USGS environmental characterization of flood sediments left in the New Orleans area after Hurricanes Katrina and Rita, 2005—Progress Report

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Overview

The flooding in the greater New Orleans area that resulted from Hurricanes Katrina and Rita in September, 2005, left behind accumulations of sediments up to many centimeters thick on streets, lawns, parking lots, and other flat surfaces. These flood sediment deposits have been the focus of extensive study by the US Environmental Protection Agency (EPA) and Louisiana Department of Environmental Quality (LDEQ) due to concerns that the sediments may contain elevated levels of heavy metals, organic contaminants, and microbes. Results of the EPA/LDEQ) sampling are presented at http://www.epa.gov/katrina/testresults/sediments/index.html#2.

The U.S. Geological Survey (USGS) is characterizing a limited number of flood sediment samples that were collected on September 15-16 and October 6-7, 2005, from the greater New Orleans area by personnel from the USGS Louisiana Water Science Center in Baton Rouge. Small samples (< 3 pints each) of wet to dry flood sediment were collected from 11 localities around downtown New Orleans on September 15, 2005, and two large samples (40 pints each) of wet flood sediment were collected from the Chalmette area on September 16. Twelve additional samples (8-10 pints each) were collected from New Orleans, Slidell, Rigolets, and Violet (near St. Bernard High School) on October 6 and 7. Sample locations are shown in figure 1 and described in table 1.

A wide variety of physical, inorganic, organic, and microbial characterization methods are being applied to the samples (table 2), with appropriate splits of the samples sent to USGS analytical facilities in Denver, Colorado, Reston, Virginia, St. Petersburg, Florida, Columbia, Missouri, and Menlo Park, California. Additional characterization studies are being performed on splits of the same samples by collaborators at the Colorado School of Mines (Golden, Colorado), EPA National Enforcement Investigations Center (Denver), University of California –Davis, and SUNY Stony Brook, New York. Figures are presented after the main text of the document. Sampling methods are described in Appendix A following the figures. Tables listing locations, types of analyses, and analytical results available to date are included at the end of this document.

The USGS characterization studies of these flood sediments are designed to produce data and interpretations regarding how the sediments and any contained contaminants may respond to environmental processes. This information will be of use to cleanup managers and DoI/USGS scientists assessing environmental impacts of the hurricanes and subsequent cleanup activities. The USGS flood sediment studies focus on:

- The extent to which and the forms in which a wide variety of potential organic and heavy metal contaminants occur in the sediments,
- Mechanisms by which any contaminants present may be released into the environment (either in place or from disposal areas),
- Whether or not the contaminants may be available for uptake by aquatic and terrestrial organisms, and
- How microbial communities may be influenced by chemical and physical properties of the sediments.

The USGS flood sediment study is also addressing several other objectives:

- The flood sediment study is being coordinated with another USGS study examining

suspended and bottom sediments in Lake Pontchartrain produced by flood waters pumped from New Orleans (study coordinated by Pete VanMetre, pvanmetre@usgs.gov). The flood sediment characterization results will assist in the discrimination of sediments deposited in Lake Pontchartrain by the floodwater pumping from sediments present prior to pumping.

- USGS flood sediment study results are being used to help calibrate measurements made by an AVIRIS (Airborne Visible and Infra-Red Imaging Spectrometer) remote sensing flight that was flown by NASA over New Orleans early in September, 2005.
- The study results will also be used to test and assist in development of techniques to remotely identify and map organic contaminants in sediments using reflectance spectroscopy and AVIRIS remote sensing.

This study is not intended to provide a detailed hazardous materials-focused assessment of contaminants present in the sediments from throughout the New Orleans area; such an assessment is the appropriate role of EPA and State environmental agencies and not the USGS. A summary of key findings is presented in the following section.

Key Findings

The Chalmette area samples are composed largely of marine mud, whereas the downtown New Orleans samples analyzed to date have greater proportions of plant matter, sand, small gravel, and anthropogenic debris

Scanning electron microscopy (SEM) and X-ray diffraction studies (tables 3a-3c) indicate the Chalmette samples are composed primarily of marine muds, with very fine-grained (<20 micron) particles of quartz, clays, feldspars, silica tests (skeletons) of marine plankton, and pyrite (iron disulfide) (figs. 2 and 3). The pyrite is often framboidal, with raspberry-shaped clusters of <1 micron pyrite crystals (Figure 3). The Chalmette samples that were collected wet had a consistency similar to cake frosting. However, the mud dries to a very hard material that takes considerable effort to break apart.

Downtown New Orleans samples analyzed to date contain some mud with clays, silica tests, and calcium carbonate (fig. 4). However, they also contain more sand- to fine gravel-sized particles than the Chalmette samples. In addition, the downtown New Orleans samples have more abundant particles of urban construction and commercial materials such as soda lime glass, glass fibers, concrete, nails, and glass jewelry beads. The downtown samples, when dried, tend to occur in large 50-100 micron clumps of smaller particles less than 10-20 microns (fig. 4).

There are generally low concentrations of heavy metals in the Chalmette sediments, but there are elevated concentrations of some metals in a number of the downtown New Orleans flood sediment samples.

Results of the USGS inorganic chemical analyses (table 4) performed to date indicate that the Chalmette 1 and 2 sediments have concentrations of heavy metals (lead, arsenic, chromium, cadmium, mercury, zinc, arsenic) that are somewhat elevated compared to concentrations in average US soils, but are low compared to concentrations of concern in commonly cited soil quality criteria (such as Netherlands soil quality criteria, 1997).

In contrast, the downtown New Orleans samples typically have substantially higher

levels of metals such as lead, zinc, mercury, copper, arsenic, and cadmium than the Chalmette samples. For many of these elements, concentrations at some sites can exceed the Netherlands and LDEQ soil quality criteria. Lead concentrations, for example, range from 95 to 2160 parts per million (ppm) in the downtown samples, with most having levels above 500 ppm. Scanning electron microscopy (SEM) analyses of samples from downtown New Orleans have identified relatively common microscopic (generally less than 10-20 micron) zinc-sulfate-carbonate, lead-phosphate-chlorine-rich, and metallic lead or lead-oxide particles (fig. 5).

Metal enrichments in the downtown New Orleans flood sediments may result in large part from incorporation of pre-Katrina urban soils

A map of lead variations measured in this study in the Katrina sediments is compared in figure 6 to a map of lead concentrations in New Orleans urban soils determined in the 1990's by Mielke (1999) and Mielke and others (2004). The similarities in spatial patterns of lead enrichments between the Katrina sediment samples and the urban New Orleans soil samples suggest that the Katrina flood sediments in the downtown New Orleans area may be composed, at least in part, of reworked local soil material having previously elevated metal concentrations. A comparison of the chemical, mineralogical, and lead isotopic composition of the flood sediments with archived soil samples collected for the Mielke studies would help assess the validity of this hypothesis.

The USGS analytical results typically are higher in many metals than EPA results for nearby samples, which is most likely due primarily to differences in the methods by which the samples were digested prior to chemical analysis

For most flood sediment samples, the USGS bulk chemical analyses yield higher concentrations of many elements and metals than EPA results for samples collected nearby; this is particularly true for major silicate-forming elements such as aluminum and silicon, but is also commonly the case with metals such as lead. While these differences may in part be due to local spatial variability in the composition of the flood sediments, they likely are due in large part to differences between the USGS and EPA methods used to digest the samples prior to chemical analysis. The USGS method uses a mix of four acids, including HF to break apart silicate minerals. Although the digestion method is not specified on the EPA web site, it most likely is EPA Method 3020, which only uses an aqua regia (two acid) leach that typically does not fully dissolve some aluminosilicate or resistate minerals. Therefore, the elements tied up in these minerals would not contribute to the resulting chemical analyses.

Chemical leach tests using simulated gastric fluids as the leaching fluid indicate that some of the heavy metals contained within the downtown New Orleans flood sediment samples can be quite bioacccessible

Simulated gastric-fluid leach tests (table 5, fig. 7) of the downtown New Orleans samples generally leached relatively high proportions of lead, zinc, cobalt, cadmium, manganese, and arsenic from the solids, indicating that these metals could potentially be bioaccessible if the flood sediments were ingested. These results can be used to help identify metals that might appropriately be evaluated as part of biomonitoring studies of emergency responders, cleanup workers, and residents (especially small children) who

have reoccupied areas near downtown New Orleans where flood sediments remain or where pre-existing metal rich soils are exposed.

Simulated rain water and landfill water leach tests did not extract high levels of metals from the wet Chalmette sediments

These leach tests (table 6) have so far been performed on wet sediment samples as received from the field. These tests are designed to evaluate release of metals from the sediments into simulated rain water (USGS test modified from EPA method 1312), simulated landfill leachate (EPA method 1311, performed by the EPA National Enforcement Investigations Center; and USGS method modified from EPA 1311), and simulated brackish water (USGS modification of EPA 1312 with simulated dilute sea water as the leaching fluid). These tests on the two Chalmette samples indicate that very low levels of metals would be leached from the samples when wet. Tests are under way to evaluate if metal release is greater from samples that have been dried completely, and from samples of the downtown New Orleans flood sediments.

Preliminary organic analysis of the Chalmette samples indicates signatures that are largely typical of sediment from the Mississippi River delta

Organic analyses to date (tables 7-9) indicate that the organic constituents of the Chalmette samples are dominated by biogenic (produced by living, non-human organisms) rather than anthropogenic (human-produced) or petrogenic (petroleum-derived) components. Some specific biogenic constituents are: suites of n-alkanes sourced from algae and land-based plant waxes, immature hopenes, the polycyclic aromatic hydrocarbon (PAH) perylene, and plant derived sterols.

There are some markers for anthropogenic input, at much lower levels than the above, such as combustion PAHs, pervasive in the environment from the burning of fossil fuel. Also, some indications of sewage-related contamination are present (coprostanol, epicoprostanol), as are indications of slight contamination by oil-related compounds (low levels of oil-related hopanes and steranes). Some heavy (4-, 5-, 6-ring) PAHs having a elevated carcinogenic potential are present in the Chalmette samples but are relatively low and within the recommended sediment quality criteria proposed by the Washington Department of Ecology, except for benzo[a]pyrene, which although low, exceeds the standard. The PAH levels of the Chalmette samples are well below levels found by Mielke and others (2004) in pre-Katrina urban New Orleans soil samples.

Analyses for pesticides and pharmaceuticals are pending from other USGS laboratories for the Slidell, Violet, Chalmette, and downtown New Orleans samples.

High iron sulfide contents indicate the Chalmette flood sediments may generate acid drainage when left in contact with rainfall and atmospheric oxygen

USGS studies to date indicate that the Chalmette-area flood sediments contain quite elevated levels of pyrite (iron disulfide) and, prior to drying, elevated levels of acid-volatile sulfides (iron monosulfides) (Table 10). Sample Chalmette 1 contains as much as 4 % by weight pyrite, and Chalmette 2 contains up to 1 % by weight pyrite (table 3a). These abundances are common features of natural mud from marine marshes, and result from bacteria-driven reduction of seawater sulfate in the marsh mud, coupled with the

reaction of the resulting aqueous sulfide with iron and other metals in the muds. This is consistent with the flood sediments having been transported into the Chalmette area from marshes to the east-northeast. Chalmette 1 contains little if any carbonate minerals, and Chalmette 2 only contains very small amounts of carbonate minerals. Both Chalmette samples also have abundant salt (sodium chloride) due to the evaporation of brackish water.

The abundance of pyrite and acid-volatile sulfide in the Chalmette samples indicates that, as the flood sediments continue to weather by reacting with rainwater and atmospheric oxygen, there is a strong potential for acidic pore waters and runoff waters to form. Such waters would likely have elevated concentrations of acid and sulfate (in the form of moderately concentrated sulfuric acid), along with iron, aluminum, and other metals leached from the sediment by the acid. These are common chemical processes that occur as pyrite-rich rocks weather to produce "acid-rock drainage" or ARD. The lack of carbonate minerals in the Chalmette 1 sediments also means that the sediments have very little capacity to self-neutralize the acid generated by sulfide oxidation.

Net acid production tests (table 11), similar to those originally developed to test whether sulfide-bearing mine waste piles would develop ARD, indicate that sample Chalmette 1 is very acid generating, and sample Chalmette 2 is slightly acid generating

In contrast, the limited number of samples analyzed to date from the downtown New Orleans area do not appear to contain pyrite or acid-volatile sulfides, but do contain some calcium carbonate minerals.

These results indicate that the progressive chemical weathering of pyrite-rich Chalmette-area flood sediments, if either left in place or removed to an on-land storage facility exposed to rainfall and the atmosphere, may start to generate acidic solutions. The acid drainage could be somewhat corrosive to concrete and metals with which the sediments are in contact, and may be detrimental to vegetation and aquatic life affected by the drainage. In contrast to the Chalmette sediments, the downtown New Orleans sediments analyzed to date do not appear to pose a similar potential for generation of acid drainage. Further mineralogical characterization and acid-base accounting tests are underway on a broader number of samples from the greater New Orleans area to define the distribution of elevated iron sulfide levels in the sediment.

The potential for the Chalmette area samples to be acid-generating is most likely only a concern if the sediments are removed to an on-land disposal facility where they will be exposed to rainfall and the atmosphere. Sediments containing high levels of iron sulfides and low levels of carbonate minerals might best be considered as candidates for disposal into water-covered disposal areas or disposal facilities isolated from the atmosphere and rainfall.

Other results are pending

Results of additional chemical leach tests, microbial characterization studies, and organic contaminant analyses are currently pending.

USGS Contacts

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Additional contacts will be listed as other analytical results are completed.

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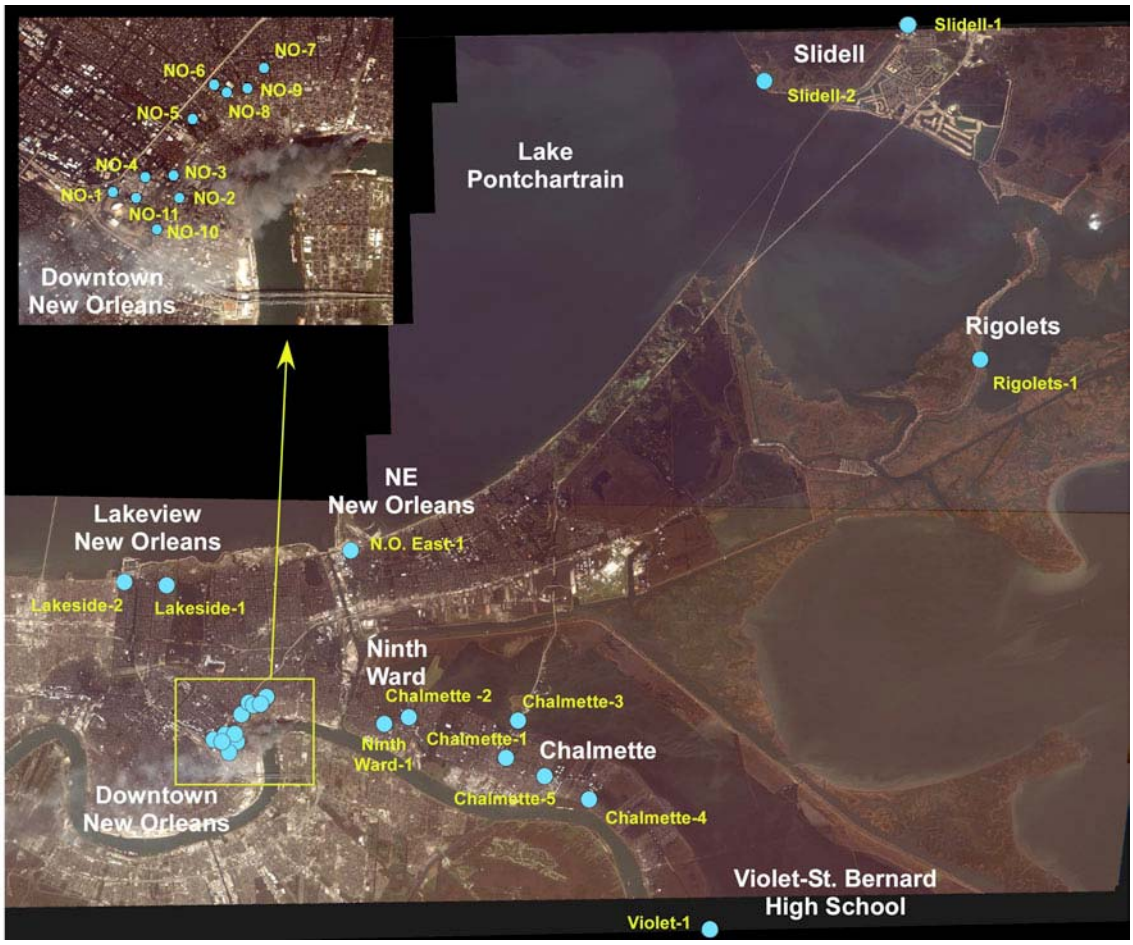

Figure 1. Locations of samples (blue circles) being analyzed to date in the USGS study, superimposed on a DigitalGlobe satellite image of the area from August 31, 2005.

