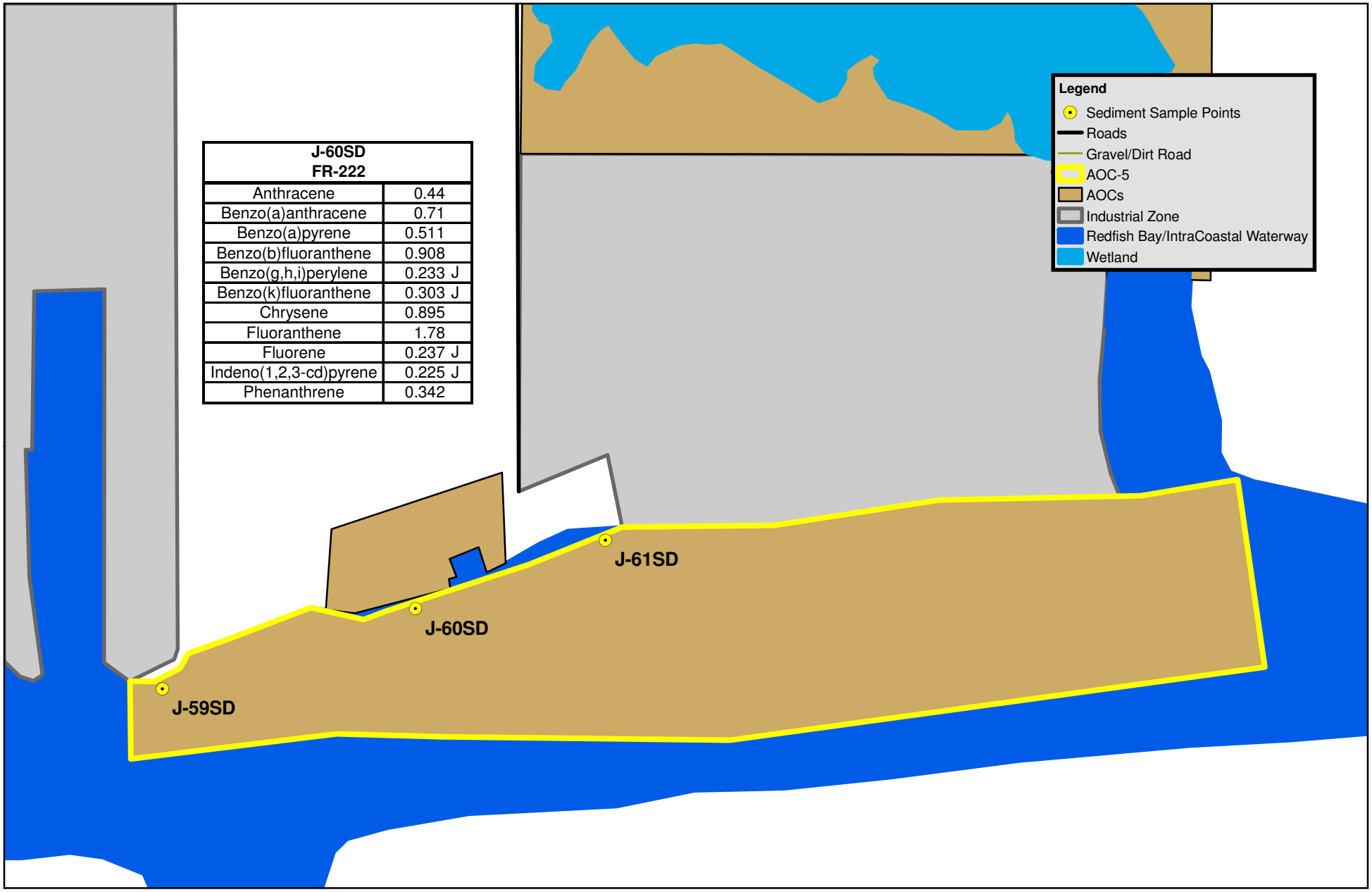
FIGURE

14B



J-60SD FR-222	
Anthracene	0.44
Benzo(a)anthracene	0.71
Benzo(a)pyrene	0.511
Benzo(b)fluoranthene	0.908
Benzo(g,h,i)perylene	0.233 J
Benzo(k)fluoranthene	0.303 J
Chrysene	0.895
Fluoranthene	1.78
Fluorene	0.237 J
Indeno(1,2,3-cd)pyrene	0.225 J
Phenanthrene	0.342

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

   J = Concentration greater than the sample detection limit (SDL) but less than the method

N

0 150 300
Feet

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APPROVED BY:	

AOC-5
Human Health
SVOC Sediment Distribution Map

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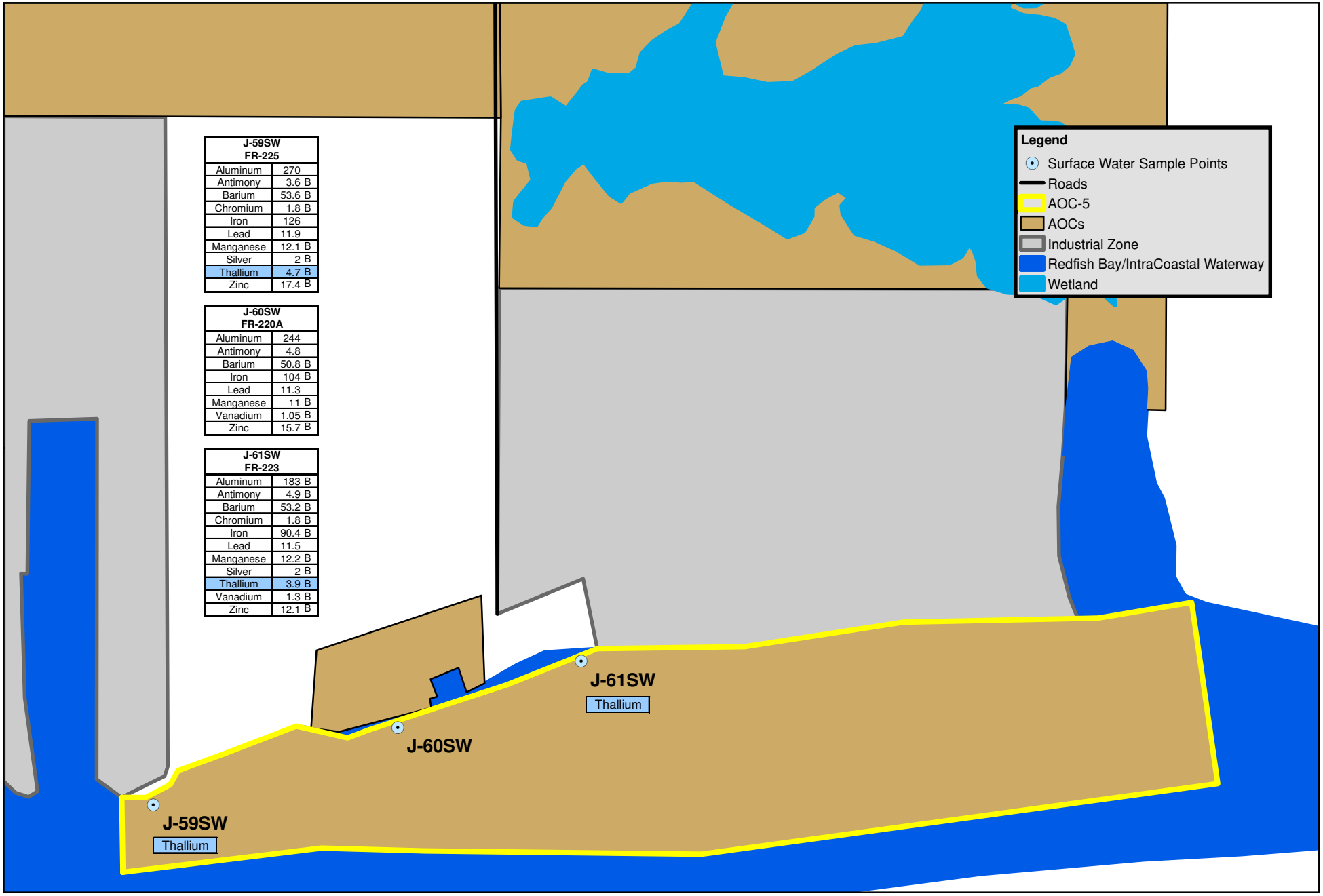
FIGURE
14C



J-59SW FR-225	
Aluminum	270
Antimony	3.6 B
Barium	53.6 B
Chromium	1.8 B
Iron	126
Lead	11.9
Manganese	12.1 B
Silver	2 B
Thallium	4.7 B
Zinc	17.4 B

J-60SW FR-220A	
Aluminum	244
Antimony	4.8
Barium	50.8 B
Iron	104 B
Lead	11.3
Manganese	11 B
Vanadium	1.05 B
Zinc	15.7 B

J-61SW FR-223	
Aluminum	183 B
Antimony	4.9 B
Barium	53.2 B
Chromium	1.8 B
Iron	90.4 B
Lead	11.5
Manganese	12.2 B
Silver	2 B
Thallium	3.9 B
Vanadium	1.3 B
Zinc	12.1 B

Notes:

1. Results are posted in µg/l
2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Exceeds ^{SW}RBELs

0 100 200
Feet

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APPROVED BY:	

