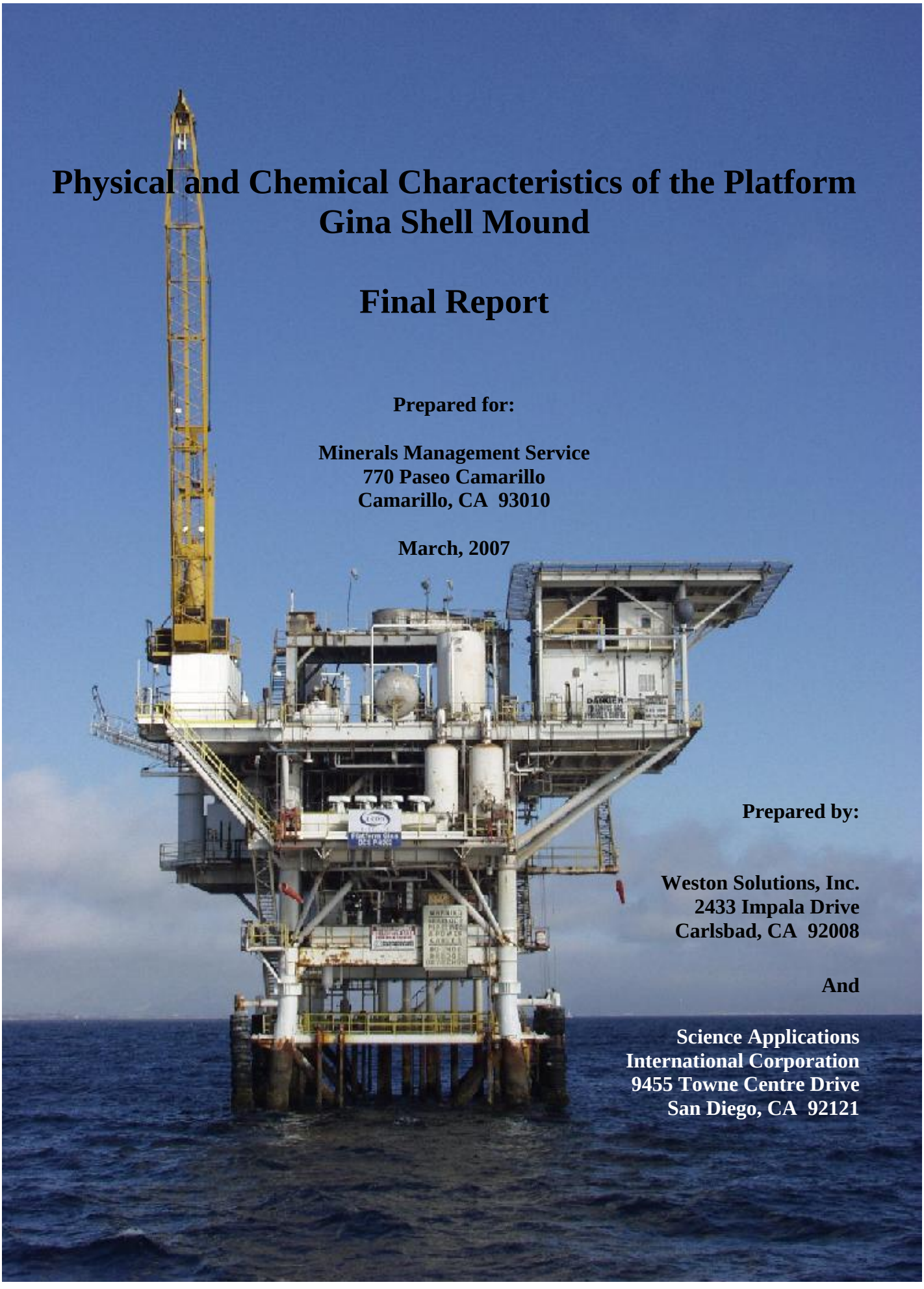

Physical and Chemical Characteristics of the Platform Gina Shell Mound

Final Report

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EXECUTIVE SUMMARY

This report presents the results and key findings from a study conducted as part of an ongoing program by the U.S. Minerals Management Service (MMS) to describe the sizes, configurations, and compositions of shell mounds associated with offshore oil and gas platforms. The objective of this pilot study was to provide information on the physical and chemical characteristics of the shell mound at Platform Gina in the outer continental shelf waters of the Santa Barbara Channel. To achieve this objective, sediment cores from the Platform Gina shell mound were collected, sub-sampled by strata, and analyzed for grain size and chemical constituents (e.g., organic carbon, sulfides, metals including barium, volatile and semi-volatile organics, and petroleum hydrocarbons).

The Platform Gina shell mound consists mainly of sands with varying proportions of gravel and fine-sized particles. The gravel-sized particles comprise predominantly subrounded pieces ranging up to several millimeters and similarly sized shell fragments (shell hash). Some cores contained sections with alternating light and dark banding, as well as dark, amorphous clumps and a slight sheen with petroleum and/or sulfide odors.

Total organic carbon (TOC) concentrations in the core samples were relatively uniform and within a factor of three of reference sediment concentrations, whereas sulfides concentrations varied by more than one order of magnitude and were significantly correlated with total recoverable petroleum hydrocarbon (TRPH) concentrations. Barium, which is a chemical marker for drilling fluids, was present at elevated concentrations (up to 2,700 mg/kg) in several samples, particularly in the surface and middle layers of cores, along with elevated lead and zinc levels. TRPH concentrations also varied within the mound, with a maximum concentration of 4,000 mg/kg, reflecting a wide range of petroleum hydrocarbon levels within the shell mound. Individual volatile and semi-volatile hydrocarbons, including polycyclic aromatic hydrocarbons (PAH), occasionally were detected but at concentrations less than 1 mg/kg. Detailed hydrocarbon analyses, using more sensitive analytical methods, of a subset of core samples detected substantially higher PAH concentrations along with other hydrocarbon characteristics that are indicative of weathered petroleum from a local crude oil source (i.e., Monterey

Formation). Pesticides and polychlorinated biphenyls were not detected in any of the shell mound samples. The highest concentrations of many of the chemical constituents occurred in the middle stratum of the shell mound, although sediments from the surface stratum also contained elevated barium relative to reference sediment concentrations, indicating that drilling wastes are not confined to the middle stratum.

Because the results from this pilot study are from a single shell mound site, the extent to which they are representative of the characteristics of other shell mounds on the outer continental shelf presently can not be determined. However, the results from the Platform Gina shell mound share some similarities and differences with previous studies of the Hazel, Heidi, Hilda, and Hope ("4H") shell mounds that were associated with decommissioned platforms in State waters with the Santa Barbara Channel. For example, the 4H shell mounds contain elevated barium and TRPH concentrations that are comparable to levels present in the Gina shell mound. The 4H shell mounds also contained elevated (part-per-million levels) of volatile organic compounds, whereas these compounds were detected only sporadically and at concentrations that were two or more orders of magnitude lower in the Platform Gina shell mound samples. Further, previous monitoring studies conducted by MMS of the effects of discharges from three OCS platforms (Harvest, Hermosa, and Hidalgo) in deeper and highly dispersive waters of the Santa Maria Basin showed minimal changes to the sedimentary environment. Differences between the Platform Gina, 4H, and Santa Maria Basin sites in contaminant levels likely reflect a number of factors, including: physical conditions that affect the dispersion and accumulation of discharged materials on the seafloor; numbers of wells drilled and volumes of materials discharged at each platform; and the chemical composition of the platform discharges which, in turn, reflect increasingly tighter regulatory restrictions on the more recent platform discharges compared with those associated with earlier drilling and production operations.

1.0 INTRODUCTION

This report presents the results and key findings from a pilot study sponsored by the U.S. Minerals Management Service (MMS) to characterize the physical and chemical composition of shell mounds associated with active oil and gas platforms in outer continental shelf (OCS) waters of the Santa Barbara Channel.

1.1 Background and Purpose

MMS is conducting a pilot study to test a methodology to characterize the size, configurations, and compositions of shell mounds associated with Pacific Region oil and gas platforms. The first phase of the pilot study (Phase 1) consisted of multi-beam surveys of 16 OCS platforms in the Santa Barbara Channel and Santa Maria Basin. This phase also evaluated a variety of factors that can affect the size and configuration of the mounds, such as water depth, bottom slope, and platform age. The results of this initial study are presented in a report titled *An Assessment and Physical Characterization of Shell Mounds Associated with Outer Continental Shelf Platforms Located in the Santa Barbara Channel and Santa Maria Basin, California* that was prepared by MEC [now Weston Solutions] and Sea Surveyor (2003).

MMS presently is developing information on the physical, chemical, and toxicological characteristics of representative shell mounds. This information is important for future assessments of possible mitigation options following platform decommissioning. Prior to initiating planning for the sampling and analysis phase of the effort, it was necessary to screen and select candidate shell mounds and evaluate logistical issues and risks associated with testing a method for sampling shell mounds in deeper OCS waters. Factors considered in the selection of candidate platforms included water depth, bottom slope, age of platform, shell mound size, distance from port and other candidate platforms, and platform development considerations (e.g., type of drilling mud used). Factors considered for the feasibility evaluation included platform accessibility (e.g., operator's willingness to participate in the pilot study, logistics of working within or next to the platform jacket, and access for working directly from the platform), bottom obstructions (e.g., power cables, pipelines), and other possible restrictions (e.g., weather,

proximity to areas of biological significance, and marine mammal issues). Key findings and conclusions from this feasibility assessment were summarized in a report titled *MMS Feasibility Study Report – Environmental Mitigation Study: Task Order 3 – Sediment Chemistry Profiling of Outer Continental Shelf Shell Mounds Associated with Platforms in the Santa Barbara Channel and Santa Maria Basin* (Weston Solutions and SAIC, 2005).

Information on the active Pacific OCS platforms is summarized in Table 1. The 23 platforms were installed over a period of several decades (1968 to 1989), occur in water depths of 29 to 365 m (96 to 1,197 ft) and bottom slopes up to 5.6 degrees, and have shell mounds with estimated volumes ranging from <400 to 9,550 m^3 (<500 to 12,500 yd^3). The size, configuration, and location of the shell mounds relative to the platform footprints are described in the Phase I report (MEC and Sea Surveyor, 2003).

The goal of the present phase of the shell mound characterization pilot study was to sample shell mounds at up to three of the OCS platforms. Ideally, the selected platform sites would represent a range of conditions with respect to platform age (installation date), water depth, bottom slope, and height and volume of the mound. These factors are important because the results of the Phase I study (MEC and Sea Surveyor, 2003) indicated that the size of a shell mound at an OCS platform appeared to be related to the age of the platform and bottom slope. Platform age also may reflect the chemical characteristics of the mounds because the types and quantities of drilling mud additives permitted for discharge by the regulatory agencies have changed over time.

Table 1. Characteristics of Active OCS Platforms in the Santa Barbara Channel and Santa Maria Basin.

Area Production Unit	Platform Name	Date Installed	Production Started	Water Depth (m/ft)	Distance from Shore (miles)	Platform Life at Time of Survey	Years in Production	Shell Mound Volume (yds^3)	Number Of Well Slots / Unused Slots	Shell Mound Height (ft)	Estimated Shell Mound size (ft)	Center of Shell Mound Location	Bottom Slope (%)
San Pedro	Edith	1/12/1983	1/21/1984	49/161	8.5	20	19		72/49				
	Elly	3/12/1980		78/256	8.6	23	na		80/16				
	Ellen	1/15/1980	1/13/1981	81/266	8.6	23	22		0/0				
	Eureka	7/8/1984	3/17/1985	213/699	9	19	18		60/0				
Point Hueneme	Gina	12/11/1980	2/11/1982	29/96	3.7	21	21	4200	15/3	13	150x210	North side	1.01
Santa Clara	Gail	4/5/1987	8/8/1988	225/740	9.9	14	15	<500	36/14	3	4 Scattered small mounds		3.6
	Grace	7/30/1979	7/25/1980	97/318	10.5	22	23	5500	48/13	13	200x390	Northwest side	0.38
	Gilda	1/6/1981	12/19/1981	63/208	8.8	21	21	7370	96/32	18	220x285	North side	1.1
Pitas Point	Habitat	10/8/1981	12/15/1983	89/293	7.8	21	20	6840	24/4	19	Dia 250	Centered	0.4
Carpinteria	Hogan	9/1/1967	6/10/1968	47/152	3.7	35	35	12,500	66/26	26	Dia 260	Western side	0.33
	Houchin	7/1/1968	4/28/1969	50/163	4.1	33	34	10,900	60/24	21	Dia 280	Centered	0.38
	Henry	8/31/1979	5/15/1980	53/172	4.3	22	23	7200	24/0	19	Dia 250	Centered	0.67
	Hillhouse	11/26/1969	7/21/1970	58/190	5.5	33	33	6800	60/8	22	180x270	Western side	0.88
	A	9/14/1968	3/3/1969	58/190	5.8	34	34	7260	57/0	20	140x260	Centered	1.02
	B	11/8/1968	7/19/1969	58/190	5.7	34	34	8590	63/8	18	160x210	Centered	1.03
	C	2/28/1977	8/1/1977	59/193	5.7	25	26	4590	60/17	13	160x235	Southwest corner	1.14

Area Production Unit	Platform Name	Date Installed	Production Started	Water Depth (m/ft)	Distance from Shore (miles)	Platform Life at Time of Survey	Years in Production	Shell Mound Volume (yds^3)	Number Of Well Slots / Unused Slots	Shell Mound Height (ft)	Estimated Shell Mound size (ft)	Center of Shell Mound Location	Bottom Slope (%)
Santa Ynez	Hondo	6/23/1976	4/2/1981	256/840	5.1	25	22	1500	28/*	9	3 mounds 40x170, 60x130, & 50x100		5.6
	Harmony	6/21/1989	12/30/1993	365/1197	6.4	14	10		60/*				
	Heritage	10/7/1989	12/18/1993	328/1076	8.2	14	10		60/*				
Point Arguello	Hermosa	10/5/1985	6/9/1991	184/604	6.8	16	12	<500	48/*	2	2 mounds 30x60 & Dia 20		5
	Harvest	6/12/1985	6/3/1991	206/676	6.7	17	12		50/*				
	Hildago	7/2/1986	5/27/1991	131/430	5.9	15	12	<500	56/*	<2	Small and scattered		4.3
Point Pedernales	Irene	8/7/1985	4/13/1987	73/240	4.7	17	16	3720	72*	9	Dia 215	Western side	0.71

* = Data are not available for these parameters.

n/a = Platform Elly is a processing facility only and no production activities are conducted from this platform.

An initial screening of OCS platforms eliminated 11 of the candidate sites because they were too deep (> 100 m) and, therefore, beyond the limits for sampling using practical sediment coring equipment (Platforms Eureka, Gail, Hondo, Heritage, Harmony, Hermosa, Hidalgo, and Harvest) or too far from likely sampling mobilization/ demobilization locations (Platforms Edith, Ellen, and Irene). The 12 remaining platforms are located in the Pitas Point, Santa Clara and Pt. Hueneme Units, and Carpinteria and Dos Quadras Fields, and are relatively close to possible staging areas for the sampling surveys (Figure 1). These platforms were installed between 1967 and 1981 and, therefore represent current ages from 24 to 38 years. The platforms occur in water depths ranging from 29 m (97 ft) (Gina) to 97 m (318 ft) (Grace), with bottom slopes from 0.3 to 1.1 degrees. The shell mounds associated with these OCS platforms have volumes ranging from 4,200 to 12,500 yd^3 (3,200 to 9,550 m^3). Although these platforms occur within the lower end of the ranges for depth and slope, they are considered representative of the ranges in shell mound age and size for all of the OCS platforms and, therefore, appropriate for this pilot characterization study. Additionally, multi-beam data from the Phase I study (MEC and Sea Surveyors, 2003) were available for each of these platforms.

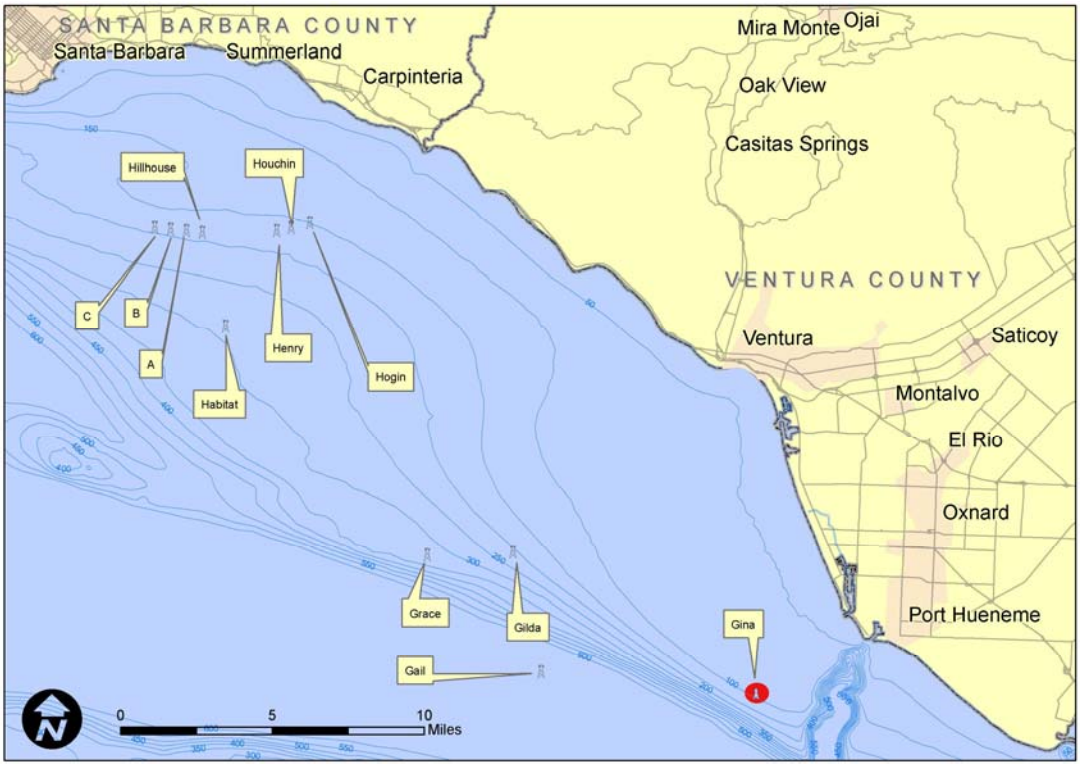

Figure 1. Selected Platform Locations in the Santa Barbara Channel.

The feasibility assessment (Weston Solutions and SAIC, 2005) concluded that sampling from the apex (or as close to the apex as possible) of the shell mounds provided the greatest probability for obtaining representative cores. The multi-beam data collected by MEC and Sea Surveyors (2003) indicated that most of the shell mounds were centered beneath the platform structures. Because the mound apex typically is beneath the platform structure, coring the apex of the shell mound would require sampling from the platform or beneath the platform. The feasibility assessment (Weston Solutions and SAIC, 2005) indicated that sampling from or beneath the platform was infeasible due to risks associated with potential for fouling of the sampling equipment by the platform structure, resulting in potential gear loss, damage to the platform and/or infrastructure, and risks to personnel. Consequently, the pilot study design focused on platforms with shell mounds centered outside the platform footprint that could be sampled from a vessel. This approach would also enable collection of cores from multiple sampling locations within each mound, thereby providing opportunities to characterize the spatial variability in composition within a mound, while eliminating or reducing most of the logistical and technical concerns associated with sampling directly beneath a platform.

Of the 12 remaining candidate platforms, two - Gina and Gilda - have shell mounds that are centered partially outside the platform footprint. Based on interpretations of the multi-beam data collected during the Phase I study (MEC and Sea Surveyors, 2003), it was determined that these two shell mounds could be sampled from a vessel. The Gina and Gilda shell mounds also satisfied the other sampling criteria related to size, age, and proximity to survey mobilization sites.

Platform Gina is located about 6 km (3.7 miles) offshore of Ventura/Oxnard in 29 m (97 ft) of water. Gina was installed in 1980 and was fully operational in 1981. It has a small shell mound (approximately 4 m [13 ft] in elevation) with the mound apex located on the northern edge of the platform and extending outside of the platform footprint.

Platform Gilda is located about 14 km (8.8 miles) offshore of Ventura in approximately 60 m (200 ft) of water. Gilda began operation in 1981, and has a shell mound approximately 5 m (18

ft) in elevation, with the mound apex also located on the northern edge of the platform and extending outside of the platform footprint.

Thus, the objectives of this study were to collect and analyze multiple sediment cores from the Platform Gina and Gilda shell mounds. As discussed below, attempts at sampling at the Platform Gilda shell mound subsequently were abandoned during the survey because the location of a power cable in the vicinity of the shell mound could not be determined with sufficient accuracy to ensure that the coring operation would not damage the cable.

1.2 Organization of the Report

Section 2 of this report presents the materials and methods used to collect and analyze samples. The results of these analyses are presented in Section 3. Results are applied to the study objectives and discussed in Section 4. The conclusions of the study are discussed in Section 5. Copies of the sediment core logs, core photographs, and the laboratory data report are included in Appendices A, B, and C, respectively. Results from the detailed hydrocarbon analyses are presented in Appendix D.

2.0 METHODS AND MATERIALS

Collection and analyses of samples for this program were performed according to a Sampling and Analysis Plan *"Sampling of Outer Continental Shelf Shell Mounds Associated with Platforms Gina and Gilda"* (SAP; Weston Solutions and SAIC, 2006) that was prepared and approved prior to the start of any survey operations. The SAP described the proposed methodology for collecting and analyzing core samples, as well as a Health and Safety Plan (HASP).

Weston Solutions (Carlsbad, CA) was responsible for preparing the SAP and coordinating the survey. Coring operations were performed primarily by TEG Ocean Services (Santa Cruz, CA), with assistance from SAIC (San Diego, CA), aboard the survey vessel, *S/V Danny C*, which is operated by Castagnola Tug Service, Inc. (Santa Barbara, CA). Fugro West (Ventura, CA) was

responsible for providing navigation and determining anchoring positions for the survey vessel. Sample analyses were performed by Calscience Environmental Laboratories (Garden Grove, CA) and Weston Solutions. Detailed hydrocarbon analyses were performed by Alpha Woods Hole Laboratory (Raynham, MA), and the results were interpreted by Newfields Environmental Forensics LLC (Rockland, MA).

2.1 Shell Mound Sampling Locations

As mentioned, the Platform Gina and Gilda shell mounds were selected as candidate sampling locations (Weston Solutions and SAIC, 2005). The sampling approach described in the SAP involved collection of three cores at each the Gina and Gilda shell mounds, as well as collection of reference sediment samples (see Section 2.3) at each of two reference sites. During the survey, sampling at the Platform Gilda shell mound was attempted, but subsequently abandoned before any cores were collected because the location of a power cable could not be determined and the possible risk of hitting the cable with the vibracore could not be mitigated. Consequently, additional sampling was performed at the Platform Gina shell mound in lieu of further attempts to sample the Platform Gilda shell mound.

Target coring locations for the Platform Gina shell mound were selected because they were considered accessible using the vessel-based coring equipment and suitable for characterizing the spatial distributions of drilling wastes near the apex and apron sections of the mound. Station locations were selected to reflect a shellmound alignment along an axis from apex to margin and oriented away from the platform and any obstructions. Station locations were pre-plotted, and actual locations were determined using a Differential Global Positioning System (DGPS) that is accurate to +/- 3 m.

2.2 Collection of Sediment Cores

The *S/V Danny C* was secured to the platform using two stern lines, and a bow anchor was deployed to maintain position during sampling. Once the bow anchor was set, the vessel could be repositioned as needed to reach multiple sampling locations by adjusting the stern lines and

the scope of the bow anchor line. This eliminated the need for multiple anchorings and thereby minimized the potential for striking a subsurface hazard with the anchor. Sediment cores were obtained using an electric vibracore that consisted of a 10-cm diameter aluminum barrel with a stainless steel cutter/catcher and vibracore head mounted inside a support frame that helped maintain the core in a vertical orientation while on the sediment surface. The core barrel was lined with a 9-cm internal diameter clear butyl acetate tube. The vibracore head and tube were lowered by a hydraulic winch and vibrated until penetration was stopped by sediment resistance (e.g., hard clay) or the core tube reached the base of the mound. The vibracore was retrieved and the core was extruded into a plastic-lined tray. Cores represent materials from the surface to the base (i.e., native sediment) of the shell mound.

Each core was photographed and logged according to the Unified Soil Classification System (USCS) (see Appendix B). The geologic description of each core included the texture, odor, color, length, approximate grain size distribution, plasticity characteristics of the fine-grained fraction, and visually distinct layering of the sediment. Sediment sampling and handling procedures generally followed guidance provided in the USEPA/USACE *Ocean Testing Manual* (EPA-503/8-91/001) and the USEPA document, *Methods for Collection, Storage and Manipulation of Sediment for Chemical and Toxicological Analysis: Technical Manual* (EPA-832-B-01-002).

Per the SAP, cores were separated visually into three strata (if present), corresponding to surface shell hash and sediment, a middle layer containing drilling muds and cuttings, and a lower mound base and native sediment layer. The cores were sub-sampled by strata. A clean Teflon® coated scoop was used to remove only material from the center of the core that had not contacted the core liner. Additional discrete subsamples (Gina 1B-2 BROWN and Gina 1B-2 GREY) were collected where distinct lamina were apparent and/or the appearance of the core material differed visually from that of the remaining portions of the core strata. Sediment samples were placed directly in certified, pre-cleaned wide-mouth glass jars with Teflon®-lined lids. Sample jars were labeled (project name, date, sampler ID, analysis, and preservative where applicable), logged onto a field chain-of-custody (COC) form (see Appendix C), and placed into a cooler. Samples were kept on wet ice and in the dark until they were delivered to the laboratory.

2.3 Collection of Reference Sediments

A reference sample was collected at the Gina Reference Site, which is approximately 2 km from Platform Gina in water depths of about 30 m. Surficial sediments were collected using a Van Veen grab sampler, and the surface 2-cm layer was subsampled for chemical and grain size analysis. No samples were collected at the Platform Gilda reference site because sampling at the Platform Gilda shell mound was unsuccessful.

2.4 Sediment Sample Analyses

Sediments from the Platform Gina shell mound and associated reference site were analyzed for physical and chemical parameters using analytical methods that are consistent with Green Book (EPA/USACE, 1991) protocols. The analyte list, along with their respective analytical method reference and detection limits, is presented in Table 2. Quality assurance/quality control (QA/QC) was maintained during the analytical portion of this study by analyzing specific types and frequencies of quality control samples with each sample batch as specified in the EPA methods.

All samples were thoroughly homogenized at the analytical laboratory prior to aliquots being removed for extraction and analysis. Sediments were analyzed for grain size according to ASTM D422-63. Quality control consisted of duplicate analyses of 5% of the samples (e.g., one duplicate analysis per batch of 20 samples). Percentages of sand, silt, clay, and gravel are reported on a dry weight basis for each field and QC sample.

Table 2. Methods for Sample Preparation, Cleanup, Analysis, and Detection Limits for Sediments.

Parameter	Preparation Method	Cleanup Methods[a]	Analysis Method	Reporting Limit[b]
Total Solids (TS)	-	-	2540G[c]	0.1 %
Total Organic Carbon (TOC)	Acidify to release carbonates	-	5310B[c]	0.1 %
Total and -Soluble Sulfides	Zinc acetate preserve	-	376.2	0.1 mg/kg
Grain Size	-	-	ASTM D422-63	1 %
Arsenic	3051[f]	-	6020[f]	0.28 mg/kg
Barium	3051[f]	-	6020[f]	0.14 mg/kg
Cadmium	3051[f]	-	6020[f]	0.14 mg/kg
Copper	3051[f]	-	6020[f]	0.14 mg/kg
Chromium	3051[f]	-	6020[f]	0.10 mg/kg
Lead	3051[f]	-	6020[f]	0.10 mg/kg
Mercury		-	245.6; 7471A[f]	0.02 mg/kg
Nickel	3051[f]	-	6020[f]	0.10 mg/kg
Silver	3051[f]	-	6020[f]	0.14 mg/kg
Selenium	3051[f]	-	6020[f]	0.66-0.70 mg/kg
Zinc	3051[f]	-	6020[f]	1.0 mg/kg
Hydrocarbons (TRPH)	3520[f]		418.1M	12-140 mg/kg
PAHs[d]	3545[f]	3640A[f]/ 3660B[f]	8270C[f]	25-60 µg/kg
PCBs[e]	3545[f]	3620B[f]/ 3640A[f]/ 3660B[f]/ 3665A[f]	8082[f]	13 µg/kg
Pesticides[g]	3545[f]	3620B[f]/ 3640A[f]/ 3660B[f]	8081A[f]	1.3-26 µg/kg
Phenols	3520[f]		8041[f]	13-660 µg/kg
Phthalates	3520[f]		8061[f]	26-30 µg/kg
Volatile Organics	5031/5032[f]		8260[f]	6-70 µg/kg

[a] Alternative cleanup procedures are described in U.S. EPA SW846 (1986). The need for additional cleanup procedures were determined on a sample-by-sample basis.

[b] Sediment reporting limit values are on a dry-weight basis. Values varied by analyte, depending on sample mass, diltion factor, and matrix interferences. To achieve the recommended minimum levels for some compounds in sediment, it was necessary to adjust (increase) the sample size, reduce the final extract volume for gas chromatography/mass spectrometry analyses, and/or use one of the recommended sample cleanup methods, as necessary, to reduce interference.

[c] Standard Methods for the Examination of Water and Wastewater, 19th Edition 1995.

[d] Includes 14 PAH compounds (LPAHs: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene; HPAHs: fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(bk)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, benzo(g,h)perylene.

[e] Includes Aroclors 1242, 1248, 1254, and 1260.

[f] SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Revision 3 (Nov. 1986), as amended by Updates I (Jul 1992), II (Sep 1994), IIA (Aug 1993), IIB (Jan 95), and III (Dec 96).

[g] Includes Aldrin, a-BHC, b-BHC, g-BHC (Lindane), d-BHC, Chlordane, 4,4-DDD, 4,4-DDE, 4,4-DDT, Dieldrin, Endosulfan I and II, Endosulfan sulfate, Endrin, Endrin aldehyde, Heptachlor, Heptachlor epoxide, and Toxaphene.

mg/kg – milligrams per kilogram
µg/kg – micrograms per kilogram
PAHs – polycyclic aromatic hydrocarbons
PCBs – polychlorinated biphenyls

Sediments were analyzed for total solids/moisture, total and soluble sulfides, total organic carbon (TOC), volatile organic compounds, metals including barium, chlorinated pesticides/polychlorinated biphenyls (PCBs), phenols, phthalates, polycyclic aromatic hydrocarbons (PAHs), and total recoverable petroleum hydrocarbons (TRPH). Samples Gina 1B-2 Brown and Gina 1B-2 Grey were analyzed for a subset of the analytes (metals, TRPH, volatile and semi-volatile organics) due to sample mass limitations. Analytical quality assurance samples (blanks, duplicates, matrix spikes) were analyzed with each batch of samples, as specified by the individual protocols. Results were reported on a dry weight basis. The data report prepared by the analytical laboratory (Calscience Laboratories, Inc. of Garden Grove, CA) is appended to this report (Appendix C), and it includes a case narrative that describes analytical problems that could affect data quality and the actions taken to resolve the problems. A summary of the quality control results is provided in Section 2.5.

Following the initial review of results from chemical analyses of each of the core samples, a subset of six samples were selected for additional analyses of hydrocarbon components. The subset of samples consisted of five subsamples from the Platform Gina shell mound cores plus a subsample from the Gina reference sample. The analytical methods used are routinely performed to characterize crude oil in reservoir and environmental samples. Gas chromatography with flame ionization detection was used to generate the gas chromatogram for each sample and to quantitatively measure alkanes (*n*-alkanes and isoprenoid alkanes) and total petroleum hydrocarbons (TPH). Gas chromatography with mass spectrometry detection (GC/MS, Modified EPA Method 8270) was utilized to quantitatively measure the PAHs, thiophenes, and biomarkers (steranes, hopanes, triaromatic steranes). The target compound list is provided in Table 3.

Table 3. Analyte List for Hydrocarbon Analyses.

TPH and Alkane Target Analyte List

Abbr.	Analyte	Abbr.	Analyte
nC9	n-Nonane	nC27	n-Heptacosane
nC10	n-Decane	nC28	n-Octacosane
nC11	n-Undecane	nC29	n-Nonacosane
nC12	n-Dodecane	nC30	n-Triacontane
nC13	n-Tridecane	nC31	n-Hentriacontane
1380	2,6,10 Trimethyldodecane	nC32	n-Dotriacontane
nC14	n-Tetradecane	nC33	n-Tritriacontane
1470	2,6,10 Trimethyltridecane	nC34	n-Tetratriacontane
nC15	n-Pentadecane	nC35	n-Pentatriacontane
nC16	n-Hexadecane	nC36	n-Hexatriacontane
nPr	Norpristane	nC37	n-Heptatriacontane
nC17	n-Heptadecane	nC38	n-Octatriacontane
Pr	Pristane	nC40	n-Tetracontane
nC18	n-Octadecane		
Pr	Pristane		
nC19	n-Nonadecane	TPH	TPH (C_9-C_{44})
nC20	n-Eicosane		
nC21	n-Heneicosane		Surrogates
nC22	n-Docosane	OTP	O-Terphenyl
nC23	n-Tricosane	D50T	Tetracosane-D50
nC24	n-Tetracosane		
nC25	n-Pentacosane		Internal Standard
nC26	n-Hexacosane	5AA	5-α-Androstane

PAH Target Analyte List

Compound	Compound
Cis/trans Decalin	C1-Fluoranthenes/pyrenes
C1-Decalin	C2-Fluoranthenes/pyrenes
C2-Decalin	C3-Fluoranthenes/pyrenes
C3-Decalin	C4-Fluoranthenes/pyrenes
C3-Decalin	Naphthobenzothiophenes
Naphthalene	C1-Naphthobenzothiophenes
C1-Naphthalenes	C2-Naphthobenzothiophenes
C2-Naphthalenes	C3-Naphthobenzothiophenes
C3-Naphthalenes	Benzo[a]anthracene
C4-Naphthalenes	Chrysene/Triphenylene
Biphenyl	C1-Chrysenes
Dibezofuran	C2-Chrysenes
Acenaphthylene	C3-Chrysenes
Acenaphthene	C4-Chrysenes
Fluorene	Benzo[b]fluoranthene
C1-Fluorenes	Benzo[k]fluoranthene
C2-Fluorenes	Benzo[e]pyrene
C3-Fluorenes	Benzo[a]pyrene

Anthracene	Perylene
Phenanthrene	Indeno[1,2,3,-c,d]pyrene
C1-Phenanthrenes/anthracenes	Dibenzo[a,h]anthracene
C2-Phenanthrenes/anthracenes	Benzo[g,h,i]perylene
C3-Phenanthrenes/anthracenes	
C4-Phenanthrenes/anthracenes	Surrogates
Dibenzothiophene	d10-2-Mehylnaphthalene
C1-Dibenzothiophenes	d10-Pyrene
C2-Dibenzothiophenes	d12-Benz(b)Fluoranthene
C3-Dibenzothiophenes	
C4-Dibenzothiophenes	Recovery Internal Standard
Fluoranthene	d10-Acenaphthene
Pyrene	d12-Chrysene

Sterane/Triterpane Target Analyte List Contained in 191, 217 and 218 Ion Scan.

Compound	**Compound**
C23 Tricyclic Terpane (T4)	13b(H),17a(H)-20S-Diacholestane (S4)
C24 Tricyclic Terpane (T5)	13b(H),17a(H)-20R-Diacholestane (S5)
C25 Tricyclic Terpane (T6)	13b,17a-20S-Methyldiacholestane (S8)
C24 Tetracyclic Terpane (T6a)	14a(H),17a(H)-20S-Cholestane (S12)
C26 Tricyclic Terpane-22S (T6b)	14a(H),17a(H)-20R-Cholestane (S17)
C26 Tricyclic Terpane-22R (T6c)	13b,17a-20R-Ethyldiacholestane (S18)
C28 Tricyclic Terpane-22S (T7)	13a,17b-20S-Ethyldiacholestane (S19)
C28 Tricyclic Terpane-22R (T8)	14a,17a-20S-Methylcholestane (S20)
C29 Tricyclic Terpane-22S (T9)	14a,17a-20R-Methylcholestane (S24)
C29 Tricyclic Terpane-22R (T10)	14a(H),17a(H)-20S-Ethylcholestane (S25)
18a-22,29,30-Trisnorneohopane-TS (T11)	14a(H),17a(H)-20R-Ethylcholestane (S28)
C30 Tricyclic Terpane-22S (T11a)	14b(H),17b(H)-20R-Cholestane (S14)
C30 Tricyclic Terpane-22R (T11b)	14b(H),17b(H)-20S-Cholestane (S15)
17a(H)-22,29,30-Trisnorhopane-TM (T12)	14b,17b-20R-Methylcholestane (S22)
17a/b,21b/a 28,30-Bisnorhopane (T14a)	14b,17b-20S-Methylcholestane (S23)
17a(H),21b(H)-25-Norhopane (T14b)	14b(H),17b(H)-20R-Ethylcholestane (S26)
30-Norhopane (T15)	14b(H),17b(H)-20S-Ethylcholestane (S27)
18a(H)-30-Norneohopane-C29Ts (T16)	C28,20S-triaromatic steroid (SC28TA)
17a(H)-Diahopane (X)	
30-Normoretane (T17)	
18a(H)&18b(H)-Oleananes (T18)	
Hopane (T19)	
Moretane (T20)	Surrogates
30-Homohopane-22S (T21)	5β(H)cholane
30-Homohopane-22R (T22)	
30,31-Bishomohopane-22S (T26)	Internal Standard
30,31-Bishomohopane-22R (T27)	d_{12}-Chrysene
30,31-Trishomohopane-22S (T30)	
30,31-Trishomohopane-22R (T31)	
Tetrakishomohopane-22S (T32)	
Tetrakishomohopane-22R (T33)	
Pentakishomohopane-22S (T34)	
Pentakishomohopane-22R (T35)	

Samples were prepared by spiking approximately 5 - 30 grams of sample, depending the degree of oiling, with surrogate internal standards and serially extracting the sample with methylene chloride (3X). The combined extracts were concentrated by Kuderna Danish (KD), and nitrogen purge and treated with activated copper to remove sulfur interferences. Samples were adjusted to an exact volume using a glass syringe and an aliquot was removed (based on extract gravimetric weight) and processed through an alumina column to remove polar interferences. The post-column extract was concentrated and spiked with internal standards. An aliquot of the extracts were analyzed by GC/MS using a modification of EPA Method 8270 and GC/FID using a modification of EPA Method 8015. The target analyte concentrations were quantified using average response factors (RF) generated from the five-point instrument calibration relative to the internal standard. Alkylated PAH concentrations were determined using the average response factor (RF) for the corresponding parent compound. A procedural blank (PB), sample duplicate, laboratory control sample and laboratory control sample duplicate were prepared and analyzed.

2.5 Quality Control Results

Analytical holding time requirements were met for all samples. Frequency and control criteria for initial and continuing calibration verifications were also met.

Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) analyses were performed for each applicable method at the required frequencies. All parameters were within control limits for each method.

Concentrations of target analytes in the method blanks were below reporting limits for all tests, with the exception of chromium, which occurred at a concentration just above the reporting limit. All field samples contained chromium at levels at least 60 times higher than the level in the method blank. Regardless, chromium data are qualified with a B, indicating its presence in the method blank.

A duplicate (DUP) analysis was performed on one of the samples (GINA-2-2) as part of the analytical quality assurance effort. Precision results were acceptable for all parameters.

Surrogate recoveries for all samples were within acceptable control limits. Surrogate compound recoveries for the semi-volatile analysis were well within the specified method control limits; recoveries ranged from 35-72 % (limit 32-143 %) for 2,4,6-tribromophenol, 43-69 % (limit 14-146 %) for 2-fluorobiphenyl, 19-83 % (limit 15-138 %) for 2-fluorophenol, 48-91 % (limit 18-162 %) for nitrobenzene-d5, 59-90 % (limit 17-141 %) for phenol-d6, and 45-107 % (limit 34-148 %) for p-terphenyl-d14. Volatile surrogate compound recoveries were well within the specified method control limits: 1,4-bromofluorobenzene was recovered between 90 and 102 % (limit 71-113 %); dibromofluoromethane was recovered at 99-110 % (limit 73-139 %); 1,2-dichloroethane-d4 was recovered between 99-110 % (limit 73-145 %); and toluene-d8 was recovered at 96-100 % (limit 90-108 %). Results for surrogate recoveries for pesticides analysis were within the control limit of 50-130 % for 2,4,5,6-tetrachloro-m-xylene and decachlorobiphenyl. Recovery ranges were 63-130 % and 62-88 % for these two compounds, respectively.

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed at the required frequencies. The MS/MSD recoveries and relative percent difference (RPD) for all testing were within acceptable limits with the following exceptions:

- For metals, the MS and/or MSD recoveries for barium, lead and zinc were outside the established control limits for these compounds. In addition, the duplicate RPD for lead was high. However, for each of these metals, the LCS and LCSD recoveries and RPDs were in-control, indicating a matrix interference effect. Therefore, the data were released with no further qualifications.

- For the pesticides, the MS and/or MSD recoveries were out-of-control low for several compounds, and the duplicate RPDs were high in several cases. The matrix required the laboratory to perform both florisil and sulfur cleanups to completed this determination. The associated LCS/LCSD recoveries and duplicate RPDs were in-control, a matrix interference effect is apparent. Therefore, the data were released with no further action.

- For the volatile and semi-volatile organic compounds, the MS/MSD recoveries were mostly in-control, with the exception of one compound, tetrachloroethylene (TCE), in one of the EPA Method 8260B batches, and one compound, fluorene, in the EPA Method

8270C analysis. However, as was the case for metals and pesticides, the LCS/LCSD recoveries were in-control for each analytical batch, indicating a matrix interference effect. Therefore, no further action was taken and the data were released.

For the detailed analyses of petroleum hydrocarbons (alkanes, aromatics, and steranes/terpanes), concentrations of target analytes in the method blanks were below the respective reporting limits, and all surrogate recoveries were within the specified limits. Recoveries and precision for both LCS/LCSD and MS/MSD were within target limits, with one minor exception (low recovery of a single saturated hydrocarbon analyte). Precision for analyses of unspiked duplicate samples were within the target limits for all saturated compounds, whereas precision values for a number of the aromatic compounds were up to 56% and exceeded the RPD limit of 30%. Overall, the quality control results indicated acceptable data quality.

3.0 RESULTS

A total of 4 cores were collected – all from the Platform Gina shell mound (Table 4). Actual coring locations (Figure 2) deviated slightly from the target locations due to site conditions, including sea state, direction of swell, presence of submarine power cables and pipelines, and navigation signal strength and interferences while sampling adjacent to the platform. The stations occupied represented the best attempt to sample along the dominant axis of the shell mound through the apex (Figure 3). One grab sample was collected at the Gina reference site. No cores were collected at Platform Gilda or the Gilda reference site.

Table 4. Summary of Platform Gina Shell Mound Core and Reference Sediments.

Location	Core ID	Sample Location*		Bottom Depth (m)	Recovered Core Length (m)	Sampled Core Length (m)
		Latitude	Longitude			
Gina	1	34° 07’ 03.57”	119° 16’ 38.21”	27.8	3.0	3.0
Gina	1B	34° 07’ 03.59”	119° 16’ 38.28”	27.8	2.4	2.4
Gina	2	34° 07’ 03.59”	119° 16’ 00.64”	28.3	5.5	3.8
Gina	2B	34° 07’ 03.60”	119° 16’ 37.86”	29.0	3.5	2.3
Gina	Reference	34° 07’ 29.01”	119° 17’ 46.88”	29.6	na	na

* Positions recorded in WGS 1984.
na – not applicable.

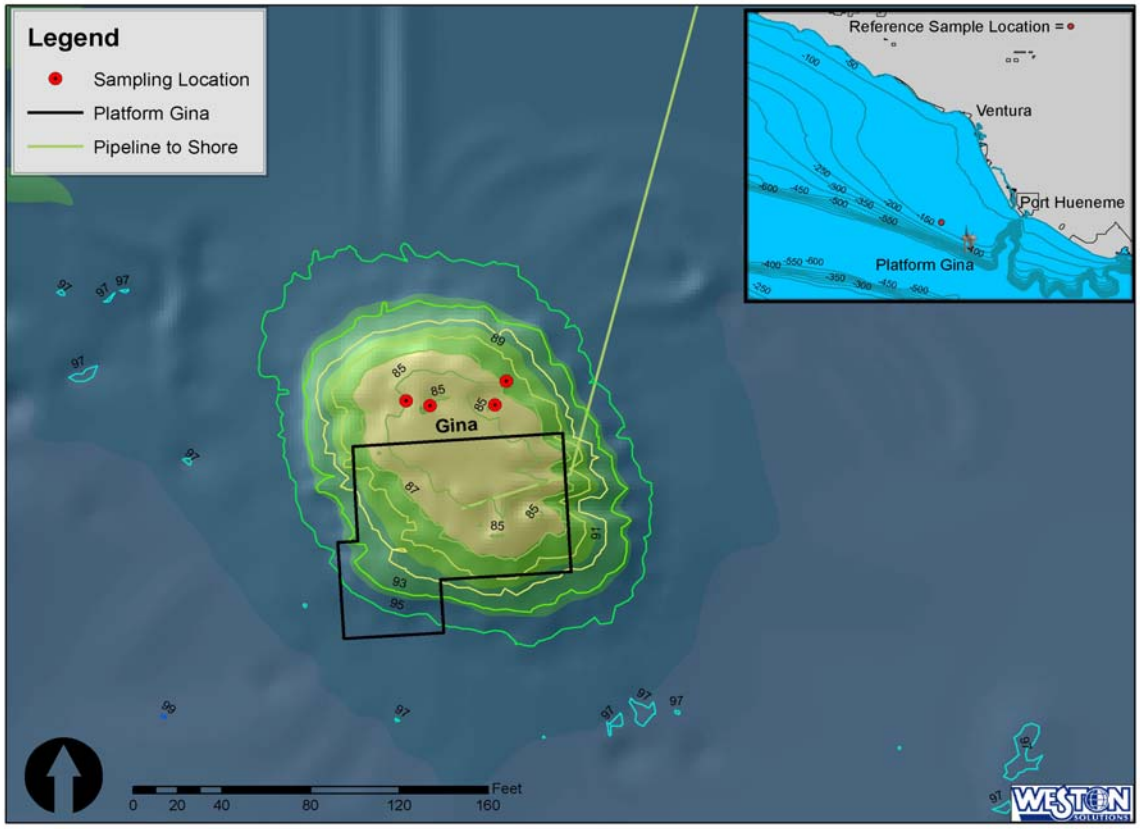

Figure 2. Coring Locations (Red dots) at the Platform Gina Shell Mound.

Individual core lengths ranged from 2.4 to 5.5 m. Three of the cores were subdivided into three strata, whereas core Gina-2 did not have a distinct surface layer and, therefore, was subdivided into only two sections (Table 5). Two additional subsamples were collected from core Gina 1B to characterize the composition of two visually distinct layers in the middle stratum that may have corresponded to a batch discharge of platform wastes (e.g., muds). (Photographs of core lamina are contained in Appendix B.) This resulted in a total of 15 samples.

Summary descriptions of the core samples are presented in Table 5. Copies of core logs are included in Appendix A, and photographs of cores are included in Appendix B.

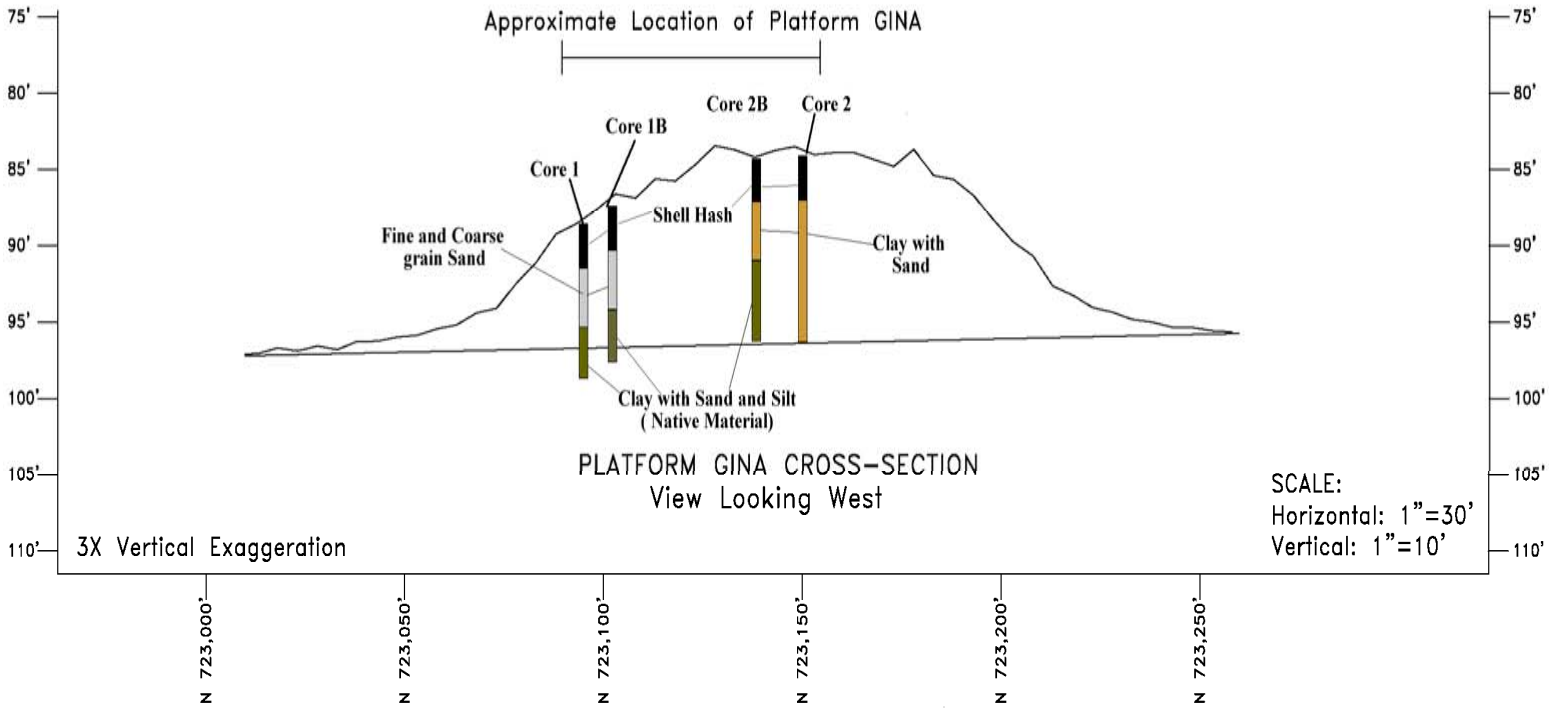

Figure 3. Approximate core positions and stratigraphy of core samples. Core locations are approximate

Table 5. Summary of Platform Gina Shell Mound and Reference Sediment Samples.