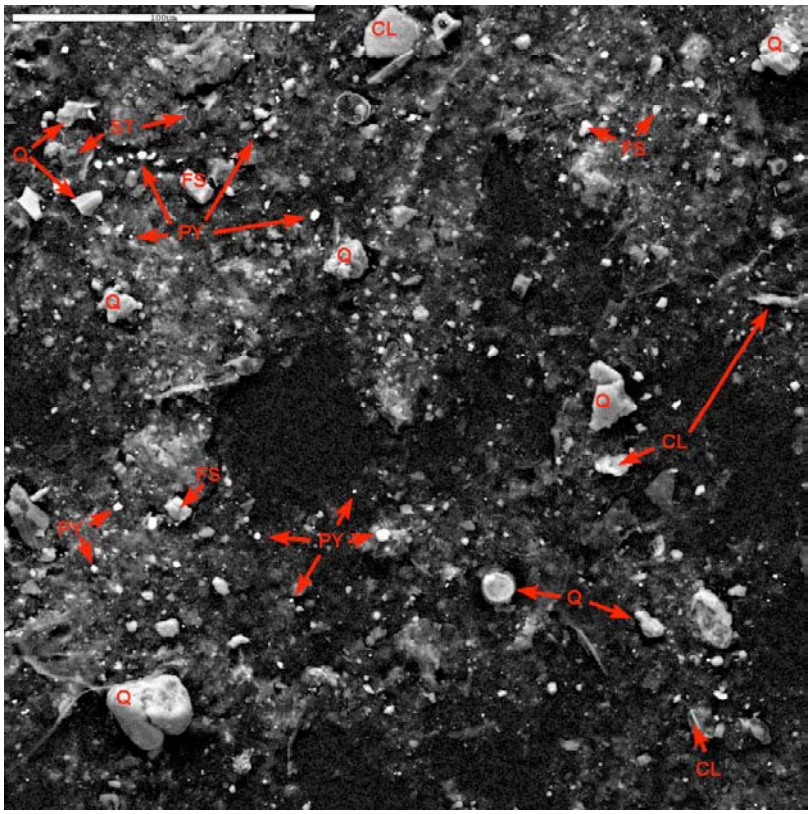

Figure 2. Backscattered electron micrograph of Chalmette composite sample 1. Image shows examples of mineral material (light gray) and unidentified organic material (darker gray). Typical mineral phases are labeled in the image. Q = quartz, FS = feldspar, CL = clay, PY = pyrite, ST = siliceous tests (skeletons) from microorganisms such as diatoms. Scale bar is 100 microns long.

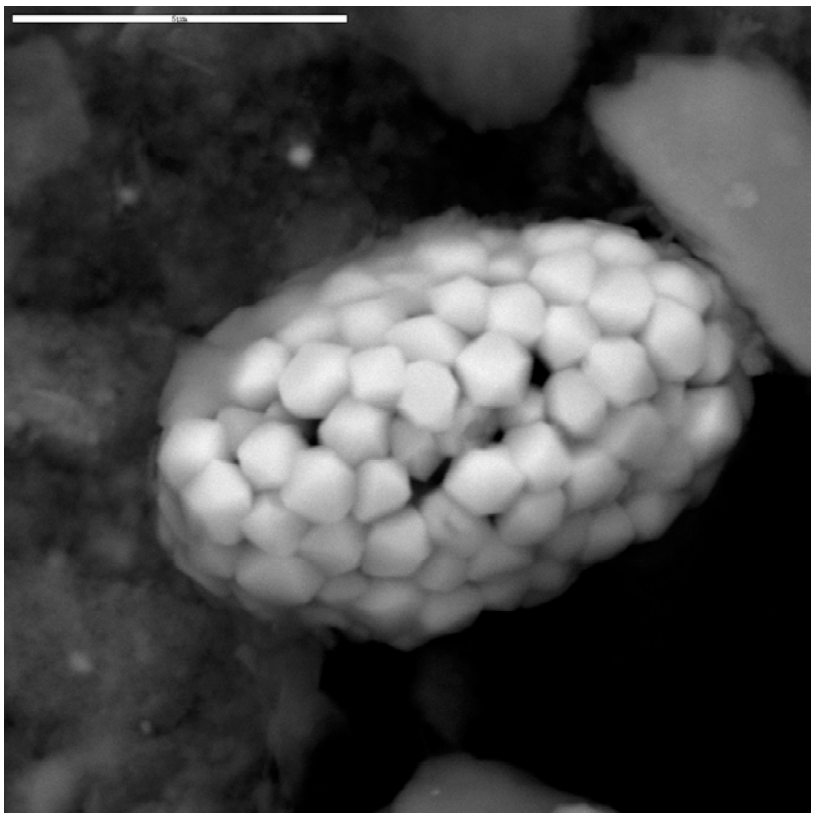

Figure 3. Backscattered electron micrograph showing an example of a pyrite framboid from sample Chalmette 1 with individual crystals < 1 mm in diameter (scale bar is 5 microns long).

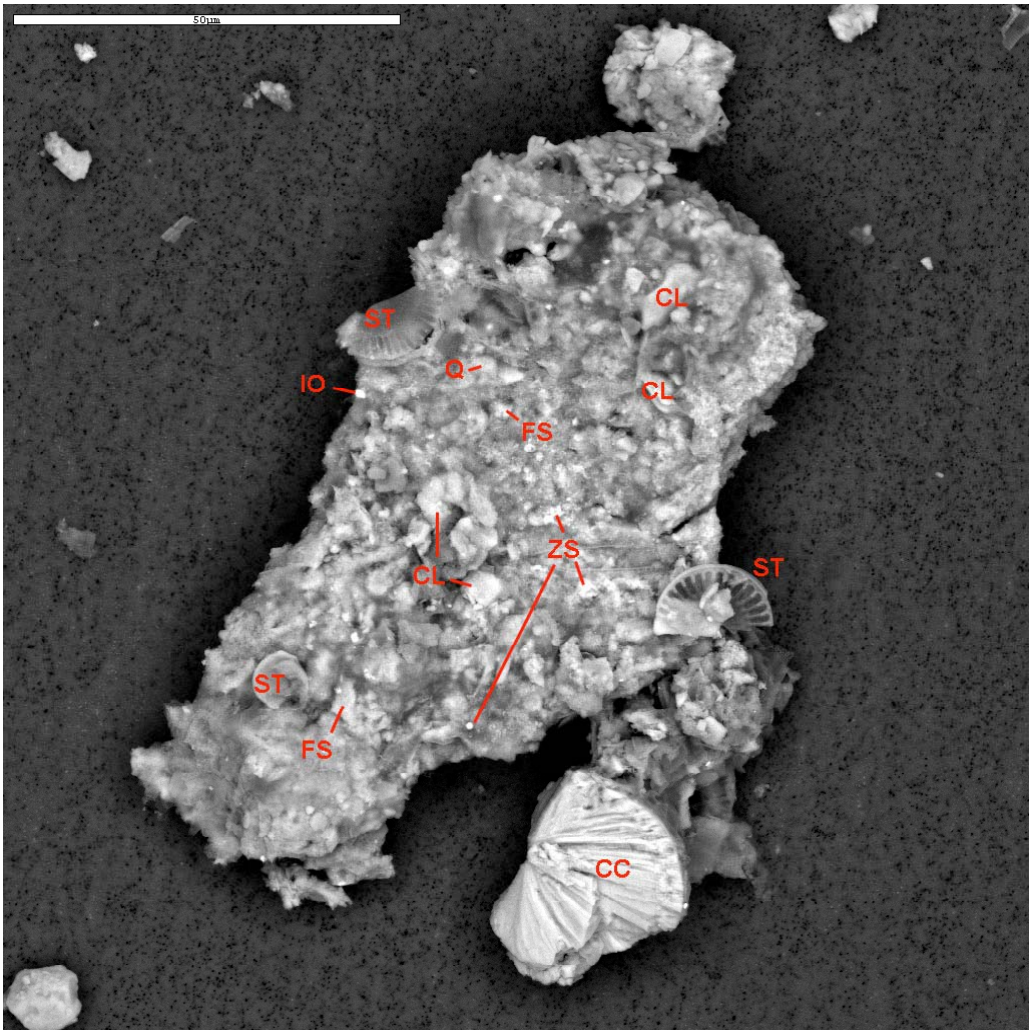

Figure 4. Typical aggregate grain of downtown New Orleans sub-sample NO7-B showing examples of primary components. CL = clay; Q = quartz; FS = feldspar; CC = calcium carbonate; ST = silica test; ZS = Zn-S-rich; IO = iron oxide. Scale bar is 50 microns long.

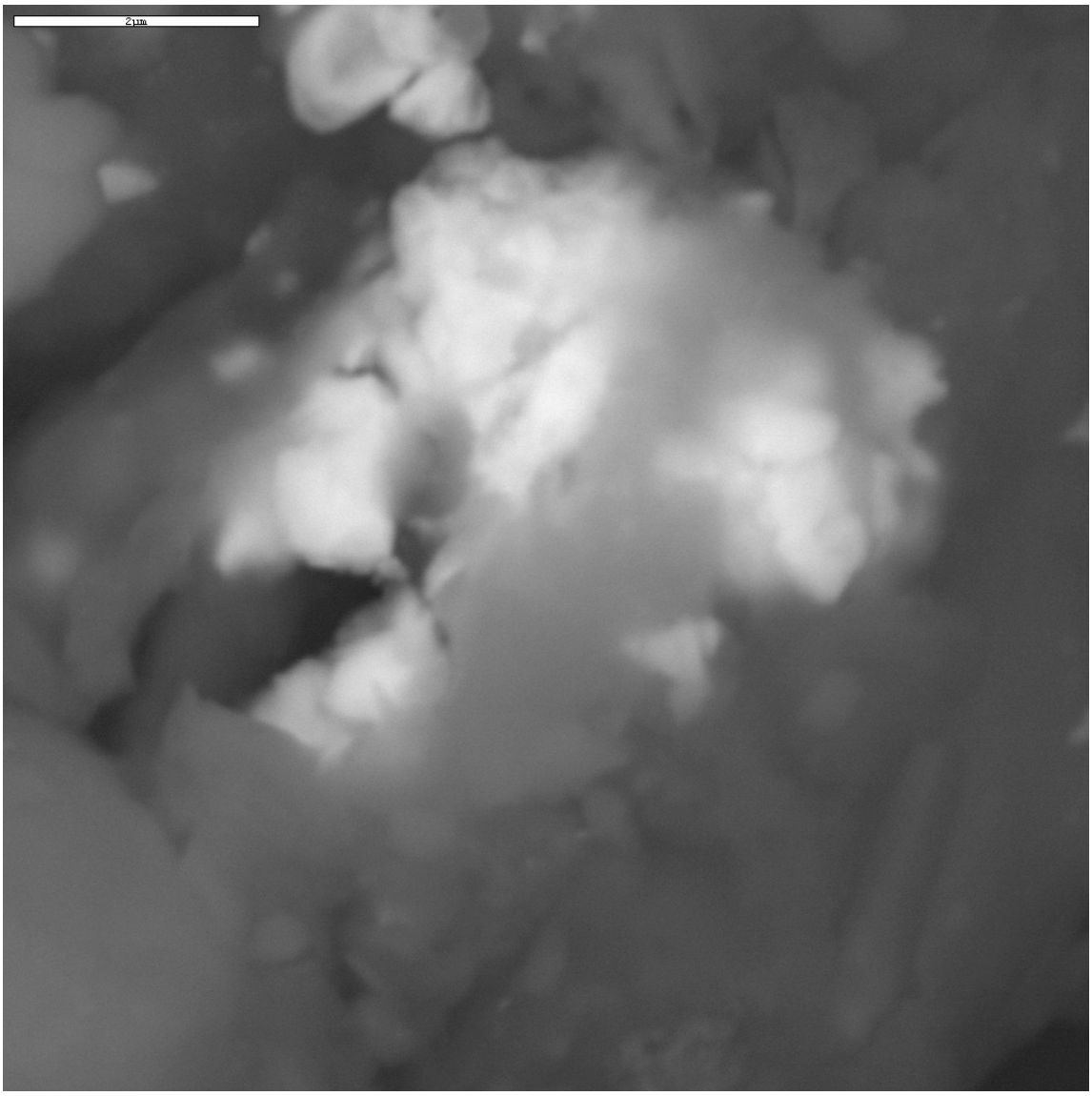

Figure 5. Backscattered electron image of lead-phosphorus-chlorine-rich particles (white) surrounded by clays and organic matter, from sample NO-7C. Scale bar is 2 microns long.