AOC-5
Human Health
Metal Surface Water Distribution Map

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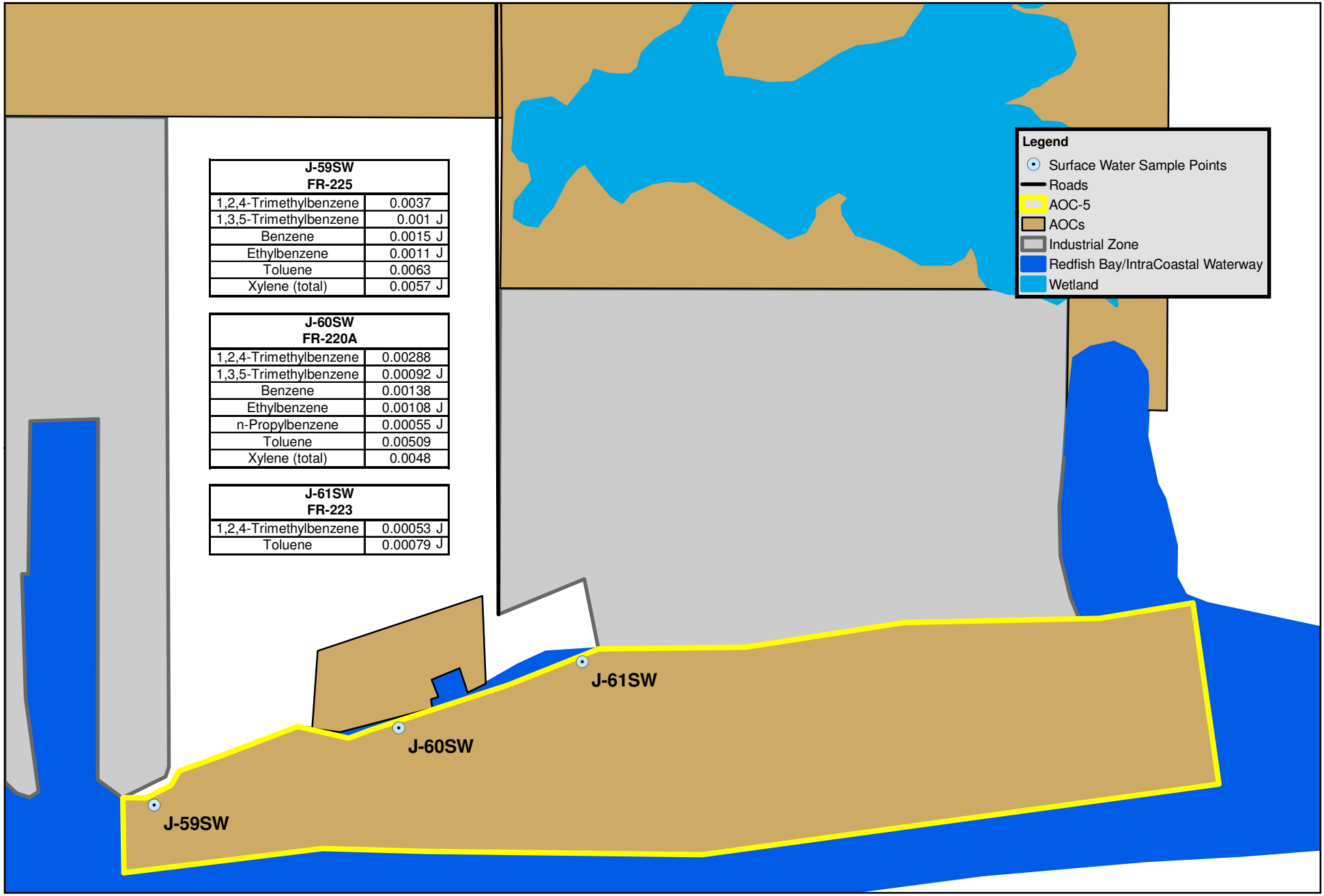
FIGURE
15A



J-59SW FR-225	
1,2,4-Trimethylbenzene	0.0037
1,3,5-Trimethylbenzene	0.001 J
Benzene	0.0015 J
Ethylbenzene	0.0011 J
Toluene	0.0063
Xylene (total)	0.0057 J

J-60SW FR-220A	
1,2,4-Trimethylbenzene	0.00288
1,3,5-Trimethylbenzene	0.00092 J
Benzene	0.00138
Ethylbenzene	0.00108 J
n-Propylbenzene	0.00055 J
Toluene	0.00509
Xylene (total)	0.0048

J-61SW FR-223	
1,2,4-Trimethylbenzene	0.00053 J
Toluene	0.00079 J

Notes:

1. Results are posted in mg/l
2. Qualifiers:

   J = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

N

0 80 160

Feet

DATE DRAWN: 5/7/08	DATE REVISED:
DRAFTED BY: C. SEATON	
CHECKED BY: S. HALASZ	
APPROVED BY:	

AOC-5
Human Health
VOC Surface Water Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 FILE NAME: Falcon Refinery Base Map

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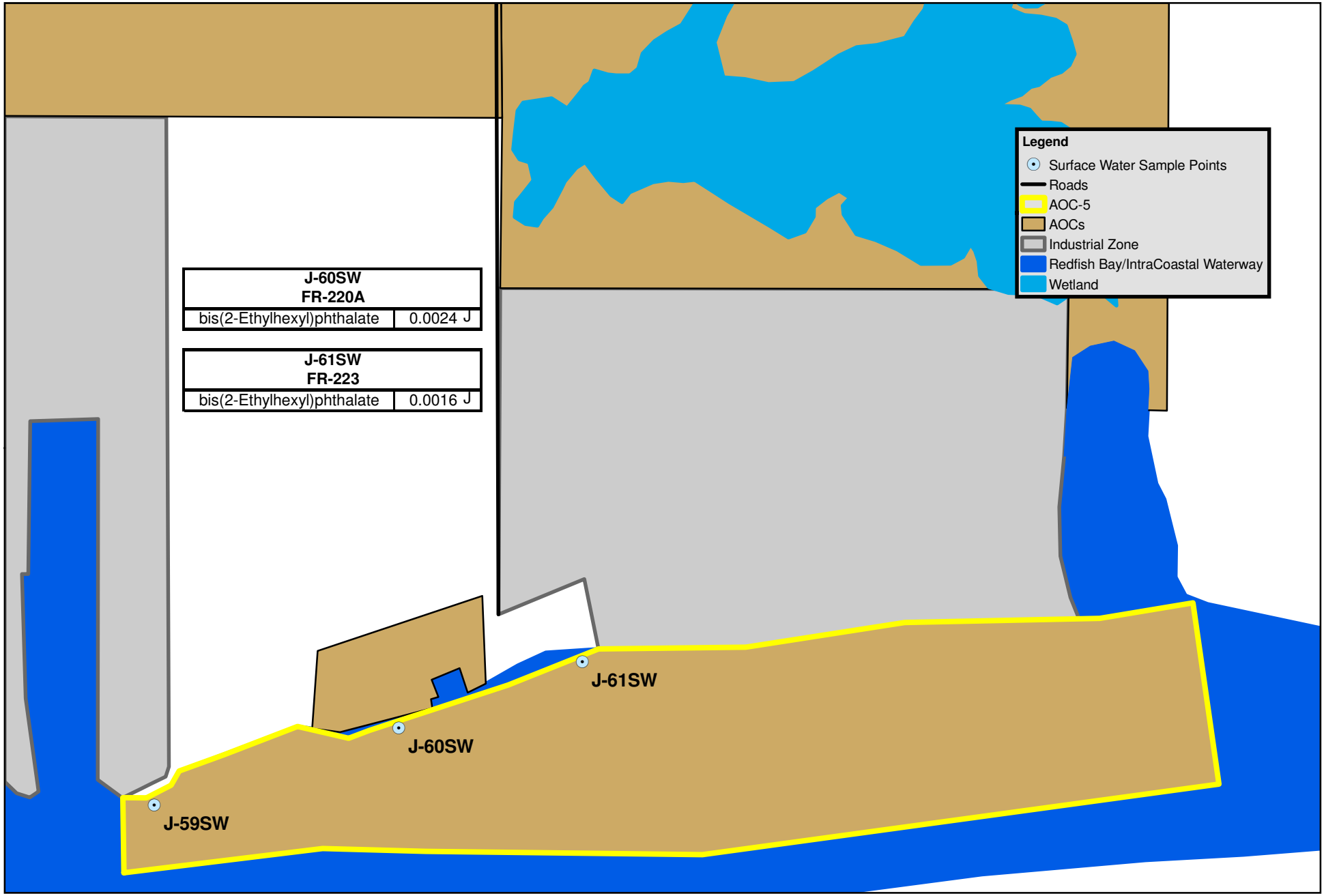
FIGURE
15B



Notes:

1. Results are posted in mg/l
2. Qualifiers:

   J = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

0 80 160
Feet

DATE DRAWN: 5/7/08	DATE REVISED:
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CHECKED BY: S. HALASZ	
APPROVED BY:	