Platform	Core ID	Core Strata	Core Interval (m)	Sediment Type	Sediment Color	Odor	Distinguishing Characteristics
Gina	1	1	0.0 – 0.5	Unconsolidated coarse grain sand, very small gravel and shell debris, layers of wet clay and fines interspersed	Overall dark grey-green sand and silt, brown colored silty-clay and light sand and shell hash	Organic	Numerous shell fragments, whole barnacles, mussel shells; a layer of sediment at 0.4 m appears to contain petroleum residues.
		2	0.5 – 1.5	Semi-consolidated coarse and fine grained sand, irregular lenses of consolidated silty-clay	Dark grey-green sand, brown clay layers, greenish fines	None detected	Alternating layers of clays and drilling wastes containing petroleum residues.
		3	1.5 – 3.0	Very consolidated fine grained sand and silty clay	Upper portion is brownish with apparent petroleum, lower portion is olive-grey	Slight petroleum odor in upper portion	Small (2 – 10mm), dark, sandy nodules containing petroleum (tar?) around 1.8 – 2.1 m.
Gina	1B	1	0.0 – 0.2	Unconsolidated coarse grain sand, shell hash, small pebbles	Very dark grey, pebbles are lighter	Slight organic odor	*Macoma* (3.5 cm) near surface, mussel shells and shell hash
		2	0.2 – 1.7	Semi-consolidated, wet medium and coarse grain sand, shell hash, interspersed silty-clay	Greyish green, alternating layers of sandy-silts of grey and brown	Petroleum hydrocarbon odor	Alternating layers of material; (1) sand with dark brown/black petroleum stain, (2) grey sandy-silty drilling wastes, (3) medium to fine grain sand. Layers range from 3.0 to 7.0 cm in

Platform	Core ID	Core Strata	Core Interval (m)	Sediment Type	Sediment Color	Odor	Distinguishing Characteristics
							thickness.
		2 (Brown)	1.2, 1.5	Sandy with petroleum residue	Dark brown and black	Petroleum hydrocarbon odor	See strata 2 above
		2 (Grey)	1.1, 1.3	Sandy with some silt and clay	Dark grey	Slight petroleum hydrocarbon odor	See strata 2 above
		3	1.7 – 2.4	Clay with sandy silt	Dark olive grey	None	Some wood particles approximately 2.1 m.
Gina	2	1	na	na	na	na	na
		2	0.0 – 1.8	Semi-consolidated coarse grain sand, shells, shell hash, barnacles	Dark to very dark grey	None	Barnacles, *Mytilus* and *Macoma* present in upper portion of strata
		3	1.8 – 2.5	Layered sections consist of upper transition of medium to coarse grain sand to sandy clay, above very consolidated clay with medium grain sand above sandy clay	Dark brown above dark olive and brown	Petroleum odor in upper portion of this strata	Sand with 2 – 4 cm nodules containing petroleum residue.
Gina	2B	1	0.0 – 0.56	Unconsolidated large grain sand, small pebbles, shell hash	Dark grey	Organic odor	Shell hash
		2	0.56 – 1.2	Semi-consolidated medium and large grain sand, layers of silty clay, drilling	Grey with layers of brown and black	Slight petroleum odor	Alternating light and dark banding interpreted as deposition from individual bulk discharge events.

Platform	Core ID	Core Strata	Core Interval (m)	Sediment Type	Sediment Color	Odor	Distinguishing Characteristics
				wastes			
		3	1.2 – 2.3	Consolidated clay with sand and silt present	Dark green and brown	None	Barnacles, anoxic sediments
Gina	Refer ence	-	0.0 – 0.02	Medium grain sand, silt and some clay presence	Grey green	None	Small shell hash

na – not analyzed; no surface stratum present.

The appearance of the core materials varied within and among cores. Some cores, particularly Gina 1B, contained thin layers of alternating bands of light and dark colored materials in the middle stratum that were visually distinct from adjacent portions of the core (Figure 4). The dark bands appeared to contain petroleum residues or stain. Two of these bands were subsampled (Gina 1B-Brown and Gina 1B-Grey) and analyzed for a subset of analytes. (Analyses of all chemical and grain size analytes were not possible due to sample mass limitations.) Portions of several cores contained darkened layers or discrete particles that appeared to contain weathered petroleum or tar. A slight sheen and petroleum odor were present in several cores. There was no evidence of cement or other debris, although wood chips were observed in one of the cores.

3.1 Grain Size and Moisture Content

The Platform Gina shell mound materials were predominantly sand (61 to 82% by weight) (Table 6) with no apparent vertical or horizontal distribution patterns (Figure 5). Proportions of gravel-sized particles ranged from 0 to 19%, while the proportions of fines (silt + clay; <0.063 mm) ranged from 8 to 38%. Based on visual observations, gravel sized particles consisted mainly of shell hash. Generally, proportions of fines increased with core depth, and were approximately twofold higher in the bottom stratum than in the corresponding surface stratum, whereas proportions of gravel decreased. By comparison the reference sediments comprised 50% sands and 50% fines with no gravel component.

Total solids ranged in concentration from 71 to 81 %, corresponding to moisture contents of 19 to 29%. No vertical or spatial patterns in moisture content values are apparent. The moisture content of the Gina reference sediment (Gina REF) was 28%.

Figure 4. Photograph of the 4.5 to 5.3 ft (right to left) Section of the Gina 1B Core Showing Alternating Light and Dark Layers.

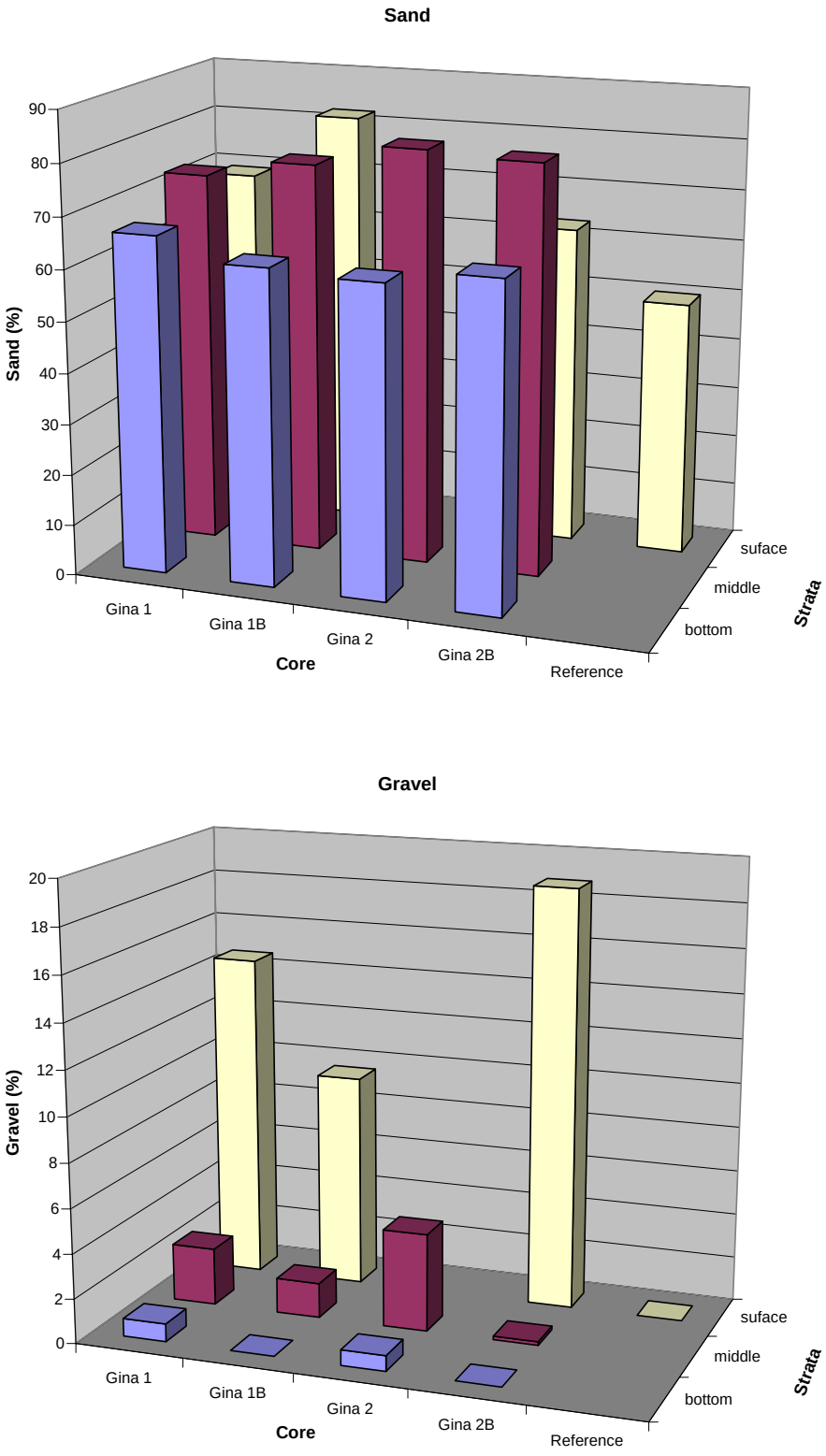

Figure 5. Distributions of Sand and Gravel (% dry weight) in Platform Gina Shell Mound Cores.

Table 6. Grain Size, Solids, Total Organic Carbon, Sulfides, and TRPH Content of Platform Gina Shell Mound and Reference Sediments.

SAMPLE	Gravel	Sand	Silt	Clay	Fines	Solids	TOC	Sulfides	TRPH
	% dry weight							mg/kg	
GINA-1-1	15	69	12	4.2	16	75	1.1	ND	140
GINA-1-2	2.6	73	16	8.3	24	78	0.33	35	550
GINA-1-3	0.8	66	27	5.5	33	77	0.33	ND	36
GINA-1B-1	9.6	82	5.6	2.7	8.3	76	0.33	32	110
GINA-1B-2	1.6	77	18	4.0	22	75	0.63	55	960
GINA-1B-2 BROWN	NA	NA	NA	NA	NA	71	NA	NA	4,000
GINA-1B-2 GREY	NA	NA	NA	NA	NA	77	NA	NA	320
GINA-1B-3	0	62	32	5.6	38	78	0.88	ND	41
GINA-2-2	4.4	81	10	4.2	14	76	0.50	11	243
GINA-2-3	0.7	61	32	6.3	38	78	0.32	ND	81
GINA-2-3B	0.1	66	28	5.4	34	81	0.32	0.12	32
GINA-2B-1	19	63	13	4.8	18	78	0.53	ND	349
GINA-2B-2	0.2	80	12	7.6	20	73	1.1	49	294
GINA-2B-3	0	64	31	5.4	36	78	0.28	0.4	32
GINA-REF	0	50	43	6.6	50	72	0.36	0.83	25

NA = not analyzed; Gina-1B-2 BROWN and GREY samples were not analyzed for grain size, TOC, and sulfides due to insufficient sample volumes.
ND = not detected.

3.2 Chemical Characteristics

Results of the sediment TOC, sulfides, and TRPH analyses are presented in Table 6, and results of the sediment metal analyses are presented in Table 7.

TOC

TOC concentrations in the Platform Gina shell mound cores ranged from 0.28 to 1.1% dry weight, compared to the 0.36% TOC concentration in the Platform Gina reference sediment (Table 6). No spatial or vertical patterns were apparent (Figure 6), and TOC concentrations in the cores were not significantly correlated with any of the grain size or chemical parameters, except for mercury (Table 8).

Sulfides

Dissolved sulfides were not detected in the Platform Gina shell mound samples, whereas measurable levels of total sulfides occurred in about half of the shell mound samples and in the reference sediment. Concentrations of total sulfides ranged from 0.12-55 mg/kg in the shell mounds samples, compared to a concentration of 0.83 mg/kg in the reference sediment (Table 6). Concentrations generally were higher in the middle stratum than the corresponding surface or bottom strata (Figure 6), and total sulfides were significantly correlated with a subset of metals (barium, cadmium, and mercury) and with TRPH (Table 8).

Metals

Barium, lead, and zinc concentrations in the Platform Gina shell mound sediments varied by one order of magnitude or more (Table 7). The highest barium and lead concentrations in the shell mound samples (3,330 mg/kg and 368 mg/kg, respectively) were more than one order of magnitude greater than corresponding concentrations in the reference sediment (116 mg/kg and 5.6 mg/kg, respectively), while the highest zinc concentration (368 mg/kg) in the shell mound samples was several fold greater than in the reference sediment (44 mg/kg, respectively). By contrast arsenic, chromium, nickel, mercury, and selenium concentrations varied among the shell mound samples by about a factor of five or less, and concentrations generally were within a factor of two of the corresponding reference sediment concentrations. Cadmium, silver, and selenium concentrations exhibited somewhat greater variability among the shell mound sediments, but concentrations typically were close to the analytical reporting limits and within a factor of two of concentrations in the reference sediment.

Table 7. Metal Concentrations (mg/kg) in Platform Gina Shell Mound and Reference Sediments.

SAMPLE	Arsenic	Barium	Cadmium	Copper	Chromium	Lead	Mercury	Nickel	Selenium	Silver	Zinc
GINA-1-1	4.66	1,600	1.12	34.8	19.4	41.7	0.105	14.8	0.673	ND	119
GINA-1-2	3.67	2,260	0.881	19.1	14.0	15.5	0.0409	7.52	1.10	0.828	173
GINA-1-3	4.80	148	0.211	5.75	14.7	3.84	0.0354	9.46	ND	ND	34.6
GINA-1B-1	5.22	2,130	1.92	26.9	24.2	34.8	0.0458	20.8	2.17	0.143	145
GINA-1B-2	3.44	2,420	1.73	12.7	25.5	51.4	0.0479	14.7	1.68	0.142	182
GINA-1B-2 BROWN	6.87	2,120	4.01	25.2	71.0	15.2	0.0545	44.4	4.81	0.449	310
GINA-1B-2 GREY	3.48	2,680	0.366	6.75	8.83	7.18	ND	4.97	ND	ND	161
GINA-1B-3	4.26	265	0.187	5.01	13.5	3.44	0.0342	8.04	ND	ND	36.7
GINA-2-2	3.38	2,740	1.08	16.3	21.3	38.1	ND	12.7	1.17	ND	243
GINA-2-3	4.92	1,870	0.398	7.06	20.9	9.87	0.0456	9.66	ND	ND	123
GINA-2-3B	3.99	78.1	0.178	5.19	14.5	3.43	ND	9.62	0.699	ND	31.9
GINA-2B-1	3.60	1,360	0.985	19.5	19.0	386	0.0402	10.4	ND	ND	349
GINA-2B-2	6.47	3,330	1.14	17.2	33.0	35.8	0.0540	10.2	0.864	0.142	294
GINA-2B-3	4.32	86.8	0.197	5.33	14.0	3.57	0.0327	9.15	ND	ND	31.5
GINA-REF	4.71	116	0.233	7.46	17.7	5.64	0.0487	11.3	ND	ND	43.5

ND = Not detected.

Table 8. Correlation (Pearson Product Moment) Coefficient Matrix of Sediment Grain Size and Chemical Parameters. Bolded coefficient values represent significant correlations ($p < 0.05$).

	Ba	**Cd**	**Cr**	**Cu**	**Pb**	**Hg**	**Ni**	**Se**	**Ag**	**Zn**	**TRPH**	**TOC**	**Clay**	**Gravel**	**Sand**	**Silt**	**Sulfide**
As	0.159	**0.56**	**0.75**	0.33	-0.23	0.21	**0.64**	0.58	-0.25	0.24	**0.56**	0.36	0.22	-0.16	0.17	-0.07	0.30
Ba	-	0.46	0.34	0.45	0.03	0.33	0.19	0.12	-0.38	**0.72**	0.30	0.33	0.08	0.15	**0.76**	**-0.74**	**0.77**
Cd		-	**0.92**	**0.65**	0.06	0.27	**0.94**	**0.96**	-0.06	**0.62**	**0.89**	0.23	-0.46	0.44	**0.79**	**-0.87**	**0.76**
Cr			-	0.45	-0.02	0.19	**0.93**	**0.91**	-0.07	**0.57**	**0.93**	0.46	-0.10	0.08	**0.67**	**-0.59**	0.72
Cu				-	0.25	**0.76**	**0.54**	0.27	0.11	0.52	0.35	0.43	-0.31	**0.75**	0.49	**-0.85**	0.55
Pb					-	-0.05	-0.05	-0.19	-0.81	**0.58**	-0.08	0.05	-0.18	**0.76**	-0.17	-0.34	0.75
Hg						-	0.23	-0.28	-0.50	0.14	0.11	**0.64**	-0.22	0.48	0.19	-0.45	**0.89**
Ni							-	**0.96**	-0.03	0.42	**0.89**	0.08	**-0.80**	0.44	**0.60**	**-0.66**	0.28
Se								-	0.06	0.53	**0.92**	-0.44	-0.55	0.11	0.65	-0.50	0.38
Ag									-	-0.06	0.19	0.51	0.65	-0.14	-0.83	0.39	-0.47
Zn										-	0.51	0.29	0.04	0.51	0.45	**-0.71**	0.68
TRPH											-	0.26	0.16	-0.13	**0.61**	-0.44	**0.84**
TOC												-	0.06	0.21	0.17	-0.29	0.64
Clay													-	-0.46	-0.21	0.32	0.14
Gravel														-	0.01	**-0.60**	0.13
Sand															-	**-0.80**	0.63
Silt																-	-0.57

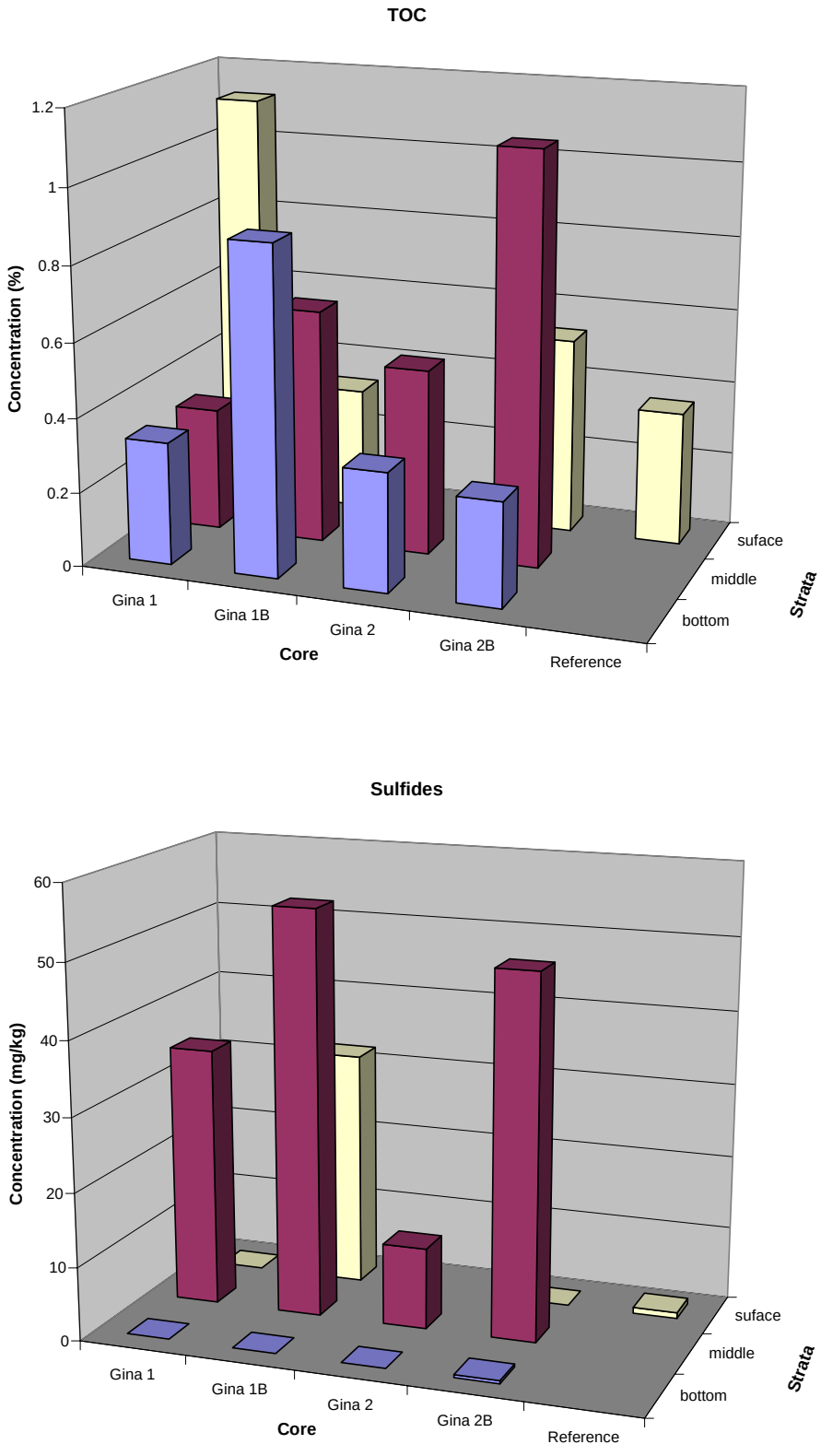

Figure 6. Total Organic Carbon (TOC; % dry weight) and Sulfides (mg/kg) Concentrations in Platform Gina Shell Mound Cores.

Concentrations of barium were highest in the middle stratum (Figure 7) and co-varied with zinc, sand, and sulfides, but barium was inversely correlated with silt and not significantly correlated with TRPH (Table 8). The sub-samples Gina 1B-2 Brown and Gina 1B-2 Grey contained barium concentrations (2,120 mg/kg and 2,680 mg/kg, respectively) that were elevated compared to the reference sediment but lower than concentrations in sections of the Gina 2 and Gina 2B cores. Lead and zinc concentrations also co-varied (Figure 8), and they were not significantly correlated with TRPH. The magnitude of the barium, lead, and zinc concentrations did not appear to be substantially higher in cores closest to the apex of the shell mound (cores Gina 1 and 1B) than in cores farther from the platform (cores Gina 2 and 2B). The other metals also were inter-correlated, but these did not exhibit any obvious spatial patterns relative to depth in the shell mound or distance from the platform. In general, a number of metals (barium, cadmium, chromium, and nickel) were positively correlated with sands and negatively correlated with silt. Given that silt and sand also were negatively correlated, these results suggest that the concentrations of a number of metals were influenced by the distributions of sand-sized cuttings particles in the Platform Gina shell mound. This is also supported by the significant positive correlation for cadmium, chromium, nickel, and selenium with TRPH.

Pesticides and PCBs

Chlorinated pesticides and PCBs were not detected in any of the Platform Gina shell mound or reference sediment samples.

TRPH

TRPH concentrations in the Platform Gina shell mound samples ranged from 32 to 4,000 mg/kg, compared to a concentration of 25 mg/kg in the reference sediment (Table 6). Concentrations generally were highest in the middle stratum, and comparatively low (32 to 81 mg/kg) in the bottom stratum (Figure 7). The subsample from the Gina 1B core ("Brown") had the highest TRPH concentration, consistent with the dark color and petroleum odor (Table 5), but as discussed below had only modest concentrations (less than 1 mg/kg) of volatile organic compounds and PAHs. Comparatively elevated TRPH concentrations (243 to 960 mg/kg) also occurred in several other core sections (1-2, 1B-2, 1B-2 Grey, 2-2, 2B-1, and 2B-2) that appeared to contain weathered oil and/or had a petroleum odor. Overall, TRPH concentrations were correlated with arsenic, cadmium, chromium, nickel, sands, and sulfides (Table 8).

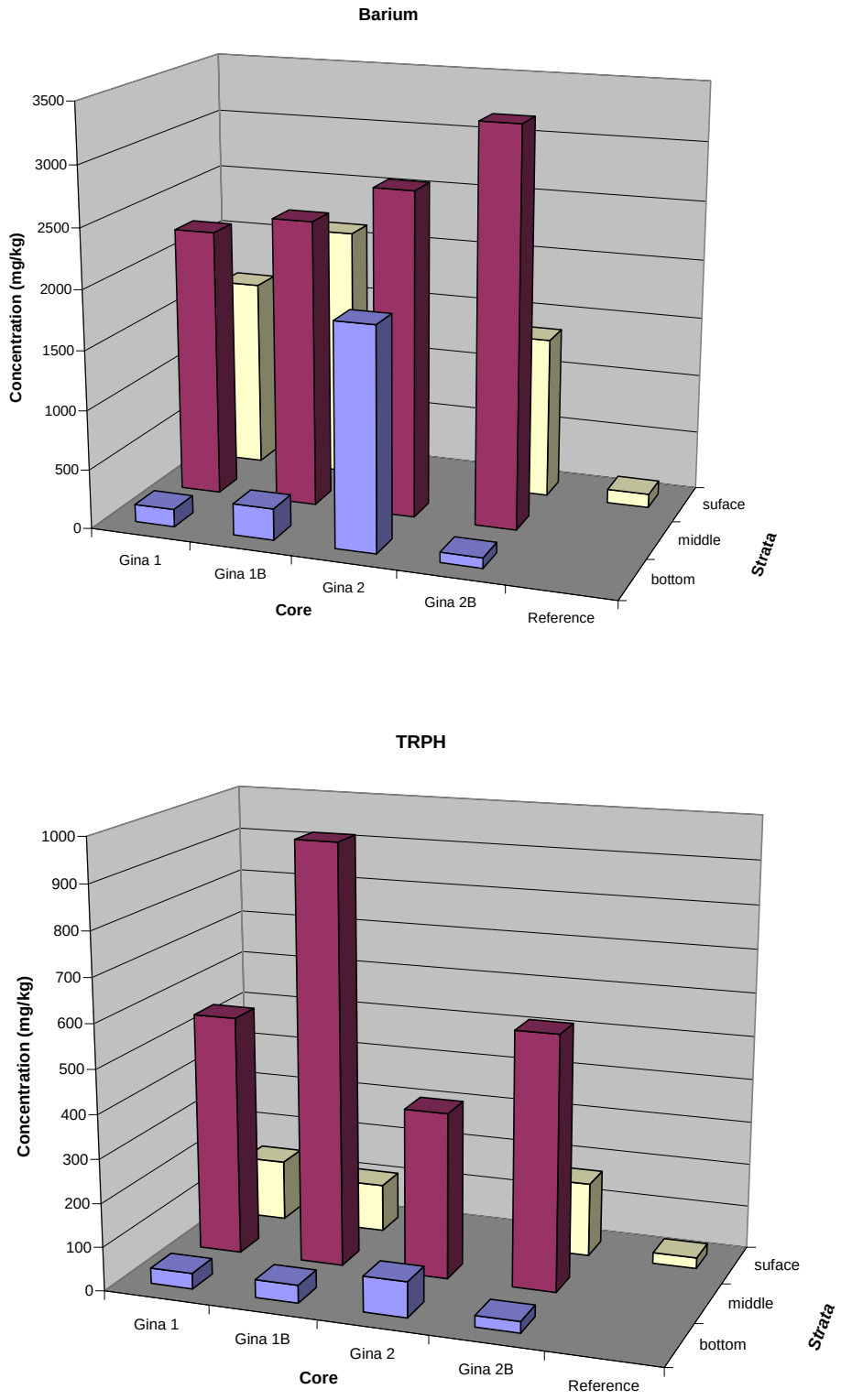

Figure 7. Barium and TRPH Concentrations (mg/kg) in Platform Gina Shell Mound Cores.

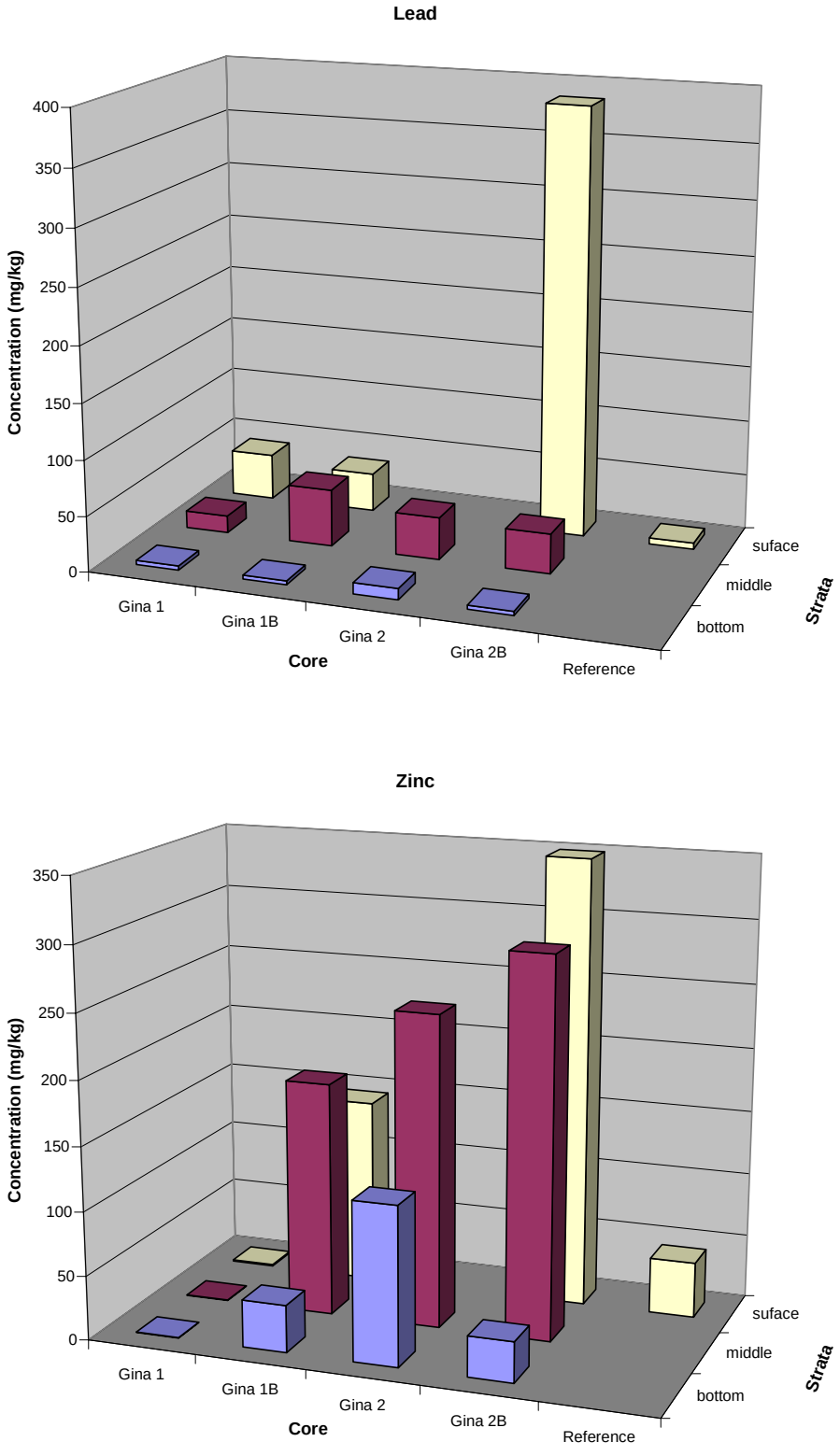

Figure 8. Lead and Zinc Concentrations (mg/kg) in Platform Gina Shell Mound Cores.

Volatile and Semi-Volatile Organics

The volatile organic compounds toluene and xylene were detected in only two core samples (Gina 2-2 and 2-3B), at summed concentrations of 0.029 and 0.020 mg/kg, respectively. The Gina 1B-2 Brown sample contained 0.007 mg/kg of toluene only. None of the other Platform Gina shell mound or reference samples contained detectable quantities of any of the target volatile organic compounds.

PAHs and other Semi-Volatile Organics

With the exception of benzo(a)pyrene and small subsets of phthalate and phenolic compounds, concentrations of PAHs and other semi-volatile organic compounds in the Platform Gina shell mound samples were below the corresponding reporting limits. The highest benzo(a)pyrene concentration (0.66 mg/kg) occurred in the Gina 1B-2 Brown sample. This sample also contained trace amounts (< 0.01 mg/kg) of 2,4-dimethyl and 4-chloro-3-methyl phenols. Phthalates (bis 2-ethylhexyl- and butylbenzyl-) were also detected at concentrations typically less than 1 mg/kg in a few samples. These compounds are common laboratory contaminants and, although the corresponding method blank did not contain detectable levels of these compounds, their presence in the shell mound samples likely represent an analytical artifact. None of the target PAH or other semi-volatile organic analytes were detected in the reference sample.

Petroluem Hydrocarbons (Alkanes, Isoprenoids, PAHs, and Saturated Biomarkers)

Complete results from the detailed hydrocarbon analyses of the subset of the Gina shell mound samples are presented in Appnedix D. The hydrocarbon signatures indicate the presence of a broad boiling range ($C_9 - C_{44+}$) petroleum in all samples. The absence of *n*-alkanes, severe reduction of the isoprenoid alkanes and the dominance of the unresolved complex mixture (UCM) within each of the samples is characteristic of a moderately degraded petroleum (Kaplan and Galperin, 1996). The carbon distribution range and UCM are most similar to biodegraded crude oils.

PAH signatures within each sample are consistent with a crude oil source. The sulfur content as measured by the dibenzothiophene concentration and distribution within each sample varies as follows:

Gina-1B-2-Brown≈Gina-1B-2 ≈Gina-1B-2-Grey>Gina-1B-1>Gina-1B-3>Gina-Ref

Perylene, a PAH produced naturally in highly anoxic marine sediments is also present in these samples and at concentrations well above those normally observed in crude oil. Assuming the concentration of perylene is a rough measure of the environmental conditions within the sediment (e.g., redox potential or Eh), the relative perylene concentrations varied between the samples as follows:

Gina-1B-2-Brown>Gina-1B-1>Gina-1B-2 >Gina-1B-2-Grey>Gina-Ref>Gina-1B-3

The triterpane biomarker patterns are also consistent with a crude oil source. The dominance of 28,30-bisnorhopane in the sediment samples is a unique characteristic of Monterey Formation/Southern California crude oils.

The concentrations of TPAH and TPH in each sample are presented graphically in Figure 9. The straight line relationship between the two variables indicates that petroleum is the primary source of PAHs to the sediments. Figure 10 is a crossplot of Fluoranthene/Pyrene (FL/PY) versus TPH and is a sensitive indicator of mixing between the background sediment (Gina-Ref) and the crude oils. FL/PY ratios within petroleum products are generally less than 0.4, whereas FL/PY ratios derived from combustion sources (e.g , atmospheric deposition) generally approach 1. The concentrations of both Fluoranthene and Pyrene are low in petroleum (versus TPAH), whereas in depositional sediments these PAHs may dominate the TPAH concentration in the sample.

Source Identification and Sample Relationships

As noted above, all of the sediment samples contain varying concentrations of crude oil that are likely derived from Southern California source (e.g., Monterey Formation). However, as inferred above there are distinct differences between the samples that can not be attributed to sample weathering. Figure 11 is a crossplot of C_2-Dibenzothiophene/C_2-Phenanthrene (D_2/P_2) versus C_3-Dibenzothiophene/C_3-Phenanthrene (D_3/P_3) diagnostic source ratios (Douglas et al.,

1996). These diagnostic ratios are both stable under extreme levels of environmental weathering and specific to the source of the oil. The sample ratios are provided in Table 9. The results of this analysis indicate that all of the samples are from different crude oil formations with the exception of samples Gina-1B-2 Brown and Gina-1B-2 which appear to be genetically related. Sediment sample Gina 1B-2-Grey is also similar to Gina-1B-2 Brown and Gina-1B-2, but is not a perfect match. The same relative source relationships are apparent when the diagnostic 28,30-bisnorhopane/C30-hopane ratio is plotted versus D_2/P_2 (Figure 12).

Table 9. TPH Concentrations and Source Ratios.

Sample ID	TPH (mg/kg)	Fl/Py	D_2/P_2	D_3/P_3	Bisnorhopane/ hopane
Gina-1B-1	360	0.75	2.7	2.6	6.1
Gina-1B-2	2,400	0.29	4.8	4.1	2.1
Gina-1B-3	290	0.75	1.8	2.4	1.3
Gina-REF	42	0.77	0.5	0.7	0.9
Gina-1B-2-Brown	13,000	0.24	4.6	4.5	2.0
Gina-1B-2-Grey	1,300	0.44	4.3	3.3	1.5

Results from these analyses of the hydrocarbon components of selected core samples support the following conclusions:

- All of the samples consist of a moderately weathered broad range petroleum material similar to a weathered crude oil.
- The presence of 28,30-bisnorhopane in all of the samples is consistent with the presence of a Monterey Formation crude oil.
- Samples Gina-1B-1, Gina-1B-3, Gina-1B-2-Brown, Gina-1B-2, and Gina-1B-2-Grey were derived from a high sulfur petroleum source.
- Samples Gina-1B-2-Brown, and Gina-1B-2 are chemically similar are likely derived from the same petroleum source.
- Sample Gina-1B-2-Grey is similar to Samples Gina-1B-2-Brown, and Gina-1B-2 but is not a perfect match.
- Samples Gina-1B-1, Gina-1B-3, Gina REF, and Gina-1B-2-Grey are chemically different and are likely derived from a different petroleum source.
- The presence of perylene in the samples indicates that the sediments are located in an anoxic depositional environment.
- Sample Gina-REF was derived from a lower sulfur petroleum source.

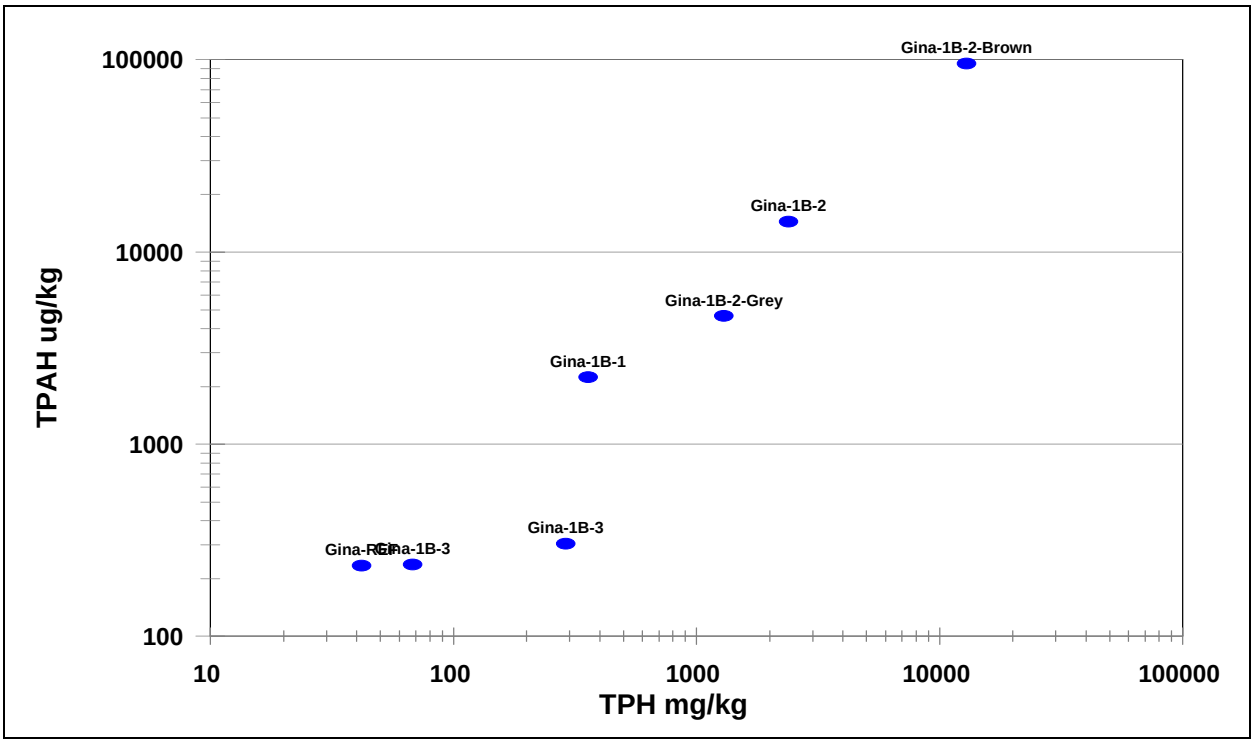

Figure 9. TPAH versus TPH

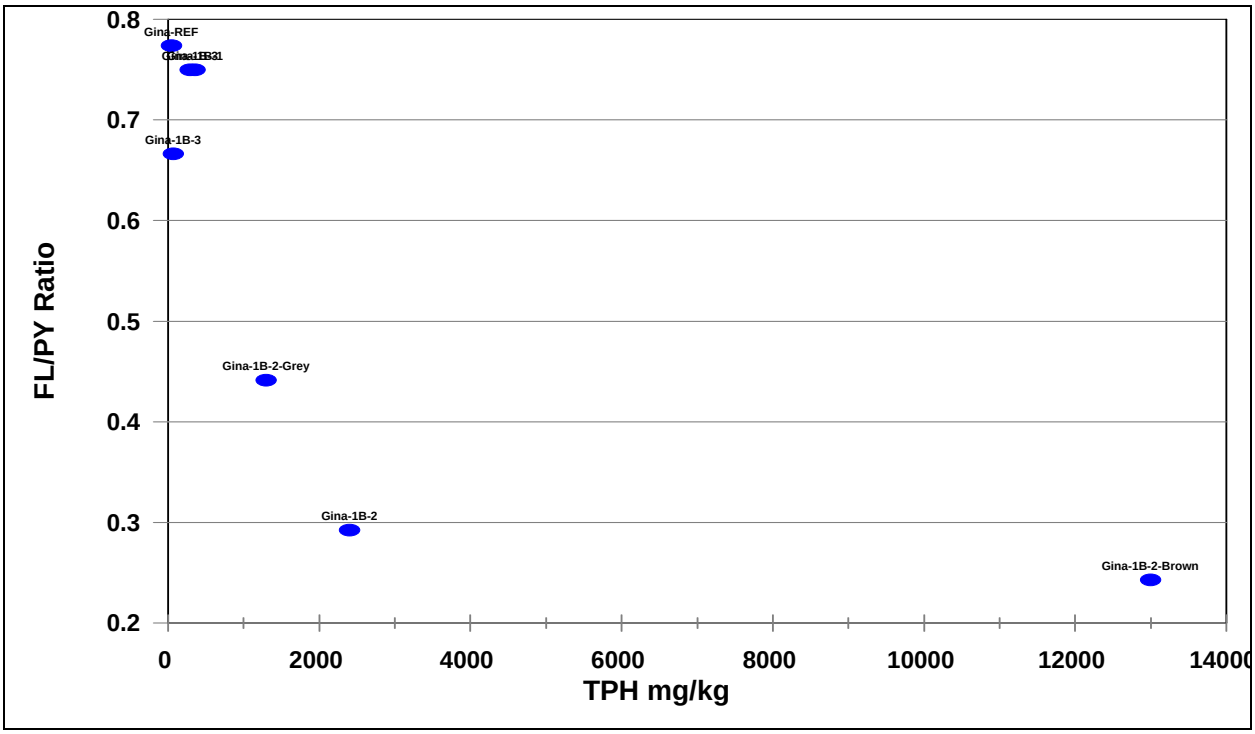

Figure 10. Fluoranthene Pyrene versus TPH

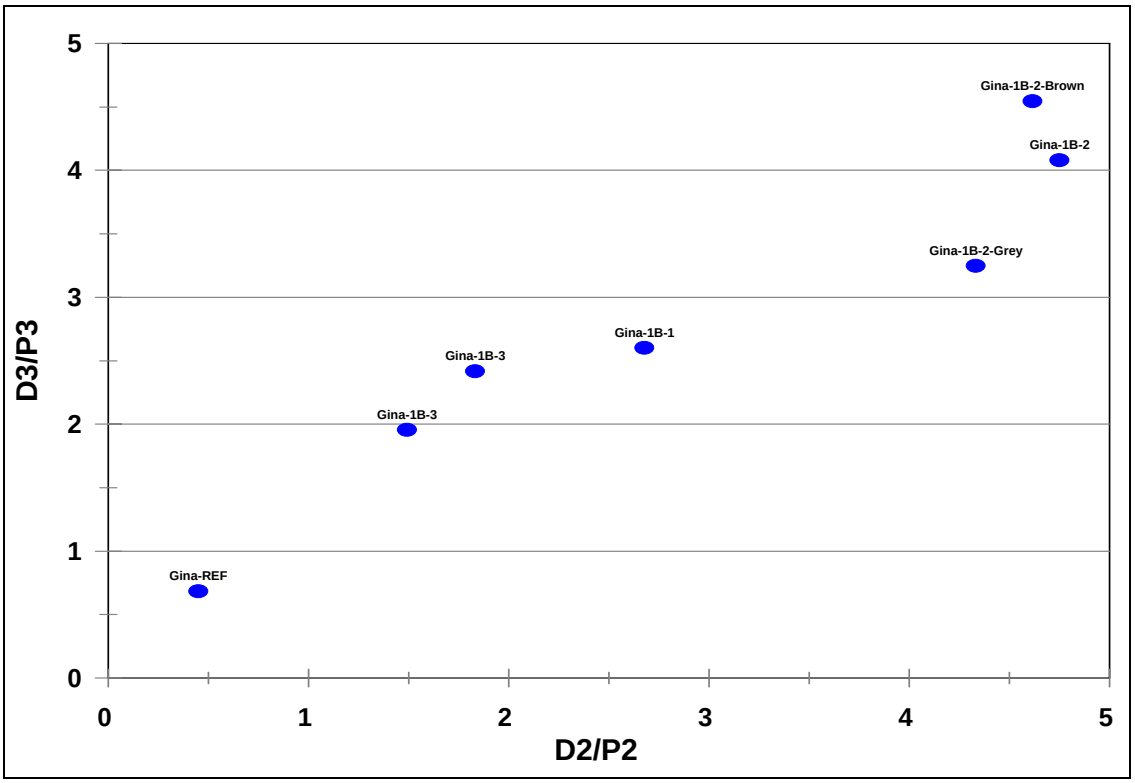

Figure 11. D_2/P_2 versus D_3/P_3 Source Ratio

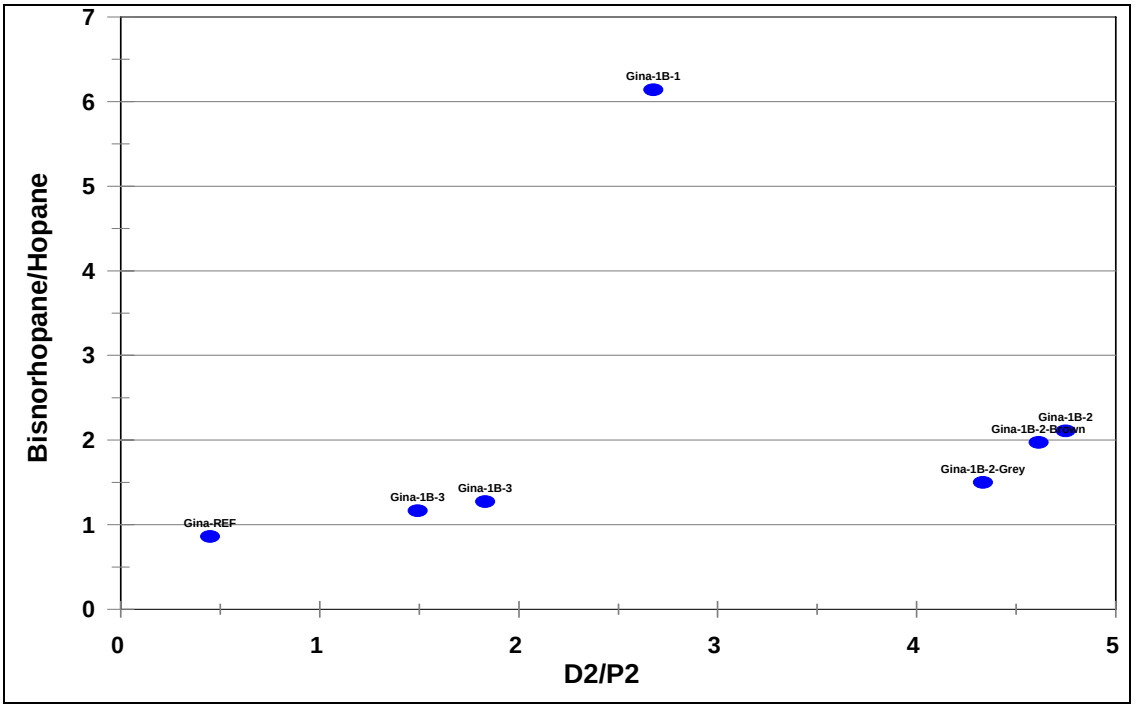

Figure 12. Bisnorhopane/Hopane versus D_2/P_2 Source Ratio

Combined, the results from chemical analyses of the Gina core samples indicate a non-homogeneous distribution of platform waste-derived contaminants. Contaminant concentrations generally were higher in the middle stratum of the mound, although the barium concentrations (as a chemical marker for drilling muds) overlapped with those in the surface layer. The highest concentrations of petroleum hydrocarbons, as well as arsenic, cadmium, chromium, nickel, and selenium, occurred in a banded section from the middle stratum of the Gina 1B core. Elevated TRPH (4,000 mg/kg) also was associated with this sample. These results indicate that the source of the metal and hydrocarbon contaminants was bulk material discharges from the platform, such as those that occur at the end of a well drilling sequence (Neff et al., 1987).

