

APPENDIX D

Subtidal Sediment Analytical Results

- D.1. Subtidal sediment log.
- D.2. PAH data for subtidal sediment samples
- D.3. NOAA Mussel Watch sediment samples collected at Hope Creek (DBHC), Arnolds Point (DBAP), and Ben Davis Point Shoal (DBBD).

D.1. Subtidal sediment log.

Sample ID	Latitude	Longitude	Date	Total PAHs (ng/g dry)	Comments
SED-DBHC-091204	39.42607	-75.49257	9-Dec-04	1030	
SMH-3	39.79850	-75.40993	10-Dec-04	5676	Marcus Hook, Left Descending Bank
SCR-4	39.70970	-75.49478	10-Dec-04	2023	Christina River, Left Descending Bank, closer to shore than CR#3
SCD-4	39.56947	-75.57192	10-Dec-04	5314	C & D Canal, Right Descending Bank, closer to shore than CD#3
SCD-5	39.57078	-75.52857	10-Dec-04	2224	C & D Canal, Left Descending Bank, closer to shore than CD#1
SED-UL-01	40.01215	-75.03547	10-Dec-04	2171	
SED-UL-02	40.01277	-75.03668	10-Dec-04	575	
SED-PTB-01	40.00893	-75.04340	10-Dec-04	2176	
SED-PTB-02	40.00977	-75.04660	10-Dec-04	11786	
SED-PTB-03	40.01125	-75.04950	10-Dec-04	209	
SLP-3	39.39867	-75.52060	11-Dec-04	264	Liston Point, RDB, closer to shore than WLP-3
SLP-2	39.40548	-75.49155	11-Dec-04	665	Liston Point, 200m towards LDB of channel
SCD-2	39.57440	-75.55315	11-Dec-04	6652	C & D Canal, center, directly below Pea Patch Is.
SCR-2	39.71293	-75.50470	11-Dec-04	1458	Christina River, center channel
SCR-1	39.71572	-75.51003	11-Dec-04	4190	Christina River, RDB, 50m downstream of red bouy
SED-WOOD-01	39.84177	-75.15462	11-Dec-04	23985	
SED-WOOD-02	39.86520	-75.19585	11-Dec-04	10023	
SED-WOOD-03	39.86695	-75.19590	11-Dec-04	10210	
SED-MAN-01	39.83533	-75.23647	11-Dec-04	4653	
SED-MAN-02	39.85245	-75.23018	11-Dec-04	5810	
SED-MAN-03	39.85383	-75.23115	11-Dec-04	19735	
SED-TN-01	39.85957	-75.30862	11-Dec-04	12847	
SED-TN-02	39.85412	-75.30743	11-Dec-04	459	
SED-TN-03	39.84313	-75.31132	11-Dec-04	6052	
SED-TN-04	39.84282	-75.28133	11-Dec-04	5564	
SED-BTC-01	39.86962	-75.11958	11-Dec-04	13972	
SED-BTC-02	39.88358	-75.13423	11-Dec-04	11841	
SED-BTC-03	39.88542	-75.13513	11-Dec-04	9025	
Supplemental Samples from NOAA Mussel Watch Program (reported as NS&T PAHs ng/g dry))					
Sample ID	Latitude	Longitude	Date	Total PAHs (ng/g dry)	Comments
DBAP	39.2300	-75.2700	1-Jan-05	2509	Arnolds Point
DBHC	39.25604	-75.2560	1-Jan-05	2728	Hope Creek
DBBD	39.1514	-75.1817	1-Jan-05	384	Ben Davis Point Shoal

D.2. PAH data for subtidal sediment samples.

Sample Name	ETX3934.D	ETX3935.D	ETX3936.D	ETX3937.D	ETX3938.D	ETX3939.D						
Client Name	SED-WOOD-01	SED-WOOD-02	SED-WOOD-03	SED-MAN-01	SED-MAN-02	SED-MAN-03						
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment						
Collection Date	12/11/04	12/11/04	12/11/04	12/11/04	12/11/04	12/11/04						
Received Date	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04						
Extraction Date	12/20/04	12/20/04	12/20/04	12/20/04	12/20/04	12/20/04						
Extraction Batch	ENV 1071	ENV 1071	ENV 1071	ENV 1071	ENV 1071	ENV 1071						
Date Acquired	12/25/04	12/25/04	12/25/04	12/25/04	12/25/04	01/03/05						
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002						
Sample Dry Weight (g)	15.0	15.0	15.0	15.0	15.0	15.0						
% Moisture	72	58	64	34	45	57						
% Dry	28	42	36	66	55	43						
Dilution	NA	NA	NA	NA	NA	NA						
Target Compounds	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q
Naphthalene	306		279		378		239		129		675	
C1-Naphthalenes	222		167		229		168		75.0		154	
C2-Naphthalenes	288		150		246		196		67.4		230	
C3-Naphthalenes	212		107		185		128		56.8		356	
C4-Naphthalenes	176		85.1		142		64.9		45.4		586	
Benzo(b)fluoranthene	14.5		9.1		15.2		10.8		4.4		20.7	
C1-Benzo(b)fluoranthenes	52.6		17.8		40.8		11.8		7.9		53.2	
C2-Benzo(b)fluoranthenes	39.9		13.5		23.7		13.8		7.6		63.9	
C3-Benzo(b)fluoranthenes	25.0		10.4		15.4		12.3		6.3		102	
Biphenyl	53		31.0		50.3		37.1		13.1		53.6	
Acenaphthylene	153		78.5		127		67.1		43.8		51.1	
Acenaphthene	94		39.8		57.3		26.4		18.8		29.4	
Dibenzofuran	135		80.2		119		95.1		34.4		56.0	
Fluorene	194		86.5		136		60.3		42.4		61.4	
C1-Fluorenes	115		42.4		79.4		23.6		23.6		135	
C2-Fluorenes	138		83.6		127		45.5		43.4		383	
C3-Fluorenes	163		132		205		68.0		62.6		625	
Carbazole	113		38.0		32.3		15.5		16.1		11.4	
Anthracene	287		139		147		80.4		87.0		75.2	
Phenanthrene	1160		421		417		216		165		142	
C1-Phenanthrene/Anthracenes	467		281		282		137		144		209	
C2-Phenanthrene/Anthracenes	427		245		255		114		142		587	
C3-Phenanthrene/Anthracenes	341		195		217		88.6		123		956	
C4-Phenanthrene/Anthracenes	221		121		93.3		45.4		69.4		761	
Dibenzothiophene	58		30.6		30.0		22.4		13.9		50.8	
C1-Dibenzothiophene	74		43.2		45.3		28.6		24.8		225	
C2-Dibenzothiophene	112		69.2		73.9		43.4		47.3		670	
C3-Dibenzothiophene	155		80.7		87.1		40.5		64.7		1220	
Fluoranthene	2590		711		651		253		493		289	
Pyrene	2320		680		650		229		438		309	
C1-Fluoranthenes/Pyrenes	850		444		449		160		260		594	
C2-Fluoranthenes/Pyrenes	643		333		325		149		210		810	
C3-Fluoranthenes/Pyrenes	252		133		148		50.1		111		520	
Naphthobenzothiophene	368		141		160		61.4		88.2		561	
C1-Naphthobenzothiophenes	180		110		140		50.8		67.7		1370	
C2-Naphthobenzothiophenes	207		119		139		44.7		83.1		1460	
C3-Naphthobenzothiophenes	148		82.8		100		29.7		76.2		965	
Benz(a)anthracene	1130		476		442		202		267		292	
Chrysene	1580		526		522		192		328		271	
C1-Chrysenes	1000		383		340		146		218		589	
C2-Chrysenes	268		184		184		64.9		108		502	
C3-Chrysenes	101.0		71.8		78.8		26.1		64.9		218	
C4-Chrysenes	56.2		39.0		39.4		14.5		21.4		251	
Benzo(b)fluoranthene	2280		729		579		268		464		398	
Benzo(k)fluoranthene	601		248		198		87.0		135		142	
Benzo(e)pyrene	995		361		300		131		208		301	
Benzo(a)pyrene	1140		436		342		142		224		292	
Perylene	381		318		226		96.0		150		374	
Indeno(1,2,3-c,d)pyrene	543		217		168		78.6		111		203	
Dibenzo(a,h)anthracene	144		41.7		36.1		17.2		23.8		65	
Benzo(g,h,i)perylene	432		162		137		60.7		82.5		216	
Total PAHs	23985		10023		10210		4653		5810		19735	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	220		169		233		172		77.5		183	
1-Methylnaphthalene	100		70.8		96.3		69.1		30.2		69.8	
2,6-Dimethylnaphthalene	149		84.4		138		120		37.7		166	
1,6,7-Trimethylnaphthalene	26.5		13.1		24.1		15.5		7.1		20.0	
1-Methylphenanthrene	103.0		44.0		43.9		16.5		28.0		46.0	
C29-Hopane	534		271		319		76.2		163		959	
18 α -Oleanane	60.2		35.1		39.8		15.2		50.7		107	
C30-Hopane	552		321		344		96.9		187		1140	
Surrogate (Su)	Su Recovery (%)		Su Recovery (%)		Su Recovery (%)		Su Recovery (%)		Su Recovery (%)		Su Recovery (%)	
Naphthalene-d8	66		78		90		88		76		96	
Acenaphthene-d10	61		91		87		80		90		91	
Phenanthrene-d10	76		90		89		88		92		84	
Chrysene-d12	62		82		90		90		83		84	
Perylene-d12	78		81		98		75		82		91	

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3940.D	ETX3941.D	ETX3942.D	ETX3943.D	ETX3944.D	ETX3945.D
Client Name	SED-TN-01	SED-TN-02	SED-TN-03	SED-TN-04	SED-BTC-01	SED-BTC-02
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Collection Date	12/11/04	12/11/04	12/11/04	12/11/04	12/11/04	12/11/04
Received Date	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04
Extraction Date	12/20/04	12/20/04	12/20/04	12/20/04	12/20/04	12/20/04
Extraction Batch	ENV 1071	ENV 1071	ENV 1071	ENV 1071	ENV 1071	ENV 1071
Date Acquired	12/25/04	12/25/04	12/25/04	12/25/04	12/25/04	12/25/04
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Dry Weight (g)	15.1	15.0	15.0	15.0	15.0	15.0
% Moisture	55	48	52	46	64	62
% Dry	45	52	48	54	36	38
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q
Naphthalene	253		14.2		172		149		354		468	
C1-Naphthalenes	180		6.9		98.2		84.7		197		264	
C2-Naphthalenes	255		8.5		82.5		75.8		202		249	
C3-Naphthalenes	246		8.4		59.4		59.1		157		182	
C4-Naphthalenes	203		8.8		47.4		45.0		142		137	
Benzo(b)fluoranthene	10.6		0.7		5.4		4.7		13.3		16.0	
C1-Benzo(b)fluoranthene	28.0		<0.3 U		12.5		9.4		30.5		32.5	
C2-Benzo(b)fluoranthene	20.6		<0.3 U		7.5		6.6		20.6		28.3	
C3-Benzo(b)fluoranthene	18.3		<0.3 U		5.1		5.1		17.3		19.8	
Biphenyl	42.5		4.4		19.1		16.0		41.4		51.5	
Acenaphthylene	113		1.8		47.2		45.4		107		142	
Acenaphthene	52.0		3.2		17.4		16.5		48.6		51.2	
Dibenzofuran	96.9		9.8		39.2		35.3		98.5		115	
Fluorene	120		13.3		45.3		40.4		121		133	
C1-Fluorenes	85.6		5.1		32.9		25.2		75.8		81.0	
C2-Fluorenes	165		6.1		42.2		35.7		116		123	
C3-Fluorenes	284		7.8		55.1		55.7		211		174	
Carbazole	44.1		1.4		14.3		17.8		54.7		32.5	
Anthracene	159		3.0		91.8		75.4		245		186	
Phenanthrene	477		18.3		232		226		607		392	
C1-Phenanthrene/Anthracenes	335		11.6		201		156		348		298	
C2-Phenanthrene/Anthracenes	385		12.4		164		134		420		311	
C3-Phenanthrene/Anthracenes	349		9.3		118		110		498		256	
C4-Phenanthrene/Anthracenes	187		8.9		55.1		52.3		358		159	
Dibenzothiophene	32.9		0.8		16.6		16.2		45.8		31.5	
C1-Dibenzothiophene	68.7		1.5		25.1		21.7		61.6		53.8	
C2-Dibenzothiophene	124		1.8		36.8		37.2		168		95.1	
C3-Dibenzothiophene	166		<0.3 U		30.8		41.7		292		120	
Fluoranthene	912		13.9		463		361		1080		762	
Pyrene	936		11.3		422		366		999		748	
C1-Fluoranthene/Pyrenes	573		11.3		326		248		600		515	
C2-Fluoranthene/Pyrenes	482		7.1		226		179		517		410	
C3-Fluoranthene/Pyrenes	180		<0.4 U		76.2		74.3		292		230	
Naphthobenzothiophene	172		2.6		93.9		82.0		201		171	
C1-Naphthobenzothiophenes	168		3.5		60.9		68.1		245		146	
C2-Naphthobenzothiophenes	160		<0.4 U		61.8		68.2		360		159	
C3-Naphthobenzothiophenes	93.3		<0.4 U		42.2		48.3		245		128.0	
Benz(a)anthracene	592		5.5		306		267		465		521	
Chrysene	627		8.1		332		251		606		474	
C1-Chrysenes	427		4.9		220		189		422		422	
C2-Chrysenes	188		<0.3 U		102		91.6		258		226	
C3-Chrysenes	79.0		<0.3 U		44.3		36.3		136		112	
C4-Chrysenes	36.4		<0.3 U		20.5		21.1		37.7		37.7	
Benzo(b)fluoranthene	828		9.8		436		449		847		802	
Benzo(k)fluoranthene	283		1.5		139		161		173		244	
Benzo(e)pyrene	415		2.7		202		230		342		392	
Benzo(a)pyrene	496		2.9		256		284		404		425	
Perylene	240		197		210		217		296		284	
Indeno(1,2,3-c,d)pyrene	225		1.9		118		134		195		212	
Dibenzo(a,h)anthracene	56.3		6.0		32.8		33.4		49.0		47.4	
Benzo(g,h,i)perylene	177		1.4		88.1		107		150		169	
Total PAHs	12847		459		6052		5564		13972		11841	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	180		6.3		102		86.0		200		270	
1-Methylnaphthalene	79.7		3.7		39.3		35.8		83.5		110	
2,6-Dimethylnaphthalene	136		3.2		45.7		41.4		116		143	
1,6,7-Trimethylnaphthalene	32.0		1.3		8.9		7.4		19.0		20.8	
1-Methylphenanthrene	79.6		3.8		31.0		23.3		89.2		62.1	
C29-Hopane	300		<1.1 U		166		203		480		474	
18a-Oleanane	32.8		<1.1 U		19.7		36.6		59.9		71.9	
C30-Hopane	319		<1.1 U		187		238		515		521	

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	83	82	77	80	81	87
Acenaphthene-d10	75	80	93	94	85	96
Phenanthrene-d10	76	99	93	93	74	91
Chrysene-d12	77	83	93	96	83	93
Perylene-d12	84	93	84	91	77	92

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3946.D	ETX3947.D	ETX3948.D	ETX3949.D	ETX3950.D	ETX3952.D
Client Name	SED-BTC-03	SED-UL-01	SED-UL-02	SED-PTB-01	SED-PTB-02	SLP-3
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Collection Date	12/11/04	12/10/04	12/10/04	12/10/04	12/10/04	12/11/04
Received Date	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04
Extraction Date	12/20/04	12/20/04	01/03/05	01/03/05	01/03/05	01/03/05
Extraction Batch	ENV 1071	ENV 1071	ENV 1074	ENV 1074	ENV 1074	ENV 1074
Date Acquired	12/25/04	12/25/04	01/07/05	01/07/05	01/07/05	01/07/05
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Dry Weight (g)	15.0	15.0	15.1	15.0	15.0	15.0
% Moisture	47	43	26	33	28	26
% Dry	53	57	74	67	72	74
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q
Naphthalene	349		48.2		20.3		80.6		224		6.6	
C1-Naphthalenes	141		22.2		5.7		20.0		109		3.4	
C2-Naphthalenes	116		22.2		5.0		19.5		62.1		4.3	
C3-Naphthalenes	79.5		18.0		4.2		14.7		41.2		3.6	
C4-Naphthalenes	50.4		14.2		4.5		11.3		19.0		1.9	
Benzothiophene	9.2		1.8		0.6		2.0		6.2		0.3	
C1-Benzothiophenes	9.7		4.1		0.9		2.5		3.8		0.9	
C2-Benzothiophenes	9.1		1.8		0.6		1.6		3.4		<0.3 U	
C3-Benzothiophenes	8.0		1.1		<0.3 U		1.3		2.9		<0.3 U	
Biphenyl	25.8		5.4		1.7		4.8		14.2		1.2	
Acenaphthylene	70.4		26.8		4.6		17.5		41.1		2.3	
Acenaphthene	37.6		8.4		2.4		8.3		130		0.7	
Dibenzofuran	55.5		15.2		4.6		13.7		93.6		1.8	
Fluorene	66.4		18.4		4.1		14.1		129		1.8	
C1-Fluorenes	41.8		10.2		1.8		7.1		32.6		1.4	
C2-Fluorenes	54.0		17.0		3.5		10.2		21.5		2.0	
C3-Fluorenes	78.1		24.3		<0.4 U		27.9		20		<0.4 U	
Carbazole	28.4		8.2		2.3		11.0		216		0.7	
Anthracene	144		31.5		8.3		28.2		195		3.0	
Phenanthrene	361		91.0		29.1		101		1180		8.6	
C1-Phenanthrene/Anthracenes	247		55.7		13.8		44.9		301		5.6	
C2-Phenanthrene/Anthracenes	199		49.1		11.8		41.5		153		6.1	
C3-Phenanthrene/Anthracenes	146		36.3		9.5		32.6		75.0		4.8	
C4-Phenanthrene/Anthracenes	105		17.7		6.0		21.0		35.4		3.2	
Dibenzothiophene	23.2		5.6		2.2		5.8		65.7		0.8	
C1-Dibenzothiophene	34.4		7.2		2.7		6.4		31.0		1.0	
C2-Dibenzothiophene	46.9		11.0		3.2		9.0		17.3		1.7	
C3-Dibenzothiophene	54.0		13.1		2.5		10.3		10.8		2.1	
Fluoranthene	836		177		54.6		215		1360		14.6	
Pyrene	764		171		47.6		154		1280		12.1	
C1-Fluoranthenes/Pyrenes	373		97.0		30.1		111		545		12.8	
C2-Fluoranthenes/Pyrenes	252		69.5		19.8		84.9		468		8.8	
C3-Fluoranthenes/Pyrenes	116		26.1		10.5		32.1		150		4.1	
Naphthobenzothiophene	121		36.9		8.6		44.2		215		3.9	
C1-Naphthobenzothiophenes	73.0		21.5		6.8		31.0		78.7		4.1	
C2-Naphthobenzothiophenes	78.7		21.7		8.5		33.6		36.8		5.1	
C3-Naphthobenzothiophenes	58.4		16.1		9.2		27.4		20.6		3.7	
Benz(a)anthracene	436		114		28.4		123		901		12.4	
Chrysene	509		120		27.7		107		469		11.2	
C1-Chrysenes	289		74.0		15.7		53.8		186		7.5	
C2-Chrysenes	125		29.6		8.7		27.0		82.4		5.0	
C3-Chrysenes	53.5		13.2		4.7		17.6		42.4		2.5	
C4-Chrysenes	29.2		9.0		3.9		14.6		54.5		1.7	
Benzo(b)fluoranthene	794		175		32.5		147		704		13.5	
Benzo(k)fluoranthene	234		60.9		10.9		23.6		176		4.6	
Benzo(e)pyrene	323		86.0		13.0		52.3		229		6.7	
Benzo(a)pyrene	390		101.0		19.0		82.9		574		8.9	
Perylene	195		60.6		19.6		74.9		161		32.9	
Indeno(1,2,3-c,d)pyrene	192		51.7		19.8		85.2		432		9.0	
Dibenzo(a,h)anthracene	45.0		12.8		5.4		20.4		92.8		2.2	
Benzo(g,h,i)perylene	139		40.7		14.1		64.3		294		7.0	
Total PAHs	9025		2171		575		2176		11786		264	
Individual Alkyl Isomers and Hopanes												
2-Methylnaphthalene	146		21.7		6.2		20.7		92.7		3.5	
1-Methylnaphthalene	56.7		10.3		2.2		9.1		71.8		1.5	
2,6-Dimethylnaphthalene	63.7		11.6		2.6		9.2		21.6		2.2	
1,5,7-Trimethylnaphthalene	9.9		2.3		0.4		1.7		5.1		0.2	
1-Methylphenanthrene	53.1		10.8		3.3		10.2		67.3		1.4	
C29-Hopane	173		65.6		16.8		42.4		18.2		12.9	
18a-Oleanane	25.8		7.9		3.4		4.9		2.8		2.4	
C30-Hopane	193		94.9		23.4		52.3		25.8		18.0	
Surrogate (Su)												
	Su Recovery (%)		Su Recovery (%)		Su Recovery (%)		Su Recovery (%)		Su Recovery (%)		Su Recovery (%)	
Naphthalene-d8	89		93		82		76		79		89	
Acenaphthene-d10	94		93		85		75		87		77	
Phenanthrene-d10	91		90		86		77		70		81	
Chrysene-d12	80		99		79		94		91		80	
Perylene-d12	78		93		71		63		76		35	

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, i=interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3953.D	ETX3954.D	ETX3955.D	ETX3956.D	ETX3957.D	ETX3958.D
Client Name	SLP-2	SCD-2	SCR-2	SCR-1	SMH-3	SCR-4
Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Collection Date	12/11/04	12/11/04	12/11/04	12/11/04	12/10/04	12/10/04
Received Date	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04	12/14/04
Extraction Date	01/03/05	01/03/05	01/03/05	01/03/05	01/03/05	01/03/05
Extraction Batch	ENV 1074	ENV 1074	ENV 1074	ENV 1074	ENV 1074	ENV 1074
Date Acquired	01/07/05	01/07/05	01/07/05	01/07/05	01/07/05	01/07/05
Method	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002	PAH-2002
Sample Dry Weight (g)	15.0	15.0	15.0	15.0	15.0	15.0
% Moisture	48	72	47	66	66	30
% Dry	52	28	53	34	34	70
Dilution	NA	NA	NA	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q
Naphthalene	7.8		145		5.0		150		134	
C1-Naphthalenes	2.6		86.2		2.5		82.0		77.5	
C2-Naphthalenes	2.8		85.8		4.5		70.8		80.9	
C3-Naphthalenes	2.2		84.0		5.8		54.7		64.2	
C4-Naphthalenes	1.2		75.3		2.4		32.7		41.2	
Benzo[thiophene]	0.4		5.0		0.2		4.9		5.2	
C1-Benzo[thiophenes]	1.6		13.5		2.5		11.8		13.2	
C2-Benzo[thiophenes]	0.5		10.7		1.2		6.9		7.3	
C3-Benzo[thiophenes]	<0.3 U		9.7		<0.3 U		5.2		4.2	
Biphenyl	2.1		20.1		2.1		21.5		19.9	
Acenaphthylene	0.9		45.5		8.8		27.9		48.8	
Acenaphthene	0.4		15.6		0.7		14.0		21.9	
Dibenzofuran	4.5		33.1		3.8		29.5		36.7	
Fluorene	2.7		36.6		4.8		41.3		46.0	
C1-Fluorenes	2.6		34.6		5.5		29.3		28.5	
C2-Fluorenes	<0.4 U		87.6		7.6		32.9		36.5	
C3-Fluorenes	<0.4 U		121		9.3		59.5		57.4	
Carbazole	1.0		13.4		1.3		12.9		20.2	
Anthracene	2.3		62.1		7.2		71.3		88.3	
Phenanthrene	8.1		139		7.2		160		232	
C1-Phenanthrene/Anthracenes	5.7		185		22.1		111		147	
C2-Phenanthrene/Anthracenes	4.1		210		25.3		113		142	
C3-Phenanthrene/Anthracenes	4.1		240		13.1		90.7		114	
C4-Phenanthrene/Anthracenes	2.5		175		4.0		64.9		60.3	
Dibenzothiophene	0.4		12.4		1.5		14.9		16.3	
C1-Dibenzothiophene	0.5		39.3		4.4		21.2		21.8	
C2-Dibenzothiophene	0.4		119		7.0		29.9		30.7	
C3-Dibenzothiophene	<0.3 U		192		4.5		40.7		38.7	
Fluoranthene	11.3		305		28.4		214		511	
Pyrene	7.0		278		30.6		174		362	
C1-Fluoranthenes/Pyrenes	9.6		269		50.4		198		334	
C2-Fluoranthenes/Pyrenes	5.5		228		22.8		167		219	
C3-Fluoranthenes/Pyrenes	2.4		134		5.7		96.6		113	
Naphthobenzothiophene	2.4		97.2		8.6		63.6		111	
C1-Naphthobenzothiophenes	<0.4 U		160		8.1		69.3		93.8	
C2-Naphthobenzothiophenes	<0.4 U		237		4.7		88.3		98.7	
C3-Naphthobenzothiophenes	<0.4 U		201		2.2		67.1		57.2	
Benz(a)anthracene	6.9		220		20.1		156		321	
Chrysene	6.2		177		21.0		114		221	
C1-Chrysenes	4.0		140		16.8		106		146	
C2-Chrysenes	2.9		90.8		7.2		71.4		85.9	
C3-Chrysenes	<0.3 U		66.4		<0.3 U		39.7		50.6	
C4-Chrysenes	<0.3 U		24.0		<0.3 U		18.6		28.0	
Benzo(b)fluoranthene	6.8		340		12.2		168		285	
Benzo(k)fluoranthene	2.1		160		1.2		42.8		72.5	
Benzo(e)pyrene	2.5		192		4.9		70.3		112	
Benzo(a)pyrene	3.7		265		6.8		117		189	
Perylene	522		395		1030		553		311	
Indeno(1,2,3-c,d)pyrene	3.8		209		4.8		94.1		164	
Dibenz(a,h)anthracene	2.1		55.3		4.7		26.1		40.9	
Benzo(g,h,i)perylene	2.9		132		4.0		69.2		115	
Total PAHs	665		6652		1458		4190		5676	2023