AOC-5
Human Health
SVOC Surface Water Distribution Map

FALCON REFINERY
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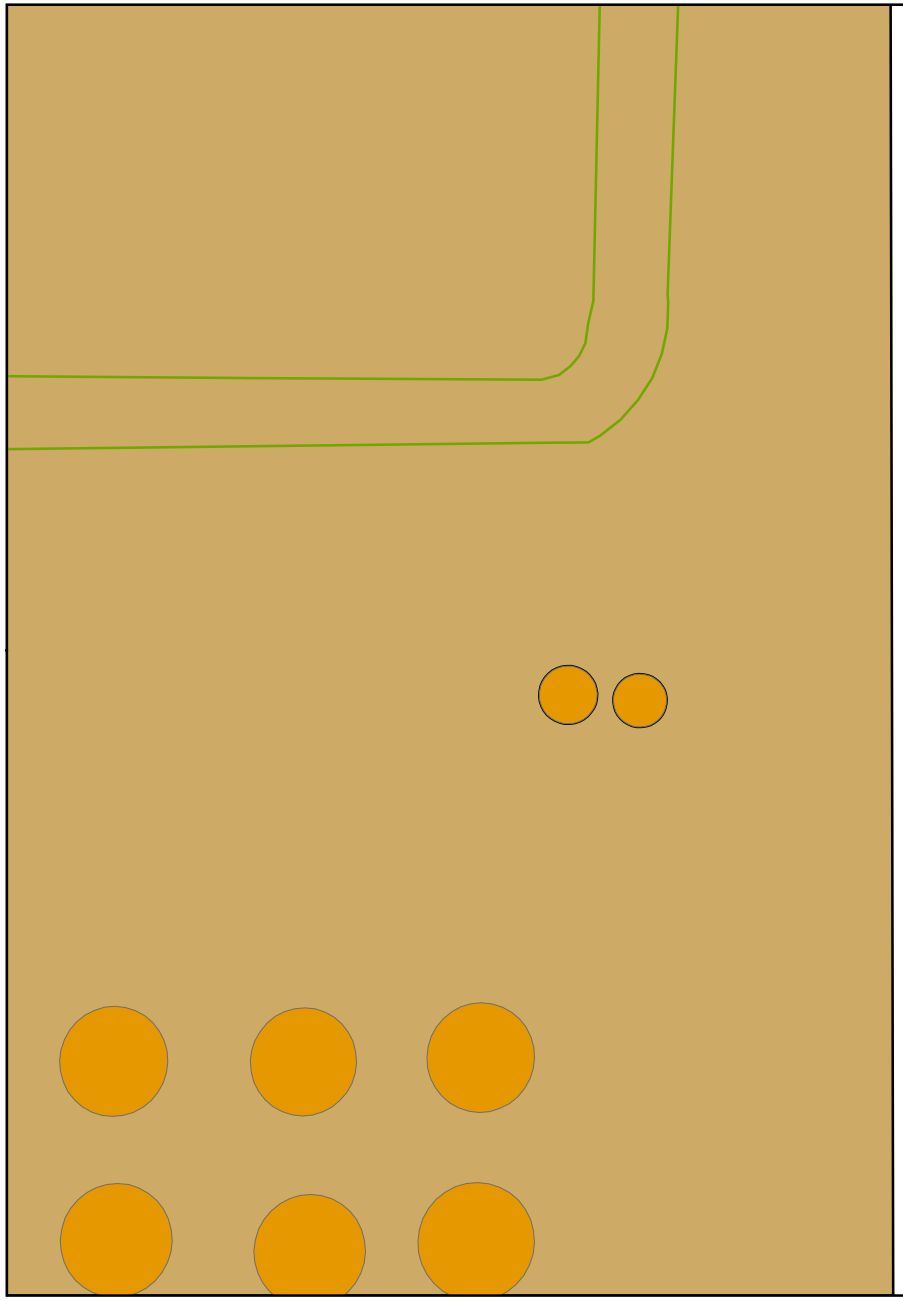
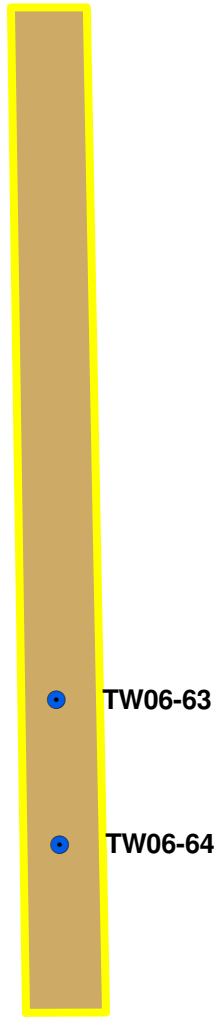
FIGURE
15C





TW06-63 FR-233	
Arsenic	3.1 B
Barium	157 B
Iron	536
Manganese	115
Zinc	8.7 B

TW06-64 FR-230	
Barium	113 B
Iron	497
Manganese	109
Silver	1.3 B
Zinc	11.8 B

Legend

- Groundwater Sample Points
- Roads
- Gravel/Dirt Road
- AOC-6
- Refinery Tanks
- AOCs

Notes:

1. Results are posted in µg/l
2. Qualifiers:

B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

N

0 50 100
Feet

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APPROVED BY:	

AOC-6
Human Health
Metal Groundwater Distribution Map

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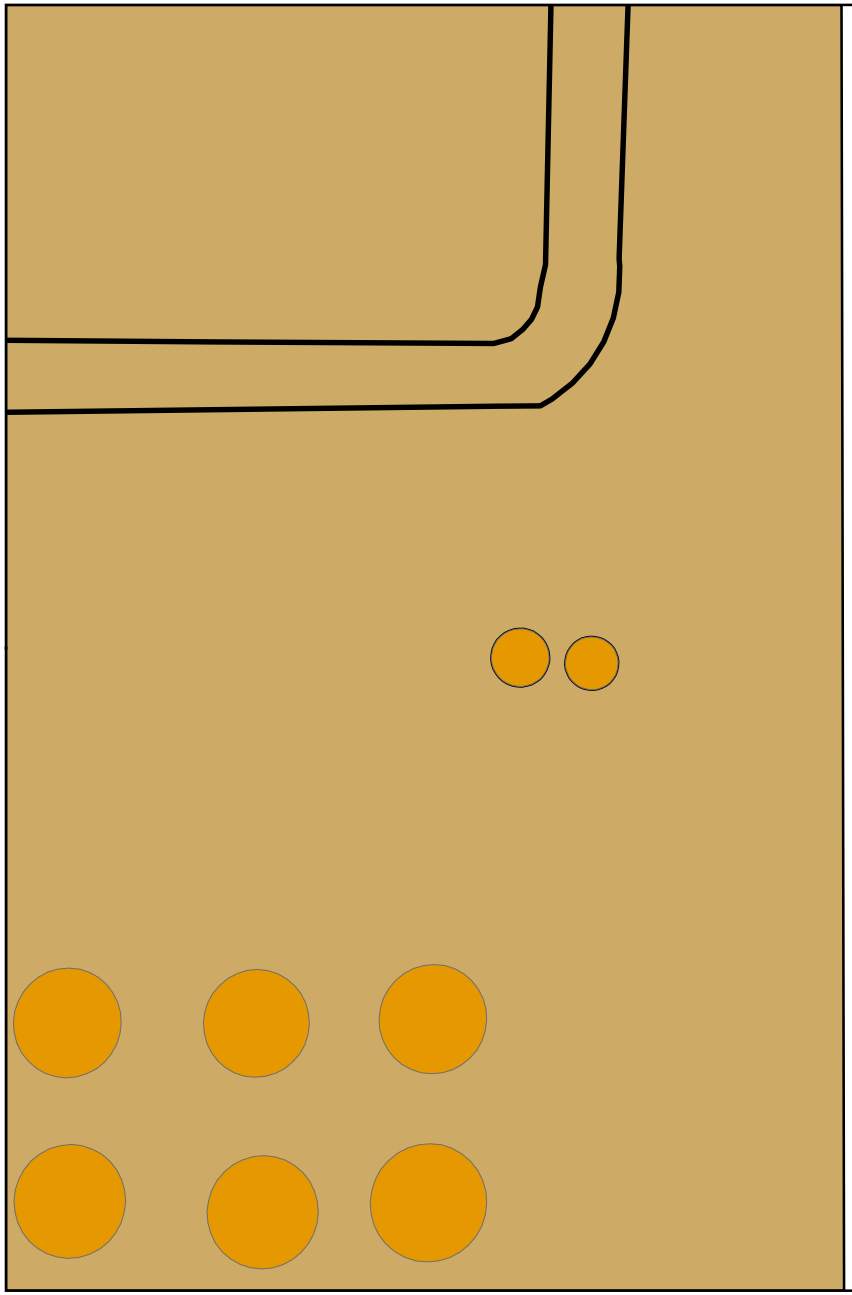
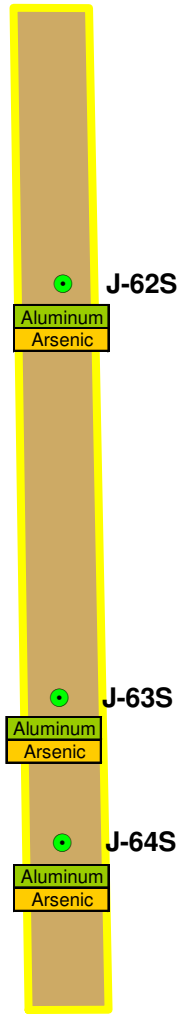
FIGURE
16





J-62S FR-234A	
Aluminum	11750
Arsenic	1.5
Barium	259
Beryllium	0.495
Cadmium	0.17 B
Chromium	12.25
Cobalt	2.75 B
Copper	8.45
Iron	7025
Lead	8.6
Manganese	180
Mercury	0.00405 B
Nickel	6
Selenium	0.795 B
Vanadium	19.45
Zinc	71.25

J-63S FR-231	
Aluminum	9190
Arsenic	2.4
Barium	280
Beryllium	0.43 B
Cadmium	0.13 B
Chromium	10.8
Cobalt	2.4 B
Copper	9.1
Iron	6580
Lead	7.1
Manganese	133
Mercury	0.0067 B
Nickel	7.5
Selenium	0.78 B
Vanadium	32.5
Zinc	69.3

J-64S FR-228	
Aluminum	10600
Arsenic	2.8
Barium	400
Beryllium	0.45 B
Cadmium	0.16 B
Chromium	15.3
Cobalt	2.7 B
Copper	14.6
Iron	7630
Lead	16.5
Manganese	157
Mercury	0.0094 B
Nickel	7.2
Selenium	1.2
Vanadium	20.6
Zinc	111

Legend

- Soil Sample Points
- Roads
- AOC-6
- Refinery Tanks
- AOCs

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Above EPA MSSL
Above TCEQ PCL

N

0 50 100
Feet

DATE DRAWN: 5/7/08	DATE REVISED:
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APPROVED BY:	