The detailed analyses of petroleum hydrocarbons in selected Platform Gina shell mound samples showed a wide range in the composition and concentrations of hydrocarbon components. All of the samples contained petroleum compounds with signatures similar to that of weathered crude oil. However, differences in the hydrocarbon signatures suggest that the source of the petroleum was not uniform among samples. While all of the samples contained petroleum from a Monterey Formation-sourced oil, differences in component ratios indicate multiple sources. In particular, the surface and bottom strata had signatures similar to that of the Gina reference sample, whereas the middle stratum of the mound appeared to have a different source signature.

It should be noted that the initial analyses of the samples for PAHs only detected benzo(a)pyrene, which is considered more characteristic of combustion than petroleum sources, although it could be associated with other platform discharges, such as produced water or deck drainage. Other, lower molecular weight PAHs, such as naphthalenes and phenanthrenes, which are more characteristic of petroleum sources, were not detected in any of the shell mound samples. By contrast, the detailed hydrocarbon analyses showed concentrations of suites of PAH compounds at concentrations up to several parts per million, particularly in the Gina 1B-Brown sample. The reason(s) for the discrepancies in the results likely were due primarily to methodological differences. For the detailed analyses, which used the modified EPA Method 8270C, the GC/MS instrument was operated in the selected ion monitoring (SIM) mode which increases the analytical sensitivity. In contrast, for the method used for the initial analyses, the

GC/MS was operated in the full scan mode, which results in higher detection limits. For this reason, the PAH results obtained from the detailed hydrocarbon analyses (Appendix D) are considered more representative of the hydrocarbon characteristics of the shell mound materials.

4.0 DISCUSSION

Offshore oil and gas production has been part of Southern California's landscape since the 4H platforms (Heidi, Hilda, Hazel, and Hope) were installed in the Santa Barbara Channel in the late 1950s and early 1960s. Currently, 23 oil platforms are operating in Federal waters off the Southern California coast, primarily in the Santa Barbara Channel and Santa Maria Basin. Shell mounds occur beneath all of the oil platforms (Love et al., 1999; MEC and Sea Surveyors, 2003; Page et al., 2005), and they represent hard substrate habitat for diverse fish and benthic invertebrate communities (Love et al., 1999; Bomkamp et al., 2004). Over time, oil production at offshore platforms declines, which eventually leads to decommissioning when the platforms become uneconomical to operate. However, shell mounds remain after the platform structures have been removed. Government regulations require the removal of all debris that settles and accumulates on the seafloor as a result of operations following abandonment of offshore platforms. Options for managing the shell mounds following platform removal can be affected by conflicting needs to restore bottom conditions versus potential impacts associated with physically disturbing the mounds and releasing potentially harmful substances into the marine environment.

Assessments of removal options require information on the physical and chemical composition of the shell mounds and the environmental risks of leaving the mounds in place. However, relatively little information presently exists on the physical and chemical properties of OCS shell mounds. This pilot study represents the first effort to sample shell mounds associated with an active OCS platform. The only other studies of shell mound composition were conducted at the shell mounds that were associated with the decommissioned 4H platforms in State waters within the Santa Barbara Channel. Results from analyses of the 4H shell mounds are discussed further in Phillips et al. (2006).

Results from the present analyses of the Platform Gina shell mound cores exhibit both similarities and differences from those for the 4H shell mounds. Ranges in grain size and contaminant concentrations in the Platform Gina and 4H shell mounds are compared in Table 10. Similar to the 4H shell mounds, the Platform Gina shell mound sediments contain elevated

concentrations of barium, lead, and zinc that likely are from drilling muds, cuttings, and other platform discharges that accumulated in the shell mounds. In the Platform Gina shell mound cores, barium and zinc concentrations were up to 29 times and 8 times greater, respectively, than background sediment levels, while concentrations of lead were up to 9 times above background (assuming that the lead concentration in the Gina 2B-1 sample [386 mg/kg] is an outlier). For comparison, barium and zinc concentrations in the 4H shell mounds were up to 40 times and 8 times greater, respectively, than background sediment levels, while lead concentrations were up to 11 times above background levels. Concentrations of other metals, such as chromium and nickel, which were elevated in the 4H shell mound sediments, occurred in the Gina shell mound sediments at levels that were comparable to those in the reference sediment.

In drilling wastes, barium typically occurs in the form of barium sulfate, which is a key constituent of drilling muds. For example, samples of drilling muds from Platform Hidalgo (in the Santa Maria Basin) contained barium concentrations from 17,000 to 180,000 mg/kg (SAIC and MEC, 1995; Phillips et al., 1998). Lead and zinc in the Platform Gina shell mounds could be from drilling mud additives or pipe dope (Neff et al., 1987). Drilling muds and cuttings samples from Platform Hidalgo contained lead concentrations of 2.3 to 51 mg/kg and 25 to 5,600 mg/kg, respectively, and zinc concentrations from 114 to 714 mg/kg and 128 to 2,871 mg/kg, respectively (SAIC and MEC, 1995). The absence of elevated chromium concentrations in the Platform Gina shell mounds suggests that chrome or ferrochrome lignosulfonate drilling mud additives were not used or discharged from this platform. This is consistent with the discharge monitoring reports that indicate the use of barite and bentonite drilling fluids at Platform Gina.

The biggest differences between the Platform Gina and 4H shell mounds are related to the VOC concentrations, which were more than two orders of magnitude lower in the Platform Gina shell mounds compared with concentrations in the 4H shell mounds. Concentrations of volatile organic compounds were less than 0.1 mg/kg in the Platform Gina samples, whereas the 4H shell mounds contained concentrations up to several parts per million (mg/kg) of individual mono- and di-cyclic aromatic hydrocarbons, including benzene, alkyl-substituted benzenes, and

Table 10. Comparisons of Chemical and Grain Size Characteristics of the Surface, Middle, and Bottom Strata of the Platform Gina Shell Mound with Characteristics of the 4H Shell Mounds and Associated Reference Sites.

	Grain Size			TOC	Total Sulfides	Trace Metals					Organics		
	Fines	**Gravel**	**Solids**			**Ba**	**Cr**	**Ni**	**Pb**	**Zn**	**TRPH**	**VOC**	**PAHs**
	----------% dry weight----------				----------mg/kg dry weight----------								
Platform Gina													
Surface	8-18	10-19	75-78	0.3-1.1	ND-32	1360-2130	19-24	10-21	35-386	119-349	110-349	ND	ND-0.23
Middle	14-24	0.2-4.4	71-78	0.3-1.1	11-55	2120-3330	8.8-71	5-44	7-51	161-310	243-4000	ND-0.03	0.07-0.66
Bottom	33-38	0-0.8	77-81	0.3	ND-0.4	78-1870	14-21	8-10	3-10	32-123	32-81	ND	ND
Gina-Ref	50	0.0	72	0.4	0.8	116	18	11	5.6	44	25	ND	ND
4H Shell Mounds													
Surface	20-56	24-41	49-63	0.2-0.7	43-1000	3210-4790	19-67	8-32	16-30	379-611	49-2400	ND-0.95	ND-1.3
Middle	31-64	3-9	58-64	0.3-1.2	6-95	2420-5530	101-135	16-54	16-110	287-575	330-3300	3.4-14	0.4-1.9
Bottom	85-95	0.2-0.5	61-73	0.4-0.7	ND-130	348-1620	28-44	26-36	7.4-15	86-157	30-290	<0.01-6.7	ND
4H-Ref	85-90	0.0	47-61	0.2-0.6	ND	148-157	30-40	32-38	10-16	72-101	80-1400	ND	ND
Background Sediments													
	69 ± 30	NA	NA	1.1 ± 0.46	NA	237 ± 105	33 ± 9.2	30 ± 14	10 ± 3.8	84 ± 29	NA	NA	0.042 ± 0.03

NA – not analyzed; ND – not detected.

Values for background sediments represent the average (± standard deviation) concentrations for sediments from Stations 2362, 2364, 2365, 2366, 2367, 2368, 2369, 2371, and 2372 in the Santa Barbara Channel sampled during the Bight'98 program (Noblet et al., 2003).

naphthalene. The presence of these labile aromatic hydrocarbons in the 4H samples was consistent with visual observations and core logs noting the presence of fresh petroleum or product that probably were from formation oils (i.e., crude oil from the oil-bearing formation) adsorbed onto discharged cuttings particles and/or from oil-based drilling muds used at the 4H platforms. Aromatic hydrocarbons, including toluene and xylene, are components of fresh (unweathered) petroleum, such as crude oil associated with muds and cuttings particles, but they are rapidly lost from discharged drilling fluids due to their high solubility in seawater (Boehm et al., 1989). Results from analyses of the Platform Gina shell mound indicate that petroleum hydrocarbons associated with the platform discharges were weathered prior to burial in the shell mounds. Thus, the differences between the Platform Gina and 4H shell mounds in VOC concentrations could reflect high levels in the 4H platform wastes (e.g., associated with diesel-based drilling fluids) and/or rapid weathering of the petroleum from the Platform Gina platform discharges.

Phillips et al. (2006) surmised that the results for the 4H shell mounds were not necessarily representative of all other shell mounds/cuttings piles. Instead, the magnitude and distributions of chemical contaminants in other mounds are expected to reflect a number of factors, including water depth and bottom slope, size/volume of the mounds, and age of the platform. Studies of other shell mounds off California (MEC and Sea Surveyors, 2003) noted that shell mounds in deeper waters with steeper bottom topography tend to be thin and elongated, whereas mounds in shallower waters with small bottom slopes, similar to the locations of the Platform Gina and 4H mounds, are thicker and more defined. The thickness of the mounds is expected to affect the extent of water exchange and, thus, rates of contaminant weathering. Additionally, the magnitude of chemical contaminants in the mounds likely reflects the age of the drilling operations, with relatively greater contaminant concentrations associated with older mounds that formed when regulations on the types and quantities of mud additives used were less stringent compared to those governing more recent drilling and production operations.

Factors that may have contributed to differences between the Platform Gina and 4H shell mounds in contaminant levels are summarized in Table 11. The water depths and bottom

slopes of the Platform Gina and 4H sites are comparable. The Platform Gina shell mound is approximately half the height and less than half the volume of any of the 4H shell mounds, which likely reflects to some extent the differences in ages of the mounds. The rate of accumulation of mound materials could be an important factor that contributes to differences in the contaminant compositions. For example, the presence of alkyl benzenes and other lower molecular weight aromatic hydrocarbons in the 4H shell mounds suggests that fresh petroleum or oil-based drilling muds discharged from the platforms were buried rapidly and before appreciable solubilization and microbial degradation could occur. The accumulation and consolidation of subsequently-deposited solids effectively capped the residues and prevented further weathering. Similarly, studies of cuttings piles in the North Sea (Bruer et al., 2004) concluded that debris accumulating at the base of offshore platforms consolidates over time, and consolidation inhibits exchange between the inner portions of the mound with overlying water. With limited water exchange, oxidation of organic matter promotes anaerobic conditions, metals form insoluble sulfide complexes, and microbial degradation of hydrocarbons is inhibited. The UKOOA (2002) studies also concluded that the sulfide forms of metals are not biologically available unless or until the piles are disturbed and the pile sediments become oxidized. These conditions limit the natural weathering processes and mobility of chemical contaminants associated with discharged platform wastes.

Table 11. Comparisons of Factors That May Contribute to Differences in the Chemical Compositions of the Platform Gina and 4H Shell Mounds.

	Platform Gina Shell Mound	**4H Shell Mounds**
Water Depth	29 m	30 m and 40 m
Bottom Slope	1%	1%
Size/Volume	Approximately 4 m in height and up to 64 m in diameter with an estimated volume of 4,200 yd^3.	Approximately 7.6 to 8.5 m in height and 55 to 81 m in diameter, with a combined volume of approximately 34,400 m^3 or 10,000 – 15,000 yd^3/mound
Age	Installed 1980; 26 years (at time of sampling)	Installed 1957-1965; 31 – 39 years (at time of platform removal)
Number of Well Slots	15	60 each at Hope and Heidi, 25 at Hazel, and 24 at Hilda.
Accumulation Rates	Unknown, but estimated at 0.154 m/yr.	Unknown, but estimated at 0.218 to 0.245 m/yr.
Limitations on Platform Discharges	Discharges regulated by NPDES permit conditions. Discharges of oil based and non-generic drilling muds prohibited.	Both water based and oil based were used, with no restrictions on composition of drilling muds; wastes discharged to ocean until the moratorium on drilling in state waters in 1969.

Platform Gina currently operates under the General National Pollutant Elimination Discharge (NPDES) Permit No. CAG28000. The permit specifies the following limitations on platform discharges:

- No discharges of oil based muds
- No discharge of free oil (using a static sheen test) or diesel oil
- Acute toxicity must have a 96-hour LC50 > 30,000 ppm (using EPA's mysid shrimp toxicity text)
- Metals concentrations in barite added to drilling fluids must not exceed:
    - 1 mg/kg for mercury
    - 3 mg/kg for cadmium

The permit also specifies maximum annual discharge volumes for cuttings (30,000 bbls), drilling fluids (105,000 bbls), excess cement (2,500 bbls), and produced waters (25,500,000 bbls). Prior to the current permit, Platform Gina operated under the general Permit No. CA0110516, which was issued in 1982 and later re-issued in 1983. Permit conditions for muds and cuttings discharges were similar under the two permits, although there were some additional restrictions for the current related to discharges of diesel-contaminated muds and limits for cadmium and mercury in barite additives, as summarized in Table 12 below.

Table 12. Comparisons of Known NPDES Discharge Permits for Platform Gina.

	Original Permit	**Current Permit**
Drilling Discharges (muds and cuttings; discharge 001)	Once/mud system toxicity if unapproved mud is discharged.	End of well toxicity test.
	Monthly volume limits.	Volume limits apply to each platform..
	Continuous constituent and additive inventory.	Continuous constituent and additive inventory.
	No discharge of oil-based muds.	No discharge of oil-based muds or muds contaminated with diesel.
	Annual report of heavy metal contamination in barite.	Limits on cadmium and mercury in barite.
	Use of generic mud.	Use of generic mud.
	Daily visual sheen observations.	Static sheen test.

By comparison, discharges of drilling wastes from the 4H platforms were not restricted prior to the moratorium on drilling in state waters in 1969. Information concerning the volumes and chemical composition of drilling muds and cuttings discharged prior to 1976 is not available. However, a review of drilling logs for the 4H platforms (O'Reilly, 1998) noted that both water-based muds (WBMs) and oil-based muds (OBMs) were used during drilling, although OBMs were used infrequently. Regardless, platform wastes, including OBMs and cuttings, were discharged from the 4H platforms.

In the late 1970s, the U.S. Environmental Protection Agency (EPA) began placing stronger restrictions on ocean discharges of drilling muds and cuttings through National Pollutant Discharge Elimination System (NPDES) permits. Among the early restrictions were prohibitions on the discharge of OBMs and cuttings. In 1993, the EPA adopted enhanced national discharge standards for the offshore oil and gas industry. These established additional requirements for discharging WBMs and cuttings from wells drilled at least 3 miles from shore but prohibited discharges within 3 miles of shore (Neff, 2005). As a result of these regulations, it is likely that the contaminant concentrations of the wastes discharged from Platform Gina under an NPDES permit are appreciably lower than those in wastes from the 4H platforms prior to restrictions on drilling discharges.

The representativeness of the Platform Gina shell mound data to other OCS shell mounds can not be determined from the present information. In theory, mounds of similar size and age, and containing muds and cuttings discharged in compliance with NPDES permit conditions, should be similar in composition to the Platform Gina shell mound. However, it is also possible that platforms in comparatively deeper waters and/or higher energy/stronger current regimes could have shell mounds that are characterized by higher proportions of coarse-grained materials due to relatively greater dispersion of the finer grainer fractions of muds. Under these conditions, it is likely that bulk sediment contaminant concentrations will be relatively lower than shell mounds containing proportions of fines similar to those of Platform Gina.

MMS conducted a long-term monitoring study of the environmental impacts from OCS oil and gas operations in the Santa Maria Basin (CAMP Program) from 1983 to 1995.

Results from the three-phase study are presented in SAIC (1986), Steinhauer and Imamura (1990), and SAIC and MEC (1995). The study evaluated temporal changes in concentrations of metals and petroleum hydrocarbons in bottom sediments and suspended sediments before, during, and after periods of active drilling and platform discharges to determine whether drilling wastes altered the geochemical environment and represented a significant source of contaminants to epifaunal organisms.

From 1986 through 1994, drilling occurred periodically at three platforms located in water depths of about 180 m within the Santa Maria Basin. Drilling a total of 44 wells resulted in discharges of 45,000 m^3 of used drilling muds and 6,300 m^3 of cuttings, which represented a total mass emission for barium of 520,000 kg over this period.

With the exception of barium, no significant changes in concentrations of chemical constituents or in grain size or mineralogical properties of the bottom sediments or suspended particles were associated with the platform discharges. Barium was the sensitive indicator of drilling discharges because it is highly enriched relative to background concentrations in the source material, it is essentially insoluble in seawater, and it is not expected to be altered by natural, chemical, or biological processes. Despite the fact that concentrations of some classes of hydrocarbons, such as low molecular weight PAHs, were elevated in muds and cuttings, concentrations and component ratios of hydrocarbons in bottom sediments and suspended particles did not indicate significant contributions from platform discharges. Any contributions from platform discharges to concentrations of petroleum hydrocarbons were masked by the dominant background signal of hydrocarbons from natural sources (e.g., local oil seeps) or reduced due to selective solubilization and/or microbial degradation of these labile compounds.

Drilling during the 1986 to 1989 monitoring period resulted in significant increases in barium concentrations in suspended particles and surficial bottom sediments, whereas drilling operations during 1993-1994 resulted in only minor increases in the barium concentrations in suspended sediments. Residual excess barium was present in some sediments within 500 m of the platforms at concentrations up to one order of magnitude

above background. These elevated levels probably were associated with cuttings particles deposited near the base of the platforms. Nevertheless, the calculated excess barium in sediments within 500 m of the platforms represented only 6 to 11% of the total barium discharged from the platforms (Phillips et al., 1998a). The absence of larger changes in the sediment contaminant concentrations was attributed in part to high dispersion of platform discharges related to the dynamic local and regional currents and relatively deep water depths. The high dispersion of discharged materials was confirmed by the results of a particle tracking model that predicted only very thin layers (average bottom accumulation thickness of 1.5 to 7.5 microns) over areas of several hundred square kilometers (SAIC and MEC, 1995).

Although the representativeness of the results from the present pilot study of the Platform Gina shell mound is difficult to determine due the relatively small number of cores collected and analyzed, the findings are useful when placed in the context of the 4H shell mound studies and the MMS CAMP program because they reflect a range of effects from platform operations on the marine environment of the Santa Barbara Channel. In particular, the composition of the 4H shell mounds reflects rapid deposition and accumulation of platform discharges, including OBMs, that were unrestricted at the time. In contrast, discharges from platforms in deeper, highly-dispersive waters of Santa Maria Basin caused only minimal changes to the benthic environment due to the limited accumulation of materials on the seafloor. The chemical characteristics of the shell mound at Platform Gina reflects deposition and accumulation of discharged muds and cuttings, but without appreciable concentrations of the volatile aromatic compounds or PCBs that are present at the 4H shell mounds. The absence of these contaminants in the Platform Gina shell mound probably reflect, in part, the relatively cleaner discharges resulting from stricter permit limits.

5.0 CONCLUSIONS

The four sediment cores collected from the Platform Gina shell mound contained chemical residues from platform discharges as reflected by elevated concentrations of barium, lead, zinc, and petroleum hydrocarbons. Concentrations of these analytes generally were relatively higher in the middle strata than in the surface or bottom strata of the mounds, but there did not appear to be an obvious pattern in the magnitude of concentrations with distance from the mound apex. Sections of cores were characterized by alternating banding of light and dark materials that was interpreted as the result of deposition of materials from multiple platform discharge events. The dark bands appeared to contain petroleum residues that probably were associated with formation oils that adhered to discharged drilling muds and cuttings. However, the low concentrations of the low molecular weight aromatic compounds (e.g., benzene, toluene, naphthalene) in the shell mound sediments suggests that weathering due to a combination of natural processes, such as solubilization and microbial degradation, removed these labile components prior to burial in the mounds.

These results for the Platform Gina shell mound have both similarities and differences with results from sampling of other shell mounds in the Santa Barbara Channel area (i.e., the 4H shell mounds). Differences are probably related to a variety of factors, including the location, water depth, size and age of the mounds and the characteristics of the platform wastes and rates of accumulation of materials within the mounds. Regardless, it is expected that site-specific differences in the compositions of shell mounds associated with other OCS platforms in the Santa Barbara Channel and Santa Maria Basin will also reflect these factors.

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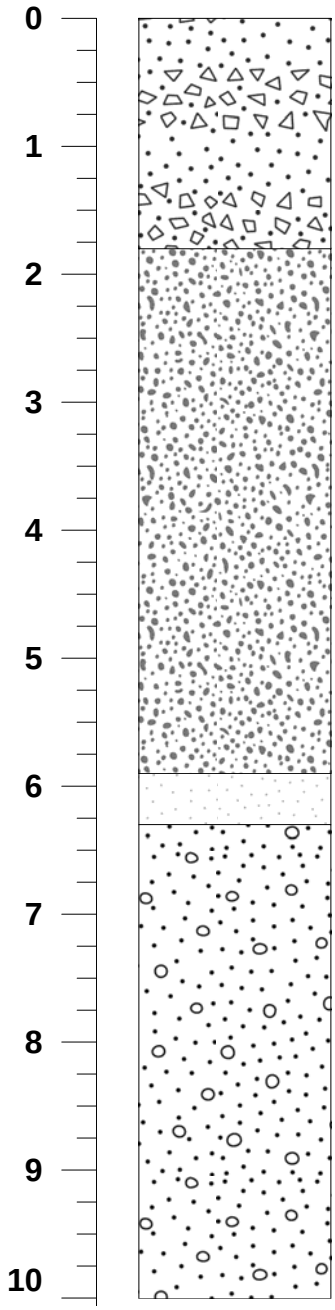
APPENDIX A: CORE LOGS

Project: MMS Shellmound
Project Manager: Dr. David Moore
Sample Date: 11/1/06
Start Time: 16:31
End Time: 16:46
Core ID: Gina1

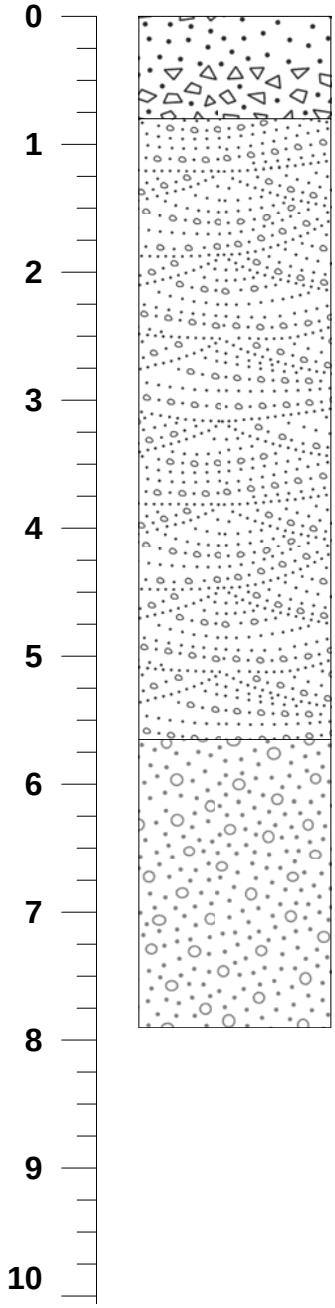
Easting: 6175075.95
Northing: 1867656.79
Latitude: 34.11765897
Longitude: -119.2772799



General Description	Odor	Comments
Shell Hash + Coarse Grain Sand	Organic	No living Organisms
Fine and Coarse Grain Sand	None	
Fine Sand with Clay	Faint Distillate	
Clay with Sand	None	

Project: MMS Shellmound
Project Manager: Dr. David Moore
Sample Date: 11/2/06
Start Time: 13:25
End Time: 13:36
Core ID: Gina1B

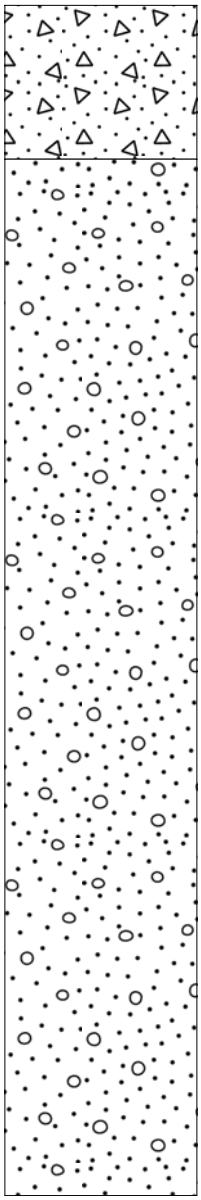
Easting: 6175069.63
Northing: 1867658.48
Latitude: 34.1176634
Longitude: -119.2773008



General Description	Odor	Comments
Shell Hash + Coarse Grain Sand	Slight Organic	Grapsid crab and Clam recovered in Core
Sand with Clay and Silt	Distillate (Strong)	repeating layers of possible distillate materials
Clay with Sand and Silt	None	wood debris from 6.4 ft. to 7.0 ft.

Project: MMS Shellmound
Project Manager: Dr. David Moore
Sample Date: 11/1/06
Start Time: 13:20
End Time: 13:36
Core ID: Gina2

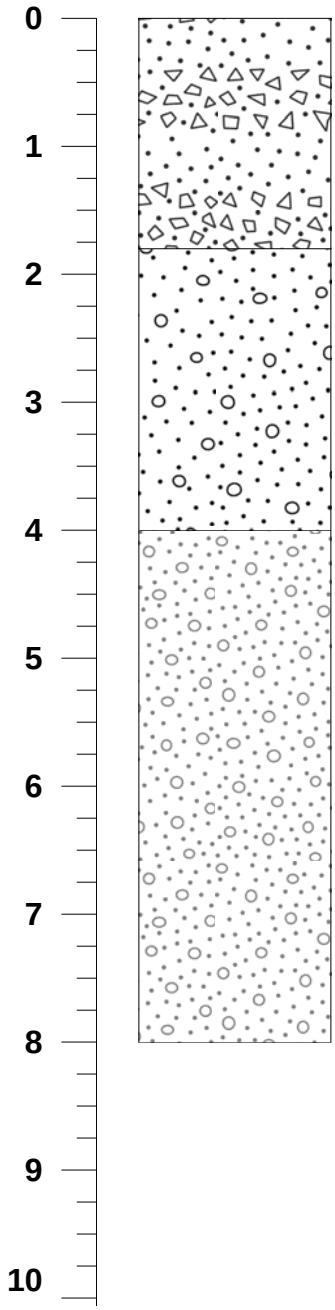
Easting: 6175065.34
Northing: 1867658.86
Latitude: 34.11766429
Longitude: -119.277315



General Description	Odor	Comments
Coarse Sand + Shell Hash+ Barnacles	None	No Strata 1 Recovered
Clay with Sand	None	
Clay with Sand	Distillate	
Clay with Sand	None	

Project: MMS Shellmound
Project Manager: Dr. David Moore
Sample Date: 11/2/06
Start Time: 11:44
End Time: 11:58
Core ID: Gina2B

Easting: 6175105.1
Northing: 1867658.84
Latitude: 34.11766562
Longitude: -119.2771836



General Description	Odor	Comments
Shell Hash + Coarse Grain Sand	Organic	
Clay with Sand	Distillate (Slight)	
Clay with Sand and Silt	None	Native Material with Barnacle tests. Very little anoxia

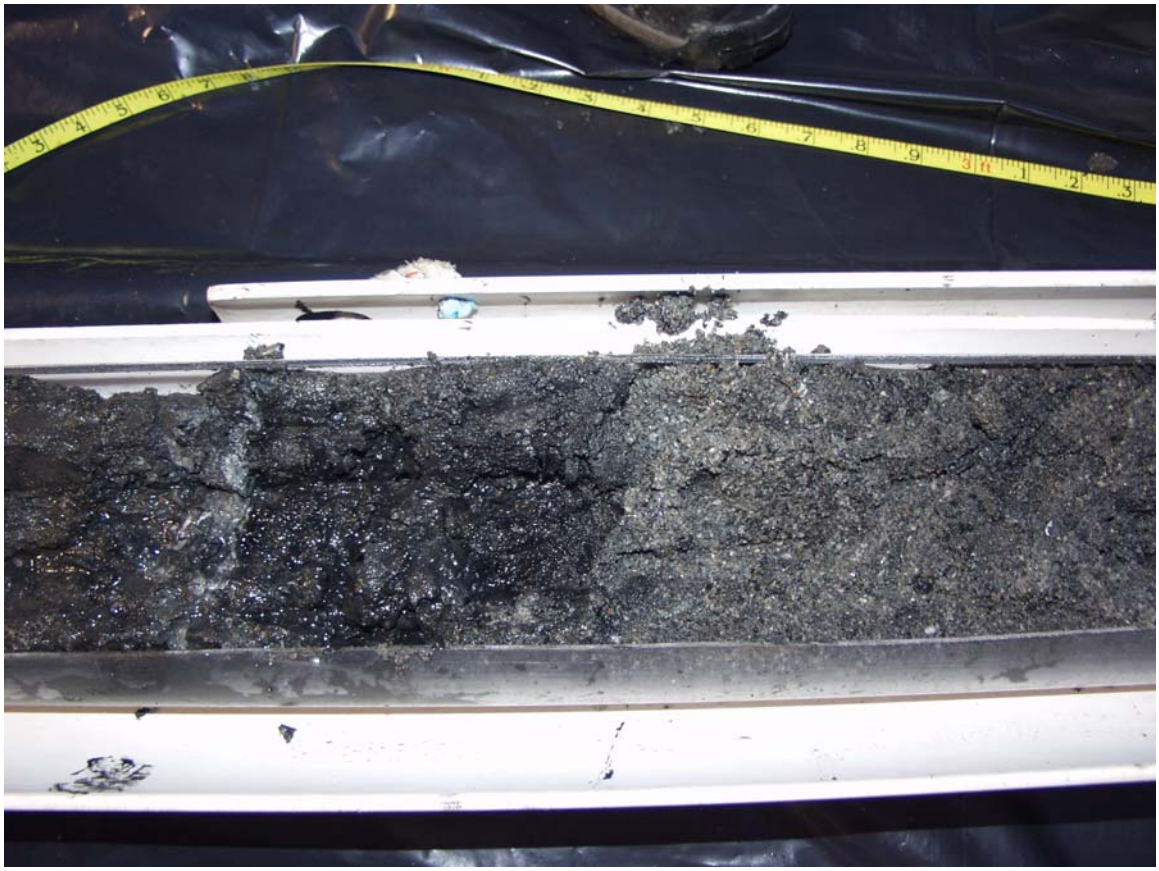
APPENDIX B: CORE PHOTOS

Platform Gina – Core 1 (GINA-1)

Gina – 1: Depth Interval; 0.0 to 4.9 feet (top to bottom).

Gina – 1: Depth Interval; 4.9 to 9.9 feet (top to bottom).

Gina – 1: Depth Interval; 0.0 to 1.75 feet (left to right).



Gina – 1: Depth Interval; 1.3 to 3.3 feet (left to right).

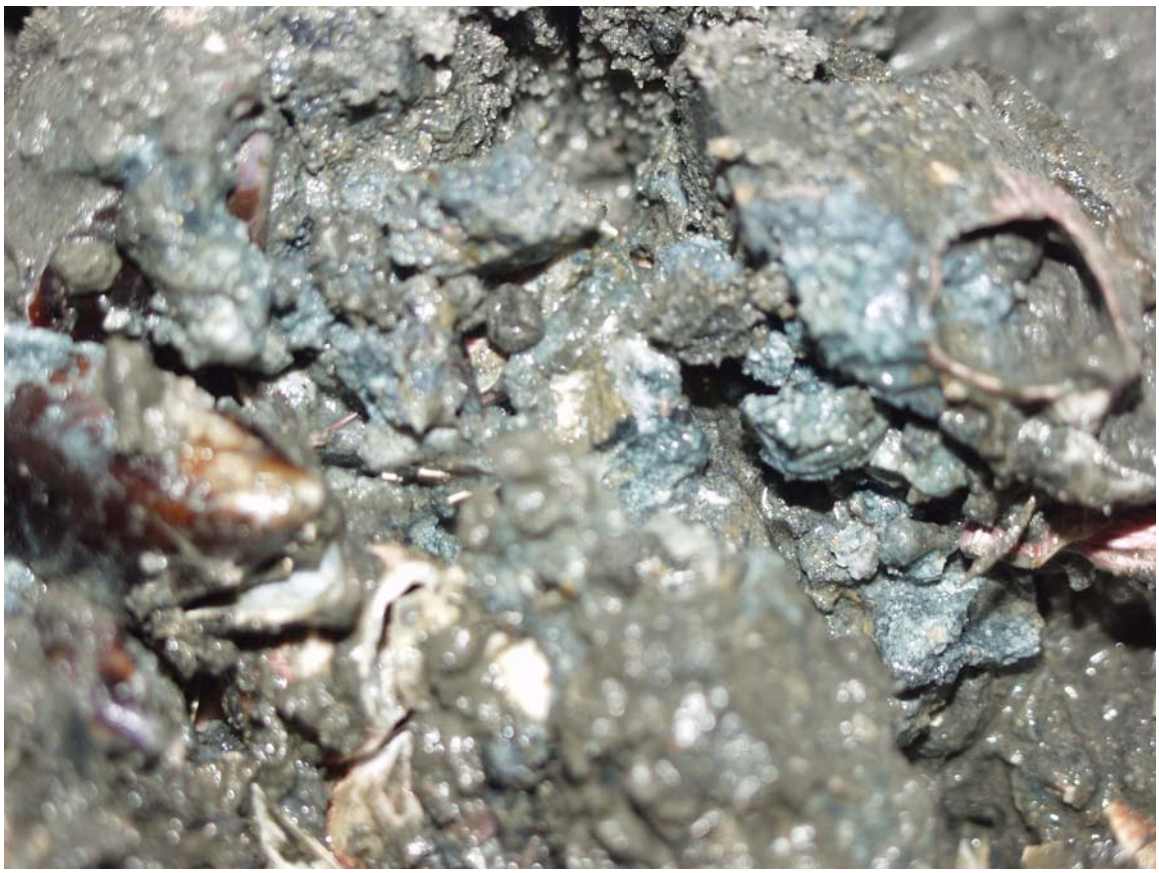
Gina – 1: Depth Interval; 2.4 to 4.2 feet (left to right).

Gina – 1: Depth Interval; 3.4 to 4.9 feet (left to right).

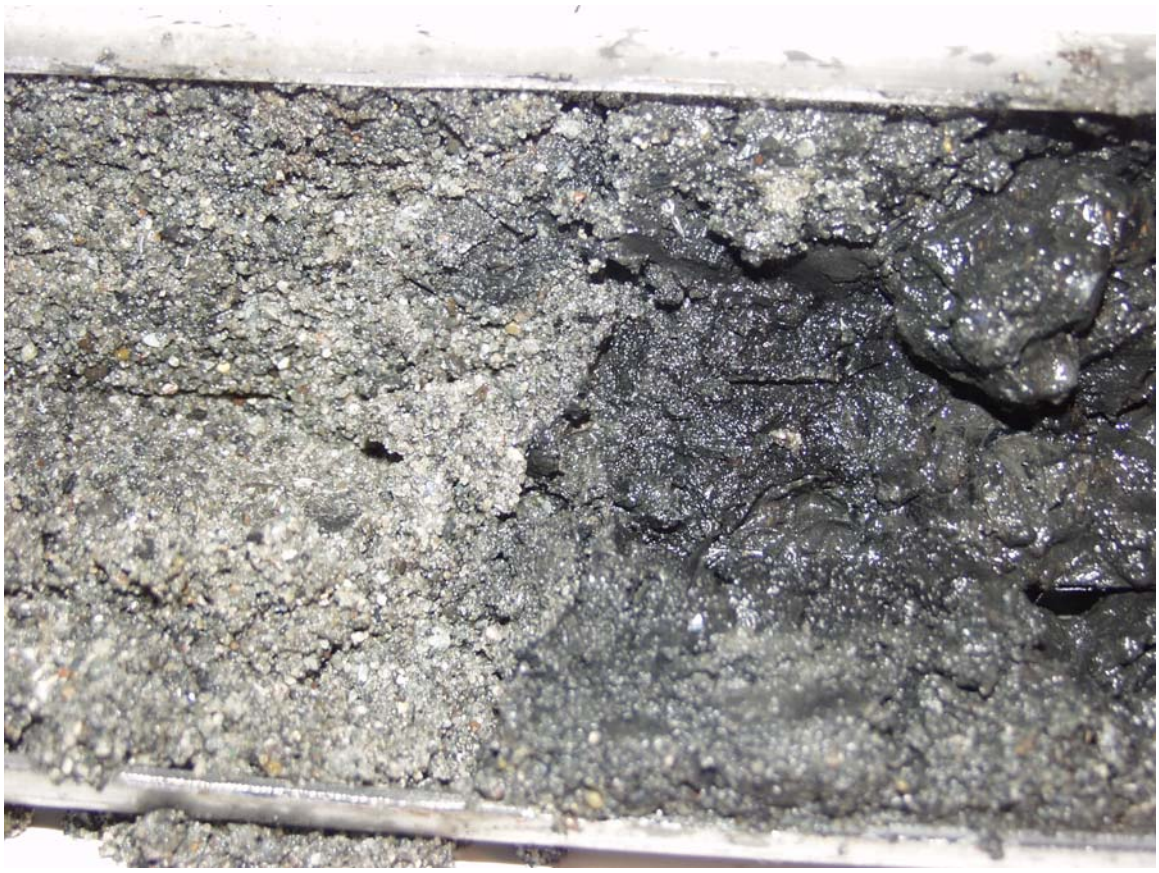
Gina – 1: Depth Interval; 4.9 to 6.0 feet (left to right).

Gina – 1: Depth Interval; 6.0 to 8.4 feet (left to right).

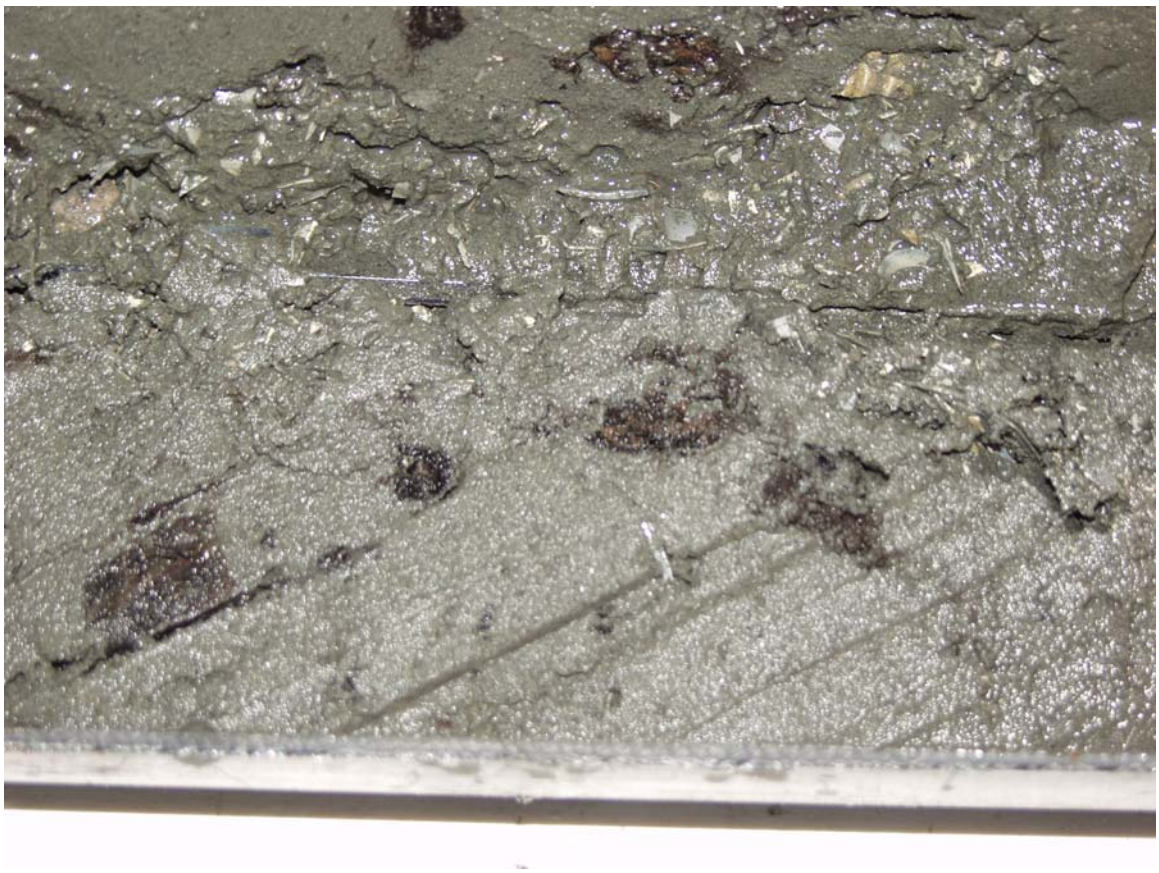
Gina – 1: Depth Interval; 8.4 to 9.9 feet (left to right).



Gina – 1: Depth Interval; 0.25 feet
(Close up of angular gravel and shell fragments, note barnacle in upper right).



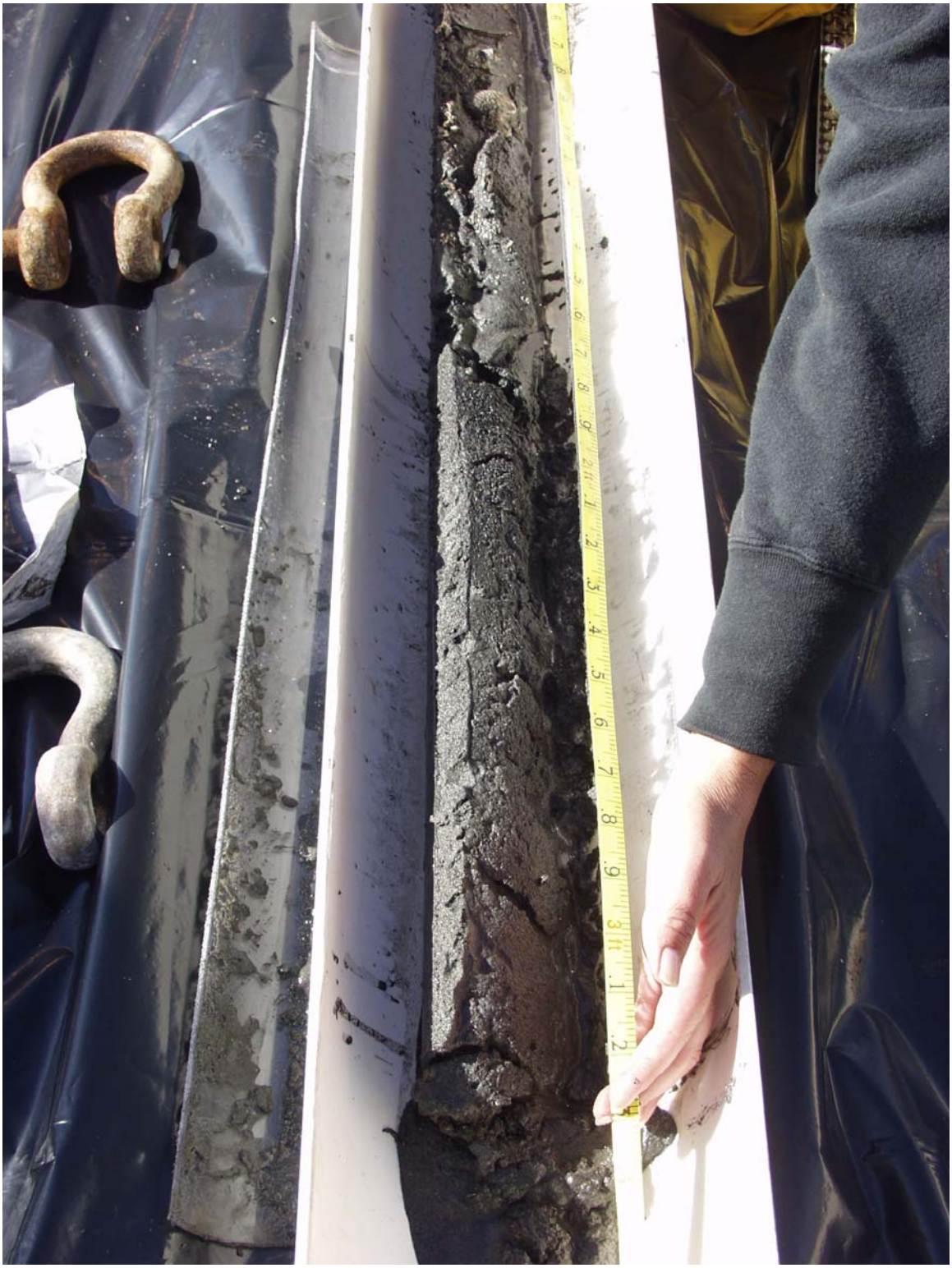
Gina – 1: Depth Interval; 1.4 feet (close up of upper sand layer and product-infused area).



Gina – 1: Depth Interval; 5.5 feet (close up of small brown deposits, approx. 2 – 10 mm).

Gina – 1: Depth Interval; 5.5 feet (close up of small brown deposits, approx. 2 – 10 mm).

Platform Gina – Core 1B (GINA-1B)

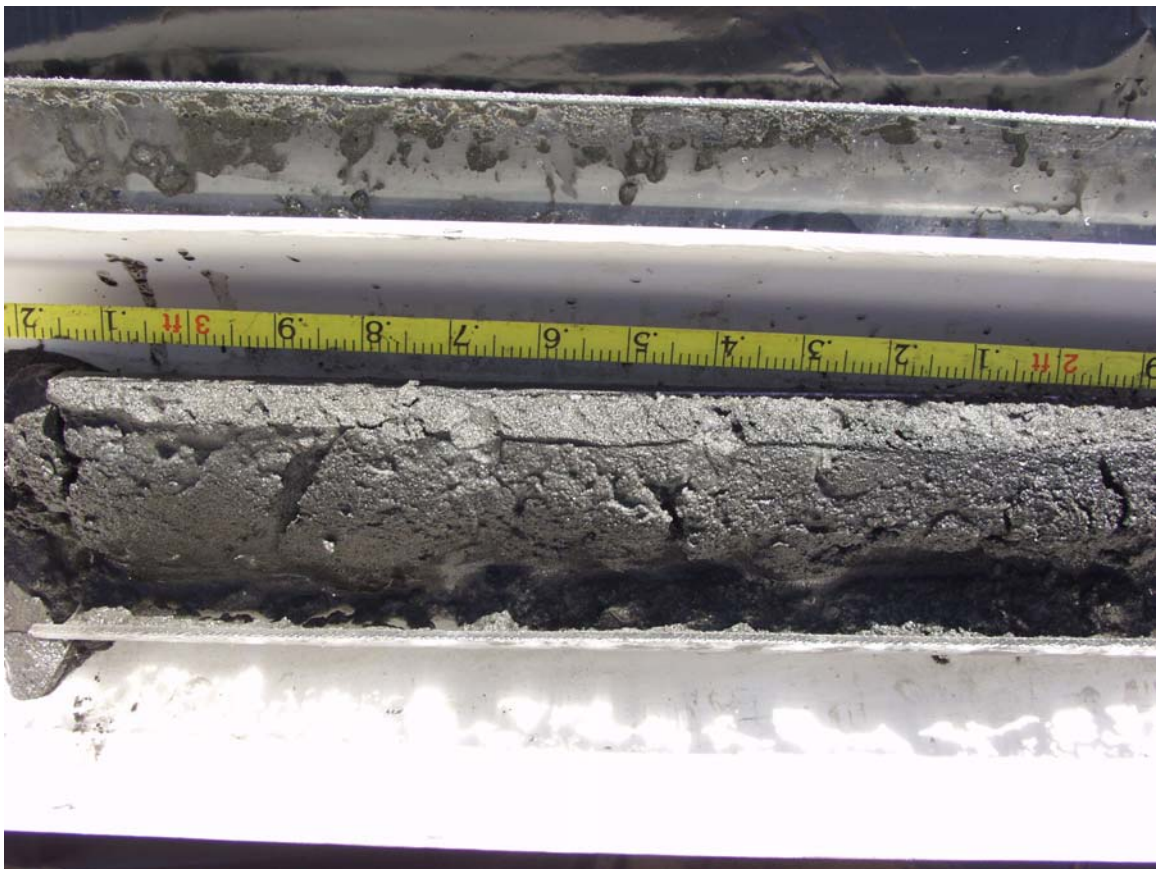


Gina – 1B: Depth Interval; 0.0 to 3.5 feet (top to bottom).

Gina – 1B: Depth Interval; 3.5 to 7.5 feet (top to bottom).