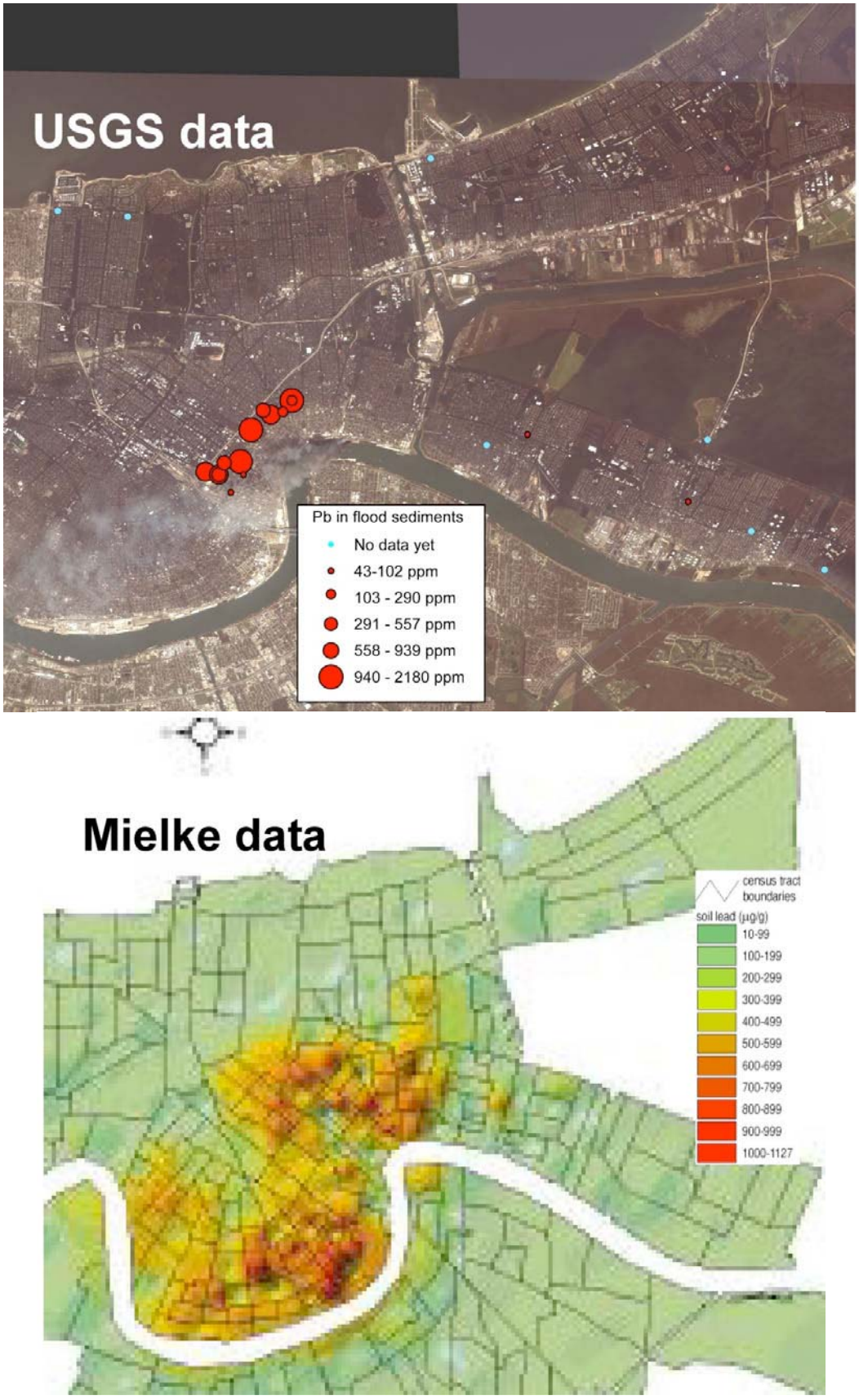

Figure 6. Map of lead concentrations measured by the USGS to date in New Orleans flood sediment samples (upper), compared to a gridded and digitally smoothed map of lead concentrations determined by Mielke and others (1999) for urban New Orleans soil samples collected in the 1990's.

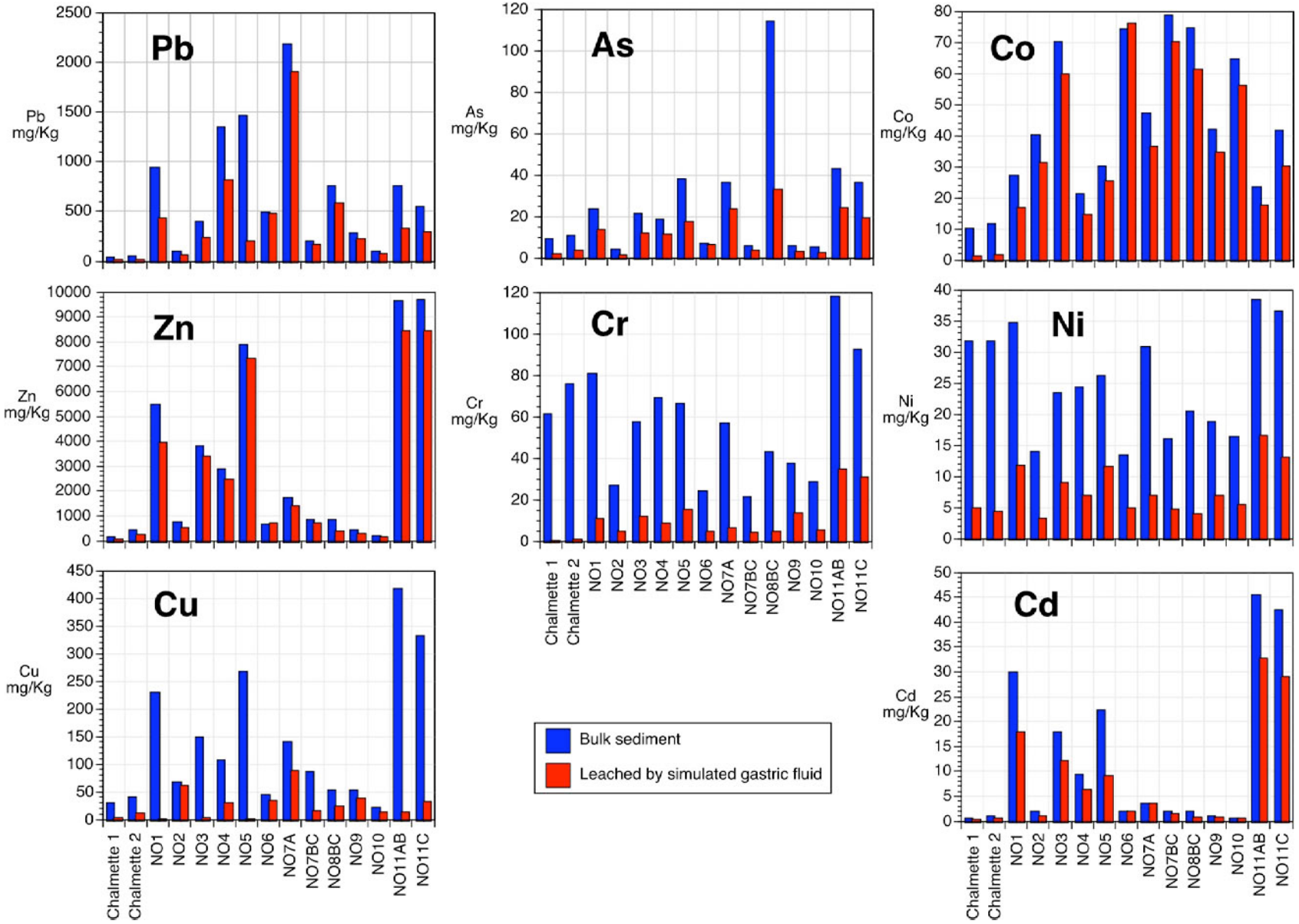

Figure 7. Plots of bulk metal concentrations (blue bars) compared to concentrations leached by simulated gastric fluids (red bars) in Katrina flood sediments. Note that scales of the concentration (y) axes vary between the plots for the different elements.

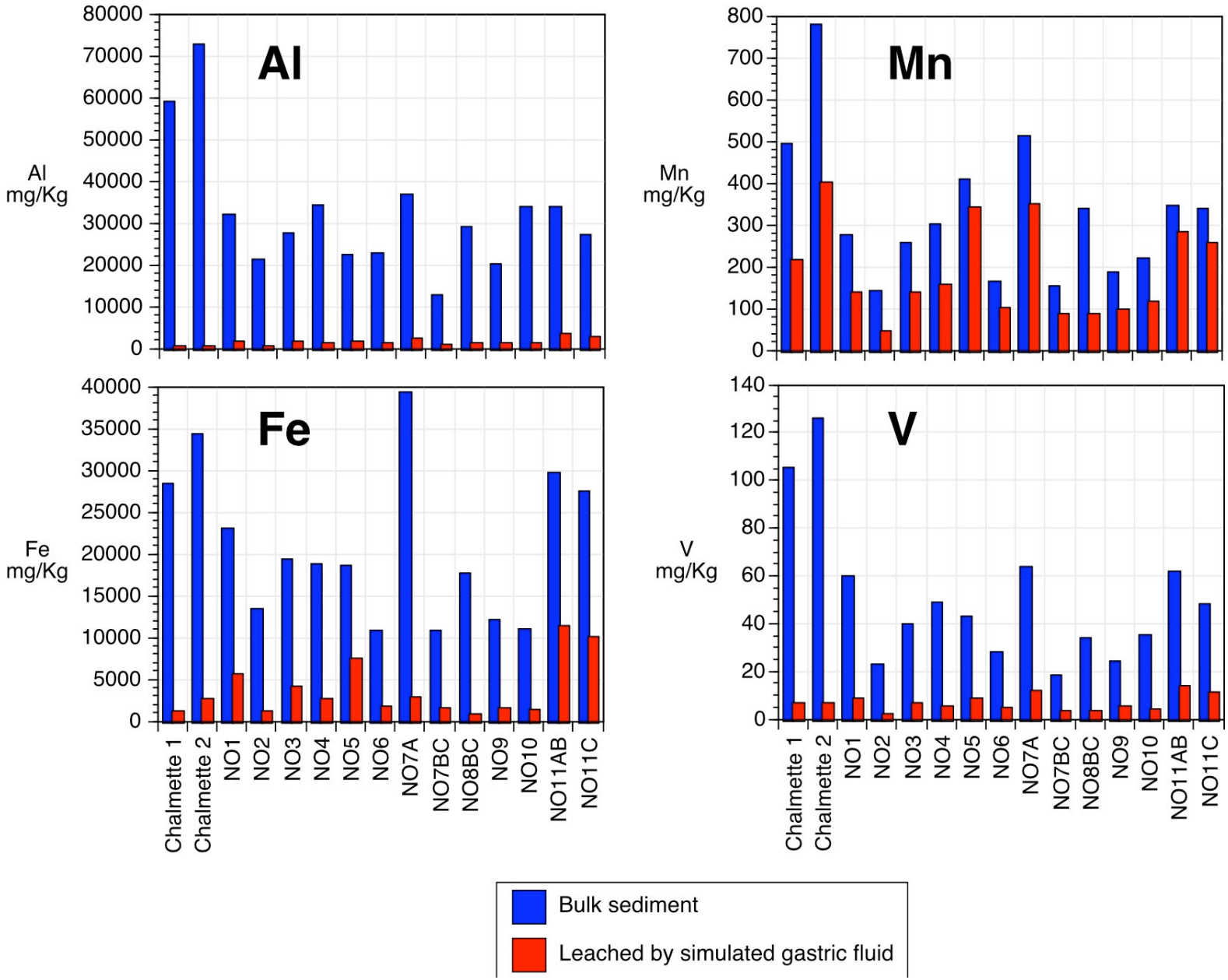

Figure 7, cont'd. Plots of bulk metal concentrations (blue bars) compared to concentrations leached by simulated gastric fluids (red bars) in Katrina flood sediments. Note that scales of the concentration (y) axes vary between the plots for the different elements.

Appendix A – Sediment sampling protocols.

Contacts: John Lovelace, jlovelace@usgs.gov; Charlie Demas, cdemas@usgs.gov; Kathleen S. Smith (composite field sampling protocols), ksmith@usgs.gov

The flood sediments at eleven sites around downtown New Orleans (samples NO1-11, fig. 1, table 1) were sampled on September 15, 2005, by John Lovelace and Mike Ross (USGS Louisiana Water Science Center). At each locality, subsamples were collected from 3 separate locations up to 30 meters apart, with the location of the central point for each locality determined using a GPS unit. Each subsample was collected using a Teflon® scoop and placed into a new pint-sized polyethylene food-grade container. At most localities sampled, there was a mix of dry and wet subsamples. The samples from each locality were stored on ice in a cooler and then later transferred to a refrigerator for storage at 4°C until shipment on ice to USGS labs in Denver.

Flood sediment samples were collected from two localities in the Chalmette area (Chalmette 1 and 2, fig. 1) on September 16, 2005. Forty subsamples were collected at each locality using Teflon® scoops, and each subsample was placed into a new pint-size polyethylene food-grade container. The subsamples were typically collected at 1-meter intervals along each of 4 transects extending radially from a street intersection. A GPS was used to determine the latitude and longitude of the center point and the end points of each transect. This sampling approach was originally developed for the sampling of highly variable mine-waste piles, so as to provide a statistically meaningful representation of a much larger area with great internal variability. The flood sediments at Chalmette 1 were still predominantly wet with only the top surface being dry. The flood sediments at Chalmette 2 were also moist to wet, but with a somewhat greater proportion of dry material than at Chalmette 1. The samples from each locality were stored on ice in a cooler and then later transferred to a refrigerator for storage at 4°C until shipment on ice to USGS labs in Denver.

Flood sediment samples were collected from the Slidell, Rigolets, northern and northeastern New Orleans, Ninth Ward, Chalmette, and St. Bernard High School areas on October 6 and 7, 2005. Forty subsamples were collected at each locality, at spatially regular intervals along each of 4 transects. In contrast to the previous two sampling efforts, these samples were composited as they were collected. One composite was collected from each locality using a Teflon scoop into a 4-liter polyethylene wide mouth jar. Another composite was collected at each locality using a clean stainless steel spoon into a 1-liter brown glass jar. The samples from each locality were stored on ice in a cooler and then later transferred to a refrigerator for storage at 4°C until shipment on ice to USGS labs in Denver.

Table 1. Locations of samples analyzed in the USGS Katrina flood sediment characterization study. Contact for sampling: John Lovelace (jlovelace@usgs.gov).

sample	Date collected	Lat	Long	Site description
Chalmette 1	9/16/05	29.94563889	89.95975	Intersection of St. Jean Baptiste and Tourneforte St., Chalmette
Chalmette 1	10/6/05	29.94563889	89.95975	Intersection of St. Jean Baptiste and Tourneforte St., Chalmette
Chalmette 2	9/16/05	29.96266667	90.00047222	1600 Block of Ayock St., Arabi, LA
Chalmette 3	10/6/05	29.96138889	89.95472222	Paris Road
Chalmette 4	10/6/05	29.92833333	89.925	NP Trist Middle School
Chalmette 5	10/7/05	29.93805556	89.94361111	Ventura Drive and Judge Perez
NO1	9/15/05	29.9532778	90.082278	New Orleans, Poydras Ave. at Superdome
NO2	9/15/05	29.95247222	90.07263889	New Orleans, Barrone & Gravier Sts.
NO3	9/15/05	29.9555	90.0775	New Orleans, Tulane & Lasalle @ Tulane Med Center
NO4	9/15/05	29.95577778	90.07338889	New Orleans, Canal & Basin Sts.
NO5	9/15/05	29.96388889	90.07069444	New Orleans, N. Villere & St. Anne Sts.
NO6	9/15/05	29.96886111	90.06758333	New Orleans, Esplanade & N. Robertson
NO7	9/15/05	29.97130556	90.06030556	New Orleans, Pauger & N. Villere
NO8	9/15/05	29.96772222	90.06569444	New Orleans, Esplanade & Marais
NO9	9/15/05	29.96838889	90.06266667	New Orleans, Annette, St. Claude, & St. Bernard
NO10	9/15/05	29.94794444	90.07586111	New Orleans, Rampart & Girod
NO11	9/15/05	29.95252778	90.07886111	New Orleans, Freret & Perdido
Lakeside 1	10/7/05	30.01944444	90.11972222	Kenison & North Hammond Highway
Lakeside 2	10/7/05	30.01805556	90.10194444	Robert E Lee Blvd and Marshall Foch
N.O. East 1	10/7/05	30.03277778	90.025	8006 W. Laverne
Violet 1	10/7/05	29.87388889	89.87444444	St. Bernard High School
Ninth Ward 1	10/7/05	29.96	90.01083333	Tupelo and St Claude Ave.
Slidell1	10/6/05	30.25305556	89.79138889	3805 Highway 11
Slidell2	10/6/05	30.22944444	89.85166667	Carr Drive
Rigolets1	10/6/05	30.11277778	89.76111111	Highway 90