AOC-6
Human Health
Metal Surface Soil Distribution Map

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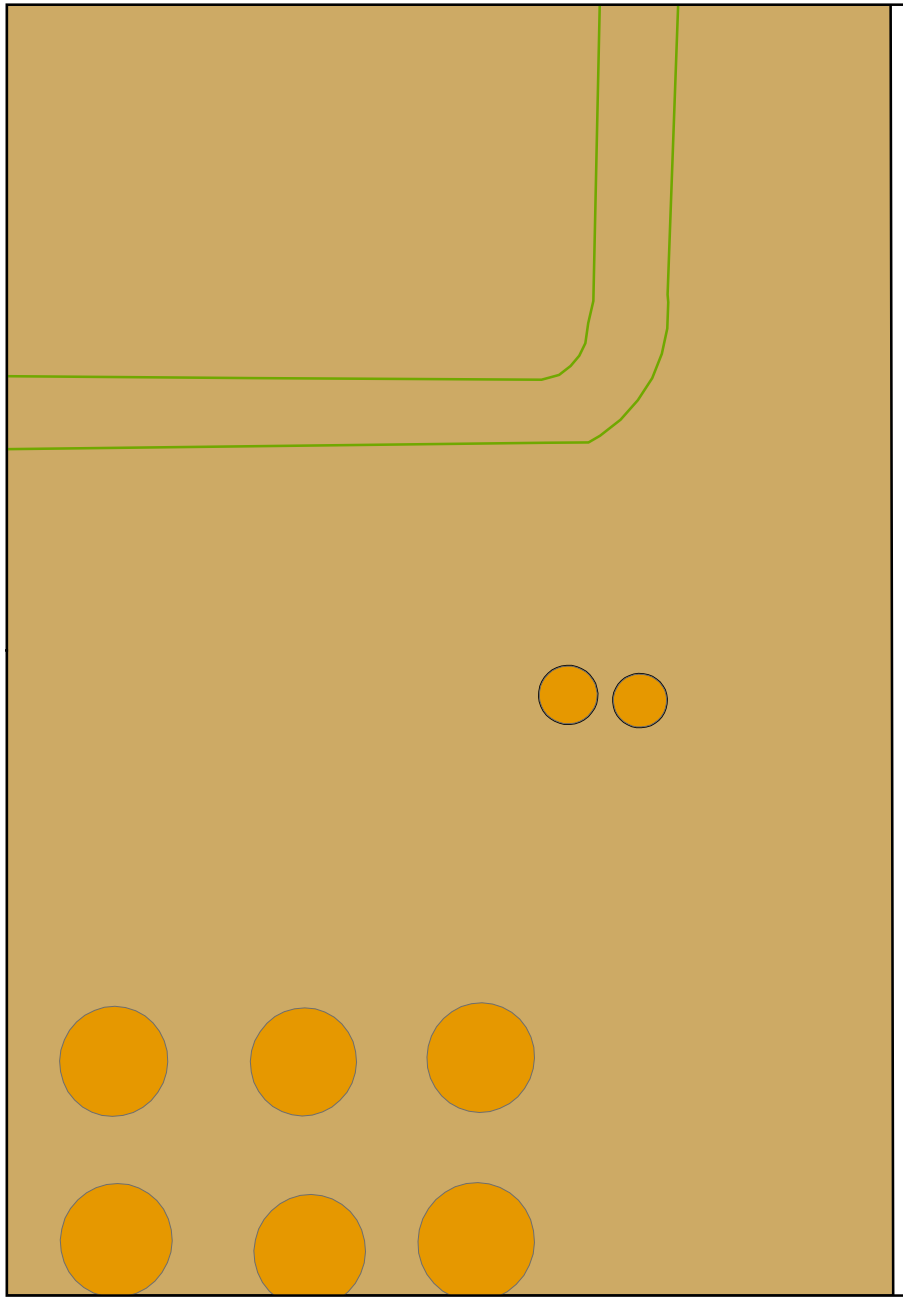
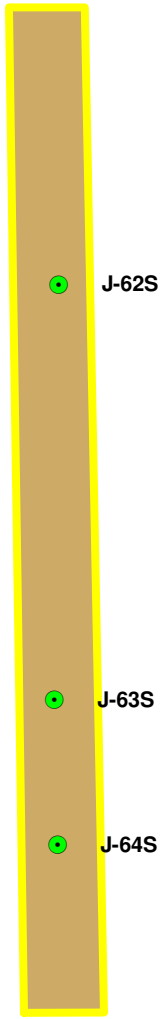
FIGURE
17A





J-62S FR-234A	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0094 J
Methylene Chloride	0.00295 J

J-63S FR-231	
1,2,3-Trichloropropane	0.0015 U
Methylene Chloride	0.0028 J

J-64S FR-228	
1,2,3-Trichloropropane	0.0015 U
Methylene Chloride	0.003 J

Legend

- Soil Sample Points
- Roads
- Gravel/Dirt Road
- AOC-6
- Refinery Tanks
- AOCs

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

U = Undetected at the sample detection limit (SDL)

J = Concentration greater than the sample detection limit (SDL) but less than the method

SDL Exceeds TCEQ Screening Level

N

0 50 100

Feet

DATE DRAWN: 5/7/08	DATE REVISED:
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CHECKED BY: S. HALASZ	
APPROVED BY:	

AOC-6
Human Health
VOC Surface Soil Distribution Map

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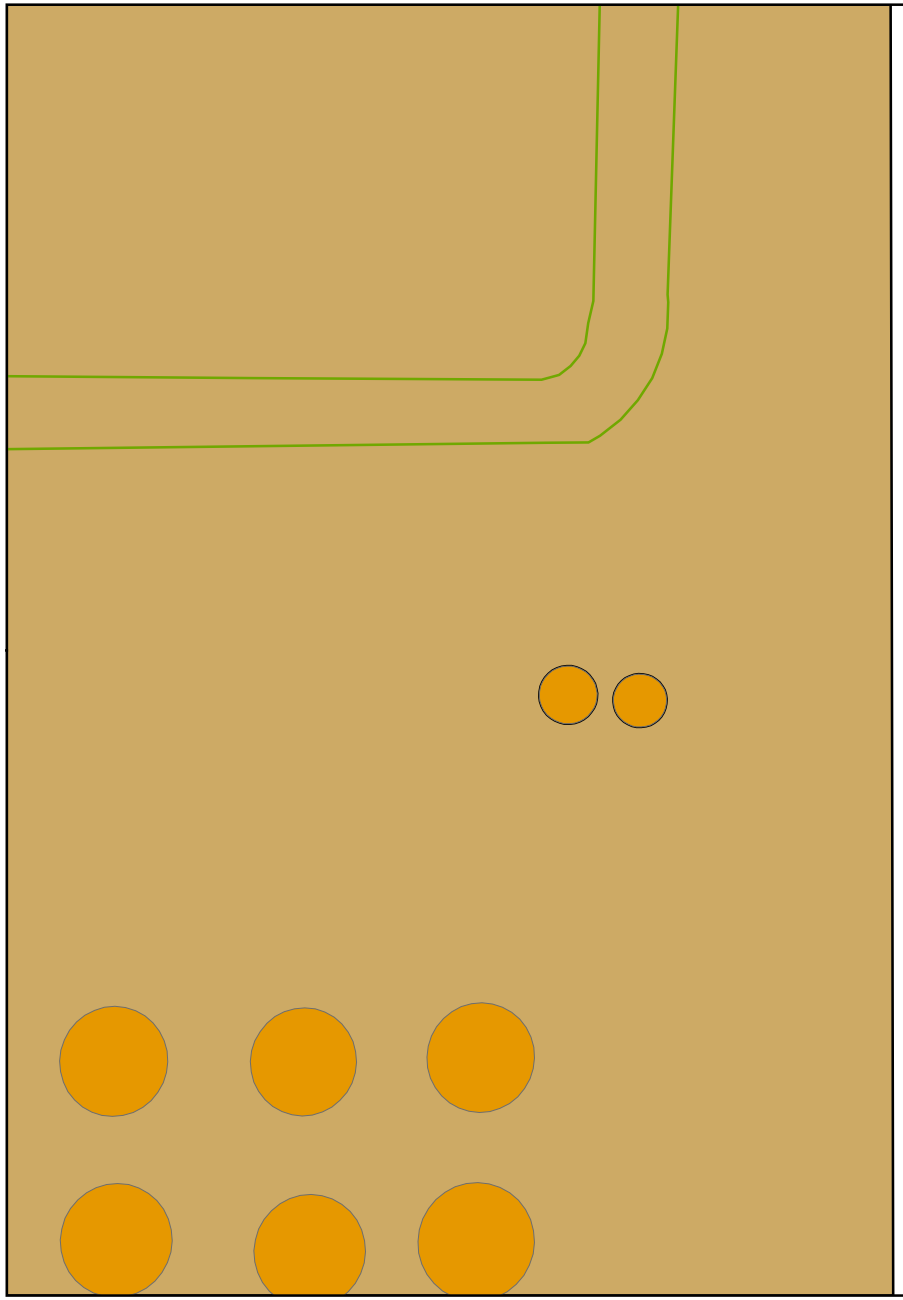
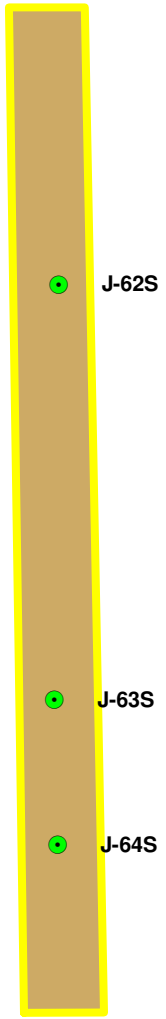
FIGURE
17B





J-62S FR-234A	
4-Bromophenyl phenyl ether	0.63 U
7,12-Dimethylbenz(a)anthracene	1.09 U
Benzenethiol	1.09 U
Benzo(a)anthracene	0.41 U
Benzo(a)pyrene	0.36 U
Benzo(b)fluoranthene	0.46 U
bis(2-Chloroethyl)ether	0.23 U
Dibenzo(a,h)anthracene	0.39 U
Hexachlorobenzene	0.36 U
Indeno(1,2,3-cd)pyrene	0.43 U
N-Nitroso-di-n-propylamine	0.44 U
Quinoline	1.09 U

J-63S FR-231	
7,12-Dimethylbenz(a)anthracene	0.36 U
Benzo(a)anthracene	0.13 U
Benzo(a)pyrene	0.12 U
Benzo(b)fluoranthene	0.15 U
Dibenzo(a,h)anthracene	0.12 U
N-Nitroso-di-n-propylamine	0.14 U
Quinoline	0.36 U

J-64S FR-228	
7,12-Dimethylbenz(a)anthracene	0.38 U
Benzo(a)anthracene	0.14 U
Benzo(a)pyrene	0.12 U
Benzo(b)fluoranthene	0.16 U
Dibenzo(a,h)anthracene	0.13 U
N-Nitroso-di-n-propylamine	0.15 U
Quinoline	0.38 U

Legend

- Soil Sample Points
- Roads
- Gravel/Dirt Road
- AOC-6
- Refinery Tanks
- AOCs

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

   U = Undetected at the sample detection limit (SDL)

- SDL Exceeds EPA Screening Level
- SDL Exceeds TCEQ Screening Level
- SDL Exceeds Both EPA and TCEQ Screening Level

N

0 50 100

Feet

DATE DRAWN: 5/7/08	DATE REVISED:
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CHECKED BY: S. HALASZ	
APPROVED BY:	