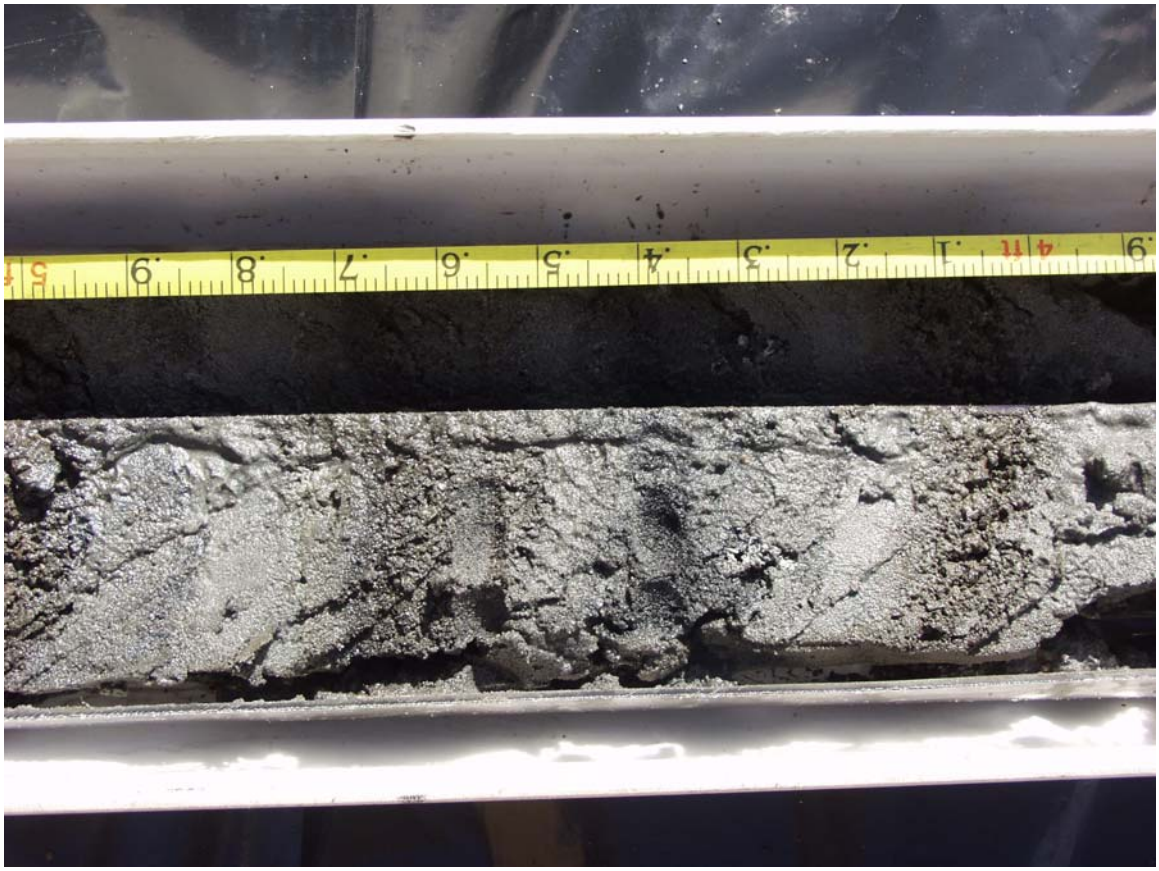
Gina – 1B: Depth Interval; 0.0 to 1.0 feet (right to left).

Gina – 1B: Depth Interval; 1.0 to 2.0 feet (right to left).



Gina – 1B: Depth Interval; 2.0 to 3.2 feet (right to left).

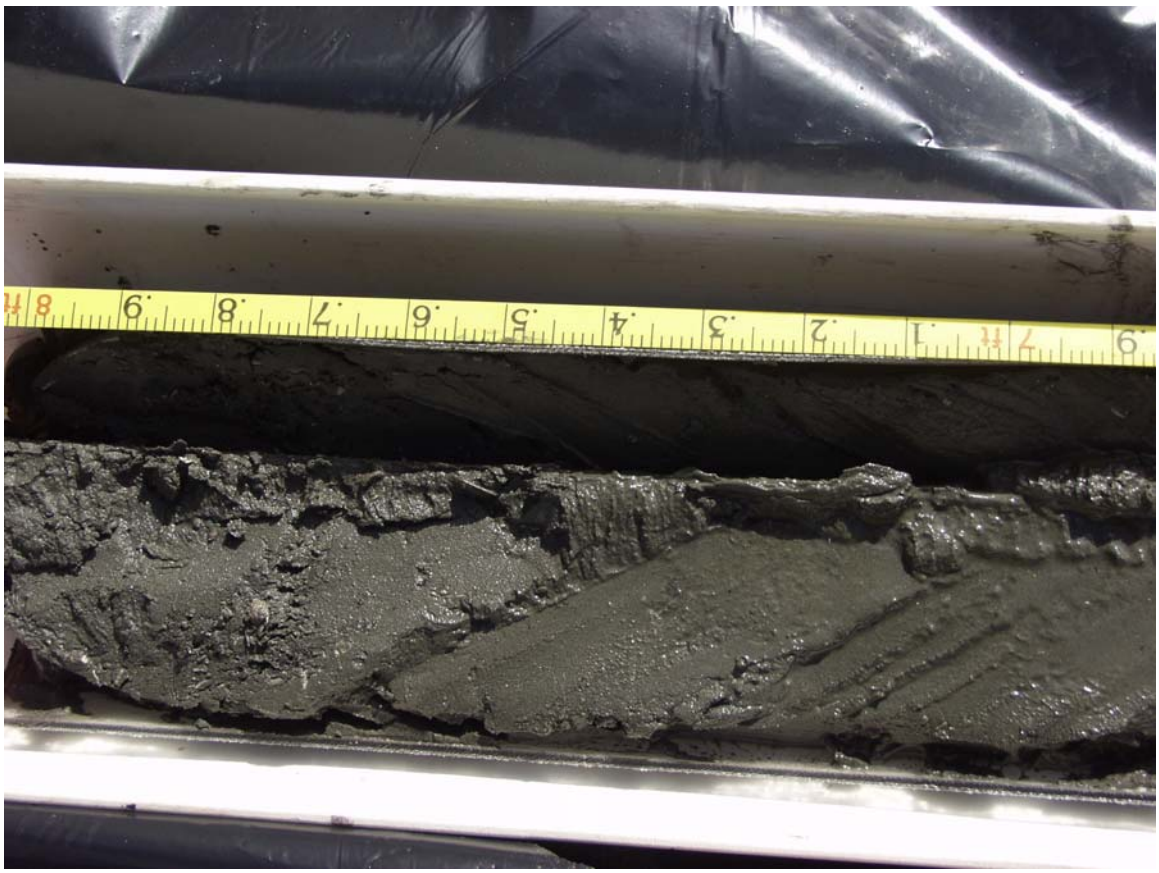
Gina – 1B: Depth Interval; 3.2 to 4.0 feet (right to left).



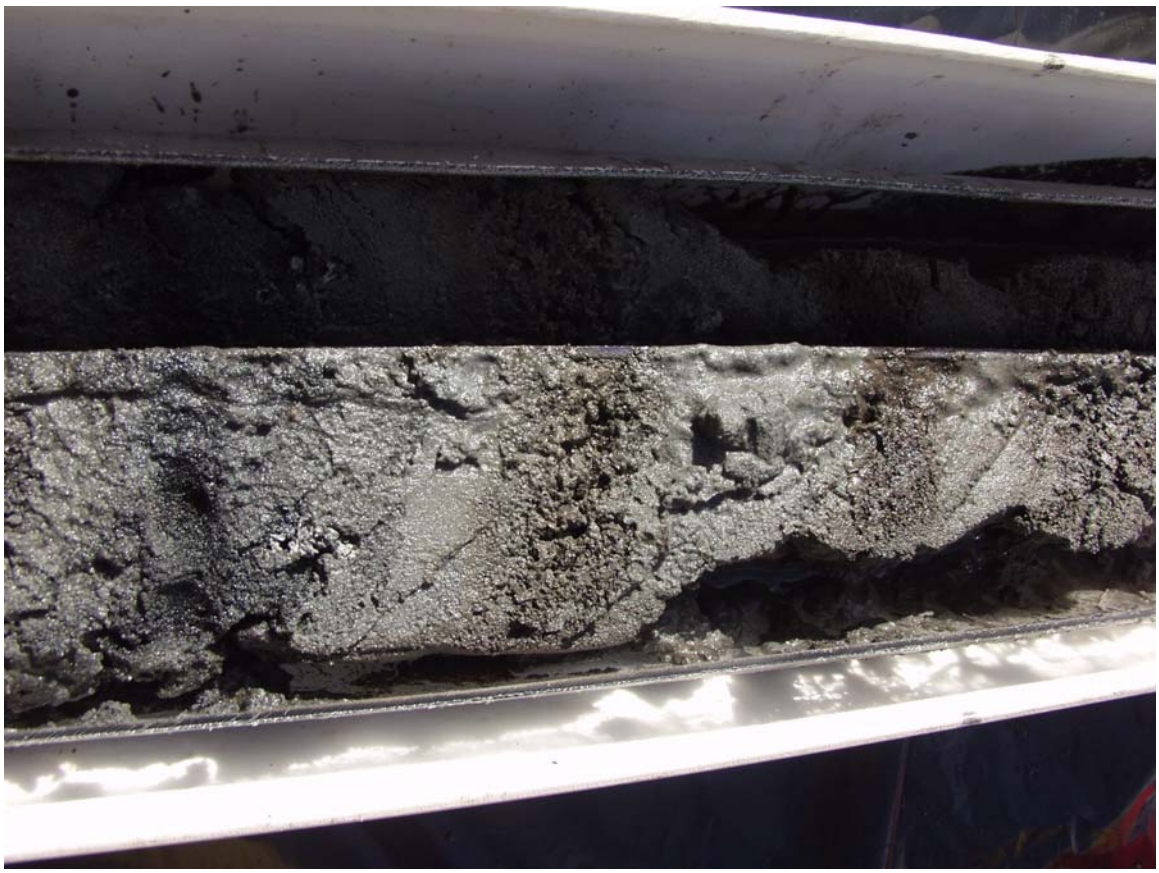
Gina – 1B: Depth Interval; 4.0 to 5.0 feet (right to left).

Gina – 1B: Depth Interval; 5.0 to 6.0 feet (right to left).

Gina – 1B: Depth Interval; 6.0 to 7.0 feet (right to left).



Gina – 1B: Depth Interval; 6.9 to 8.0 feet (right to left).



Gina – 1B: Depth Interval; Close-up of section 3.5 to 4.5 feet (right to left).

Gina – 1B: Depth Interval; Close-up of section 4.5 to 5.3 feet (right to left).

Gina – 1B: Depth Interval; Close-up of section 5.2 to 5.4 feet (top to bottom).

Platform Gina – Core 2 (GINA-2)

Gina – 2: Depth Interval; 0 – 1.5 feet (left to right).

Gina – 2: Depth Interval; 1.5 – 3.0 feet (left to right).

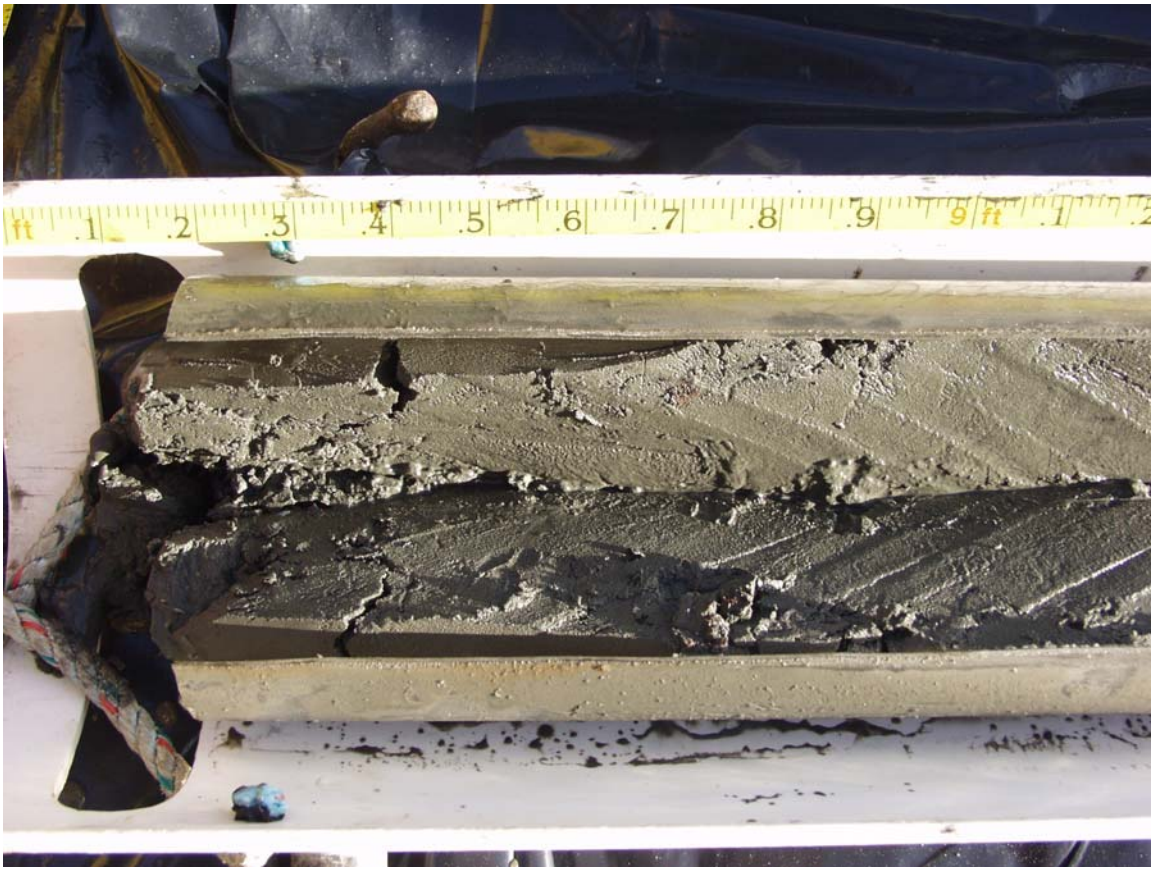
Gina – 2: Depth Interval; 3.0 – 4.5 feet (left to right).

Gina – 2: Depth Interval; 4.5 – 6.0 feet (left to right).

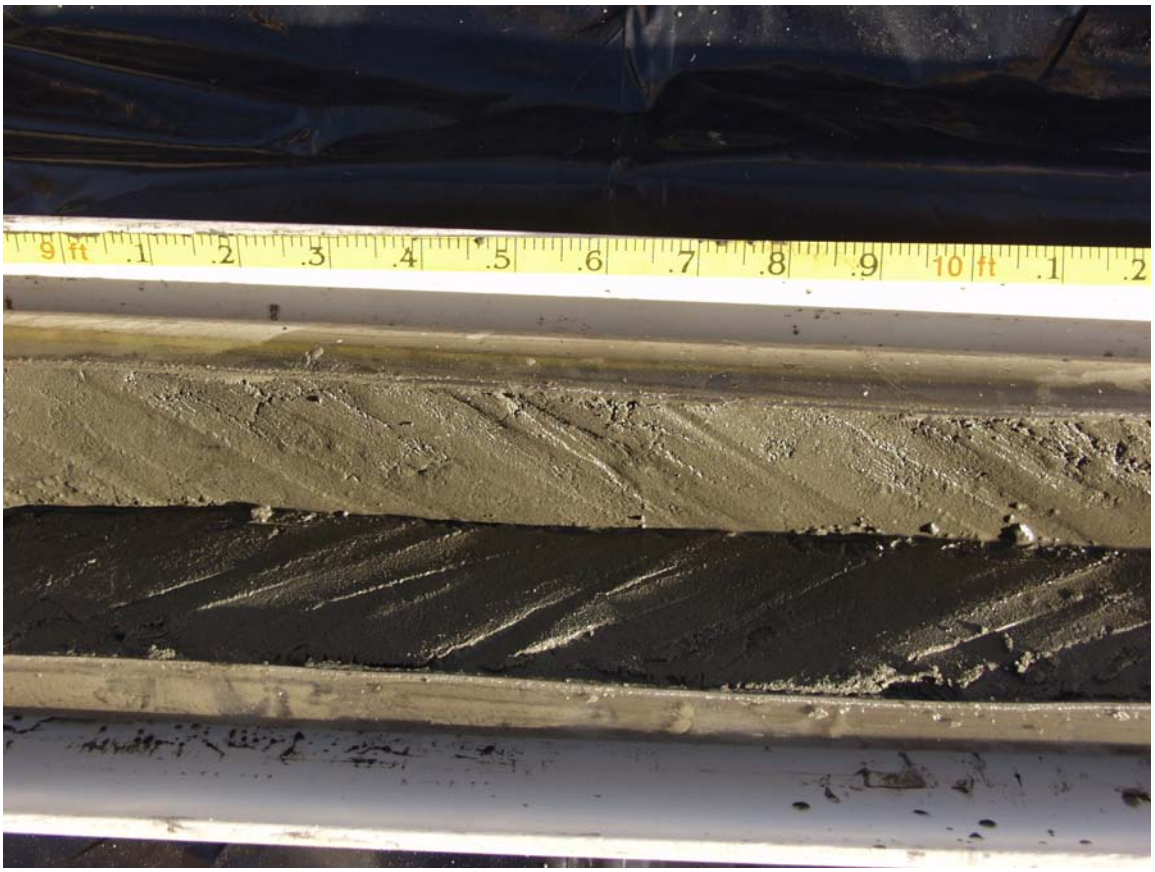
Gina – 2: Depth Interval; 6.0 – 7.5 feet (left to right).

Gina – 2: Depth Interval; Close up of area 5.7 – 6.4 feet (left to right).

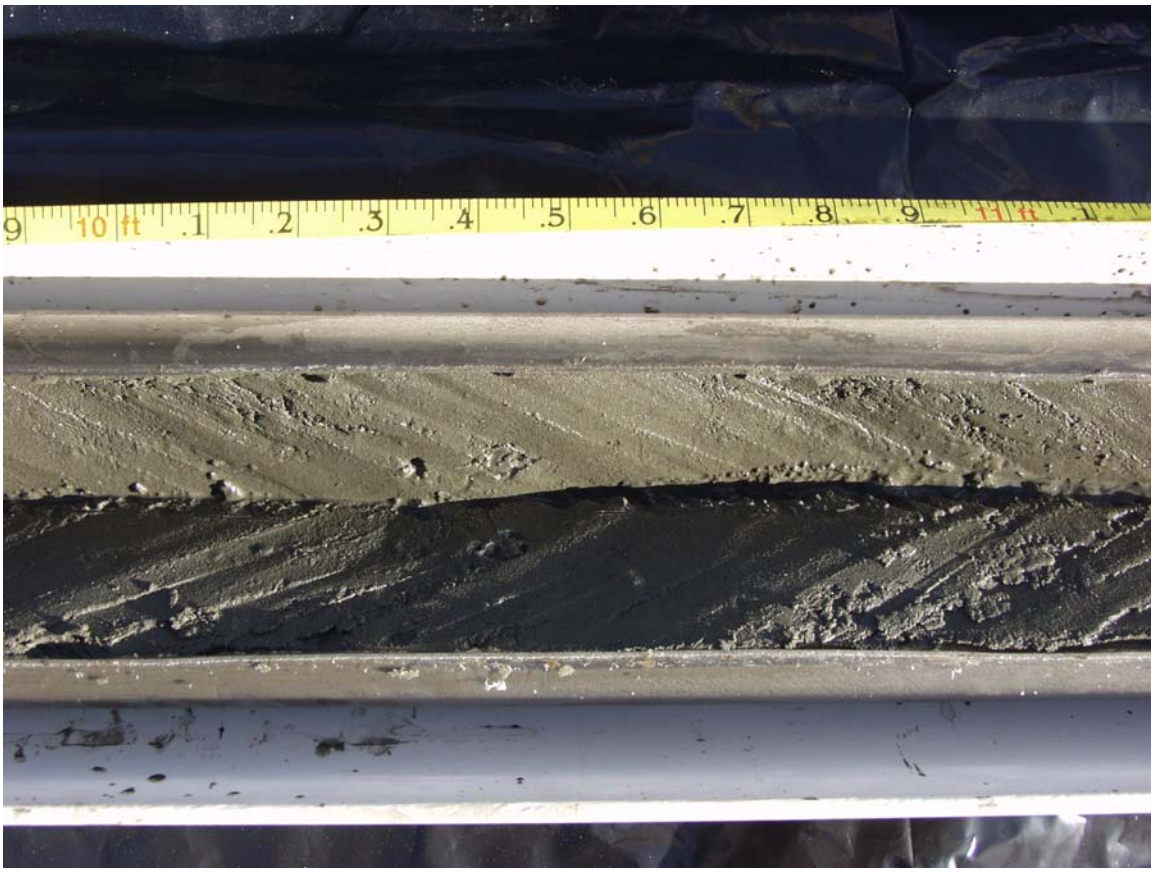
Gina – 2: Depth Interval; 8.0 to 13.5 feet (top to bottom).



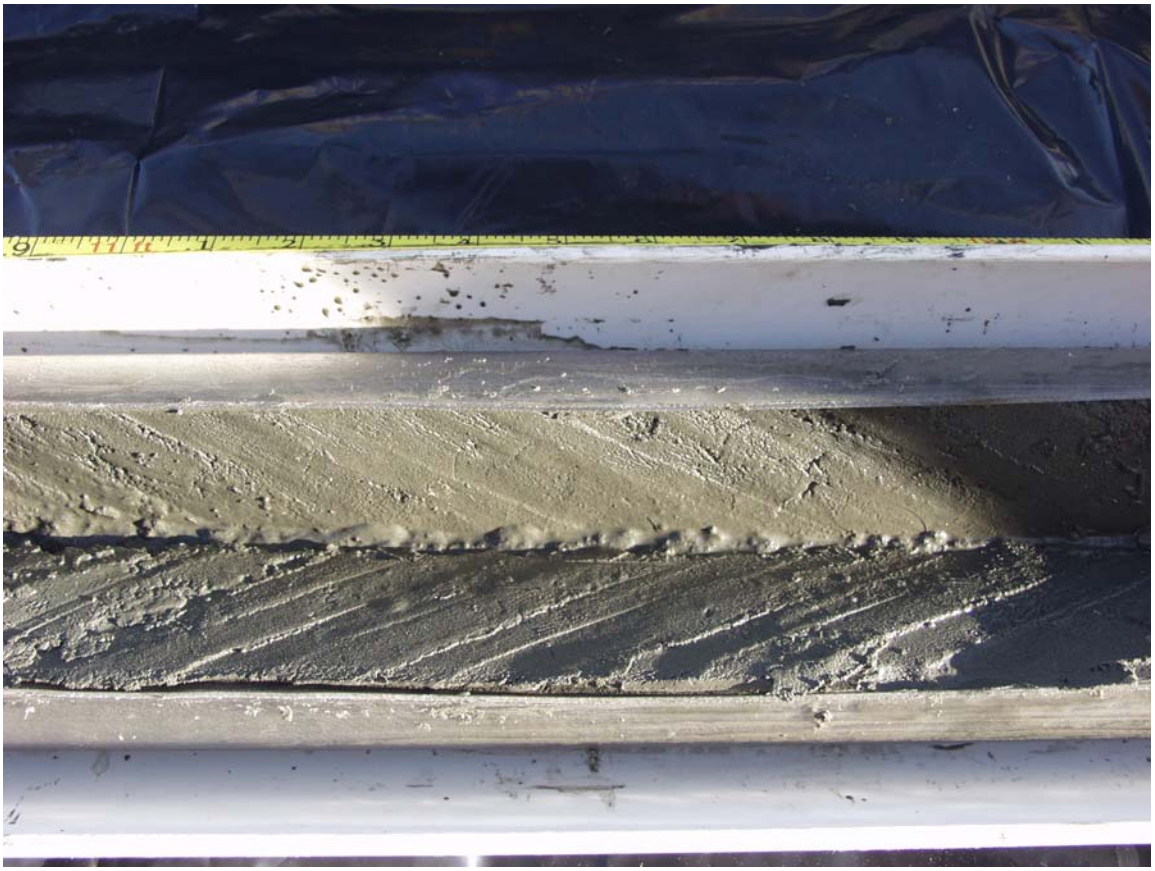
Gina – 2: Depth Interval; 8.0 – 9.0 feet (left to right).



Gina – 2: Depth Interval; 9.0 – 10.2 feet (left to right).



Gina – 2: Depth Interval; 9.9 – 11.1 feet (left to right).



Gina – 2: Depth Interval; 10.9 – 12.1 feet (left to right).

Gina – 2: Depth Interval; 11.8 – 13.5 feet (left to right).

Gina – 2: Depth Interval; Close up of section 8.25 – 8.75 feet (left to right).

Platform Gina – Core 2B (GINA-2B)

Gina – 2B: Depth Interval (split core); 0.0 to 3.8 feet (top to bottom).

Gina – 2B: Depth Interval; 3.8 to 7.5 feet (top to bottom).

Gina – 2B: Depth Interval; 0.0 – 1.1 feet (right to left).

Gina – 2B: Depth Interval; (Close up of surface material).

Gina – 2B: Depth Interval; 0.9 – 1.2 feet (right to left).

Gina – 2B: Depth Interval; (Close up of area 1.25 – 1.65 feet).

Gina – 2B: Depth Interval; 1.9 – 3.2 feet (right to left).

Gina – 2B: Depth Interval; (Close up of area 1.85 – 2.25 feet).

Gina – 2B: Depth Interval; (Close up of area 2.5 – 2.8 feet).

Gina – 2B: Depth Interval; 2.75 – 3.8 feet (right to left).

Gina – 2B: Depth Interval; (Close up of area 2.8 – 3.05 feet).

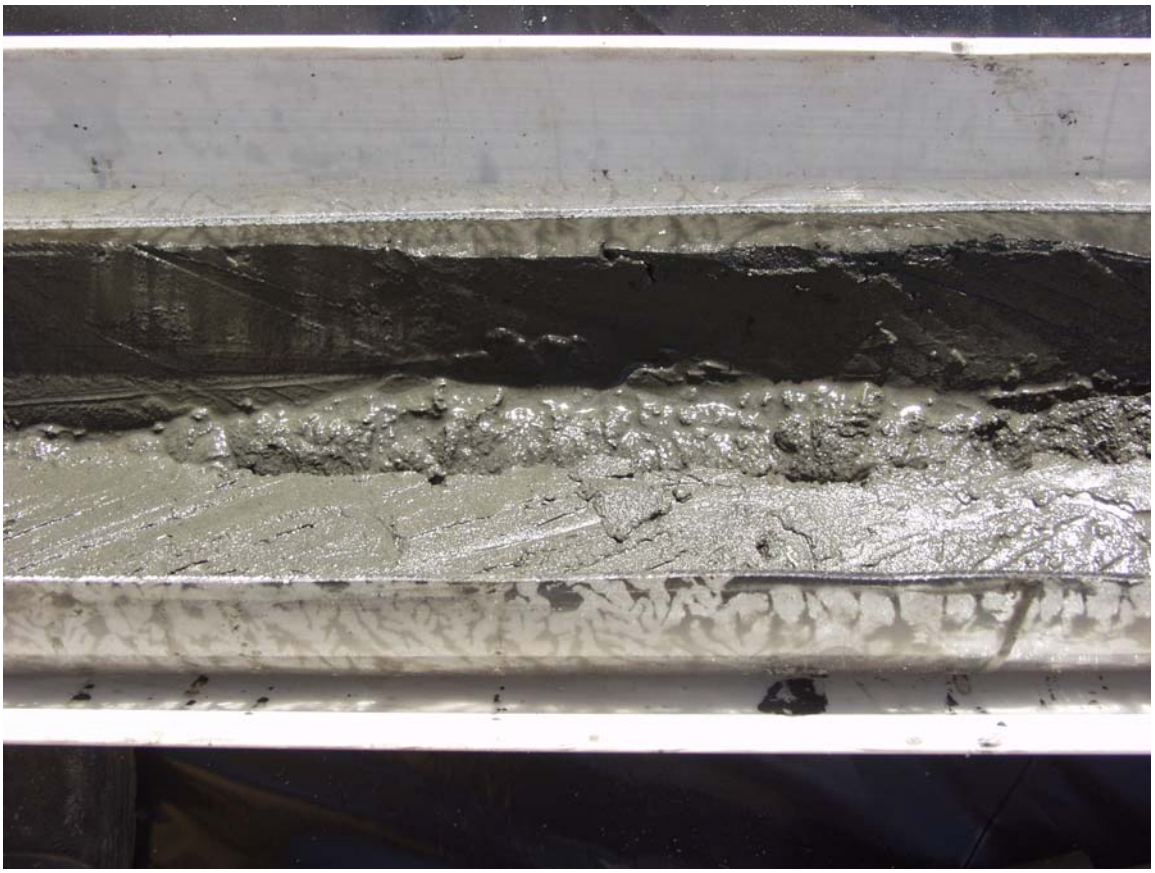
Gina – 2B: Depth Interval; (Close up of area 2.5 – 3.05 feet, left to right).

Gina – 2B: Depth Interval; (Close up of area 2.75 – 2.95 feet, left to right).

Gina – 2B: Depth Interval; (Close up of area 2.65 – 2.75 feet).

Gina – 2B: Depth Interval; (Close up of area 2.8 – 2.9 feet).

Gina – 2B: Depth Interval; 3.8 – 4.8 feet (right to left).

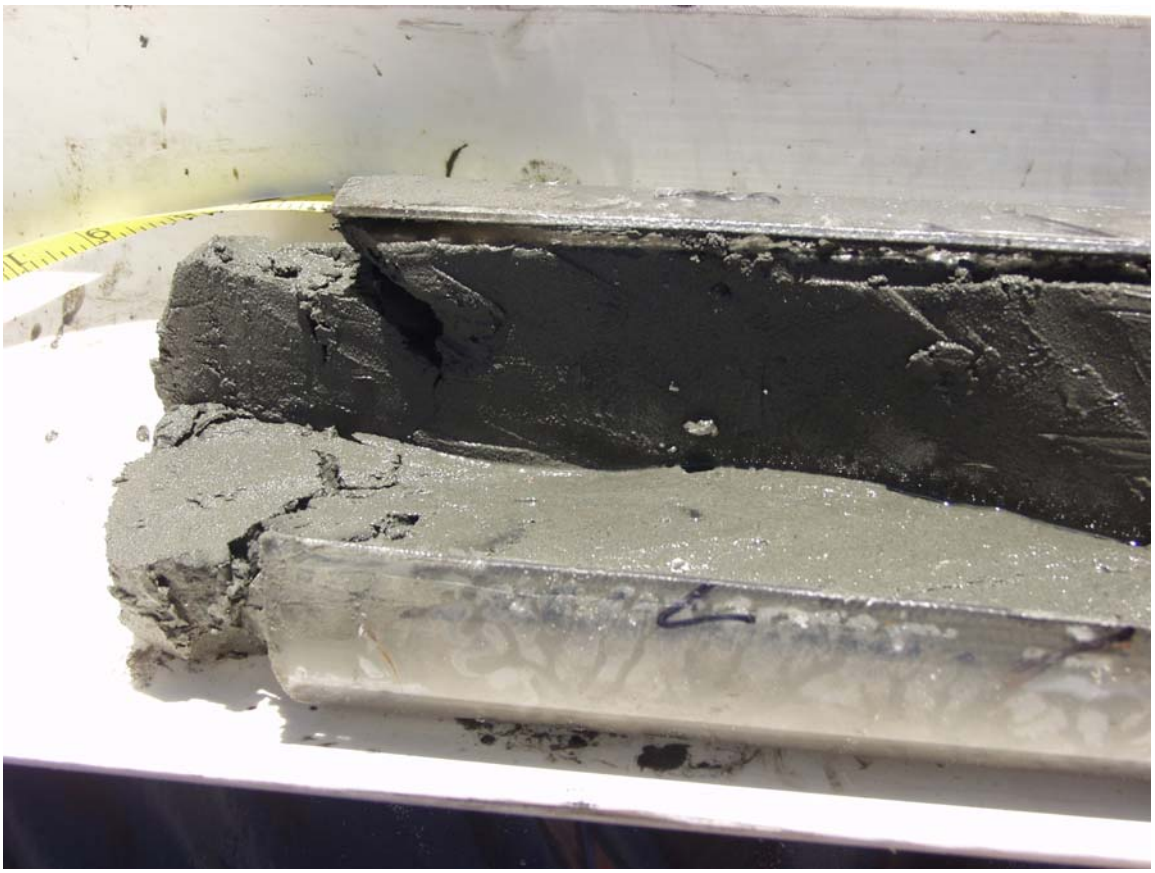


Gina – 2B: Depth Interval; 4.0 – 5.0 feet (right to left).

Gina – 2B: Depth Interval; 5.0 – 6.0 feet (right to left).

Gina – 2B: Depth Interval; 5.5 – 6.5 feet (right to left).

Gina – 2B: Depth Interval; 6.5 – 7.2 feet (right to left).



Gina – 2B: Depth Interval; 7.0 – 7.8 feet (right to left).

APPENDIX C: LABORATORY DATA REPORT

Calscience
Environmental
Laboratories, Inc.

November 15, 2006

J. Evans
Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Subject: **Calscience Work Order No.: 06-11-0207**
Client Reference: Shell Mounds 2006

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/3/2006 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Robert Stearns
Project Manager

Calscience Environmental Laboratories, Inc.

CASE NARRATIVE

Calscience Work Order No.: 06-11-0207

Provided below is a narrative of our analytical effort, including any unique features or anomalies that were encountered as part of the analysis of the sediment samples.

Sample Condition on Receipt

Fifteen marine sediment samples were received for this project on November 3, 2006. All samples were transferred to the laboratory in an ice-chest with wet ice, following strict chain-of-custody procedures. The temperature of all samples upon receipt at the laboratory was 2.8°C. The samples were logged into the Laboratory Information Management System (LIMS), given laboratory identification numbers, and stored in refrigeration units pending analysis.

One additional sample, including a 1-liter wide mouth jar and a 4-oz jar, were received with the samples, but not listed on the chain-of-custody form. The sample was labeled GINA-2-3B. The client was notified and requested this sample also be tested. No other anomalies were found upon sample receipt.

Data Summary

Testing was performed in accordance with the chain-of-custody (COC) instructions. The COC references a table for the testing requirements. The parameters and methods are listed below.

Parameter	Method
Metals	EPA 6020/7471A
PAHs, phenols, phthalates	EPA 8270C SIM
Organochlorine pest./PCBs	EPA 8081A/8082
TRPH	EPA 418.1M
Total Sulfides	EPA 376.2M
Soluble Sulfides	EPA 376.2M
Total Solids	EPA 160.3
Volatile Organics	EPA 8260B

Testing for volatiles and sulfides were performed on aliquots from a four-ounce jar supplied for this purpose. The rest of the testing was performed on sediment from a one-liter container.

Holding times

All holding time requirements were met.

Calibration

Frequency and control criteria for initial and continuing calibration verifications were met.

Blanks

Concentrations of target analytes in the method blanks were found to be below reporting limits for all testing, with the exception of chromium, which was found at a concentration just above the reporting limit All samples show chromium at levels at least 60 times higher than the level in the method blank. However, all chromium data is qualified with a B, indicating its presence in the method blank.

Laboratory Control Samples

Laboratory Control Sample (LCS) analyses were performed for each applicable method at the required frequencies. All parameters were within control limits for each method.

Matrix Spikes

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were performed on a project sample at the required frequencies . The MS/MSD recoveries and %RPD for all testing were within acceptable limits with the following exceptions.

For metals, the MS and/or MSD recoveries for barium, lead, and zinc were outside the established control limits for these compounds. In addition, the duplicate RPD for lead was high. However, for each of these metals, the LCS and LCSD recoveries and RPDs were in control, indicating a matrix interference effect. Therefore, the data is released with no further qualification.

For the pesticides, the MS and/or MSD recoveries were out-of-control low for several compounds, and the duplicate RPDs were high in several cases. The matrix required the laboratory to perform both Florisil and Sulfur cleanups to complete this determination. Because the associated LCS/LCSD recoveries and duplicate RPDs were in control, a matrix interference effect is apparent. Thus, the data is released with no further action.

For the volatile and semi-volatile organic compounds, the MS/MSD recoveries were mostly in control, with the exception of one compound (TCE) in one of the EPA 8260B batches, and one compound in the EPA 8270C analysis (fluorene). However, as was the case for metals and pesticides, the LCS and LCSD

recoveries were in control for each batch, indicating a matrix interference effect. Therefore, no further action was warranted.

Surrogates

Surrogate recoveries for all samples were within acceptable control limits.

Precision

A duplicate analysis was performed on one of the samples (GINA-2-2) as part of the analytical quality assurance effort.

Acronyms

SVOC:	Semi-volatile Organic Compound
MS/MSD:	Matrix Spike/Matrix Spike Duplicate
LCS/LCSD:	Laboratory Control Sample/Laboratory Control Sample Duplicate
RPD:	Relative Percent Difference

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 3050B
		Method:	EPA 6020
		Units:	mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-2	**06-11-0207-1**	**11/01/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	3.38	0.26	1.32		Lead	38.1	0.1	1.32	
Barium	2740	0.132	1.32		Nickel	12.7	0.1	1.32	
Cadmium	1.08	0.13	1.32		Selenium	1.17	0.66	1.32	
Chromium	21.3	0.1	1.32	B	Silver	ND	0.132	1.32	
Copper	16.3	0.1	1.32		Zinc	243	1	1.32	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-3	**06-11-0207-2**	**11/01/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	4.92	0.26	1.28		Lead	9.87	0.13	1.28	
Barium	1870	0.128	1.28		Nickel	9.66	0.13	1.28	
Cadmium	0.398	0.128	1.28		Selenium	ND	0.641	1.28	
Chromium	20.9	0.1	1.28	B	Silver	ND	0.128	1.28	
Copper	7.06	0.13	1.28		Zinc	123	1	1.28	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-1	**06-11-0207-3**	**11/01/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	4.66	0.27	1.33		Lead	41.7	0.1	1.33	
Barium	1600	0.133	1.33		Nickel	14.8	0.1	1.33	
Cadmium	1.12	0.13	1.33		Selenium	0.673	0.667	1.33	
Chromium	19.4	0.1	1.33	B	Silver	ND	0.133	1.33	
Copper	34.8	0.1	1.33		Zinc	119	1	1.33	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-2	**06-11-0207-4**	**11/01/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	3.67	0.26	1.28		Lead	15.5	0.1	1.28	
Barium	2260	0.128	1.28		Nickel	7.52	0.13	1.28	
Cadmium	0.881	0.128	1.28		Selenium	1.10	0.64	1.28	
Chromium	14.0	0.1	1.28	B	Silver	0.828	0.128	1.28	
Copper	19.1	0.1	1.28		Zinc	173	1	1.28	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-3	**06-11-0207-5**	**11/01/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	4.80	0.26	1.30		Lead	3.84	0.13	1.30	
Barium	148	0.130	1.30		Nickel	9.46	0.13	1.30	
Cadmium	0.211	0.130	1.30		Selenium	ND	0.649	1.30	
Chromium	14.7	0.1	1.30	B	Silver	ND	0.130	1.30	
Copper	5.75	0.13	1.30		Zinc	34.6	1.3	1.30	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 3050B
Method: EPA 6020
Units: mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2B-1	**06-11-0207-6**	**11/02/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	3.60	0.26	1.28		Lead	386	0.128	1.28	
Barium	1360	0.128	1.28		Nickel	10.4	0.1	1.28	
Cadmium	0.985	0.128	1.28		Selenium	ND	0.641	1.28	
Chromium	19.0	0.1	1.28	B	Silver	ND	0.128	1.28	
Copper	19.5	0.1	1.28		Zinc	349	1	1.28	

GINA-2B-2	**06-11-0207-7**	**11/02/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	6.47	0.27	1.37		Lead	35.8	0.1	1.37	
Barium	3330	0.137	1.37		Nickel	10.2	0.1	1.37	
Cadmium	1.14	0.14	1.37		Selenium	0.864	0.685	1.37	
Chromium	33.0	0.1	1.37	B	Silver	0.142	0.137	1.37	
Copper	17.2	0.1	1.37		Zinc	294	1	1.37	

GINA-2B-3	**06-11-0207-8**	**11/02/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	4.32	0.25	1.27		Lead	3.57	0.13	1.27	
Barium	86.8	0.1	1.27		Nickel	9.15	0.13	1.27	
Cadmium	0.197	0.127	1.27		Selenium	ND	0.633	1.27	
Chromium	14.0	0.1	1.27	B	Silver	ND	0.127	1.27	
Copper	5.33	0.13	1.27		Zinc	31.5	1.3	1.27	

GINA-1B-1	**06-11-0207-9**	**11/02/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	5.22	0.26	1.32		Lead	34.8	0.1	1.32	
Barium	2130	0.132	1.32		Nickel	20.8	0.1	1.32	
Cadmium	1.92	0.13	1.32		Selenium	2.17	0.66	1.32	
Chromium	24.2	0.1	1.32	B	Silver	0.143	0.132	1.32	
Copper	26.9	0.1	1.32		Zinc	145	1	1.32	

GINA-1B-2	**06-11-0207-10**	**11/02/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	3.44	0.27	1.33		Lead	51.4	0.1	1.33	
Barium	2420	0.133	1.33		Nickel	14.7	0.1	1.33	
Cadmium	1.73	0.13	1.33		Selenium	1.68	0.67	1.33	
Chromium	25.5	0.1	1.33	B	Silver	0.142	0.133	1.33	
Copper	12.7	0.1	1.33		Zinc	182	1	1.33	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 3050B
	Method:	EPA 6020
	Units:	mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-3	**06-11-0207-11**	**11/02/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	4.26	0.26	1.28		Lead	3.44	0.13	1.28	
Barium	265	0.128	1.28		Nickel	8.04	0.13	1.28	
Cadmium	0.187	0.128	1.28		Selenium	ND	0.641	1.28	
Chromium	13.5	0.1	1.28	B	Silver	ND	0.128	1.28	
Copper	5.01	0.13	1.28		Zinc	36.7	1.3	1.28	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-REF	**06-11-0207-12**	**11/02/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	4.71	0.28	1.39		Lead	5.64	0.14	1.39	
Barium	116	0.139	1.39		Nickel	11.3	0.1	1.39	
Cadmium	0.233	0.139	1.39		Selenium	ND	0.694	1.39	
Chromium	17.7	0.1	1.39	B	Silver	ND	0.139	1.39	
Copper	7.46	0.14	1.39		Zinc	43.5	1.4	1.39	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-2 BROWN	**06-11-0207-13**	**11/02/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	6.87	0.28	1.41		Lead	15.2	0.1	1.41	
Barium	2120	0.141	1.41		Nickel	44.4	0.1	1.41	
Cadmium	4.01	0.14	1.41		Selenium	4.81	0.70	1.41	
Chromium	71.0	0.1	1.41	B	Silver	0.449	0.141	1.41	
Copper	25.2	0.1	1.41		Zinc	310	1	1.41	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-2 GREY	**06-11-0207-14**	**11/02/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	3.48	0.26	1.30		Lead	7.18	0.13	1.30	
Barium	2680	0.130	1.30		Nickel	4.97	0.13	1.30	
Cadmium	0.366	0.130	1.30		Selenium	ND	0.649	1.30	
Chromium	8.83	0.13	1.30	B	Silver	ND	0.130	1.30	
Copper	6.75	0.13	1.30		Zinc	161	1	1.30	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-3B	**06-11-0207-15**	**11/01/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	3.99	0.25	1.23		Lead	3.43	0.12	1.23	
Barium	78.1	0.1	1.23		Nickel	9.62	0.12	1.23	
Cadmium	0.178	0.123	1.23		Selenium	0.699	0.617	1.23	
Chromium	14.5	0.1	1.23	B	Silver	ND	0.123	1.23	
Copper	5.19	0.12	1.23		Zinc	31.9	1.2	1.23	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 3050B
Method: EPA 6020
Units: mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-2 DUP	**06-11-0207-16**	**11/01/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	3.26	0.26	1.32		Lead	36.9	0.1	1.32	
Barium	2620	0.132	1.32		Nickel	11.7	0.1	1.32	
Cadmium	1.27	0.13	1.32		Selenium	1.34	0.66	1.32	
Chromium	17.4	0.1	1.32	B	Silver	ND	0.132	1.32	
Copper	14.5	0.1	1.32		Zinc	207	1	1.32	

Method Blank	**096-10-002-769**	**N/A**	**Solid**	**11/09/06**	**11/09/06**	**061109L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	ND	0.200	1		Lead	ND	0.100	1	
Barium	ND	0.100	1		Nickel	ND	0.100	1	
Cadmium	ND	0.100	1		Selenium	ND	0.500	1	
Chromium	0.172	0.100	1		Silver	ND	0.100	1	
Copper	ND	0.100	1		Zinc	ND	1.00	1	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: Extraction
Method: EPA 418.1M

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-2	**06-11-0207-1**	**11/01/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	380	13	1.32		mg/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-3	**06-11-0207-2**	**11/01/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	81	13	1.28		mg/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-1	**06-11-0207-3**	**11/01/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	140	13	1.33		mg/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-2	**06-11-0207-4**	**11/01/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	550	26	2.56		mg/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-3	**06-11-0207-5**	**11/01/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	36	13	1.30		mg/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2B-1	**06-11-0207-6**	**11/02/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	170	13	1.28		mg/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: Extraction
Method: EPA 418.1M

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2B-2	**06-11-0207-7**	**11/02/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	580	27	2.74		mg/kg

GINA-2B-3	**06-11-0207-8**	**11/02/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	26	13	1.28		mg/kg

GINA-1B-1	**06-11-0207-9**	**11/02/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	110	13	1.32		mg/kg

GINA-1B-2	**06-11-0207-10**	**11/02/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	960	53	5.34		mg/kg

GINA-1B-3	**06-11-0207-11**	**11/02/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	41	13	1.28		mg/kg

GINA-REF	**06-11-0207-12**	**11/02/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	25	14	1.39		mg/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: Extraction
Method: EPA 418.1M

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-2 BROWN	**06-11-0207-13**	**11/02/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	4000	140	14.1		mg/kg

GINA-1B-2 GREY	**06-11-0207-14**	**11/02/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	320	13	1.30		mg/kg

GINA-2-3B	**06-11-0207-15**	**11/01/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	27	12	1.23		mg/kg

GINA-2-2 DUP	**06-11-0207-16**	**11/01/06**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	420	13	1.32		mg/kg

Method Blank	**099-07-015-1,037**	**N/A**	**Solid**	**11/08/06**	**11/08/06**	**061108L01**

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	10	1		mg/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-2	**06-11-0207-1**	**11/01/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0264	1.32		mg/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-3	**06-11-0207-2**	**11/01/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	0.0456	0.0257	1.28		mg/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-1	**06-11-0207-3**	**11/01/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	0.105	0.027	1.34		mg/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-2	**06-11-0207-4**	**11/01/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	0.0409	0.0257	1.28		mg/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-3	**06-11-0207-5**	**11/01/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	0.0354	0.0260	1.30		mg/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2B-1	**06-11-0207-6**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	0.0402	0.0257	1.28		mg/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2B-2	**06-11-0207-7**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	0.0540	0.0275	1.37		mg/kg

GINA-2B-3	**06-11-0207-8**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	0.0327	0.0253	1.26		mg/kg

GINA-1B-1	**06-11-0207-9**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	0.0458	0.0264	1.32		mg/kg

GINA-1B-2	**06-11-0207-10**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	0.0479	0.0268	1.34		mg/kg

GINA-1B-3	**06-11-0207-11**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	0.0342	0.0257	1.28		mg/kg

GINA-REF	**06-11-0207-12**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	0.0487	0.0278	1.39		mg/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-2 BROWN	**06-11-0207-13**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	0.0545	0.0282	1.41		mg/kg

GINA-1B-2 GREY	**06-11-0207-14**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0260	1.30		mg/kg

GINA-2-3B	**06-11-0207-15**	**11/01/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0247	1.23		mg/kg

GINA-2-2 DUP	**06-11-0207-16**	**11/01/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	0.0387	0.0264	1.32		mg/kg

Method Blank	**099-12-452-4**	**N/A**	**Solid**	**11/06/06**	**11/06/06**	**061106L04**

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0200	1		mg/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 3545
		Method:	EPA 8081A/8082
		Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-2	**06-11-0207-1**	**11/01/06**	**Solid**	**11/06/06**	**11/07/06**	**061106L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.3	1.31		Endrin	ND	1.3	1.31	
Alpha-BHC	ND	1.3	1.31		Endrin Aldehyde	ND	1.3	1.31	
Beta-BHC	ND	1.3	1.31		Endrin Ketone	ND	1.3	1.31	
Delta-BHC	ND	1.3	1.31		Heptachlor	ND	1.3	1.31	
Gamma-BHC	ND	1.3	1.31		Heptachlor Epoxide	ND	1.3	1.31	
Chlordane	ND	13	1.31		Methoxychlor	ND	1.3	1.31	
Dieldrin	ND	1.3	1.31		Toxaphene	ND	26	1.31	
2,4'-DDD	ND	1.3	1.31		Aroclor-1016	ND	13	1.31	
2,4'-DDE	ND	1.3	1.31		Aroclor-1221	ND	13	1.31	
2,4'-DDT	ND	1.3	1.31		Aroclor-1232	ND	13	1.31	
4,4'-DDD	ND	1.3	1.31		Aroclor-1242	ND	13	1.31	
4,4'-DDE	ND	1.3	1.31		Aroclor-1248	ND	13	1.31	
4,4'-DDT	ND	1.3	1.31		Aroclor-1254	ND	13	1.31	
Endosulfan I	ND	1.3	1.31		Aroclor-1260	ND	13	1.31	
Endosulfan II	ND	1.3	1.31		Aroclor-1262	ND	13	1.31	
Endosulfan Sulfate	ND	1.3	1.31						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	130	50-130		Decachlorobiphenyl	79	50-130	