Individual Alkyl Isomers and Hopanes

2-Methylnaphthalene	2.8		87.8		2.4		83.6		81.6		31.7
1-Methylnaphthalene	1.1		40.8		1.4		38.8		33.5		14.4
2,6-Dimethylnaphthalene	1.4		44.9		1.7		40.3		43.5		15.2
1,6,7-Trimethylnaphthalene	0.1		11.3		0.4		5.2		7.1		2.4
1-Methylphenanthrene	1.8		26.0		3.6		24.0		31.6		10.5
C29-Hopane	<1.1 U		297		17.9		218		149		65.5
18a-Oleanane	<1.1 U		44.2		10.1		42.6		25.5		12.0
C30-Hopane	<1.1 U		366		24.8		284		185		92.1

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	79	77	80	76	91	83
Acenaphthene-d10	71	91	78	88	92	91
Phenanthrene-d10	74	71	79	71	72	80
Chrysene-d12	77	84	84	85	93	84
Perylene-d12	60	82	46	80	62	67

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name	ETX3959.D	ETX3960.D	ETX3961.D
Client Name	SCD-4	SCD-5	SED-DBHC-091204
Matrix	Sediment	Sediment	Sediment
Collection Date	12/10/04	12/10/04	12/09/04
Received Date	12/14/04	12/14/04	12/14/04
Extraction Date	01/03/05	01/03/05	01/03/05
Extraction Batch	ENV 1074	ENV 1074	ENV 1074
Date Acquired	01/07/05	01/07/05	01/07/05
Method	PAH-2002	PAH-2002	PAH-2002
Sample Dry Weight (g)	15.0	15.0	15.0
% Moisture	55	49	47
% Dry	45	51	53
Dilution	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q	Su Corrected Conc. (ng/dry g)	Q
Naphthalene	222		61.5		27.9	
C1-Naphthalenes	78.8		34.5		16.6	
C2-Naphthalenes	57.5		34.6		17.0	
C3-Naphthalenes	37.8		27.4		12.6	
C4-Naphthalenes	21.7		17.4		7.7	
Benzothiophene	9.8		2.4		1.1	
C1-Benzothiophenes	10.1		7.0		3.4	
C2-Benzothiophenes	4.4		3.3		1.5	
C3-Benzothiophenes	2.2		2.8		1.2	
Biphenyl	31.0		9.2		4.6	
Acenaphthylene	31.9		18.9		8.1	
Acenaphthene	24.0		7.0		2.6	
Dibenzofuran	70.5		15.7		7.0	
Fluorene	60.9		19.5		9.0	
C1-Fluorenes	26.4		14.3		5.7	
C2-Fluorenes	21.8		17.7		9.0	
C3-Fluorenes	56.5		28.4		17.3	
Carbazole	17.7		9.1		3.6	
Anthracene	102		29.3		14.5	
Phenanthrene	257		81.1		36.6	
C1-Phenanthrene/Anthracenes	130		51.9		24.4	
C2-Phenanthrene/Anthracenes	118		49.1		24.0	
C3-Phenanthrene/Anthracenes	102		46.4		21.2	
C4-Phenanthrene/Anthracenes	73.3		26.1		14.4	
Dibenzothiophene	17.6		6.7		3.3	
C1-Dibenzothiophene	13.0		9.0		4.6	
C2-Dibenzothiophene	14.7		13.6		7.3	
C3-Dibenzothiophene	16.2		15.3		8.2	
Fluoranthene	346		148		61.2	
Pyrene	230		130		48.6	
C1-Fluoranthenes/Pyrenes	284		112		49.1	
C2-Fluoranthenes/Pyrenes	180		88.2		30.0	
C3-Fluoranthenes/Pyrenes	90		48.7		17.8	
Naphthobenzothiophene	77.6		39.7		16.1	
C1-Naphthobenzothiophenes	64.8		33.6		17.4	
C2-Naphthobenzothiophenes	68.2		40.1		21.3	
C3-Naphthobenzothiophenes	35.3		31.3		16.0	
Benz(a)anthracene	252		101		39.3	
Chrysene	148		79.3		36.0	
C1-Chrysenes	154		54.1		24.7	
C2-Chrysenes	99.0		33.6		16.9	
C3-Chrysenes	50.3		18.4		10.4	
C4-Chrysenes	17.1		9.3		5.8	
Benzo(b)fluoranthene	215		107		48.9	
Benzo(k)fluoranthene	60.2		44.1		16.2	
Benzo(e)pyrene	88.1		49.0		21.4	
Benzo(a)pyrene	147		71.8		29.8	
Perylene	856		192		119	
Indeno(1,2,3-c,d)pyrene	113		68.3		29.7	
Dibenzo(a,h)anthracene	32.6		17.2		8.1	
Benzo(g,h,i)perylene	77.8		47.6		22.4	
Total PAHs	5314		2224		1030	
Individual Alkyl Isomers and Hopanes						
2-Methylnaphthalene	87.4		35.1		17.0	
1-Methylnaphthalene	29.0		16.4		7.7	
2,6-Dimethylnaphthalene	32.4		18.8		9.8	
1,6,7-Trimethylnaphthalene	4.4		1.3		1.2	
1-Methylphenanthrene	28.2		10.5		6.9	
C29-Hopane	21.0		93.4		56.0	
18 α -Oleanane	<1.1	U	15.1		8.3	
C30-Hopane	33.6		117		72.0	

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	87	77	78
Acenaphthene-d10	94	81	81
Phenanthrene-d10	74	73	75
Chrysene-d12	97	86	84
Perylene-d12	60	70	65

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

Sample Name ETX3951.D
Client Name SED-PTB-03
Matrix Rocks
Collection Date 12/10/04
Received Date 12/14/04
Extraction Date 12/20/04
Extraction Batch ENV 1071
Date Acquired 01/03/05
Method PAH-2002
Sample Weight (mg) 15.0
% Moisture 43
% Dry 57
Dilution NA

Target Compounds	Su Corrected Conc. (ng/mg)	Q
Naphthalene	3.4	
C1-Naphthalenes	2.0	
C2-Naphthalenes	3.0	
C3-Naphthalenes	1.8	
C4-Naphthalenes	1.2	
Benzo[thiophene]	<0.2	U
C1-Benzo[thiophenes]	<0.3	U
C2-Benzo[thiophenes]	<0.3	U
C3-Benzo[thiophenes]	<0.3	U
Biphenyl	0.5	
Acenaphthylene	2.1	
Acenaphthene	0.5	
Dibenzofuran	0.9	
Fluorene	1.0	
C1-Fluorenes	<0.4	U
C2-Fluorenes	<0.4	U
C3-Fluorenes	<0.4	U
Carbazole	0.7	
Anthracene	2.6	
Phenanthrene	4.1	
C1-Phenanthrene/Anthracenes	3	
C2-Phenanthrene/Anthracenes	5	
C3-Phenanthrene/Anthracenes	11	
C4-Phenanthrene/Anthracenes	8	
Dibenzothiophene	0.5	
C1-Dibenzothiophene	1.2	
C2-Dibenzothiophene	3.0	
C3-Dibenzothiophene	5.4	
Fluoranthene	9.9	
Pyrene	13.4	
C1-Fluoranthenes/Pyrenes	11.2	
C2-Fluoranthenes/Pyrenes	11.4	
C3-Fluoranthenes/Pyrenes	4.4	
Naphthobenzothiophene	3.2	
C1-Naphthobenzothiophenes	5.6	
C2-Naphthobenzothiophenes	12.3	
C3-Naphthobenzothiophenes	15.3	
Benz(a)anthracene	5.6	
Chrysene	6.9	
C1-Chrysenes	4.9	
C2-Chrysenes	5.3	
C3-Chrysenes	4.2	
C4-Chrysenes	2.9	
Benzo(b)fluoranthene	7.5	
Benzo(k)fluoranthene	2.5	
Benzo(e)pyrene	6.1	
Benzo(a)pyrene	4.9	
Perylene	2.7	
Indeno(1,2,3-c,d)pyrene	3.2	
Dibenzo(a,h)anthracene	1.1	
Benzo(g,h,i)perylene	3.6	
Total PAHs	209	
Individual Alkyl Isomers and Hopanes		
2-Methylnaphthalene	2.3	
1-Methylnaphthalene	1.0	
2,6-Dimethylnaphthalene	3.1	
1,6,7-Trimethylnaphthalene	0.2	
1-Methylphenanthrene	1	
C29-Hopane	32.3	
18a-Oleanane	4.9	
C30-Hopane	39.8	

Surrogate (Su)	Su Recovery (%)
Naphthalene-d8	80
Acenaphthene-d10	89
Phenanthrene-d10	75
Chrysene-d12	85
Perylene-d12	81

Qualifiers (Q): J=Below the MDL, U=Not detected, B=in procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

D.3. NOAA Mussel Watch sediment samples collected at Hope Creek (DBHC), Arnolds Point (DBAP), and Ben Davis Point Shoal (DBBD).

Sample Name	NST1367.D	NST1368.D	NST1369.D
Client Name	DBAP	DBBD	DBHC
Matrix	Sediment	Sediment	Sediment
Collection Date	01/02/05	01/02/05	01/02/05
Received Date	01/05/05	01/05/05	01/05/05
Extraction Date	06/15/05	06/15/05	06/15/05
Extraction Batch	ENV1190	ENV1190	ENV1190
Date Acquired	06/22/05	06/22/05	06/22/05
Method	PAH-2002	PAH-2002	PAH-2002
Sample Wet Weight (g)	43.1	25.1	44.0
Sample Dry Weight (g)	15.1	15.1	15.0
% Moisture	65	40	66
% Dry	35	60	34
Dilution	NA	NA	NA

Target Compounds	Su Corrected Conc. (ng/dry g)	Q1	Q2	Q3	Su Corrected Conc. (ng/dry g)	Q1	Q2	Q3	Su Corrected Conc. (ng/dry g)	Q1	Q2	Q3
Decalin	0.0	U			0.0	U			0.0	U		
C1-Decalins	0.0	U			0.0	U			0.0	U		
C2-Decalins	0.0	U			0.0	U			0.0	U		
C3-Decalins	0.0	U			0.0	U			0.0	U		
C4-Decalins	0.0	U			0.0	U			0.0	U		
Naphthalene	59.1				9.0				67.0			
C1-Naphthalenes	37.2				5.3				42.8			
C2-Naphthalenes	39.9				6.8				45.4			
C3-Naphthalenes	31.1				5.4				35.7			
C4-Naphthalenes	18.9				3.4				20.5			
Benzothiophene	2.3				0.3				2.6			
C1-Benzothiophenes	5.9				0.0	U			6.2			
C2-Benzothiophenes	3.0				0.0	U			3.4			
C3-Benzothiophenes	2.8				0.0	U			2.9			
Biphenyl	12.1				2.4				13.9			
Acenaphthylene	12.3				2.2				14.0			
Acenaphthene	8.7				1.5				10.4			
Dibenzofuran	18.7				3.3				21.7			
Fluorene	21.1				3.7				24.8			
C1-Fluorenes	12.8				2.2				14.3			
C2-Fluorenes	20.7				4.4				20.8			
C3-Fluorenes	14.4				0.0	U			18.0			
Carbazole	10.2				0.9				10.9			
Anthracene	38.7				5.8				42.3			
Phenanthrene	96.8				13.0				109			
C1- Phenanthrene/Anthracenes	76.6				12.9				80.4			
C2- Phenanthrene/Anthracenes	63.1				11.3				66.4			
C3- Phenanthrene/Anthracenes	54.7				6.9				50.5			
C4- Phenanthrene/Anthracenes	40.4				5.4				34.1			
Dibenzothiophene	9.3				1.3				10.2			
C1-Dibenzothiophenes	13.9				1.8				14.5			
C2-Dibenzothiophenes	22.5				2.5				21.2			
C3-Dibenzothiophenes	28.6				2.6				23.8			
Fluoranthene	159				26.0				173			
Pyrene	159				22.4				170			
C1-Fluoranthenes/Pyrenes	111				19.9				124			
C2-Fluoranthenes/Pyrenes	76.6				9.0				79.4			
C3-Fluoranthenes/Pyrenes	34.1				3.7				34.6			
Naphthobenzothiophene	35.3				5.0				37.0			
C1- Naphthobenzothiophenes	36.6				3.8				33.8			

C2- Naphthobenzothiophenes	30.2		2.8		27.6
C3- Naphthobenzothiophenes	24.1		1.4		20.3
Benz(a)anthracene	93.4		14.6		106
Chrysene	123		16.9		135
C1-Chrysenes	103		14.0		110
C2-Chrysenes	61.7		7.8		65.7
C3-Chrysenes	29.8		3.6		28.5
C4-Chrysenes	13.6		0.0	U	14.4
Benzo(b)fluoranthene	104		20.1		126
Benzo(k)fluoranthene	40.1		6.5		48.3
Benzo(e)pyrene	59.3		10.1		68.3
Benzo(a)pyrene	81.7		15.5		98.2
Perylene	232		44.0		259
Indeno(1,2,3-c,d)pyrene	58.8		10.4		65.6
Dibenzo(a,h)anthracene	12.9		2.4		15.0
C1- Dibenzo(a,h)anthracenes	0.0	U	0.0	U	0.0
C2- Dibenzo(a,h)anthracenes	0.0	U	0.0	U	0.0
C3- Dibenzo(a,h)anthracenes	0.0	U	0.0	U	0.0
Benzo(g,h,i)perylene	53.6		9.3		60.1
Total PAHs	2509		384		2728
Individual Isomers					
2-Methylnaphthalene	41.5		5.8		47.5
1-Methylnaphthalene	16.5		2.5		19.3
2,6-Dimethylnaphthalene	25.9		4.4		29.4
1,6,7-Trimethylnaphthalene	3.7		0.6		4.5
1-Methylphenanthrene	14.0		2.4		15.7

Surrogate (Su)	Su Recovery (%)	Su Recovery (%)	Su Recovery (%)
Naphthalene-d8	94	93	91
Acenaphthene-d10	94	81	91
Phenanthrene-d10	85	81	82
Chrysene-d12	82	81	78
Perylene-d12	67	72	67

Qualifiers (Q): J=Below the MDL, U=Not detected, B=In procedural blank > 3x MDL, I=Interference, D=Diluted value, NA=Not Applicable, *=Outside QA limits, refer to narrative

APPENDIX E

Intertidal Sediment Analyses

- E.1. Intertidal sediment sample log and summary PAH data.
- E.2. PAH data for intertidal sediment samples.
- E.3. Alkane analyses of intertidal sediment samples.
- E.4. Total organic carbon analysis of intertidal sediment samples.
- E.5. Biomarker analyses.

E.1. Intertidal sediment sample log and summary PAH data.

Sample ID	Latitude	Longitude	Date	Total PAHs (ng/g dry)	Comments
SED-RC-01	39.79985	-75.35778	14-Dec-04	8334	Raccoon Creek, top 1 cm of sediment in rice grass mud flats
SED-RC-02	39.80010	-75.35738	14-Dec-04	7853	Raccoon Creek, top 1 cm of sediment in rice grass mud flats
SED-RC-03	39.79570	-75.36352	14-Dec-04	7196	Raccoon Creek, top 1 cm of sediment in rice grass mud flats
SED-TI-01	39.85308	-75.26673	15-Dec-04	36772	Tinicum Island, top 1 cm of sediment in perennial mud flats
SED-TI-02	39.85298	-75.26677	15-Dec-04	44022	Tinicum Island, top 1 cm of sediment in perennial mud flats
SED-TI-03	39.85277	-75.26732	15-Dec-04	27845	Tinicum Island, top 1 cm of sediment in perennial mud flats
SED-TP-01	40.01073	-75.03833	15-Dec-04	948	Tacony-Palmyra bridge, top 1 cm, perennial mud flat control
SED-CW-01	40.16643	-75.70443	15-Dec-04	9917	Crosswick Creek, top 1 cm, rice grass mud flat control
SED-PP-01	39.58608	-75.57310	17-Dec-04	1333	Pea Patch Island, top 1 cm,
SED-PP-02	39.58609	-75.57319	17-Dec-04	1283	Pea Patch Island, top 1 cm,
SED-PP-03	39.58607	-75.57305	17-Dec-04	2104	Pea Patch Island, top 1 cm,

E.2. PAH data for intertidal sediment samples

Client Sample ID	SED-RC-01	SED-RC-02
Sample Descriptor	1020	1036
Original Sample		
GERG ID	C45280	C45281
Sample Type	SAMP	SAMP
SDG	EC176	EC176
Dry Weight	4.37	4.63
Wet Weight	18.32	19.99
Sample Size Units	Grams	Grams
Matrix	Sediment	Sediment
% solid	23.9	23.2
% Lipid		
Reporting Units	ng/g	ng/g
Calculation Basis (dry/wet)	Dry	Dry
QC Batch ID	M3324	M3324
Method	GCMS	GCMS
Collection Date	12/14/04	12/14/04
Receive Date	12/16/04	12/16/04
Extraction Date	12/20/04	12/20/04
Analysis Date	01/06/05	01/06/05
Surrogate Compounds:	%Recovery	%Recovery
d8-Naphthalene	69.3	70.0
d10-Acenaphthene	98.7	87.0
d10-Phenanthrene	102.5	88.5
d12-Chrysene	106.8	86.4
d12-Perylene	61.0	47.1
Total PAHs	Concentration	Concentration
Total PAHs with Perylene	8333.8	7852.7
Total PAHs without Perylene	7996.5	7488.4
Total NS&T PAHs	3648.5	3871.0

Client Sample ID	SED-RC-01	SED-RC-02
Sample Descriptor	1020	1036
Original Sample		
GERG ID	C45280	C45281
Sample Type	SAMP	SAMP
SDG	EC176	EC176

PAH Compounds	Concentration	MDL	Concentration	MDL
Naphthalene	214.04	1.21	201.56	1.14
C1-Naphthalenes	192.50	3.86	175.37	3.65
C2-Naphthalenes	128.83	1.00	114.49	0.94
C3-Naphthalenes	103.72	2.10	85.98	1.98
C4-Naphthalenes	75.52	2.10	53.47	1.98
Biphenyl	32.73	0.82	31.44	0.77
Acenaphthylene	51.71	1.16	55.03	1.10
Acenaphthene	36.61	2.02	50.02	1.91
Fluorene	79.66	1.03	79.59	0.97
C1-Fluorenes	81.27	2.06	70.20	1.95
C2-Fluorenes	125.83	2.06	95.63	1.95
C3-Fluorenes	196.09	2.06	138.34	1.95
Phenanthrene	273.98	1.00	286.68	0.94
Anthracene	183.40	1.11	189.38	1.05
C1-Phenanthrenes/Anthracenes	218.38	1.99	207.51	1.87
C2-Phenanthrenes/Anthracenes	277.22	1.99	206.70	1.87
C3-Phenanthrenes/Anthracenes	269.04	1.99	178.68	1.87
C4-Phenanthrenes/Anthracenes	277.69	1.99	191.34	1.87
Dibenzothiophene	27.45	0.67	26.67	0.63
C1-Dibenzothiophenes	63.71	1.33	45.68	1.26
C2-Dibenzothiophenes	193.53	1.33	102.44	1.26
C3-Dibenzothiophenes	274.90	1.33	121.42	1.26
Fluoranthene	472.32	1.82	502.28	1.72
Pyrene	478.02	2.08	505.03	1.96
C1-Fluoranthenes/Pyrenes	334.12	3.89	328.02	3.68
C2-Fluoranthenes/Pyrenes	292.95	3.89	266.34	3.68
C3-Fluoranthenes/Pyrenes	227.77	3.89	159.12	3.68
Benzo(a)anthracene	288.34	1.06	333.82	1.00
Chrysene	300.94	1.26	336.54	1.19
C1-Chrysenes	260.85	2.51	246.55	2.37
C2-Chrysenes	186.04	2.51	122.48	2.37
C3-Chrysenes	78.86	2.51	57.83	2.37
C4-Chrysenes	11.74	2.51	6.77	2.37
Benzo(b)fluoranthene	436.82	1.16	516.45	1.09
Benzo(k)fluoranthene	119.05	1.01	131.14	0.95
Benzo(e)pyrene	241.34	1.07	271.33	1.01
Benzo(a)pyrene	342.22	1.79	363.59	1.69
Perylene	337.32	2.53	364.37	2.39
Indeno(1,2,3-c,d)pyrene	262.36	1.47	309.62	1.39
Dibenz(a,h)anthracene	52.74	0.73	60.56	0.69
Benzo(g,h,i)perylene	232.22	1.38	263.28	1.30
2-Methylnaphthalene	138.31	2.19	124.70	2.07
1-Methylnaphthalene	54.19	1.67	50.67	1.58
2,6-Dimethylnaphthalene	64.75	0.50	64.11	0.47
1,6,7-Trimethylnaphthalene	29.66	1.05	26.93	0.99
1-Methylphenanthrene	57.56	0.99	55.33	0.94

ND Not Detected
 J <MDL
 NA Not Applicable
 Q Results Outside QC
 I Interference
 B Blank Contamination >3xMDL
 D Dilution

Client Sample ID	SED-RC-03	SED-TI-01	
Sample Descriptor	1107	Diluted 1:50	
Original Sample			
GERG ID	C45282	C45283	
Sample Type	SAMP	SAMP	
SDG	EC176	EC176	
<hr/>			
Dry Weight	3.36	13.15	
Wet Weight	20.14	18.64	
Sample Size Units	Grams	Grams	
Matrix	Sediment	Sediment	
% solid	16.7	70.5	
% Lipid	ng/g	ng/g	
Reporting Units	Dry	Dry	
Calculation Basis (dry/wet)			
<hr/>			
QC Batch ID	M3324	M3324	
Method	GCMS	GCMS	
Collection Date	12/14/04	12/15/04	
Receive Date	12/16/04	12/16/04	
Extraction Date	12/20/04	12/20/04	
Analysis Date	01/06/05	01/07/05	
<hr/>			
Surrogate Compounds	%Recovery	%Recovery	
d8-Naphthalene	70.5		D
d10-Acenaphthene	94.8		D
d10-Phenanthrene	103.7		D
d12-Chrysene	108.9		D
d12-Perylene	61.1		D
<hr/>			
Total PAHs	Concentration	Concentration	
Total PAHs with Perylene	7195.6	36771.8	
Total PAHs without Perylene	6850.5	36245.7	
Total NS&T PAHs	3620.0	20250.6	
<hr/>			