AOC-6
Human Health
SVOC Surface Soil Distribution Map

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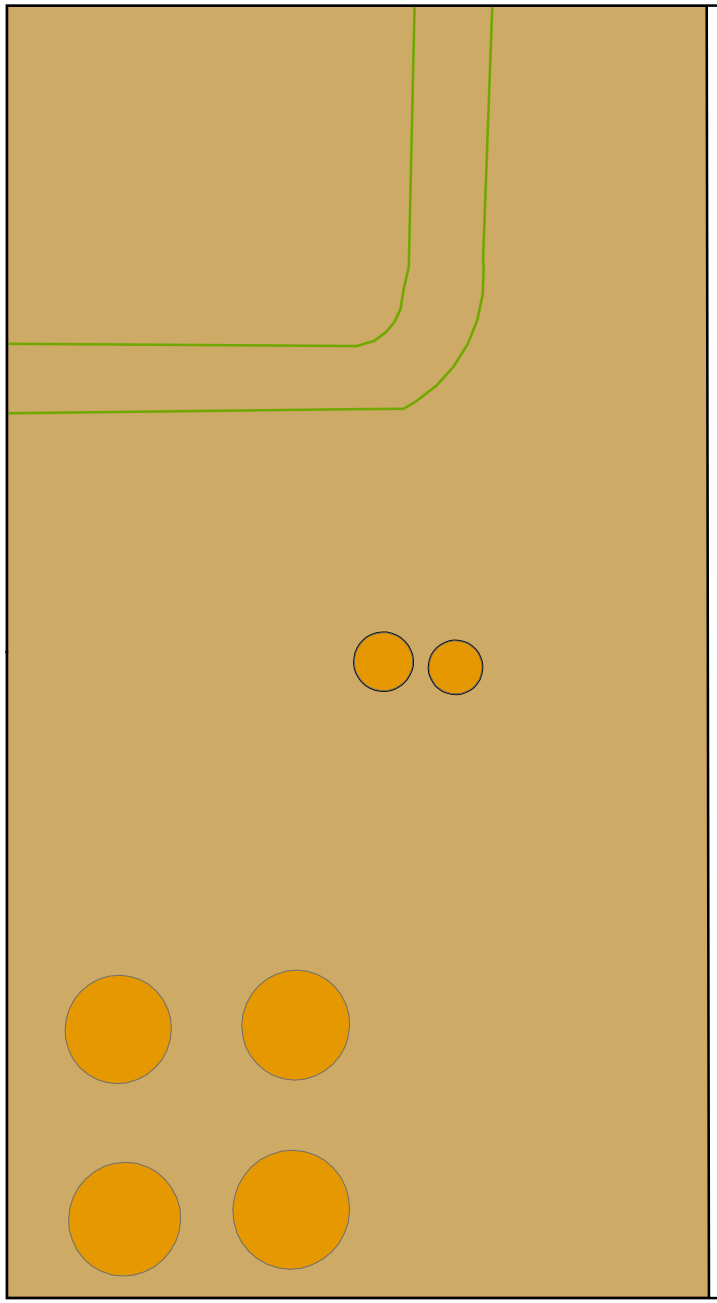
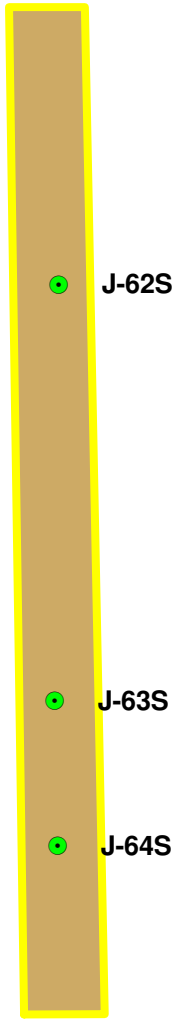
FIGURE

17C





J-62S FR-236	
Aluminum	2660
Barium	21.5 B
Beryllium	0.14 B
Chromium	2.1
Cobalt	0.2 B
Copper	1.2 B
Iron	956
Lead	2.6
Manganese	5.2
Mercury	0.025
Nickel	0.39 B
Vanadium	2.4 B
Zinc	3.7

J-63S FR-232	
Aluminum	4340
Arsenic	0.35 B
Barium	39.6
Beryllium	0.22 B
Chromium	4
Cobalt	0.3 B
Copper	1.9 B
Iron	1500
Lead	3.1
Manganese	7.5
Mercury	0.0064 B
Nickel	0.74 B
Vanadium	3.6 B
Zinc	5.8

J-64S FR-229	
Aluminum	1420
Barium	20.1 B
Beryllium	0.075 B
Chromium	2.3
Hex Chrom	1.5 B
Copper	1.5 B
Iron	737
Lead	2.1
Manganese	4.5
Mercury	0.0083 B
Nickel	0.25 B
Vanadium	1.6 B
Zinc	3

Legend

- Soil Sample Points
- Roads
- Gravel/Dirt Road
- AOC-6
- Refinery Tanks
- AOCs

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

N

0 50 100

Feet

DATE DRAWN: 5/7/08	DATE REVISED:
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CHECKED BY: S. HALASZ	
APPROVED BY:	

AOC-6
Human Health
Metal Subsurface Soil Distribution Map

FALCON REFINERY
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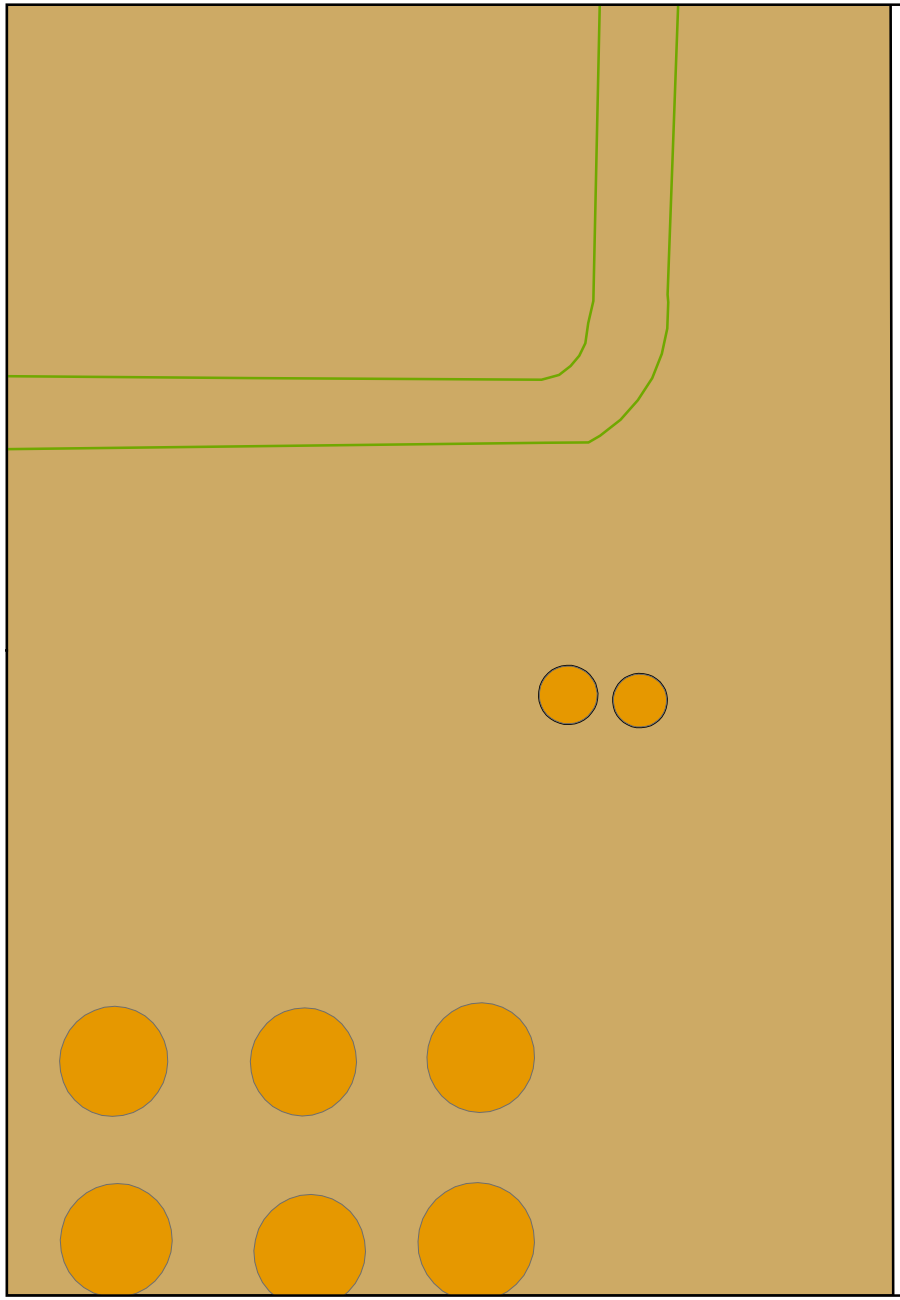
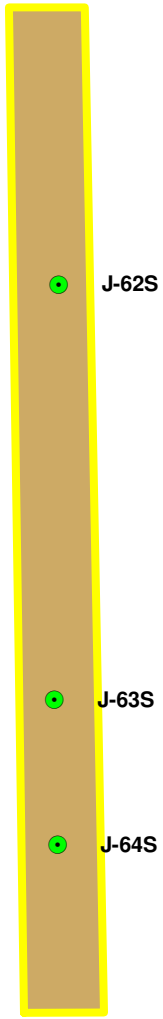
FIGURE

18A





J-62S FR-236	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0669
Methylene Chloride	0.0042 J

J-63S FR-232	
1,2,3-Trichloropropane	0.0016 U
Acetone	0.0661
Methylene Chloride	0.004 J

J-64S FR-229	
1,2,3-Trichloropropane	0.0015 U
Acetone	0.0183 J
Methylene Chloride	0.0033 J

Legend

- Soil Sample Points
- Roads
- Gravel/Dirt Road
- AOC-6
- Refinery Tanks
- AOCs

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

U = Undetected at the sample detection limit (SDL)

J = Concentration greater than the sample detection limit (SDL) but less than the method