GINA-2-3	**06-11-0207-2**	**11/01/06**	**Solid**	**11/06/06**	**11/07/06**	**061106L09**	

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.3	1.29		Endrin	ND	1.3	1.29	
Alpha-BHC	ND	1.3	1.29		Endrin Aldehyde	ND	1.3	1.29	
Beta-BHC	ND	1.3	1.29		Endrin Ketone	ND	1.3	1.29	
Delta-BHC	ND	1.3	1.29		Heptachlor	ND	1.3	1.29	
Gamma-BHC	ND	1.3	1.29		Heptachlor Epoxide	ND	1.3	1.29	
Chlordane	ND	13	1.29		Methoxychlor	ND	1.3	1.29	
Dieldrin	ND	1.3	1.29		Toxaphene	ND	26	1.29	
2,4'-DDD	ND	1.3	1.29		Aroclor-1016	ND	13	1.29	
2,4'-DDE	ND	1.3	1.29		Aroclor-1221	ND	13	1.29	
2,4'-DDT	ND	1.3	1.29		Aroclor-1232	ND	13	1.29	
4,4'-DDD	ND	1.3	1.29		Aroclor-1242	ND	13	1.29	
4,4'-DDE	ND	1.3	1.29		Aroclor-1248	ND	13	1.29	
4,4'-DDT	ND	1.3	1.29		Aroclor-1254	ND	13	1.29	
Endosulfan I	ND	1.3	1.29		Aroclor-1260	ND	13	1.29	
Endosulfan II	ND	1.3	1.29		Aroclor-1262	ND	13	1.29	
Endosulfan Sulfate	ND	1.3	1.29						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	66	50-130		Decachlorobiphenyl	77	50-130	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 3545
		Method:	EPA 8081A/8082
		Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-1	**06-11-0207-3**	**11/01/06**	**Solid**	**11/06/06**	**11/07/06**	**061106L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.3	1.34		Endrin	ND	1.3	1.34	
Alpha-BHC	ND	1.3	1.34		Endrin Aldehyde	ND	1.3	1.34	
Beta-BHC	ND	1.3	1.34		Endrin Ketone	ND	1.3	1.34	
Delta-BHC	ND	1.3	1.34		Heptachlor	ND	1.3	1.34	
Gamma-BHC	ND	1.3	1.34		Heptachlor Epoxide	ND	1.3	1.34	
Chlordane	ND	13	1.34		Methoxychlor	ND	1.3	1.34	
Dieldrin	ND	1.3	1.34		Toxaphene	ND	27	1.34	
2,4'-DDD	ND	1.3	1.34		Aroclor-1016	ND	13	1.34	
2,4'-DDE	ND	1.3	1.34		Aroclor-1221	ND	13	1.34	
2,4'-DDT	ND	1.3	1.34		Aroclor-1232	ND	13	1.34	
4,4'-DDD	ND	1.3	1.34		Aroclor-1242	ND	13	1.34	
4,4'-DDE	ND	1.3	1.34		Aroclor-1248	ND	13	1.34	
4,4'-DDT	ND	1.3	1.34		Aroclor-1254	ND	13	1.34	
Endosulfan I	ND	1.3	1.34		Aroclor-1260	ND	13	1.34	
Endosulfan II	ND	1.3	1.34		Aroclor-1262	ND	13	1.34	
Endosulfan Sulfate	ND	1.3	1.34						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	115	50-130		Decachlorobiphenyl	84	50-130	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-2	**06-11-0207-4**	**11/01/06**	**Solid**	**11/06/06**	**11/07/06**	**061106L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.3	1.28		Endrin	ND	1.3	1.28	
Alpha-BHC	ND	1.3	1.28		Endrin Aldehyde	ND	1.3	1.28	
Beta-BHC	ND	1.3	1.28		Endrin Ketone	ND	1.3	1.28	
Delta-BHC	ND	1.3	1.28		Heptachlor	ND	1.3	1.28	
Gamma-BHC	ND	1.3	1.28		Heptachlor Epoxide	ND	1.3	1.28	
Chlordane	ND	13	1.28		Methoxychlor	ND	1.3	1.28	
Dieldrin	ND	1.3	1.28		Toxaphene	ND	26	1.28	
2,4'-DDD	ND	1.3	1.28		Aroclor-1016	ND	13	1.28	
2,4'-DDE	ND	1.3	1.28		Aroclor-1221	ND	13	1.28	
2,4'-DDT	ND	1.3	1.28		Aroclor-1232	ND	13	1.28	
4,4'-DDD	ND	1.3	1.28		Aroclor-1242	ND	13	1.28	
4,4'-DDE	ND	1.3	1.28		Aroclor-1248	ND	13	1.28	
4,4'-DDT	ND	1.3	1.28		Aroclor-1254	ND	13	1.28	
Endosulfan I	ND	1.3	1.28		Aroclor-1260	ND	13	1.28	
Endosulfan II	ND	1.3	1.28		Aroclor-1262	ND	13	1.28	
Endosulfan Sulfate	ND	1.3	1.28						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	70	50-130		Decachlorobiphenyl	76	50-130	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 3545
	Method:	EPA 8081A/8082
	Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-3	**06-11-0207-5**	**11/01/06**	**Solid**	**11/06/06**	**11/07/06**	**061106L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.3	1.3		Endrin	ND	1.3	1.3	
Alpha-BHC	ND	1.3	1.3		Endrin Aldehyde	ND	1.3	1.3	
Beta-BHC	ND	1.3	1.3		Endrin Ketone	ND	1.3	1.3	
Delta-BHC	ND	1.3	1.3		Heptachlor	ND	1.3	1.3	
Gamma-BHC	ND	1.3	1.3		Heptachlor Epoxide	ND	1.3	1.3	
Chlordane	ND	13	1.3		Methoxychlor	ND	1.3	1.3	
Dieldrin	ND	1.3	1.3		Toxaphene	ND	26	1.3	
2,4'-DDD	ND	1.3	1.3		Aroclor-1016	ND	13	1.3	
2,4'-DDE	ND	1.3	1.3		Aroclor-1221	ND	13	1.3	
2,4'-DDT	ND	1.3	1.3		Aroclor-1232	ND	13	1.3	
4,4'-DDD	ND	1.3	1.3		Aroclor-1242	ND	13	1.3	
4,4'-DDE	ND	1.3	1.3		Aroclor-1248	ND	13	1.3	
4,4'-DDT	ND	1.3	1.3		Aroclor-1254	ND	13	1.3	
Endosulfan I	ND	1.3	1.3		Aroclor-1260	ND	13	1.3	
Endosulfan II	ND	1.3	1.3		Aroclor-1262	ND	13	1.3	
Endosulfan Sulfate	ND	1.3	1.3						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	66	50-130		Decachlorobiphenyl	74	50-130	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2B-1	**06-11-0207-6**	**11/02/06**	**Solid**	**11/06/06**	**11/07/06**	**061106L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.3	1.28		Endrin	ND	1.3	1.28	
Alpha-BHC	ND	1.3	1.28		Endrin Aldehyde	ND	1.3	1.28	
Beta-BHC	ND	1.3	1.28		Endrin Ketone	ND	1.3	1.28	
Delta-BHC	ND	1.3	1.28		Heptachlor	ND	1.3	1.28	
Gamma-BHC	ND	1.3	1.28		Heptachlor Epoxide	ND	1.3	1.28	
Chlordane	ND	13	1.28		Methoxychlor	ND	1.3	1.28	
Dieldrin	ND	1.3	1.28		Toxaphene	ND	26	1.28	
2,4'-DDD	ND	1.3	1.28		Aroclor-1016	ND	13	1.28	
2,4'-DDE	ND	1.3	1.28		Aroclor-1221	ND	13	1.28	
2,4'-DDT	ND	1.3	1.28		Aroclor-1232	ND	13	1.28	
4,4'-DDD	ND	1.3	1.28		Aroclor-1242	ND	13	1.28	
4,4'-DDE	ND	1.3	1.28		Aroclor-1248	ND	13	1.28	
4,4'-DDT	ND	1.3	1.28		Aroclor-1254	ND	13	1.28	
Endosulfan I	ND	1.3	1.28		Aroclor-1260	ND	13	1.28	
Endosulfan II	ND	1.3	1.28		Aroclor-1262	ND	13	1.28	
Endosulfan Sulfate	ND	1.3	1.28						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	92	50-130		Decachlorobiphenyl	81	50-130	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 3545
		Method:	EPA 8081A/8082
		Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2B-2	**06-11-0207-7**	**11/02/06**	**Solid**	**11/06/06**	**11/07/06**	**061106L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.4	1.37		Endrin	ND	1.4	1.37	
Alpha-BHC	ND	1.4	1.37		Endrin Aldehyde	ND	1.4	1.37	
Beta-BHC	ND	1.4	1.37		Endrin Ketone	ND	1.4	1.37	
Delta-BHC	ND	1.4	1.37		Heptachlor	ND	1.4	1.37	
Gamma-BHC	ND	1.4	1.37		Heptachlor Epoxide	ND	1.4	1.37	
Chlordane	ND	14	1.37		Methoxychlor	ND	1.4	1.37	
Dieldrin	ND	1.4	1.37		Toxaphene	ND	27	1.37	
2,4'-DDD	ND	1.4	1.37		Aroclor-1016	ND	14	1.37	
2,4'-DDE	ND	1.4	1.37		Aroclor-1221	ND	14	1.37	
2,4'-DDT	ND	1.4	1.37		Aroclor-1232	ND	14	1.37	
4,4'-DDD	ND	1.4	1.37		Aroclor-1242	ND	14	1.37	
4,4'-DDE	ND	1.4	1.37		Aroclor-1248	ND	14	1.37	
4,4'-DDT	ND	1.4	1.37		Aroclor-1254	ND	14	1.37	
Endosulfan I	ND	1.4	1.37		Aroclor-1260	ND	14	1.37	
Endosulfan II	ND	1.4	1.37		Aroclor-1262	ND	14	1.37	
Endosulfan Sulfate	ND	1.4	1.37						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	86	50-130		Decachlorobiphenyl	88	50-130	

GINA-2B-3	**06-11-0207-8**	**11/02/06**	**Solid**	**11/06/06**	**11/07/06**	**061106L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.3	1.27		Endrin	ND	1.3	1.27	
Alpha-BHC	ND	1.3	1.27		Endrin Aldehyde	ND	1.3	1.27	
Beta-BHC	ND	1.3	1.27		Endrin Ketone	ND	1.3	1.27	
Delta-BHC	ND	1.3	1.27		Heptachlor	ND	1.3	1.27	
Gamma-BHC	ND	1.3	1.27		Heptachlor Epoxide	ND	1.3	1.27	
Chlordane	ND	13	1.27		Methoxychlor	ND	1.3	1.27	
Dieldrin	ND	1.3	1.27		Toxaphene	ND	25	1.27	
2,4'-DDD	ND	1.3	1.27		Aroclor-1016	ND	13	1.27	
2,4'-DDE	ND	1.3	1.27		Aroclor-1221	ND	13	1.27	
2,4'-DDT	ND	1.3	1.27		Aroclor-1232	ND	13	1.27	
4,4'-DDD	ND	1.3	1.27		Aroclor-1242	ND	13	1.27	
4,4'-DDE	ND	1.3	1.27		Aroclor-1248	ND	13	1.27	
4,4'-DDT	ND	1.3	1.27		Aroclor-1254	ND	13	1.27	
Endosulfan I	ND	1.3	1.27		Aroclor-1260	ND	13	1.27	
Endosulfan II	ND	1.3	1.27		Aroclor-1262	ND	13	1.27	
Endosulfan Sulfate	ND	1.3	1.27						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	64	50-130		Decachlorobiphenyl	71	50-130	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 3545
		Method:	EPA 8081A/8082
		Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-1	**06-11-0207-9**	**11/02/06**	**Solid**	**11/06/06**	**11/09/06**	**061106L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.3	1.31		Endrin	ND	1.3	1.31	
Alpha-BHC	ND	1.3	1.31		Endrin Aldehyde	ND	1.3	1.31	
Beta-BHC	ND	1.3	1.31		Endrin Ketone	ND	1.3	1.31	
Delta-BHC	ND	1.3	1.31		Heptachlor	ND	1.3	1.31	
Gamma-BHC	ND	1.3	1.31		Heptachlor Epoxide	ND	1.3	1.31	
Chlordane	ND	13	1.31		Methoxychlor	ND	1.3	1.31	
Dieldrin	ND	1.3	1.31		Toxaphene	ND	26	1.31	
2,4'-DDD	ND	1.3	1.31		Aroclor-1016	ND	13	1.31	
2,4'-DDE	ND	1.3	1.31		Aroclor-1221	ND	13	1.31	
2,4'-DDT	ND	1.3	1.31		Aroclor-1232	ND	13	1.31	
4,4'-DDD	ND	1.3	1.31		Aroclor-1242	ND	13	1.31	
4,4'-DDE	ND	1.3	1.31		Aroclor-1248	ND	13	1.31	
4,4'-DDT	ND	1.3	1.31		Aroclor-1254	ND	13	1.31	
Endosulfan I	ND	1.3	1.31		Aroclor-1260	ND	13	1.31	
Endosulfan II	ND	1.3	1.31		Aroclor-1262	ND	13	1.31	
Endosulfan Sulfate	ND	1.3	1.31						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	75	50-130		Decachlorobiphenyl	62	50-130	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-2	**06-11-0207-10**	**11/02/06**	**Solid**	**11/06/06**	**11/07/06**	**061106L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.3	1.33		Endrin	ND	1.3	1.33	
Alpha-BHC	ND	1.3	1.33		Endrin Aldehyde	ND	1.3	1.33	
Beta-BHC	ND	1.3	1.33		Endrin Ketone	ND	1.3	1.33	
Delta-BHC	ND	1.3	1.33		Heptachlor	ND	1.3	1.33	
Gamma-BHC	ND	1.3	1.33		Heptachlor Epoxide	ND	1.3	1.33	
Chlordane	ND	13	1.33		Methoxychlor	ND	1.3	1.33	
Dieldrin	ND	1.3	1.33		Toxaphene	ND	27	1.33	
2,4'-DDD	ND	1.3	1.33		Aroclor-1016	ND	13	1.33	
2,4'-DDE	ND	1.3	1.33		Aroclor-1221	ND	13	1.33	
2,4'-DDT	ND	1.3	1.33		Aroclor-1232	ND	13	1.33	
4,4'-DDD	ND	1.3	1.33		Aroclor-1242	ND	13	1.33	
4,4'-DDE	ND	1.3	1.33		Aroclor-1248	ND	13	1.33	
4,4'-DDT	ND	1.3	1.33		Aroclor-1254	ND	13	1.33	
Endosulfan I	ND	1.3	1.33		Aroclor-1260	ND	13	1.33	
Endosulfan II	ND	1.3	1.33		Aroclor-1262	ND	13	1.33	
Endosulfan Sulfate	ND	1.3	1.33						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	81	50-130		Decachlorobiphenyl	71	50-130	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 3545
		Method:	EPA 8081A/8082
		Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-3	**06-11-0207-11**	**11/02/06**	**Solid**	**11/06/06**	**11/07/06**	**061106L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.3	1.28		Endrin	ND	1.3	1.28	
Alpha-BHC	ND	1.3	1.28		Endrin Aldehyde	ND	1.3	1.28	
Beta-BHC	ND	1.3	1.28		Endrin Ketone	ND	1.3	1.28	
Delta-BHC	ND	1.3	1.28		Heptachlor	ND	1.3	1.28	
Gamma-BHC	ND	1.3	1.28		Heptachlor Epoxide	ND	1.3	1.28	
Chlordane	ND	13	1.28		Methoxychlor	ND	1.3	1.28	
Dieldrin	ND	1.3	1.28		Toxaphene	ND	26	1.28	
2,4'-DDD	ND	1.3	1.28		Aroclor-1016	ND	13	1.28	
2,4'-DDE	ND	1.3	1.28		Aroclor-1221	ND	13	1.28	
2,4'-DDT	ND	1.3	1.28		Aroclor-1232	ND	13	1.28	
4,4'-DDD	ND	1.3	1.28		Aroclor-1242	ND	13	1.28	
4,4'-DDE	ND	1.3	1.28		Aroclor-1248	ND	13	1.28	
4,4'-DDT	ND	1.3	1.28		Aroclor-1254	ND	13	1.28	
Endosulfan I	ND	1.3	1.28		Aroclor-1260	ND	13	1.28	
Endosulfan II	ND	1.3	1.28		Aroclor-1262	ND	13	1.28	
Endosulfan Sulfate	ND	1.3	1.28						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	66	50-130		Decachlorobiphenyl	71	50-130	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-REF	**06-11-0207-12**	**11/02/06**	**Solid**	**11/06/06**	**11/07/06**	**061106L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.4	1.39		Endrin	ND	1.4	1.39	
Alpha-BHC	ND	1.4	1.39		Endrin Aldehyde	ND	1.4	1.39	
Beta-BHC	ND	1.4	1.39		Endrin Ketone	ND	1.4	1.39	
Delta-BHC	ND	1.4	1.39		Heptachlor	ND	1.4	1.39	
Gamma-BHC	ND	1.4	1.39		Heptachlor Epoxide	ND	1.4	1.39	
Chlordane	ND	14	1.39		Methoxychlor	ND	1.4	1.39	
Dieldrin	ND	1.4	1.39		Toxaphene	ND	28	1.39	
2,4'-DDD	ND	1.4	1.39		Aroclor-1016	ND	14	1.39	
2,4'-DDE	ND	1.4	1.39		Aroclor-1221	ND	14	1.39	
2,4'-DDT	ND	1.4	1.39		Aroclor-1232	ND	14	1.39	
4,4'-DDD	ND	1.4	1.39		Aroclor-1242	ND	14	1.39	
4,4'-DDE	ND	1.4	1.39		Aroclor-1248	ND	14	1.39	
4,4'-DDT	ND	1.4	1.39		Aroclor-1254	ND	14	1.39	
Endosulfan I	ND	1.4	1.39		Aroclor-1260	ND	14	1.39	
Endosulfan II	ND	1.4	1.39		Aroclor-1262	ND	14	1.39	
Endosulfan Sulfate	ND	1.4	1.39						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	76	50-130		Decachlorobiphenyl	78	50-130	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 3545
		Method:	EPA 8081A/8082
		Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-3B	**06-11-0207-15**	**11/01/06**	**Solid**	**11/06/06**	**11/07/06**	**061106L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.2	1.24		Endrin	ND	1.2	1.24	
Alpha-BHC	ND	1.2	1.24		Endrin Aldehyde	ND	1.2	1.24	
Beta-BHC	ND	1.2	1.24		Endrin Ketone	ND	1.2	1.24	
Delta-BHC	ND	1.2	1.24		Heptachlor	ND	1.2	1.24	
Gamma-BHC	ND	1.2	1.24		Heptachlor Epoxide	ND	1.2	1.24	
Chlordane	ND	12	1.24		Methoxychlor	ND	1.2	1.24	
Dieldrin	ND	1.2	1.24		Toxaphene	ND	25	1.24	
2,4'-DDD	ND	1.2	1.24		Aroclor-1016	ND	12	1.24	
2,4'-DDE	ND	1.2	1.24		Aroclor-1221	ND	12	1.24	
2,4'-DDT	ND	1.2	1.24		Aroclor-1232	ND	12	1.24	
4,4'-DDD	ND	1.2	1.24		Aroclor-1242	ND	12	1.24	
4,4'-DDE	ND	1.2	1.24		Aroclor-1248	ND	12	1.24	
4,4'-DDT	ND	1.2	1.24		Aroclor-1254	ND	12	1.24	
Endosulfan I	ND	1.2	1.24		Aroclor-1260	ND	12	1.24	
Endosulfan II	ND	1.2	1.24		Aroclor-1262	ND	12	1.24	
Endosulfan Sulfate	ND	1.2	1.24						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	63	50-130		Decachlorobiphenyl	69	50-130	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-2 DUP	**06-11-0207-16**	**11/01/06**	**Solid**	**11/06/06**	**11/07/06**	**061106L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.3	1.31		Endrin	ND	1.3	1.31	
Alpha-BHC	ND	1.3	1.31		Endrin Aldehyde	ND	1.3	1.31	
Beta-BHC	ND	1.3	1.31		Endrin Ketone	ND	1.3	1.31	
Delta-BHC	ND	1.3	1.31		Heptachlor	ND	1.3	1.31	
Gamma-BHC	ND	1.3	1.31		Heptachlor Epoxide	ND	1.3	1.31	
Chlordane	ND	13	1.31		Methoxychlor	ND	1.3	1.31	
Dieldrin	ND	1.3	1.31		Toxaphene	ND	26	1.31	
2,4'-DDD	ND	1.3	1.31		Aroclor-1016	ND	13	1.31	
2,4'-DDE	ND	1.3	1.31		Aroclor-1221	ND	13	1.31	
2,4'-DDT	ND	1.3	1.31		Aroclor-1232	ND	13	1.31	
4,4'-DDD	ND	1.3	1.31		Aroclor-1242	ND	13	1.31	
4,4'-DDE	ND	1.3	1.31		Aroclor-1248	ND	13	1.31	
4,4'-DDT	ND	1.3	1.31		Aroclor-1254	ND	13	1.31	
Endosulfan I	ND	1.3	1.31		Aroclor-1260	ND	13	1.31	
Endosulfan II	ND	1.3	1.31		Aroclor-1262	ND	13	1.31	
Endosulfan Sulfate	ND	1.3	1.31						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	70	50-130		Decachlorobiphenyl	75	50-130	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 3545
	Method:	EPA 8081A/8082
	Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-07-033-45**	**N/A**	**Solid**	**11/06/06**	**11/07/06**	**061106L09**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aldrin	ND	1.0	1		Endrin	ND	1.0	1	
Alpha-BHC	ND	1.0	1		Endrin Aldehyde	ND	1.0	1	
Beta-BHC	ND	1.0	1		Endrin Ketone	ND	1.0	1	
Delta-BHC	ND	1.0	1		Heptachlor	ND	1.0	1	
Gamma-BHC	ND	1.0	1		Heptachlor Epoxide	ND	1.0	1	
Chlordane	ND	10	1		Methoxychlor	ND	1.0	1	
Dieldrin	ND	1.0	1		Toxaphene	ND	20	1	
2,4'-DDD	ND	1.0	1		Aroclor-1016	ND	10	1	
2,4'-DDE	ND	1.0	1		Aroclor-1221	ND	10	1	
2,4'-DDT	ND	1.0	1		Aroclor-1232	ND	10	1	
4,4'-DDD	ND	1.0	1		Aroclor-1242	ND	10	1	
4,4'-DDE	ND	1.0	1		Aroclor-1248	ND	10	1	
4,4'-DDT	ND	1.0	1		Aroclor-1254	ND	10	1	
Endosulfan I	ND	1.0	1		Aroclor-1260	ND	10	1	
Endosulfan II	ND	1.0	1		Aroclor-1262	ND	10	1	
Endosulfan Sulfate	ND	1.0	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	77	50-130		Decachlorobiphenyl	97	50-130	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 3545
	Method:	EPA 8270C SIM
	Units:	mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-2	**06-11-0207-1**	**11/01/06**	**Solid**	**11/06/06**	**11/08/06**	**061106L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.013	1.31		Benzo (g,h,i) Perylene	ND	0.026	1.31	
2,4,6-Trichlorophenol	ND	0.013	1.31		Benzo (k) Fluoranthene	ND	0.026	1.31	
2,4-Dichlorophenol	ND	0.026	1.31		Bis(2-Ethylhexyl) Phthalate	0.11	0.03	1.31	
2,4-Dimethylphenol	ND	0.026	1.31		Butyl Benzyl Phthalate	ND	0.026	1.31	
2,4-Dinitrophenol	ND	0.66	1.31		Chrysene	ND	0.026	1.31	
2-Chlorophenol	ND	0.026	1.31		Di-n-Butyl Phthalate	ND	0.026	1.31	
2-Methylphenol	ND	0.026	1.31		Di-n-Octyl Phthalate	ND	0.026	1.31	
2-Nitrophenol	ND	0.026	1.31		Dibenz (a,h) Anthracene	ND	0.026	1.31	
3/4-Methylphenol	ND	0.026	1.31		Diethyl Phthalate	ND	0.026	1.31	
4,6-Dinitro-2-Methylphenol	ND	0.66	1.31		Dimethyl Phthalate	ND	0.026	1.31	
4-Chloro-3-Methylphenol	ND	0.026	1.31		Fluoranthene	ND	0.026	1.31	
4-Nitrophenol	ND	0.66	1.31		Fluorene	ND	0.026	1.31	
Acenaphthene	ND	0.026	1.31		Indeno (1,2,3-c,d) Pyrene	ND	0.026	1.31	
Acenaphthylene	ND	0.026	1.31		Naphthalene	ND	0.026	1.31	
Anthracene	ND	0.026	1.31		Pentachlorophenol	ND	0.66	1.31	
Benzo (a) Anthracene	ND	0.026	1.31		Phenanthrene	ND	0.026	1.31	
Benzo (a) Pyrene	0.13	0.03	1.31		Phenol	ND	0.026	1.31	
Benzo (b) Fluoranthene	ND	0.026	1.31		Pyrene	ND	0.026	1.31	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	57	32-143			2-Fluorobiphenyl	57	14-146		
2-Fluorophenol	72	15-138			Nitrobenzene-d5	73	18-162		
p-Terphenyl-d14	54	34-148			Phenol-d6	76	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 3545
	Method:	EPA 8270C SIM
	Units:	mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-3	**06-11-0207-2**	**11/01/06**	**Solid**	**11/06/06**	**11/08/06**	**061106L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.013	1.29		Benzo (g,h,i) Perylene	ND	0.026	1.29	
2,4,6-Trichlorophenol	ND	0.013	1.29		Benzo (k) Fluoranthene	ND	0.026	1.29	
2,4-Dichlorophenol	ND	0.026	1.29		Bis(2-Ethylhexyl) Phthalate	0.095	0.026	1.29	
2,4-Dimethylphenol	ND	0.026	1.29		Butyl Benzyl Phthalate	ND	0.026	1.29	
2,4-Dinitrophenol	ND	0.65	1.29		Chrysene	ND	0.026	1.29	
2-Chlorophenol	ND	0.026	1.29		Di-n-Butyl Phthalate	ND	0.026	1.29	
2-Methylphenol	ND	0.026	1.29		Di-n-Octyl Phthalate	ND	0.026	1.29	
2-Nitrophenol	ND	0.026	1.29		Dibenz (a,h) Anthracene	ND	0.026	1.29	
3/4-Methylphenol	ND	0.026	1.29		Diethyl Phthalate	ND	0.026	1.29	
4,6-Dinitro-2-Methylphenol	ND	0.65	1.29		Dimethyl Phthalate	ND	0.026	1.29	
4-Chloro-3-Methylphenol	ND	0.026	1.29		Fluoranthene	ND	0.026	1.29	
4-Nitrophenol	ND	0.65	1.29		Fluorene	ND	0.026	1.29	
Acenaphthene	ND	0.026	1.29		Indeno (1,2,3-c,d) Pyrene	ND	0.026	1.29	
Acenaphthylene	ND	0.026	1.29		Naphthalene	ND	0.026	1.29	
Anthracene	ND	0.026	1.29		Pentachlorophenol	ND	0.65	1.29	
Benzo (a) Anthracene	ND	0.026	1.29		Phenanthrene	ND	0.026	1.29	
Benzo (a) Pyrene	ND	0.026	1.29		Phenol	ND	0.026	1.29	
Benzo (b) Fluoranthene	ND	0.026	1.29		Pyrene	ND	0.026	1.29	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	60	32-143			2-Fluorobiphenyl	64	14-146		
2-Fluorophenol	83	15-138			Nitrobenzene-d5	91	18-162		
p-Terphenyl-d14	55	34-148			Phenol-d6	87	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 3545
		Method:	EPA 8270C SIM
		Units:	mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-1	**06-11-0207-3**	**11/01/06**	**Solid**	**11/06/06**	**11/08/06**	**061106L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.013	1.34		Benzo (g,h,i) Perylene	ND	0.027	1.34	
2,4,6-Trichlorophenol	ND	0.013	1.34		Benzo (k) Fluoranthene	ND	0.027	1.34	
2,4-Dichlorophenol	ND	0.027	1.34		Bis(2-Ethylhexyl) Phthalate	0.089	0.027	1.34	
2,4-Dimethylphenol	ND	0.027	1.34		Butyl Benzyl Phthalate	ND	0.027	1.34	
2,4-Dinitrophenol	ND	0.67	1.34		Chrysene	ND	0.027	1.34	
2-Chlorophenol	ND	0.027	1.34		Di-n-Butyl Phthalate	ND	0.027	1.34	
2-Methylphenol	ND	0.027	1.34		Di-n-Octyl Phthalate	ND	0.027	1.34	
2-Nitrophenol	ND	0.027	1.34		Dibenz (a,h) Anthracene	ND	0.027	1.34	
3/4-Methylphenol	ND	0.027	1.34		Diethyl Phthalate	ND	0.027	1.34	
4,6-Dinitro-2-Methylphenol	ND	0.67	1.34		Dimethyl Phthalate	ND	0.027	1.34	
4-Chloro-3-Methylphenol	ND	0.027	1.34		Fluoranthene	ND	0.027	1.34	
4-Nitrophenol	ND	0.67	1.34		Fluorene	ND	0.027	1.34	
Acenaphthene	ND	0.027	1.34		Indeno (1,2,3-c,d) Pyrene	ND	0.027	1.34	
Acenaphthylene	ND	0.027	1.34		Naphthalene	ND	0.027	1.34	
Anthracene	ND	0.027	1.34		Pentachlorophenol	ND	0.67	1.34	
Benzo (a) Anthracene	ND	0.027	1.34		Phenanthrene	ND	0.027	1.34	
Benzo (a) Pyrene	ND	0.027	1.34		Phenol	ND	0.027	1.34	
Benzo (b) Fluoranthene	ND	0.027	1.34		Pyrene	ND	0.027	1.34	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	35	32-143			2-Fluorobiphenyl	50	14-146		
2-Fluorophenol	62	15-138			Nitrobenzene-d5	65	18-162		
p-Terphenyl-d14	49	34-148			Phenol-d6	59	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 3545
		Method:	EPA 8270C SIM
		Units:	mg/kg

Project: Shell Mounds 2006 Page 4 of 17

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-2	**06-11-0207-4**	**11/01/06**	**Solid**	**11/06/06**	**11/08/06**	**061106L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.013	1.28		Benzo (g,h,i) Perylene	ND	0.026	1.28	
2,4,6-Trichlorophenol	ND	0.013	1.28		Benzo (k) Fluoranthene	ND	0.026	1.28	
2,4-Dichlorophenol	ND	0.026	1.28		Bis(2-Ethylhexyl) Phthalate	0.088	0.026	1.28	
2,4-Dimethylphenol	ND	0.026	1.28		Butyl Benzyl Phthalate	ND	0.026	1.28	
2,4-Dinitrophenol	ND	0.64	1.28		Chrysene	ND	0.026	1.28	
2-Chlorophenol	ND	0.026	1.28		Di-n-Butyl Phthalate	ND	0.026	1.28	
2-Methylphenol	ND	0.026	1.28		Di-n-Octyl Phthalate	ND	0.026	1.28	
2-Nitrophenol	ND	0.026	1.28		Dibenz (a,h) Anthracene	ND	0.026	1.28	
3/4-Methylphenol	ND	0.026	1.28		Diethyl Phthalate	ND	0.026	1.28	
4,6-Dinitro-2-Methylphenol	ND	0.64	1.28		Dimethyl Phthalate	ND	0.026	1.28	
4-Chloro-3-Methylphenol	ND	0.026	1.28		Fluoranthene	ND	0.026	1.28	
4-Nitrophenol	ND	0.64	1.28		Fluorene	ND	0.026	1.28	
Acenaphthene	ND	0.026	1.28		Indeno (1,2,3-c,d) Pyrene	ND	0.026	1.28	
Acenaphthylene	ND	0.026	1.28		Naphthalene	ND	0.026	1.28	
Anthracene	ND	0.026	1.28		Pentachlorophenol	ND	0.64	1.28	
Benzo (a) Anthracene	ND	0.026	1.28		Phenanthrene	ND	0.026	1.28	
Benzo (a) Pyrene	0.082	0.026	1.28		Phenol	ND	0.026	1.28	
Benzo (b) Fluoranthene	ND	0.026	1.28		Pyrene	ND	0.026	1.28	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	62	32-143			2-Fluorobiphenyl	63	14-146		
2-Fluorophenol	83	15-138			Nitrobenzene-d5	89	18-162		
p-Terphenyl-d14	64	34-148			Phenol-d6	86	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 3545
	Method:	EPA 8270C SIM
	Units:	mg/kg

Project: Shell Mounds 2006 — Page 5 of 17

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-3	**06-11-0207-5**	**11/01/06**	**Solid**	**11/06/06**	**11/08/06**	**061106L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.013	1.3		Benzo (g,h,i) Perylene	ND	0.026	1.3	
2,4,6-Trichlorophenol	ND	0.013	1.3		Benzo (k) Fluoranthene	ND	0.026	1.3	
2,4-Dichlorophenol	ND	0.026	1.3		Bis(2-Ethylhexyl) Phthalate	0.034	0.026	1.3	
2,4-Dimethylphenol	ND	0.026	1.3		Butyl Benzyl Phthalate	ND	0.026	1.3	
2,4-Dinitrophenol	ND	0.65	1.3		Chrysene	ND	0.026	1.3	
2-Chlorophenol	ND	0.026	1.3		Di-n-Butyl Phthalate	ND	0.026	1.3	
2-Methylphenol	ND	0.026	1.3		Di-n-Octyl Phthalate	ND	0.026	1.3	
2-Nitrophenol	ND	0.026	1.3		Dibenz (a,h) Anthracene	ND	0.026	1.3	
3/4-Methylphenol	ND	0.026	1.3		Diethyl Phthalate	ND	0.026	1.3	
4,6-Dinitro-2-Methylphenol	ND	0.65	1.3		Dimethyl Phthalate	ND	0.026	1.3	
4-Chloro-3-Methylphenol	ND	0.026	1.3		Fluoranthene	ND	0.026	1.3	
4-Nitrophenol	ND	0.65	1.3		Fluorene	ND	0.026	1.3	
Acenaphthene	ND	0.026	1.3		Indeno (1,2,3-c,d) Pyrene	ND	0.026	1.3	
Acenaphthylene	ND	0.026	1.3		Naphthalene	ND	0.026	1.3	
Anthracene	ND	0.026	1.3		Pentachlorophenol	ND	0.65	1.3	
Benzo (a) Anthracene	ND	0.026	1.3		Phenanthrene	ND	0.026	1.3	
Benzo (a) Pyrene	ND	0.026	1.3		Phenol	ND	0.026	1.3	
Benzo (b) Fluoranthene	ND	0.026	1.3		Pyrene	ND	0.026	1.3	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	57	32-143			2-Fluorobiphenyl	58	14-146		
2-Fluorophenol	72	15-138			Nitrobenzene-d5	72	18-162		
p-Terphenyl-d14	46	34-148			Phenol-d6	81	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 3545
		Method:	EPA 8270C SIM
		Units:	mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2B-1	**06-11-0207-6**	**11/02/06**	**Solid**	**11/06/06**	**11/08/06**	**061106L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.013	1.28		Benzo (g,h,i) Perylene	ND	0.026	1.28	
2,4,6-Trichlorophenol	ND	0.013	1.28		Benzo (k) Fluoranthene	ND	0.026	1.28	
2,4-Dichlorophenol	ND	0.026	1.28		Bis(2-Ethylhexyl) Phthalate	0.051	0.026	1.28	
2,4-Dimethylphenol	ND	0.026	1.28		Butyl Benzyl Phthalate	ND	0.026	1.28	
2,4-Dinitrophenol	ND	0.64	1.28		Chrysene	ND	0.026	1.28	
2-Chlorophenol	ND	0.026	1.28		Di-n-Butyl Phthalate	ND	0.026	1.28	
2-Methylphenol	ND	0.026	1.28		Di-n-Octyl Phthalate	ND	0.026	1.28	
2-Nitrophenol	ND	0.026	1.28		Dibenz (a,h) Anthracene	ND	0.026	1.28	
3/4-Methylphenol	ND	0.026	1.28		Diethyl Phthalate	ND	0.026	1.28	
4,6-Dinitro-2-Methylphenol	ND	0.64	1.28		Dimethyl Phthalate	ND	0.026	1.28	
4-Chloro-3-Methylphenol	ND	0.026	1.28		Fluoranthene	ND	0.026	1.28	
4-Nitrophenol	ND	0.64	1.28		Fluorene	ND	0.026	1.28	
Acenaphthene	ND	0.026	1.28		Indeno (1,2,3-c,d) Pyrene	ND	0.026	1.28	
Acenaphthylene	ND	0.026	1.28		Naphthalene	ND	0.026	1.28	
Anthracene	ND	0.026	1.28		Pentachlorophenol	ND	0.64	1.28	
Benzo (a) Anthracene	ND	0.026	1.28		Phenanthrene	ND	0.026	1.28	
Benzo (a) Pyrene	0.092	0.026	1.28		Phenol	ND	0.026	1.28	
Benzo (b) Fluoranthene	ND	0.026	1.28		Pyrene	ND	0.026	1.28	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	68	32-143			2-Fluorobiphenyl	59	14-146		
2-Fluorophenol	31	15-138			Nitrobenzene-d5	70	18-162		
p-Terphenyl-d14	68	34-148			Phenol-d6	83	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

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Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2B-2	**06-11-0207-7**	**11/02/06**	**Solid**	**11/06/06**	**11/08/06**	**061106L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.014	1.37		Benzo (g,h,i) Perylene	ND	0.027	1.37	
2,4,6-Trichlorophenol	ND	0.014	1.37		Benzo (k) Fluoranthene	ND	0.027	1.37	
2,4-Dichlorophenol	ND	0.027	1.37		Bis(2-Ethylhexyl) Phthalate	0.15	0.03	1.37	
2,4-Dimethylphenol	ND	0.027	1.37		Butyl Benzyl Phthalate	ND	0.027	1.37	
2,4-Dinitrophenol	ND	0.69	1.37		Chrysene	ND	0.027	1.37	
2-Chlorophenol	ND	0.027	1.37		Di-n-Butyl Phthalate	ND	0.027	1.37	
2-Methylphenol	ND	0.027	1.37		Di-n-Octyl Phthalate	ND	0.027	1.37	
2-Nitrophenol	ND	0.027	1.37		Dibenz (a,h) Anthracene	ND	0.027	1.37	
3/4-Methylphenol	ND	0.027	1.37		Diethyl Phthalate	ND	0.027	1.37	
4,6-Dinitro-2-Methylphenol	ND	0.69	1.37		Dimethyl Phthalate	ND	0.027	1.37	
4-Chloro-3-Methylphenol	ND	0.027	1.37		Fluoranthene	ND	0.027	1.37	
4-Nitrophenol	ND	0.69	1.37		Fluorene	ND	0.027	1.37	
Acenaphthene	ND	0.027	1.37		Indeno (1,2,3-c,d) Pyrene	ND	0.027	1.37	
Acenaphthylene	ND	0.027	1.37		Naphthalene	ND	0.027	1.37	
Anthracene	ND	0.027	1.37		Pentachlorophenol	ND	0.69	1.37	
Benzo (a) Anthracene	ND	0.027	1.37		Phenanthrene	ND	0.027	1.37	
Benzo (a) Pyrene	0.068	0.027	1.37		Phenol	ND	0.027	1.37	
Benzo (b) Fluoranthene	ND	0.027	1.37		Pyrene	ND	0.027	1.37	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	72	32-143		2-Fluorobiphenyl	66	14-146	
2-Fluorophenol	24	15-138		Nitrobenzene-d5	81	18-162	
p-Terphenyl-d14	75	34-148		Phenol-d6	88	17-141	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 3545
	Method:	EPA 8270C SIM
	Units:	mg/kg