ND Not Detected
 J <MDL
 NA Not Applicable
 Q Results Outside QC
 I Interference
 B Blank Contamination >3xMDL
 D Dilution

Client Sample ID	SED-RC-03	SED-TI-01
Sample Descriptor	1107	Diluted 1:50
Original Sample		
GERG ID	C45282	C45283
Sample Type	SAMP	SAMP
SDG	EC176	EC176

PAH Compounds	Concentration	MDL	Concentration	MDL
Naphthalene	223.16	1.57	575.84	20.08
C1-Naphthalenes	212.32	5.03	291.51	64.23
C2-Naphthalenes	138.03	1.30	188.57	16.59
C3-Naphthalenes	101.56	2.74	221.02	34.92
C4-Naphthalenes	61.57	2.74	115.73	34.92
Biphenyl	34.77	1.06	50.90	13.57
Acenaphthylene	58.27	1.51	285.11	19.33
Acenaphthene	38.60	2.63	240.72	33.57
Fluorene	101.63	1.34	351.65	17.15
C1-Fluorenes	89.30	2.69	283.41	34.30
C2-Fluorenes	112.97	2.69	287.44	34.30
C3-Fluorenes	142.99	2.69	224.66	34.30
Phenanthrene	295.54	1.30	1537.25	16.57
Anthracene	200.15	1.45	1067.53	18.48
C1-Phenanthrenes/Anthracenes	200.69	2.59	1406.50	33.01
C2-Phenanthrenes/Anthracenes	174.08	2.59	950.67	33.01
C3-Phenanthrenes/Anthracenes	156.94	2.59	454.03	33.01
C4-Phenanthrenes/Anthracenes	182.48	2.59	209.96	33.01
Dibenzothiophene	28.93	0.87	99.03	11.06
C1-Dibenzothiophenes	44.81	1.73	139.45	22.12
C2-Dibenzothiophenes	84.13	1.73	172.02	22.12
C3-Dibenzothiophenes	101.25	1.73	128.53	22.12
Fluoranthene	512.46	2.37	3433.23	30.23
Pyrene	466.49	2.70	2876.93	34.51
C1-Fluoranthenes/Pyrenes	296.78	5.07	2664.89	64.74
C2-Fluoranthenes/Pyrenes	250.23	5.07	1287.78	64.74
C3-Fluoranthenes/Pyrenes	153.62	5.07	505.05	64.74
Benzo(a)anthracene	231.35	1.38	2543.06	17.61
Chrysene	280.28	1.64	1880.11	20.90
C1-Chrysenes	200.56	3.27	1388.11	41.80
C2-Chrysenes	106.74	3.27	470.88	41.80
C3-Chrysenes	52.77	3.27	109.52	41.80
C4-Chrysenes	5.74	3.27	7.17	41.80
Benzo(b)fluoranthene	414.35	1.50	2427.27	19.21
Benzo(k)fluoranthene	102.69	1.31	908.53	16.75
Benzo(e)pyrene	213.96	1.40	1188.72	17.84
Benzo(a)pyrene	291.94	2.33	2863.49	29.77
Perylene	345.11	3.30	526.09	42.13
Indeno(1,2,3-c,d)pyrene	239.80	1.92	1257.65	24.52
Dibenz(a,h)anthracene	46.67	0.95	304.67	12.11
Benzo(g,h,i)perylene	199.89	1.80	847.14	22.96
2-Methylnaphthalene	151.93	2.86	213.88	36.48
1-Methylnaphthalene	60.39	2.17	77.63	27.75
2,6-Dimethylnaphthalene	73.13	0.65	108.63	8.29
1,6,7-Trimethylnaphthalene	31.54	1.37	85.88	17.46
1-Methylphenanthrene	52.47	1.29	410.27	16.51

ND Not Detected
 J <MDL
 NA Not Applicable
 Q Results Outside QC
 I Interference
 B Blank Contamination >3xMDL
 D Dilution

Client Sample ID	SED-TI-02	SED-TI-03
Sample Descriptor	Diluted 1:50	Diluted 1:25
Original Sample		
GERG ID	C45284	C45285
Sample Type	SAMP	SAMP
SDG	EC176	EC176
<hr/>		
Dry Weight	13.28	12.82
Wet Weight	20.22	19.85
Sample Size Units	Grams	Grams
Matrix	Sediment	Sediment
% solid	65.7	64.6
% Lipid	ng/g	ng/g
Reporting Units	Dry	Dry
Calculation Basis (dry/wet)		
<hr/>		
QC Batch ID	M3324	M3324
Method	GCMS	GCMS
Collection Date	12/15/04	12/15/04
Receive Date	12/16/04	12/16/04
Extraction Date	12/20/04	12/20/04
Analysis Date	01/07/05	01/07/05
<hr/>		
Surrogate Compounds	%Recovery	%Recovery D
d8-Naphthalene		D D
d10-Acenaphthene		D D
d10-Phenanthrene		D D
d12-Chrysene		D D
d12-Perylene		D
<hr/>		
Total PAHs	Concentration	Concentration
Total PAHs with Perylene	44021.9	27844.6
Total PAHs without Perylene	43429.6	27415.5
Total NS&T PAHs	24350.0	14988.6
<hr/>		

ND Not Detected
 J <MDL
 NA Not Applicable
 Q Results Outside QC
 I Interference
 B Blank Contamination >3xMDL
 D Dilution

Client Sample ID	SED-TI-02	SED-TI-03
Sample Descriptor	Diluted 1:50	Diluted 1:25
Original Sample		
GERG ID	C45284	C45285
Sample Type	SAMP	SAMP
SDG	EC176	EC176

PAH Compounds	Concentration	MDL	Concentration	MDL
Naphthalene	508.68	19.87	310.20	10.29
C1-Naphthalenes	281.63	63.57	169.35	32.94
C2-Naphthalenes	190.87	16.41	113.54	8.50
C3-Naphthalenes	248.58	34.56	166.63	17.90
C4-Naphthalenes	152.82	34.56	103.13	17.90
Biphenyl	44.87	13.42	27.85	6.96
Acenaphthylene	313.72	19.13	233.28	9.91
Acenaphthene	201.62	33.22	102.49	17.21
Fluorene	344.61	16.97	196.24	8.79
C1-Fluorenes	445.35	33.94	287.91	17.59
C2-Fluorenes	321.46	33.94	234.58	17.59
C3-Fluorenes	307.71	33.94	163.30	17.59
Phenanthrene	1953.35	16.39	940.19	8.49
Anthracene	1346.79	18.29	790.74	9.47
C1-Phenanthrenes/Anthracenes	1751.93	32.67	1097.68	16.93
C2-Phenanthrenes/Anthracenes	1166.52	32.67	770.29	16.93
C3-Phenanthrenes/Anthracenes	577.86	32.67	363.82	16.93
C4-Phenanthrenes/Anthracenes	571.99	32.67	173.64	16.93
Dibenzothiophene	111.09	10.95	60.57	5.67
C1-Dibenzothiophenes	152.56	21.90	101.43	11.34
C2-Dibenzothiophenes	168.54	21.90	109.88	11.34
C3-Dibenzothiophenes	120.96	21.90	97.01	11.34
Fluoranthene	4627.73	29.92	2814.49	15.50
Pyrene	3858.95	34.15	2343.64	17.70
C1-Fluoranthenes/Pyrenes	3313.93	64.07	2251.22	33.20
C2-Fluoranthenes/Pyrenes	1481.04	64.07	1059.36	33.20
C3-Fluoranthenes/Pyrenes	610.49	64.07	390.41	33.20
Benzo(a)anthracene	2952.90	17.42	1883.55	9.03
Chrysene	2182.81	20.68	1421.02	10.72
C1-Chrysenes	1524.03	41.37	1018.23	21.43
C2-Chrysenes	475.75	41.37	383.30	21.43
C3-Chrysenes	81.16	41.37	55.67	21.43
C4-Chrysenes	6.67	41.37	3.85	21.43
Benzo(b)fluoranthene	2801.12	19.01	1807.37	9.85
Benzo(k)fluoranthene	1041.49	16.58	669.19	8.59
Benzo(e)pyrene	1296.06	17.65	849.38	9.15
Benzo(a)pyrene	3199.44	29.46	2094.81	15.26
Perylene	592.29	41.70	429.14	21.60
Indeno(1,2,3-c,d)pyrene	1392.72	24.27	913.14	12.57
Dibenz(a,h)anthracene	336.92	11.99	219.50	6.21
Benzo(g,h,i)perylene	962.91	22.72	623.58	11.77
2-Methylnaphthalene	196.52	36.10	126.66	18.71
1-Methylnaphthalene	85.11	27.47	42.69	14.23
2,6-Dimethylnaphthalene	95.15	8.21	60.49	4.25
1,6,7-Trimethylnaphthalene	93.47	17.28	60.63	8.95
1-Methylphenanthrene	526.18	16.33	335.51	8.46

ND Not Detected
 J <MDL
 NA Not Applicable
 Q Results Outside QC
 I Interference
 B Blank Contamination >3xMDL
 D Dilution

Client Sample ID	SED-TP-01	SED-CW-01
Sample Descriptor	1206	1315
Original Sample		
GERG ID	C45286	C45287
Sample Type	SAMP	SAMP
SDG	EC176	EC176
<hr/>		
Dry Weight	11.16	6.04
Wet Weight	19.74	19.28
Sample Size Units	Grams	Grams
Matrix	Sediment	Sediment
% solid	56.5	31.3
% Lipid	ng/g	ng/g
Reporting Units	Dry	Dry
Calculation Basis (dry/wet)		
<hr/>		
QC Batch ID	M3324	M3324
Method	GCMS	GCMS
Collection Date	12/15/04	12/15/04
Receive Date	12/16/04	12/16/04
Extraction Date	12/20/04	12/20/04
Analysis Date	01/06/05	01/06/05
<hr/>		
Surrogate Compounds	%Recovery	%Recovery
d8-Naphthalene	93.3	91.5
d10-Acenaphthene	98.1	117.0
d10-Phenanthrene	101.2	115.5
d12-Chrysene	112.1	102.7
d12-Perylene	10.4	55.7
		Q
<hr/>		
Total PAHs	Concentration	Concentration
Total PAHs with Perylene	948.4	9916.6
Total PAHs without Perylene	737.8	9540.8
Total NS&T PAHs	595.4	5309.6
<hr/>		

ND Not Detected
 J <MDL
 NA Not Applicable
 Q Results Outside QC
 I Interference
 B Blank Contamination >3xMDL
 D Dilution

Client Sample ID	SED-TP-01	SED-CW-01
Sample Descriptor	1206	1315
Original Sample		
GERG ID	C45286	C45287
Sample Type	SAMP	SAMP
SDG	EC176	EC176

PAH Compounds	Concentration	MDL	Concentration	MDL
Naphthalene	42.05	0.47	91.35	0.87
C1-Naphthalenes	15.35	1.51	92.10	2.80
C2-Naphthalenes	8.34	0.39	64.14	0.72
C3-Naphthalenes	6.45	0.82	54.60	1.52
C4-Naphthalenes	4.93	0.82	35.14	1.52
Biphenyl	3.99	0.32	15.32	0.59
Acenaphthylene	5.00	0.46	88.37	0.84
Acenaphthene	4.68	0.79	24.62	1.46
Fluorene	12.19	0.40	53.44	0.75
C1-Fluorenes	12.16	0.81	61.09	1.49
C2-Fluorenes	12.60	0.81	63.98	1.49
C3-Fluorenes	15.36	0.81	112.91	1.49
Phenanthrene	39.93	0.39	328.81	0.72
Anthracene	20.55	0.44	234.93	0.80
C1-Phenanthrenes/Anthracenes	22.20	0.78	222.39	1.44
C2-Phenanthrenes/Anthracenes	19.32	0.78	178.36	1.44
C3-Phenanthrenes/Anthracenes	15.91	0.78	114.55	1.44
C4-Phenanthrenes/Anthracenes	19.07	0.78	53.55	1.44
Dibenzothiophene	3.03	0.26	22.80	0.48
C1-Dibenzothiophenes	3.40	0.52	30.09	0.96
C2-Dibenzothiophenes	5.48	0.52	43.96	0.96
C3-Dibenzothiophenes	5.02	0.52	42.78	0.96
Fluoranthene	61.85	0.71	857.55	1.32
Pyrene	56.52	0.81	762.64	1.50
C1-Fluoranthenes/Pyrenes	34.10	1.53	426.43	2.82
C2-Fluoranthenes/Pyrenes	24.85	1.53	286.03	2.82
C3-Fluoranthenes/Pyrenes	12.86	1.53	130.97	2.82
Benzo(a)anthracene	30.01	0.41	571.56	0.77
Chrysene	32.55	0.49	559.09	0.91
C1-Chrysenes	21.04	0.98	350.05	1.82
C2-Chrysenes	9.52	0.98	141.13	1.82
C3-Chrysenes	3.20	0.98	39.49	1.82
C4-Chrysenes	0.95	0.98	6.29	1.82
Benzo(b)fluoranthene	47.51	0.45	872.54	0.84
Benzo(k)fluoranthene	11.00	0.39	244.34	0.73
Benzo(e)pyrene	21.45	0.42	432.26	0.78
Benzo(a)pyrene	26.49	0.70	705.41	1.30
Perylene	210.61	0.99	375.86	1.84
Indeno(1,2,3-c,d)pyrene	23.71	0.58	567.69	1.07
Dibenz(a,h)anthracene	4.84	0.29	117.44	0.53
Benzo(g,h,i)perylene	18.35	0.54	440.56	1.00
2-Methylnaphthalene	10.99	0.86	58.34	1.59
1-Methylnaphthalene	4.36	0.65	33.76	1.21
2,6-Dimethylnaphthalene	4.98	0.20	28.16	0.36
1,6,7-Trimethylnaphthalene	2.76	0.41	17.98	0.76
1-Methylphenanthrene	7.32	0.39	59.04	0.72

ND Not Detected
 J <MDL
 NA Not Applicable
 Q Results Outside QC
 I Interference
 B Blank Contamination >3xMDL
 D Dilution

Client Sample ID	SED-PP-01	SED-PP-02
Sample Descriptor	10:41	10:49
Original Sample		
GERG ID	C45291	C45292
Sample Type	SAMP	SAMP
SDG	F1178	F1178
<hr/>		
Dry Weight	14.49	13.48
Wet Weight	20.67	21.75
Sample Size Units	Grams	Grams
Matrix	Sediment	Sediment
% solid	70.1	62.0
% Lipid	ng/g	ng/g
Reporting Units	Dry	Dry
Calculation Basis (dry/wet)		
<hr/>		
QC Batch ID	M3324	M3324
Method	GCMS	GCMS
Collection Date	12/17/04	12/17/04
Receive Date	12/18/04	12/18/04
Extraction Date	12/20/04	12/20/04
Analysis Date	01/06/05	01/06/05
<hr/>		
Surrogate Compounds	%Recovery	%Recovery
d8-Naphthalene	84.7	90.7
d10-Acenaphthene	103.6	109.1
d10-Phenanthrene	108.5	114.7
d12-Chrysene	116.4	119.0
d12-Perylene	64.7	64.9
<hr/>		
Total PAHs	Concentration	Concentration
Total PAHs with Perylene	1333.4	1283.3
Total PAHs without Perylene	1220.8	1167.9
Total NS&T PAHs	665.5	678.1
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ND Not Detected
 J <MDL
 NA Not Applicable
 Q Results Outside QC
 I Interference
 B Blank Contamination >3xMDL
 D Dilution

Client Sample ID	SED-PP-01	SED-PP-02
Sample Descriptor	10:41	10:49
Original Sample		
GERG ID	C45291	C45292
Sample Type	SAMP	SAMP
SDG	F1178	F1178

PAH Compounds	Concentration	MDL	Concentration	MDL
Naphthalene	39.44	0.36	33.89	0.39
C1-Naphthalenes	31.54	1.17	27.32	1.25
C2-Naphthalenes	17.30	0.30	15.67	0.32
C3-Naphthalenes	13.56	0.63	12.10	0.68
C4-Naphthalenes	9.62	0.63	8.14	0.68
Biphenyl	6.28	0.25	5.34	0.26
Acenaphthylene	10.03	0.35	9.55	0.38
Acenaphthene	5.66	0.61	5.20	0.65
Fluorene	15.65	0.31	14.44	0.33
C1-Fluorenes	11.92	0.62	11.77	0.67
C2-Fluorenes	17.20	0.62	15.88	0.67
C3-Fluorenes	24.85	0.62	17.07	0.67
Phenanthrene	42.56	0.30	41.92	0.32
Anthracene	34.74	0.34	33.21	0.36
C1-Phenanthrenes/Anthracenes	34.55	0.60	33.26	0.64
C2-Phenanthrenes/Anthracenes	34.17	0.60	29.45	0.64
C3-Phenanthrenes/Anthracenes	27.06	0.60	24.61	0.64
C4-Phenanthrenes/Anthracenes	18.37	0.60	29.10	0.64
Dibenzothiophene	4.31	0.20	4.00	0.22
C1-Dibenzothiophenes	7.15	0.40	6.12	0.43
C2-Dibenzothiophenes	12.85	0.40	10.80	0.43
C3-Dibenzothiophenes	15.35	0.40	13.86	0.43
Fluoranthene	77.57	0.55	76.97	0.59
Pyrene	73.74	0.63	71.40	0.67
C1-Fluoranthenes/Pyrenes	61.50	1.17	57.86	1.26
C2-Fluoranthenes/Pyrenes	55.27	1.17	43.38	1.26
C3-Fluoranthenes/Pyrenes	52.14	1.17	24.92	1.26
Benzo(a)anthracene	48.07	0.32	56.53	0.34
Chrysene	49.29	0.38	53.54	0.41
C1-Chrysenes	46.69	0.76	48.58	0.82
C2-Chrysenes	29.53	0.76	22.31	0.82
C3-Chrysenes	19.14	0.76	8.79	0.82
C4-Chrysenes	2.21	0.76	1.28	0.82
Benzo(b)fluoranthene	66.96	0.35	79.63	0.37
Benzo(k)fluoranthene	20.15	0.30	21.48	0.33
Benzo(e)pyrene	38.11	0.32	40.39	0.35
Benzo(a)pyrene	62.75	0.54	74.20	0.58
Perylene	112.55	0.76	115.34	0.82
Indeno(1,2,3-c,d)pyrene	39.89	0.44	41.68	0.48
Dibenz(a,h)anthracene	9.07	0.22	9.34	0.24
Benzo(g,h,i)perylene	34.60	0.42	32.95	0.45
2-Methylnaphthalene	23.05	0.66	19.83	0.71
1-Methylnaphthalene	8.49	0.50	7.49	0.54
2,6-Dimethylnaphthalene	9.89	0.15	8.93	0.16
1,6,7-Trimethylnaphthalene	4.52	0.32	4.12	0.34
1-Methylphenanthrene	8.56	0.30	10.09	0.32

ND Not Detected
 J <MDL
 NA Not Applicable
 Q Results Outside QC
 I Interference
 B Blank Contamination >3xMDL
 D Dilution

Client Sample ID	SED-PP-03
Sample Descriptor	10:58
Original Sample	
GERG ID	C45293
Sample Type	SAMP
SDG	F1178
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Dry Weight	15.04
Wet Weight	22.92
Sample Size Units	Grams
Matrix	Sediment
% solid	65.6
% Lipid	ng/g
Reporting Units	Dry
Calculation Basis (dry/wet)	
<hr/>	
QC Batch ID	M3324
Method	GCMS
Collection Date	12/17/04
Receive Date	12/18/04
Extraction Date	12/20/04
Analysis Date	01/06/05
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Surrogate Compounds	%Recovery
d8-Naphthalene	76.6
d10-Acenaphthene	88.0
d10-Phenanthrene	104.4
d12-Chrysene	104.0
d12-Perylene	46.8
<hr/>	
Total PAHs	Concentration
Total PAHs with Perylene	2104.3
Total PAHs without Perylene	1965.1
Total NS&T PAHs	1063.0
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ND Not Detected
 J <MDL
 NA Not Applicable
 Q Results Outside QC
 I Interference
 B Blank Contamination >3xMDL
 D Dilution

Client Sample ID	SED-PP-03
Sample Descriptor	10:58
Original Sample	
GERG ID	C45293
Sample Type	SAMP
SDG	F1178

PAH Compounds	Concentration	MDL
Naphthalene	59.02	0.35
C1-Naphthalenes	49.79	1.12
C2-Naphthalenes	30.01	0.29
C3-Naphthalenes	22.67	0.61
C4-Naphthalenes	16.62	0.61
Biphenyl	11.71	0.24
Acenaphthylene	17.26	0.34
Acenaphthene	7.61	0.59
Fluorene	26.80	0.30
C1-Fluorenes	19.65	0.60
C2-Fluorenes	27.87	0.60
C3-Fluorenes	45.45	0.60
Phenanthrene	74.13	0.29
Anthracene	48.56	0.32
C1-Phenanthrenes/Anthracenes	53.96	0.58
C2-Phenanthrenes/Anthracenes	51.68	0.58
C3-Phenanthrenes/Anthracenes	49.12	0.58
C4-Phenanthrenes/Anthracenes	53.38	0.58
Dibenzothiophene	7.59	0.19
C1-Dibenzothiophenes	11.04	0.39
C2-Dibenzothiophenes	21.80	0.39
C3-Dibenzothiophenes	27.01	0.39
Fluoranthene	129.45	0.53
Pyrene	120.57	0.60
C1-Fluoranthenes/Pyrenes	98.28	1.13
C2-Fluoranthenes/Pyrenes	72.30	1.13
C3-Fluoranthenes/Pyrenes	48.55	1.13
Benzo(a)anthracene	100.57	0.31
Chrysene	76.94	0.37
C1-Chrysenes	73.85	0.73
C2-Chrysenes	36.19	0.73
C3-Chrysenes	15.78	0.73
C4-Chrysenes	1.43	0.73
Benzo(b)fluoranthene	113.55	0.34
Benzo(k)fluoranthene	36.54	0.29
Benzo(e)pyrene	62.70	0.31
Benzo(a)pyrene	104.52	0.52
Perylene	139.18	0.74
Indeno(1,2,3-c,d)pyrene	69.57	0.43
Dibenz(a,h)anthracene	15.64	0.21
Benzo(g,h,i)perylene	55.92	0.40
2-Methylnaphthalene	36.61	0.64
1-Methylnaphthalene	13.18	0.49
2,6-Dimethylnaphthalene	19.31	0.14
1,6,7-Trimethylnaphthalene	7.73	0.31
1-Methylphenanthrene	16.45	0.29

ND Not Detected
 J <MDL
 NA Not Applicable
 Q Results Outside QC
 I Interference
 B Blank Contamination >3xMDL
 D Dilution