Table 2. Types of analyses used to characterize Katrina flood sediments. GD - USGS Geologic Discipline, BRD - USGS Biological Reesources Discipline; WRD - USGS Water Resources Discipline

Analysis type	Lab	Contact
Inorganic chemistry, 42 element, 4-acid digestion, ICP-MS	Denver GD	Paul Lamothe, plamothe@usgs.gov
XRF major, trace element chemistry	Denver GD	Joe Taggart, jtaggart@usgs.gov
Total Hg, Methyl Hg	Denver GD	Jim Crock, jcrock@usgs.gov
Grain size analysis	Menlo GD	Mike Torresan, mtorresan@usgs.gov
X-ray diffraction mineralogy	Denver GD	Steve Sutley, ssutley@usgs.gov
Scanning electron microscope mineralogy, quantitative electron probe microanalysis	Denver GD	Greg Meeker, gmeeker@usgs.gov
Gamma spectrometry screening for radionuclides (U, Ra, Pb210, etc.)	Denver GD	Jim Budahn, jbudahn@usgs.gov
Field-flow fractionation -Element distributions over fine-sil/colloid size continuum for wet and dry sediments	Denver GD	Lopaka Lee, rclee@usgs.gov
Reflectance spectroscopy	Denver GD	Roger Clark, rclark@usgs.gov. Gregg Swayze, gswayze@usgs.gov.
4-step sequential extraction **	Denver GD	Rick Sanzolone, rsanzolo@usgs.gov
Forms of sulfur	Denver GD	Michelle Tuttle, mtuttle@usgs.gov
Carbonate and organic carbon	Denver GD	Zoe Ann Brown, zbrown@usgs.gov
EPA SPLP (1312) metals leach**	Denver GD	Phil Hageman, phageman@usgs.gov
USGS Field leach test for metals**	Denver GD	Phil Hageman, phageman@usgs.gov
Synthetic 6 ppt sea water leach**	Denver GD	Phil Hageman, phageman@usgs.gov
Field TCLP/EPA TCLP verification**	Colo. School of Mines; EPA NEIC	Jim Ranville, jranvill@mines.edu, Tom Wildeman, twildema@mines.edu
ELISA screening for carcinogenic PAH's, DDT/DDE, and PCB	Denver GD	LaDonna Choate, lchoate@usgs.gov
Simulated gastric fluid leach**	Denver GD	Geoff Plumlee, gplumlee@usgs.gov
Simulated lung fluid leach**	Denver GD	Geoff Plumlee, gplumlee@usgs.gov
Forms of cyanide using alkaline leach	Denver GD	Craig Johnson, cjohnso@usgs.gov
PCR DNA molecular microbial screening for specific pathogens, common microbes	St. Petersburg GD	Dale Griffin, dgriffin@usgs.gov

Table 2. Types of analyses used to characterize Katrina flood sediments. GD - USGS Geologic Discipline, BRD - USGS Biological Reesources Discipline; WRD - USGS Water Resources Discipline

Analysis type	Lab	Contact
PLFA microbial analysis for microbial communities	GD Denver, UC Davis	JoAnn Holloway, jholloway@usgs.gov
L28-d whole-sediment toxicity tests, amphipood Hyalella azteca	Columbia BRD	Chris Ingersoll, cingersoll@usgs.gov
PAH's, polychlorinated biphenyls (congener-specific, 80+congeners), volatile aromatic hydrocarbons, natural biomarkers (hydrocarbons, fatty alcohols, hydroxy acids, sterls), molecular markers of municipal waste (fecal sterols, long-chain alkylbenzenes, vitamin E acetate), CHN analysis, qualitative analysis of complex organic chemical mixtures (GCxGC/ToFMS)	WRD Reston	Bob Eganhouse, eganhous@usgs.gov
Crude oil, petroleum products, PAH's, sterols (eg coprostanol), current use and legacy ag /urban contaminants (organophosphates, carbamates, triazines, chloracetanilides, DDT)	GD Menlo Park	Bob Rosenbauer, brosenbauer@usgs.gov
Dioxins/furans, PBDE's, PCB's and chlorinated pesticides, semivolatile organic "unknowns"	BRD Columbia	Cari Orazio, corazio@usgs.gov
WRD Schedule 2501-OC (insecticides), WRD Schedule 2502 - Semivolatiles, WRD LC8045 PCB Congeners, wastewater compounds (schedule 1433), PAH and Alkyl PAH, musks and fragrances, human health pharmaceuticals, antibiotics. As appropriate, some organic analyses will be run on leachates.	WRD National Water Quality Laboratory (NWQL)	Ed Furlong, efurlong@usgs.gov
Organics on TCLP leach	WRD NWQL	Ed Furlong, efurlong@usgs.gov
Reactive oxygen species generation, cell line toxicity testing	State University of New York Stony Brook	Martin Schoonen, schoonen@stonybrook.edu

**Leachates will be analyzed for pH, specific conductance, anions, major cations, and trace elements by ICP-MS; Hg (as appropriate) by flow injection-cold vapor-atomic fluorescence spectrometry, As and Se (as appropriate) by hydride generation. If needed, some leachates will be analyzed for organic species of interest by appropriate methods.

Table 3a. Analytical results for quantitative X-Ray Diffraction (XRD) . Analyst - George Breit (gbreit@usgs.gov). nd -Not detected. Analyses performed on Siemens D500 Kristalloflex, using Ni filtered, Cu Ka radiation scanning from 4 to 64 degrees 2q, 0.02 degrees per step and 3 second count time pre step.

	Chalmette 1	**Chalmette 2**	**NO-7A**	**NO-7B**
Comment	sample freeze-dried from wet	sample freeze-dried from wet	sample freeze-dried from wet	sample dry when collected
	wt. %	wt. %	wt. %	wt. %
Quartz	16	24	80	16
Pyrite	4	1	ND	ND
Halite	2	1	<0.5	<0.5
Hematite	ND	0.4	2	2
Gypsum	ND	ND	0.6	ND
Ferroan(?) dolomite	ND	ND	ND	5
Potassium feldspar	ND	ND	<0.2?	2
Plagioclase feldspar	detected	detected	detected	ND
Illite + chlorite	detected	detected	detected	ND?
Non-crystalline material (silica remnants and organic matter	detected	detected	detected	detected

Table 3b. Analytical results for qualitative XRD. Major > 25%; Minor 5-25%; Trace 1-5%; ? - Possibly present; ND= not detected. Analyst - Stephen J Sutley, ssutley@usgs.gov.

	Chalmette 1	Chalmette 2	NO-1	NO-2	NO-3	NO-4	NO-5	NO-6	NO-7A	NO-7BC	NO-8 BC	NO-9	NO-10	NO-11 AB	NO11c
Quartz	Major	Major	Major	Major	Major	Major	Major	Major	Major	Major	Major	Major	Major	Major	Major
Calcite	ND	ND	Minor	Minor	Trace	Trace	Minor	Trace	Trace	Minor	Trace	Minor	Trace	Minor	Minor
Albite	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace
Ankerite	ND	ND	ND	ND	ND	ND	Trace	ND	ND	ND	?	?	ND	ND	ND
Dolomite	ND	ND	ND	ND	ND	ND	?	ND	ND	ND	Trace	Trace	ND	ND	ND
Orthoclase	Trace	Trace	Trace	Trace	Trace	Trace	ND	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace
Muscovite	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace
Kaolinite	Trace	Trace	?	?	ND	?	?	?	ND	?	?	ND	?	?	?
Halite	Trace	Trace	?	ND	ND	ND	Trace	ND	Trace	Trace	ND	ND	ND	?	Minor
Pyrite	Trace	Trace	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Montmorillonite	Minor	Minor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hematite	ND	ND	ND	ND	ND	ND	ND	ND	?	?	ND	ND	?	ND	ND
Gypsum	ND	ND	ND	ND	ND	ND	?	ND	ND	ND	ND	ND	ND	ND	ND

Table 3c. Analytical results for Scanning Electron Microscopy (SEM) / Energy Dispersive Spectroscopy (EDS) analysis of Katrina flood sediments. Analysts - Greg Meeker (gmeeker@usgs.gov), Isabelle Brownfield.

	Comment	**Size distribution**	**Mineralogy**	**Other microscopic materials, including plant matter and commercial or man-made materials**
Chalmette 1	sample freeze-dried from wet	All particles less than ~20 microns; most are less than 5-10 microns	Quartz; clays (including illites, smectites, possible chlorites); ailica with varying amounts of aluminum (may be biogenic or with clay); ailica diatom tests; feldspars, including potassium- and sodium-rich; relatively abundant pyrite (mostly framboidal);	Pollen grains (rare); glass fibers (rare)
Chalmette 2	sample freeze-dried from wet	All particles less than ~20 microns; most are less than 5-10 microns	Quartz; clays (including illites, smectites, possible chlorites); silica with varying amounts of aluminum (may be biogenic or with clay); silica diatom tests; feldspars, including potassium- and sodium-rich; minor pyrite (few framboids, more micron-sized single crystals which could be disaggregated from framboids)	
NO-3			Quartz; feldspars, including potassium- and sodium-rich; calcite; clays (including illites, smectites, possible chlorites); titanium oxides.	Carbon (plant material?)
NO-5	Sample air dried	Most particles <5 microns unless an aggregate grain	Quartz; clays (kaolinites, illites, smectites); apatite (calcium phosphate); silica with varying amounts of aluminum (may be biogenic or with kaolinite clay); silica diatom tests; feldspars, including potassium- and sodium-rich; calcium carbonates; silica, aluminum, magnesium, iron compounds. Heavy metal compounds include: metallic lead; Zn-S-C particles (zinc sulfate-carbonate?); barite; iron oxides; and phosphates. Many of the heavy metals occur in particles less than <0.5 microns in size.	some slag wool, silica diatoms,

Table 3c. Analytical results for Scanning Electron Microscopy (SEM) / Energy Dispersive Spectroscopy (EDS) analysis of Katrina flood sediments. Analysts - Greg Meeker (gmeeker@usgs.gov), Isabelle Brownfield.

	Comment	Size distribution	Mineralogy	Other microscopic materials, including plant matter and commercial or man-made materials
NO-7A	sample freeze-dried from wet	Most particles <5 microns unless an agregrate grain	Quartz; clays (kaolinites, illites, smectites); apatite (calcium phosphate); silica with varying amounts of aluminum (may be biogenic or with kaolinite clay); silica diatom tests; feldspars, including potassium- and sodium-rich; calcium and magnesium carbonates; silica, alumium, magnesium, iron compound. Heavy metal compounds include: Zn-S-C particles (zinc sulfate-carbonate?); barite; iron oxides; lead generally with calcium and phosphorus; copper sulfates; apatite; titanium oxide; and zircon.	Carbon fragments (plant material?)
NO-7B	sample dry when collected	Many large aggregates (50-70 microns) of smaller (generally <10 microns) particles	Quartz; clays (kaolinites, illites, smectites); Silica with varying amounts of aluminum (may be biogenic or with clay); silica diatom tests; feldspars, including potassium- and sodium-rich; Calcium carbonate; Zn-S-C particles (zinc sulfate-carbonate?).	Soda-lime glass, glass fibers, concrete
NO-7C			Quartz; clays; titanium oxides; lead-phosphate-chloride particles; lead or lead oxide particles.	
NO-11 comp			Quartz; clays (kaolinites, illites, smectites); apatite (calcium phosphate); silica with varying amounts of aluminum (may be biogenic or with kaolinite clay); feldspars, including potassium- and sodium-rich; calcium and magnesium carbonates. Heavy metal compounds include: barite; iron oxides (some of which are relatively large, ~ 40 μm); iron and titanium oxides; metallic lead; one particle of tin.	Carbon fragments (plant material?)

Table 4.	Inorganic analytical results for USGS samples, compared to nearby EPA samples, mean US soils, Netherlands (1997) soil quality criteria, and non-industrial LDEQ (2003) Soil Screening Standards. WDXRF-wavelength dispersive x-ray fluorescence; ICP-MS - inductively coupled plasma-mass spectrometry; CVAA - cold vapor atomic absorption spectroscopy. NA - Not analyzed; NR - Not reported			
Field No.	**Sample Description** USGS method	**SiO2** wt. % WDXRF	**Al2O3** wt. % WDXRF	**Fe2O3** wt. % WDXRF
Chalmette 1	Katrina flood sediment, St. Jean Baptiste and Buffon Sts., Chalmette, LA	43.2	11.1	4.1
Chalmette 1d	Sample duplicate	43.4	11.1	4.1
EPA 8939*	EPA Katrina flood sediment, W Josephine St.	NR	NR	NR
Chalmette 2	Katrina flood sediment, Ayock St., Arabi, LA	54.1	13.3	4.82
Chalmette 2d	Sample duplicate	54.0	13.2	4.79
EPA 10174**	EPA Katrina flood sediment, 1921 Angela St.	NR	NR	NR
NO1	New Orleans, Poydras Ave. at Superdome	42.6	5.39	2.87
EPA 8490	EPA 8490 Superdome	NR	NR	NR
NO2	New Orleans, Barrone & Gravier Sts.	79.7	3.74	1.77
NO3	New Orleans, Tulane & LaSalle @ Tulane Med Center	59.9	4.69	2.47
NO4	New Orleans, Canal & Basin Sts.	63.6	5.80	2.38
NO5	New Orleans, N. Villere & St. Anne Sts.	43.3	3.96	2.39
EPA 8493	EPA Treme & St. Philip, 9-11-05	NR	NR	NR
NO6	New Orleans, Espalanade & N. Robertson	79.6	4.29	1.50
EPA 8910	EPA Gov. Nichols & Clairborne, 9-12-05	NR	NR	NR
NO7A	New Orleans, Pauger & N. Villere	57.4	6.61	5.11
NO7BC	New Orleans, Pauger & N. Villere	75.3	2.25	1.47
EPA 8912	Touro & Clairborne, 9-12-05	NR	NR	NR
NO8BC	New Orleans, Esplanade & Marais	70.0	5.10	2.35
NO9	New Orleans, Annette, St. Claude, & St. Bernard	71.8	3.38	1.55
EPA 8911	EPA 8911, St. Anthony & St. Claude	NR	NR	NR
NO10	New Orleans, Rampart & Girod	75.8	5.91	1.48
NO11AB	New Orleans, Freret & Perdido	35.4	6.22	4.00
NO11C	New Orleans, Freret & Perdido	40.8	4.70	3.49
US Mean soil	Shacklette & Boerngen (1984); **BOLD values from Lindsay (1979)**	NR	NR	NR
Netherlands	Tentative soil quality criteria, limiting value for soil quality	NR	NR	NR
LDEQ	Louisiana Dept. Env. Qual. Soil Screening Standard	NR	NR	NR