SDL Exceeds TCEQ Screening Level

N

0 50 100

Feet

DATE DRAWN: 5/7/08	DATE REVISED:
DRAFTED BY: C. SEATON	
CHECKED BY: S. HALASZ	
APPROVED BY:	

AOC-6
Human Health
VOC Subsurface Soil Distribution Map

FALCON REFINERY
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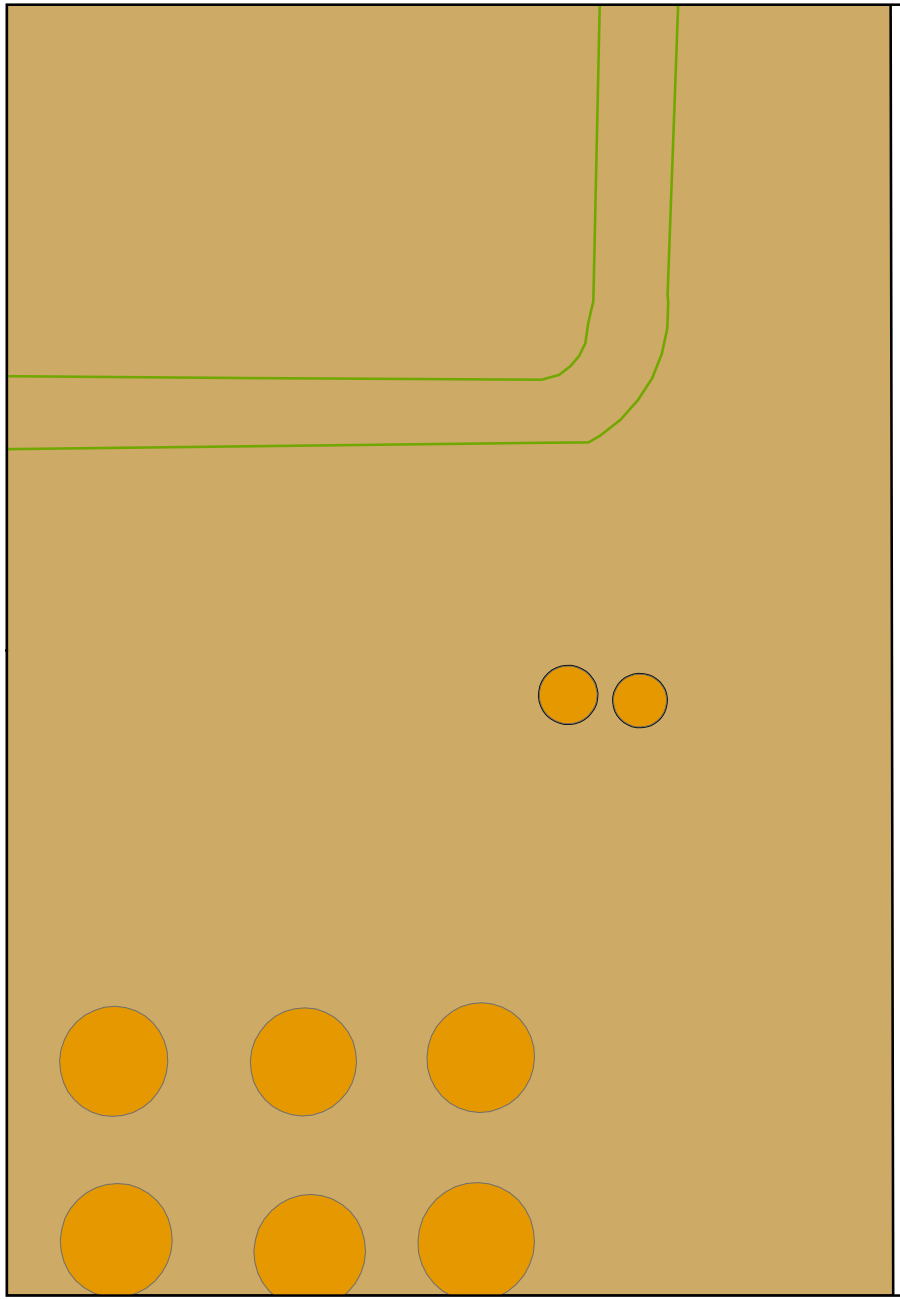
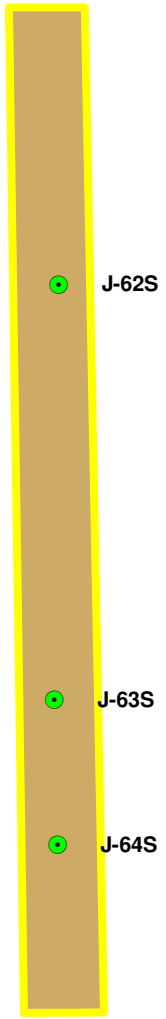
FIGURE

18B





J-62S FR-236	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.064 U
Dibenzo(a,h)anthracene	0.068 U
N-Nitroso-di-n-propylamine	0.079 U
Quinoline	0.20 U

J-63S FR-232	
7,12-Dimethylbenz(a)anthracene	0.19 U
Benzo(a)pyrene	0.062 U
Dibenzo(a,h)anthracene	0.067 U
N-Nitroso-di-n-propylamine	0.077 U
Quinoline	0.19 U

J-64S FR-229	
7,12-Dimethylbenz(a)anthracene	0.20 U
Benzo(a)pyrene	0.065 U
Dibenzo(a,h)anthracene	0.069 U
N-Nitroso-di-n-propylamine	0.080 U
Quinoline	0.20 U

Legend

- Soil Sample Points
- Roads
- Gravel/Dirt Road
- AOC-6
- Refinery Tanks
- AOCs

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

   U = Undetected at the sample detection limit (SDL)

SDL Exceeds EPA Screening Level

SDL Exceeds TCEQ Screening Level

N

0 50 100

Feet

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CHECKED BY: S. HALASZ	
APPROVED BY:	

AOC-6
Human Health
SVOC Subsurface Soil Distribution Map

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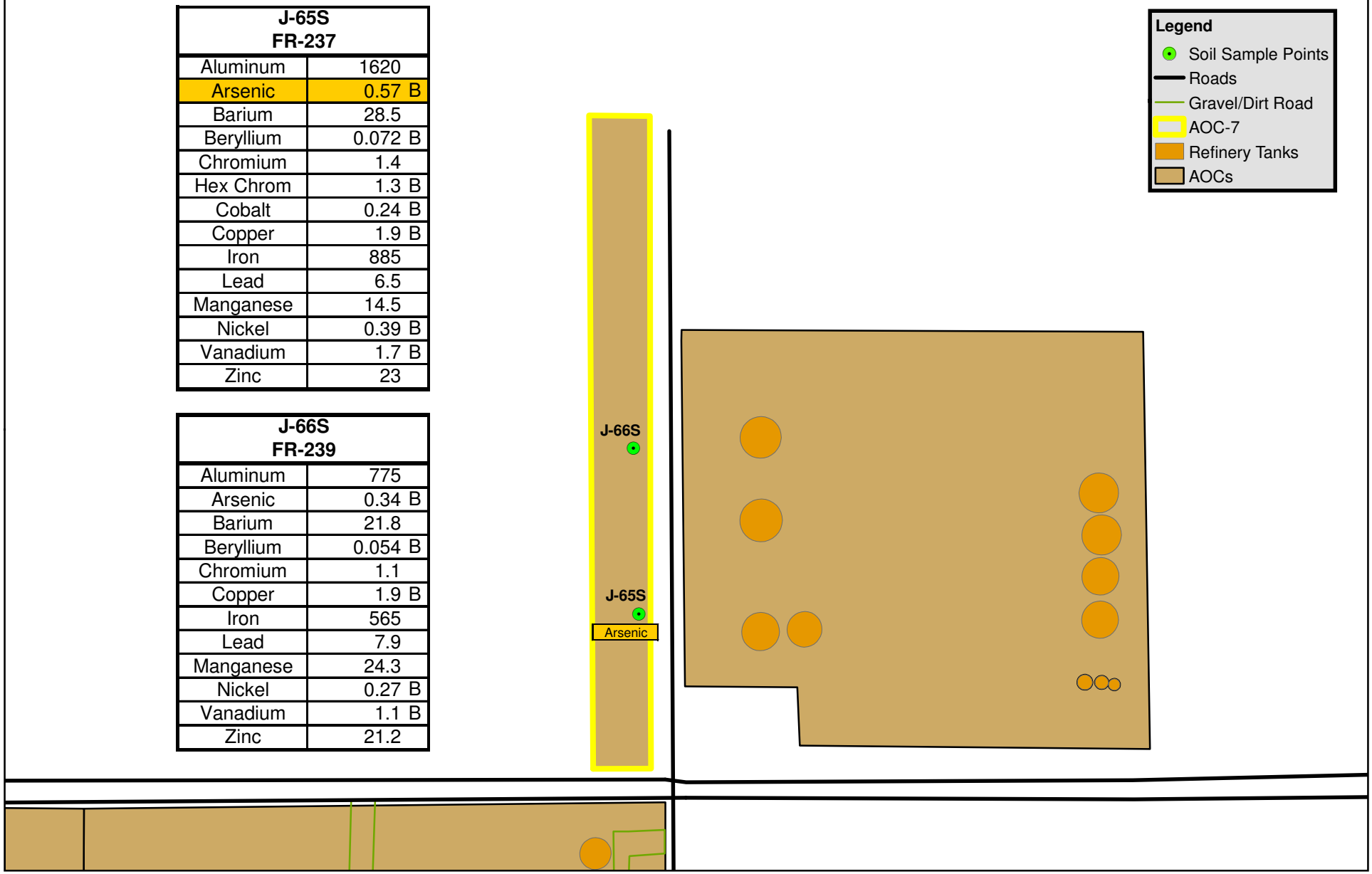
FIGURE

18C

J-65S FR-237	
Aluminum	1620
Arsenic	0.57 B
Barium	28.5
Beryllium	0.072 B
Chromium	1.4
Hex Chrom	1.3 B
Cobalt	0.24 B
Copper	1.9 B
Iron	885
Lead	6.5
Manganese	14.5
Nickel	0.39 B
Vanadium	1.7 B
Zinc	23