E.3. Alkane Analyses of Intertidal Sediment Samples

Client Sample ID	MDL	SED-RC-01		SED-RC-02		SED-RC-03	
Dry Weight	15.1	4.37		4.63		3.36	
Wet Weight		18.32		19.99		20.14	
Sample Size Units	Grams	Grams		Grams		Grams	
Matrix	Sediment	Sediment		Sediment		Sediment	
% solid		23.9		23.2		16.7	
Reporting Units	ng/g	ng/g		ng/g		ng/g	
Calculation Basis (dry/wet)	Dry	Dry		Dry		Dry	
QC Batch ID		M3324		M3324		M3324	
Method		GCFID		GCFID		GCFID	
Collection Date		12/14/04		12/14/04		12/14/04	
Receive Date		12/16/04		12/16/04		12/16/04	
Extraction Date		12/20/04		12/20/04		12/20/04	
Analysis Date		01/08/05		01/08/05		01/08/05	
Surrogate Compounds		%Recovery		%Recovery		%Recovery	
d26-C12		63.0		75.0		72.0	
d42-C20		75.0		77.0		87.0	
d50-C24		44.0		62.0		67.0	
d62-C30		225.0		55.0		74.0	
Alkanes		Concentration	MDL	Concentration	MDL	Concentration	MDL
n-C10	5.7	118.3	19.7	167.9	18.6	161.1	25.7
n-C11	10.5	142.1	36.3	178.4	34.3	191.3	47.3
n-C12	18.4	271.2	63.5	111.6	60.0	126.3	82.7
n-C13	5.3	185.0	18.3	236.7	17.3	255.0	23.9
n-C14	7.0	111.8	24.2	159.9	22.8	153.8	31.5
n-C15	23.9	1069.8	82.2	2879.4	77.6	610.9	107.1
n-C16	34.5	154.5	119.0	167.3	112.4	189.0	155.0
n-C17	24.9	3201.3	85.9	1763.1	81.1	2209.4	111.8
Pristane	20.1	228.3	69.1	213.1	65.3	212.8	90.1
n-C18	34.0	367.7	117.3	421.6	110.8	333.0	152.8
Phytane	7.2	206.3	24.9	302.0	23.5	334.7	32.4
n-C19	21.8	244.8	75.2	300.5	71.0	343.1	97.9
n-C20	25.7	409.7	88.5	443.5	83.5	569.5	115.2
n-C21	25.6	521.6	88.2	745.6	83.3	693.2	114.9
n-C22	18.8	389.3	64.7	574.8	61.2	555.4	84.3
n-C23	14.8	2035.7	51.0	1804.4	48.2	2325.7	66.4
n-C24	25.0	450.0	86.2	505.0	81.4	537.9	112.3
n-C25	9.4	2827.2	32.5	2616.7	30.7	3474.9	42.3
n-C26	8.6	908.7	29.5	800.9	27.9	1053.8	38.5
n-C27	6.5	4497.4	22.5	4069.8	21.2	5336.8	29.3
n-C28	19.9	1098.9	68.5	1260.5	64.7	1237.5	89.2
n-C29	8.7	8356.1	29.9	7150.6	28.2	8323.8	38.9
n-C30	25.9	1291.0	89.1	1223.3	84.2	1415.6	116.1
n-C31	10.1	6191.8	34.8	5372.8	32.9	5997.9	45.3
n-C32	21.3	883.1	73.5	767.4	69.5	803.8	95.8
n-C33	4.8	1652.3	16.6	1874.7	15.7	1745.3	21.6
n-C34	26.3	308.3	90.6	801.4	85.6	1148.3	118.0
n-C35	7.5	436.5	25.7	791.1	24.3	496.1	33.5
Total Alkanes		38558.6		37703.9		40835.8	
Reporting Units	ug/g	ug/g		ug/g		ug/g	
Total Resolved	0.5	137.2	1.7	132.5	1.6	154.9	2.2
Total UCM	10.0	819.1	34.5	669.6	32.6	669.6	44.9
Total TPH	10.0	956.2	34.5	802.1	32.6	824.4	44.9

Client Sample ID	MDL	SED-TI-01		SED-TI-02		SED-TI-03	
Sample Descriptor							
Original Sample							
GERG ID		C45283		C45284		C45285	
Sample Type	MDL	SAMP		SAMP		SAMP	
SDG		EC176		EC176		EC176	
Dry Weight	15.1	13.15		13.28		12.82	
Wet Weight		18.64		20.22		19.85	
Sample Size Units	Grams Sediment	Grams		Grams		Grams	
Matrix		Sediment		Sediment		Sediment	
% solid		70.5		65.7		64.6	
% Lipid							
Reporting Units	ng/g	ng/g		ng/g		ng/g	
Calculation Basis (dry/wet)	Dry	Dry		Dry		Dry	
QC Batch ID		M3324		M3324		M3324	
Method		GCFID		GCFID		GCFID	
Collection Date		12/15/04		12/15/04		12/15/04	
Receive Date		12/16/04		12/16/04		12/16/04	
Extraction Date		12/20/04		12/20/04		12/20/04	
Analysis Date		01/08/05		01/08/05		01/08/05	
Surrogate Compounds		%Recovery		%Recovery		%Recovery	
d26-C12		75.0		75.0		55.0	
d42-C20		76.0		75.0		80.0	
d50-C24		81.0		77.0		109.0	
d62-C30		60.0		77.0		83.0	
Alkanes		Concentration	MDL	Concentration	MDL	Concentration	MDL
n-C10	5.7	146.5	6.6	126.5	6.5	95.0	6.7
n-C11	10.5	110.4	12.1	93.9	12.0	71.5	12.4
n-C12	18.4	110.7	21.1	105.6	20.9	68.0	21.6
n-C13	5.3	413.9	6.1	341.8	6.0	210.8	6.3
n-C14	7.0	100.7	8.0	105.6	8.0	67.3	8.3
n-C15	23.9	115.0	27.3	117.7	27.1	88.7	28.0
n-C16	34.5	139.5	39.6	147.4	39.2	97.4	40.6
n-C17	24.9	104.9	28.6	148.7	28.3	113.3	29.3
Pristane	20.1	123.9	23.0	65.2	22.8	90.9	23.6
n-C18	34.0	63.4	39.0	35.7	38.6	27.3	40.0
Phytane	7.2	32.5	8.3	41.1	8.2	40.2	8.5
n-C19	21.8	692.2	25.0	746.4	24.7	435.4	25.6
n-C20	25.7	46.6	29.4	76.8	29.1	51.3	30.2
n-C21	25.6	292.7	29.3	425.7	29.0	245.9	30.1
n-C22	18.8	174.5	21.5	227.4	21.3	148.5	22.1
n-C23	14.8	34.7	17.0	116.0	16.8	157.0	17.4
n-C24	25.0	1005.2	28.7	1195.4	28.4	738.6	29.4
n-C25	9.4	192.6	10.8	271.8	10.7	264.0	11.1
n-C26	8.6	659.9	9.8	663.5	9.7	457.5	10.1
n-C27	6.5	171.2	7.5	269.4	7.4	315.7	7.7
n-C28	19.9	1624.8	22.8	2727.5	22.6	2252.2	23.4
n-C29	8.7	192.0	9.9	333.3	9.8	479.1	10.2
n-C30	25.9	7.4	29.6	17.4	29.3	1.1	30.4
n-C31	10.1	129.4	11.6	342.0	11.5	328.1	11.9
n-C32	21.3	122.7	24.5	128.3	24.2	149.0	25.1
n-C33	4.8	247.9	5.5	317.9	5.5	314.1	5.7
n-C34	26.3	163.9	30.1	129.9	29.8	475.2	30.9
n-C35	7.5	134.3	8.5	104.1	8.5	115.2	8.8
Total Alkanes		7353.1		9421.7		7898.1	
Reporting Units	ug/g	ug/g		ug/g		ug/g	
Total Resolved	0.5	66.6	0.6	71.2	0.6	45.5	0.6
Total UCM	10.0	218.2	11.5	218.2	11.3	191.0	11.8
Total TPH	10.0	284.9	11.5	289.4	11.3	236.5	11.8

Client Sample ID	MDL	SED-TP-01		SED-CW-01		SED-PP-01	
Sample Descriptor							
Original Sample							
GERG ID		C45286		C45287		C45291	
Sample Type	MDL	SAMP		SAMP		SAMP	
SDG		EC176		EC176		EC178	
Dry Weight	15.1	11.16		6.04		14.49	
Wet Weight		19.74		19.28		20.67	
Sample Size Units	Grams	Grams		Grams		Grams	
Matrix	Sediment	Sediment		Sediment		Sediment	
% solid		56.5		31.3		70.1	
% Lipid							
Reporting Units	ng/g	ng/g		ng/g		ng/g	
Calculation Basis (dry/wet)	Dry	Dry		Dry		Dry	
QC Batch ID		M3324		M3324		M3324	
Method		GCFID		GCFID		GCFID	
Collection Date		12/15/04		12/15/04		12/17/04	
Receive Date		12/16/04		12/16/04		12/18/04	
Extraction Date		12/20/04		12/20/04		12/20/04	
Analysis Date		01/08/05		01/08/05		01/08/05	
Surrogate Compounds		%Recovery		%Recovery		%Recovery	
d26-C12		81.0		77.0		82.0	
d42-C20		101.0		104.0		90.0	
d50-C24		85.0		83.0		86.0	
d62-C30		64.0		497.0		86.0	
Alkanes		Concentration	MDL	Concentration	MDL	Concentration	MDL
n-C10	5.7	25.8	7.7	48.9	14.3	146.1	6.0
n-C11	10.5	37.5	14.2	51.1	26.3	155.1	11.0
n-C12	18.4	23.5	24.9	168.5	46.0	82.4	19.2
n-C13	5.3	11.0	7.2	43.8	13.3	52.2	5.5
n-C14	7.0	14.2	9.5	64.2	17.5	26.2	7.3
n-C15	23.9	23.0	32.2	237.8	59.5	26.0	24.8
n-C16	34.5	13.4	46.6	104.9	86.2	34.3	35.9
n-C17	24.9	52.9	33.6	650.7	62.2	65.4	25.9
Pristane	20.1	2.2	27.1	117.0	50.1	23.2	20.9
n-C18	34.0	27.8	45.9	223.2	85.0	39.4	35.4
Phytane	7.2	23.0	9.7	153.7	18.0	29.0	7.5
n-C19	21.8	53.5	29.4	213.2	54.4	45.7	22.7
n-C20	25.7	58.0	34.6	310.5	64.1	25.3	26.7
n-C21	25.6	146.1	34.5	506.9	63.9	63.7	26.6
n-C22	18.8	92.3	25.4	245.0	46.9	29.4	19.5
n-C23	14.8	541.5	20.0	982.1	36.9	155.3	15.4
n-C24	25.0	185.5	33.8	488.5	62.4	58.2	26.0
n-C25	9.4	736.0	12.7	1868.1	23.5	238.5	9.8
n-C26	8.6	206.6	11.6	562.5	21.4	103.7	8.9
n-C27	6.5	1082.0	8.8	3997.0	16.3	363.0	6.8
n-C28	19.9	322.3	26.8	1019.7	49.6	131.6	20.7
n-C29	8.7	1655.1	11.7	9598.2	21.6	591.6	9.0
n-C30	25.9	238.7	34.9	1140.2	64.5	155.2	26.9
n-C31	10.1	1373.9	13.6	7976.1	25.2	548.5	10.5
n-C32	21.3	229.9	28.8	596.5	53.3	223.6	22.2
n-C33	4.8	544.5	6.5	2862.9	12.0	262.8	5.0
n-C34	26.3	89.4	35.5	813.6	65.6	65.7	27.3
n-C35	7.5	200.3	10.1	729.0	18.6	111.4	7.8
Total Alkanes		8009.9		35773.5		3852.4	
Reporting Units	ug/g	ug/g		ug/g		ug/g	
Total Resolved	0.5	20.5	0.7	120.4	1.2	11.6	0.5
Total UCM	10.0	36.1	13.5	318.4	25.0	83.3	10.4
Total TPH	10.0	56.6	13.5	438.9	25.0	94.9	10.4

Client Sample ID	MDL	SED-PP-02		SED-PP-03	
Sample Descriptor					
Original Sample					
GERG ID		C45292		C45293	
Sample Type	MDL	SAMP		SAMP	
SDG		EC178		EC178	
Dry Weight	15.1	13.48		15.04	
Wet Weight		21.75		22.92	
Sample Size Units	Grams	Grams		Grams	
Matrix	Sediment	Sediment		Sediment	
% solid		62.0		65.6	
% Lipid					
Reporting Units	ng/g	ng/g		ng/g	
Calculation Basis (dry/wet)	Dry	Dry		Dry	
QC Batch ID		M3324		M3324	
Method		GCFID		GCFID	
Collection Date		12/17/04		12/17/04	
Receive Date		12/18/04		12/18/04	
Extraction Date		12/20/04		12/20/04	
Analysis Date		01/08/05		01/08/05	
Surrogate Compounds		%Recovery		%Recovery	
d26-C12		87.0		83.0	
d42-C20		94.0		95.0	
d50-C24		90.0		85.0	
d62-C30		84.0		83.0	
Alkanes		Concentration	MDL	Concentration	MDL
n-C10	5.7	65.3	6.4	53.6	5.7
n-C11	10.5	66.2	11.8	59.1	10.6
n-C12	18.4	47.3	20.6	45.4	18.5
n-C13	5.3	15.2	5.9	48.8	5.3
n-C14	7.0	19.6	7.8	24.2	7.0
n-C15	23.9	20.1	26.7	26.0	23.9
n-C16	34.5	14.6	38.6	19.4	34.6
n-C17	24.9	59.4	27.9	58.5	25.0
Pristane	20.1	20.2	22.4	33.1	20.1
n-C18	34.0	58.6	38.1	29.9	34.1
Phytane	7.2	25.5	8.1	35.0	7.2
n-C19	21.8	48.3	24.4	65.3	21.8
n-C20	25.7	27.0	28.7	30.2	25.7
n-C21	25.6	66.9	28.6	80.8	25.6
n-C22	18.8	36.0	21.0	31.2	18.8
n-C23	14.8	196.6	16.5	151.6	14.8
n-C24	25.0	108.5	28.0	82.6	25.1
n-C25	9.4	311.9	10.5	294.7	9.4
n-C26	8.6	125.9	9.6	116.3	8.6
n-C27	6.5	468.2	7.3	429.0	6.5
n-C28	19.9	166.5	22.2	160.3	19.9
n-C29	8.7	672.0	9.7	692.3	8.7
n-C30	25.9	141.2	28.9	184.4	25.9
n-C31	10.1	606.7	11.3	639.6	10.1
n-C32	21.3	311.0	23.9	242.6	21.4
n-C33	4.8	263.3	5.4	283.2	4.8
n-C34	26.3	47.9	29.4	8.6	26.3
n-C35	7.5	144.1	8.3	147.4	7.5
Total Alkanes		4153.7		4073.1	
Reporting Units	ug/g	ug/g		ug/g	
Total Resolved	0.5	15.2	0.6	10.9	0.5
Total UCM	10.0	63.3	11.2	104.2	10.0
Total TPH	10.0	78.5	11.2	115.1	10.0

E.4. Total organic carbon analyses of intertidal sediment samples.

GERG ID	Sample Description	Matrix	Sample Type	Collection Date	Collection Time	SDG	Receipt Date	QC Batch	Preparation Date	Analysis Date	% Dry Wt	Dry Wt	% TOC	DL	Qual	RPD	% Recov
Samples																	
C45280	SED-RC-01	Sediment	SAMP	12/14/2004	1020	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	23.9	0.101	5.34	0.12			
C45281	SED-RC-02	Sediment	SAMP	12/14/2004	1036	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	23.2	0.104	4.88	0.12			
C45282	SED-RC-03	Sediment	SAMP	12/14/2004	1107	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	16.7	0.100	7.66	0.12			
C45283	SED-TI-01	Sediment	SAMP	12/15/2004	1022	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	70.5	0.102	4.00	0.12			
C45284	SED-TI-02	Sediment	SAMP	12/15/2004	1026	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	65.7	0.101	2.71	0.12			
C45285	SED-TI-03	Sediment	SAMP	12/15/2004	1030	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	64.6	0.102	2.37	0.12			
C45286	SED-TP-01	Sediment	SAMP	12/15/2004	1206	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	56.5	0.101	1.53	0.12			
C45287	SED-CW-01	Sediment	SAMP	12/15/2004	1315	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	31.3	0.101	5.24	0.12			
C45291	SED-PP-01	Sediment	SAMP	12/17/2004	1041	F1178	12/18/2004	TOC517	6/20/2005	6/23/2005	70.1	0.102	0.81	0.12			
C45292	SED-PP-02	Sediment	SAMP	12/17/2004	1049	F1178	12/18/2004	TOC517	6/20/2005	6/23/2005	62.0	0.102	1.11	0.12			
C45293	SED-PP-03	Sediment	SAMP	12/17/2004	1058	F1178	12/18/2004	TOC517	6/20/2005	6/23/2005	65.6	0.101	1.24	0.12			
QA																	
Proc Blanks																	
PB062305E	Preparation Blank	Sediment	BLANK					TOC517	6/20/2005	6/23/2005		0.300	0.04	0.04	J		
Duplicates																	
C45280	SED-RC-01	Sediment	SAMP	12/14/2004	1020	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	23.9	0.101	5.34	0.12			
C45280D	SED-RC-01	Sediment	DUP	12/14/2004	1020	EC176	12/16/2004	TOC517	6/20/2005	6/23/2005	23.9	0.100	5.91	0.12		10.2%	
SRM																	
<i>(Certified value 4.4%)</i>																	
SRM062305	NIST 1944	Sediment	SRM					TOC517	6/20/2005	6/23/2005		0.103	3.89	0.12			88.4%
SRM062305D	NIST 1944	Sediment	SRM					TOC517	6/20/2005	6/23/2005		0.100	3.39	0.12		13.7%	77.0%

E.5. Biomarker Analyses

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45280

Sample Descriptor: SED-RC-01

Analysis Date: 1/7/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.94	191	1271	12.67	0.5
A	C20 TRICYCLIC TERPANE	30.71	191	13714	136.66	5.5
B	C21 TRICYCLIC TERPANE	32.57	191	8137	81.09	3.3
C	C22 TRICYCLIC TERPANE	34.42	191	3023	30.12	1.2
D	C23 TRICYCLIC TERPANE	36.73	191	18654	185.89	7.5
E	C24 TRICYCLIC TERPANE	37.98	191	10001	99.66	4.0
1	C25 TRICYCLIC TERPANE	40.64	191	11477	114.37	4.6
4	C24 TETRACYCLIC TERPANE	42.57	191	7376	73.50	3.0
5	C26 TRICYCLIC TERPANE (22R)	42.64	191	2987	29.77	1.2
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	4202	41.87	1.7
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	1637	16.31	0.7
10	C28 TRICYCLIC TERPANE (22S)	45.11	191	556	5.54	0.2
11	C29 TRICYCLIC TERPANE (22R)	47.25	191	6004	59.83	2.4
12	C29 TRICYCLIC TERPANE (22S)	47.52	191	3064	30.53	1.2
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	9353	93.20	3.8
I	C27 PENTACYCLIC TERPANE (Y)	50.52	191	233	2.32	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	10511	104.74	4.2
15	C30 TRICYCLIC TERPANE (22R)	51.08	191	3714	37.01	1.5
16	C30 TRICYCLIC TERPANE (22S)	51.34	191	1610	16.04	0.6
17	C28 17a,21b-28,30-BISNORHOPANE	52.87	191	4476	44.60	1.8
J	C29 17a,21b-25-NORHOPANE	52.97	191	314	3.13	0.1
19	C29 17a,21b-30-NORHOPANE	53.61	191	26165	260.74	10.5
20	C29 18a-NORNEOHOPANE (29Ts)	53.69	191	4429	44.14	1.8
F	C30 DIAHOPANE	54.04	191	2005	19.98	0.8
21	C29 17b,21a-30-NORMORETANE	54.70	191	4836	48.19	1.9
22	C30 18a-OLEANANE	55.03	191	3784	37.71	1.5
23	C30 17a,21b-HOPANE	55.36	191	28847	287.46	11.6
24	C30 17b,21a-MORETANE	56.20	191	5149	51.31	2.1
27	C31 17a,21b-HOMOHOPANE (22S)	57.40	191	9460	94.27	3.8
28	C31 17a,21b-HOMOHOPANE(22R)	57.64	191	7361	73.35	3.0
G	C30 GAMMACERANE	58.04	191	2519	25.10	1.0
30	C32 17a,21b-HOMOHOPANE (22S)	58.94	191	3356	33.44	1.4
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	3525	35.13	1.4
34	C33 17a,21b-HOMOHOPANE (22S)	60.92	191	3552	35.40	1.4
35	C33 17a,21b-HOMOHOPANE (22R)	61.35	191	2516	25.07	1.0
36	C34 17a,21b-HOMOHOPANE (22S)	62.61	191	7021	69.96	2.8
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	8712	86.82	3.5
38	C35 17a,21b-HOMOHOPANE (22S)	64.93	191	1975	19.68	0.8
39	C35 17a,21b-HOMOHOPANE (22R)	65.67	191	844	8.41	0.3

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45280

Sample Descriptor: SED-RC-01

Analysis Date: 1/7/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/mg)	
A	C21 DIAPREGNANE	0.00	217	0	0.00	0.0
1	C21 PREGNANE	34.81	217	4724	71.45	7.9
B	C22 DIAHOMOPREGNANE	34.94	217	2399	36.28	4.0
2	C22 HOMOPREGNANE	37.36	217	3160	47.80	5.3
3	C27 13b,17a DIASTERANE (20S)	44.98	217	3943	60.34	6.6
4	C27 13b,17a DIASTERANE (20R)	45.70	217	2306	35.29	3.9
8	C27 13a,17b DIASTERANE (20S)	46.32	217	1249	19.12	2.1
9	C27 13a,17b DIASTERANE (20R)	46.67	217	1597	24.44	2.7
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.60	217	215	3.29	0.4
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.80	217	1566	23.97	2.6
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.17	217	637	9.75	1.1
16	C28 13a,17b DIASTERANE (20S)	48.34	217	626	9.70	1.1
17	C27 5a,14a,17a STERANE (20S)	48.42	217	2862	44.33	4.9
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.61	217	2451	37.96	4.2
19	C27 5a,14b,17b ISOSTERANE (20S)	48.83	217	2502	38.75	4.3
20	C28 13a,17b DIASTERANE (20R)	49.02	217	385	5.96	0.7
22	C27 5a,14a,17a STERANE (20R)	49.24	217	1711	26.50	2.9
23	C29 13b,17a DIASTERANE (20R)	49.51	217	3105	48.09	5.3
24	C29 13a,17b DIASTERANE (20S)	49.94	217	1650	25.56	2.8
26	C28 5a,14a,17a STERANE (20S)	50.48	217	883	14.58	1.6
27	C29 13a,17b DIASTERANE (20R)	50.60	217	1458	24.07	2.7
28	C28 5a,14b,17b ISOSTERANE (20R)	50.79	217	2324	38.37	4.2
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	2142	35.36	3.9
31	C28 5a,14a,17a STERANE (20R)	51.55	217	1036	17.10	1.9
33	C29 5a,14a,17a STERANE (20S)	52.35	217	72	1.27	0.1
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	2899	51.24	5.6
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	2325	41.10	4.5
37	C29 5a,14a,17a STERANE (20R)	53.42	217	1983	35.05	3.9
38	C30 5a,14a,17a STERANE (20S)	53.61	217	1263	22.33	2.5
39	C30 5a,14b,17b ISOSTERANE (20R)	54.04	217	215	3.80	0.4
40	C30 5a,14b,17b ISOSTERANE (20S)	54.23	217	1292	22.84	2.5
41	C30 5a,14a,17a STERANE (20R)	54.95	217	1826	32.28	3.6

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
 Lab Sample ID: C45280
 Sample Descriptor: SED-RC-01
 Analysis Date: 1/7/2005

PARAMETERS

A: LEVEL OF MATURITY

<u>Steranes</u>		<u>Terpanes</u>	
% 20S C29 STERANES	3.5	% 22S C31 HOMOHOPEANE	56.2
% C29 ISOSTERANES (abb)	71.8	% C30 HOPANE	84.9
% REGULAR STERANES	21.3	% TS/TS+TM (C27)	47.1
% ISOSTERANES	27.6	TS/TM (C27)	0.89
% DIASTERANES	34.0	% C30 MORETANE	15.1
% SHORT-CHAIN STERANES	17.1	% C29 NORMORETANE	15.6
		DIAHOPANE INDEX (%)	6.5
		% TRICYCLIC TERPANES	36.3