Table 4.							
Field No.	**MgO** wt. % WDXRF	**CaO** wt. % WDXRF	**Na2O** wt. % WDXRF	**K2O** wt. % WDXRF	**TiO2** wt. % WDXRF	**P2O5** wt. % WDXRF	**MnO** wt. % WDXRF
Chalmette 1	1.97	0.91	2.69	1.80	0.48	0.23	0.06
Chalmette 1d	1.99	0.92	2.66	1.80	0.48	0.22	0.06
EPA 8939*	NR	NR	NR	NR	NR	NR	NR
Chalmette 2	2.01	1.29	1.87	2.27	0.58	0.20	0.10
Chalmette 2d	2.02	1.28	1.90	2.26	0.58	0.21	0.10
EPA 10174**	NR	NR	NR	NR	NR	NR	NR
NO1	1.23	4.45	1.59	0.92	0.34	0.39	0.03
EPA 8490	NR	NR	NR	NR	NR	NR	NR
NO2	0.53	5.31	0.73	0.89	0.21	0.12	0.02
NO3	0.86	3.77	1.08	0.98	0.31	0.35	0.03
NO4	0.98	4.46	1.08	1.29	0.43	0.27	0.03
NO5	1.36	5.11	1.85	0.69	0.31	0.60	0.04
EPA 8493	NR	NR	NR	NR	NR	NR	NR
NO6	0.52	2.29	0.93	1.08	0.24	0.20	0.02
EPA 8910	NR	NR	NR	NR	NR	NR	NR
NO7A	0.97	3.28	0.97	1.06	0.44	0.72	0.06
NO7BC	0.63	6.72	0.67	0.54	0.15	0.16	0.02
EPA 8912	NR	NR	NR	NR	NR	NR	NR
NO8BC	1.73	4.10	0.96	1.47	0.30	0.40	0.04
NO9	0.84	8.07	0.67	0.79	0.20	0.19	0.02
EPA 8911	NR	NR	NR	NR	NR	NR	NR
NO10	0.85	4.26	1.16	1.48	0.27	0.15	0.03
NO11AB	1.34	3.90	1.67	1.02	0.42	0.73	0.04
NO11C	1.62	4.49	2.90	0.68	0.32	0.64	0.04
US Mean soil	NR	NR	NR	NR	NR	NR	NR
Netherlands	NR	NR	NR	NR	NR	NR	NR
LDEQ	NR	NR	NR	NR	NR	NR	NR

Table 4.							
Field No.	**Loss on ignition** wt. % WDXRF	**CO2** %	**Carbonate C** %	**S** %	**Ag** ppm ICP-MS	**Al** ppm ICP-MS	**As** ppm Hydride
Chalmette 1	32.9	0.22	0.06	1.81	<2	58500	8.2
Chalmette 1d	32.9	0.22	0.06	1.80	<2	59800	8.2
EPA 8939*	NR	NR	NR	NR	0.663	9860	9.7
Chalmette 2	18.5	0.68	0.19	0.76	<2	72600	9.9
Chalmette 2d	18.5	0.71	0.19	0.77	<2	72900	10
EPA 10174**	NR	NR	NR	NR	0.4	8930	18
NO1	38.2	NA	NA	NA	<3	32100	NA
EPA 8490	NR	NR	NR	NR	0.036	3820	NR
NO2	6.19	NA	NA	NA	<3	21500	NA
NO3	24.3	NA	NA	NA	<3	27500	NA
NO4	18.1	NA	NA	NA	<3	34300	NA
NO5	38.1	NA	NA	NA	<3	22500	NA
EPA 8493	NR	NR	NR	NR	0.6	3250	NR
NO6	8.81	NA	NA	NA	<3	23000	NA
EPA 8910	NR	NR	NR	NR	NR	5090	NR
NO7A	22.3	NA	NA	NA	<3	37000	NA
NO7BC	11.1	NA	NA	NA	<3	12800	NA
EPA 8912	NR	NR	NR	NR	0.12	4650	NR
NO8BC	12.2	NA	NA	NA	<3	29000	NA
NO9	11.5	NA	NA	NA	<3	20200	NA
EPA 8911	NR	NR	NR	NR	NR	1850	NR
NO10	7.89	NR	NR	NR	<3	33800	NA
NO11AB	43.5	NR	NR	NR	4.4	34100	NA
NO11C	38.4	NR	NR	NR	3.3	27400	NA
US Mean soil	NR	NR	NR	0.12	NR	47000	5.2
Netherlands	NR	NR	NR	NR	NR	NR	30
LDEQ	NR	NR	NR	NR	39	NR	12

Table 4.							
Field No.	**As** ppm ICP-MS	**Ba** ppm ICP-MS	**Be** ppm ICP-MS	**Bi** ppm ICP-MS	**Ca** ppm ICP-MS	**Cd** ppm ICP-MS	**Ce** ppm ICP-MS
Chalmette 1	9.2	367	1.7	0.3	6190	0.6	50
Chalmette 1d	8.8	363	1.6	0.2	6170	0.6	45
EPA 8939*	9.7	668.7	0.8	NR	6700	0.3	NR
Chalmette 2	11	676	2	0.3	8630	1.0	64
Chalmette 2d	11	689	1.9	0.3	9080	1	65
EPA 10174**	18.3	156	0.8	NR	5730	1.8	NR
NO1	24	593	1.0	0.8	36900	30	45
EPA 8490	2.69	68.1	0.22	NR	9000	0.3	NR
NO2	4.5	415	0.8	0.2	42500	1.9	32
NO3	22	496	1.0	1.3	29800	18	40
NO4	19	942	1.1	0.7	35500	9.4	45
NO5	38	630	1.1	0.9	40900	22	35
EPA 8493	14	344	0.3	NR	33600	5.5	NR
NO6	7.3	457	0.7	0.3	17300	2.0	34
EPA 8910	19.2	222	0.41	NR	17800	6.4	NR
NO7A	37	1150	1.8	1.9	25300	3.7	49
NO7BC	5.8	398	0.5	0.2	51200	2.1	25
EPA 8912	28.9	216	0.41	NR	19300	6.8	NR
NO8BC	114	653	0.8	0.4	31800	2.0	35
NO9	6.1	544	0.7	0.2	65900	1.1	30
EPA 8911	4.38	42.8	0.15	NR	20900	0.3	NR
NO10	5.2	564	1.0	0.1	33400	0.6	37
NO11AB	43	625	1.2	1.1	29400	46	45
NO11C	36	552	0.9	0.8	36600	43	41
US Mean soil	5.2	440	0.63	0.56	9200	0.06	75
Netherlands	30	400	NR	NR	NR	5	NR
LDEQ	12	550	16	NR	NR	3.9	NR

Table 4.							
Field No.	**Co** ppm ICP-MS	**Cr** ppm ICP-MS	**Cs** ppm ICP-MS	**Cu** ppm ICP-MS	**Fe** ppm ICP-MS	**Ga** ppm ICP-MS	**Hg** ppm CVAA
Chalmette 1	10	63	5	31	28400	14	0.1
Chalmette 1d	10	60	5	29	28600	14	0.1
EPA 8939*	6.98	17.2	NR	42.2	15900	NR	0.08
Chalmette 2	11	75	6	41	33800	16	0.1
Chalmette 2d	12	77	6	41	34800	17	0.1
EPA 10174**	6.37	25	NR	41.9	15600	NR	0.12
NO1	27	81	2.7	230	23000	6.8	0.6
EPA 8490	3.71	12.9	NR	55.5	6520	NR	0.17
NO2	40	27	0.9	69	13500	3.6	0.08
NO3	70	57	2.2	150	19300	5.5	1.7
NO4	22	69	2	108	18800	6.5	0.9
NO5	30	67	1.7	267	18600	4.8	1.4
EPA 8493	3.34	28.7	NR	101	9830	NR	0.56
NO6	74	24	1.1	45	10800	4.6	0.3
EPA 8910	4.15	28.7	NR	126	12800	NR	1.07
NO7A	47	57	2.6	141	39400	7.8	2.8
NO7BC	79	22	0.6	87	10900	2.5	4.1
EPA 8912	5.5	29.5	NR	143	13100	NR	0.53
NO8BC	75	43	1.2	52	17700	5.5	2.2
NO9	42	38	1.1	54	12100	3.8	0.1
EPA 8911	3.26	8.15	NR	23.8	5350	NR	0.062
NO10	65	29	1.4	22	11100	6.2	0.1
NO11AB	24	118	3.3	418	29800	7.1	2.0
NO11C	42	93	2.6	333	27600	5.8	1.5
US Mean soil	9.1	54	**6**	25	26000	17	0.058
Netherlands	50	250	NR	100	NR	NR	2
LDEQ	470	Total Cr NR	NR	310	NR	NR	2.3

Table 4.							
Field No.	**K** ppm ICP-MS	**La** ppm ICP-MS	**Li** ppm ICP-MS	**Mg** ppm ICP-MS	**Mn** ppm ICP-MS	**Mo** ppm ICP-MS	**Na** ppm ICP-MS
Chalmette 1	14800	28	35	12200	499	3.6	20700
Chalmette 1d	14700	25	34	12400	493	3.4	20900
EPA 8939*	3530	NR	NR	7920	516	NR	20400
Chalmette 2	18200	34	40	12700	770	2.0	14700
Chalmette 2d	19200	35	40	13100	792	1.9	15000
EPA 10174**	2840	NR	NR	6310	244	NR	9480
NO1	10200	20	19	8720	275	4.38	14200
EPA 8490	453	NR	NR	1530	216	NR	1240
NO2	8100	15	10	3480	143	1.8	6160
NO3	9460	19	17	5830	259	2.5	8640
NO4	12000	22	16	6800	301	2.3	8460
NO5	7900	16	15	8970	411	2.3	16000
EPA 8493	NR	NR	NR	4120	385	NR	3130
NO6	9380	16	8.7	3260	166	1.5	7060
EPA 8910	1570	NR	NR	4670	239	NR	5820
NO7A	9690	23	32	5800	513	3.0	7670
NO7BC	4850	11	8.4	4010	153	1.7	5340
EPA 8912	1750	NR	NR	6200	200	NR	12200
NO8BC	13600	17	12	11600	339	2.4	8010
NO9	7580	14	11	5650	188	1.5	5870
EPA 8911	456	NR	NR	2710	83.7	NR	2020
NO10	13400	18	13	5560	219	1.5	9380
NO11AB	9890	22	20	8850	347	4.0	11500
NO11C	9430	18	15	10700	338	3.6	28200
US Mean soil	15000	37	24	9000	550	0.97	12000
Netherlands	NR	NR	NR	NR	NR	40	NR
LDEQ	NR	NR	NR	NR	NR	NR	NR

Table 4.							
Field No.	**Nb** ppm ICP-MS	**Ni** ppm ICP-MS	**P** ppm ICP-MS	**Pb** ppm ICP-MS	**Rb** ppm ICP-MS	**Sb** ppm ICP-MS	**Se** ppm Hydride
Chalmette 1	12	32	959	44	80	0.7	1.4
Chalmette 1d	9.8	32	947	43	81	0.7	1.4
EPA 8939*	NR	27.2	NR	34.8	NR	NR	NR
Chalmette 2	15	31	820	51	96	1.0	0.8
Chalmette 2d	16	32	867	52	98	1.0	0.8
EPA 10174**	NR	18	NR	36.8	NR	NR	NR
NO1	6.4	35	2100	939	45	6.7	NA
EPA 8490	NR	7.3	NR	28.2	NR	0.54	NR
NO2	< 2	14	356	102	28	1.9	NA
NO3	6.9	23	1660	402	37	8.3	NA
NO4	7.1	24	1230	1350	46	5.2	NA
NO5	6.2	26	3050	1460	31	4.8	NA
EPA 8493	NR	14.2	NR	655	NR	NR	NR
NO6	< 2	14	732	497	33	2.5	NA
EPA 8910	NR	21	NR	597	NR	NR	NR
NO7A	10.2	31	3490	2180	43	12	NA
NO7BC	< 2	16	621	207	17	1.3	NA
EPA 8912	NR	28.8	NR	627	NR	NR	NR
NO8BC	5.3	21	1840	760	46	4.3	NA
NO9	< 2	19	851	290	26	4.5	NA
EPA 8911	NR	10.2	NR	71.7	NR	NR	NR
NO10	3.6	16	561	96	45	2.4	NA
NO11AB	7.1	38	3580	754	46	11	NA
NO11C	5.9	37	3380	557	39	9.6	NA
US Mean soil	11	19	430	19	67	0.66	0.26
Netherlands	NR	100	NR	150	NR	NR	NR
LDEQ	NR	160	NR	400	NR	3.1	39

Table 4.							
Field No.	**Sc** ppm ICP-MS	**Sr** ppm ICP-MS	**Th** ppm ICP-MS	**Ti** ppm ICP-MS	**Tl** ppm ICP-MS	**U** ppm ICP-MS	**V** ppm ICP-MS
Chalmette 1	10	118	9.1	2400	0.6	3.9	107
Chalmette 1d	10	117	8.5	2060	0.6	3.7	104
EPA 8939*	NR	NR	NR	NR	NR	NR	21.3
Chalmette 2	12	130	11	3220	0.7	3.5	124
Chalmette 2d	12	132	11	3360	0.7	3.5	128
EPA 10174**	NR	NR	NR	NR	NR	NR	20.7
NO1	4.8	201	5.4	2040	0.4	2.3	60
EPA 8490	NR	NR	NR	NR	NR	NR	12.2
NO2	2.1	170	3.7	1130	0.1	1.2	23
NO3	3.6	164	3.9	1740	0.3	1.6	40
NO4	4.2	200	5.5	2500	0.4	1.8	49
NO5	3.4	203	4.2	1900	0.5	1.5	43
EPA 8493	NR	NR	NR	NR	NR	NR	9.67
NO6	2.5	134	3.3	1280	0.2	1.2	28
EPA 8910	NR	NR	NR	NR	0.19	NR	13.7
NO7A	6.6	225	6.9	2600	0.4	2.4	64
NO7BC	1.6	179	1.8	810	0.1	0.9	19
EPA 8912	NR	NR	NR	NR	0.37	NR	15.9
NO8BC	3.4	172	3.5	1590	0.3	1.5	34
NO9	2.2	217	2.8	1170	0.2	1.2	25
EPA 8911	NR	NR	NR	NR	NR	NR	5.3
NO10	3.1	212	4.0	1440	0.3	1.3	36
NO11AB	5.3	182	6.2	2290	0.4	2.1	62
NO11C	4.2	177	5.1	1830	0.3	1.7	48
US Mean soil	8.9	240	9.4	2900	NR	2.7	80
Netherlands	NR	NR	NR	NR	NR	NR	NR
LDEQ	NR	NR	NR	NR	0.55	NR	55

Table 4.		
Field No.	**Y** ppm ICP-MS	**Zn** ppm ICP-MS
Chalmette 1	19	174
Chalmette 1d	18	174
EPA 8939*	NR	153
Chalmette 2	24	435
Chalmette 2d	25	454
EPA 10174**	NR	650
NO1	15	5500
EPA 8490	NR	274
NO2	8.4	755
NO3	13	3830
NO4	15	2880
NO5	10	7880
EPA 8493	NR	1830
NO6	10	694
EPA 8910	NR	2160
NO7A	20	1740
NO7BC	6.4	863
EPA 8912	NR	2820
NO8BC	12	849
NO9	8.9	432
EPA 8911	NR	291
NO10	13	209
NO11AB	17	9680
NO11C	14	9700
US Mean soil	25	60
Netherlands	NR	500
LDEQ	NR	2300

Table 5a. Blank and leachate concentrations.

Analytical results for simulated gastric fluid leach tests performed on flood sediment samples. Table 5a reports concentrations in the leachate, table 5b reports values recalculated to mg leached per kg solid. Analyst: Suzette Morman. Contact: Geoff Plumlee, gplumlee@usgs.gov. The Chalmette samples originally contained approximately 60-75% water, so measured concentrations on the Chalmette leachates would increase proportionally if recalculated to dry weight. The NO samples were dried prior to leaching. This test is modified slightly from a simulated gastric fluid leach test used by EPA to assess lead bioaccessibility from soils (Chris Weis, oral communications, 2004). One part solid is added to 100 parts simulated gastric fluid (pH 1.5, composed of HCl and glycine), mixture rotated for 2 hours at 37°C, Concentrations below the detection limit are shown by (<). Separate batches, each using a new blank leachate solution, are separated by horizontal borders in the database. All analyses by ICP-MS except Hg by cold vapor atomic fluorescence.