J-66S FR-239	
Aluminum	775
Arsenic	0.34 B
Barium	21.8
Beryllium	0.054 B
Chromium	1.1
Copper	1.9 B
Iron	565
Lead	7.9
Manganese	24.3
Nickel	0.27 B
Vanadium	1.1 B
Zinc	21.2



Notes:

1. Results are posted in mg/kg
2. Qualifiers:

B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

N

Above EPA MSSL

0 150 300
Feet

DATE DRAWN: 5/7/08	DATE REVISED:
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CHECKED BY: S. HALASZ	
APPROVED BY:	

AOC-7
Human Health
Metal Surface Soil Distribution Map

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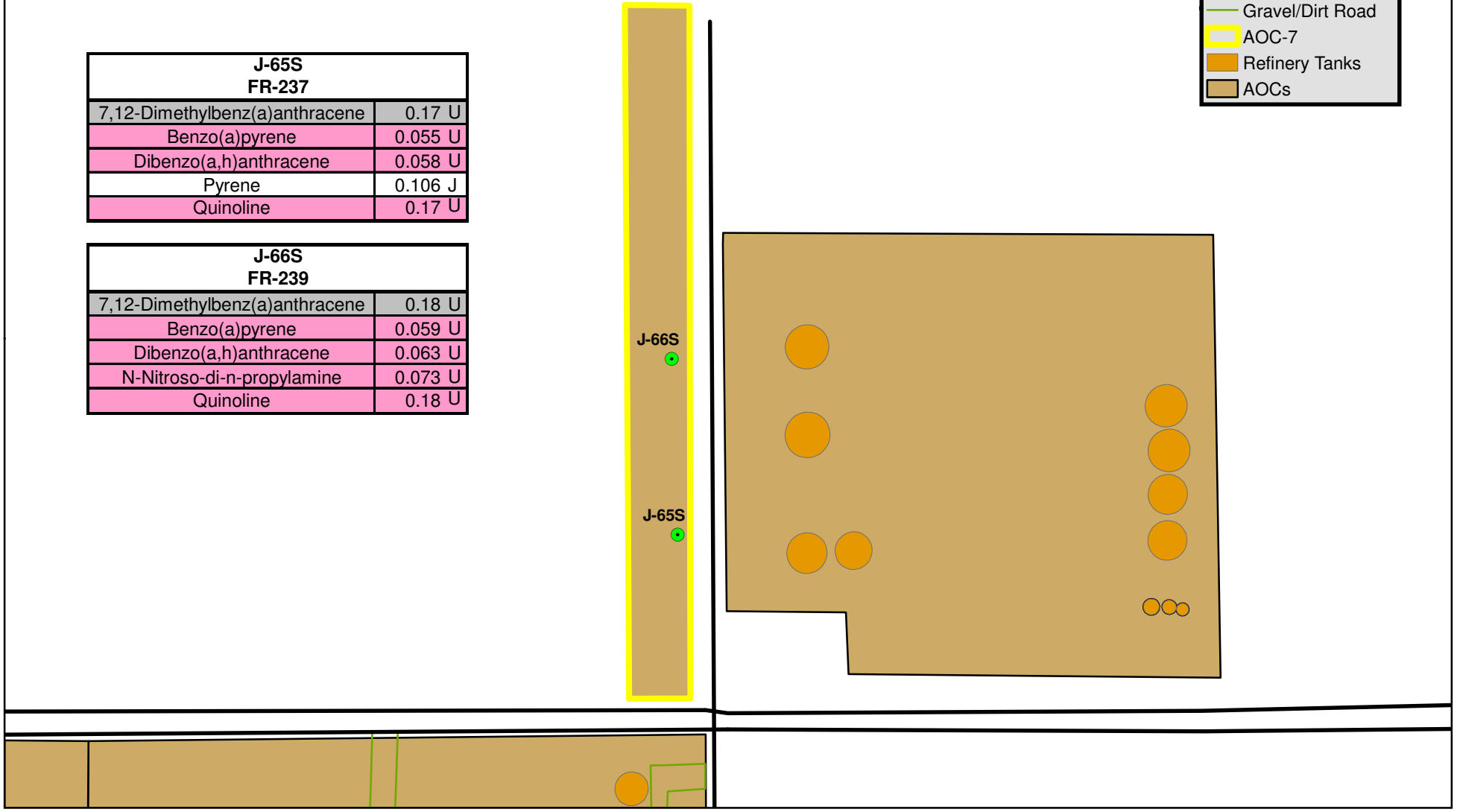
FIGURE
19A

J-65S FR-237	
7,12-Dimethylbenz(a)anthracene	0.17 U
Benzo(a)pyrene	0.055 U
Dibenzo(a,h)anthracene	0.058 U
Pyrene	0.106 J
Quinoline	0.17 U

J-66S FR-239	
7,12-Dimethylbenz(a)anthracene	0.18 U
Benzo(a)pyrene	0.059 U
Dibenzo(a,h)anthracene	0.063 U
N-Nitroso-di-n-propylamine	0.073 U
Quinoline	0.18 U



Notes:

1. Results are posted in mg/kg
2. Qualifiers:
   - U = Undetected at the sample detection limit (SDL)
   - J = Concentration greater than the sample detection limit (SDL) but less than the method

SDL Exceeds EPA Screening Level
SDL Exceeds TCEQ Screening Level

N

0 150 300
Feet

DATE DRAWN: 5/7/08	DATE REVISED:
DRAFTED BY: C. SEATON	
CHECKED BY: S. HALASZ	
APPROVED BY:	

AOC-7
Human Health
SVOC Surface Soil Distribution Map

FALCON REFINERY
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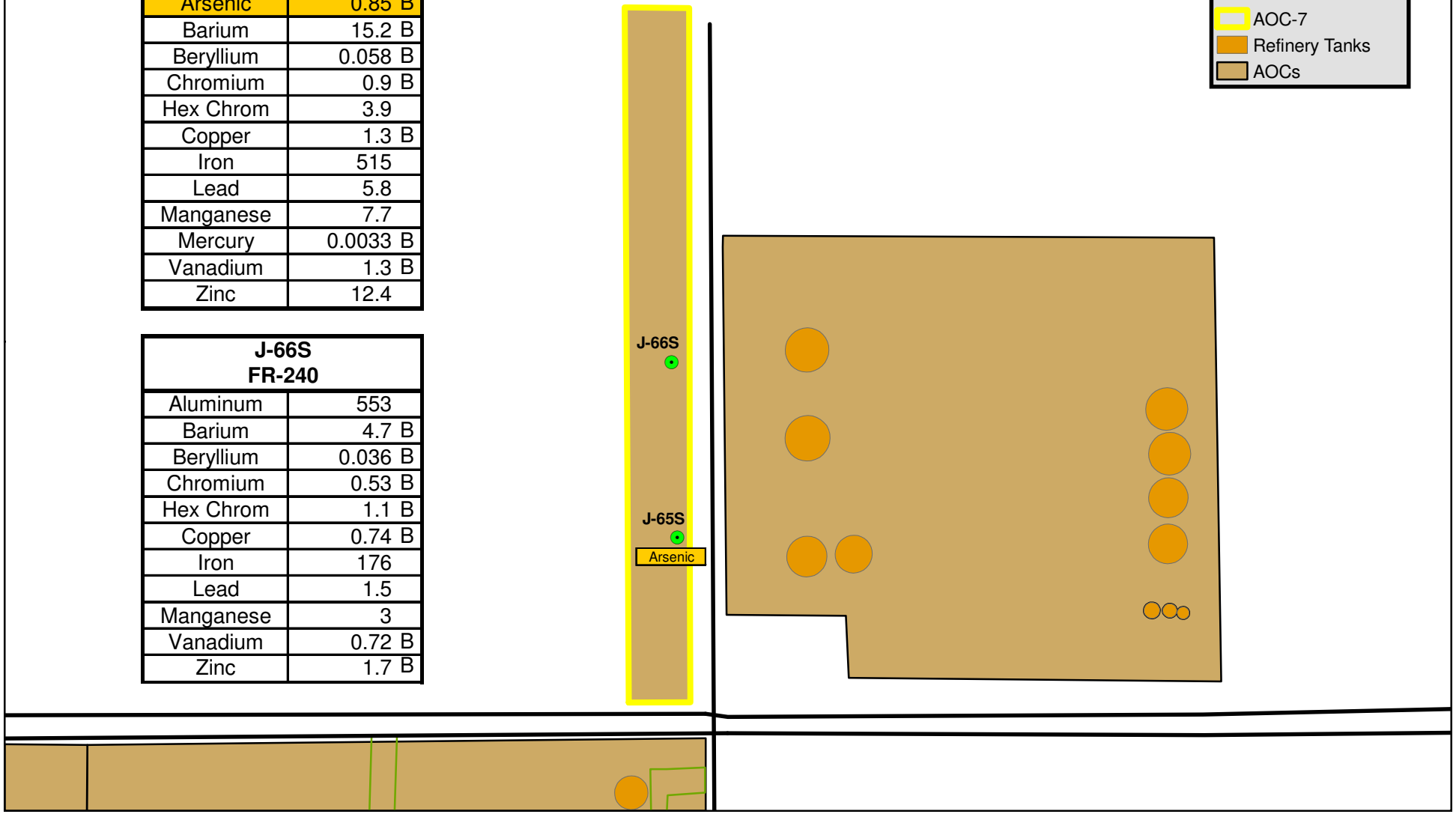
FIGURE
19B

J-65S FR-238	
Aluminum	1190
Arsenic	0.85 B
Barium	15.2 B
Beryllium	0.058 B
Chromium	0.9 B
Hex Chrom	3.9
Copper	1.3 B
Iron	515
Lead	5.8
Manganese	7.7
Mercury	0.0033 B
Vanadium	1.3 B
Zinc	12.4

J-66S FR-240	
Aluminum	553
Barium	4.7 B
Beryllium	0.036 B
Chromium	0.53 B
Hex Chrom	1.1 B
Copper	0.74 B
Iron	176
Lead	1.5
Manganese	3
Vanadium	0.72 B
Zinc	1.7 B



Notes:

1. Results are posted in mg/kg
   Hex Chrom posted in mg/l

2. Qualifiers:

   B = Concentration greater than the sample detection limit (SDL) but less than the method quantitation limit (MQL)