B: ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	17.1	OLEANANE INDEX (%)	11.6
% TOTAL C27	29.5	GAMMACERANE INDEX (%)	8.0
% TOTAL C28	17.4	BISNORHOPANE INDEX (%)	13.4
% TOTAL C29	27.0	25-NORHOPANE INDEX (%)	1.1
% TOTAL C30	8.9	DIAHOPANE INDEX (%)	6.5
HOPANES/STERANES	2.7	% TRICYCLIC TERPANES	36.3
% DIASTERANES	34.0	% C24 TETRACYCLIC TERPANE	20.4
TOTAL STERANES (ppm)	908	% MORETANES	15.4
<u>Other Biological Markers</u>		% TOTAL C31 PENTACYCLICS	34.8
b-Carotane (ppm)	3.0	% TOTAL C32 PENTACYCLICS	14.2
		% TOTAL C33 PENTACYCLICS	12.6
		% TOTAL C34 PENTACYCLICS	32.6
		% TOTAL C35 PENTACYCLICS	5.8
		C35/C34 HOMOHOPEANES	0.18
		29/30 HOPANES	0.91
		TOTAL TRITERPANES (ppm)	2475.0

All ratios based on concentrations

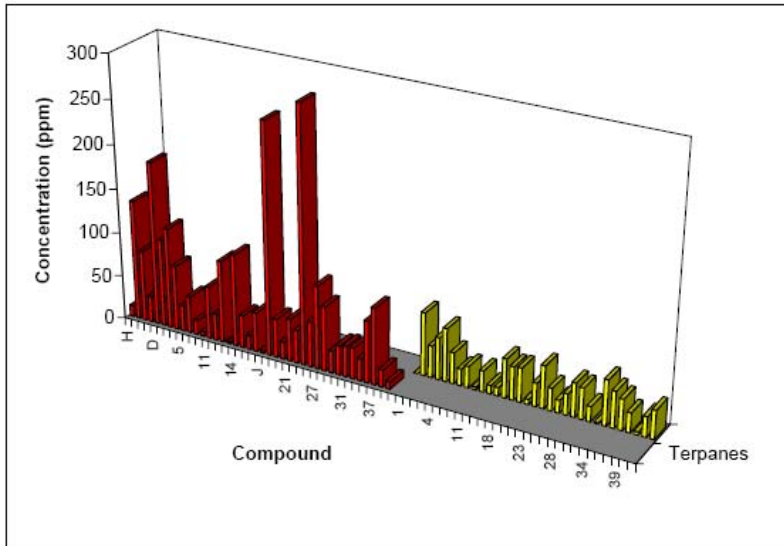
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45280

Sample Descriptor: SED-RC-01

Analysis Date: 1/7/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45281

Sample Descriptor: SED-RC-02

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.96	191	1062	8.95	0.5
A	C20 TRICYCLIC TERPANE	30.71	191	9620	81.05	4.1
B	C21 TRICYCLIC TERPANE	32.57	191	4124	34.74	1.8
C	C22 TRICYCLIC TERPANE	34.42	191	2169	18.27	0.9
D	C23 TRICYCLIC TERPANE	36.72	191	11482	96.73	4.9
E	C24 TRICYCLIC TERPANE	37.98	191	6526	54.98	2.8
1	C25 TRICYCLIC TERPANE	40.64	191	7702	64.89	3.3
4	C24 TETRACYCLIC TERPANE	42.57	191	6009	50.62	2.6
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	1933	16.28	0.8
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	2816	23.72	1.2
9	C28 TRICYCLIC TERPANE (22R)	44.34	191	1671	14.08	0.7
10	C28 TRICYCLIC TERPANE (22S)	45.12	191	868	7.31	0.4
11	C29 TRICYCLIC TERPANE (22R)	47.25	191	3921	33.03	1.7
12	C29 TRICYCLIC TERPANE (22S)	47.51	191	2275	19.17	1.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	9293	78.29	4.0
I	C27 PENTACYCLIC TERPANE (Y)	50.50	191	138	1.16	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	10255	86.40	4.4
15	C30 TRICYCLIC TERPANE (22R)	51.08	191	3101	26.12	1.3
16	C30 TRICYCLIC TERPANE (22S)	51.34	191	1376	11.59	0.6
17	C28 17a,21b-28,30-BISNORHOPANE	52.87	191	3594	30.28	1.5
J	C29 17a,21b-25-NORHOPANE	52.95	191	104	0.88	0.0
19	C29 17a,21b-30-NORHOPANE	53.61	191	28600	240.95	12.2
20	C29 18a-NORNEOHOPANE (29Ts)	53.69	191	5011	42.22	2.1
F	C30 DIAHOPANE	54.02	191	1788	15.06	0.8
21	C29 17b,21a-30-NORMORETANE	54.68	191	6126	51.61	2.6
22	C30 18a-OLEANANE	55.03	191	4820	40.61	2.1
23	C30 17a,21b-HOPANE	55.36	191	31441	264.88	13.5
24	C30 17b,21a-MORETANE	56.20	191	6747	56.84	2.9
27	C31 17a,21b-HOMOHOHOPANE (22S)	57.40	191	10199	85.92	4.4
28	C31 17a,21b-HOMOHOHOPANE(22R)	57.64	191	8503	71.64	3.6
G	C30 GAMMACERANE	58.05	191	2495	21.02	1.1
30	C32 17a,21b-HOMOHOHOPANE (22S)	58.94	191	3390	28.56	1.5
31	C32 17a,21b-HOMOHOHOPANE (22R)	59.35	191	4039	34.03	1.7
34	C33 17a,21b-HOMOHOHOPANE (22S)	60.92	191	4796	40.40	2.1
35	C33 17a,21b-HOMOHOHOPANE (22R)	61.35	191	4118	34.69	1.8
36	C34 17a,21b-HOMOHOHOPANE (22S)	62.61	191	7313	61.61	3.1
37	C34 17a,21b-HOMOHOHOPANE (22R)	63.33	191	11222	94.54	4.8
38	C35 17a,21b-HOMOHOHOPANE (22S)	64.93	191	1675	14.11	0.7
39	C35 17a,21b-HOMOHOHOPANE (22R)	65.67	191	1271	10.71	0.5

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45281

Sample Descriptor: SED-RC-02

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC (ng/mg)	%
STERANES						
A	C21 DIAPREGNANE	33.06	217	1550	19.82	2.8
1	C21 PREGNANE	34.79	217	2819	36.05	5.2
B	C22 DIAHOMOPREGNANE	34.91	217	1266	16.19	2.3
2	C22 HOMOPREGNANE	37.36	217	1856	23.73	3.4
3	C27 13b,17a DIASTERANE (20S)	44.98	217	3492	45.18	6.5
4	C27 13b,17a DIASTERANE (20R)	45.70	217	2062	26.68	3.8
8	C27 13a,17b DIASTERANE (20S)	46.34	217	1125	14.56	2.1
9	C27 13a,17b DIASTERANE (20R)	46.69	217	857	11.09	1.6
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.62	217	58	0.75	0.1
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	1716	22.20	3.2
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.17	217	548	7.09	1.0
16	C28 13a,17b DIASTERANE (20S)	48.34	217	650	8.51	1.2
17	C27 5a,14a,17a STERANE (20S)	48.42	217	2693	35.26	5.1
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.60	217	2293	30.02	4.3
19	C27 5a,14b,17b ISOSTERANE (20S)	48.83	217	2279	29.84	4.3
20	C28 13a,17b DIASTERANE (20R)	49.00	217	345	4.52	0.6
22	C27 5a,14a,17a STERANE (20R)	49.24	217	1333	17.45	2.5
23	C29 13b,17a DIASTERANE (20R)	49.49	217	2665	34.90	5.0
24	C29 13a,17b DIASTERANE (20S)	49.96	217	1216	15.92	2.3
26	C28 5a,14a,17a STERANE (20S)	50.50	217	587	8.19	1.2
27	C29 13a,17b DIASTERANE (20R)	50.62	217	1907	26.62	3.8
28	C28 5a,14b,17b ISOSTERANE (20R)	50.77	217	2304	32.16	4.6
29	C28 5a,14b,17b ISOSTERANE (20S)	51.01	217	1952	27.25	3.9
31	C28 5a,14a,17a STERANE (20R)	51.55	217	1140	15.91	2.3
33	C29 5a,14a,17a STERANE (20S)	52.37	217	14	0.21	0.0
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	2944	43.99	6.3
35	C29 5a,14b,17b ISOSTERANE (20S)	52.76	217	2020	30.19	4.3
37	C29 5a,14a,17a STERANE (20R)	53.40	217	2174	32.49	4.7
38	C30 5a,14a,17a STERANE (20S)	53.63	217	945	14.12	2.0
39	C30 5a,14b,17b ISOSTERANE (20R)	54.04	217	447	6.68	1.0
40	C30 5a,14b,17b ISOSTERANE (20S)	54.23	217	1314	19.64	2.8
41	C30 5a,14a,17a STERANE (20R)	54.95	217	2586	38.64	5.6

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
 Lab Sample ID: C45281
 Sample Descriptor: SED-RC-02
 Analysis Date: 1/8/2005

PARAMETERS

A: LEVEL OF MATURITY

<u>Steranes</u>		<u>Terpanes</u>	
% 20S C29 STERANES	0.6	% 22S C31 HOMOHOPEANE	54.5
% C29 ISOSTERANES (abb)	69.4	% C30 HOPANE	82.3
% REGULAR STERANES	23.3	% TS/TS-TM (C27)	47.5
% ISOSTERANES	29.4	TS/TM (C27)	0.91
% DIASTERANES	33.5	% C30 MORETANE	17.7
% SHORT-CHAIN STERANES	13.8	% C29 NORMORETANE	17.6
		DIAHOPANE INDEX (%)	5.4
		% TRICYCLIC TERPANES	26.0

B: ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20-C21	13.8	OLEANANE INDEX (%)	13.3
% TOTAL C27	28.0	GAMMACERANE INDEX (%)	7.4
% TOTAL C28	18.2	BISNORHOPANE INDEX (%)	10.3
% TOTAL C29	28.6	25-NORHOPANE INDEX (%)	0.3
% TOTAL C30	11.4	DIAHOPANE INDEX (%)	5.4
HOPANES/STERANES	2.8	% TRICYCLIC TERPANES	26.0
% DIASTERANES	33.5	% C24 TETRACYCLIC TERPANE	16.0
TOTAL STERANES (ppm)	696	% MORETANES	17.7
<u>Other Biological Markers</u>		% TOTAL C31 PENTACYCLICS	33.1
b-Carotane (ppm)	2.0	% TOTAL C32 PENTACYCLICS	13.1
		% TOTAL C33 PENTACYCLICS	15.8
		% TOTAL C34 PENTACYCLICS	32.8
		% TOTAL C35 PENTACYCLICS	5.2
		C35/C34 HOMOHOPEANES	0.16
		29/30 HOPANES	0.91
		TOTAL TRITERPANES (ppm)	1967.9

All ratios based on concentrations

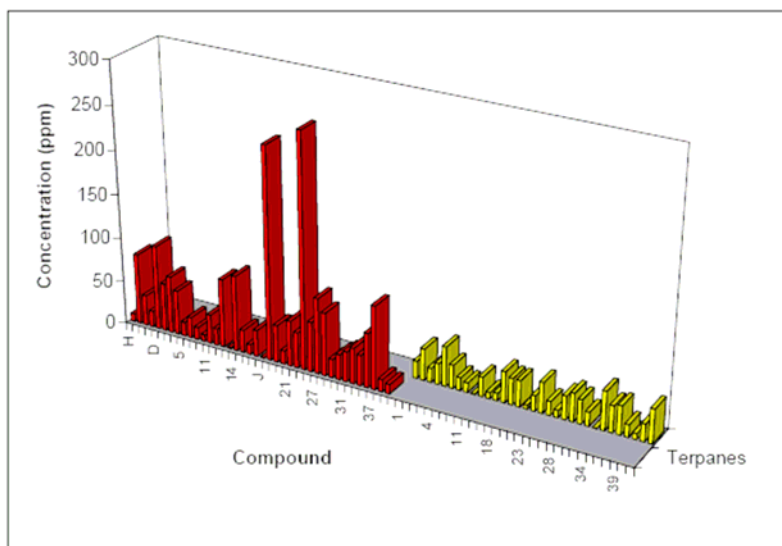
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45281

Sample Descriptor: SED-RC-02

Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45282

Sample Descriptor: SED-RC-03

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.94	191	777	11.42	0.5
A	C20 TRICYCLIC TERPANE	30.71	191	5131	75.42	3.2
B	C21 TRICYCLIC TERPANE	32.57	191	2964	43.57	1.8
C	C22 TRICYCLIC TERPANE	34.42	191	1093	16.07	0.7
D	C23 TRICYCLIC TERPANE	36.72	191	7203	105.88	4.5
E	C24 TRICYCLIC TERPANE	37.98	191	4166	61.24	2.6
1	C25 TRICYCLIC TERPANE	40.64	191	4516	66.38	2.8
4	C24 TETRACYCLIC TERPANE	42.55	191	4129	60.69	2.6
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	1002	14.73	0.6
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	1621	23.83	1.0
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	1062	15.61	0.7
10	C28 TRICYCLIC TERPANE (22S)	45.10	191	599	8.80	0.4
11	C29 TRICYCLIC TERPANE (22R)	47.25	191	2724	40.04	1.7
12	C29 TRICYCLIC TERPANE (22S)	47.51	191	1426	20.96	0.9
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	6422	94.40	4.0
I	C27 PENTACYCLIC TERPANE (Y)	50.50	191	158	2.32	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	7023	103.23	4.4
15	C30 TRICYCLIC TERPANE (22R)	51.05	191	1922	28.25	1.2
16	C30 TRICYCLIC TERPANE (22S)	51.34	191	875	12.86	0.5
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	2340	34.40	1.5
J	C29 17a,21b-25-NORHOPANE	52.95	191	104	1.53	0.1
19	C29 17a,21b-30-NORHOPANE	53.61	191	18339	269.57	11.4
20	C29 18a-NORNEOHOPANE (29Ts)	53.67	191	2962	43.54	1.8
F	C30 DIAHOPANE	54.02	191	1608	23.64	1.0
21	C29 17b,21a-30-NORMORETANE	54.68	191	3335	49.02	2.1
22	C30 18a-OLEANANE	55.03	191	3301	48.52	2.1
23	C30 17a,21b-HOPANE	55.34	191	23206	341.11	14.5
24	C30 17b,21a-MORETANE	56.18	191	6529	95.97	4.1
27	C31 17a,21b-HOMOHOHOPANE (22S)	57.38	191	6889	101.26	4.3
28	C31 17a,21b-HOMOHOHOPANE(22R)	57.62	191	6195	91.06	3.9
G	C30 GAMMACERANE	58.05	191	2064	30.34	1.3
30	C32 17a,21b-HOMOHOHOPANE (22S)	58.92	191	2331	34.26	1.5
31	C32 17a,21b-HOMOHOHOPANE (22R)	59.33	191	2734	40.19	1.7
34	C33 17a,21b-HOMOHOHOPANE (22S)	60.90	191	3497	51.40	2.2
35	C33 17a,21b-HOMOHOHOPANE (22R)	61.35	191	2641	38.82	1.6
36	C34 17a,21b-HOMOHOHOPANE (22S)	62.60	191	4684	68.85	2.9
37	C34 17a,21b-HOMOHOHOPANE (22R)	63.33	191	10812	158.93	6.7
38	C35 17a,21b-HOMOHOHOPANE (22S)	64.91	191	1193	17.54	0.7
39	C35 17a,21b-HOMOHOHOPANE (22R)	65.67	191	908	13.35	0.6

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45282

Sample Descriptor: SED-RC-03

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC (ng/mg)	%
STERANES						
A	C21 DIAPREGNANE	33.08	217	1170	26.10	3.1
1	C21 PREGNANE	34.81	217	1827	40.76	4.8
B	C22 DIAHOMOPREGNANE	34.91	217	903	20.15	2.4
2	C22 HOMOPREGNANE	37.36	217	1097	24.47	2.9
3	C27 13b.17a DIASTERANE (20S)	44.98	217	2324	52.46	6.2
4	C27 13b.17a DIASTERANE (20R)	45.68	217	1282	28.94	3.4
8	C27 13a.17b DIASTERANE (20S)	46.32	217	649	14.65	1.7
9	C27 13a.17b DIASTERANE (20R)	46.67	217	590	13.32	1.6
10	C28 13b.17a DIASTERANE (20S) (24R/24S ?)	47.60	217	68	1.54	0.2
11	C28 13b.17a DIASTERANE (20S) (24R/24S ?)	47.78	217	899	20.30	2.4
14-15	C28 13b.17a DIASTERANE (20R) (24R/24S ?)	48.15	217	384	8.67	1.0
16	C28 13a.17b DIASTERANE (20S)	48.34	217	499	11.40	1.3
17	C27 5a.14a.17a STERANE (20S)	48.40	217	1607	36.71	4.3
18	C27 5a.14b.17b ISOSTERANE (20R) + C29 13b.17a DIASTERANE (20S)	48.58	217	1507	34.43	4.1
19	C27 5a.14b.17b ISOSTERANE (20S)	48.83	217	1752	40.03	4.7
20	C28 13a.17b DIASTERANE (20R)	48.97	217	168	3.84	0.5
22	C27 5a.14a.17a STERANE (20R)	49.22	217	1032	23.58	2.8
23	C29 13b.17a DIASTERANE (20R)	49.51	217	2555	58.37	6.9
24	C29 13a.17b DIASTERANE (20S)	49.96	217	1007	23.01	2.7
26	C28 5a.14a.17a STERANE (20S)	50.48	217	273	6.65	0.8
27	C29 13a.17b DIASTERANE (20R)	50.60	217	1115	27.15	3.2
28	C28 5a.14b.17b ISOSTERANE (20R)	50.79	217	1970	47.98	5.6
29	C28 5a.14b.17b ISOSTERANE (20S)	50.99	217	1483	36.12	4.3
31	C28 5a.14a.17a STERANE (20R)	51.53	217	714	17.39	2.0
33	C29 5a.14a.17a STERANE (20S)	0.00	217	0	0.00	0.0
34	C29 5a.14b.17b ISOSTERANE (20R)	52.56	217	2004	52.25	6.2
35	C29 5a.14b.17b ISOSTERANE (20S)	52.74	217	1330	34.68	4.1
37	C29 5a.14a.17a STERANE (20R)	53.40	217	1087	28.34	3.3
38	C30 5a.14a.17a STERANE (20S)	53.61	217	1280	33.37	3.9
39	C30 5a.14b.17b ISOSTERANE (20R)	54.00	217	172	4.48	0.5
40	C30 5a.14b.17b ISOSTERANE (20S)	54.23	217	962	25.08	3.0
41	C30 5a.14a.17a STERANE (20R)	54.95	217	2037	53.11	6.3

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
 Lab Sample ID: C45282
 Sample Descriptor: SED-RC-03
 Analysis Date: 1/8/2005

PARAMETERS

A: LEVEL OF MATURITY

<u>Steranes</u>		<u>Terpanes</u>	
% 20S C29 STERANES	0.0	% 22S C31 HOMOHOPEANE	52.7
% C29 ISOSTERANES (abb)	75.4	% C30 HOPANE	78.0
% REGULAR STERANES	23.4	% TS/TS-TM (C27)	47.8
% ISOSTERANES	30.4	TS/TM (C27)	0.91
% DIASTERANES	33.1	% C30 MORETANE	22.0
% SHORT-CHAIN STERANES	13.1	% C29 NORMORETANE	15.4
		DIAHOPANE INDEX (%)	6.5
		% TRICYCLIC TERPANES	23.1

B: ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20-C21	13.1	OLEANANE INDEX (%)	12.5
% TOTAL C27	26.7	GAMMACERANE INDEX (%)	8.2
% TOTAL C28	18.1	BISNORHOPANE INDEX (%)	9.2
% TOTAL C29	28.4	25-NORHOPANE INDEX (%)	0.4
% TOTAL C30	13.7	DIAHOPANE INDEX (%)	6.5
HOPANES/STERANES	2.7	% TRICYCLIC TERPANES	23.1
% DIASTERANES	33.1	% C24 TETRACYCLIC TERPANE	15.1
TOTAL STERANES (ppm)	849	% MORETANES	19.2
<u>Other Biological Markers</u>		% TOTAL C31 PENTACYCLICS	31.2
b-Carotane (ppm)	3.7	% TOTAL C32 PENTACYCLICS	12.1
		% TOTAL C33 PENTACYCLICS	14.7
		% TOTAL C34 PENTACYCLICS	37.0
		% TOTAL C35 PENTACYCLICS	5.0
		C35/C34 HOMOHOPEANES	0.14
		29/30 HOPANES	0.79
		TOTAL TRITERPANES (ppm)	2359.0

All ratios based on concentrations

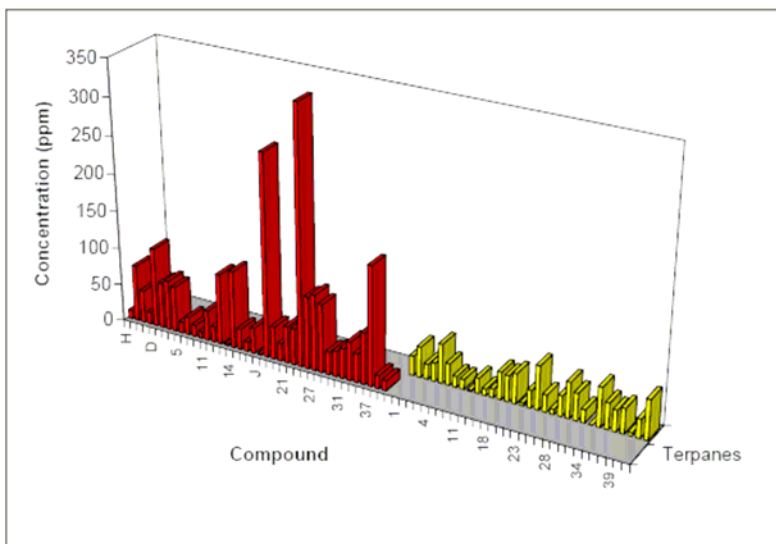
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45282

Sample Descriptor: SED-RC-03

Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45283

Sample Descriptor: SED-TI-01

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.96	191	14494	37.41	4.0
A	C20 TRICYCLIC TERPANE	30.71	191	218363	563.54	60.3
B	C21 TRICYCLIC TERPANE	32.59	191	11438	29.52	3.2
C	C22 TRICYCLIC TERPANE	34.44	191	4713	12.16	1.3
D	C23 TRICYCLIC TERPANE	36.72	191	6900	17.81	1.9
E	C24 TRICYCLIC TERPANE	37.98	191	4466	11.53	1.2
1	C25 TRICYCLIC TERPANE	40.68	191	4172	10.77	1.2
4	C24 TETRACYCLIC TERPANE	42.57	191	4104	10.59	1.1
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	1375	3.55	0.4
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	1648	4.25	0.5
9	C28 TRICYCLIC TERPANE (22R)	44.34	191	857	2.21	0.2
10	C28 TRICYCLIC TERPANE (22S)	45.12	191	574	1.48	0.2
11	C29 TRICYCLIC TERPANE (22R)	47.25	191	2274	5.87	0.6
12	C29 TRICYCLIC TERPANE (22S)	47.51	191	1438	3.71	0.4
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	5848	15.09	1.6
I	C27 PENTACYCLIC TERPANE (Y)	50.48	191	279	0.72	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	6793	17.53	1.9
15	C30 TRICYCLIC TERPANE (22R)	51.10	191	1701	4.39	0.5
16	C30 TRICYCLIC TERPANE (22S)	51.34	191	652	1.68	0.2
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	2100	5.42	0.6
J	C29 17a,21b-25-NORHOPANE	52.99	191	172	0.44	0.0
19	C29 17a,21b-30-NORHOPANE	53.61	191	15896	41.02	4.4
20	C29 18a-NORNEOHOPANE (29Ts)	53.67	191	2595	6.70	0.7
F	C30 DIAHOPANE	54.02	191	1547	3.99	0.4
21	C29 17b,21a-30-NORMORETANE	54.68	191	3311	8.54	0.9
22	C30 18a-OLEANANE	55.01	191	3218	8.30	0.9
23	C30 17a,21b-HOPANE	55.34	191	19584	50.54	5.4
24	C30 17b,21a-MORETANE	56.20	191	3503	9.04	1.0
27	C31 17a,21b-HOMOHOPANE (22S)	57.40	191	5259	13.57	1.5
28	C31 17a,21b-HOMOHOPANE(22R)	57.62	191	3926	10.13	1.1
G	C30 GAMMACERANE	58.05	191	1159	2.99	0.3
30	C32 17a,21b-HOMOHOPANE (22S)	58.94	191	306	0.79	0.1
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	2048	5.29	0.6
34	C33 17a,21b-HOMOHOPANE (22S)	60.90	191	1454	3.75	0.4
35	C33 17a,21b-HOMOHOPANE (22R)	61.35	191	867	2.24	0.2
36	C34 17a,21b-HOMOHOPANE (22S)	62.58	191	337	0.87	0.1
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	1597	4.12	0.4
38	C35 17a,21b-HOMOHOPANE (22S)	64.93	191	603	1.56	0.2
39	C35 17a,21b-HOMOHOPANE (22R)	65.65	191	378	0.98	0.1