Field No.	Ag ug/L	Al ug/L	As ug/L	Ba ug/L	Be ug/L	Bi ug/L	Ca mg/L	Cd ug/L
blank	<3	30	1	9.2	<0.05	0.9	0.3	0.1
Blank dup	<3	31	<1	11	<0.05	0.9	0.7	0.08
Chalmette 1	<3	5850	19	305	3.0	0.6	38	3.6
Chalmette 1 dup	<3	6620	22	348	3.3	0.5	44	4.2
Chalmette 2	<3	5140	35	540	3.1	0.6	53	7.7
Chalmette 2 dup	<3	4730	33	511	2.7	0.6	49	6.6
NO 7C	<3	2240	9.0	475	0.3	0.5	287	7.0
NO 7C dup	<3	3550	15	553	0.8	0.5	426	11
Blank	<3	7.9	2	49	<0.05	0.2	0.5	<0.02
NO1	<3	16500	138	1240	2.4	<0.2	305	180
NO2	<3	7500	17	615	0.7	<0.2	353	10
NO2 dup	<3	7910	16	581	0.8	<0.2	357	11
NO3	<3	16600	121	1380	2.2	<0.2	266	122
NO4	<3	15200	114	1560	2.4	<0.2	285	64
NO5	<3	16900	177	1420	2.1	<0.2	390	93
NO6	<3	13900	68	1500	1.5	0.2	154	20
NO7 A	<3	22900	241	3180	4.0	2.8	221	36
NO7 BC	<3	10100	40	1690	1.0	<0.2	476	16
NO8 BC	<3	11800	336	1500	1.1	0.8	204	9.0
NO9	<3	14800	32	1680	1.3	0.4	545	8.4
NO10	<3	11600	26	1250	1.3	0.2	245	4.9
NO11	<3	36200	245	1880	3.5	<0.2	364	328
NO11 C	<3	30100	192	1400	2.8	<0.2	362	290

Table 5a. Blank and leachate concentrations.

Field No.	Ce ug/L	Co ug/L	Cr ug/L	Cs ug/L	Cu ug/L	Dy ug/L	Er ug/L	Eu ug/L
blank	0.07	0.08	68	0.04	4.2	<0.005	0.01	<0.005
Blank dup	0.1	0.1	68	0.03	4.1	<0.005	0.03	<0.005
Chalmette 1	50	13	74	0.4	31	2.8	1.3	0.7
Chalmette 1 dup	52	14	73	0.4	31	3.1	1.4	0.8
Chalmette 2	110	19	74	0.3	133	9.3	4.6	2.4
Chalmette 2 dup	102	17	76	0.3	121	8.4	4.1	2.2
NO 7C	15	4.1	77	0.1	101	1.4	0.7	0.3
NO 7C dup	34	6.2	84	0.1	216	2.5	1.2	0.6
Blank	0.07	0.07	71	<0.02	1.1	0.02	0.04	0.008
NO1	51	170	180	1.3	21	3.9	2.3	0.9
NO2	35	322	114	0.5	536	3.2	1.7	0.8
NO2 dup	35	306	120	0.5	688	3.2	1.7	0.8
NO3	47	600	194	2.1	36	3.9	2.2	0.9
NO4	66	145	160	0.8	307	5.8	3.1	1.5
NO5	38	253	223	0.8	4.2	2.9	1.8	0.7
NO6	58	762	119	0.8	341	5.3	2.8	1.3
NO7 A	75	366	138	1.1	891	7.6	4.0	1.9
NO7 BC	40	704	115	0.6	159	3.3	1.8	0.9
NO8 BC	37	614	120	0.7	253	3.7	2.1	0.9
NO9	44	348	207	1.5	390	4.4	2.4	1.1
NO10	65	560	127	0.7	133	6.8	3.5	1.6
NO11	67	178	421	2.1	143	4.9	2.8	1.3
NO11 C	54	304	378	1.9	324	4.2	2.5	1.0

Table 5a. Blank and leachate concentrations.

Field No.	Fe ug/L	Ga ug/L	Gd ug/L	Ge ug/L	Ho ug/L	K mg/L	La ug/L	Li ug/L
blank	<50	<0.05	<0.005	<0.05	<0.005	0.07	0.02	<0.9
Blank dup	<50	<0.05	0.02	<0.05	<0.005	0.05	0.05	<0.9
Chalmette 1	11200	1.4	3.8	<0.05	0.5	10	29	<0.9
Chalmette 1 dup	12600	1.4	4.2	<0.05	0.6	12	32	<0.9
Chalmette 2	28500	2	12	<0.05	1.8	10.0	50	<0.9
Chalmette 2 dup	26500	1.9	11	<0.05	1.7	9.0	47	<0.9
NO 7C	5820	0.6	1.8	<0.05	0.3	2.0	9.1	<0.9
NO 7C dup	9080	0.9	2.9	<0.05	0.5	3.0	18	<0.9
Blank	<50	0.1	0.005	<0.05	<0.005	<0.03	0.06	0.6
NO1	56400	2.6	4.7	<0.05	0.8	13	28	16
NO2	13000	1.6	4.4	<0.05	0.6	1.8	21	5.6
NO2 dup	13000	1.7	4.2	<0.05	0.6	1.8	21	5.8
NO3	42200	2.9	4.6	0.4	0.8	9.3	27	12
NO4	27400	2.6	7.2	0.6	1.1	5.2	37	9.5
NO5	74400	3.2	3.2	0.2	0.6	15.3	23	14
NO6	18000	3.2	6.6	0.5	1.0	7.7	30	10
NO7 A	29200	4.4	9.2	1.4	1.4	11	40	21
NO7 BC	15300	2.0	4.0	0.08	0.6	5.5	22	8.2
NO8 BC	8160	2.3	4.4	0.4	0.7	7.0	21	5.9
NO9	16700	3.5	5.5	0.4	0.9	4.8	25	14
NO10	14000	3.1	8.6	0.4	1.3	5.9	33	8.4
NO11	114000	4.2	5.9	0.5	1.0	19	38	22
NO11 C	102000	4.4	5.0	0.9	0.9	25	29	25

Table 5a. Blank and leachate concentrations.

Field No.	Lu ug/L	Mg mg/L	Mn ug/L	Mo ug/L	Na mg/L	Nb ug/L	Nd ug/L	Ni ug/L
blank	<0.1	0.02	1.3	5.1	<0.5	2.6	0.2	1.7
Blank dup	<0.1	0.04	2.0	2.6	<0.5	2.1	0.2	1.8
Chalmette 1	0.1	46	2010	<2	139	2.2	22	48
Chalmette 1 dup	0.1	52	2340	<2	157	1.8	24	53
Chalmette 2	0.4	33	4270	<2	92	1.6	58	49
Chalmette 2 dup	0.4	30	3790	<2	84	1.4	53	44
NO 7C	<0.1	14	452	<2	14	1.3	8.3	32
NO 7C dup	0.1	24	686	<2	22	1.1	14	36
Blank	<0.1	0.3	1.1	<2	0.1	<0.2	0.1	1.4
NO1	0.2	39	1400	<2	75	0.24	20	120
NO2	0.2	15	469	<2	3.5	<0.2	18	35
NO2 dup	0.2	16	493	<2	3.6	<0.2	18	34
NO3	0.2	30	1410	<2	39	<0.2	21	91
NO4	0.4	26	1570	<2	15	<0.2	31	72
NO5	0.2	63	3420	<2	142	<0.2	16	118
NO6	0.3	19	1020	<2	23	<0.2	29	50
NO7 A	0.4	24	3490	<2	45	<0.2	38	72
NO7 BC	0.2	29	886	<2	22	<0.2	18	50
NO8 BC	0.2	60	884	<2	17	<0.2	19	41
NO9	0.3	35	995	<2	11	<0.2	24	71
NO10	0.4	29	1190	<2	9.8	<0.2	36	57
NO11	0.3	72	2850	<2	124	0.4	28	167
NO11 C	0.3	87	2590	<2	273	0.3	25	133

Table 5a. Blank and leachate concentrations.

Field No.	P mg/L	Pb ug/L	Pr ug/L	Rb ug/L	Sb ug/L	Sc ug/L	Se ug/L	SiO2 mg/L
blank	0.05	4.8	0.01	0.06	6.6	0.8	1.8	13
Blank dup	0.04	6.7	<0.01	0.04	4.4	1	1.4	13
Chalmette 1	1.9	179	5.8	13	4.3	1.5	3.5	19
Chalmette 1 dup	2.2	204	6.1	14	3.4	1.7	5.6	19
Chalmette 2	2.6	242	13	11	3.2	2	4.1	21
Chalmette 2 dup	2.4	220	13	10.0	2.8	2	3.4	21
NO 7C	2.4	1120	2.0	2.7	3.1	1.7	2.4	17
NO 7C dup	3.4	1820	3.8	4.1	3.7	1.9	2.1	19
Blank	0.02	1.2	<0.01	0.03	1.3	0.9	1.2	17
NO1	8.6	4370	5.1	26	2.9	3.5	6.1	38
NO2	2	637	4.3	6.6	5.1	2.9	2	33
NO2 dup	2.1	615	4.3	6.7	4.3	2.9	2.4	34
NO3	11	2390	5.2	24	1.0	3.1	4.5	38
NO4	7.4	8150	7.6	15	5.4	4.4	3.6	54
NO5	27	2090	4.1	22	1.4	3.5	10	44
NO6	6.1	4770	6.8	23	4.3	2.5	3.6	32
NO7 A	27	19000	8.9	29	8.6	3.5	4.3	41
NO7 BC	4.6	1720	4.6	14	2.4	2.9	2.8	35
NO8 BC	13	5840	4.5	19	4.9	2.3	4.2	28
NO9	6.5	2320	5.6	19	3.8	4.7	3.2	54
NO10	4.3	763	8.2	19	4.6	3	3	32
NO11	23	3330	7.3	33	6.1	7.8	6	71
NO11 C	19	2910	6.1	33	5.8	6.9	6.5	63

Table 5a. Blank and leachate concentrations.

Field No.	Sm ug/L	SO4 mg/L	Sr ug/L	Ta ug/L	Tb ug/L	Th ug/L	Ti ug/L	Tl ug/L
blank	<0.01	10	1.0	1.1	<0.005	<0.2	9.1	0.1
Blank dup	<0.01	10	1.8	0.9	<0.005	<0.2	11	<0.1
Chalmette 1	3.5	22	457	1.0	0.5	<0.2	24	0.1
Chalmette 1 dup	3.7	22	518	0.7	0.5	<0.2	23	0.2
Chalmette 2	11.6	22	381	0.7	1.6	0.4	45	0.1
Chalmette 2 dup	9.7	20	345	0.6	1.5	0.4	48	0.1
NO 7C	1.6	15	625	0.6	0.3	<0.2	48	<0.1
NO 7C dup	2.4	14	942	0.5	0.4	<0.2	58	0.1
Blank	<0.01	<2	2.0	<0.02	<0.005	<0.2	33	<0.1
NO1	3.4	63	1080	0.07	0.7	0.34	68	0.8
NO2	3.7	7	596	0.05	0.6	<0.2	188	0.1
NO2 dup	3.7	8	597	0.03	0.6	<0.2	188	0.1
NO3	3.6	141	787	0.09	0.6	<0.2	65	0.63
NO4	6.0	29	742	<0.02	1.0	<0.2	94	0.3
NO5	2.5	545	1400	0.05	0.5	0.74	44	1.9
NO6	5.8	24	490	<0.02	1.0	<0.2	74	0.3
NO7 A	7.7	30	908	0.1	1.3	<0.2	70	0.7
NO7 BC	3.4	27	1190	<0.02	0.6	<0.2	100	0.3
NO8 BC	3.8	14	501	<0.02	0.6	<0.2	91	0.2
NO9	4.9	24	1180	<0.02	0.8	<0.2	251	0.2
NO10	7.5	11	649	0.1	1.2	<0.2	88	0.2
NO11	4.8	35	1190	0.2	0.8	0.3	71	0.8
NO11 C	4.1	81	1130	0.1	0.7	0.2	79	0.6

Table 5a. Blank and leachate concentrations.

Field No.	Tm ug/L	U ug/L	V ug/L	W ug/L	Y ug/L	Yb ug/L	Zn ug/L	Zr ug/L
blank	<0.005	<0.1	17	2.1	<0.01	<0.005	24	<0.2
Blank dup	<0.005	<0.1	16	1.9	0.02	0.005	32	<0.2
Chalmette 1	0.2	1.3	79	1.9	19	0.8	727	1.2
Chalmette 1 dup	0.2	1.3	88	1.5	20	0.9	804	1.2
Chalmette 2	0.6	4.8	87	1.3	51	3.0	2560	1.7
Chalmette 2 dup	0.5	4.6	82	1.3	47	2.9	2300	1.6
NO 7C	0.1	1.0	28	1.2	8.0	0.6	2980	0.6
NO 7C dup	0.2	1.4	35	1.0	14	0.8	4690	0.8
Blank	<0.005	<0.1	16	<0.5	<0.01	<0.005	18	<0.2
NO1	0.3	3.5	105	2.7	28	1.7	39800	8.3
NO2	0.2	2.6	40	29	18	1.3	5220	2.8
NO2 dup	0.2	2.5	43	28	18	1.3	5200	2.9
NO3	0.3	2.8	86	12	26	1.7	34100	6
NO4	0.4	3.3	73	4.6	37	2.4	25000	5.6
NO5	0.2	2.1	105	5.0	20	1.3	73400	11
NO6	0.4	2.8	63	32.7	30	2.1	7290	3.5
NO7 A	0.5	3.5	135	9.3	41	3.0	14100	4.2
NO7 BC	0.2	2.6	54	37	18	1.4	7210	3.7
NO8 BC	0.3	3.3	50	48	22	1.6	4010	2.3
NO9	0.3	4.5	73	54	26	1.9	3240	4.2
NO10	0.4	3.3	56	26	35	2.6	1550	2.4
NO11	0.4	2.8	156	3.7	33	2.1	84500	6.8
NO11 C	0.3	2.2	132	5.0	28	1.8	84700	5.3

Table 5a. Blank and leachate concentrations.