Above EPA MSSL

N

0 150 300
Feet

DATE DRAWN: 5/7/08	DATE REVISED:
DRAFTED BY: C. SEATON	
CHECKED BY: S. HALASZ	
APPROVED BY:	

AOC-7
Human Health
Metal Subsurface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

PROJ NO. 59752 FILE NAME: Falcon Refinery Base Map

KLEINFELDER
Bright People. Right Solutions.
3601 Manor Road, Austin, Texas 78723
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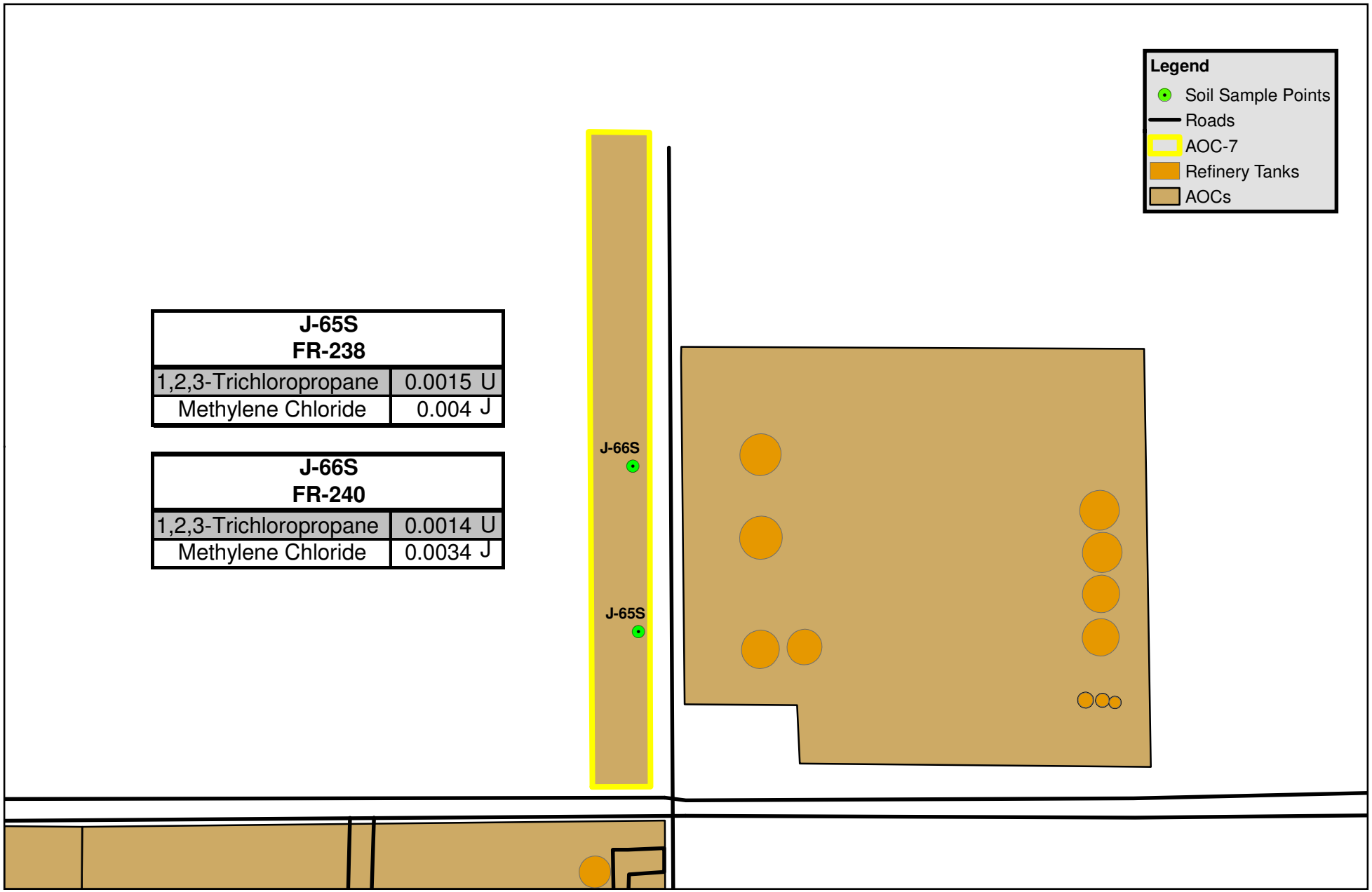
www.kleinfelder.com

FIGURE
20A



J-65S FR-238	
1,2,3-Trichloropropane	0.0015 U
Methylene Chloride	0.004 J

J-66S FR-240	
1,2,3-Trichloropropane	0.0014 U
Methylene Chloride	0.0034 J

Notes:

1. Results are posted in mg/kg
2. Qualifiers:
   - U = Undetected at the sample detection limit (SDL)
   - J = Concentration greater than the sample detection limit (SDL) but less than the method

SDL Exceeds TCEQ Screening Level

N

0 150 300
Feet

DATE DRAWN: 5/7/08	DATE REVISED:
DRAFTED BY: C. SEATON	
CHECKED BY: S. HALASZ	
APPROVED BY:	

AOC-7
Human Health
VOC Subsurface Soil Distribution Map

FALCON REFINERY
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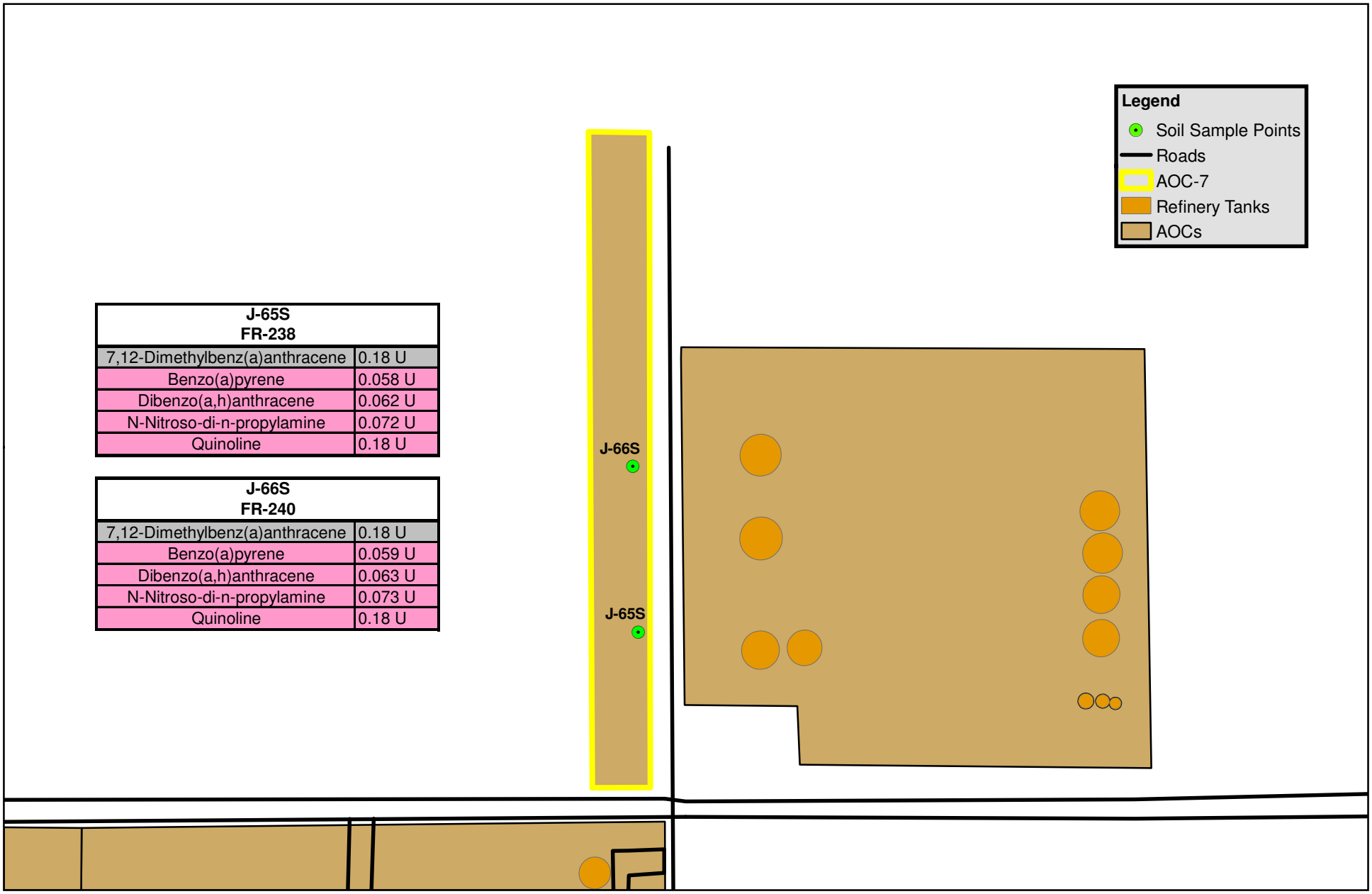
FIGURE
20B



J-65S FR-238	
7,12-Dimethylbenz(a)anthracene	0.18 U
Benzo(a)pyrene	0.058 U
Dibenzo(a,h)anthracene	0.062 U
N-Nitroso-di-n-propylamine	0.072 U
Quinoline	0.18 U

J-66S FR-240	
7,12-Dimethylbenz(a)anthracene	0.18 U
Benzo(a)pyrene	0.059 U
Dibenzo(a,h)anthracene	0.063 U
N-Nitroso-di-n-propylamine	0.073 U
Quinoline	0.18 U

Notes:

1. Results are posted in mg/kg
2. Qualifiers:

U = Undetected at the sample detection limit (SDL)

SDL Exceeds TCEQ Screening Level
SDL Exceeds EPA Screening Level

N

0 150 300
Feet

DATE DRAWN: 5/7/08	DATE REVISED:
DRAFTED BY: C. SEATON	
CHECKED BY: S. HALASZ	
APPROVED BY:	

AOC-7
Human Health
SVOC Subsurface Soil Distribution Map

FALCON REFINERY
INGLESIDE, SAN PATRICIO COUNTY, TEXAS

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FIGURE
20C