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45283

Sample Descriptor: SED-TI-01

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC (ug/mg)	%
STERANES						
A	C21 DIAPREGNANE	33.04	217	3830	15.00	7.6
1	C21 PREGNANE	34.81	217	8789	34.43	17.4
B	C22 DIAHOMOPREGNANE	34.87	217	7029	27.53	13.9
2	C22 HOMOPREGNANE	37.36	217	5687	22.28	11.2
3	C27 13b,17a DIASTERANE (20S)	44.98	217	1553	6.16	3.1
4	C27 13b,17a DIASTERANE (20R)	45.70	217	784	3.11	1.6
8	C27 13a,17b DIASTERANE (20S)	46.34	217	430	1.70	0.9
9	C27 13a,17b DIASTERANE (20R)	46.69	217	535	2.12	1.1
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.60	217	72	0.29	0.1
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.80	217	1102	4.37	2.2
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.17	217	110	0.44	0.2
16	C28 13a,17b DIASTERANE (20S)	48.34	217	929	3.73	1.9
17	C27 5a,14a,17a STERANE (20S)	48.42	217	1103	4.42	2.2
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.62	217	828	3.32	1.7
19	C27 5a,14b,17b ISOSTERANE (20S)	48.83	217	1349	5.41	2.7
20	C28 13a,17b DIASTERANE (20R)	49.00	217	138	0.55	0.3
22	C27 5a,14a,17a STERANE (20R)	49.24	217	696	2.79	1.4
23	C29 13b,17a DIASTERANE (20R)	49.51	217	2183	8.76	4.4
24	C29 13a,17b DIASTERANE (20S)	49.96	217	676	2.71	1.4
26	C28 5a,14a,17a STERANE (20S)	50.50	217	560	2.39	1.2
27	C29 13a,17b DIASTERANE (20R)	50.60	217	949	4.06	2.0
28	C28 5a,14b,17b ISOSTERANE (20R)	50.77	217	1222	5.22	2.6
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	985	4.21	2.1
31	C28 5a,14a,17a STERANE (20R)	51.53	217	658	2.81	1.4
33	C29 5a,14a,17a STERANE (20S)	52.35	217	28	0.13	0.1
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	1883	8.62	4.4
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	1568	7.18	3.6
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1401	6.41	3.2
38	C30 5a,14a,17a STERANE (20S)	53.63	217	421	1.93	1.0
39	C30 5a,14b,17b ISOSTERANE (20R)	54.06	217	138	0.63	0.3
40	C30 5a,14b,17b ISOSTERANE (20S)	54.23	217	624	2.86	1.4
41	C30 5a,14a,17a STERANE (20R)	54.95	217	541	2.48	1.3

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
 Lab Sample ID: C45283
 Sample Descriptor: SED-TI-01
 Analysis Date: 1/8/2005

PARAMETERS

A: LEVEL OF MATURITY

<u>Steranes</u>		<u>Terpanes</u>	
% 20S C29 STERANES	2.0	% 22S C31 HOMOHOPEANE	57.3
% C29 ISOSTERANES (abb)	70.7	% C30 HOPANE	84.8
% REGULAR STERANES	11.8	% TS/TS+TM (C27)	46.3
% ISOSTERANES	18.1	TS/TM (C27)	0.86
% DIASTERANES	20.0	% C30 MORETANE	15.2
% SHORT-CHAIN STERANES	50.1	% C29 NORMORETANE	17.2
		DIAHOPANE INDEX (%)	7.3
		% TRICYCLIC TERPANES	76.0

B: ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20-C21	50.1	OLEANANE INDEX (%)	14.1
% TOTAL C27	13.8	GAMMACERANE INDEX (%)	5.6
% TOTAL C28	12.1	BISNORHOPANE INDEX (%)	9.7
% TOTAL C29	20.0	25-NORHOPANE INDEX (%)	0.9
% TOTAL C30	4.0	DIAHOPANE INDEX (%)	7.3
HOPANES/STERANES	4.7	% TRICYCLIC TERPANES	76.0
% DIASTERANES	20.0	% C24 TETRACYCLIC TERPANE	17.3
TOTAL STERANES (ppm)	198	% MORETANES	16.1
<u>Other Biological Markers</u>		% TOTAL C31 PENTACYCLICS	54.8
b-Carotane (ppm)	0.4	% TOTAL C32 PENTACYCLICS	14.0
		% TOTAL C33 PENTACYCLICS	13.8
		% TOTAL C34 PENTACYCLICS	11.5
		% TOTAL C35 PENTACYCLICS	5.8
		C35/C34 HOMOHOPEANES	0.51
		29/30 HOPANES	0.81
		TOTAL TRITERPANES (ppm)	934.1

All ratios based on concentrations

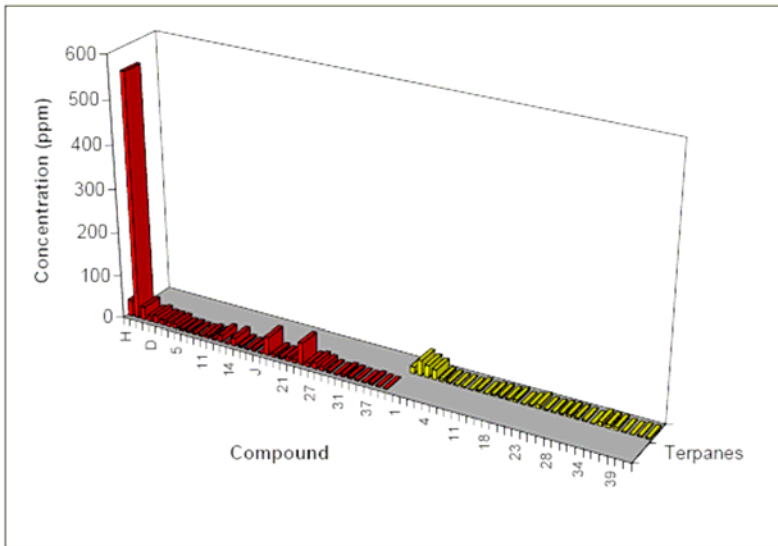
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45283

Sample Descriptor: SED-TI-01

Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45284

Sample Descriptor: SED-TI-02

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.96	191	7225	20.53	2.5
A	C20 TRICYCLIC TERPANE	30.71	191	118459	336.54	41.4
B	C21 TRICYCLIC TERPANE	32.57	191	9836	27.94	3.4
C	C22 TRICYCLIC TERPANE	34.44	191	3786	10.76	1.3
D	C23 TRICYCLIC TERPANE	36.73	191	8589	24.40	3.0
E	C24 TRICYCLIC TERPANE	37.98	191	5002	14.21	1.7
1	C25 TRICYCLIC TERPANE	40.64	191	2512	7.14	0.9
4	C24 TETRACYCLIC TERPANE	42.55	191	4852	13.78	1.7
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	1387	3.94	0.5
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	1869	5.31	0.7
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	1390	3.95	0.5
10	C28 TRICYCLIC TERPANE (22S)	45.11	191	542	1.54	0.2
11	C29 TRICYCLIC TERPANE (22R)	47.25	191	2565	7.29	0.9
12	C29 TRICYCLIC TERPANE (22S)	47.51	191	946	2.69	0.3
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	7248	20.59	2.5
I	C27 PENTACYCLIC TERPANE (Y)	50.48	191	240	0.68	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	8788	24.97	3.1
15	C30 TRICYCLIC TERPANE (22R)	51.08	191	1838	5.22	0.6
16	C30 TRICYCLIC TERPANE (22S)	51.34	191	877	2.49	0.3
17	C28 17a,21b-28,30-BISNORHOPANE	52.87	191	2330	6.62	0.8
J	C29 17a,21b-25-NORHOPANE	52.95	191	209	0.59	0.1
19	C29 17a,21b-30-NORHOPANE	53.59	191	21157	60.11	7.4
20	C29 18a-NORNEOHOPANE (29Ts)	53.65	191	5291	15.03	1.8
F	C30 DIAHOPANE	54.02	191	1844	5.24	0.6
21	C29 17b,21a-30-NORMORETANE	54.68	191	4384	12.45	1.5
22	C30 18a-OLEANANE	55.03	191	3741	10.63	1.3
23	C30 17a,21b-HOPANE	55.34	191	26547	75.42	9.3
24	C30 17b,21a-MORETANE	56.20	191	4536	12.89	1.6
27	C31 17a,21b-HOMOHOOPANE (22S)	57.40	191	8120	23.07	2.8
28	C31 17a,21b-HOMOHOOPANE(22R)	57.62	191	5651	16.05	2.0
G	C30 GAMMACERANE	58.04	191	1391	3.95	0.5
30	C32 17a,21b-HOMOHOOPANE (22S)	58.92	191	392	1.11	0.1
31	C32 17a,21b-HOMOHOOPANE (22R)	59.33	191	3223	9.16	1.1
34	C33 17a,21b-HOMOHOOPANE (22S)	60.90	191	2671	7.59	0.9
35	C33 17a,21b-HOMOHOOPANE (22R)	61.33	191	1495	4.25	0.5
36	C34 17a,21b-HOMOHOOPANE (22S)	62.59	191	633	1.80	0.2
37	C34 17a,21b-HOMOHOOPANE (22R)	63.33	191	2745	7.80	1.0
38	C35 17a,21b-HOMOHOOPANE (22S)	64.93	191	985	2.80	0.3
39	C35 17a,21b-HOMOHOOPANE (22R)	65.63	191	746	2.12	0.3

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45284

Sample Descriptor: SED-TI-02

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
STERANES					(ng/mg)	
A	C21 DIAPREGNANE	33.06	217	1143	4.93	2.2
1	C21 PREGNANE	34.79	217	5236	22.58	10.2
B	C22 DIAHOMOPREGNANE	34.95	217	4867	20.99	9.5
2	C22 HOMOPREGNANE	37.36	217	4551	19.62	8.9
3	C27 13b,17a DIASTERANE (20S)	44.98	217	2115	9.23	4.2
4	C27 13b,17a DIASTERANE (20R)	45.68	217	1328	5.79	2.6
8	C27 13a,17b DIASTERANE (20S)	46.30	217	679	2.96	1.3
9	C27 13a,17b DIASTERANE (20R)	46.67	217	421	1.84	0.8
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.58	217	206	0.90	0.4
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	1489	6.50	2.9
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.17	217	552	2.41	1.1
16	C28 13a,17b DIASTERANE (20S)	48.36	217	783	3.46	1.6
17	C27 5a,14a,17a STERANE (20S)	48.42	217	1573	6.95	3.2
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.61	217	702	3.10	1.4
19	C27 5a,14b,17b ISOSTERANE (20S)	48.83	217	1684	7.44	3.4
20	C28 13a,17b DIASTERANE (20R)	49.02	217	332	1.47	0.7
22	C27 5a,14a,17a STERANE (20R)	49.24	217	930	4.11	1.9
23	C29 13b,17a DIASTERANE (20R)	49.49	217	2712	11.98	5.4
24	C29 13a,17b DIASTERANE (20S)	49.96	217	1401	6.19	2.8
26	C28 5a,14a,17a STERANE (20S)	50.50	217	646	3.04	1.4
27	C29 13a,17b DIASTERANE (20R)	50.60	217	831	3.91	1.8
28	C28 5a,14b,17b ISOSTERANE (20R)	50.77	217	2101	9.89	4.5
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	1722	8.11	3.7
31	C28 5a,14a,17a STERANE (20R)	51.53	217	1117	5.26	2.4
33	C29 5a,14a,17a STERANE (20S)	52.33	217	210	1.06	0.5
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	2531	12.75	5.8
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	1927	9.71	4.4
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1811	9.13	4.1
38	C30 5a,14a,17a STERANE (20S)	53.61	217	799	4.03	1.8
39	C30 5a,14b,17b ISOSTERANE (20R)	54.04	217	394	1.99	0.9
40	C30 5a,14b,17b ISOSTERANE (20S)	54.23	217	861	4.34	2.0
41	C30 5a,14a,17a STERANE (20R)	54.97	217	950	4.79	2.2

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
 Lab Sample ID: C45284
 Sample Descriptor: SED-TI-02
 Analysis Date: 1/8/2005

PARAMETERS

A: LEVEL OF MATURITY

<u>Steranes</u>		<u>Terpanes</u>	
% 20S C29 STERANES	10.4	% 22S C31 HOMOHOPEANE	59.0
% C29 ISOSTERANES (abb)	68.8	% C30 HOPANE	85.4
% REGULAR STERANES	17.4	% TS/TS+TM (C27)	45.2
% ISOSTERANES	25.3	TS/TM (C27)	0.82
% DIASTERANES	26.4	% C30 MORETANE	14.6
% SHORT-CHAIN STERANES	30.9	% C29 NORMORETANE	17.2
		DIAHOPANE INDEX (%)	6.5
		% TRICYCLIC TERPANES	58.3

B: ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20-C21	30.9	OLEANANE INDEX (%)	12.4
% TOTAL C27	18.1	GAMMACERANE INDEX (%)	5.0
% TOTAL C28	18.6	BISNORHOPANE INDEX (%)	8.1
% TOTAL C29	25.5	25-NORHOPANE INDEX (%)	0.8
% TOTAL C30	6.9	DIAHOPANE INDEX (%)	6.5
HOPANES/STERANES	3.6	% TRICYCLIC TERPANES	58.3
% DIASTERANES	26.4	% C24 TETRACYCLIC TERPANE	15.5
TOTAL STERANES (ppm)	220	% MORETANES	15.8
		% TOTAL C31 PENTACYCLICS	51.7
<u>Other Biological Markers</u>		% TOTAL C32 PENTACYCLICS	13.6
b-Carotane (ppm)	0.7	% TOTAL C33 PENTACYCLICS	15.6
		% TOTAL C34 PENTACYCLICS	12.7
		% TOTAL C35 PENTACYCLICS	6.5
		C35/C34 HOMOHOPEANES	0.51
		29/30 HOPANES	0.80
		TOTAL TRITERPANES (ppm)	812.6

All ratios based on concentrations

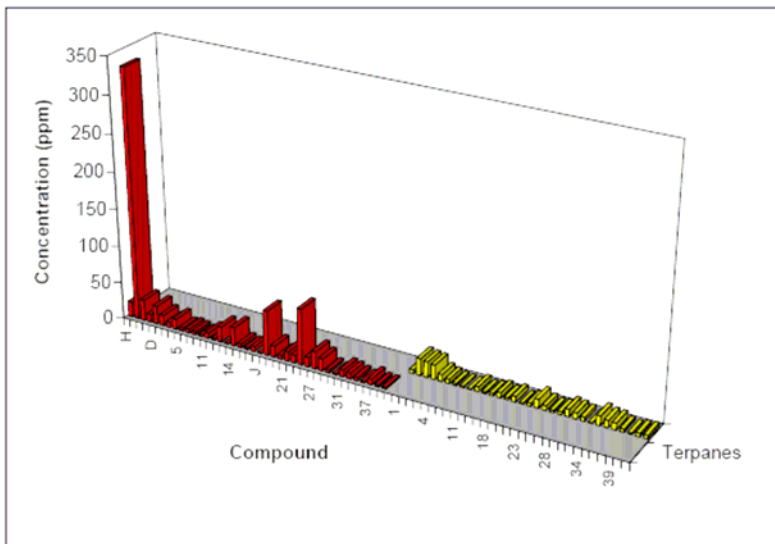
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45284

Sample Descriptor: SED-TI-02

Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45285

Sample Descriptor: SED-II-03

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.96	191	3642	10.87	1.7
A	C20 TRICYCLIC TERPANE	30.69	191	53038	158.27	25.0
B	C21 TRICYCLIC TERPANE	32.56	191	5709	17.04	2.7
C	C22 TRICYCLIC TERPANE	34.42	191	2432	7.26	1.1
D	C23 TRICYCLIC TERPANE	36.70	191	7277	21.72	3.4
E	C24 TRICYCLIC TERPANE	37.96	191	4216	12.58	2.0
1	C25 TRICYCLIC TERPANE	40.64	191	3151	9.40	1.5
4	C24 TETRACYCLIC TERPANE	42.55	191	4610	13.76	2.2
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	1337	3.99	0.6
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	1865	5.57	0.9
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	965	2.88	0.5
10	C28 TRICYCLIC TERPANE (22S)	45.10	191	384	1.15	0.2
11	C29 TRICYCLIC TERPANE (22R)	47.24	191	2623	7.83	1.2
12	C29 TRICYCLIC TERPANE (22S)	47.51	191	1221	3.64	0.6
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	7466	22.28	3.5
I	C27 PENTACYCLIC TERPANE (Y)	50.50	191	170	0.51	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	8439	25.18	4.0
15	C30 TRICYCLIC TERPANE (22R)	51.07	191	2020	6.03	1.0
16	C30 TRICYCLIC TERPANE (22S)	51.32	191	923	2.75	0.4
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	2409	7.19	1.1
J	C29 17a,21b-25-NORHOPANE	52.97	191	264	0.79	0.1
19	C29 17a,21b-30-NORHOPANE	53.59	191	22059	65.83	10.4
20	C29 18a-NORNEOHOPANE (29Ts)	53.65	191	4861	14.51	2.3
F	C30 DIAHOPANE	54.02	191	2140	6.39	1.0
21	C29 17b,21a-30-NORMORETANE	54.68	191	3862	11.52	1.8
22	C30 18a-OLEANANE	55.01	191	4673	13.94	2.2
23	C30 17a,21b-HOPANE	55.34	191	25910	77.32	12.2
24	C30 17b,21a-MORETANE	56.20	191	5214	15.56	2.5
27	C31 17a,21b-HOMOHOHOPANE (22S)	57.40	191	7689	22.95	3.6
28	C31 17a,21b-HOMOHOHOPANE(22R)	57.62	191	5910	17.64	2.8
G	C30 GAMMACERANE	58.03	191	1308	3.90	0.6
30	C32 17a,21b-HOMOHOHOPANE (22S)	58.94	191	471	1.41	0.2
31	C32 17a,21b-HOMOHOHOPANE (22R)	59.33	191	3055	9.12	1.4
34	C33 17a,21b-HOMOHOHOPANE (22S)	60.92	191	2566	7.66	1.2
35	C33 17a,21b-HOMOHOHOPANE (22R)	61.33	191	1597	4.77	0.8
36	C34 17a,21b-HOMOHOHOPANE (22S)	62.58	191	629	1.88	0.3
37	C34 17a,21b-HOMOHOHOPANE (22R)	63.33	191	3433	10.24	1.6
38	C35 17a,21b-HOMOHOHOPANE (22S)	64.93	191	1704	5.08	0.8
39	C35 17a,21b-HOMOHOHOPANE (22R)	65.67	191	719	2.15	0.3

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45285

Sample Descriptor: SED-TI-03

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC (ng/mg)	%
STERANES						
A	C21 DIAPREGNANE	33.06	217	1502	6.80	3.0
1	C21 PREGNANE	34.79	217	6457	29.25	12.9
B	C22 DIAHOMOPREGNANE	34.93	217	3669	16.62	7.3
2	C22 HOMOPREGNANE	37.36	217	2952	13.37	5.9
3	C27 13b,17a DIASTERANE (20S)	44.98	217	2390	10.95	4.8
4	C27 13b,17a DIASTERANE (20R)	45.68	217	1363	6.25	2.8
8	C27 13a,17b DIASTERANE (20S)	46.32	217	705	3.23	1.4
9	C27 13a,17b DIASTERANE (20R)	46.67	217	807	3.70	1.6
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.59	217	70	0.32	0.1
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	1371	6.28	2.8
14-15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.17	217	526	2.41	1.1
16	C28 13a,17b DIASTERANE (20S)	48.32	217	918	4.26	1.9
17	C27 5a,14a,17a STERANE (20S)	48.42	217	1862	8.64	3.8
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.58	217	993	4.61	2.0
19	C27 5a,14b,17b ISOSTERANE (20S)	48.81	217	1475	6.84	3.0
20	C28 13a,17b DIASTERANE (20R)	48.97	217	366	1.70	0.7
22	C27 5a,14a,17a STERANE (20R)	49.22	217	959	4.45	2.0
23	C29 13b,17a DIASTERANE (20R)	49.49	217	2541	11.79	5.2
24	C29 13a,17b DIASTERANE (20S)	49.94	217	973	4.51	2.0
26	C28 5a,14a,17a STERANE (20S)	50.48	217	574	2.84	1.2
27	C29 13a,17b DIASTERANE (20R)	50.60	217	1387	6.86	3.0
28	C28 5a,14b,17b ISOSTERANE (20R)	50.79	217	1765	8.73	3.8
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	1566	7.74	3.4
31	C28 5a,14a,17a STERANE (20R)	51.51	217	957	4.73	2.1
33	C29 5a,14a,17a STERANE (20S)	52.31	217	103	0.55	0.2
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	2597	13.75	6.1
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	1673	8.86	3.9
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1881	9.96	4.4
38	C30 5a,14a,17a STERANE (20S)	53.59	217	1172	6.20	2.7
39	C30 5a,14b,17b ISOSTERANE (20R)	54.04	217	259	1.37	0.6
40	C30 5a,14b,17b ISOSTERANE (20S)	54.20	217	1018	5.39	2.4
41	C30 5a,14a,17a STERANE (20R)	54.95	217	792	4.19	1.8

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45285

Sample Descriptor: SED-TI-03

Analysis Date: 1/8/2005

PARAMETERS

A: LEVEL OF MATURITY

<u>Steranes</u>		<u>Terpanes</u>	
% 20S C29 STERANES	5.2	% 22S C31 HOMOHOPEANE	56.5
% C29 ISOSTERANES (abb)	68.3	% C30 HOPANE	83.2
% REGULAR STERANES	18.3	% TS/TS-TM (C27)	46.9
% ISOSTERANES	24.2	TS/TM (C27)	0.88
% DIASTERANES	28.4	% C30 MORETANE	16.8
% SHORT-CHAIN STERANES	29.1	% C29 NORMORETANE	14.9
		DIAHOPANE INDEX (%)	7.6
		% TRICYCLIC TERPANES	42.8

B: ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20-C21	29.1	OLEANANE INDEX (%)	15.3
% TOTAL C27	20.4	GAMMACERANE INDEX (%)	4.8
% TOTAL C28	17.2	BISNORHOPANE INDEX (%)	8.5
% TOTAL C29	25.8	25-NORHOPANE INDEX (%)	1.0
% TOTAL C30	7.6	DIAHOPANE INDEX (%)	7.6
HOPANES/STERANES	2.7	% TRICYCLIC TERPANES	42.8
% DIASTERANES	28.4	% C24 TETRACYCLIC TERPANE	15.1
TOTAL STERANES (ppm)	227	% MORETANES	15.9
		% TOTAL C31 PENTACYCLICS	49.0
		% TOTAL C32 PENTACYCLICS	12.7
		% TOTAL C33 PENTACYCLICS	15.0
		% TOTAL C34 PENTACYCLICS	14.6
		% TOTAL C35 PENTACYCLICS	8.7
		C35/C34 HOMOHOPEANES	0.60
		29/30 HOPANES	0.85
		TOTAL TRITERPANES (ppm)	632.5