Field No.	Hg ng/L
blank	NA
Blank dup	NA
Chalmette 1	NA
Chalmette 1 dup	NA
Chalmette 2	NA
Chalmette 2 dup	NA
NO 7C	NA
NO 7C dup	NA
Blank	NA
NO1	NA
NO2	NA
NO2 dup	NA
NO3	<15
NO4	NA
NO5	<15
NO6	NA
NO7 A	23
NO7 BC	<15
NO8 BC	18
NO9	NA
NO10	NA
NO11	<15
NO11 C	NA

Table 5b. Recalculated to mg leached/kg solid								
NA = not analyzed **Field No.**	**Ag** solid	**Al** solid	**As** solid	**Ba** solid	**Be** solid	**Bi** solid	**Ca** solid	**Cd** solid
blank	<0.3	2.97	0.1	0.9	<0.005	0.09	28	0.01
Blank dup	<0.3	3.08	<0.1	1.1	<0.005	0.09	72	0.008
Chalmette 1	<0.3	585	1.9	31	0.3	0.06	3810	0.4
Chalmette 1 dup	<0.3	662	2.2	35	0.3	0.05	4390	0.4
Chalmette 2	<0.3	514	3.5	54	0.3	0.06	5330	0.8
Chalmette 2 dup	<0.3	473	3.3	51	0.3	0.06	4920	0.7
NO 7C	<0.3	224	0.9	48	0.03	0.05	28700	0.7
NO 7C dup	<0.3	355	1.5	55	0.08	0.05	42600	1.1
Blank	<0.3	0.79	0.2	4.9	<0.005	0.02	50	<0.002
NO1	<0.3	1650	14	124	0.2	<0.02	30500	18
NO2	<0.3	750	1.7	62	0.07	<0.02	35300	1.0
NO2 dup	<0.3	791	1.6	58	0.08	<0.02	35700	1.1
NO3	<0.3	1660	12	138	0.2	<0.02	26600	12
NO4	<0.3	1520	11	156	0.2	<0.02	28500	6.4
NO5	<0.3	1690	18	142	0.2	<0.02	39000	9.3
NO6	<0.3	1390	6.8	150	0.2	0.02	15400	2.0
NO7 A	<0.3	2290	24	318	0.4	0.3	22100	3.6
NO7 BC	<0.3	1010	4.0	169	0.1	<0.02	47600	1.6
NO8 BC	<0.3	1180	34	150	0.1	0.08	20400	0.90
NO9	<0.3	1480	3.2	168	0.1	0.04	54500	0.84
NO10	<0.3	1160	2.6	125	0.1	0.02	24500	0.49
NO11	<0.3	3620	25	188	0.4	<0.02	36400	33
NO11 C	<0.3	3010	19	140	0.3	<0.02	36200	29

Table 5b. Recalculated to mg leached/kg solid								
NA = not analyzed **Field No.**	**Ce** solid	**Co** solid	**Cr** solid	**Cs** solid	**Cu** solid	**Dy** solid	**Er** solid	**Eu** solid
blank	0.007	0.008	6.8	0.004	0.4	<0.0005	0.001	<0.0005
Blank dup	0.01	0.01	6.8	0.003	0.4	<0.0005	0.003	<0.0005
Chalmette 1	5.0	1.3	7.4	0.04	3.1	0.3	0.1	0.07
Chalmette 1 dup	5.2	1.4	7.3	0.04	3.1	0.3	0.1	0.08
Chalmette 2	11	1.9	7.4	0.03	13	0.9	0.5	0.2
Chalmette 2 dup	10	1.7	7.6	0.03	12	0.8	0.41	0.2
NO 7C	1.5	0.4	7.7	0.01	10	0.1	0.07	0.03
NO 7C dup	3.4	0.6	8.4	0.01	22	0.2	0.1	0.06
Blank	0.007	0.007	7.1	<0.002	0.1	0.002	0.004	0.0008
NO1	5.1	17	18	0.1	2.1	0.4	0.2	0.09
NO2	3.5	32	11	0.05	54	0.3	0.2	0.08
NO2 dup	3.5	31	12	0.05	69	0.3	0.2	0.08
NO3	4.7	60	19	0.2	3.6	0.4	0.2	0.09
NO4	6.6	15	16	0.08	31	0.6	0.3	0.1
NO5	3.8	25	22	0.08	0.4	0.3	0.2	0.07
NO6	5.8	76	12	0.08	34	0.5	0.3	0.1
NO7 A	7.5	37	14	0.1	89	0.8	0.4	0.2
NO7 BC	4	70	12	0.06	16	0.3	0.2	0.09
NO8 BC	3.7	61	12	0.07	25	0.4	0.2	0.09
NO9	4.4	35	21	0.1	39	0.4	0.2	0.1
NO10	6.5	56	13	0.07	13	0.7	0.3	0.2
NO11	6.7	18	42	0.2	14	0.5	0.3	0.1
NO11 C	5.4	30	38	0.2	32	0.4	0.2	0.1

Table 5b. Recalculated to mg leached/kg solid								
NA = not analyzed **Field No.**	**Fe** solid	**Ga** solid	**Gd** solid	**Ge** solid	**Ho** solid	**K** solid	**La** solid	**Li** solid
blank	<5	<0.005	<0.0005	<0.005	<0.0005	7	0.002	<0.09
Blank dup	<5	<0.005	0.002	<0.005	<0.0005	5	0.005	<0.09
Chalmette 1	1120	0.1	0.4	<0.005	0.05	1040	2.9	<0.09
Chalmette 1 dup	1260	0.1	0.4	<0.005	0.06	1200	3.2	<0.09
Chalmette 2	2850	0.2	1.2	<0.005	0.2	995	5.0	<0.09
Chalmette 2 dup	2650	0.2	1.1	<0.005	0.2	896	4.7	<0.09
NO 7C	582	0.06	0.2	<0.005	0.03	203	0.9	<0.09
NO 7C dup	908	0.09	0.3	<0.005	0.05	296	1.8	<0.09
Blank	<5	0.01	0.0005	<0.005	<0.0005	<3	0.006	0.06
NO1	5640	0.3	0.5	<0.005	0.08	1260	2.8	1.6
NO2	1300	0.2	0.4	<0.005	0.06	177	2.1	0.6
NO2 dup	1300	0.2	0.4	<0.005	0.06	184	2.1	0.6
NO3	4220	0.3	0.5	0.04	0.08	926	2.7	1.2
NO4	2740	0.3	0.7	0.06	0.1	523	3.7	1.0
NO5	7440	0.3	0.3	0.02	0.06	1530	2.3	1.4
NO6	1800	0.3	0.7	0.05	0.1	773	3.0	1.0
NO7 A	2920	0.4	0.9	0.1	0.1	1080	4.0	2.1
NO7 BC	1530	0.2	0.4	0.008	0.06	552	2.2	0.8
NO8 BC	816	0.2	0.4	0.04	0.07	695	2.1	0.6
NO9	1670	0.4	0.5	0.04	0.09	480	2.5	1.4
NO10	1400	0.3	0.9	0.04	0.1	592	3.3	0.8
NO11	11400	0.4	0.6	0.05	0.1	1850	3.8	2.2
NO11 C	10200	0.4	0.5	0.09	0.09	2540	2.9	2.5

Table 5b. Recalculated to mg leached/kg solid								
NA = not analyzed **Field No.**	**Lu** solid	**Mg** solid	**Mn** solid	**Mo** solid	**Na** solid	**Nb** solid	**Nd** solid	**Ni** solid
blank	<0.01	2	0.1	0.5	<50	0.3	0.02	0.2
Blank dup	<0.01	4	0.2	0.3	<50	0.2	0.02	0.2
Chalmette 1	0.01	4580	201	<0.2	13900	0.2	2.2	4.8
Chalmette 1 dup	0.01	5200	234	<0.2	15700	0.2	2.4	5.3
Chalmette 2	0.04	3250	427	<0.2	9170	0.2	5.8	4.9
Chalmette 2 dup	0.04	2990	379	<0.2	8400	0.1	5.3	4.4
NO 7C	<0.01	1420	45	<0.2	1380	0.1	0.8	3.2
NO 7C dup	0.01	2440	69	<0.2	2150	0.1	1.4	3.6
Blank	<0.01	26	0.1	<0.2	14	<0.02	0.01	0.1
NO1	0.02	3850	140	<0.2	7520	0.02	2.0	12
NO2	0.02	1470	47	<0.2	354	<0.02	1.8	3.5
NO2 dup	0.02	1600	49	<0.2	359	<0.02	1.8	3.4
NO3	0.02	3040	141	<0.2	3880	<0.02	2.1	9.1
NO4	0.04	2630	157	<0.2	1530	<0.02	3.1	7.2
NO5	0.02	6320	342	<0.2	14200	<0.02	1.6	12
NO6	0.03	1890	102	<0.2	2260	<0.02	2.9	5.0
NO7 A	0.04	2420	349	<0.2	4490	<0.02	3.8	7.2
NO7 BC	0.02	2880	89	<0.2	2170	<0.02	1.8	5.0
NO8 BC	0.02	5990	88	<0.2	1680	<0.02	1.9	4.1
NO9	0.03	3470	100	<0.2	1130	<0.02	2.4	7.1
NO10	0.04	2860	119	<0.2	981	<0.02	3.6	5.7
NO11	0.03	7220	285	<0.2	12400	0.04	2.8	17
NO11 C	0.03	8700	259	<0.2	27300	0.03	2.5	13

Table 5b. Recalculated to mg leached/kg solid								
NA = not analyzed **Field No.**	**P** solid	**Pb** solid	**Pr** solid	**Rb** solid	**Sb** solid	**Sc** solid	**Se** solid	**SiO2** solid
blank	5	0.5	0.001	0.006	0.7	0.08	0.2	1280
Blank dup	4	0.7	<0.001	0.004	0.4	0.1	0.1	1260
Chalmette 1	190	18	0.6	1.3	0.4	0.2	0.4	1910
Chalmette 1 dup	220	20	0.6	1.4	0.3	0.2	0.6	1940
Chalmette 2	260	24	1.3	1.1	0.3	0.2	0.4	2130
Chalmette 2 dup	240	22	1.3	1.0	0.3	0.2	0.3	2090
NO 7C	240	112	0.2	0.3	0.3	0.2	0.2	1660
NO 7C dup	340	182	0.4	0.4	0.4	0.2	0.2	1930
Blank	2	0.1	<0.001	0.003	0.1	0.09	0.1	1650
NO1	860	437	0.5	2.6	0.3	0.4	0.6	3780
NO2	200	64	0.4	0.7	0.5	0.3	0.2	3260
NO2 dup	210	62	0.4	0.7	0.4	0.3	0.2	3360
NO3	1140	239	0.5	2.4	0.1	0.3	0.5	3840
NO4	740	815	0.8	1.5	0.5	0.4	0.4	5440
NO5	2660	209	0.4	2.2	0.1	0.4	1	4380
NO6	610	477	0.7	2.3	0.4	0.3	0.4	3150
NO7 A	2740	1900	0.9	2.9	0.9	0.4	0.4	4090
NO7 BC	460	172	0.5	1.4	0.2	0.3	0.3	3500
NO8 BC	1280	584	0.4	1.9	0.5	0.2	0.4	2760
NO9	650	232	0.6	1.9	0.4	0.5	0.3	5410
NO10	430	76.3	0.8	1.9	0.5	0.3	0.3	3220
NO11	2290	333	0.7	3.3	0.6	0.8	0.6	7110
NO11 C	1860	291	0.6	3.3	0.6	0.7	0.7	6320

Table 5b. Recalculated to mg leached/kg solid								
NA = not analyzed **Field No.**	**Sm** solid	**SO4** solid	**Sr** solid	**Ta** solid	**Tb** solid	**Th** solid	**Ti** solid	**Tl** solid
blank	<0.001	1000	0.1	0.11	<0.0005	<0.02	0.9	0.01
Blank dup	<0.001	1000	0.2	0.1	<0.0005	<0.02	1.1	<0.01
Chalmette 1	0.4	2200	46	0.1	0.05	<0.02	2.4	0.01
Chalmette 1 dup	0.4	2200	52	0.1	0.05	<0.02	2.3	0.02
Chalmette 2	1.2	2200	38	0.1	0.2	0.04	4.5	0.01
Chalmette 2 dup	1.0	2000	35	0.1	0.1	0.04	4.8	0.01
NO 7C	0.2	1500	63	0.1	0.03	<0.02	4.8	<0.01
NO 7C dup	0.2	1400	94	0.0	0.04	<0.02	5.8	0.01
Blank	<0.001	<200	0.2	<0.002	<0.0005	<0.02	3.3	<0.01
NO1	0.3	6300	108	0.007	0.07	0.03	6.8	0.08
NO2	0.4	700	60	0.005	0.06	<0.02	19	0.01
NO2 dup	0.4	800	60	0.003	0.06	<0.02	19	0.01
NO3	0.4	14100	79	0.009	0.06	<0.02	6.5	0.06
NO4	0.6	2900	74	<0.002	0.1	<0.02	9.4	0.03
NO5	0.3	54500	140	0.005	0.05	0.07	4.4	0.2
NO6	0.6	2400	49	<0.002	0.1	<0.02	7.4	0.03
NO7 A	0.8	3000	91	0.01	0.1	<0.02	7.0	0.07
NO7 BC	0.3	2700	119	<0.002	0.06	<0.02	10	0.03
NO8 BC	0.4	1400	50	<0.002	0.06	<0.02	9.1	0.02
NO9	0.5	2400	118	<0.002	0.08	<0.02	25	0.02
NO10	0.7	1100	65	0.01	0.1	<0.02	8.8	0.02
NO11	0.5	3500	119	0.02	0.08	0.03	7.1	0.08
NO11 C	0.4	8100	113	0.01	0.07	0.02	7.9	0.06

Table 5b. Recalculated to mg leached/kg solid								
NA = not analyzed **Field No.**	**Tm** solid	**U** solid	**V** solid	**W** solid	**Y** solid	**Yb** solid	**Zn** solid	**Zr** solid
blank	<0.0005	<0.01	1.7	0.2	<0.001	<0.0005	2.4	<0.02
Blank dup	<0.0005	<0.01	1.6	0.2	0.002	0.0005	3.2	<0.02
Chalmette 1	0.02	0.1	7.9	0.2	1.9	0.08	73	0.1
Chalmette 1 dup	0.02	0.1	8.8	0.2	2.0	0.09	80	0.1
Chalmette 2	0.06	0.5	8.7	0.1	5.1	0.3	256	0.2
Chalmette 2 dup	0.05	0.5	8.2	0.1	4.7	0.29	230	0.2
NO 7C	0.01	0.1	2.8	0.1	0.8	0.06	298	0.06
NO 7C dup	0.02	0.1	3.5	0.1	1.4	0.08	469	0.08
Blank	<0.0005	<0.01	1.6	<0.05	<0.001	<0.0005	1.8	<0.02
NO1	0.03	0.4	11	0.3	2.8	0.2	3980	0.8
NO2	0.02	0.3	4.0	2.9	1.8	0.1	522	0.3
NO2 dup	0.02	0.2	4.3	2.8	1.8	0.1	520	0.3
NO3	0.03	0.3	8.6	1.2	2.6	0.2	3410	0.6
NO4	0.04	0.3	7.3	0.5	3.7	0.2	2500	0.6
NO5	0.02	0.2	11	0.5	2.0	0.1	7340	1.1
NO6	0.04	0.3	6.3	3.3	3.0	0.2	729	0.4
NO7 A	0.05	0.3	14	0.9	4.1	0.3	1410	0.4
NO7 BC	0.02	0.3	5.4	3.7	1.8	0.1	721	0.4
NO8 BC	0.03	0.3	5.0	4.8	2.2	0.2	401	0.2
NO9	0.03	0.4	7.3	5.4	2.6	0.2	324	0.4
NO10	0.04	0.3	5.6	2.6	3.5	0.3	155	0.2
NO11	0.04	0.3	16	0.4	3.3	0.2	8450	0.7
NO11 C	0.03	0.2	13	0.5	2.8	0.2	8470	0.5

Table 5b. Recalculated to mg leached/kg solid	
NA = not analyzed	
Field No.	**Hg** ng/L
blank	NA
Blank dup	NA
Chalmette 1	NA
Chalmette 1 dup	NA
Chalmette 2	NA
Chalmette 2 dup	NA
NO 7C	NA
NO 7C dup	NA
Blank	NA
NO1	NA
NO2	NA
NO2 dup	NA
NO3	<15
NO4	NA
NO5	<15
NO6	NA
NO7 A	23
NO7 BC	<15
NO8 BC	18
NO9	NA
NO10	NA
NO11	<15
NO11 C	NA

Table 6.