Project: Shell Mounds 2006 Page 8 of 17

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2B-3	**06-11-0207-8**	**11/02/06**	**Solid**	**11/06/06**	**11/08/06**	**061106L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.013	1.27		Benzo (g,h,i) Perylene	ND	0.025	1.27	
2,4,6-Trichlorophenol	ND	0.013	1.27		Benzo (k) Fluoranthene	ND	0.025	1.27	
2,4-Dichlorophenol	ND	0.025	1.27		Bis(2-Ethylhexyl) Phthalate	0.037	0.025	1.27	
2,4-Dimethylphenol	ND	0.025	1.27		Butyl Benzyl Phthalate	ND	0.025	1.27	
2,4-Dinitrophenol	ND	0.64	1.27		Chrysene	ND	0.025	1.27	
2-Chlorophenol	ND	0.025	1.27		Di-n-Butyl Phthalate	ND	0.025	1.27	
2-Methylphenol	ND	0.025	1.27		Di-n-Octyl Phthalate	ND	0.025	1.27	
2-Nitrophenol	ND	0.025	1.27		Dibenz (a,h) Anthracene	ND	0.025	1.27	
3/4-Methylphenol	ND	0.025	1.27		Diethyl Phthalate	ND	0.025	1.27	
4,6-Dinitro-2-Methylphenol	ND	0.64	1.27		Dimethyl Phthalate	ND	0.025	1.27	
4-Chloro-3-Methylphenol	ND	0.025	1.27		Fluoranthene	ND	0.025	1.27	
4-Nitrophenol	ND	0.64	1.27		Fluorene	ND	0.025	1.27	
Acenaphthene	ND	0.025	1.27		Indeno (1,2,3-c,d) Pyrene	ND	0.025	1.27	
Acenaphthylene	ND	0.025	1.27		Naphthalene	ND	0.025	1.27	
Anthracene	ND	0.025	1.27		Pentachlorophenol	ND	0.64	1.27	
Benzo (a) Anthracene	ND	0.025	1.27		Phenanthrene	ND	0.025	1.27	
Benzo (a) Pyrene	ND	0.025	1.27		Phenol	ND	0.025	1.27	
Benzo (b) Fluoranthene	ND	0.025	1.27		Pyrene	ND	0.025	1.27	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	68	32-143			2-Fluorobiphenyl	64	14-146		
2-Fluorophenol	78	15-138			Nitrobenzene-d5	85	18-162		
p-Terphenyl-d14	55	34-148			Phenol-d6	90	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 3545
	Method:	EPA 8270C SIM
	Units:	mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-1	**06-11-0207-9**	**11/02/06**	**Solid**	**11/06/06**	**11/08/06**	**061106L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.013	1.31		Benzo (g,h,i) Perylene	ND	0.026	1.31	
2,4,6-Trichlorophenol	ND	0.013	1.31		Benzo (k) Fluoranthene	ND	0.026	1.31	
2,4-Dichlorophenol	ND	0.026	1.31		Bis(2-Ethylhexyl) Phthalate	0.064	0.026	1.31	
2,4-Dimethylphenol	ND	0.026	1.31		Butyl Benzyl Phthalate	0.028	0.026	1.31	
2,4-Dinitrophenol	ND	0.66	1.31		Chrysene	ND	0.026	1.31	
2-Chlorophenol	ND	0.026	1.31		Di-n-Butyl Phthalate	ND	0.026	1.31	
2-Methylphenol	ND	0.026	1.31		Di-n-Octyl Phthalate	ND	0.026	1.31	
2-Nitrophenol	ND	0.026	1.31		Dibenz (a,h) Anthracene	ND	0.026	1.31	
3/4-Methylphenol	ND	0.026	1.31		Diethyl Phthalate	ND	0.026	1.31	
4,6-Dinitro-2-Methylphenol	ND	0.66	1.31		Dimethyl Phthalate	ND	0.026	1.31	
4-Chloro-3-Methylphenol	ND	0.026	1.31		Fluoranthene	ND	0.026	1.31	
4-Nitrophenol	ND	0.66	1.31		Fluorene	ND	0.026	1.31	
Acenaphthene	ND	0.026	1.31		Indeno (1,2,3-c,d) Pyrene	ND	0.026	1.31	
Acenaphthylene	ND	0.026	1.31		Naphthalene	ND	0.026	1.31	
Anthracene	ND	0.026	1.31		Pentachlorophenol	ND	0.66	1.31	
Benzo (a) Anthracene	ND	0.026	1.31		Phenanthrene	ND	0.026	1.31	
Benzo (a) Pyrene	0.23	0.03	1.31		Phenol	ND	0.026	1.31	
Benzo (b) Fluoranthene	ND	0.026	1.31		Pyrene	ND	0.026	1.31	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	62	32-143			2-Fluorobiphenyl	62	14-146		
2-Fluorophenol	28	15-138			Nitrobenzene-d5	75	18-162		
p-Terphenyl-d14	71	34-148			Phenol-d6	81	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-2	**06-11-0207-10**	**11/02/06**	**Solid**	**11/06/06**	**11/08/06**	**061106L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.013	1.33		Benzo (g,h,i) Perylene	ND	0.027	1.33	
2,4,6-Trichlorophenol	ND	0.013	1.33		Benzo (k) Fluoranthene	ND	0.027	1.33	
2,4-Dichlorophenol	ND	0.027	1.33		Bis(2-Ethylhexyl) Phthalate	0.074	0.027	1.33	
2,4-Dimethylphenol	ND	0.027	1.33		Butyl Benzyl Phthalate	0.044	0.027	1.33	
2,4-Dinitrophenol	ND	0.67	1.33		Chrysene	ND	0.027	1.33	
2-Chlorophenol	ND	0.027	1.33		Di-n-Butyl Phthalate	ND	0.027	1.33	
2-Methylphenol	ND	0.027	1.33		Di-n-Octyl Phthalate	ND	0.027	1.33	
2-Nitrophenol	ND	0.027	1.33		Dibenz (a,h) Anthracene	ND	0.027	1.33	
3/4-Methylphenol	ND	0.027	1.33		Diethyl Phthalate	ND	0.027	1.33	
4,6-Dinitro-2-Methylphenol	ND	0.67	1.33		Dimethyl Phthalate	ND	0.027	1.33	
4-Chloro-3-Methylphenol	ND	0.027	1.33		Fluoranthene	ND	0.027	1.33	
4-Nitrophenol	ND	0.67	1.33		Fluorene	ND	0.027	1.33	
Acenaphthene	ND	0.027	1.33		Indeno (1,2,3-c,d) Pyrene	ND	0.027	1.33	
Acenaphthylene	ND	0.027	1.33		Naphthalene	ND	0.027	1.33	
Anthracene	ND	0.027	1.33		Pentachlorophenol	ND	0.67	1.33	
Benzo (a) Anthracene	ND	0.027	1.33		Phenanthrene	ND	0.027	1.33	
Benzo (a) Pyrene	0.22	0.03	1.33		Phenol	ND	0.027	1.33	
Benzo (b) Fluoranthene	ND	0.027	1.33		Pyrene	ND	0.027	1.33	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	71	32-143		2-Fluorobiphenyl	69	14-146	
2-Fluorophenol	22	15-138		Nitrobenzene-d5	80	18-162	
p-Terphenyl-d14	107	34-148		Phenol-d6	87	17-141	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 3545
		Method:	EPA 8270C SIM
		Units:	mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-3	**06-11-0207-11**	**11/02/06**	**Solid**	**11/06/06**	**11/08/06**	**061106L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.013	1.29		Benzo (g,h,i) Perylene	ND	0.026	1.29	
2,4,6-Trichlorophenol	ND	0.013	1.29		Benzo (k) Fluoranthene	ND	0.026	1.29	
2,4-Dichlorophenol	ND	0.026	1.29		Bis(2-Ethylhexyl) Phthalate	ND	0.026	1.29	
2,4-Dimethylphenol	ND	0.026	1.29		Butyl Benzyl Phthalate	ND	0.026	1.29	
2,4-Dinitrophenol	ND	0.65	1.29		Chrysene	ND	0.026	1.29	
2-Chlorophenol	ND	0.026	1.29		Di-n-Butyl Phthalate	ND	0.026	1.29	
2-Methylphenol	ND	0.026	1.29		Di-n-Octyl Phthalate	ND	0.026	1.29	
2-Nitrophenol	ND	0.026	1.29		Dibenz (a,h) Anthracene	ND	0.026	1.29	
3/4-Methylphenol	ND	0.026	1.29		Diethyl Phthalate	ND	0.026	1.29	
4,6-Dinitro-2-Methylphenol	ND	0.65	1.29		Dimethyl Phthalate	ND	0.026	1.29	
4-Chloro-3-Methylphenol	ND	0.026	1.29		Fluoranthene	ND	0.026	1.29	
4-Nitrophenol	ND	0.65	1.29		Fluorene	ND	0.026	1.29	
Acenaphthene	ND	0.026	1.29		Indeno (1,2,3-c,d) Pyrene	ND	0.026	1.29	
Acenaphthylene	ND	0.026	1.29		Naphthalene	ND	0.026	1.29	
Anthracene	ND	0.026	1.29		Pentachlorophenol	ND	0.65	1.29	
Benzo (a) Anthracene	ND	0.026	1.29		Phenanthrene	ND	0.026	1.29	
Benzo (a) Pyrene	ND	0.026	1.29		Phenol	ND	0.026	1.29	
Benzo (b) Fluoranthene	ND	0.026	1.29		Pyrene	ND	0.026	1.29	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	47	32-143			2-Fluorobiphenyl	58	14-146		
2-Fluorophenol	65	15-138			Nitrobenzene-d5	71	18-162		
p-Terphenyl-d14	49	34-148			Phenol-d6	68	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 3545
		Method:	EPA 8270C SIM
		Units:	mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-REF	**06-11-0207-12**	**11/02/06**	**Solid**	**11/06/06**	**11/07/06**	**061106L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.014	1.39		Benzo (g,h,i) Perylene	ND	0.028	1.39	
2,4,6-Trichlorophenol	ND	0.014	1.39		Benzo (k) Fluoranthene	ND	0.028	1.39	
2,4-Dichlorophenol	ND	0.028	1.39		Bis(2-Ethylhexyl) Phthalate	0.81	0.03	1.39	
2,4-Dimethylphenol	ND	0.028	1.39		Butyl Benzyl Phthalate	ND	0.028	1.39	
2,4-Dinitrophenol	ND	0.70	1.39		Chrysene	ND	0.028	1.39	
2-Chlorophenol	ND	0.028	1.39		Di-n-Butyl Phthalate	ND	0.028	1.39	
2-Methylphenol	ND	0.028	1.39		Di-n-Octyl Phthalate	ND	0.028	1.39	
2-Nitrophenol	ND	0.028	1.39		Dibenz (a,h) Anthracene	ND	0.028	1.39	
3/4-Methylphenol	ND	0.028	1.39		Diethyl Phthalate	ND	0.028	1.39	
4,6-Dinitro-2-Methylphenol	ND	0.70	1.39		Dimethyl Phthalate	ND	0.028	1.39	
4-Chloro-3-Methylphenol	ND	0.028	1.39		Fluoranthene	ND	0.028	1.39	
4-Nitrophenol	ND	0.70	1.39		Fluorene	ND	0.028	1.39	
Acenaphthene	ND	0.028	1.39		Indeno (1,2,3-c,d) Pyrene	ND	0.028	1.39	
Acenaphthylene	ND	0.028	1.39		Naphthalene	ND	0.028	1.39	
Anthracene	ND	0.028	1.39		Pentachlorophenol	ND	0.70	1.39	
Benzo (a) Anthracene	ND	0.028	1.39		Phenanthrene	ND	0.028	1.39	
Benzo (a) Pyrene	ND	0.028	1.39		Phenol	ND	0.028	1.39	
Benzo (b) Fluoranthene	ND	0.028	1.39		Pyrene	ND	0.028	1.39	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	49	32-143			2-Fluorobiphenyl	56	14-146		
2-Fluorophenol	76	15-138			Nitrobenzene-d5	85	18-162		
p-Terphenyl-d14	46	34-148			Phenol-d6	85	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 3545
		Method:	EPA 8270C SIM
		Units:	mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-2 BROWN	**06-11-0207-13**	**11/02/06**	**Solid**	**11/06/06**	**11/10/06**	**061106L13**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.028	2.81		Benzo (g,h,i) Perylene	ND	0.056	2.81	
2,4,6-Trichlorophenol	ND	0.028	2.81		Benzo (k) Fluoranthene	ND	0.056	2.81	
2,4-Dichlorophenol	ND	0.056	2.81		Bis(2-Ethylhexyl) Phthalate	0.14	0.06	2.81	
2,4-Dimethylphenol	0.084	0.056	2.81		Butyl Benzyl Phthalate	0.14	0.06	2.81	
2,4-Dinitrophenol	ND	1.4	2.81		Chrysene	ND	0.056	2.81	
2-Chlorophenol	ND	0.056	2.81		Di-n-Butyl Phthalate	ND	0.056	2.81	
2-Methylphenol	ND	0.056	2.81		Di-n-Octyl Phthalate	ND	0.056	2.81	
2-Nitrophenol	ND	0.056	2.81		Dibenz (a,h) Anthracene	ND	0.056	2.81	
3/4-Methylphenol	ND	0.056	2.81		Diethyl Phthalate	ND	0.056	2.81	
4,6-Dinitro-2-Methylphenol	ND	1.4	2.81		Dimethyl Phthalate	ND	0.056	2.81	
4-Chloro-3-Methylphenol	0.069	0.056	2.81		Fluoranthene	ND	0.056	2.81	
4-Nitrophenol	ND	1.4	2.81		Fluorene	ND	0.056	2.81	
Acenaphthene	ND	0.056	2.81		Indeno (1,2,3-c,d) Pyrene	ND	0.056	2.81	
Acenaphthylene	ND	0.056	2.81		Naphthalene	ND	0.056	2.81	
Anthracene	ND	0.056	2.81		Pentachlorophenol	ND	1.4	2.81	
Benzo (a) Anthracene	ND	0.056	2.81		Phenanthrene	ND	0.056	2.81	
Benzo (a) Pyrene	0.66	0.06	2.81		Phenol	ND	0.056	2.81	
Benzo (b) Fluoranthene	ND	0.056	2.81		Pyrene	ND	0.056	2.81	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	39	32-143			2-Fluorobiphenyl	69	14-146		
2-Fluorophenol	60	15-138			Nitrobenzene-d5	85	18-162		
p-Terphenyl-d14	101	34-148			Phenol-d6	64	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-2 GREY	**06-11-0207-14**	**11/02/06**	**Solid**	**11/06/06**	**11/08/06**	**061106L13**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.013	1.3		Benzo (g,h,i) Perylene	ND	0.026	1.3	
2,4,6-Trichlorophenol	ND	0.013	1.3		Benzo (k) Fluoranthene	ND	0.026	1.3	
2,4-Dichlorophenol	ND	0.026	1.3		Bis(2-Ethylhexyl) Phthalate	0.043	0.026	1.3	
2,4-Dimethylphenol	ND	0.026	1.3		Butyl Benzyl Phthalate	ND	0.026	1.3	
2,4-Dinitrophenol	ND	0.65	1.3		Chrysene	ND	0.026	1.3	
2-Chlorophenol	ND	0.026	1.3		Di-n-Butyl Phthalate	ND	0.026	1.3	
2-Methylphenol	ND	0.026	1.3		Di-n-Octyl Phthalate	ND	0.026	1.3	
2-Nitrophenol	ND	0.026	1.3		Dibenz (a,h) Anthracene	ND	0.026	1.3	
3/4-Methylphenol	ND	0.026	1.3		Diethyl Phthalate	ND	0.026	1.3	
4,6-Dinitro-2-Methylphenol	ND	0.65	1.3		Dimethyl Phthalate	ND	0.026	1.3	
4-Chloro-3-Methylphenol	ND	0.026	1.3		Fluoranthene	ND	0.026	1.3	
4-Nitrophenol	ND	0.65	1.3		Fluorene	ND	0.026	1.3	
Acenaphthene	ND	0.026	1.3		Indeno (1,2,3-c,d) Pyrene	ND	0.026	1.3	
Acenaphthylene	ND	0.026	1.3		Naphthalene	ND	0.026	1.3	
Anthracene	ND	0.026	1.3		Pentachlorophenol	ND	0.65	1.3	
Benzo (a) Anthracene	ND	0.026	1.3		Phenanthrene	ND	0.026	1.3	
Benzo (a) Pyrene	0.037	0.026	1.3		Phenol	ND	0.026	1.3	
Benzo (b) Fluoranthene	ND	0.026	1.3		Pyrene	ND	0.026	1.3	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	55	32-143		2-Fluorobiphenyl	46	14-146	
2-Fluorophenol	19	15-138		Nitrobenzene-d5	48	18-162	
p-Terphenyl-d14	78	34-148		Phenol-d6	70	17-141	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-3B	**06-11-0207-15**	**11/01/06**	**Solid**	**11/06/06**	**11/08/06**	**061106L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.012	1.24		Benzo (g,h,i) Perylene	ND	0.025	1.24	
2,4,6-Trichlorophenol	ND	0.012	1.24		Benzo (k) Fluoranthene	ND	0.025	1.24	
2,4-Dichlorophenol	ND	0.025	1.24		Bis(2-Ethylhexyl) Phthalate	ND	0.025	1.24	
2,4-Dimethylphenol	ND	0.025	1.24		Butyl Benzyl Phthalate	ND	0.025	1.24	
2,4-Dinitrophenol	ND	0.62	1.24		Chrysene	ND	0.025	1.24	
2-Chlorophenol	ND	0.025	1.24		Di-n-Butyl Phthalate	ND	0.025	1.24	
2-Methylphenol	ND	0.025	1.24		Di-n-Octyl Phthalate	ND	0.025	1.24	
2-Nitrophenol	ND	0.025	1.24		Dibenz (a,h) Anthracene	ND	0.025	1.24	
3/4-Methylphenol	ND	0.025	1.24		Diethyl Phthalate	ND	0.025	1.24	
4,6-Dinitro-2-Methylphenol	ND	0.62	1.24		Dimethyl Phthalate	ND	0.025	1.24	
4-Chloro-3-Methylphenol	ND	0.025	1.24		Fluoranthene	ND	0.025	1.24	
4-Nitrophenol	ND	0.62	1.24		Fluorene	ND	0.025	1.24	
Acenaphthene	ND	0.025	1.24		Indeno (1,2,3-c,d) Pyrene	ND	0.025	1.24	
Acenaphthylene	ND	0.025	1.24		Naphthalene	ND	0.025	1.24	
Anthracene	ND	0.025	1.24		Pentachlorophenol	ND	0.62	1.24	
Benzo (a) Anthracene	ND	0.025	1.24		Phenanthrene	ND	0.025	1.24	
Benzo (a) Pyrene	ND	0.025	1.24		Phenol	ND	0.025	1.24	
Benzo (b) Fluoranthene	ND	0.025	1.24		Pyrene	ND	0.025	1.24	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	57	32-143			2-Fluorobiphenyl	43	14-146		
2-Fluorophenol	65	15-138			Nitrobenzene-d5	58	18-162		
p-Terphenyl-d14	45	34-148			Phenol-d6	80	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 3545
	Method:	EPA 8270C SIM
	Units:	mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-2 DUP	**06-11-0207-16**	**11/01/06**	**Solid**	**11/06/06**	**11/10/06**	**061106L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.013	1.31		Benzo (g,h,i) Perylene	ND	0.026	1.31	
2,4,6-Trichlorophenol	ND	0.013	1.31		Benzo (k) Fluoranthene	ND	0.026	1.31	
2,4-Dichlorophenol	ND	0.026	1.31		Bis(2-Ethylhexyl) Phthalate	1.2	0.026	1.31	
2,4-Dimethylphenol	ND	0.026	1.31		Butyl Benzyl Phthalate	ND	0.026	1.31	
2,4-Dinitrophenol	ND	0.66	1.31		Chrysene	ND	0.026	1.31	
2-Chlorophenol	ND	0.026	1.31		Di-n-Butyl Phthalate	ND	0.026	1.31	
2-Methylphenol	ND	0.026	1.31		Di-n-Octyl Phthalate	ND	0.026	1.31	
2-Nitrophenol	ND	0.026	1.31		Dibenz (a,h) Anthracene	ND	0.026	1.31	
3/4-Methylphenol	ND	0.026	1.31		Diethyl Phthalate	ND	0.026	1.31	
4,6-Dinitro-2-Methylphenol	ND	0.66	1.31		Dimethyl Phthalate	ND	0.026	1.31	
4-Chloro-3-Methylphenol	ND	0.026	1.31		Fluoranthene	ND	0.026	1.31	
4-Nitrophenol	ND	0.66	1.31		Fluorene	ND	0.026	1.31	
Acenaphthene	ND	0.026	1.31		Indeno (1,2,3-c,d) Pyrene	ND	0.026	1.31	
Acenaphthylene	ND	0.026	1.31		Naphthalene	ND	0.026	1.31	
Anthracene	ND	0.026	1.31		Pentachlorophenol	ND	0.66	1.31	
Benzo (a) Anthracene	ND	0.026	1.31		Phenanthrene	ND	0.026	1.31	
Benzo (a) Pyrene	0.13	0.03	1.31		Phenol	ND	0.026	1.31	
Benzo (b) Fluoranthene	ND	0.026	1.31		Pyrene	ND	0.026	1.31	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	68	32-143		2-Fluorobiphenyl	52	14-146	
2-Fluorophenol	64	15-138		Nitrobenzene-d5	55	18-162	
p-Terphenyl-d14	54	34-148		Phenol-d6	79	17-141	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 3545
		Method:	EPA 8270C SIM
		Units:	mg/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-413-13**	**N/A**	**Solid**	**11/06/06**	**11/07/06**	**061106L13**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,4,5-Trichlorophenol	ND	0.010	1		Benzo (g,h,i) Perylene	ND	0.020	1	
2,4,6-Trichlorophenol	ND	0.010	1		Benzo (k) Fluoranthene	ND	0.020	1	
2,4-Dichlorophenol	ND	0.020	1		Bis(2-Ethylhexyl) Phthalate	ND	0.020	1	
2,4-Dimethylphenol	ND	0.020	1		Butyl Benzyl Phthalate	ND	0.020	1	
2,4-Dinitrophenol	ND	0.50	1		Chrysene	ND	0.020	1	
2-Chlorophenol	ND	0.020	1		Di-n-Butyl Phthalate	ND	0.020	1	
2-Methylphenol	ND	0.020	1		Di-n-Octyl Phthalate	ND	0.020	1	
2-Nitrophenol	ND	0.020	1		Dibenz (a,h) Anthracene	ND	0.020	1	
3/4-Methylphenol	ND	0.020	1		Diethyl Phthalate	ND	0.020	1	
4,6-Dinitro-2-Methylphenol	ND	0.50	1		Dimethyl Phthalate	ND	0.020	1	
4-Chloro-3-Methylphenol	ND	0.020	1		Fluoranthene	ND	0.020	1	
4-Nitrophenol	ND	0.50	1		Fluorene	ND	0.020	1	
Acenaphthene	ND	0.020	1		Indeno (1,2,3-c,d) Pyrene	ND	0.020	1	
Acenaphthylene	ND	0.020	1		Naphthalene	ND	0.020	1	
Anthracene	ND	0.020	1		Pentachlorophenol	ND	0.50	1	
Benzo (a) Anthracene	ND	0.020	1		Phenanthrene	ND	0.020	1	
Benzo (a) Pyrene	ND	0.020	1		Phenol	ND	0.020	1	
Benzo (b) Fluoranthene	ND	0.020	1		Pyrene	ND	0.020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	48	32-143			2-Fluorobiphenyl	57	14-146		
2-Fluorophenol	69	15-138			Nitrobenzene-d5	72	18-162		
p-Terphenyl-d14	63	34-148			Phenol-d6	75	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-2	**06-11-0207-1**	**11/01/06**	**Solid**	**11/15/06**	**11/15/06**	**061115L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	160	1.32		1,3-Dichloropropane	ND	6.6	1.32	
Benzene	ND	6.6	1.32		2,2-Dichloropropane	ND	6.6	1.32	
Bromobenzene	ND	6.6	1.32		1,1-Dichloropropene	ND	6.6	1.32	
Bromochloromethane	ND	6.6	1.32		c-1,3-Dichloropropene	ND	6.6	1.32	
Bromodichloromethane	ND	6.6	1.32		t-1,3-Dichloropropene	ND	6.6	1.32	
Bromoform	ND	6.6	1.32		Ethylbenzene	ND	6.6	1.32	
Bromomethane	ND	33	1.32		2-Hexanone	ND	66	1.32	
2-Butanone	ND	66	1.32		Isopropylbenzene	ND	6.6	1.32	
n-Butylbenzene	ND	6.6	1.32		p-Isopropyltoluene	ND	6.6	1.32	
sec-Butylbenzene	ND	6.6	1.32		Methylene Chloride	74	66	1.32	
tert-Butylbenzene	ND	6.6	1.32		4-Methyl-2-Pentanone	ND	66	1.32	
Carbon Disulfide	ND	66	1.32		Naphthalene	ND	66	1.32	
Carbon Tetrachloride	ND	6.6	1.32		n-Propylbenzene	ND	6.6	1.32	
Chlorobenzene	ND	6.6	1.32		Styrene	ND	6.6	1.32	
Chloroethane	ND	6.6	1.32		1,1,1,2-Tetrachloroethane	ND	6.6	1.32	
Chloroform	ND	6.6	1.32		1,1,2,2-Tetrachloroethane	ND	6.6	1.32	
Chloromethane	ND	33	1.32		Tetrachloroethene	ND	6.6	1.32	
2-Chlorotoluene	ND	6.6	1.32		Toluene	13	7	1.32	
4-Chlorotoluene	ND	6.6	1.32		1,2,3-Trichlorobenzene	ND	13	1.32	
Dibromochloromethane	ND	6.6	1.32		1,2,4-Trichlorobenzene	ND	6.6	1.32	
1,2-Dibromo-3-Chloropropane	ND	13	1.32		1,1,1-Trichloroethane	ND	6.6	1.32	
1,2-Dibromoethane	ND	6.6	1.32		1,1,2-Trichloroethane	ND	6.6	1.32	
Dibromomethane	ND	6.6	1.32		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	66	1.32	
1,2-Dichlorobenzene	ND	6.6	1.32		Trichloroethene	ND	6.6	1.32	
1,3-Dichlorobenzene	ND	6.6	1.32		1,2,3-Trichloropropane	ND	6.6	1.32	
1,4-Dichlorobenzene	ND	6.6	1.32		1,2,4-Trimethylbenzene	ND	6.6	1.32	
Dichlorodifluoromethane	ND	6.6	1.32		Trichlorofluoromethane	ND	66	1.32	
1,1-Dichloroethane	ND	6.6	1.32		1,3,5-Trimethylbenzene	ND	6.6	1.32	
1,2-Dichloroethane	ND	6.6	1.32		Vinyl Acetate	ND	66	1.32	
1,1-Dichloroethene	ND	6.6	1.32		Vinyl Chloride	ND	6.6	1.32	
c-1,2-Dichloroethene	ND	6.6	1.32		p/m-Xylene	16	7	1.32	
t-1,2-Dichloroethene	ND	6.6	1.32		o-Xylene	ND	6.6	1.32	
1,2-Dichloropropane	ND	6.6	1.32		Methyl-t-Butyl Ether (MTBE)	ND	6.6	1.32	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	102	73-139		1,2-Dichloroethane-d4	110	73-145	
Toluene-d8	100	90-108		1,4-Bromofluorobenzene	96	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-3	**06-11-0207-2**	**11/01/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	160	1.28		1,3-Dichloropropane	ND	6.4	1.28	
Benzene	ND	6.4	1.28		2,2-Dichloropropane	ND	6.4	1.28	
Bromobenzene	ND	6.4	1.28		1,1-Dichloropropene	ND	6.4	1.28	
Bromochloromethane	ND	6.4	1.28		c-1,3-Dichloropropene	ND	6.4	1.28	
Bromodichloromethane	ND	6.4	1.28		t-1,3-Dichloropropene	ND	6.4	1.28	
Bromoform	ND	6.4	1.28		Ethylbenzene	ND	6.4	1.28	
Bromomethane	ND	32	1.28		2-Hexanone	ND	64	1.28	
2-Butanone	ND	64	1.28		Isopropylbenzene	ND	6.4	1.28	
n-Butylbenzene	ND	6.4	1.28		p-Isopropyltoluene	ND	6.4	1.28	
sec-Butylbenzene	ND	6.4	1.28		Methylene Chloride	ND	64	1.28	
tert-Butylbenzene	ND	6.4	1.28		4-Methyl-2-Pentanone	ND	64	1.28	
Carbon Disulfide	ND	64	1.28		Naphthalene	ND	64	1.28	
Carbon Tetrachloride	ND	6.4	1.28		n-Propylbenzene	ND	6.4	1.28	
Chlorobenzene	ND	6.4	1.28		Styrene	ND	6.4	1.28	
Chloroethane	ND	6.4	1.28		1,1,1,2-Tetrachloroethane	ND	6.4	1.28	
Chloroform	ND	6.4	1.28		1,1,2,2-Tetrachloroethane	ND	6.4	1.28	
Chloromethane	ND	32	1.28		Tetrachloroethene	ND	6.4	1.28	
2-Chlorotoluene	ND	6.4	1.28		Toluene	ND	6.4	1.28	
4-Chlorotoluene	ND	6.4	1.28		1,2,3-Trichlorobenzene	ND	13	1.28	
Dibromochloromethane	ND	6.4	1.28		1,2,4-Trichlorobenzene	ND	6.4	1.28	
1,2-Dibromo-3-Chloropropane	ND	13	1.28		1,1,1-Trichloroethane	ND	6.4	1.28	
1,2-Dibromoethane	ND	6.4	1.28		1,1,2-Trichloroethane	ND	6.4	1.28	
Dibromomethane	ND	6.4	1.28		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	64	1.28	
1,2-Dichlorobenzene	ND	6.4	1.28		Trichloroethene	ND	6.4	1.28	
1,3-Dichlorobenzene	ND	6.4	1.28		1,2,3-Trichloropropane	ND	6.4	1.28	
1,4-Dichlorobenzene	ND	6.4	1.28		1,2,4-Trimethylbenzene	ND	6.4	1.28	
Dichlorodifluoromethane	ND	6.4	1.28		Trichlorofluoromethane	ND	64	1.28	
1,1-Dichloroethane	ND	6.4	1.28		1,3,5-Trimethylbenzene	ND	6.4	1.28	
1,2-Dichloroethane	ND	6.4	1.28		Vinyl Acetate	ND	64	1.28	
1,1-Dichloroethene	ND	6.4	1.28		Vinyl Chloride	ND	6.4	1.28	
c-1,2-Dichloroethene	ND	6.4	1.28		p/m-Xylene	ND	6.4	1.28	
t-1,2-Dichloroethene	ND	6.4	1.28		o-Xylene	ND	6.4	1.28	
1,2-Dichloropropane	ND	6.4	1.28		Methyl-t-Butyl Ether (MTBE)	ND	6.4	1.28	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	104	73-139		1,2-Dichloroethane-d4	107	73-145	
Toluene-d8	97	90-108		1,4-Bromofluorobenzene	102	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-1	**06-11-0207-3**	**11/01/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	170	1.33		1,3-Dichloropropane	ND	6.7	1.33	
Benzene	ND	6.7	1.33		2,2-Dichloropropane	ND	6.7	1.33	
Bromobenzene	ND	6.7	1.33		1,1-Dichloropropene	ND	6.7	1.33	
Bromochloromethane	ND	6.7	1.33		c-1,3-Dichloropropene	ND	6.7	1.33	
Bromodichloromethane	ND	6.7	1.33		t-1,3-Dichloropropene	ND	6.7	1.33	
Bromoform	ND	6.7	1.33		Ethylbenzene	ND	6.7	1.33	
Bromomethane	ND	33	1.33		2-Hexanone	ND	67	1.33	
2-Butanone	ND	67	1.33		Isopropylbenzene	ND	6.7	1.33	
n-Butylbenzene	ND	6.7	1.33		p-Isopropyltoluene	ND	6.7	1.33	
sec-Butylbenzene	ND	6.7	1.33		Methylene Chloride	ND	67	1.33	
tert-Butylbenzene	ND	6.7	1.33		4-Methyl-2-Pentanone	ND	67	1.33	
Carbon Disulfide	ND	67	1.33		Naphthalene	ND	67	1.33	
Carbon Tetrachloride	ND	6.7	1.33		n-Propylbenzene	ND	6.7	1.33	
Chlorobenzene	ND	6.7	1.33		Styrene	ND	6.7	1.33	
Chloroethane	ND	6.7	1.33		1,1,1,2-Tetrachloroethane	ND	6.7	1.33	
Chloroform	ND	6.7	1.33		1,1,2,2-Tetrachloroethane	ND	6.7	1.33	
Chloromethane	ND	33	1.33		Tetrachloroethene	ND	6.7	1.33	
2-Chlorotoluene	ND	6.7	1.33		Toluene	ND	6.7	1.33	
4-Chlorotoluene	ND	6.7	1.33		1,2,3-Trichlorobenzene	ND	13	1.33	
Dibromochloromethane	ND	6.7	1.33		1,2,4-Trichlorobenzene	ND	6.7	1.33	
1,2-Dibromo-3-Chloropropane	ND	13	1.33		1,1,1-Trichloroethane	ND	6.7	1.33	
1,2-Dibromoethane	ND	6.7	1.33		1,1,2-Trichloroethane	ND	6.7	1.33	
Dibromomethane	ND	6.7	1.33		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	67	1.33	
1,2-Dichlorobenzene	ND	6.7	1.33		Trichloroethene	ND	6.7	1.33	
1,3-Dichlorobenzene	ND	6.7	1.33		1,2,3-Trichloropropane	ND	6.7	1.33	
1,4-Dichlorobenzene	ND	6.7	1.33		1,2,4-Trimethylbenzene	ND	6.7	1.33	
Dichlorodifluoromethane	ND	6.7	1.33		Trichlorofluoromethane	ND	67	1.33	
1,1-Dichloroethane	ND	6.7	1.33		1,3,5-Trimethylbenzene	ND	6.7	1.33	
1,2-Dichloroethane	ND	6.7	1.33		Vinyl Acetate	ND	67	1.33	
1,1-Dichloroethene	ND	6.7	1.33		Vinyl Chloride	ND	6.7	1.33	
c-1,2-Dichloroethene	ND	6.7	1.33		p/m-Xylene	ND	6.7	1.33	
t-1,2-Dichloroethene	ND	6.7	1.33		o-Xylene	ND	6.7	1.33	
1,2-Dichloropropane	ND	6.7	1.33		Methyl-t-Butyl Ether (MTBE)	ND	6.7	1.33	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	103	73-139		1,2-Dichloroethane-d4	107	73-145	
Toluene-d8	100	90-108		1,4-Bromofluorobenzene	101	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-2	**06-11-0207-4**	**11/01/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	160	1.28		1,3-Dichloropropane	ND	6.4	1.28	
Benzene	ND	6.4	1.28		2,2-Dichloropropane	ND	6.4	1.28	
Bromobenzene	ND	6.4	1.28		1,1-Dichloropropene	ND	6.4	1.28	
Bromochloromethane	ND	6.4	1.28		c-1,3-Dichloropropene	ND	6.4	1.28	
Bromodichloromethane	ND	6.4	1.28		t-1,3-Dichloropropene	ND	6.4	1.28	
Bromoform	ND	6.4	1.28		Ethylbenzene	ND	6.4	1.28	
Bromomethane	ND	32	1.28		2-Hexanone	ND	64	1.28	
2-Butanone	ND	64	1.28		Isopropylbenzene	ND	6.4	1.28	
n-Butylbenzene	ND	6.4	1.28		p-Isopropyltoluene	ND	6.4	1.28	
sec-Butylbenzene	ND	6.4	1.28		Methylene Chloride	ND	64	1.28	
tert-Butylbenzene	ND	6.4	1.28		4-Methyl-2-Pentanone	ND	64	1.28	
Carbon Disulfide	ND	64	1.28		Naphthalene	ND	64	1.28	
Carbon Tetrachloride	ND	6.4	1.28		n-Propylbenzene	ND	6.4	1.28	
Chlorobenzene	ND	6.4	1.28		Styrene	ND	6.4	1.28	
Chloroethane	ND	6.4	1.28		1,1,1,2-Tetrachloroethane	ND	6.4	1.28	
Chloroform	ND	6.4	1.28		1,1,2,2-Tetrachloroethane	ND	6.4	1.28	
Chloromethane	ND	32	1.28		Tetrachloroethene	ND	6.4	1.28	
2-Chlorotoluene	ND	6.4	1.28		Toluene	ND	6.4	1.28	
4-Chlorotoluene	ND	6.4	1.28		1,2,3-Trichlorobenzene	ND	13	1.28	
Dibromochloromethane	ND	6.4	1.28		1,2,4-Trichlorobenzene	ND	6.4	1.28	
1,2-Dibromo-3-Chloropropane	ND	13	1.28		1,1,1-Trichloroethane	ND	6.4	1.28	
1,2-Dibromoethane	ND	6.4	1.28		1,1,2-Trichloroethane	ND	6.4	1.28	
Dibromomethane	ND	6.4	1.28		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	64	1.28	
1,2-Dichlorobenzene	ND	6.4	1.28		Trichloroethene	ND	6.4	1.28	
1,3-Dichlorobenzene	ND	6.4	1.28		1,2,3-Trichloropropane	ND	6.4	1.28	
1,4-Dichlorobenzene	ND	6.4	1.28		1,2,4-Trimethylbenzene	ND	6.4	1.28	
Dichlorodifluoromethane	ND	6.4	1.28		Trichlorofluoromethane	ND	64	1.28	
1,1-Dichloroethane	ND	6.4	1.28		1,3,5-Trimethylbenzene	ND	6.4	1.28	
1,2-Dichloroethane	ND	6.4	1.28		Vinyl Acetate	ND	64	1.28	
1,1-Dichloroethene	ND	6.4	1.28		Vinyl Chloride	ND	6.4	1.28	
c-1,2-Dichloroethene	ND	6.4	1.28		p/m-Xylene	ND	6.4	1.28	
t-1,2-Dichloroethene	ND	6.4	1.28		o-Xylene	ND	6.4	1.28	
1,2-Dichloropropane	ND	6.4	1.28		Methyl-t-Butyl Ether (MTBE)	ND	6.4	1.28	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	102	73-139		1,2-Dichloroethane-d4	107	73-145	
Toluene-d8	98	90-108		1,4-Bromofluorobenzene	100	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/kg

Project: Shell Mounds 2006 — Page 5 of 21

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1-3	**06-11-0207-5**	**11/01/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	160	1.30		1,3-Dichloropropane	ND	6.5	1.30	
Benzene	ND	6.5	1.30		2,2-Dichloropropane	ND	6.5	1.30	
Bromobenzene	ND	6.5	1.30		1,1-Dichloropropene	ND	6.5	1.30	
Bromochloromethane	ND	6.5	1.30		c-1,3-Dichloropropene	ND	6.5	1.30	
Bromodichloromethane	ND	6.5	1.30		t-1,3-Dichloropropene	ND	6.5	1.30	
Bromoform	ND	6.5	1.30		Ethylbenzene	ND	6.5	1.30	
Bromomethane	ND	32	1.30		2-Hexanone	ND	65	1.30	
2-Butanone	ND	65	1.30		Isopropylbenzene	ND	6.5	1.30	
n-Butylbenzene	ND	6.5	1.30		p-Isopropyltoluene	ND	6.5	1.30	
sec-Butylbenzene	ND	6.5	1.30		Methylene Chloride	ND	65	1.30	
tert-Butylbenzene	ND	6.5	1.30		4-Methyl-2-Pentanone	ND	65	1.30	
Carbon Disulfide	ND	65	1.30		Naphthalene	ND	65	1.30	
Carbon Tetrachloride	ND	6.5	1.30		n-Propylbenzene	ND	6.5	1.30	
Chlorobenzene	ND	6.5	1.30		Styrene	ND	6.5	1.30	
Chloroethane	ND	6.5	1.30		1,1,1,2-Tetrachloroethane	ND	6.5	1.30	
Chloroform	ND	6.5	1.30		1,1,2,2-Tetrachloroethane	ND	6.5	1.30	
Chloromethane	ND	32	1.30		Tetrachloroethene	ND	6.5	1.30	
2-Chlorotoluene	ND	6.5	1.30		Toluene	ND	6.5	1.30	
4-Chlorotoluene	ND	6.5	1.30		1,2,3-Trichlorobenzene	ND	13	1.30	
Dibromochloromethane	ND	6.5	1.30		1,2,4-Trichlorobenzene	ND	6.5	1.30	
1,2-Dibromo-3-Chloropropane	ND	13	1.30		1,1,1-Trichloroethane	ND	6.5	1.30	
1,2-Dibromoethane	ND	6.5	1.30		1,1,2-Trichloroethane	ND	6.5	1.30	
Dibromomethane	ND	6.5	1.30		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	65	1.30	
1,2-Dichlorobenzene	ND	6.5	1.30		Trichloroethene	ND	6.5	1.30	
1,3-Dichlorobenzene	ND	6.5	1.30		1,2,3-Trichloropropane	ND	6.5	1.30	
1,4-Dichlorobenzene	ND	6.5	1.30		1,2,4-Trimethylbenzene	ND	6.5	1.30	
Dichlorodifluoromethane	ND	6.5	1.30		Trichlorofluoromethane	ND	65	1.30	
1,1-Dichloroethane	ND	6.5	1.30		1,3,5-Trimethylbenzene	ND	6.5	1.30	
1,2-Dichloroethane	ND	6.5	1.30		Vinyl Acetate	ND	65	1.30	
1,1-Dichloroethene	ND	6.5	1.30		Vinyl Chloride	ND	6.5	1.30	
c-1,2-Dichloroethene	ND	6.5	1.30		p/m-Xylene	ND	6.5	1.30	
t-1,2-Dichloroethene	ND	6.5	1.30		o-Xylene	ND	6.5	1.30	
1,2-Dichloropropane	ND	6.5	1.30		Methyl-t-Butyl Ether (MTBE)	ND	6.5	1.30	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	107	73-139		1,2-Dichloroethane-d4	109	73-145	
Toluene-d8	98	90-108		1,4-Bromofluorobenzene	98	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2B-1	**06-11-0207-6**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	160	1.28		1,3-Dichloropropane	ND	6.4	1.28	
Benzene	ND	6.4	1.28		2,2-Dichloropropane	ND	6.4	1.28	
Bromobenzene	ND	6.4	1.28		1,1-Dichloropropene	ND	6.4	1.28	
Bromochloromethane	ND	6.4	1.28		c-1,3-Dichloropropene	ND	6.4	1.28	
Bromodichloromethane	ND	6.4	1.28		t-1,3-Dichloropropene	ND	6.4	1.28	
Bromoform	ND	6.4	1.28		Ethylbenzene	ND	6.4	1.28	
Bromomethane	ND	32	1.28		2-Hexanone	ND	64	1.28	
2-Butanone	ND	64	1.28		Isopropylbenzene	ND	6.4	1.28	
n-Butylbenzene	ND	6.4	1.28		p-Isopropyltoluene	ND	6.4	1.28	
sec-Butylbenzene	ND	6.4	1.28		Methylene Chloride	ND	64	1.28	
tert-Butylbenzene	ND	6.4	1.28		4-Methyl-2-Pentanone	ND	64	1.28	
Carbon Disulfide	ND	64	1.28		Naphthalene	ND	64	1.28	
Carbon Tetrachloride	ND	6.4	1.28		n-Propylbenzene	ND	6.4	1.28	
Chlorobenzene	ND	6.4	1.28		Styrene	ND	6.4	1.28	
Chloroethane	ND	6.4	1.28		1,1,1,2-Tetrachloroethane	ND	6.4	1.28	
Chloroform	ND	6.4	1.28		1,1,2,2-Tetrachloroethane	ND	6.4	1.28	
Chloromethane	ND	32	1.28		Tetrachloroethene	ND	6.4	1.28	
2-Chlorotoluene	ND	6.4	1.28		Toluene	ND	6.4	1.28	
4-Chlorotoluene	ND	6.4	1.28		1,2,3-Trichlorobenzene	ND	13	1.28	
Dibromochloromethane	ND	6.4	1.28		1,2,4-Trichlorobenzene	ND	6.4	1.28	
1,2-Dibromo-3-Chloropropane	ND	13	1.28		1,1,1-Trichloroethane	ND	6.4	1.28	
1,2-Dibromoethane	ND	6.4	1.28		1,1,2-Trichloroethane	ND	6.4	1.28	
Dibromomethane	ND	6.4	1.28		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	64	1.28	
1,2-Dichlorobenzene	ND	6.4	1.28		Trichloroethene	ND	6.4	1.28	
1,3-Dichlorobenzene	ND	6.4	1.28		1,2,3-Trichloropropane	ND	6.4	1.28	
1,4-Dichlorobenzene	ND	6.4	1.28		1,2,4-Trimethylbenzene	ND	6.4	1.28	
Dichlorodifluoromethane	ND	6.4	1.28		Trichlorofluoromethane	ND	64	1.28	
1,1-Dichloroethane	ND	6.4	1.28		1,3,5-Trimethylbenzene	ND	6.4	1.28	
1,2-Dichloroethane	ND	6.4	1.28		Vinyl Acetate	ND	64	1.28	
1,1-Dichloroethene	ND	6.4	1.28		Vinyl Chloride	ND	6.4	1.28	
c-1,2-Dichloroethene	ND	6.4	1.28		p/m-Xylene	ND	6.4	1.28	
t-1,2-Dichloroethene	ND	6.4	1.28		o-Xylene	ND	6.4	1.28	
1,2-Dichloropropane	ND	6.4	1.28		Methyl-t-Butyl Ether (MTBE)	ND	6.4	1.28	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	102	73-139		1,2-Dichloroethane-d4	104	73-145	
Toluene-d8	98	90-108		1,4-Bromofluorobenzene	100	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2B-2	**06-11-0207-7**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	170	1.37		1,3-Dichloropropane	ND	6.9	1.37	
Benzene	ND	6.9	1.37		2,2-Dichloropropane	ND	6.9	1.37	
Bromobenzene	ND	6.9	1.37		1,1-Dichloropropene	ND	6.9	1.37	
Bromochloromethane	ND	6.9	1.37		c-1,3-Dichloropropene	ND	6.9	1.37	
Bromodichloromethane	ND	6.9	1.37		t-1,3-Dichloropropene	ND	6.9	1.37	
Bromoform	ND	6.9	1.37		Ethylbenzene	ND	6.9	1.37	
Bromomethane	ND	34	1.37		2-Hexanone	ND	69	1.37	
2-Butanone	ND	69	1.37		Isopropylbenzene	ND	6.9	1.37	
n-Butylbenzene	ND	6.9	1.37		p-Isopropyltoluene	ND	6.9	1.37	
sec-Butylbenzene	ND	6.9	1.37		Methylene Chloride	ND	69	1.37	
tert-Butylbenzene	ND	6.9	1.37		4-Methyl-2-Pentanone	ND	69	1.37	
Carbon Disulfide	ND	69	1.37		Naphthalene	ND	69	1.37	
Carbon Tetrachloride	ND	6.9	1.37		n-Propylbenzene	ND	6.9	1.37	
Chlorobenzene	ND	6.9	1.37		Styrene	ND	6.9	1.37	
Chloroethane	ND	6.9	1.37		1,1,1,2-Tetrachloroethane	ND	6.9	1.37	
Chloroform	ND	6.9	1.37		1,1,2,2-Tetrachloroethane	ND	6.9	1.37	
Chloromethane	ND	34	1.37		Tetrachloroethene	ND	6.9	1.37	
2-Chlorotoluene	ND	6.9	1.37		Toluene	ND	6.9	1.37	
4-Chlorotoluene	ND	6.9	1.37		1,2,3-Trichlorobenzene	ND	14	1.37	
Dibromochloromethane	ND	6.9	1.37		1,2,4-Trichlorobenzene	ND	6.9	1.37	
1,2-Dibromo-3-Chloropropane	ND	14	1.37		1,1,1-Trichloroethane	ND	6.9	1.37	
1,2-Dibromoethane	ND	6.9	1.37		1,1,2-Trichloroethane	ND	6.9	1.37	
Dibromomethane	ND	6.9	1.37		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	69	1.37	
1,2-Dichlorobenzene	ND	6.9	1.37		Trichloroethene	ND	6.9	1.37	
1,3-Dichlorobenzene	ND	6.9	1.37		1,2,3-Trichloropropane	ND	6.9	1.37	
1,4-Dichlorobenzene	ND	6.9	1.37		1,2,4-Trimethylbenzene	ND	6.9	1.37	
Dichlorodifluoromethane	ND	6.9	1.37		Trichlorofluoromethane	ND	69	1.37	
1,1-Dichloroethane	ND	6.9	1.37		1,3,5-Trimethylbenzene	ND	6.9	1.37	
1,2-Dichloroethane	ND	6.9	1.37		Vinyl Acetate	ND	69	1.37	
1,1-Dichloroethene	ND	6.9	1.37		Vinyl Chloride	ND	6.9	1.37	
c-1,2-Dichloroethene	ND	6.9	1.37		p/m-Xylene	ND	6.9	1.37	
t-1,2-Dichloroethene	ND	6.9	1.37		o-Xylene	ND	6.9	1.37	
1,2-Dichloropropane	ND	6.9	1.37		Methyl-t-Butyl Ether (MTBE)	ND	6.9	1.37	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	103	73-139		1,2-Dichloroethane-d4	103	73-145	
Toluene-d8	98	90-108		1,4-Bromofluorobenzene	98	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/kg

Project: Shell Mounds 2006 — Page 8 of 21

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2B-3	**06-11-0207-8**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	160	1.28		1,3-Dichloropropane	ND	6.4	1.28	
Benzene	ND	6.4	1.28		2,2-Dichloropropane	ND	6.4	1.28	
Bromobenzene	ND	6.4	1.28		1,1-Dichloropropene	ND	6.4	1.28	
Bromochloromethane	ND	6.4	1.28		c-1,3-Dichloropropene	ND	6.4	1.28	
Bromodichloromethane	ND	6.4	1.28		t-1,3-Dichloropropene	ND	6.4	1.28	
Bromoform	ND	6.4	1.28		Ethylbenzene	ND	6.4	1.28	
Bromomethane	ND	32	1.28		2-Hexanone	ND	64	1.28	
2-Butanone	ND	64	1.28		Isopropylbenzene	ND	6.4	1.28	
n-Butylbenzene	ND	6.4	1.28		p-Isopropyltoluene	ND	6.4	1.28	
sec-Butylbenzene	ND	6.4	1.28		Methylene Chloride	ND	64	1.28	
tert-Butylbenzene	ND	6.4	1.28		4-Methyl-2-Pentanone	ND	64	1.28	
Carbon Disulfide	ND	64	1.28		Naphthalene	ND	64	1.28	
Carbon Tetrachloride	ND	6.4	1.28		n-Propylbenzene	ND	6.4	1.28	
Chlorobenzene	ND	6.4	1.28		Styrene	ND	6.4	1.28	
Chloroethane	ND	6.4	1.28		1,1,1,2-Tetrachloroethane	ND	6.4	1.28	
Chloroform	ND	6.4	1.28		1,1,2,2-Tetrachloroethane	ND	6.4	1.28	
Chloromethane	ND	32	1.28		Tetrachloroethene	ND	6.4	1.28	
2-Chlorotoluene	ND	6.4	1.28		Toluene	ND	6.4	1.28	
4-Chlorotoluene	ND	6.4	1.28		1,2,3-Trichlorobenzene	ND	13	1.28	
Dibromochloromethane	ND	6.4	1.28		1,2,4-Trichlorobenzene	ND	6.4	1.28	
1,2-Dibromo-3-Chloropropane	ND	13	1.28		1,1,1-Trichloroethane	ND	6.4	1.28	
1,2-Dibromoethane	ND	6.4	1.28		1,1,2-Trichloroethane	ND	6.4	1.28	
Dibromomethane	ND	6.4	1.28		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	64	1.28	
1,2-Dichlorobenzene	ND	6.4	1.28		Trichloroethene	ND	6.4	1.28	
1,3-Dichlorobenzene	ND	6.4	1.28		1,2,3-Trichloropropane	ND	6.4	1.28	
1,4-Dichlorobenzene	ND	6.4	1.28		1,2,4-Trimethylbenzene	ND	6.4	1.28	
Dichlorodifluoromethane	ND	6.4	1.28		Trichlorofluoromethane	ND	64	1.28	
1,1-Dichloroethane	ND	6.4	1.28		1,3,5-Trimethylbenzene	ND	6.4	1.28	
1,2-Dichloroethane	ND	6.4	1.28		Vinyl Acetate	ND	64	1.28	
1,1-Dichloroethene	ND	6.4	1.28		Vinyl Chloride	ND	6.4	1.28	
c-1,2-Dichloroethene	ND	6.4	1.28		p/m-Xylene	ND	6.4	1.28	
t-1,2-Dichloroethene	ND	6.4	1.28		o-Xylene	ND	6.4	1.28	
1,2-Dichloropropane	ND	6.4	1.28		Methyl-t-Butyl Ether (MTBE)	ND	6.4	1.28	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	102	73-139		1,2-Dichloroethane-d4	105	73-145	
Toluene-d8	97	90-108		1,4-Bromofluorobenzene	99	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-1	**06-11-0207-9**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	160	1.32		1,3-Dichloropropane	ND	6.6	1.32	
Benzene	ND	6.6	1.32		2,2-Dichloropropane	ND	6.6	1.32	
Bromobenzene	ND	6.6	1.32		1,1-Dichloropropene	ND	6.6	1.32	
Bromochloromethane	ND	6.6	1.32		c-1,3-Dichloropropene	ND	6.6	1.32	
Bromodichloromethane	ND	6.6	1.32		t-1,3-Dichloropropene	ND	6.6	1.32	
Bromoform	ND	6.6	1.32		Ethylbenzene	ND	6.6	1.32	
Bromomethane	ND	33	1.32		2-Hexanone	ND	66	1.32	
2-Butanone	ND	66	1.32		Isopropylbenzene	ND	6.6	1.32	
n-Butylbenzene	ND	6.6	1.32		p-Isopropyltoluene	ND	6.6	1.32	
sec-Butylbenzene	ND	6.6	1.32		Methylene Chloride	ND	66	1.32	
tert-Butylbenzene	ND	6.6	1.32		4-Methyl-2-Pentanone	ND	66	1.32	
Carbon Disulfide	ND	66	1.32		Naphthalene	ND	66	1.32	
Carbon Tetrachloride	ND	6.6	1.32		n-Propylbenzene	ND	6.6	1.32	
Chlorobenzene	ND	6.6	1.32		Styrene	ND	6.6	1.32	
Chloroethane	ND	6.6	1.32		1,1,1,2-Tetrachloroethane	ND	6.6	1.32	
Chloroform	ND	6.6	1.32		1,1,2,2-Tetrachloroethane	ND	6.6	1.32	
Chloromethane	ND	33	1.32		Tetrachloroethene	ND	6.6	1.32	
2-Chlorotoluene	ND	6.6	1.32		Toluene	ND	6.6	1.32	
4-Chlorotoluene	ND	6.6	1.32		1,2,3-Trichlorobenzene	ND	13	1.32	
Dibromochloromethane	ND	6.6	1.32		1,2,4-Trichlorobenzene	ND	6.6	1.32	
1,2-Dibromo-3-Chloropropane	ND	13	1.32		1,1,1-Trichloroethane	ND	6.6	1.32	
1,2-Dibromoethane	ND	6.6	1.32		1,1,2-Trichloroethane	ND	6.6	1.32	
Dibromomethane	ND	6.6	1.32		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	66	1.32	
1,2-Dichlorobenzene	ND	6.6	1.32		Trichloroethene	ND	6.6	1.32	
1,3-Dichlorobenzene	ND	6.6	1.32		1,2,3-Trichloropropane	ND	6.6	1.32	
1,4-Dichlorobenzene	ND	6.6	1.32		1,2,4-Trimethylbenzene	ND	6.6	1.32	
Dichlorodifluoromethane	ND	6.6	1.32		Trichlorofluoromethane	ND	66	1.32	
1,1-Dichloroethane	ND	6.6	1.32		1,3,5-Trimethylbenzene	ND	6.6	1.32	
1,2-Dichloroethane	ND	6.6	1.32		Vinyl Acetate	ND	66	1.32	
1,1-Dichloroethene	ND	6.6	1.32		Vinyl Chloride	ND	6.6	1.32	
c-1,2-Dichloroethene	ND	6.6	1.32		p/m-Xylene	ND	6.6	1.32	
t-1,2-Dichloroethene	ND	6.6	1.32		o-Xylene	ND	6.6	1.32	
1,2-Dichloropropane	ND	6.6	1.32		Methyl-t-Butyl Ether (MTBE)	ND	6.6	1.32	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	102	73-139		1,2-Dichloroethane-d4	105	73-145	
Toluene-d8	99	90-108		1,4-Bromofluorobenzene	100	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-2	**06-11-0207-10**	**11/02/06**	**Solid**	**11/07/06**	**11/07/06**	**061107L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	170	1.33		1,3-Dichloropropane	ND	6.7	1.33	
Benzene	ND	6.7	1.33		2,2-Dichloropropane	ND	6.7	1.33	
Bromobenzene	ND	6.7	1.33		1,1-Dichloropropene	ND	6.7	1.33	
Bromochloromethane	ND	6.7	1.33		c-1,3-Dichloropropene	ND	6.7	1.33	
Bromodichloromethane	ND	6.7	1.33		t-1,3-Dichloropropene	ND	6.7	1.33	
Bromoform	ND	6.7	1.33		Ethylbenzene	ND	6.7	1.33	
Bromomethane	ND	33	1.33		2-Hexanone	ND	67	1.33	
2-Butanone	ND	67	1.33		Isopropylbenzene	ND	6.7	1.33	
n-Butylbenzene	ND	6.7	1.33		p-Isopropyltoluene	ND	6.7	1.33	
sec-Butylbenzene	ND	6.7	1.33		Methylene Chloride	ND	67	1.33	
tert-Butylbenzene	ND	6.7	1.33		4-Methyl-2-Pentanone	ND	67	1.33	
Carbon Disulfide	ND	67	1.33		Naphthalene	ND	67	1.33	
Carbon Tetrachloride	ND	6.7	1.33		n-Propylbenzene	ND	6.7	1.33	
Chlorobenzene	ND	6.7	1.33		Styrene	ND	6.7	1.33	
Chloroethane	ND	6.7	1.33		1,1,1,2-Tetrachloroethane	ND	6.7	1.33	
Chloroform	ND	6.7	1.33		1,1,2,2-Tetrachloroethane	ND	6.7	1.33	
Chloromethane	ND	33	1.33		Tetrachloroethene	ND	6.7	1.33	
2-Chlorotoluene	ND	6.7	1.33		Toluene	ND	6.7	1.33	
4-Chlorotoluene	ND	6.7	1.33		1,2,3-Trichlorobenzene	ND	13	1.33	
Dibromochloromethane	ND	6.7	1.33		1,2,4-Trichlorobenzene	ND	6.7	1.33	
1,2-Dibromo-3-Chloropropane	ND	13	1.33		1,1,1-Trichloroethane	ND	6.7	1.33	
1,2-Dibromoethane	ND	6.7	1.33		1,1,2-Trichloroethane	ND	6.7	1.33	
Dibromomethane	ND	6.7	1.33		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	67	1.33	
1,2-Dichlorobenzene	ND	6.7	1.33		Trichloroethene	ND	6.7	1.33	
1,3-Dichlorobenzene	ND	6.7	1.33		1,2,3-Trichloropropane	ND	6.7	1.33	
1,4-Dichlorobenzene	ND	6.7	1.33		1,2,4-Trimethylbenzene	ND	6.7	1.33	
Dichlorodifluoromethane	ND	6.7	1.33		Trichlorofluoromethane	ND	67	1.33	
1,1-Dichloroethane	ND	6.7	1.33		1,3,5-Trimethylbenzene	ND	6.7	1.33	
1,2-Dichloroethane	ND	6.7	1.33		Vinyl Acetate	ND	67	1.33	
1,1-Dichloroethene	ND	6.7	1.33		Vinyl Chloride	ND	6.7	1.33	
c-1,2-Dichloroethene	ND	6.7	1.33		p/m-Xylene	ND	6.7	1.33	
t-1,2-Dichloroethene	ND	6.7	1.33		o-Xylene	ND	6.7	1.33	
1,2-Dichloropropane	ND	6.7	1.33		Methyl-t-Butyl Ether (MTBE)	ND	6.7	1.33	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	103	73-139		1,2-Dichloroethane-d4	106	73-145	
Toluene-d8	98	90-108		1,4-Bromofluorobenzene	100	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-3	**06-11-0207-11**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	160	1.28		1,3-Dichloropropane	ND	6.4	1.28	
Benzene	ND	6.4	1.28		2,2-Dichloropropane	ND	6.4	1.28	
Bromobenzene	ND	6.4	1.28		1,1-Dichloropropene	ND	6.4	1.28	
Bromochloromethane	ND	6.4	1.28		c-1,3-Dichloropropene	ND	6.4	1.28	
Bromodichloromethane	ND	6.4	1.28		t-1,3-Dichloropropene	ND	6.4	1.28	
Bromoform	ND	6.4	1.28		Ethylbenzene	ND	6.4	1.28	
Bromomethane	ND	32	1.28		2-Hexanone	ND	64	1.28	
2-Butanone	ND	64	1.28		Isopropylbenzene	ND	6.4	1.28	
n-Butylbenzene	ND	6.4	1.28		p-Isopropyltoluene	ND	6.4	1.28	
sec-Butylbenzene	ND	6.4	1.28		Methylene Chloride	ND	64	1.28	
tert-Butylbenzene	ND	6.4	1.28		4-Methyl-2-Pentanone	ND	64	1.28	
Carbon Disulfide	ND	64	1.28		Naphthalene	ND	64	1.28	
Carbon Tetrachloride	ND	6.4	1.28		n-Propylbenzene	ND	6.4	1.28	
Chlorobenzene	ND	6.4	1.28		Styrene	ND	6.4	1.28	
Chloroethane	ND	6.4	1.28		1,1,1,2-Tetrachloroethane	ND	6.4	1.28	
Chloroform	ND	6.4	1.28		1,1,2,2-Tetrachloroethane	ND	6.4	1.28	
Chloromethane	ND	32	1.28		Tetrachloroethene	ND	6.4	1.28	
2-Chlorotoluene	ND	6.4	1.28		Toluene	ND	6.4	1.28	
4-Chlorotoluene	ND	6.4	1.28		1,2,3-Trichlorobenzene	ND	13	1.28	
Dibromochloromethane	ND	6.4	1.28		1,2,4-Trichlorobenzene	ND	6.4	1.28	
1,2-Dibromo-3-Chloropropane	ND	13	1.28		1,1,1-Trichloroethane	ND	6.4	1.28	
1,2-Dibromoethane	ND	6.4	1.28		1,1,2-Trichloroethane	ND	6.4	1.28	
Dibromomethane	ND	6.4	1.28		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	64	1.28	
1,2-Dichlorobenzene	ND	6.4	1.28		Trichloroethene	ND	6.4	1.28	
1,3-Dichlorobenzene	ND	6.4	1.28		1,2,3-Trichloropropane	ND	6.4	1.28	
1,4-Dichlorobenzene	ND	6.4	1.28		1,2,4-Trimethylbenzene	ND	6.4	1.28	
Dichlorodifluoromethane	ND	6.4	1.28		Trichlorofluoromethane	ND	64	1.28	
1,1-Dichloroethane	ND	6.4	1.28		1,3,5-Trimethylbenzene	ND	6.4	1.28	
1,2-Dichloroethane	ND	6.4	1.28		Vinyl Acetate	ND	64	1.28	
1,1-Dichloroethene	ND	6.4	1.28		Vinyl Chloride	ND	6.4	1.28	
c-1,2-Dichloroethene	ND	6.4	1.28		p/m-Xylene	ND	6.4	1.28	
t-1,2-Dichloroethene	ND	6.4	1.28		o-Xylene	ND	6.4	1.28	
1,2-Dichloropropane	ND	6.4	1.28		Methyl-t-Butyl Ether (MTBE)	ND	6.4	1.28	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	102	73-139		1,2-Dichloroethane-d4	103	73-145	
Toluene-d8	98	90-108		1,4-Bromofluorobenzene	100	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/kg