All ratios based on concentrations

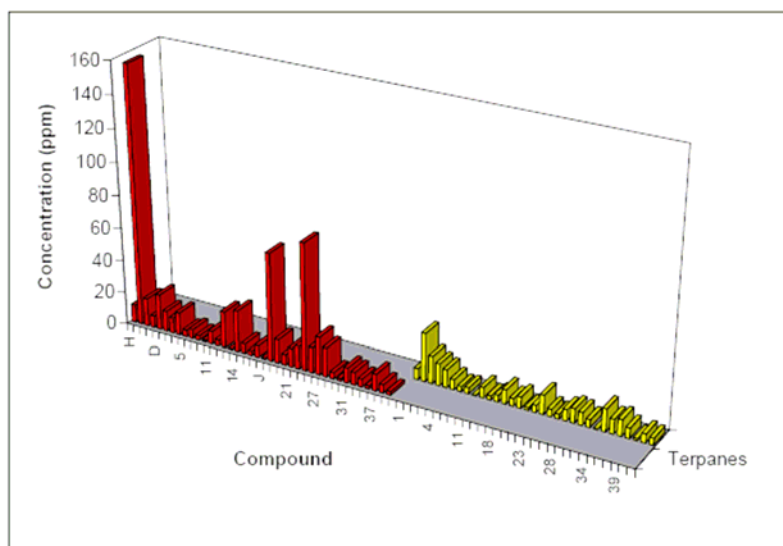
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45285

Sample Descriptor: SED-TI-03

Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45286

Sample Descriptor: SED-TP-01

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.94	191	337	1.30	1.1
A	C20 TRICYCLIC TERPANE	30.69	191	1168	4.51	3.9
B	C21 TRICYCLIC TERPANE	32.57	191	490	1.89	1.6
C	C22 TRICYCLIC TERPANE	34.40	191	208	0.80	0.7
D	C23 TRICYCLIC TERPANE	36.71	191	883	3.41	2.9
E	C24 TRICYCLIC TERPANE	37.94	191	762	2.94	2.5
1	C25 TRICYCLIC TERPANE	40.60	191	565	2.18	1.9
4	C24 TETRACYCLIC TERPANE	42.55	191	434	1.67	1.4
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	172	0.66	0.6
6	C26 TRICYCLIC TERPANE (22S)	42.76	191	211	0.81	0.7
9	C28 TRICYCLIC TERPANE (22R)	44.30	191	336	1.30	1.1
10	C28 TRICYCLIC TERPANE (22S)	45.08	191	70	0.27	0.2
11	C29 TRICYCLIC TERPANE (22R)	47.23	191	481	1.86	1.6
12	C29 TRICYCLIC TERPANE (22S)	47.49	191	145	0.56	0.5
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.84	191	972	3.75	3.2
I	C27 PENTACYCLIC TERPANE (Y)	50.48	191	31	0.12	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.77	191	1306	5.04	4.3
15	C30 TRICYCLIC TERPANE (22R)	51.04	191	324	1.25	1.1
16	C30 TRICYCLIC TERPANE (22S)	51.32	191	231	0.89	0.8
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	198	0.76	0.7
J	C29 17a,21b-25-NORHOPANE	52.97	191	105	0.41	0.3
19	C29 17a,21b-30-NORHOPANE	53.59	191	3700	14.28	12.2
20	C29 18a-NORNEOHOPANE (29Ts)	53.69	191	728	2.81	2.4
F	C30 DIAHOPANE	54.02	191	91	0.35	0.3
21	C29 17b,21a-30-NORMORETANE	54.68	191	1400	5.40	4.6
22	C30 18a-OLEANANE	55.01	191	483	1.86	1.6
23	C30 17a,21b-HOPANE	55.34	191	3756	14.49	12.4
24	C30 17b,21a-MORETANE	0.00	191	0	0.00	0.0
27	C31 17a,21b-HOMOHOPANE (22S)	57.38	191	1629	6.29	5.4
28	C31 17a,21b-HOMOHOPANE(22R)	57.62	191	3069	11.84	10.1
G	C30 GAMMACERANE	57.99	191	358	1.38	1.2
30	C32 17a,21b-HOMOHOPANE (22S)	58.90	191	1372	5.29	4.5
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	882	3.40	2.9
34	C33 17a,21b-HOMOHOPANE (22S)	60.92	191	653	2.52	2.2
35	C33 17a,21b-HOMOHOPANE (22R)	61.33	191	429	1.66	1.4
36	C34 17a,21b-HOMOHOPANE (22S)	0.00	191	0	0.00	0.0
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	1705	6.58	5.6
38	C35 17a,21b-HOMOHOPANE (22S)	64.91	191	210	0.81	0.7
39	C35 17a,21b-HOMOHOPANE (22R)	65.67	191	394	1.52	1.3

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45286

Sample Descriptor: SED-TP-01

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ag/mg)	
A	C21 DIAPREGNANE	33.04	217	164	0.96	3.3
1	C21 PREGNANE	34.79	217	256	1.50	5.1
B	C22 DIAHOMOPREGNANE	34.91	217	122	0.71	2.4
2	C22 HOMOPREGNANE	37.36	217	163	0.95	3.3
3	C27 13b,17a DIASTERANE (20S)	44.96	217	276	1.64	5.6
4	C27 13b,17a DIASTERANE (20R)	45.66	217	221	1.31	4.5
8	C27 13a,17b DIASTERANE (20S)	46.28	217	151	0.89	3.1
9	C27 13a,17b DIASTERANE (20R)	46.67	217	135	0.80	2.7
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.60	217	78	0.46	1.6
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.76	217	126	0.75	2.6
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.13	217	49	0.29	1.0
16	C28 13a,17b DIASTERANE (20S)	48.30	217	152	0.91	3.1
17	C27 5a,14a,17a STERANE (20S)	48.36	217	126	0.76	2.6
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.61	217	140	0.84	2.9
19	C27 5a,14b,17b ISOSTERANE (20S)	48.83	217	83	0.50	1.7
20	C28 13a,17b DIASTERANE (20R)	49.00	217	23	0.14	0.5
22	C27 5a,14a,17a STERANE (20R)	49.20	217	201	1.21	4.1
23	C29 13b,17a DIASTERANE (20R)	49.49	217	238	1.43	4.9
24	C29 13a,17b DIASTERANE (20S)	49.96	217	161	0.97	3.3
26	C28 5a,14a,17a STERANE (20S)	50.46	217	44	0.28	1.0
27	C29 13a,17b DIASTERANE (20R)	50.60	217	238	1.52	5.2
28	C28 5a,14b,17b ISOSTERANE (20R)	50.75	217	315	2.01	6.9
29	C28 5a,14b,17b ISOSTERANE (20S)	50.97	217	124	0.79	2.7
31	C28 5a,14a,17a STERANE (20R)	0.00	217	0	0.00	0.0
33	C29 5a,14a,17a STERANE (20S)	52.33	217	15	0.10	0.4
34	C29 5a,14b,17b ISOSTERANE (20R)	52.54	217	295	2.02	6.9
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	320	2.19	7.5
37	C29 5a,14a,17a STERANE (20R)	53.42	217	121	0.83	2.8
38	C30 5a,14a,17a STERANE (20S)	0.00	217	0	0.00	0.0
39	C30 5a,14b,17b ISOSTERANE (20R)	54.02	217	51	0.35	1.2
40	C30 5a,14b,17b ISOSTERANE (20S)	54.25	217	185	1.27	4.3
41	C30 5a,14a,17a STERANE (20R)	54.93	217	128	0.88	3.0

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45286

Sample Descriptor: SED-TP-01

Analysis Date: 1/8/2005

PARAMETERS

A: LEVEL OF MATURITY

<u>Steranes</u>		<u>Terpanes</u>	
% 20S C29 STERANES	11.0	% 22S C31 HOMOHOPEANE	34.7
% C29 ISOSTERANES (abb)	81.9	% C30 HOPANE	100.0
% REGULAR STERANES	13.8	% TS/TS+TM (C27)	42.7
% ISOSTERANES	32.6	TS/TM (C27)	0.74
% DIASTERANES	39.4	% C30 MORETANE	0.0
% SHORT-CHAIN STERANES	14.1	% C29 NORMORETANE	27.5
		DIAHOPANE INDEX (%)	2.4
		% TRICYCLIC TERPANES	21.1

B: ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	14.1	OLEANANE INDEX (%)	11.4
% TOTAL C27	25.7	GAMMACERANE INDEX (%)	8.7
% TOTAL C28	19.3	BISNORHOPANE INDEX (%)	5.0
% TOTAL C29	32.4	25-NORHOPANE INDEX (%)	2.7
% TOTAL C30	8.5	DIAHOPANE INDEX (%)	2.4
HOPANES/STERANES	3.9	% TRICYCLIC TERPANES	21.1
% DIASTERANES	39.4	% C24 TETRACYCLIC TERPANE	10.4
TOTAL STERANES (ppm)	29	% MORETANES	15.8
<u>Other Biological Markers</u>		% TOTAL C31 PENTACYCLICS	45.4
b-Carotane (ppm)	1.0	% TOTAL C32 PENTACYCLICS	21.8
		% TOTAL C33 PENTACYCLICS	10.5
		% TOTAL C34 PENTACYCLICS	16.5
		% TOTAL C35 PENTACYCLICS	5.8
		C35/C34 HOMOHOPEANES	0.35
		29/30 HOPANES	0.99
		TOTAL TRITERPANES (ppm)	116.9

All ratios based on concentrations

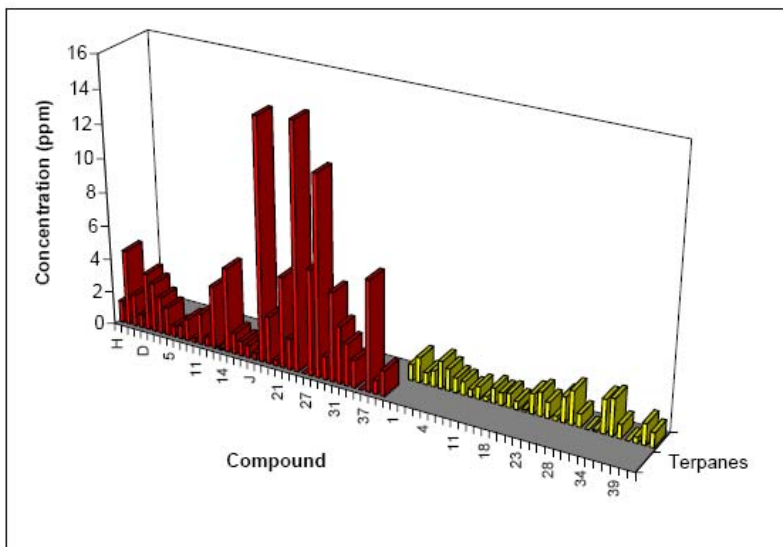
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45286

Sample Descriptor: SED-TP-01

Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45287

Sample Descriptor: SED-CW-01

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.96	191	1032	6.74	0.6
A	C20 TRICYCLIC TERPANE	30.69	191	8357	54.58	4.5
B	C21 TRICYCLIC TERPANE	32.57	191	2226	14.54	1.2
C	C22 TRICYCLIC TERPANE	34.42	191	1248	8.15	0.7
D	C23 TRICYCLIC TERPANE	36.70	191	7354	48.03	3.9
E	C24 TRICYCLIC TERPANE	37.96	191	4197	27.41	2.3
1	C25 TRICYCLIC TERPANE	40.64	191	3507	22.91	1.9
4	C24 TETRACYCLIC TERPANE	42.55	191	4971	32.47	2.7
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	1272	8.31	0.7
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	2119	13.84	1.1
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	1223	7.99	0.7
10	C28 TRICYCLIC TERPANE (22S)	45.10	191	482	3.15	0.3
11	C29 TRICYCLIC TERPANE (22R)	47.25	191	3195	20.87	1.7
12	C29 TRICYCLIC TERPANE (22S)	47.49	191	1854	12.11	1.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	7248	47.34	3.9
I	C27 PENTACYCLIC TERPANE (Y)	50.50	191	177	1.16	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	7905	51.63	4.2
15	C30 TRICYCLIC TERPANE (22R)	51.07	191	2571	16.79	1.4
16	C30 TRICYCLIC TERPANE (22S)	51.32	191	1658	10.83	0.9
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	2373	15.50	1.3
J	C29 17a,21b-25-NORHOPANE	52.97	191	1037	6.77	0.6
19	C29 17a,21b-30-NORHOPANE	53.59	191	26086	170.38	14.0
20	C29 18a-NORNEOHOPANE (29Ts)	53.69	191	4091	26.72	2.2
F	C30 DIAHOPANE	54.02	191	1536	10.03	0.8
21	C29 17b,21a-30-NORMORETANE	54.68	191	4247	27.74	2.3
22	C30 18a-OLEANANE	55.01	191	2388	15.60	1.3
23	C30 17a,21b-HOPANE	55.34	191	25924	169.32	13.9
24	C30 17b,21a-MORETANE	56.20	191	4418	28.86	2.4
27	C31 17a,21b-HOMOHOPANE (22S)	57.40	191	9681	63.23	5.2
28	C31 17a,21b-HOMOHOPANE (22R)	57.62	191	7618	49.76	4.1
G	C30 GAMMACERANE	58.03	191	2817	18.40	1.5
30	C32 17a,21b-HOMOHOPANE (22S)	58.94	191	4194	27.39	2.3
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	4396	28.71	2.4
34	C33 17a,21b-HOMOHOPANE (22S)	60.92	191	4489	29.32	2.4
35	C33 17a,21b-HOMOHOPANE (22R)	61.33	191	4203	27.45	2.3
36	C34 17a,21b-HOMOHOPANE (22S)	62.60	191	3984	26.02	2.1
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	6680	43.63	3.6
38	C35 17a,21b-HOMOHOPANE (22S)	64.91	191	2288	14.94	1.2
39	C35 17a,21b-HOMOHOPANE (22R)	65.65	191	1153	7.53	0.6

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45287

Sample Descriptor: SED-CW-01

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
STERANES						
A	C21 DIAPREGNANE	33.06	217	1030	10.21	2.1
1	C21 PREGNANE	34.79	217	1989	19.72	4.0
B	C22 DIAHOMOPREGNANE	34.91	217	1051	10.42	2.1
2	C22 HOMOPREGNANE	37.36	217	1240	12.29	2.5
3	C27 13b,17a DIASTERANE (20S)	44.98	217	2861	28.70	5.9
4	C27 13b,17a DIASTERANE (20R)	45.68	217	1898	19.04	3.9
8	C27 13a,17b DIASTERANE (20S)	46.30	217	1027	10.30	2.1
9	C27 13a,17b DIASTERANE (20R)	46.67	217	1159	11.63	2.4
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.60	217	104	1.04	0.2
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	1340	13.44	2.8
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.15	217	476	4.77	1.0
16	C28 13a,17b DIASTERANE (20S)	48.30	217	460	4.67	1.0
17	C27 5a,14a,17a STERANE (20S)	48.40	217	2473	25.10	5.1
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.58	217	1536	15.59	3.2
19	C27 5a,14b,17b ISOSTERANE (20S)	48.81	217	2649	26.89	5.5
20	C28 13a,17b DIASTERANE (20R)	49.00	217	149	1.51	0.3
22	C27 5a,14a,17a STERANE (20R)	49.22	217	1437	14.59	3.0
23	C29 13b,17a DIASTERANE (20R)	49.49	217	2635	26.75	5.5
24	C29 13a,17b DIASTERANE (20S)	49.92	217	615	6.24	1.3
26	C28 5a,14a,17a STERANE (20S)	50.48	217	870	9.41	1.9
27	C29 13a,17b DIASTERANE (20R)	50.60	217	1400	15.15	3.1
28	C28 5a,14b,17b ISOSTERANE (20R)	50.77	217	2235	24.19	5.0
29	C28 5a,14b,17b ISOSTERANE (20S)	51.01	217	1744	18.87	3.9
31	C28 5a,14a,17a STERANE (20R)	51.53	217	1282	13.87	2.8
33	C29 5a,14a,17a STERANE (20S)	52.33	217	48	0.56	0.1
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	3165	36.67	7.5
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	2162	25.05	5.1
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1959	22.70	4.7
38	C30 5a,14a,17a STERANE (20S)	53.63	217	1453	16.83	3.5
39	C30 5a,14b,17b ISOSTERANE (20R)	54.04	217	420	4.87	1.0
40	C30 5a,14b,17b ISOSTERANE (20S)	54.22	217	1018	11.79	2.4
41	C30 5a,14a,17a STERANE (20R)	54.95	217	2156	24.98	5.1

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
 Lab Sample ID: C45287
 Sample Descriptor: SED-CW-01
 Analysis Date: 1/8/2005

PARAMETERS

A: LEVEL OF MATURITY

<u>Steranes</u>		<u>Terpanes</u>	
% 20S C29 STERANES	2.4	% 22S C31 HOMOHOPEANE	56.0
% C29 ISOSTERANES (abb)	72.6	% C30 HOPANE	85.4
% REGULAR STERANES	26.2	% TS/TS-TM (C27)	47.8
% ISOSTERANES	32.0	TS/TM (C27)	0.92
% DIASTERANES	31.0	% C30 MORETANE	14.6
% SHORT-CHAIN STERANES	10.8	% C29 NORMORETANE	14.0
		DIAHOPANE INDEX (%)	5.6
		% TRICYCLIC TERPANES	22.7

B: ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20-C21	10.8	OLEANANE INDEX (%)	8.4
% TOTAL C27	29.5	GAMMACERANE INDEX (%)	9.8
% TOTAL C28	18.8	BISNORHOPANE INDEX (%)	8.4
% TOTAL C29	28.9	25-NORHOPANE INDEX (%)	3.8
% TOTAL C30	12.0	DIAHOPANE INDEX (%)	5.6
HOPANES/STERANES	2.5	% TRICYCLIC TERPANES	22.7
% DIASTERANES	31.0	% C24 TETRACYCLIC TERPANE	16.1
TOTAL STERANES (ppm)	488	% MORETANES	14.3
		% TOTAL C31 PENTACYCLICS	35.5
<u>Other Biological Markers</u>		% TOTAL C32 PENTACYCLICS	17.6
b-Carotane (ppm)	3.4	% TOTAL C33 PENTACYCLICS	17.9
		% TOTAL C34 PENTACYCLICS	21.9
		% TOTAL C35 PENTACYCLICS	7.1
		C35/C34 HOMOHOPEANES	0.32
		29/30 HOPANES	1.01
		TOTAL TRITERPANES (ppm)	1216.2

All ratios based on concentrations

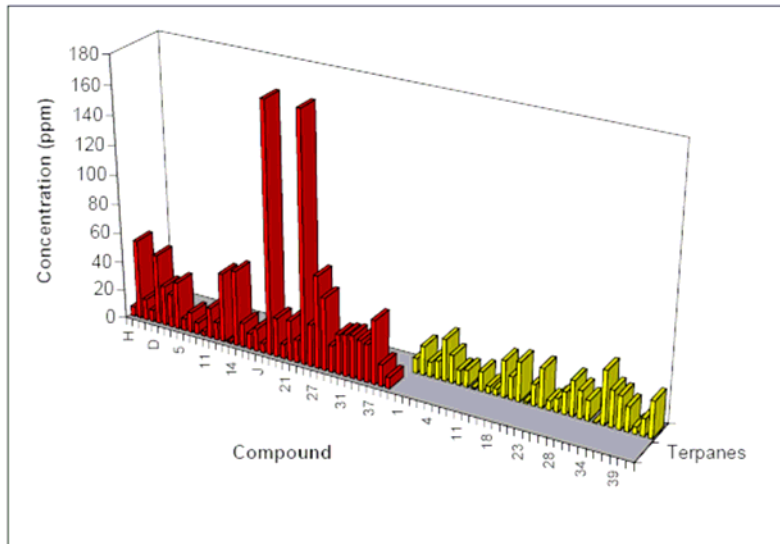
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45287

Sample Descriptor: SED-CW-01

Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45291

Sample Descriptor: SED-PP-01

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.94	191	1139	1.51	0.7
A	C20 TRICYCLIC TERPANE	30.69	191	13265	17.60	7.6
B	C21 TRICYCLIC TERPANE	32.56	191	3715	4.93	2.1
C	C22 TRICYCLIC TERPANE	34.40	191	1616	2.14	0.9
D	C23 TRICYCLIC TERPANE	36.70	191	8599	11.41	4.9
E	C24 TRICYCLIC TERPANE	37.96	191	4991	6.62	2.9
1	C25 TRICYCLIC TERPANE	40.62	191	3794	5.03	2.2
4	C24 TETRACYCLIC TERPANE	42.55	191	4578	6.07	2.6
5	C26 TRICYCLIC TERPANE (22R)	42.61	191	1750	2.32	1.0
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	2240	2.97	1.3
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	1129	1.50	0.6
10	C28 TRICYCLIC TERPANE (22S)	45.10	191	380	0.50	0.2
11	C29 TRICYCLIC TERPANE (22R)	47.22	191	3306	4.39	1.9
12	C29 TRICYCLIC TERPANE (22S)	47.51	191	1738	2.31	1.0
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	7981	10.59	4.6
I	C27 PENTACYCLIC TERPANE (Y)	50.48	191	384	0.51	0.2
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	8291	11.00	4.7
15	C30 TRICYCLIC TERPANE (22R)	51.07	191	1908	2.53	1.1
16	C30 TRICYCLIC TERPANE (22S)	51.32	191	880	1.17	0.5
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	2515	3.34	1.4
J	C29 17a,21b-25-NORHOPANE	52.95	191	485	0.64	0.3
19	C29 17a,21b-30-NORHOPANE	53.59	191	20441	27.11	11.7
20	C29 18a-NORNEOHOPANE (29Ts)	53.69	191	2979	3.95	1.7
F	C30 DIAHOPANE	54.02	191	1906	2.53	1.1
21	C29 17b,21a-30-NORMORETANE	54.68	191	6285	8.34	3.6
22	C30 18a-OLEANANE	55.01	191	4801	6.37	2.7
23	C30 17a,21b-HOPANE	55.34	191	24747	32.83	14.1
24	C30 17b,21a-MORETANE	56.20	191	5338	7.08	3.0
27	C31 17a,21b-HOMOHOPANE (22S)	57.37	191	7315	9.70	4.2
28	C31 17a,21b-HOMOHOPANE(22R)	57.62	191	6305	8.36	3.6
G	C30 GAMMACERANE	58.01	191	1480	1.96	0.8
30	C32 17a,21b-HOMOHOPANE (22S)	58.96	191	1901	2.52	1.1
31	C32 17a,21b-HOMOHOPANE (22R)	59.33	191	2966	3.93	1.7
34	C33 17a,21b-HOMOHOPANE (22S)	60.90	191	2987	3.96	1.7
35	C33 17a,21b-HOMOHOPANE (22R)	61.35	191	1788	2.37	1.0
36	C34 17a,21b-HOMOHOPANE (22S)	62.60	191	2313	3.07	1.3
37	C34 17a,21b-HOMOHOPANE (22R)	63.33	191	4749	6.30	2.7
38	C35 17a,21b-HOMOHOPANE (22S)	64.93	191	1361	1.81	0.8
39	C35 17a,21b-HOMOHOPANE (22R)	65.67	191	733	0.97	0.4