Project: Shell Mounds 2006 — Page 12 of 21

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-REF	**06-11-0207-12**	**11/02/06**	**Solid**	**11/06/06**	**11/06/06**	**061106L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	170	1.39		1,3-Dichloropropane	ND	6.9	1.39	
Benzene	ND	6.9	1.39		2,2-Dichloropropane	ND	6.9	1.39	
Bromobenzene	ND	6.9	1.39		1,1-Dichloropropene	ND	6.9	1.39	
Bromochloromethane	ND	6.9	1.39		c-1,3-Dichloropropene	ND	6.9	1.39	
Bromodichloromethane	ND	6.9	1.39		t-1,3-Dichloropropene	ND	6.9	1.39	
Bromoform	ND	6.9	1.39		Ethylbenzene	ND	6.9	1.39	
Bromomethane	ND	35	1.39		2-Hexanone	ND	69	1.39	
2-Butanone	ND	69	1.39		Isopropylbenzene	ND	6.9	1.39	
n-Butylbenzene	ND	6.9	1.39		p-Isopropyltoluene	ND	6.9	1.39	
sec-Butylbenzene	ND	6.9	1.39		Methylene Chloride	ND	69	1.39	
tert-Butylbenzene	ND	6.9	1.39		4-Methyl-2-Pentanone	ND	69	1.39	
Carbon Disulfide	ND	69	1.39		Naphthalene	ND	69	1.39	
Carbon Tetrachloride	ND	6.9	1.39		n-Propylbenzene	ND	6.9	1.39	
Chlorobenzene	ND	6.9	1.39		Styrene	ND	6.9	1.39	
Chloroethane	ND	6.9	1.39		1,1,1,2-Tetrachloroethane	ND	6.9	1.39	
Chloroform	ND	6.9	1.39		1,1,2,2-Tetrachloroethane	ND	6.9	1.39	
Chloromethane	ND	35	1.39		Tetrachloroethene	ND	6.9	1.39	
2-Chlorotoluene	ND	6.9	1.39		Toluene	ND	6.9	1.39	
4-Chlorotoluene	ND	6.9	1.39		1,2,3-Trichlorobenzene	ND	14	1.39	
Dibromochloromethane	ND	6.9	1.39		1,2,4-Trichlorobenzene	ND	6.9	1.39	
1,2-Dibromo-3-Chloropropane	ND	14	1.39		1,1,1-Trichloroethane	ND	6.9	1.39	
1,2-Dibromoethane	ND	6.9	1.39		1,1,2-Trichloroethane	ND	6.9	1.39	
Dibromomethane	ND	6.9	1.39		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	69	1.39	
1,2-Dichlorobenzene	ND	6.9	1.39		Trichloroethene	ND	6.9	1.39	
1,3-Dichlorobenzene	ND	6.9	1.39		1,2,3-Trichloropropane	ND	6.9	1.39	
1,4-Dichlorobenzene	ND	6.9	1.39		1,2,4-Trimethylbenzene	ND	6.9	1.39	
Dichlorodifluoromethane	ND	6.9	1.39		Trichlorofluoromethane	ND	69	1.39	
1,1-Dichloroethane	ND	6.9	1.39		1,3,5-Trimethylbenzene	ND	6.9	1.39	
1,2-Dichloroethane	ND	6.9	1.39		Vinyl Acetate	ND	69	1.39	
1,1-Dichloroethene	ND	6.9	1.39		Vinyl Chloride	ND	6.9	1.39	
c-1,2-Dichloroethene	ND	6.9	1.39		p/m-Xylene	ND	6.9	1.39	
t-1,2-Dichloroethene	ND	6.9	1.39		o-Xylene	ND	6.9	1.39	
1,2-Dichloropropane	ND	6.9	1.39		Methyl-t-Butyl Ether (MTBE)	ND	6.9	1.39	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	100	73-139		1,2-Dichloroethane-d4	104	73-145	
Toluene-d8	99	90-108		1,4-Bromofluorobenzene	101	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/kg

Project: Shell Mounds 2006 — Page 13 of 21

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-2 BROWN	**06-11-0207-13**	**11/02/06**	**Solid**	**11/07/06**	**11/07/06**	**061107L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	180	1.41		1,3-Dichloropropane	ND	7.0	1.41	
Benzene	ND	7.0	1.41		2,2-Dichloropropane	ND	7.0	1.41	
Bromobenzene	ND	7.0	1.41		1,1-Dichloropropene	ND	7.0	1.41	
Bromochloromethane	ND	7.0	1.41		c-1,3-Dichloropropene	ND	7.0	1.41	
Bromodichloromethane	ND	7.0	1.41		t-1,3-Dichloropropene	ND	7.0	1.41	
Bromoform	ND	7.0	1.41		Ethylbenzene	ND	7.0	1.41	
Bromomethane	ND	35	1.41		2-Hexanone	ND	70	1.41	
2-Butanone	ND	70	1.41		Isopropylbenzene	ND	7.0	1.41	
n-Butylbenzene	ND	7.0	1.41		p-Isopropyltoluene	ND	7.0	1.41	
sec-Butylbenzene	ND	7.0	1.41		Methylene Chloride	ND	70	1.41	
tert-Butylbenzene	ND	7.0	1.41		4-Methyl-2-Pentanone	ND	70	1.41	
Carbon Disulfide	ND	70	1.41		Naphthalene	ND	70	1.41	
Carbon Tetrachloride	ND	7.0	1.41		n-Propylbenzene	ND	7.0	1.41	
Chlorobenzene	ND	7.0	1.41		Styrene	ND	7.0	1.41	
Chloroethane	ND	7.0	1.41		1,1,1,2-Tetrachloroethane	ND	7.0	1.41	
Chloroform	ND	7.0	1.41		1,1,2,2-Tetrachloroethane	ND	7.0	1.41	
Chloromethane	ND	35	1.41		Tetrachloroethene	ND	7.0	1.41	
2-Chlorotoluene	ND	7.0	1.41		Toluene	ND	7.0	1.41	
4-Chlorotoluene	ND	7.0	1.41		1,2,3-Trichlorobenzene	ND	14	1.41	
Dibromochloromethane	ND	7.0	1.41		1,2,4-Trichlorobenzene	ND	7.0	1.41	
1,2-Dibromo-3-Chloropropane	ND	14	1.41		1,1,1-Trichloroethane	ND	7.0	1.41	
1,2-Dibromoethane	ND	7.0	1.41		1,1,2-Trichloroethane	ND	7.0	1.41	
Dibromomethane	ND	7.0	1.41		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	70	1.41	
1,2-Dichlorobenzene	ND	7.0	1.41		Trichloroethene	ND	7.0	1.41	
1,3-Dichlorobenzene	ND	7.0	1.41		1,2,3-Trichloropropane	ND	7.0	1.41	
1,4-Dichlorobenzene	ND	7.0	1.41		1,2,4-Trimethylbenzene	ND	7.0	1.41	
Dichlorodifluoromethane	ND	7.0	1.41		Trichlorofluoromethane	ND	70	1.41	
1,1-Dichloroethane	ND	7.0	1.41		1,3,5-Trimethylbenzene	ND	7.0	1.41	
1,2-Dichloroethane	ND	7.0	1.41		Vinyl Acetate	ND	70	1.41	
1,1-Dichloroethene	ND	7.0	1.41		Vinyl Chloride	ND	7.0	1.41	
c-1,2-Dichloroethene	ND	7.0	1.41		p/m-Xylene	7.2	7.0	1.41	
t-1,2-Dichloroethene	ND	7.0	1.41		o-Xylene	ND	7.0	1.41	
1,2-Dichloropropane	ND	7.0	1.41		Methyl-t-Butyl Ether (MTBE)	ND	7.0	1.41	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	105	73-139		1,2-Dichloroethane-d4	109	73-145	
Toluene-d8	96	90-108		1,4-Bromofluorobenzene	98	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-1B-2 GREY	**06-11-0207-14**	**11/02/06**	**Solid**	**11/09/06**	**11/09/06**	**061109L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	160	1.30		1,3-Dichloropropane	ND	6.5	1.30	
Benzene	ND	6.5	1.30		2,2-Dichloropropane	ND	6.5	1.30	
Bromobenzene	ND	6.5	1.30		1,1-Dichloropropene	ND	6.5	1.30	
Bromochloromethane	ND	6.5	1.30		c-1,3-Dichloropropene	ND	6.5	1.30	
Bromodichloromethane	ND	6.5	1.30		t-1,3-Dichloropropene	ND	6.5	1.30	
Bromoform	ND	6.5	1.30		Ethylbenzene	ND	6.5	1.30	
Bromomethane	ND	32	1.30		2-Hexanone	ND	65	1.30	
2-Butanone	ND	65	1.30		Isopropylbenzene	ND	6.5	1.30	
n-Butylbenzene	ND	6.5	1.30		p-Isopropyltoluene	ND	6.5	1.30	
sec-Butylbenzene	ND	6.5	1.30		Methylene Chloride	ND	65	1.30	
tert-Butylbenzene	ND	6.5	1.30		4-Methyl-2-Pentanone	ND	65	1.30	
Carbon Disulfide	ND	65	1.30		Naphthalene	ND	65	1.30	
Carbon Tetrachloride	ND	6.5	1.30		n-Propylbenzene	ND	6.5	1.30	
Chlorobenzene	ND	6.5	1.30		Styrene	ND	6.5	1.30	
Chloroethane	ND	6.5	1.30		1,1,1,2-Tetrachloroethane	ND	6.5	1.30	
Chloroform	ND	6.5	1.30		1,1,2,2-Tetrachloroethane	ND	6.5	1.30	
Chloromethane	ND	32	1.30		Tetrachloroethene	ND	6.5	1.30	
2-Chlorotoluene	ND	6.5	1.30		Toluene	ND	6.5	1.30	
4-Chlorotoluene	ND	6.5	1.30		1,2,3-Trichlorobenzene	ND	13	1.30	
Dibromochloromethane	ND	6.5	1.30		1,2,4-Trichlorobenzene	ND	6.5	1.30	
1,2-Dibromo-3-Chloropropane	ND	13	1.30		1,1,1-Trichloroethane	ND	6.5	1.30	
1,2-Dibromoethane	ND	6.5	1.30		1,1,2-Trichloroethane	ND	6.5	1.30	
Dibromomethane	ND	6.5	1.30		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	65	1.30	
1,2-Dichlorobenzene	ND	6.5	1.30		Trichloroethene	ND	6.5	1.30	
1,3-Dichlorobenzene	ND	6.5	1.30		1,2,3-Trichloropropane	ND	6.5	1.30	
1,4-Dichlorobenzene	ND	6.5	1.30		1,2,4-Trimethylbenzene	ND	6.5	1.30	
Dichlorodifluoromethane	ND	6.5	1.30		Trichlorofluoromethane	ND	65	1.30	
1,1-Dichloroethane	ND	6.5	1.30		1,3,5-Trimethylbenzene	ND	6.5	1.30	
1,2-Dichloroethane	ND	6.5	1.30		Vinyl Acetate	ND	65	1.30	
1,1-Dichloroethene	ND	6.5	1.30		Vinyl Chloride	ND	6.5	1.30	
c-1,2-Dichloroethene	ND	6.5	1.30		p/m-Xylene	ND	6.5	1.30	
t-1,2-Dichloroethene	ND	6.5	1.30		o-Xylene	ND	6.5	1.30	
1,2-Dichloropropane	ND	6.5	1.30		Methyl-t-Butyl Ether (MTBE)	ND	6.5	1.30	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	104	73-139		1,2-Dichloroethane-d4	99	73-145	
Toluene-d8	97	90-108		1,4-Bromofluorobenzene	96	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation		Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T		Work Order No:	06-11-0207
San Diego, CA 92121-1111		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/kg

Project: Shell Mounds 2006 — Page 15 of 21

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-3B	**06-11-0207-15**	**11/01/06**	**Solid**	**11/10/06**	**11/10/06**	**061110L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	150	1.23		1,3-Dichloropropane	ND	6.2	1.23	
Benzene	ND	6.2	1.23		2,2-Dichloropropane	ND	6.2	1.23	
Bromobenzene	ND	6.2	1.23		1,1-Dichloropropene	ND	6.2	1.23	
Bromochloromethane	ND	6.2	1.23		c-1,3-Dichloropropene	ND	6.2	1.23	
Bromodichloromethane	ND	6.2	1.23		t-1,3-Dichloropropene	ND	6.2	1.23	
Bromoform	ND	6.2	1.23		Ethylbenzene	ND	6.2	1.23	
Bromomethane	ND	31	1.23		2-Hexanone	ND	62	1.23	
2-Butanone	ND	62	1.23		Isopropylbenzene	ND	6.2	1.23	
n-Butylbenzene	ND	6.2	1.23		p-Isopropyltoluene	ND	6.2	1.23	
sec-Butylbenzene	ND	6.2	1.23		Methylene Chloride	67	62	1.23	
tert-Butylbenzene	ND	6.2	1.23		4-Methyl-2-Pentanone	ND	62	1.23	
Carbon Disulfide	ND	62	1.23		Naphthalene	ND	62	1.23	
Carbon Tetrachloride	ND	6.2	1.23		n-Propylbenzene	ND	6.2	1.23	
Chlorobenzene	ND	6.2	1.23		Styrene	ND	6.2	1.23	
Chloroethane	ND	6.2	1.23		1,1,1,2-Tetrachloroethane	ND	6.2	1.23	
Chloroform	ND	6.2	1.23		1,1,2,2-Tetrachloroethane	ND	6.2	1.23	
Chloromethane	ND	31	1.23		Tetrachloroethene	ND	6.2	1.23	
2-Chlorotoluene	ND	6.2	1.23		Toluene	11	6	1.23	
4-Chlorotoluene	ND	6.2	1.23		1,2,3-Trichlorobenzene	ND	12	1.23	
Dibromochloromethane	ND	6.2	1.23		1,2,4-Trichlorobenzene	ND	6.2	1.23	
1,2-Dibromo-3-Chloropropane	ND	12	1.23		1,1,1-Trichloroethane	ND	6.2	1.23	
1,2-Dibromoethane	ND	6.2	1.23		1,1,2-Trichloroethane	ND	6.2	1.23	
Dibromomethane	ND	6.2	1.23		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	62	1.23	
1,2-Dichlorobenzene	ND	6.2	1.23		Trichloroethene	ND	6.2	1.23	
1,3-Dichlorobenzene	ND	6.2	1.23		1,2,3-Trichloropropane	ND	6.2	1.23	
1,4-Dichlorobenzene	ND	6.2	1.23		1,2,4-Trimethylbenzene	ND	6.2	1.23	
Dichlorodifluoromethane	ND	6.2	1.23		Trichlorofluoromethane	ND	62	1.23	
1,1-Dichloroethane	ND	6.2	1.23		1,3,5-Trimethylbenzene	ND	6.2	1.23	
1,2-Dichloroethane	ND	6.2	1.23		Vinyl Acetate	ND	62	1.23	
1,1-Dichloroethene	ND	6.2	1.23		Vinyl Chloride	ND	6.2	1.23	
c-1,2-Dichloroethene	ND	6.2	1.23		p/m-Xylene	8.6	6.2	1.23	
t-1,2-Dichloroethene	ND	6.2	1.23		o-Xylene	ND	6.2	1.23	
1,2-Dichloropropane	ND	6.2	1.23		Methyl-t-Butyl Ether (MTBE)	ND	6.2	1.23	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	107	73-139		1,2-Dichloroethane-d4	104	73-145	
Toluene-d8	98	90-108		1,4-Bromofluorobenzene	92	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Science Applications International Corporation	Date Received:	11/03/06
9455 Towne Centre Dr. MS W-2T	Work Order No:	06-11-0207
San Diego, CA 92121-1111	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
GINA-2-2 DUP	**06-11-0207-16**	**11/01/06**	**Solid**	**11/10/06**	**11/10/06**	**061110L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	160	1.32		1,3-Dichloropropane	ND	6.6	1.32	
Benzene	ND	6.6	1.32		2,2-Dichloropropane	ND	6.6	1.32	
Bromobenzene	ND	6.6	1.32		1,1-Dichloropropene	ND	6.6	1.32	
Bromochloromethane	ND	6.6	1.32		c-1,3-Dichloropropene	ND	6.6	1.32	
Bromodichloromethane	ND	6.6	1.32		t-1,3-Dichloropropene	ND	6.6	1.32	
Bromoform	ND	6.6	1.32		Ethylbenzene	ND	6.6	1.32	
Bromomethane	ND	33	1.32		2-Hexanone	ND	66	1.32	
2-Butanone	ND	66	1.32		Isopropylbenzene	ND	6.6	1.32	
n-Butylbenzene	ND	6.6	1.32		p-Isopropyltoluene	ND	6.6	1.32	
sec-Butylbenzene	ND	6.6	1.32		Methylene Chloride	85	66	1.32	
tert-Butylbenzene	ND	6.6	1.32		4-Methyl-2-Pentanone	ND	66	1.32	
Carbon Disulfide	ND	66	1.32		Naphthalene	ND	66	1.32	
Carbon Tetrachloride	ND	6.6	1.32		n-Propylbenzene	ND	6.6	1.32	
Chlorobenzene	ND	6.6	1.32		Styrene	ND	6.6	1.32	
Chloroethane	ND	6.6	1.32		1,1,1,2-Tetrachloroethane	ND	6.6	1.32	
Chloroform	ND	6.6	1.32		1,1,2,2-Tetrachloroethane	ND	6.6	1.32	
Chloromethane	ND	33	1.32		Tetrachloroethene	ND	6.6	1.32	
2-Chlorotoluene	ND	6.6	1.32		Toluene	8.1	6.6	1.32	
4-Chlorotoluene	ND	6.6	1.32		1,2,3-Trichlorobenzene	ND	13	1.32	
Dibromochloromethane	ND	6.6	1.32		1,2,4-Trichlorobenzene	ND	6.6	1.32	
1,2-Dibromo-3-Chloropropane	ND	13	1.32		1,1,1-Trichloroethane	ND	6.6	1.32	
1,2-Dibromoethane	ND	6.6	1.32		1,1,2-Trichloroethane	ND	6.6	1.32	
Dibromomethane	ND	6.6	1.32		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	66	1.32	
1,2-Dichlorobenzene	ND	6.6	1.32		Trichloroethene	ND	6.6	1.32	
1,3-Dichlorobenzene	ND	6.6	1.32		1,2,3-Trichloropropane	ND	6.6	1.32	
1,4-Dichlorobenzene	ND	6.6	1.32		1,2,4-Trimethylbenzene	ND	6.6	1.32	
Dichlorodifluoromethane	ND	6.6	1.32		Trichlorofluoromethane	ND	66	1.32	
1,1-Dichloroethane	ND	6.6	1.32		1,3,5-Trimethylbenzene	ND	6.6	1.32	
1,2-Dichloroethane	ND	6.6	1.32		Vinyl Acetate	ND	66	1.32	
1,1-Dichloroethene	ND	6.6	1.32		Vinyl Chloride	ND	6.6	1.32	
c-1,2-Dichloroethene	ND	6.6	1.32		p/m-Xylene	ND	6.6	1.32	
t-1,2-Dichloroethene	ND	6.6	1.32		o-Xylene	ND	6.6	1.32	
1,2-Dichloropropane	ND	6.6	1.32		Methyl-t-Butyl Ether (MTBE)	ND	6.6	1.32	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	110	73-139		1,2-Dichloroethane-d4	107	73-145	
Toluene-d8	98	90-108		1,4-Bromofluorobenzene	94	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-10-005-12,957**	**N/A**	**Solid**	**11/06/06**	**11/06/06**	**061106L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	130	1		1,3-Dichloropropane	ND	5.0	1	
Benzene	ND	5.0	1		2,2-Dichloropropane	ND	5.0	1	
Bromobenzene	ND	5.0	1		1,1-Dichloropropene	ND	5.0	1	
Bromochloromethane	ND	5.0	1		c-1,3-Dichloropropene	ND	5.0	1	
Bromodichloromethane	ND	5.0	1		t-1,3-Dichloropropene	ND	5.0	1	
Bromoform	ND	5.0	1		Ethylbenzene	ND	5.0	1	
Bromomethane	ND	25	1		2-Hexanone	ND	50	1	
2-Butanone	ND	50	1		Isopropylbenzene	ND	5.0	1	
n-Butylbenzene	ND	5.0	1		p-Isopropyltoluene	ND	5.0	1	
sec-Butylbenzene	ND	5.0	1		Methylene Chloride	ND	50	1	
tert-Butylbenzene	ND	5.0	1		4-Methyl-2-Pentanone	ND	50	1	
Carbon Disulfide	ND	50	1		Naphthalene	ND	50	1	
Carbon Tetrachloride	ND	5.0	1		n-Propylbenzene	ND	5.0	1	
Chlorobenzene	ND	5.0	1		Styrene	ND	5.0	1	
Chloroethane	ND	5.0	1		1,1,1,2-Tetrachloroethane	ND	5.0	1	
Chloroform	ND	5.0	1		1,1,2,2-Tetrachloroethane	ND	5.0	1	
Chloromethane	ND	25	1		Tetrachloroethene	ND	5.0	1	
2-Chlorotoluene	ND	5.0	1		Toluene	ND	5.0	1	
4-Chlorotoluene	ND	5.0	1		1,2,3-Trichlorobenzene	ND	10	1	
Dibromochloromethane	ND	5.0	1		1,2,4-Trichlorobenzene	ND	5.0	1	
1,2-Dibromo-3-Chloropropane	ND	10	1		1,1,1-Trichloroethane	ND	5.0	1	
1,2-Dibromoethane	ND	5.0	1		1,1,2-Trichloroethane	ND	5.0	1	
Dibromomethane	ND	5.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	50	1	
1,2-Dichlorobenzene	ND	5.0	1		Trichloroethene	ND	5.0	1	
1,3-Dichlorobenzene	ND	5.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,4-Dichlorobenzene	ND	5.0	1		1,2,4-Trimethylbenzene	ND	5.0	1	
Dichlorodifluoromethane	ND	5.0	1		Trichlorofluoromethane	ND	50	1	
1,1-Dichloroethane	ND	5.0	1		1,3,5-Trimethylbenzene	ND	5.0	1	
1,2-Dichloroethane	ND	5.0	1		Vinyl Acetate	ND	50	1	
1,1-Dichloroethene	ND	5.0	1		Vinyl Chloride	ND	5.0	1	
c-1,2-Dichloroethene	ND	5.0	1		p/m-Xylene	ND	5.0	1	
t-1,2-Dichloroethene	ND	5.0	1		o-Xylene	ND	5.0	1	
1,2-Dichloropropane	ND	5.0	1		Methyl-t-Butyl Ether (MTBE)	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	99	73-139			1,2-Dichloroethane-d4	101	73-145		
Toluene-d8	99	90-108			1,4-Bromofluorobenzene	100	71-113		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-10-005-12,962**	**N/A**	**Solid**	**11/07/06**	**11/07/06**	**061107L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	130	1		1,3-Dichloropropane	ND	5.0	1	
Benzene	ND	5.0	1		2,2-Dichloropropane	ND	5.0	1	
Bromobenzene	ND	5.0	1		1,1-Dichloropropene	ND	5.0	1	
Bromochloromethane	ND	5.0	1		c-1,3-Dichloropropene	ND	5.0	1	
Bromodichloromethane	ND	5.0	1		t-1,3-Dichloropropene	ND	5.0	1	
Bromoform	ND	5.0	1		Ethylbenzene	ND	5.0	1	
Bromomethane	ND	25	1		2-Hexanone	ND	50	1	
2-Butanone	ND	50	1		Isopropylbenzene	ND	5.0	1	
n-Butylbenzene	ND	5.0	1		p-Isopropyltoluene	ND	5.0	1	
sec-Butylbenzene	ND	5.0	1		Methylene Chloride	ND	50	1	
tert-Butylbenzene	ND	5.0	1		4-Methyl-2-Pentanone	ND	50	1	
Carbon Disulfide	ND	50	1		Naphthalene	ND	50	1	
Carbon Tetrachloride	ND	5.0	1		n-Propylbenzene	ND	5.0	1	
Chlorobenzene	ND	5.0	1		Styrene	ND	5.0	1	
Chloroethane	ND	5.0	1		1,1,1,2-Tetrachloroethane	ND	5.0	1	
Chloroform	ND	5.0	1		1,1,2,2-Tetrachloroethane	ND	5.0	1	
Chloromethane	ND	25	1		Tetrachloroethene	ND	5.0	1	
2-Chlorotoluene	ND	5.0	1		Toluene	ND	5.0	1	
4-Chlorotoluene	ND	5.0	1		1,2,3-Trichlorobenzene	ND	10	1	
Dibromochloromethane	ND	5.0	1		1,2,4-Trichlorobenzene	ND	5.0	1	
1,2-Dibromo-3-Chloropropane	ND	10	1		1,1,1-Trichloroethane	ND	5.0	1	
1,2-Dibromoethane	ND	5.0	1		1,1,2-Trichloroethane	ND	5.0	1	
Dibromomethane	ND	5.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	50	1	
1,2-Dichlorobenzene	ND	5.0	1		Trichloroethene	ND	5.0	1	
1,3-Dichlorobenzene	ND	5.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,4-Dichlorobenzene	ND	5.0	1		1,2,4-Trimethylbenzene	ND	5.0	1	
Dichlorodifluoromethane	ND	5.0	1		Trichlorofluoromethane	ND	50	1	
1,1-Dichloroethane	ND	5.0	1		1,3,5-Trimethylbenzene	ND	5.0	1	
1,2-Dichloroethane	ND	5.0	1		Vinyl Acetate	ND	50	1	
1,1-Dichloroethene	ND	5.0	1		Vinyl Chloride	ND	5.0	1	
c-1,2-Dichloroethene	ND	5.0	1		p/m-Xylene	ND	5.0	1	
t-1,2-Dichloroethene	ND	5.0	1		o-Xylene	ND	5.0	1	
1,2-Dichloropropane	ND	5.0	1		Methyl-t-Butyl Ether (MTBE)	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	101	73-139			1,2-Dichloroethane-d4	101	73-145		
Toluene-d8	99	90-108			1,4-Bromofluorobenzene	101	71-113		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-10-005-12,974**	**N/A**	**Solid**	**11/09/06**	**11/09/06**	**061109L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	130	1		1,3-Dichloropropane	ND	5.0	1	
Benzene	ND	5.0	1		2,2-Dichloropropane	ND	5.0	1	
Bromobenzene	ND	5.0	1		1,1-Dichloropropene	ND	5.0	1	
Bromochloromethane	ND	5.0	1		c-1,3-Dichloropropene	ND	5.0	1	
Bromodichloromethane	ND	5.0	1		t-1,3-Dichloropropene	ND	5.0	1	
Bromoform	ND	5.0	1		Ethylbenzene	ND	5.0	1	
Bromomethane	ND	25	1		2-Hexanone	ND	50	1	
2-Butanone	ND	50	1		Isopropylbenzene	ND	5.0	1	
n-Butylbenzene	ND	5.0	1		p-Isopropyltoluene	ND	5.0	1	
sec-Butylbenzene	ND	5.0	1		Methylene Chloride	ND	50	1	
tert-Butylbenzene	ND	5.0	1		4-Methyl-2-Pentanone	ND	50	1	
Carbon Disulfide	ND	50	1		Naphthalene	ND	50	1	
Carbon Tetrachloride	ND	5.0	1		n-Propylbenzene	ND	5.0	1	
Chlorobenzene	ND	5.0	1		Styrene	ND	5.0	1	
Chloroethane	ND	5.0	1		1,1,1,2-Tetrachloroethane	ND	5.0	1	
Chloroform	ND	5.0	1		1,1,2,2-Tetrachloroethane	ND	5.0	1	
Chloromethane	ND	25	1		Tetrachloroethene	ND	5.0	1	
2-Chlorotoluene	ND	5.0	1		Toluene	ND	5.0	1	
4-Chlorotoluene	ND	5.0	1		1,2,3-Trichlorobenzene	ND	10	1	
Dibromochloromethane	ND	5.0	1		1,2,4-Trichlorobenzene	ND	5.0	1	
1,2-Dibromo-3-Chloropropane	ND	10	1		1,1,1-Trichloroethane	ND	5.0	1	
1,2-Dibromoethane	ND	5.0	1		1,1,2-Trichloroethane	ND	5.0	1	
Dibromomethane	ND	5.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	50	1	
1,2-Dichlorobenzene	ND	5.0	1		Trichloroethene	ND	5.0	1	
1,3-Dichlorobenzene	ND	5.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,4-Dichlorobenzene	ND	5.0	1		1,2,4-Trimethylbenzene	ND	5.0	1	
Dichlorodifluoromethane	ND	5.0	1		Trichlorofluoromethane	ND	50	1	
1,1-Dichloroethane	ND	5.0	1		1,3,5-Trimethylbenzene	ND	5.0	1	
1,2-Dichloroethane	ND	5.0	1		Vinyl Acetate	ND	50	1	
1,1-Dichloroethene	ND	5.0	1		Vinyl Chloride	ND	5.0	1	
c-1,2-Dichloroethene	ND	5.0	1		p/m-Xylene	ND	5.0	1	
t-1,2-Dichloroethene	ND	5.0	1		o-Xylene	ND	5.0	1	
1,2-Dichloropropane	ND	5.0	1		Methyl-t-Butyl Ether (MTBE)	ND	5.0	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	109	73-139		1,2-Dichloroethane-d4	109	73-145	
Toluene-d8	99	90-108		1,4-Bromofluorobenzene	93	71-113	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-10-005-12,979**	**N/A**	**Solid**	**11/10/06**	**11/10/06**	**061110L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	130	1		1,3-Dichloropropane	ND	5.0	1	
Benzene	ND	5.0	1		2,2-Dichloropropane	ND	5.0	1	
Bromobenzene	ND	5.0	1		1,1-Dichloropropene	ND	5.0	1	
Bromochloromethane	ND	5.0	1		c-1,3-Dichloropropene	ND	5.0	1	
Bromodichloromethane	ND	5.0	1		t-1,3-Dichloropropene	ND	5.0	1	
Bromoform	ND	5.0	1		Ethylbenzene	ND	5.0	1	
Bromomethane	ND	25	1		2-Hexanone	ND	50	1	
2-Butanone	ND	50	1		Isopropylbenzene	ND	5.0	1	
n-Butylbenzene	ND	5.0	1		p-Isopropyltoluene	ND	5.0	1	
sec-Butylbenzene	ND	5.0	1		Methylene Chloride	ND	50	1	
tert-Butylbenzene	ND	5.0	1		4-Methyl-2-Pentanone	ND	50	1	
Carbon Disulfide	ND	50	1		Naphthalene	ND	50	1	
Carbon Tetrachloride	ND	5.0	1		n-Propylbenzene	ND	5.0	1	
Chlorobenzene	ND	5.0	1		Styrene	ND	5.0	1	
Chloroethane	ND	5.0	1		1,1,1,2-Tetrachloroethane	ND	5.0	1	
Chloroform	ND	5.0	1		1,1,2,2-Tetrachloroethane	ND	5.0	1	
Chloromethane	ND	25	1		Tetrachloroethene	ND	5.0	1	
2-Chlorotoluene	ND	5.0	1		Toluene	ND	5.0	1	
4-Chlorotoluene	ND	5.0	1		1,2,3-Trichlorobenzene	ND	10	1	
Dibromochloromethane	ND	5.0	1		1,2,4-Trichlorobenzene	ND	5.0	1	
1,2-Dibromo-3-Chloropropane	ND	10	1		1,1,1-Trichloroethane	ND	5.0	1	
1,2-Dibromoethane	ND	5.0	1		1,1,2-Trichloroethane	ND	5.0	1	
Dibromomethane	ND	5.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	50	1	
1,2-Dichlorobenzene	ND	5.0	1		Trichloroethene	ND	5.0	1	
1,3-Dichlorobenzene	ND	5.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,4-Dichlorobenzene	ND	5.0	1		1,2,4-Trimethylbenzene	ND	5.0	1	
Dichlorodifluoromethane	ND	5.0	1		Trichlorofluoromethane	ND	50	1	
1,1-Dichloroethane	ND	5.0	1		1,3,5-Trimethylbenzene	ND	5.0	1	
1,2-Dichloroethane	ND	5.0	1		Vinyl Acetate	ND	50	1	
1,1-Dichloroethene	ND	5.0	1		Vinyl Chloride	ND	5.0	1	
c-1,2-Dichloroethene	ND	5.0	1		p/m-Xylene	ND	5.0	1	
t-1,2-Dichloroethene	ND	5.0	1		o-Xylene	ND	5.0	1	
1,2-Dichloropropane	ND	5.0	1		Methyl-t-Butyl Ether (MTBE)	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	105	73-139			1,2-Dichloroethane-d4	103	73-145		
Toluene-d8	98	90-108			1,4-Bromofluorobenzene	90	71-113		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/kg

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-10-005-12,999**	**N/A**	**Solid**	**11/15/06**	**11/15/06**	**061115L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	130	1		1,3-Dichloropropane	ND	5.0	1	
Benzene	ND	5.0	1		2,2-Dichloropropane	ND	5.0	1	
Bromobenzene	ND	5.0	1		1,1-Dichloropropene	ND	5.0	1	
Bromochloromethane	ND	5.0	1		c-1,3-Dichloropropene	ND	5.0	1	
Bromodichloromethane	ND	5.0	1		t-1,3-Dichloropropene	ND	5.0	1	
Bromoform	ND	5.0	1		Ethylbenzene	ND	5.0	1	
Bromomethane	ND	25	1		2-Hexanone	ND	50	1	
2-Butanone	ND	50	1		Isopropylbenzene	ND	5.0	1	
n-Butylbenzene	ND	5.0	1		p-Isopropyltoluene	ND	5.0	1	
sec-Butylbenzene	ND	5.0	1		Methylene Chloride	ND	50	1	
tert-Butylbenzene	ND	5.0	1		4-Methyl-2-Pentanone	ND	50	1	
Carbon Disulfide	ND	50	1		Naphthalene	ND	50	1	
Carbon Tetrachloride	ND	5.0	1		n-Propylbenzene	ND	5.0	1	
Chlorobenzene	ND	5.0	1		Styrene	ND	5.0	1	
Chloroethane	ND	5.0	1		1,1,1,2-Tetrachloroethane	ND	5.0	1	
Chloroform	ND	5.0	1		1,1,2,2-Tetrachloroethane	ND	5.0	1	
Chloromethane	ND	25	1		Tetrachloroethene	ND	5.0	1	
2-Chlorotoluene	ND	5.0	1		Toluene	ND	5.0	1	
4-Chlorotoluene	ND	5.0	1		1,2,3-Trichlorobenzene	ND	10	1	
Dibromochloromethane	ND	5.0	1		1,2,4-Trichlorobenzene	ND	5.0	1	
1,2-Dibromo-3-Chloropropane	ND	10	1		1,1,1-Trichloroethane	ND	5.0	1	
1,2-Dibromoethane	ND	5.0	1		1,1,2-Trichloroethane	ND	5.0	1	
Dibromomethane	ND	5.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	50	1	
1,2-Dichlorobenzene	ND	5.0	1		Trichloroethene	ND	5.0	1	
1,3-Dichlorobenzene	ND	5.0	1		1,2,3-Trichloropropane	ND	5.0	1	
1,4-Dichlorobenzene	ND	5.0	1		1,2,4-Trimethylbenzene	ND	5.0	1	
Dichlorodifluoromethane	ND	5.0	1		Trichlorofluoromethane	ND	50	1	
1,1-Dichloroethane	ND	5.0	1		1,3,5-Trimethylbenzene	ND	5.0	1	
1,2-Dichloroethane	ND	5.0	1		Vinyl Acetate	ND	50	1	
1,1-Dichloroethene	ND	5.0	1		Vinyl Chloride	ND	5.0	1	
c-1,2-Dichloroethene	ND	5.0	1		p/m-Xylene	ND	5.0	1	
t-1,2-Dichloroethene	ND	5.0	1		o-Xylene	ND	5.0	1	
1,2-Dichloropropane	ND	5.0	1		Methyl-t-Butyl Ether (MTBE)	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	103	73-139			1,2-Dichloroethane-d4	110	73-145		
Toluene-d8	99	90-108			1,4-Bromofluorobenzene	95	71-113		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-2-2	**06-11-0207-1**	**11/01/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	76.2	0.1	1		%	11/07/06	11/07/06	EPA 160.3
Sulfide, Total (1)	11	1	1.32		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved (1)	ND	0.13	0.264		mg/kg	11/09/06	11/09/06	EPA 376.2M

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-2-3	**06-11-0207-2**	**11/01/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	77.5	0.1	1		%	11/07/06	11/07/06	EPA 160.3
Sulfide, Total (1)	ND	0.13	0.256		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved (1)	ND	0.13	0.256		mg/kg	11/09/06	11/09/06	EPA 376.2M

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-1-1	**06-11-0207-3**	**11/01/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	74.8	0.1	1		%	11/07/06	11/07/06	EPA 160.3
Sulfide, Total (1)	ND	0.13	0.266		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved (1)	ND	0.13	0.266		mg/kg	11/09/06	11/09/06	EPA 376.2M

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-1-2	**06-11-0207-4**	**11/01/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	78.1	0.1	1		%	11/07/06	11/07/06	EPA 160.3
Sulfide, Total (1)	35	1	2.56		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved (1)	ND	0.13	0.256		mg/kg	11/09/06	11/09/06	EPA 376.2M

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

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Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-1-3	**06-11-0207-5**	**11/01/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	77.2	0.1	1		%	11/07/06	11/07/06	EPA 160.3
Sulfide, Total (1)	ND	0.13	0.26		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved (1)	ND	0.13	0.26		mg/kg	11/09/06	11/09/06	EPA 376.2M

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-2B-1	**06-11-0207-6**	**11/02/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	78.2	0.1	1		%	11/07/06	11/07/06	EPA 160.3
Sulfide, Total (1)	ND	0.13	0.256		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved (1)	ND	0.13	0.256		mg/kg	11/09/06	11/09/06	EPA 376.2M

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-2B-2	**06-11-0207-7**	**11/02/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	73.0	0.1	1		%	11/07/06	11/07/06	EPA 160.3
Sulfide, Total (1)	49	1	2.74		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved (1)	ND	0.14	0.274		mg/kg	11/09/06	11/09/06	EPA 376.2M

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-2B-3	**06-11-0207-8**	**11/02/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	78.5	0.1	1		%	11/07/06	11/07/06	EPA 160.3
Sulfide, Total (1)	0.45	0.13	0.256		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved (1)	ND	0.13	0.256		mg/kg	11/09/06	11/09/06	EPA 376.2M

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

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Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-1B-1	**06-11-0207-9**	**11/02/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	76.1	0.1	1		%	11/07/06	11/07/06	EPA 160.3
Sulfide, Total (1)	32	1	2.64		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved (1)	ND	0.13	0.264		mg/kg	11/09/06	11/09/06	EPA 376.2M

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-1B-2	**06-11-0207-10**	**11/02/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	75.3	0.1	1		%	11/07/06	11/07/06	EPA 160.3
Sulfide, Total (1)	55	1	2.66		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved (1)	ND	0.13	0.266		mg/kg	11/09/06	11/09/06	EPA 376.2M

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-1B-3	**06-11-0207-11**	**11/02/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	77.8	0.1	1		%	11/07/06	11/07/06	EPA 160.3
Sulfide, Total (1)	ND	0.13	0.256		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved (1)	ND	0.13	0.256		mg/kg	11/09/06	11/09/06	EPA 376.2M

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-REF	**06-11-0207-12**	**11/02/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	71.8	0.1	1		%	11/07/06	11/07/06	EPA 160.3
Sulfide, Total (1)	0.83	0.14	0.278		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved (1)	ND	0.14	0.278		mg/kg	11/09/06	11/09/06	EPA 376.2M

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

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Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-1B-2 BROWN	**06-11-0207-13**	**11/02/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	71.2	0.1	1		%	N/A	11/13/06	EPA 160.3

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-1B-2 GREY	**06-11-0207-14**	**11/02/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	77.2	0.1	1		%	N/A	11/13/06	EPA 160.3

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-2-3B	**06-11-0207-15**	**11/01/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	80.7	0.1	1		%	11/07/06	11/07/06	EPA 160.3
Sulfide, Total (1)	0.12	0.12	0.248		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved (1)	ND	0.12	0.248		mg/kg	11/09/06	11/09/06	EPA 376.2M

Client Sample Number	Lab Sample Number	Date Collected	Matrix
GINA-2-2 DUP	**06-11-0207-16**	**11/01/06**	**Solid**

Comment(s): (1) Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Solids, Total	76.2	0.1	1		%	11/07/06	11/07/06	EPA 160.3
Sulfide, Total (1)	11	1	1.32		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved (1)	ND	0.13	0.264		mg/kg	11/09/06	11/09/06	EPA 376.2M

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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Analytical Report

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Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207

Project: Shell Mounds 2006

Client Sample Number	Lab Sample Number	Date Collected	Matrix
Method Blank		**N/A**	**Solid**

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Sulfide, Total	ND	0.10	0.2		mg/kg	11/10/06	11/10/06	EPA 376.2M
Sulfide, Dissolved	ND	0.10	0.2		mg/kg	11/09/06	11/09/06	EPA 376.2M

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 3050B
Method: EPA 6020

Project Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GINA-REF	**Solid**	**ICP/MS A**	**11/09/06**	**11/09/06**	**061109S02**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	98	103	80-120	5	0-20	
Barium	67	95	80-120	7	0-20	3
Cadmium	98	102	80-120	3	0-20	
Chromium	98	113	80-120	10	0-20	
Copper	91	93	80-120	2	0-20	
Lead	96	139	80-120	32	0-20	4,3
Nickel	96	100	80-120	3	0-20	
Selenium	93	96	80-120	3	0-20	
Silver	89	93	80-120	4	0-20	
Zinc	157	139	80-120	6	0-20	3

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: Extraction
Method: EPA 418.1M

Project Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GINA-REF	**Solid**	**IR #1**	**11/08/06**	**11/08/06**	**061108S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TRPH	93	93	55-135	0	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 7471A Total
Method: EPA 7471A

Project Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GINA-REF	**Solid**	**Mercury**	**11/06/06**	**11/06/06**	**061106S04**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	103	108	76-136	4	0-16	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 3545
Method: EPA 8081A/8082

Project Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GINA-REF	**Solid**	**GC 16**	**11/06/06**	**11/09/06**	**061106S09**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aldrin	71	67	50-135	5	0-25	
Alpha-BHC	76	60	50-135	25	0-25	
Beta-BHC	70	52	50-135	30	0-25	4
Delta-BHC	77	42	50-135	58	0-25	4,3
Gamma-BHC	75	55	50-135	30	0-25	4
Dieldrin	70	49	50-135	35	0-25	4,3
4,4'-DDD	104	90	50-135	15	0-25	
4,4'-DDE	123	101	50-135	19	0-25	
4,4'-DDT	56	31	50-135	57	0-25	4,3
Endosulfan I	56	48	50-135	17	0-25	3
Endosulfan II	63	34	50-135	60	0-25	4,3
Endosulfan Sulfate	51	26	50-135	65	0-25	4,3
Endrin	75	54	50-135	32	0-25	4
Endrin Aldehyde	33	11	50-135	100	0-25	3,4
Endrin Ketone	57	23	50-135	86	0-25	4,3
Heptachlor	69	61	50-135	13	0-25	
Heptachlor Epoxide	69	58	50-135	18	0-25	
Methoxychlor	48	25	50-135	63	0-25	3,4
Aroclor-1254	78	75	50-135	3	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 3545
Method: EPA 8270C SIM

Project Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GINA-REF	**Solid**	**GC/MS N**	**11/06/06**	**11/07/06**	**061106S13**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	64	63	40-160	1	0-20	
2,4-Dichlorophenol	61	60	40-160	2	0-20	
2-Methylphenol	72	69	40-160	5	0-20	
2-Nitrophenol	59	58	40-160	2	0-20	
4-Chloro-3-Methylphenol	78	75	40-160	4	0-20	
Acenaphthene	53	53	40-106	0	0-20	
Benzo (a) Pyrene	64	61	17-163	4	0-20	
Chrysene	37	36	17-168	1	0-20	
Di-n-Butyl Phthalate	59	57	40-160	4	0-20	
Dimethyl Phthalate	61	62	40-160	0	0-20	
Fluoranthene	62	56	26-137	10	0-20	
Fluorene	56	55	59-121	2	0-20	3
N-Nitrosodimethylamine	73	73	40-160	1	0-20	
Naphthalene	51	52	21-133	3	0-20	
Phenanthrene	58	54	54-120	7	0-20	
Phenol	74	71	40-160	4	0-20	
Pyrene	42	42	6-156	1	0-46	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B

Project Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GINA-REF	**Solid**	**GC/MS BB**	**11/06/06**	**11/06/06**	**061106S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	89	86	79-115	4	0-13	
Carbon Tetrachloride	94	91	55-139	2	0-15	
Chlorobenzene	90	85	79-115	5	0-17	
1,2-Dichlorobenzene	85	77	63-123	10	0-23	
1,1-Dichloroethene	94	92	69-123	2	0-16	
Toluene	88	84	79-115	5	0-15	
Trichloroethene	90	86	66-144	4	0-14	
Vinyl Chloride	88	87	60-126	1	0-14	
Methyl-t-Butyl Ether (MTBE)	93	93	68-128	0	0-14	
Tert-Butyl Alcohol (TBA)	97	95	44-134	2	0-37	
Diisopropyl Ether (DIPE)	89	89	75-123	1	0-12	
Ethyl-t-Butyl Ether (ETBE)	95	95	75-117	0	0-12	
Tert-Amyl-Methyl Ether (TAME)	95	92	79-115	4	0-12	
Ethanol	96	91	42-138	5	0-28	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B