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45291

Sample Descriptor: SED-PP-01

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	STERANES				(ng/mg)	
A	C21 DIAPREGNANE	33.06	217	1588	3.20	3.8
1	C21 PREGNANE	34.79	217	2969	5.98	7.0
B	C22 DIAHOMOPREGNANE	34.91	217	1488	3.00	3.5
2	C22 HOMOPREGNANE	37.36	217	1481	2.98	3.5
3	C27 13b,17a DIASTERANE (20S)	44.98	217	2524	5.14	6.0
4	C27 13b,17a DIASTERANE (20R)	45.68	217	1587	3.23	3.8
8	C27 13a,17b DIASTERANE (20S)	46.32	217	998	2.03	2.4
9	C27 13a,17b DIASTERANE (20R)	46.65	217	744	1.52	1.8
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.60	217	141	0.29	0.3
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	1207	2.46	2.9
14+15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.17	217	446	0.91	1.1
16	C28 13a,17b DIASTERANE (20S)	48.34	217	614	1.27	1.5
17	C27 5a,14a,17a STERANE (20S)	48.40	217	1518	3.13	3.7
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.60	217	1059	2.18	2.6
19	C27 5a,14b,17b ISOSTERANE (20S)	48.81	217	1498	3.09	3.6
20	C28 13a,17b DIASTERANE (20R)	49.02	217	117	0.24	0.3
22	C27 5a,14a,17a STERANE (20R)	49.24	217	971	2.00	2.4
23	C29 13b,17a DIASTERANE (20R)	49.49	217	3323	6.85	8.0
24	C29 13a,17b DIASTERANE (20S)	49.94	217	876	1.81	2.1
26	C28 5a,14a,17a STERANE (20S)	50.50	217	419	0.92	1.1
27	C29 13a,17b DIASTERANE (20R)	50.60	217	1907	4.19	4.9
28	C28 5a,14b,17b ISOSTERANE (20R)	50.77	217	2381	5.23	6.1
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	1848	4.06	4.8
31	C28 5a,14a,17a STERANE (20R)	51.51	217	1129	2.48	2.9
33	C29 5a,14a,17a STERANE (20S)	52.31	217	93	0.22	0.3
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	2035	4.79	5.6
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	1355	3.19	3.7
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1418	3.34	3.9
38	C30 5a,14a,17a STERANE (20S)	53.61	217	714	1.68	2.0
39	C30 5a,14b,17b ISOSTERANE (20R)	0.00	217	0	0.00	0.0
40	C30 5a,14b,17b ISOSTERANE (20S)	54.20	217	681	1.60	1.9
41	C30 5a,14a,17a STERANE (20R)	54.95	217	909	2.14	2.5

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
 Lab Sample ID: C45291
 Sample Descriptor: SED-PP-01
 Analysis Date: 1/8/2005

PARAMETERS

A: LEVEL OF MATURITY

<u>Steranes</u>		<u>Terpanes</u>	
% 20S C29 STERANES	6.2	% 22S C31 HOMOHOPEANE	53.7
% C29 ISOSTERANES (abb)	69.2	% C30 HOPANE	82.3
% REGULAR STERANES	18.7	% TS/TS-TM (C27)	49.0
% ISOSTERANES	27.1	TS/TM (C27)	0.96
% DIASTERANES	36.4	% C30 MORETANE	17.7
% SHORT-CHAIN STERANES	17.8	% C29 NORMORETANE	23.5
		DIAHOPANE INDEX (%)	7.2
		% TRICYCLIC TERPANES	28.8

B: ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20-C21	17.8	OLEANANE INDEX (%)	16.2
% TOTAL C27	24.9	GAMMACERANE INDEX (%)	5.6
% TOTAL C28	21.0	BISNORHOPANE INDEX (%)	9.2
% TOTAL C29	29.9	25-NORHOPANE INDEX (%)	1.9
% TOTAL C30	6.4	DIAHOPANE INDEX (%)	7.2
HOPANES/STERANES	2.7	% TRICYCLIC TERPANES	28.8
% DIASTERANES	36.4	% C24 TETRACYCLIC TERPANE	15.6
TOTAL STERANES (ppm)	85	% MORETANES	20.5
<u>Other Biological Markers</u>		% TOTAL C31 PENTACYCLICS	42.0
b-Carotane (ppm)	0.3	% TOTAL C32 PENTACYCLICS	15.0
		% TOTAL C33 PENTACYCLICS	14.7
		% TOTAL C34 PENTACYCLICS	21.8
		% TOTAL C35 PENTACYCLICS	6.5
		C35/C34 HOMOHOPEANES	0.30
		29/30 HOPANES	0.83
		TOTAL TRITERPANES (ppm)	232.2

All ratios based on concentrations

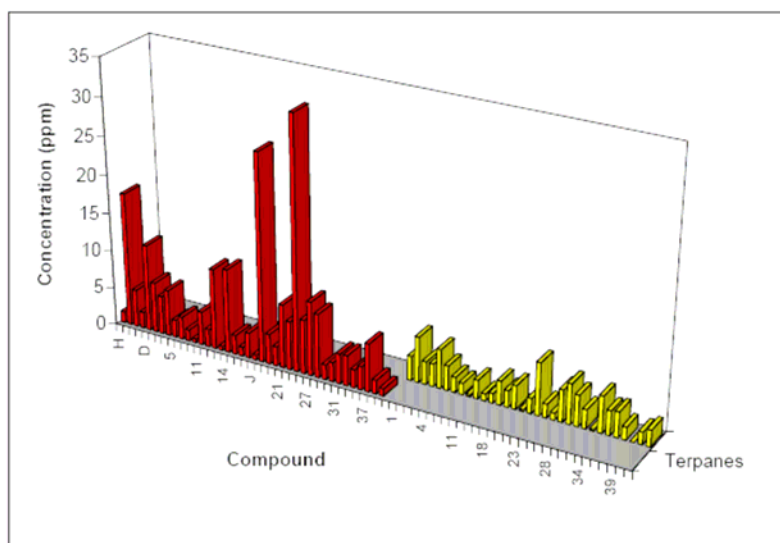
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45291

Sample Descriptor: SED-PP-01

Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45292

Sample Descriptor: SED-PP-02

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.94	191	730	1.14	0.5
A	C20 TRICYCLIC TERPANE	30.71	191	5649	8.84	4.0
B	C21 TRICYCLIC TERPANE	32.57	191	2618	4.10	1.9
C	C22 TRICYCLIC TERPANE	34.42	191	945	1.48	0.7
D	C23 TRICYCLIC TERPANE	36.70	191	6720	10.52	4.8
E	C24 TRICYCLIC TERPANE	37.96	191	4144	6.49	2.9
1	C25 TRICYCLIC TERPANE	40.62	191	5795	9.07	4.1
4	C24 TETRACYCLIC TERPANE	42.55	191	3608	5.65	2.6
5	C26 TRICYCLIC TERPANE (22R)	42.61	191	1502	2.35	1.1
6	C26 TRICYCLIC TERPANE (22S)	42.76	191	1510	2.36	1.1
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	1114	1.74	0.8
10	C28 TRICYCLIC TERPANE (22S)	45.10	191	378	0.59	0.3
11	C29 TRICYCLIC TERPANE (22R)	47.22	191	2241	3.51	1.6
12	C29 TRICYCLIC TERPANE (22S)	47.49	191	1338	2.09	0.9
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	5681	8.89	4.0
I	C27 PENTACYCLIC TERPANE (Y)	50.52	191	225	0.35	0.2
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	6713	10.51	4.8
15	C30 TRICYCLIC TERPANE (22R)	51.07	191	1658	2.60	1.2
16	C30 TRICYCLIC TERPANE (22S)	51.32	191	877	1.37	0.6
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	2609	4.08	1.9
J	C29 17a,21b-25-NORHOPANE	0.00	191	0	0.00	0.0
19	C29 17a,21b-30-NORHOPANE	53.59	191	16261	25.46	11.5
20	C29 18a-NORNEOHOPANE (29Ts)	53.65	191	3814	5.97	2.7
F	C30 DIAHOPANE	54.00	191	1681	2.63	1.2
21	C29 17b,21a-30-NORMORETANE	54.68	191	4025	6.30	2.9
22	C30 18a-OLEANANE	55.01	191	2900	4.54	2.1
23	C30 17a,21b-HOPANE	55.34	191	19967	31.26	14.2
24	C30 17b,21a-MORETANE	56.20	191	5084	7.96	3.6
27	C31 17a,21b-HOMOHOHOPANE (22S)	57.38	191	6225	9.75	4.4
28	C31 17a,21b-HOMOHOHOPANE(22R)	57.62	191	5900	9.24	4.2
G	C30 GAMMACERANE	58.01	191	1594	2.50	1.1
30	C32 17a,21b-HOMOHOHOPANE (22S)	58.92	191	1613	2.53	1.1
31	C32 17a,21b-HOMOHOHOPANE (22R)	59.33	191	2040	3.19	1.4
34	C33 17a,21b-HOMOHOHOPANE (22S)	60.92	191	2325	3.64	1.6
35	C33 17a,21b-HOMOHOHOPANE (22R)	61.31	191	1859	2.91	1.3
36	C34 17a,21b-HOMOHOHOPANE (22S)	62.60	191	2634	4.12	1.9
37	C34 17a,21b-HOMOHOHOPANE (22R)	63.33	191	5455	8.54	3.9
38	C35 17a,21b-HOMOHOHOPANE (22S)	64.93	191	1242	1.94	0.9
39	C35 17a,21b-HOMOHOHOPANE (22R)	65.65	191	252	0.39	0.2

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45292

Sample Descriptor: SED-PP-02

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC (ng/mg)	%
STERANES						
A	C21 DIAPREGNANE	33.06	217	1268	3.01	4.0
1	C21 PREGNANE	34.79	217	1876	4.46	5.9
B	C22 DIAHOMOPREGNANE	34.91	217	1429	3.40	4.5
2	C22 HOMOPREGNANE	37.36	217	1293	3.07	4.1
3	C27 13b,17a DIASTERANE (20S)	44.96	217	1975	4.75	6.3
4	C27 13b,17a DIASTERANE (20R)	45.68	217	1130	2.72	3.6
8	C27 13a,17b DIASTERANE (20S)	46.30	217	621	1.49	2.0
9	C27 13a,17b DIASTERANE (20R)	46.69	217	615	1.48	2.0
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.57	217	62	0.15	0.2
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	1166	2.80	3.7
14-15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.15	217	191	0.46	0.6
16	C28 13a,17b DIASTERANE (20S)	48.32	217	438	1.07	1.4
17	C27 5a,14a,17a STERANE (20S)	48.40	217	1142	2.78	3.7
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.58	217	558	1.36	1.8
19	C27 5a,14b,17b ISOSTERANE (20S)	48.81	217	1329	3.23	4.3
20	C28 13a,17b DIASTERANE (20R)	49.00	217	261	0.64	0.8
22	C27 5a,14a,17a STERANE (20R)	49.22	217	734	1.79	2.4
23	C29 13b,17a DIASTERANE (20R)	49.49	217	1935	4.71	6.3
24	C29 13a,17b DIASTERANE (20S)	49.92	217	439	1.07	1.4
26	C28 5a,14a,17a STERANE (20S)	50.48	217	314	0.81	1.1
27	C29 13a,17b DIASTERANE (20R)	50.58	217	1374	3.56	4.7
28	C28 5a,14b,17b ISOSTERANE (20R)	50.77	217	1536	3.98	5.3
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	1129	2.93	3.9
31	C28 5a,14a,17a STERANE (20R)	51.51	217	750	1.95	2.6
33	C29 5a,14a,17a STERANE (20S)	52.33	217	16	0.04	0.1
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	1799	5.00	6.7
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	1340	3.72	5.0
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1150	3.19	4.3
38	C30 5a,14a,17a STERANE (20S)	53.81	217	250	0.69	0.9
39	C30 5a,14b,17b ISOSTERANE (20R)	54.02	217	225	0.62	0.8
40	C30 5a,14b,17b ISOSTERANE (20S)	54.20	217	609	1.69	2.3
41	C30 5a,14a,17a STERANE (20R)	54.95	217	881	2.45	3.3

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45292

Sample Descriptor: SED-PP-02

Analysis Date: 1/8/2005

PARAMETERS

A: LEVEL OF MATURITY

<u>Steranes</u>		<u>Terpanes</u>	
% 20S C29 STERANES	1.4	% 22S C31 HOMOHOPEANE	51.3
% C29 ISOSTERANES (abb)	72.9	% C30 HOPANE	79.7
% REGULAR STERANES	18.3	% TS/TS+TM (C27)	45.8
% ISOSTERANES	29.1	TS/TM (C27)	0.85
% DIASTERANES	34.1	% C30 MORETANE	20.3
% SHORT-CHAIN STERANES	18.6	% C29 NORMORETANE	19.8
		DIAHOPANE INDEX (%)	7.8
		% TRICYCLIC TERPANES	26.4

B: ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20+C21	18.6	OLEANANE INDEX (%)	12.7
% TOTAL C27	25.2	GAMMACERANE INDEX (%)	7.4
% TOTAL C28	19.7	BISNORHOPANE INDEX (%)	11.6
% TOTAL C29	29.3	25-NORHOPANE INDEX (%)	0.0
% TOTAL C30	7.3	DIAHOPANE INDEX (%)	7.8
HOPANES/STERANES	2.9	% TRICYCLIC TERPANES	26.4
% DIASTERANES	34.1	% C24 TETRACYCLIC TERPANE	15.3
TOTAL STERANES (ppm)	75	% MORETANES	20.1
		% TOTAL C31 PENTACYCLICS	41.0
		% TOTAL C32 PENTACYCLICS	12.4
		% TOTAL C33 PENTACYCLICS	14.2
		% TOTAL C34 PENTACYCLICS	27.4
		% TOTAL C35 PENTACYCLICS	5.1
		C35/C34 HOMOHOPEANES	0.18
		29/30 HOPANES	0.81
		TOTAL TRITERPANES (ppm)	220.6

Other Biological Markers

b-Carotane (ppm) 0.1

All ratios based on concentrations

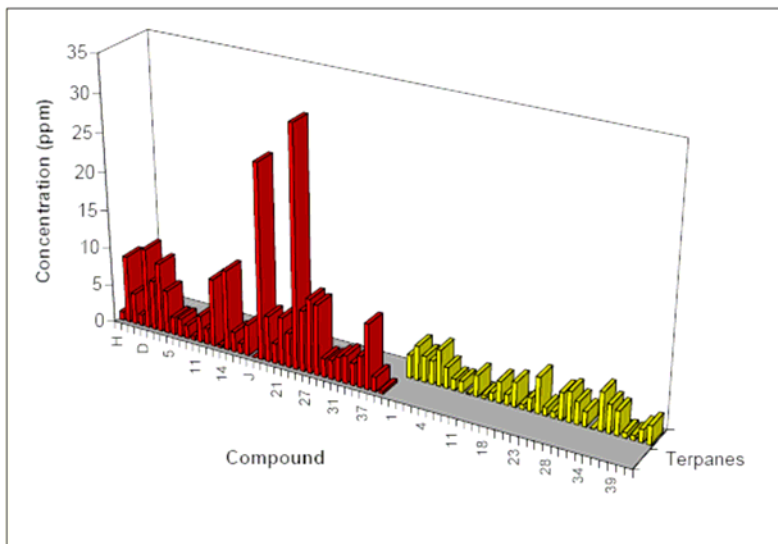
STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45292

Sample Descriptor: SED-PP-02

Analysis Date: 1/8/2005



STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45293

Sample Descriptor: SED-PP-03

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC	%
	TERPANES				(ng/g)	
H	C19 TRICYCLIC TERPANE	28.94	191	1432	3.48	0.8
A	C20 TRICYCLIC TERPANE	30.69	191	11648	28.34	6.1
B	C21 TRICYCLIC TERPANE	32.57	191	3986	9.70	2.1
C	C22 TRICYCLIC TERPANE	34.42	191	1458	3.55	0.8
D	C23 TRICYCLIC TERPANE	36.72	191	9229	22.46	4.9
E	C24 TRICYCLIC TERPANE	37.96	191	5944	14.46	3.1
1	C25 TRICYCLIC TERPANE	40.64	191	3856	9.38	2.0
4	C24 TETRACYCLIC TERPANE	42.55	191	5752	14.00	3.0
5	C26 TRICYCLIC TERPANE (22R)	42.63	191	1448	3.52	0.8
6	C26 TRICYCLIC TERPANE (22S)	42.78	191	2603	6.33	1.4
9	C28 TRICYCLIC TERPANE (22R)	44.32	191	1812	4.41	1.0
10	C28 TRICYCLIC TERPANE (22S)	45.12	191	640	1.56	0.3
11	C29 TRICYCLIC TERPANE (22R)	47.25	191	3509	8.54	1.8
12	C29 TRICYCLIC TERPANE (22S)	47.51	191	2006	4.88	1.1
13	C27 18a-22,29,30-TRISNORNEOHOPANE (Ts)	49.86	191	8679	21.12	4.6
I	C27 PENTACYCLIC TERPANE (Y)	50.52	191	133	0.32	0.1
14	C27 17a-22,29,30-TRISNORHOPANE (Tm)	50.79	191	10224	24.88	5.4
15	C30 TRICYCLIC TERPANE (22R)	51.07	191	2120	5.16	1.1
16	C30 TRICYCLIC TERPANE (22S)	51.32	191	1124	2.74	0.6
17	C28 17a,21b-28,30-BISNORHOPANE	52.85	191	2907	7.07	1.5
J	C29 17a,21b-25-NORHOPANE	52.97	191	268	0.65	0.1
19	C29 17a,21b-30-NORHOPANE	53.59	191	25148	61.19	13.3
20	C29 18a-NORNEOHOPANE (29Ts)	53.65	191	5754	14.00	3.0
F	C30 DIAHOPANE	54.02	191	2010	4.89	1.1
21	C29 17b,21a-30-NORMORETANE	54.68	191	4860	11.83	2.6
22	C30 18a-OLEANANE	55.01	191	4481	10.90	2.4
23	C30 17a,21b-HOPANE	55.34	191	30889	75.16	16.3
24	C30 17b,21a-MORETANE	56.20	191	6410	15.60	3.4
27	C31 17a,21b-HOMOHOOPANE (22S)	57.38	191	8396	20.43	4.4
28	C31 17a,21b-HOMOHOOPANE(22R)	57.62	191	6548	15.93	3.5
G	C30 GAMMACERANE	58.01	191	1170	2.85	0.6
30	C32 17a,21b-HOMOHOOPANE (22S)	58.92	191	481	1.17	0.3
31	C32 17a,21b-HOMOHOOPANE (22R)	59.33	191	3351	8.15	1.8
34	C33 17a,21b-HOMOHOOPANE (22S)	60.90	191	2759	6.71	1.5
35	C33 17a,21b-HOMOHOOPANE (22R)	61.35	191	1855	4.51	1.0
36	C34 17a,21b-HOMOHOOPANE (22S)	62.60	191	694	1.69	0.4
37	C34 17a,21b-HOMOHOOPANE (22R)	63.33	191	2605	6.34	1.4
38	C35 17a,21b-HOMOHOOPANE (22S)	64.91	191	1022	2.49	0.5
39	C35 17a,21b-HOMOHOOPANE (22R)	65.65	191	514	1.25	0.3

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill

Lab Sample ID: C45293

Sample Descriptor: SED-PP-03

Analysis Date: 1/8/2005

No.	COMPOUND NAME	RT	ION	AREA	CONC ($\mu\text{g}/\text{mg}$)	%
STERANES						
A	C21 DIAPREGNANE	33.06	217	1638	6.05	3.5
1	C21 PREGNANE	34.79	217	3435	12.69	7.3
B	C22 DIAHOMOPREGNANE	34.91	217	2331	8.61	5.0
2	C22 HOMOPREGNANE	37.36	217	1704	6.29	3.6
3	C27 13b,17a DIASTERANE (20S)	44.98	217	3311	12.37	7.1
4	C27 13b,17a DIASTERANE (20R)	45.68	217	1850	6.91	4.0
8	C27 13a,17b DIASTERANE (20S)	46.32	217	844	3.15	1.8
9	C27 13a,17b DIASTERANE (20R)	46.67	217	1067	3.99	2.3
10	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.60	217	179	0.67	0.4
11	C28 13b,17a DIASTERANE (20S) (24R/24S ?)	47.78	217	1462	5.46	3.2
14-15	C28 13b,17a DIASTERANE (20R) (24R/24S ?)	48.15	217	419	1.57	0.9
16	C28 13a,17b DIASTERANE (20S)	48.32	217	754	2.85	1.6
17	C27 5a,14a,17a STERANE (20S)	48.40	217	2561	9.69	5.6
18	C27 5a,14b,17b ISOSTERANE (20R) + C29 13b,17a DIASTERANE (20S)	48.58	217	1412	5.34	3.1
19	C27 5a,14b,17b ISOSTERANE (20S)	48.81	217	1601	6.05	3.5
20	C28 13a,17b DIASTERANE (20R)	49.00	217	208	0.79	0.5
22	C27 5a,14a,17a STERANE (20R)	49.22	217	1160	4.39	2.5
23	C29 13b,17a DIASTERANE (20R)	49.49	217	2615	9.89	5.7
24	C29 13a,17b DIASTERANE (20S)	49.94	217	613	2.32	1.3
26	C28 5a,14a,17a STERANE (20S)	50.46	217	677	2.73	1.6
27	C29 13a,17b DIASTERANE (20R)	50.60	217	1782	7.18	4.2
28	C28 5a,14b,17b ISOSTERANE (20R)	50.77	217	1905	7.68	4.4
29	C28 5a,14b,17b ISOSTERANE (20S)	50.99	217	1664	6.71	3.9
31	C28 5a,14a,17a STERANE (20R)	51.51	217	1164	4.69	2.7
33	C29 5a,14a,17a STERANE (20S)	52.31	217	105	0.45	0.3
34	C29 5a,14b,17b ISOSTERANE (20R)	52.56	217	2380	10.27	5.9
35	C29 5a,14b,17b ISOSTERANE (20S)	52.74	217	1449	6.25	3.6
37	C29 5a,14a,17a STERANE (20R)	53.40	217	1697	7.32	4.2
38	C30 5a,14a,17a STERANE (20S)	53.61	217	988	4.26	2.5
39	C30 5a,14b,17b ISOSTERANE (20R)	54.02	217	275	1.19	0.7
40	C30 5a,14b,17b ISOSTERANE (20S)	54.20	217	595	2.57	1.5
41	C30 5a,14a,17a STERANE (20R)	54.95	217	621	2.68	1.5

Percent composition data for saturated biomarkers are based on concentration data

STERANE AND TRITERPANE BIOMARKERS

Project: ATHOS I Oil Spill
 Lab Sample ID: C45293
 Sample Descriptor: SED-PP-03
 Analysis Date: 1/8/2005

PARAMETERS

A: LEVEL OF MATURITY

<u>Steranes</u>		<u>Terpanes</u>	
% 20S C29 STERANES	5.8	% 22S C31 HOMOHOPEANE	56.2
% C29 ISOSTERANES (abb)	68.0	% C30 HOPANE	82.8
% REGULAR STERANES	20.9	% TS/TS-TM (C27)	45.9
% ISOSTERANES	25.1	TS/TM (C27)	0.85
% DIASTERANES	34.6	% C30 MORETANE	17.2
% SHORT-CHAIN STERANES	19.4	% C29 NORMORETANE	16.2
		DIAHOPANE INDEX (%)	6.1
		% TRICYCLIC TERPANES	27.8

B: ORGANIC FACIES AND DEPOSITIONAL ENVIRONMENT

% TOTAL C20-C21	19.4	OLEANANE INDEX (%)	12.7
% TOTAL C27	28.4	GAMMACERANE INDEX (%)	3.6
% TOTAL C28	19.2	BISNORHOPANE INDEX (%)	8.6
% TOTAL C29	26.8	25-NORHOPANE INDEX (%)	0.9
% TOTAL C30	6.2	DIAHOPANE INDEX (%)	6.1
HOPANES/STERANES	2.6	% TRICYCLIC TERPANES	27.8
% DIASTERANES	34.6	% C24 TETRACYCLIC TERPANE	15.7
TOTAL STERANES (ppm)	173	% MORETANES	16.7
<u>Other Biological Markers</u>		% TOTAL C31 PENTACYCLICS	52.9
b-Carotane (ppm)	0.4	% TOTAL C32 PENTACYCLICS	13.6
		% TOTAL C33 PENTACYCLICS	16.3
		% TOTAL C34 PENTACYCLICS	11.7
		% TOTAL C35 PENTACYCLICS	5.4
		C35/C34 HOMOHOPEANES	0.47
		29/30 HOPANES	0.81
		TOTAL TRITERPANES (ppm)	461.7

All ratios based on concentrations

STERANE AND TRITERPANE BIOMARKERS

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