Project Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
06-11-0337-1	**Solid**	**GC/MS BB**	**11/07/06**	**11/07/06**	**061107S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	89	91	79-115	2	0-13	
Carbon Tetrachloride	93	93	55-139	1	0-15	
Chlorobenzene	88	90	79-115	2	0-17	
1,2-Dichlorobenzene	78	80	63-123	2	0-23	
1,1-Dichloroethene	95	95	69-123	0	0-16	
Toluene	87	88	79-115	1	0-15	
Trichloroethene	90	91	66-144	1	0-14	
Vinyl Chloride	91	89	60-126	3	0-14	
Methyl-t-Butyl Ether (MTBE)	97	98	68-128	1	0-14	
Tert-Butyl Alcohol (TBA)	107	110	44-134	2	0-37	
Diisopropyl Ether (DIPE)	93	93	75-123	1	0-12	
Ethyl-t-Butyl Ether (ETBE)	96	96	75-117	1	0-12	
Tert-Amyl-Methyl Ether (TAME)	94	95	79-115	2	0-12	
Ethanol	118	105	42-138	12	0-28	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B

Project Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
06-11-0538-1	**Solid**	**GC/MS Z**	**11/09/06**	**11/09/06**	**061109S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	89	90	79-115	1	0-13	
Carbon Tetrachloride	78	79	55-139	1	0-15	
Chlorobenzene	85	89	79-115	4	0-17	
1,2-Dichlorobenzene	81	83	63-123	3	0-23	
1,1-Dichloroethene	86	85	69-123	2	0-16	
Toluene	89	89	79-115	0	0-15	
Trichloroethene	149	151	66-144	2	0-14	3
Vinyl Chloride	69	70	60-126	1	0-14	
Methyl-t-Butyl Ether (MTBE)	86	86	68-128	0	0-14	
Tert-Butyl Alcohol (TBA)	82	83	44-134	1	0-37	
Diisopropyl Ether (DIPE)	85	85	75-123	0	0-12	
Ethyl-t-Butyl Ether (ETBE)	83	83	75-117	1	0-12	
Tert-Amyl-Methyl Ether (TAME)	87	88	79-115	1	0-12	
Ethanol	85	85	42-138	0	0-28	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B

Project Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
GINA-2-3B	**Solid**	**GC/MS Z**	**11/10/06**	**11/10/06**	**061110S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	94	93	79-115	1	0-13	
Carbon Tetrachloride	89	84	55-139	6	0-15	
Chlorobenzene	92	92	79-115	0	0-17	
1,2-Dichlorobenzene	83	81	63-123	2	0-23	
1,1-Dichloroethene	93	88	69-123	6	0-16	
Toluene	92	94	79-115	2	0-15	
Trichloroethene	92	92	66-144	0	0-14	
Vinyl Chloride	71	70	60-126	1	0-14	
Methyl-t-Butyl Ether (MTBE)	92	87	68-128	5	0-14	
Tert-Butyl Alcohol (TBA)	82	80	44-134	3	0-37	
Diisopropyl Ether (DIPE)	97	94	75-123	3	0-12	
Ethyl-t-Butyl Ether (ETBE)	90	88	75-117	2	0-12	
Tert-Amyl-Methyl Ether (TAME)	91	91	79-115	0	0-12	
Ethanol	87	89	42-138	2	0-28	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: 11/03/06
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B

Project Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
06-11-0961-1	**Solid**	**GC/MS Q**	**11/15/06**	**11/15/06**	**061115S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	92	90	79-115	2	0-13	
Carbon Tetrachloride	118	117	55-139	0	0-15	
Chlorobenzene	94	90	79-115	3	0-17	
1,2-Dichlorobenzene	93	91	63-123	2	0-23	
1,1-Dichloroethene	95	93	69-123	2	0-16	
Toluene	92	90	79-115	2	0-15	
Trichloroethene	103	105	66-144	2	0-14	
Vinyl Chloride	92	85	60-126	8	0-14	
Methyl-t-Butyl Ether (MTBE)	88	88	68-128	1	0-14	
Tert-Butyl Alcohol (TBA)	87	86	44-134	1	0-37	
Diisopropyl Ether (DIPE)	101	97	75-123	4	0-12	
Ethyl-t-Butyl Ether (ETBE)	99	97	75-117	1	0-12	
Tert-Amyl-Methyl Ether (TAME)	95	95	79-115	0	0-12	
Ethanol	90	93	42-138	3	0-28	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: N/A
Work Order No: 06-11-0207

Project: Shell Mounds 2006

Matrix: Solid

Parameter	Method	QC Sample ID	Date Analyzed	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	EPA 376.2M	GINA-2-3	11/10/06	ND	ND	NA	0-25	
Sulfide, Dissolved	EPA 376.2M	GINA-2-3	11/09/06	ND	ND	NA	0-25	
Solids, Total	EPA 160.3	GINA-REF	11/07/06	71.8	71.4	1	0-25	
Solids, Total	EPA 160.3	GINA-1B-2 GREY	11/13/06	77.2	77.4	0	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: N/A
Work Order No: 06-11-0207
Preparation: EPA 3050B
Method: EPA 6020

Project: Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
096-10-002-769	**Solid**	**ICP/MS A**	**11/09/06**	**11/09/06**	**061109L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	106	105	80-120	1	0-20	
Barium	100	99	80-120	0	0-20	
Cadmium	108	107	80-120	1	0-20	
Chromium	100	101	80-120	1	0-20	
Copper	95	95	80-120	0	0-20	
Lead	106	105	80-120	1	0-20	
Nickel	90	90	80-120	1	0-20	
Selenium	108	109	80-120	1	0-20	
Silver	92	92	80-120	1	0-20	
Zinc	106	104	80-120	2	0-20	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: N/A
Work Order No: 06-11-0207
Preparation: Extraction
Method: EPA 418.1M

Project: Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-015-1,037	**Solid**	**IR #1**	**11/08/06**	**NONE**	**061108L01**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
TRPH	100	110	105	70-130	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: N/A
Work Order No: 06-11-0207
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-452-4	**Solid**	**Mercury**	**11/06/06**	**11/06/06**	**061106L04**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	104	103	82-124	1	0-16	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: N/A
Work Order No: 06-11-0207
Preparation: EPA 3545
Method: EPA 8081A/8082

Project: Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-07-033-45	**Solid**	**GC 16**	**11/06/06**	**11/08/06**	**061106L09**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aldrin	82	87	50-135	6	0-25	
Alpha-BHC	88	93	50-135	5	0-25	
Beta-BHC	80	84	50-135	5	0-25	
Delta-BHC	86	90	50-135	5	0-25	
Gamma-BHC	88	93	50-135	6	0-25	
Dieldrin	83	88	50-135	6	0-25	
4,4'-DDD	82	86	50-135	5	0-25	
4,4'-DDE	78	73	50-135	6	0-25	
4,4'-DDT	80	85	50-135	6	0-25	
Endosulfan I	84	95	50-135	12	0-25	
Endosulfan II	83	87	50-135	5	0-25	
Endosulfan Sulfate	82	87	50-135	6	0-25	
Endrin	77	82	50-135	6	0-25	
Endrin Aldehyde	87	92	50-135	6	0-25	
Endrin Ketone	83	88	50-135	6	0-25	
Heptachlor	81	86	50-135	6	0-25	
Heptachlor Epoxide	82	87	50-135	6	0-25	
Methoxychlor	79	84	50-135	6	0-25	
Aroclor-1254	86	82	50-135	5	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: N/A
Work Order No: 06-11-0207
Preparation: EPA 3545
Method: EPA 8270C SIM

Project: Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-413-13	**Solid**	**GC/MS N**	**11/06/06**	**11/07/06**	**061106L13**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	55	56	40-160	1	0-20	
2,4-Dichlorophenol	58	58	40-160	1	0-20	
2-Methylphenol	72	72	40-160	0	0-20	
2-Nitrophenol	62	62	40-160	0	0-20	
4-Chloro-3-Methylphenol	71	70	40-160	0	0-20	
Acenaphthene	63	64	48-108	1	0-11	
Benzo (a) Pyrene	57	58	17-163	0	0-20	
Chrysene	56	56	17-168	1	0-20	
Di-n-Butyl Phthalate	66	67	40-160	1	0-20	
Dimethyl Phthalate	64	64	40-160	0	0-20	
Fluoranthene	57	57	26-137	1	0-20	
Fluorene	62	63	59-121	0	0-20	
N-Nitrosodimethylamine	71	77	40-160	7	0-20	
Naphthalene	64	65	21-133	0	0-20	
Phenanthrene	58	58	54-120	1	0-20	
Phenol	69	68	40-160	1	0-20	
Pyrene	69	68	28-106	0	0-16	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: N/A
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B

Project: Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-10-005-12,957	**Solid**	**GC/MS BB**	**11/06/06**	**11/06/06**	**061106L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	89	88	84-114	1	0-7	
Carbon Tetrachloride	100	100	66-132	1	0-12	
Chlorobenzene	90	90	87-111	0	0-7	
1,2-Dichlorobenzene	89	89	79-115	0	0-8	
1,1-Dichloroethene	88	88	73-121	1	0-12	
Toluene	88	88	78-114	0	0-7	
Trichloroethene	87	88	84-114	1	0-8	
Vinyl Chloride	85	86	63-129	1	0-15	
Methyl-t-Butyl Ether (MTBE)	92	92	77-125	0	0-11	
Tert-Butyl Alcohol (TBA)	89	91	47-137	2	0-27	
Diisopropyl Ether (DIPE)	88	88	76-130	0	0-8	
Ethyl-t-Butyl Ether (ETBE)	94	94	76-124	0	0-12	
Tert-Amyl-Methyl Ether (TAME)	92	93	82-118	0	0-11	
Ethanol	86	92	59-131	7	0-21	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: N/A
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B

Project: Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-10-005-12,962	**Solid**	**GC/MS BB**	**11/07/06**	**11/07/06**	**061107L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	89	89	84-114	0	0-7	
Carbon Tetrachloride	97	96	66-132	1	0-12	
Chlorobenzene	93	93	87-111	0	0-7	
1,2-Dichlorobenzene	92	91	79-115	2	0-8	
1,1-Dichloroethene	93	92	73-121	1	0-12	
Toluene	91	91	78-114	0	0-7	
Trichloroethene	88	88	84-114	0	0-8	
Vinyl Chloride	89	91	63-129	2	0-15	
Methyl-t-Butyl Ether (MTBE)	93	93	77-125	1	0-11	
Tert-Butyl Alcohol (TBA)	75	86	47-137	14	0-27	
Diisopropyl Ether (DIPE)	92	91	76-130	2	0-8	
Ethyl-t-Butyl Ether (ETBE)	96	95	76-124	1	0-12	
Tert-Amyl-Methyl Ether (TAME)	90	93	82-118	3	0-11	
Ethanol	97	104	59-131	8	0-21	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: N/A
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B

Project: Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-10-005-12,974	**Solid**	**GC/MS Z**	**11/09/06**	**11/09/06**	**061109L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	94	94	84-114	0	0-7	
Carbon Tetrachloride	91	92	66-132	1	0-12	
Chlorobenzene	96	95	87-111	1	0-7	
1,2-Dichlorobenzene	93	92	79-115	1	0-8	
1,1-Dichloroethene	90	93	73-121	3	0-12	
Toluene	94	94	78-114	0	0-7	
Trichloroethene	92	92	84-114	1	0-8	
Vinyl Chloride	76	80	63-129	4	0-15	
Methyl-t-Butyl Ether (MTBE)	89	88	77-125	2	0-11	
Tert-Butyl Alcohol (TBA)	82	98	47-137	18	0-27	
Diisopropyl Ether (DIPE)	92	89	76-130	3	0-8	
Ethyl-t-Butyl Ether (ETBE)	86	83	76-124	4	0-12	
Tert-Amyl-Methyl Ether (TAME)	93	89	82-118	4	0-11	
Ethanol	84	104	59-131	21	0-21	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: N/A
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B

Project: Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-10-005-12,979	**Solid**	**GC/MS Z**	**11/10/06**	**11/10/06**	**061110L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	91	93	84-114	2	0-7	
Carbon Tetrachloride	84	86	66-132	3	0-12	
Chlorobenzene	94	96	87-111	2	0-7	
1,2-Dichlorobenzene	88	91	79-115	4	0-8	
1,1-Dichloroethene	84	86	73-121	2	0-12	
Toluene	91	93	78-114	3	0-7	
Trichloroethene	88	89	84-114	1	0-8	
Vinyl Chloride	73	75	63-129	4	0-15	
Methyl-t-Butyl Ether (MTBE)	86	86	77-125	0	0-11	
Tert-Butyl Alcohol (TBA)	88	85	47-137	3	0-27	
Diisopropyl Ether (DIPE)	89	91	76-130	2	0-8	
Ethyl-t-Butyl Ether (ETBE)	84	84	76-124	0	0-12	
Tert-Amyl-Methyl Ether (TAME)	88	88	82-118	0	0-11	
Ethanol	88	81	59-131	8	0-21	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Science Applications International Corporation
9455 Towne Centre Dr. MS W-2T
San Diego, CA 92121-1111

Date Received: N/A
Work Order No: 06-11-0207
Preparation: EPA 5030B
Method: EPA 8260B

Project: Shell Mounds 2006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-10-005-12,999	**Solid**	**GC/MS Q**	**11/15/06**	**11/15/06**	**061115L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	95	95	84-114	0	0-7	
Carbon Tetrachloride	127	126	66-132	1	0-12	
Chlorobenzene	100	98	87-111	2	0-7	
1,2-Dichlorobenzene	102	102	79-115	0	0-8	
1,1-Dichloroethene	97	95	73-121	2	0-12	
Toluene	96	95	78-114	1	0-7	
Trichloroethene	95	95	84-114	0	0-8	
Vinyl Chloride	92	106	63-129	14	0-15	
Methyl-t-Butyl Ether (MTBE)	103	98	77-125	5	0-11	
Tert-Butyl Alcohol (TBA)	91	100	47-137	10	0-27	
Diisopropyl Ether (DIPE)	107	107	76-130	0	0-8	
Ethyl-t-Butyl Ether (ETBE)	110	110	76-124	0	0-12	
Tert-Amyl-Methyl Ether (TAME)	107	109	82-118	1	0-11	
Ethanol	97	98	59-131	2	0-21	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 06-11-0207

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike or Matrix Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

CALSCIENCE ENVIRONMENTAL LABORATORIES, INC.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1427
TEL: (714) 895-5494 • FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

Date 3NOV '06

Page 1 of 3

LABORATORY CLIENT: SAIC – John Evans
ADDRESS:
CITY San Diego STATE CA ZIP 92121
TEL: 858 826 7476 E-MAIL: evansj @saic.com

CLIENT PROJECT NAME / NUMBER: Shell Mounds 2006
PROJECT CONTACT: J. Evans
SAMPLER(S): (PRINT) JE + V. Frank
COELT LOG CODE: ☐ ☐ ☐ ☐
P.O. NO.:
LAB USE ONLY: 11-0207
COOLER RECEIPT TEMP = ______ °C

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☐ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY): ☐ RWQCB REPORTING FORMS ☐ COELT EDF ☐

SPECIAL INSTRUCTIONS:
NOTE: 4-oz jars for ~~metals, in~~ VOC, total + soluable sulfides. Rest of analyses from the 1-L jars. Metals must include Barium (6020), Mercury (245.6/7471A)
Pls. see Bob Stearns Thx.

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	FIELD POINT NAME (FOR COELT EDF)	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH (G)	TPH (D) or	BTEX / MTBE (8260B) or	OXYGENATES (8260B)	VOCs (8260B)	5035 ENCORE PREP	SVOCs (8270C)	PEST (8081A)	PCBs (8082)	~~CAC, T22 METALS (6010B/747)~~ 6020 PLUS BARIUM mercury (245.6/7471A)	PNAs (8310) or (8270C)	VOCs (TO-14A) or (TO-15)	TPH(G) (TO-3M)	tot. & soluable sulfides (376.2)	phthalates (3520/8270)	phenols (3520/8041)	TRPH (418.1)	tot. solids (2540G)
	GINA-2-2		1NOV'06	13:36	SED	1					X									X				
1	"		↓	↓	↓	1							X	X	X	X					X	X	X	X
	GINA-2-3					1					X									X				
2	"		↓	↓	↓	1							X	X	X	X					X	X	X	X
	GINA-1-1		1NOV'06	16:46	SED	1					X									X				
3	"		↓	↓	↓	1							X	X	X	X					X	X	X	X
	GINA-1-2					1					X									X				
4	"		↓	↓	↓	1							X	X	X	X					X	X	X	X
	GINA-1-3					1					X									X				
5	"		↓	↓	↓	1							X	X	X	X					X	X	X	X

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
[signature] 3NOV06	[signature] (CEL)	11.3.06	1038
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

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Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

05/10/06 Revision

Q&Q Graphic 714-898-9702

CALSCIENCE ENVIRONMENTAL LABORATORIES, INC.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1427
TEL: (714) 895-5494 • FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

Date 3 NOV '06

LABORATORY CLIENT: SAIC - John Evans
ADDRESS:
CITY STATE ZIP
TEL: 858 826 7476 E-MAIL: evansj@saic.com
TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☐ 10 DAYS
SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING FORMS ☐ COELT EDF ☐
SPECIAL INSTRUCTIONS:
Low volume on GINA-1B-1; prioritize analyses → ~~DO~~ analyze for metals (incl. barium), TRPH, PAH from the 1-L jar, and VOC from the 4oz jar. Thx.

CLIENT PROJECT NAME / NUMBER:
PROJECT CONTACT:
SAMPLER(S): (PRINT)
COELT LOG CODE ☐☐☐☐
P.O. NO.:
LAB USE ONLY 1 1 - 0 2 0 7
COOLER RECEIPT TEMP = °C

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	FIELD POINT NAME (FOR COELT EDF)	SAMPLING DATE	SAMPLING TIME (PST)	MATRIX	NO. OF CONT.	TPH (G)	TPH (D) or	BTEX / MTBE (8260B) or	OXYGENATES (8260B)	VOCs (8260B)	5035 ENCORE PREP	SVOCs (8270C)	PEST (8081A)	PCBs (8082)	CAM 17 METALS (6010/7471 + boron + thallium)	PNAs (8310) or (8270C)	VOCs (TO-14A) or (TO-15)	TPH(G) (TO-3M)	total soluble sulfides (376.2)	phthalates (3520/8061)	phenols (3520/8041)	TRPH (418.1)	Tot. Solids (2540G)
6	GINA-2B-1		2NOV'06	11:58	SED	1					X									X				
	"					1							X	X	X	X					X	X	X	X
7	GINA-2B-2					1					X									X				
	"					1							X	X	X	X					X	X	X	X
8	GINA-2B-3					1					X									X				
	"					1							X	X	X	X			(VF)	~~X~~	X	X	X	X
9	GINA-1B-1	see note	2NOV'06	13:36	SED	1					X									X				
	"	see note				1							X	X	X	X					X	X	X	X
10	GINA-1B-2					1					X									X				
	"					1							X	X	X	X					X	X	X	X

Relinquished by: (Signature) V. Funk SAIC 3 NOV 06	Received by: (Signature/Affiliation) (CEL)	Date: 11.3.06	Time: 10 38
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

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05/10/06 Revision

Q&Q Graphic 714-898-9702

CALSCIENCE ENVIRONMENTAL LABORATORIES, INC.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1427
TEL: (714) 895-5494 • FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

Date 3 NOV '06

LABORATORY CLIENT: SAIC - John Evans
ADDRESS:
CITY STATE ZIP
TEL: 858 826 7476 E-MAIL: evansj@saic.com
TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☐ 10 DAYS
SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING FORMS ☐ COELT EDF ☐ _____
SPECIAL INSTRUCTIONS:
See pgs. 2 + 1 (of 3): Also GINA-1B-2 BROWN + GINA-1B-2-GREY get only 4 analyses (marked)

CLIENT PROJECT NAME / NUMBER: (206/7476)
PROJECT CONTACT:
SAMPLER(S): (PRINT)
COELT LOG CODE ☐☐☐☐
P.O. NO.:
LAB USE ONLY 1 1 - 0 2 0 7
COOLER RECEIPT TEMP = _____ °C

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	FIELD POINT NAME (FOR COELT EDF)	SAMPLING DATE	SAMPLING PST TIME	MATRIX	NO. OF CONT.	TPH (G)	TPH (D) or _____	BTEX / MTBE (8260B) or _____	OXYGENATES (8260B)	VOCs (8260B)	5035 ENCORE PREP	SVOCs (8270C)	PEST (8081A)	PCBs (8082)	CAC, T22 METALS (6010B/7471A mercury) + barium	PNAs (8310) or (8270C)	VOCs (TO-14A) or (TO-15)	TPH(G) (TO-3M)	TOT. & Soluble sulfide (376.2)	phthalates (3520/8061)	phenols (3520/8041)	TRPH (418.1)	tot. solids (2540 G)
	GINA-1B-3		2 NOV '06	13:36	SED	1					X									X				
	"		↓	↓	↓	1						X	X	X	X	X					X	X	X	X
12	GINA-REF		2 NOV '06	15:23	SED	1					X									X				
13	GINA-1B-2 BROWN ~~SED~~ (NF)		2 NOV '06	13:36	SED	2					X		X			X							X	
14	GINA-1B-2 GR~~EY~~ ~~SED~~ (NF)		↓	↓	↓	2					X		X			X							X	
12	GINA-REF		2 NOV '06	15:23	SED	1							X	X	X	X					X	X	X	X

Relinquished by: (Signature) 3 NOV 06	Received by: (Signature/Affiliation) (CEZ)	Date: 11.3.06	Time: 1038
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

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05/10/06 Revision

Q&Q Graphic 714-898-9702

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 06 - 11-0207

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: SAIC **DATE:** 11.3.06

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
2.8 °C IR thermometer.
_____ Ambient temperature.

Initial: SF

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Present: /

Initial: SF

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	/		
Sampler's name indicated on COC	/		
Sample container label(s) consistent with custody papers	/ ED	/	
Sample container(s) intact and good condition	/		
Correct containers and volume for analyses requested	/		
Proper preservation noted on sample label(s)			/
VOA vial(s) free of headspace.			/
Tedlar bag(s) free of condensation			/

Initial: SF

COMMENTS:

RECEIVED EXTRA SAMPLES: 1 LITER WIDE MOUTH JAR & 1-4OZ JAR SAMPLE ID GINA-2-3B, TIME/DATE 13:36 11/01/06, IS LABELED AS -15. ED

APPENDIX D: DETAILED HYDROCARBON FINGERPRINTING ANALYSIS

Project Name: Shell Mounds
Project Number:

Client ID	Gina-1B-1	Gina-1B-2	Gina-1B-3	Gina-REF
Lab ID	0702041-01	0702041-02	0702041-03	0702041-04
Matrix	Soil	Soil	Soil	Soil
Reference Method	Modified 8270C	Modified 8270C	Modified 8270C	Modified 8270C
Batch ID	SS022307B14	SS022307B14	SS022307B14	SS022307B14
Date Collected	11/2/2006	11/2/2006	11/2/2006	11/2/2006
Date Received	2/7/2007	2/7/2007	2/7/2007	2/7/2007
Date Prepped	2/23/2007	2/23/2007	2/23/2007	2/23/2007
Date Analyzed	3/11/2007	3/3/2007	3/11/2007	3/3/2007
Sample Size (wet)	10.02	5.07	10.05	30.03
% Solid	76.97	76.2	77.46	73.58
File ID	P49219.D	A13416.D	P49221.D	A13422.D
Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Final Volume	2	5	0.635	2
Dilution	1	1	1	1
Reporting Limit	2.6	13	0.82	0.91

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
2	D0	cis/trans-Decalin	15	2.6	190	13	3.0	0.82	1.2	0.91
2	D1	C1-Decalins	57	2.6	670	13	13	0.82	2.9	0.91
2	D2	C2-Decalins	100	2.6	770	13	17	0.82	4.5	0.91
2	D3	C3-Decalins	110	2.6	770	13	17	0.82	U	0.91
2	D4	C4-Decalins	130	2.6	660	13	18	0.82	4.3	0.91
2	BT0	Benzothiophene	U	2.6	2.6 J	13	U	0.82	U	0.91
2	BT1	C1-Benzo(b)thiophenes	11	2.6	85	13	8.8	0.82	0.83 J	0.91
2	BT2	C2-Benzo(b)thiophenes	13	2.6	260	13	11	0.82	0.78 J	0.91
2	BT3	C3-Benzo(b)thiophenes	56	2.6	590	13	5.1	0.82	0.90 J	0.91
2	BT4	C4-Benzo(b)thiophenes	110	2.6	1200	13	12	0.82	1.5	0.91
2	N0	Naphthalene	3.2	2.6	23	13	2.4	0.82	2.8	0.91
2	N1	C1-Naphthalenes	5.1	2.6	89	13	4.2	0.82	4.8	0.91
2	N2	C2-Naphthalenes	19	2.6	350	13	7.6	0.82	7.8	0.91
2	N3	C3-Naphthalenes	58	2.6	700	13	9.1	0.82	6.0	0.91
2	N4	C4-Naphthalenes	130	2.6	1200	13	13	0.82	6.5	0.91
2	B	Biphenyl	2.0 J	2.6	8.7 J	13	1.3	0.82	2.0	0.91
3	DF	Dibenzofuran	2.3 J	2.6	8.8 J	13	0.52 J	0.82	0.82 J	0.91
3	AY	Acenaphthylene	0.59 J	2.6	2.9 J	13	0.16 J	0.82	0.15 J	0.91
3	AE	Acenaphthene	4.8	2.6	19	13	0.61 J	0.82	0.18 J	0.91
3	F0	Fluorene	3.3	2.6	17	13	0.46 J	0.82	0.52 J	0.91
3	F1	C1-Fluorenes	12	2.6	120	13	1.1	0.82	1.0	0.91
3	F2	C2-Fluorenes	25	2.6	340	13	6.4	0.82	5.4	0.91
3	F3	C3-Fluorenes	75	2.6	430	13	8.6	0.82	7.7	0.91
3	A0	Anthracene	7.0	2.6	19	13	0.33 J	0.82	0.38 J	0.91
3	P0	Phenanthrene	14	2.6	39	13	4.8	0.82	6.0	0.91
3	PA1	C1-Phenanthrenes/Anthracenes	110 G	2.6	140	13	7.9	0.82	7.4	0.91
3	PA2	C2-Phenanthrenes/Anthracenes	56	2.6	400	13	12	0.82	8.2	0.91
3	PA3	C3-Phenanthrenes/Anthracenes	73	2.6	490	13	12	0.82	9.5	0.91
3	PA4	C4-Phenanthrenes/Anthracenes	52	2.6	430	13	11	0.82	7.5	0.91
3	RET	Retene	7.2	2.6	38	13	1.5	0.82	1.7	0.91
3	DBT0	Dibenzothiophene	15	2.6	83	13	1.1	0.82	0.68 J	0.91
3	DBT1	C1-Dibenzothiophenes	80	2.6	790	13	5.8	0.82	1.3	0.91
3	DBT2	C2-Dibenzothiophenes	150	2.6	1900	13	22	0.82	3.7	0.91
3	DBT3	C3-Dibenzothiophenes	190	2.6	2000	13	29	0.82	6.5	0.91
3	DBT4	C4-Dibenzothiophenes	140	2.6	1400	13	22	0.82	4.5	0.91
4	BF	Benzo(b)fluorene	U	2.6	U	13	U	0.82	0.33 J	0.91
4	FL0	Fluoranthene	15	2.6	12 J	13	1.2	0.82	2.4	0.91
4	PY0	Pyrene	20	2.6	41	13	1.6	0.82	3.1	0.91
4	FP1	C1-Fluoranthenes/Pyrenes	26	2.6	130	13	5.3	0.82	5.0	0.91
4	FP2	C2-Fluoranthenes/Pyrenes	23	2.6	170	13	7.5	0.82	7.8	0.91
4	FP3	C3-Fluoranthenes/Pyrenes	30	2.6	240	13	10	0.82	10	0.91
4	FP4	C4-Fluoranthenes/Pyrenes	39	2.6	220	13	7.8	0.82	11	0.91
4	NBT0	Naphthobenzothiophenes	14	2.6	100	13	2.1	0.82	1.1	0.91
4	NBT1	C1-Naphthobenzothiophenes	37	2.6	310	13	7.4	0.82	3.0	0.91
4	NBT2	C2-Naphthobenzothiophenes	54	2.6	440	13	9.1	0.82	5.8	0.91
4	NBT3	C3-Naphthobenzothiophenes	54	2.6	400	13	8.9	0.82	5.9	0.91
4	NBT4	C4-Naphthobenzothiophenes	54	2.6	380	13	10	0.82	4.4	0.91
4	BA0	Benz[a]anthracene	2.8	2.6	4.0 J	13	0.36 J	0.82	1.1	0.91
4	C0	Chrysene/Triphenylene	6.8	2.6	32	13	1.8	0.82	3.2	0.91
4	BC1	C1-Chrysenes	9.3	2.6	51	13	3.6	0.82	5.1	0.91
4	BC2	C2-Chrysenes	18	2.6	96	13	6.6	0.82	7.8	0.91
4	BC3	C3-Chrysenes	30	2.6	130	13	11	0.82	18	0.91
4	BC4	C4-Chrysenes	23	2.6	U	13	10	0.82	13	0.91
5	BBF	Benzo[b]fluoranthene	1.8 J	2.6	6.7 J	13	0.81 J	0.82	2.0	0.91
5	BJKF	Benzo[k]fluoranthene	U	2.6	U	13	U	0.82	1.0	0.91
5	BAF	Benzo[a]fluoranthene	U	2.6	U	13	U	0.82	0.18 J	0.91
5	BEP	Benzo[e]pyrene	3.1	2.6	17	13	1.2	0.82	2.5	0.91
5	BAP	Benzo[a]pyrene	1.8 J	2.6	7.6 J	13	0.53 J	0.82	1.4	0.91
5	PER	Perylene	530	2.6	510	13	9.4	0.82	11	0.91
6	IND	Indeno[1,2,3-cd]pyrene	1.2 J	2.6	7.8 J	13	0.36 J	0.82	0.94	0.91
5	DA	Dibenz[a,h]anthracene	0.43 J	2.6	U	13	0.25 J	0.82	0.48 J	0.91

Project Name: Shell Mounds
Project Number:

		Client ID	Gina-1B-1	Gina-1B-2	Gina-1B-3	Gina-REF
		Lab ID	0702041-01	0702041-02	0702041-03	0702041-04
		Matrix	Soil	Soil	Soil	Soil
		Reference Method	Modified 8270C	Modified 8270C	Modified 8270C	Modified 8270C
		Batch ID	SS022307B14	SS022307B14	SS022307B14	SS022307B14
		Date Collected	11/2/2006	11/2/2006	11/2/2006	11/2/2006
		Date Received	2/7/2007	2/7/2007	2/7/2007	2/7/2007
		Date Prepped	2/23/2007	2/23/2007	2/23/2007	2/23/2007
		Date Analyzed	3/11/2007	3/3/2007	3/11/2007	3/3/2007
		Sample Size (wet)	10.02	5.07	10.05	30.03
		% Solid	76.97	76.2	77.46	73.58
		File ID	P49219.D	A13416.D	P49221.D	A13422.D
		Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg
		Final Volume	2	5	0.635	2
		Dilution	1	1	1	1
		Reporting Limit	2.6	13	0.82	0.91

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result	SSRL	Result	SSRL
6	GHI	Benzo[g,h,i]perylene	2.1	J	2.6	9.9	J	13	0.88	0.82	2.1	0.91

Project Name: Shell Mounds
Project Number:

Client ID	Gina-1B-1	Gina-1B-2	Gina-1B-3	Gina-REF
Lab ID	0702041-01	0702041-02	0702041-03	0702041-04
Matrix	Soil	Soil	Soil	Soil
Reference Method	Modified 8270C	Modified 8270C	Modified 8270C	Modified 8270C
Batch ID	SS022307B14	SS022307B14	SS022307B14	SS022307B14
Date Collected	11/2/2006	11/2/2006	11/2/2006	11/2/2006
Date Received	2/7/2007	2/7/2007	2/7/2007	2/7/2007
Date Prepped	2/23/2007	2/23/2007	2/23/2007	2/23/2007
Date Analyzed	3/11/2007	3/3/2007	3/11/2007	3/3/2007
Sample Size (wet)	10.02	5.07	10.05	30.03
% Solid	76.97	76.2	77.46	73.58
File ID	P49219.D	A13416.D	P49221.D	A13422.D
Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Final Volume	2	5	0.635	2
Dilution	1	1	1	1
Reporting Limit	2.6	13	0.82	0.91

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
t23	T4	C23 Tricyclic Terpane	60	2.6	430	13	10	0.82	6.1	0.91
t24	T5	C24 Tricyclic Terpane	30	2.6	170	13	6.3	0.82	4.1	0.91
t25	T6	C25 Tricyclic Terpane	35	2.6	200	13	6.6	0.82	4.8	0.91
te24	T6a	C24 Tetracyclic Terpane	11	2.6	38	13	1.6	0.82	1.3	0.91
t26S	T6b	C26 Tricyclic Terpane-22S	11	2.6	73	13	2.5	0.82	1.8	0.91
t26R	T6c	C26 Tricyclic Terpane-22R	11	2.6	67	13	2.5	0.82	1.7	0.91
t28S	T7	C28 Tricyclic Terpane-22S	12	2.6	80	13	2.4	0.82	1.7	0.91
t28R	T8	C28 Tricyclic Terpane-22R	14	2.6	99	13	3.9	0.82	2.2	0.91
t29S	T9	C29 Tricyclic Terpane-22S	18	2.6	120	13	6.1	0.82	2.5	0.91
t29R	T10	C29 Tricyclic Terpane-22R	16	2.6	110	13	3.1	0.82	2.8	0.91
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	14	2.6	51	13	2.5	0.82	2.4	0.91
t30S	T11a	C30 Tricyclic Terpane-22S	18	2.6	120	13	2.8	0.82	2.6	0.91
t30R	T11b	C30 Tricyclic Terpane-22R	14	2.6	85	13	2.6	0.82	1.3	0.91
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	31	2.6	200	13	6.9	0.82	4.4	0.91
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	860	2.6	1900	13	42	0.82	19	0.91
25N	T14b	17a(H),21b(H)-25-Norhopane	18	2.6	69	13	U	0.82	U	0.91
H29	T15	30-Norhopane	89	2.6	660	13	23	0.82	13	0.91
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	11	2.6	73	13	2.3	0.82	3.5	0.91
X	X	17a(H)-Diahopane	U	2.6	U	13	U	0.82	U	0.91
M29	T17	30-Normoretane	21	2.6	110	13	4.7	0.82	4.3	0.91
OL	T18	18a(H)&18b(H)-Oleananes	16	2.6	78	13	6.7	0.82	8.5	0.91
H30	T19	Hopane	140	2.6	900	13	33	0.82	22	0.91
M30	T20	Moretane	33	2.6	100	13	5.2	0.82	11	0.91
H31S	T21	30-Homohopane-22S	71	2.6	610	13	16	0.82	7.2	0.91
H31R	T22	30-Homohopane-22R	63	2.6	470	13	11	0.82	6.2	0.91
H32S	T26	30,31-Bishomohopane-22S	56	2.6	440	13	16	0.82	9.4	0.91
H32R	T27	30,31-Bishomohopane-22R	47	2.6	330	13	9.5	0.82	3.0	0.91
H33R	T30	30,31-Trishomohopane-22S	46	2.6	340	13	9.7	0.82	5.5	0.91
H33S	T31	30,31-Trishomohopane-22R	25	2.6	220	13	6.4	0.82	3.0	0.91
H34R	T32	Tetrakishomohopane-22S	24	2.6	180	13	4.6	0.82	2.4	0.91
H34S	T33	Tetrakishomohopane-22R	19	2.6	120	13	16 G	0.82	16	0.91
H35S	T34	Pentakishomohopane-22S	35	2.6	310	13	6.0	0.82	2.0	0.91
H35R	T35	Pentakishomohopane-22R	24	2.6	180	13	5.5	0.82	2.0	0.91
d27S	S4	13b(H),17a(H)-20S-Diacholestane	21	2.6	150	13	5.4	0.82	4.1	0.91
d27R	S5	13b(H),17a(H)-20R-Diacholestane	6.7	2.6	48	13	2.6	0.82	2.2	0.91
d28S	S8	13b,17a-20S-Methyldiacholestane	63	2.6	95	13	3.0	0.82	5.5	0.91
aa27S	S12	14a(H),17a(H)-20S-Cholestane	25	2.6	62	13	4.6	0.82	3.5	0.91
aa27R	S17	14a(H),17a(H)-20R-Cholestane	280	2.6	590	13	25	0.82	26	0.91
d29R	S18	13b,17a-20R-Ethyldiacholestane	8.4	2.6	43	13	2.8	0.82	1.3	0.91
d29S	S19	13a,17b-20S-Ethyldiacholestane	4.1	2.6	49	13	U	0.82	0.76 J	0.91
aa28S	S20	14a,17a-20S-Methylcholestane	19	2.6	95	13	3.3	0.82	3.6	0.91
aa28R	S24	14a,17a-20R-Methylcholestane	190	2.6	250	13	18	0.82	26	0.91
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	48	2.6	350	13	9.0	0.82	7.6	0.91
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	190	2.6	370	13	13	0.82	20	0.91
bb27R	S14	14b(H),17b(H)-20R-Cholestane	39	2.6	310	13	6.6	0.82	3.6	0.91
bb27S	S15	14b(H),17b(H)-20S-Cholestane	41	2.6	300	13	6.2	0.82	4.3	0.91
bb28R	S22	14b,17b-20R-Methylcholestane	55	2.6	430	13	9.6	0.82	9.0	0.91
bb28S	S23	14b,17b-20S-Methylcholestane	50	2.6	410	13	8.6	0.82	8.0	0.91
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	50	2.6	300	13	9.0	0.82	9.3	0.91
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	30	2.6	200	13	5.0	0.82	4.2	0.91
RC26/SC	RC26/SC	C26,20R- +C27,20S- triaromatic steroid	730	2.6	5000	13	140	0.82	91	0.91
SC28TA	SC28TA	C28,20S-triaromatic steroid	170	2.6	1100	13	39	0.82	37	0.91
RC27TA	RC27TA	C27,20R-triaromatic steroid	500	2.6	3400	13	92	0.82	57	0.91
RC28TA	RC28TA	C28,20R-triaromatic steroid	160	2.6	1000	13	34	0.82	30	0.91

Surrogates (% Recovery)				
2-Methylnaphthalene-d10	91	87	88	74
Pyrene-d10	96	89	88	80
Benzo[b]fluoranthene-d12	85	84	84	91
5B(H)Cholane	92	92	93	87

Project Name: Shell Mounds
Project Number:

Client ID	Gina-1B-2-Brown	Gina-1B-2-Grey
Lab ID	0702041-05	0702041-06
Matrix	Soil	Soil
Reference Method	Modified 8270C	Modified 8270C
Batch ID	SS022307B14	SS022307B14
Date Collected	11/2/2006	11/2/2006
Date Received	2/7/2007	2/7/2007
Date Prepped	2/23/2007	2/23/2007
Date Analyzed	3/3/2007	3/3/2007
Sample Size (wet)	5.09	5.04
% Solid	71.45	80.86
File ID	A13424.D	A13426.D
Units	µg/Kg	µg/Kg
Final Volume	16.67	2
Dilution	1	1
Reporting Limit	46	4.9

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL
2	D0	cis/trans-Decalin	770	46	130	4.9
2	D1	C1-Decalins	5500	46	370	4.9
2	D2	C2-Decalins	5600	46	360	4.9
2	D3	C3-Decalins	5600	46	290	4.9
2	D4	C4-Decalins	4500	46	250	4.9
2	BT0	Benzothiophene	7.8 J	46	U	4.9
2	BT1	C1-Benzo(b)thiophenes	220	46	38	4.9
2	BT2	C2-Benzo(b)thiophenes	830	46	25	4.9
2	BT3	C3-Benzo(b)thiophenes	2300	46	90	4.9
2	BT4	C4-Benzo(b)thiophenes	7700	46	320	4.9
2	N0	Naphthalene	90	46	6.3	4.9
2	N1	C1-Naphthalenes	280	46	11	4.9
2	N2	C2-Naphthalenes	1600	46	50	4.9
2	N3	C3-Naphthalenes	3500	46	170	4.9
2	N4	C4-Naphthalenes	6700	46	420	4.9
2	B	Biphenyl	46	46	2.8 J	4.9
3	DF	Dibenzofuran	56	46	1.3 J	4.9
3	AY	Acenaphthylene	13 J	46	U	4.9
3	AE	Acenaphthene	130	46	1.2 J	4.9
3	F0	Fluorene	79	46	2.1 J	4.9
3	F1	C1-Fluorenes	640	46	52	4.9
3	F2	C2-Fluorenes	2100	46	160	4.9
3	F3	C3-Fluorenes	2400	46	190	4.9
3	A0	Anthracene	U	46	U	4.9
3	P0	Phenanthrene	170	46	5.0	4.9
3	PA1	C1-Phenanthrenes/Anthracenes	800	46	32	4.9
3	PA2	C2-Phenanthrenes/Anthracenes	2600	46	150	4.9
3	PA3	C3-Phenanthrenes/Anthracenes	3300	46	200	4.9
3	PA4	C4-Phenanthrenes/Anthracenes	3000	46	140	4.9
3	RET	Retene	310	46	14	4.9
3	DBT0	Dibenzothiophene	440	46	16	4.9
3	DBT1	C1-Dibenzothiophenes	4300	46	290	4.9
3	DBT2	C2-Dibenzothiophenes	12000	46	650	4.9
3	DBT3	C3-Dibenzothiophenes	15000	46	650	4.9
3	DBT4	C4-Dibenzothiophenes	10000	46	390	4.9
4	BF	Benzo(b)fluorene	U	46	U	4.9
4	FL0	Fluoranthene	73	46	5.3	4.9
4	PY0	Pyrene	300	46	12	4.9
4	FP1	C1-Fluoranthenes/Pyrenes	1100	46	58	4.9
4	FP2	C2-Fluoranthenes/Pyrenes	1500	46	57	4.9
4	FP3	C3-Fluoranthenes/Pyrenes	1600	46	88	4.9
4	FP4	C4-Fluoranthenes/Pyrenes	1600	46	94	4.9
4	NBT0	Naphthobenzothiophenes	720	46	30	4.9
4	NBT1	C1-Naphthobenzothiophenes	2400	46	94	4.9
4	NBT2	C2-Naphthobenzothiophenes	3300	46	130	4.9
4	NBT3	C3-Naphthobenzothiophenes	3400	46	130	4.9
4	NBT4	C4-Naphthobenzothiophenes	3000	46	93	4.9
4	BA0	Benz[a]anthracene	37 J	46	1.4 J	4.9
4	C0	Chrysene/Triphenylene	250	46	9.6	4.9
4	BC1	C1-Chrysenes	330	46	17	4.9
4	BC2	C2-Chrysenes	680	46	40	4.9
4	BC3	C3-Chrysenes	1400	46	39	4.9
4	BC4	C4-Chrysenes	870	46	U	4.9
5	BBF	Benzo[b]fluoranthene	U	46	U	4.9
5	BJKF	Benzo[k]fluoranthene	U	46	U	4.9
5	BAF	Benzo[a]fluoranthene	U	46	U	4.9
5	BEP	Benzo[e]pyrene	130	46	5.6	4.9
5	BAP	Benzo[a]pyrene	U	46	U	4.9
5	PER	Perylene	3200	46	130	4.9
6	IND	Indeno[1,2,3-cd]pyrene	U	46	U	4.9
5	DA	Dibenz[a,h]anthracene	U	46	U	4.9

Project Name: Shell Mounds
Project Number:

		Client ID	Gina-1B-2-Brown		Gina-1B-2-Grey	
		Lab ID	0702041-05		0702041-06	
		Matrix	Soil		Soil	
		Reference Method	Modified 8270C		Modified 8270C	
		Batch ID	SS022307B14		SS022307B14	
		Date Collected	11/2/2006		11/2/2006	
		Date Received	2/7/2007		2/7/2007	
		Date Prepped	2/23/2007		2/23/2007	
		Date Analyzed	3/3/2007		3/3/2007	
		Sample Size (wet)	5.09		5.04	
		% Solid	71.45		80.86	
		File ID	A13424.D		A13426.D	
		Units	µg/Kg		µg/Kg	
		Final Volume	16.67		2	
		Dilution	1		1	
		Reporting Limit	46		4.9	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL
6	GHI	Benzo[g,h,i]perylene	33 J	46	1.9 J	4.9

Project Name: Shell Mounds
Project Number:

Client ID	Gina-1B-2-Brown	Gina-1B-2-Grey
Lab ID	0702041-05	0702041-06
Matrix	Soil	Soil
Reference Method	Modified 8270C	Modified 8270C
Batch ID	SS022307B14	SS022307B14
Date Collected	11/2/2006	11/2/2006
Date Received	2/7/2007	2/7/2007
Date Prepped	2/23/2007	2/23/2007
Date Analyzed	3/3/2007	3/3/2007
Sample Size (wet)	5.09	5.04
% Solid	71.45	80.86
File ID	A13424.D	A13426.D
Units	µg/Kg	µg/Kg
Final Volume	16.67	2
Dilution	1	1
Reporting Limit	46	4.9

Class	Abbrev	Analytes	Result		SSRL	Result	SSRL
t23	T4	C23 Tricyclic Terpane	3400		46	180	4.9
t24	T5	C24 Tricyclic Terpane	1300		46	74	4.9
t25	T6	C25 Tricyclic Terpane	1500		46	84	4.9
te24	T6a	C24 Tetracyclic Terpane	260		46	14	4.9
t26S	T6b	C26 Tricyclic Terpane-22S	520		46	31	4.9
t26R	T6c	C26 Tricyclic Terpane-22R	470		46	32	4.9
t28S	T7	C28 Tricyclic Terpane-22S	540		46	43	4.9
t28R	T8	C28 Tricyclic Terpane-22R	770		46	46	4.9
t29S	T9	C29 Tricyclic Terpane-22S	920		46	63	4.9
t29R	T10	C29 Tricyclic Terpane-22R	870		46	56	4.9
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	340		46	46	4.9
t30S	T11a	C30 Tricyclic Terpane-22S	840		46	54	4.9
t30R	T11b	C30 Tricyclic Terpane-22R	630		46	46	4.9
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	1800		46	83	4.9
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	15000		46	570	4.9
25N	T14b	17a(H),21b(H)-25-Norhopane	560		46	34	4.9
H29	T15	30-Norhopane	6000		46	270	4.9
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	450		46	41	4.9
X	X	17a(H)-Diahopane		U	46	19	4.9
M29	T17	30-Normoretane	830		46	47	4.9
OL	T18	18a(H)&18b(H)-Oleananes	450		46	36	4.9
H30	T19	Hopane	7600		46	380	4.9
M30	T20	Moretane	970		46	51	4.9
H31S	T21	30-Homohopane-22S	5100		46	210	4.9
H31R	T22	30-Homohopane-22R	3800		46	190	4.9
H32S	T26	30,31-Bishomohopane-22S	3700		46	160	4.9
H32R	T27	30,31-Bishomohopane-22R	2600		46	110	4.9
H33R	T30	30,31-Trishomohopane-22S	3000		46	120	4.9
H33S	T31	30,31-Trishomohopane-22R	2000		46	78	4.9
H34R	T32	Tetrakishomohopane-22S	1600		46	77	4.9
H34S	T33	Tetrakishomohopane-22R	1100		46	59	4.9
H35S	T34	Pentakishomohopane-22S	2500		46	100	4.9
H35R	T35	Pentakishomohopane-22R	1700		46	77	4.9
d27S	S4	13b(H),17a(H)-20S-Diacholestane	1100		46	130	4.9
d27R	S5	13b(H),17a(H)-20R-Diacholestane	300		46	64	4.9
d28S	S8	13b,17a-20S-Methyldiacholestane	720		46	87	4.9
aa27S	S12	14a(H),17a(H)-20S-Cholestane	430		46	92	4.9
aa27R	S17	14a(H),17a(H)-20R-Cholestane	3700		46	330	4.9
d29R	S18	13b,17a-20R-Ethyldiacholestane	320		46	30	4.9
d29S	S19	13a,17b-20S-Ethyldiacholestane	290		46	14	4.9
aa28S	S20	14a,17a-20S-Methylcholestane	820		46	63	4.9
aa28R	S24	14a,17a-20R-Methylcholestane	1500		46	160	4.9
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	2900		46	180	4.9
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	2200		46	180	4.9
bb27R	S14	14b(H),17b(H)-20R-Cholestane	2500		46	150	4.9
bb27S	S15	14b(H),17b(H)-20S-Cholestane	2200		46	160	4.9
bb28R	S22	14b,17b-20R-Methylcholestane	3300		46	220	4.9
bb28S	S23	14b,17b-20S-Methylcholestane	3400		46	220	4.9
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	1800		46	150	4.9
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	1900		46	150	4.9
RC26/SC	RC26/SC	C26,20R- +C27,20S- triaromatic steroid	42000		46	1500	4.9
SC28TA	SC28TA	C28,20S-triaromatic steroid	9300		46	400	4.9
RC27TA	RC27TA	C27,20R-triaromatic steroid	28000		46	1000	4.9
RC28TA	RC28TA	C28,20R-triaromatic steroid	8500		46	360	4.9

Surrogates (% Recovery)		
2-Methylnaphthalene-d10	90	89
Pyrene-d10	93	88
Benzo[b]fluoranthene-d12	91	84
5B(H)Cholane	104	95