Analytical results for chemical leach tests performed on wet Chalmette samples. Table 6a reports concentrations in the leachate, table 6b reports values recalculated to mg leached per kg solid. The samples originally contained approximately 60-70% water, so that measured concentrations would increase proportionally if recalculated to dry weight. All leach tests were run at 1 part solid to 20 parts leach solution. "Modified TCLP" is a USGS modification on EPA Method 1311, using simulated landfill leachate compositions, rotated end over end for 18 hours. Simulated brackish water is a dilute sea-water leach using 6 ppt sea salt in deionized water as the leachate, rotated end over end for 18 hours. "Modified SPLP" is a USGS modification of EPA Method 1312, synthetic rainfall leach test, rotated end over end for 18 hours. "USGS FLT" is a field leach test using deionized water as the leachate, rotated end over end for 5 minutes. "TCLP 1311" method was run by EPA National Enforcement Investigations Center (NEIC) laboratory, using EPA protocols. Concentrations below detection limit shown by (<).

6a. Blank, leachate concentrations

NA = not analyzed

Field ID	Analysis Description	pH	Spec. conduct. µS/cm	Alkalinity CaCO3 ppm	IC-Aq Cl ppm	IC-Aq F ppm	IC-Aq NO3 ppm	IC-Aq SO4 ppm
Blank USGS TCLP	Modified TCLP	4.9	4070	NA	NA	NA	NA	NA
Chalmette 1-USGS	Modified TCLP	5.0	4910	NA	NA	NA	NA	NA
Chalmette1D-USGS	Modified TCLP	5.1	4930	NA	NA	NA	NA	NA
Chalmette 2-USGS	Modified TCLP	5.2	5280	NA	NA	NA	NA	NA
Chalmette2D-USGS	Modified TCLP	5.1	5220	NA	NA	NA	NA	NA
BlkUSGS SimBrac	Simulated brackish water	8.8	8510	NA	NA	NA	NA	NA
Chalm 1-USGS	Simulated brackish water	7.0	8770	NA	NA	NA	NA	NA
Chalm 1D-USGS	Simulated brackish water	7.0	8770	NA	NA	NA	NA	NA
Chalm 2-USGS	Simulated brackish water	7.7	9050	NA	NA	NA	NA	NA
Chalm 2D-USGS	Simulated brackish water	7.6	8900	NA	NA	NA	NA	NA
Blank USGS SPLP	Modified SPLP	4.2	29.8	1.387	1.2	<0.08	1.3	9.1
Chalme 1-USGS	Modified SPLP	7.3	1040	19.18	281	<0.08	3.1	63
Chalme 1D-USGS	Modified SPLP	7.2	1000	19.9	288	<0.08	3	63
Chalmette 2USGS	Modified SPLP	8.5	1060	40.34	329	<0.08	1.7	62
Chalm 2DUSGS	Modified SPLP	8.5	1020	39.98	281	<0.08	1.6	56
Blank USGS FLT	USGS FLT	5.8	0.65	3.988	<0.08	<0.08	<0.08	<1.6
Chalm 1USGS	USGS FLT	7.4	643	8.516	89	<0.08	0.8	9.1
Chalm1D-USGS	USGS FLT	7.4	509	11.42	47	<0.08	0.2	5.5
Chalm2-USGS	USGS FLT	7.4	779	8.156	25.4	<0.08	0.2	4.5
Chalm2D-USGS	USGS FLT	8.8	1000	26.76	103	<0.08	0.4	6.7
Blank NEIC-TCLP	TCLP 1311	NA	NA	NA	NA	NA	NA	NA
Chalmette1-NEIC	TCLP 1311	NA	NA	NA	NA	NA	NA	NA
Chalmette1D-NEIC	TCLP 1311 duplicate	NA	NA	NA	NA	NA	NA	NA
Chalmette2-NEIC	TCLP 1311	NA	NA	NA	NA	NA	NA	NA
Chalmette2D-NEIC	TCLP 1311 duplicate	NA	NA	NA	NA	NA	NA	NA
Ref. Standard	Standard T-103	NA	NA	NA	NA	NA	NA	NA
Ref. Standard2	Standard M-112	NA	NA	NA	NA	NA	NA	NA

Table 6.

6a. Blank, leachate concentrations

NA = not analyzed **Field ID**	**Analysis Description**	**ICPMS_LEACH** **SO4** mg/L	**ICPMS_LEACH** **Ag** ug/L	**ICPMS_LEACH** **Al** ug/L	**ICPMS_LEACH** **As** ug/L	**ICPMS_LEACH** **Ba** ug/L	**ICPMS_LEACH** **Be** ug/L	**ICPMS_LEACH** **Bi** ug/L
Blank USGS TCLP	Modified TCLP	7	<3	7.3	3.7	238	0.1	0.2
Chalmette 1-USGS	Modified TCLP	27	<3	82	16	358	0.2	<0.2
Chalmette1D-USGS	Modified TCLP	30	<3	66	14	281	0.07	<0.2
Chalmette 2-USGS	Modified TCLP	28	<3	55	33	387	0.4	<0.2
Chalmette2D-USGS	Modified TCLP	27	<3	59	29	378	0.5	<0.2
BlkUSGS SimBrac	Simulated brackish water	374	<3	3.4	7.9	106	<0.05	<0.2
Chalm 1-USGS	Simulated brackish water	407	<3	21	11	192	<0.05	<0.2
Chalm 1D-USGS	Simulated brackish water	424	<3	59	9.5	188	<0.05	<0.2
Chalm 2-USGS	Simulated brackish water	428	<3	20	11	159	<0.05	<0.2
Chalm 2D-USGS	Simulated brackish water	431	<3	11	10	155	<0.05	<0.2
Blank USGS SPLP	Modified SPLP	22	<3	8.2	<1	2.7	<0.05	<0.2
Chalme 1-USGS	Modified SPLP	70	<3	186	<1	151	<0.05	<0.2
Chalme 1D-USGS	Modified SPLP	63	<3	192	2	16	<0.05	<0.2
Chalmette 2USGS	Modified SPLP	67	<3	208	2	53	<0.05	<0.2
Chalm 2DUSGS	Modified SPLP	65	<3	267	1	27	<0.05	<0.2
Blank USGS FLT	USGS FLT	15	<3	2.9	<1	18	<0.05	<0.2
Chalm 1USGS	USGS FLT	17	<3	38	<1	160	<0.05	<0.2
Chalm1D-USGS	USGS FLT	26	<3	67	<1	189	<0.05	<0.2
Chalm2-USGS	USGS FLT	22	<3	50	<1	185	<0.05	<0.2
Chalm2D-USGS	USGS FLT	30	<3	211	2	19	<0.05	<0.2
Blank NEIC-TCLP	TCLP 1311	14	<3	16	<1	97	<0.05	<0.2
Chalmette1-NEIC	TCLP 1311	25	<3	152	18	258	0.06	<0.2
Chalmette1D-NEIC	TCLP 1311 duplicate	27	<3	114	20	267	0.2	<0.2
Chalmette2-NEIC	TCLP 1311	34	<3	196	35	404	0.9	<0.2
Chalmette2D-NEIC	TCLP 1311 duplicate	33	<3	91	35	438	0.8	<0.2
Ref. Standard	Standard T-103	230	<3	128	3.8	42	4.9	<0.2
Ref. Standard2	Standard M-112	22	<3	7.6	<1	3	<0.05	<0.2

Table 6.

6a. Blank, leachate concentrations

NA = not analyzed **Field ID**	**Analysis Description**	**ICPMS_LEACH** **Ca** mg/L	**ICPMS_LEACH** **Cd** ug/L	**ICPMS_LEACH** **Ce** ug/L	**ICPMS_LEACH** **Co** ug/L	**ICPMS_LEACH** **Cr** ug/L	**ICPMS_LEACH** **Cs** ug/L	**ICPMS_LEACH** **Cu** ug/L
Blank USGS TCLP	Modified TCLP	0.38	0.12	0.01	0.06	<1	0.02	1.9
Chalmette 1-USGS	Modified TCLP	29	0.11	0.34	3.7	3.3	0.02	3.3
Chalmette1D-USGS	Modified TCLP	29	0.12	0.29	4.6	3.2	<0.02	1.8
Chalmette 2-USGS	Modified TCLP	104	0.05	1.5	13	7.6	0.02	2
Chalmette2D-USGS	Modified TCLP	81	<0.02	1.3	12	3.8	0.03	1.9
BlkUSGS SimBrac	Simulated brackish water	52	0.65	<0.01	0.12	4.7	0.12	4.7
Chalm 1-USGS	Simulated brackish water	63	<0.02	0.06	0.1	3.6	0.02	3.4
Chalm 1D-USGS	Simulated brackish water	65	0.04	0.06	0.13	1.3	<0.02	4.8
Chalm 2-USGS	Simulated brackish water	77	0.06	0.02	0.28	2	<0.02	2.9
Chalm 2D-USGS	Simulated brackish water	79	<0.02	0.02	0.32	2.2	<0.02	3.2
Blank USGS SPLP	Modified SPLP	0.38	0.03	<0.01	0.04	1.4	<0.02	<0.5
Chalme 1-USGS	Modified SPLP	8.2	0.14	0.94	0.32	12	<0.02	9.5
Chalme 1D-USGS	Modified SPLP	6.9	<0.02	0.47	0.12	1.9	<0.02	1.4
Chalmette 2USGS	Modified SPLP	11.9	0.02	1.4	0.23	3.2	<0.02	1.4
Chalm 2DUSGS	Modified SPLP	11.3	0.02	1.3	0.33	2.3	<0.02	0.77
Blank USGS FLT	USGS FLT	<0.2	<0.02	<0.01	<0.02	<1	<0.02	<0.5
Chalm 1USGS	USGS FLT	2.1	<0.02	0.06	0.04	<1	<0.02	<0.5
Chalm1D-USGS	USGS FLT	3.0	<0.02	0.15	0.43	<1	<0.02	1.3
Chalm2-USGS	USGS FLT	3.1	<0.02	0.16	0.05	<1	<0.02	0.64
Chalm2D-USGS	USGS FLT	6.5	0.16	0.89	0.18	<1	<0.02	2.2
Blank NEIC-TCLP	TCLP 1311	<0.2	0.03	<0.01	0.07	1.3	<0.02	6.3
Chalmette1-NEIC	TCLP 1311	30	0.18	0.24	3.4	3.2	<0.02	2.5
Chalmette1D-NEIC	TCLP 1311 duplicate	31	0.22	0.25	3.5	4.2	<0.02	4.3
Chalmette2-NEIC	TCLP 1311	83	6.8	2.2	16.4	4.8	0.02	8.8
Chalmette2D-NEIC	TCLP 1311 duplicate	84	7.0	2.0	17.3	4.6	<0.02	9.9
Ref. Standard	Standard T-103	59	2.0	0.01	3.4	7	<0.02	85
Ref. Standard2	Standard M-112	12	<0.02	<0.01	<0.02	2.3	<0.02	1

Table 6.

6a. Blank, leachate concentrations

NA = not analyzed **Field ID**	**Analysis Description**	**ICPMS_LEACH** **Dy** ug/L	**ICPMS_LEACH** **Er** ug/L	**ICPMS_LEACH** **Eu** ug/L	**ICPMS_LEACH** **Fe** ug/L	**ICPMS_LEACH** **Ga** ug/L	**ICPMS_LEACH** **Gd** ug/L	**ICPMS_LEACH** **Ge** ug/L
Blank USGS TCLP	Modified TCLP	0.26	<0.005	<0.005	<50	<0.05	<0.005	<0.05
Chalmette 1-USGS	Modified TCLP	<0.005	0.007	0.03	<50	<0.05	0.06	<0.05
Chalmette1D-USGS	Modified TCLP	0.03	0.02	0.01	<50	0.06	0.04	0.06
Chalmette 2-USGS	Modified TCLP	0.16	0.10	0.10	27200	0.1	0.3	0.08
Chalmette2D-USGS	Modified TCLP	0.18	0.10	0.09	29500	0.1	0.2	<0.05
BlkUSGS SimBrac	Simulated brackish water	<0.005	<0.005	<0.005	<50	<0.05	0.009	<0.05
Chalm 1-USGS	Simulated brackish water	<0.005	0.01	<0.005	<50	<0.05	0.006	<0.05
Chalm 1D-USGS	Simulated brackish water	<0.005	0.007	<0.005	<50	0.07	0.03	<0.05
Chalm 2-USGS	Simulated brackish water	<0.005	<0.005	<0.005	<50	<0.05	0.03	<0.05
Chalm 2D-USGS	Simulated brackish water	<0.005	0.01	<0.005	<50	<0.05	0.01	<0.05
Blank USGS SPLP	Modified SPLP	<0.005	<0.005	0.008	<50	<0.05	0.02	<0.05
Chalme 1-USGS	Modified SPLP	0.04	0.01	0.03	<50	<0.05	0.08	<0.05
Chalme 1D-USGS	Modified SPLP	0.03	0.006	0.01	<50	0.07	0.04	<0.05
Chalmette 2USGS	Modified SPLP	0.1	0.19	0.02	<50	0.09	0.2	<0.05
Chalm 2DUSGS	Modified SPLP	0.055	0.05	0.03	<50	0.1	0.1	<0.05
Blank USGS FLT	USGS FLT	<0.005	<0.005	0.006	<50	<0.05	0.02	<0.05
Chalm 1USGS	USGS FLT	<0.005	0.01	<0.005	<50	<0.05	0.01	<0.05
Chalm1D-USGS	USGS FLT	<0.005	<0.005	0.02	<50	<0.05	0.03	<0.05
Chalm2-USGS	USGS FLT	<0.005	<0.005	0.009	<50	<0.05	0.05	0.05
Chalm2D-USGS	USGS FLT	0.063	0.02	0.02	<50	0.09	0.10	<0.05
Blank NEIC-TCLP	TCLP 1311	<0.005	<0.005	<0.005	<50	<0.05	<0.005	<0.05
Chalmette1-NEIC	TCLP 1311	0.01	0.01	0.009	<50	<0.05	0.04	<0.05
Chalmette1D-NEIC	TCLP 1311 duplicate	0.006	0.01	0.02	<50	<0.05	0.07	0.07
Chalmette2-NEIC	TCLP 1311	0.28	0.13	0.08	<50	0.2	0.5	0.2
Chalmette2D-NEIC	TCLP 1311 duplicate	0.2	0.19	0.08	<50	0.1	0.6	0.2
Ref. Standard	Standard T-103	<0.005	<0.005	<0.005	<50	0.05	0.005	<0.05
Ref. Standard2	Standard M-112	<0.005	<0.005	<0.005	<50	<0.05	<0.005	<0.05

Table 6.

6a. Blank, leachate concentrations

NA = not analyzed **Field ID**	**Analysis Description**	**CVAFS** **Hg** ng/L	**ICPMS_LEACH** **Ho** ug/L	**ICPMS_LEACH** **K** mg/L	**ICPMS_LEACH** **La** ug/L	**ICPMS_LEACH** **Li** ug/L	**ICPMS_LEACH** **Lu** ug/L	**ICPMS_LEACH** **Mg** mg/L
Blank USGS TCLP	Modified TCLP	<15	<0.005	2.3	0.01	5	<0.1	0.06
Chalmette 1-USGS	Modified TCLP	<15	0.01	15.5	0.17	24	<0.1	39
Chalmette1D-USGS	Modified TCLP	<15	0.005	15	0.16	19	<0.1	38
Chalmette 2-USGS	Modified TCLP	<15	0.05	25	0.76	15	<0.1	54
Chalmette2D-USGS	Modified TCLP	<15	0.03	24	0.64	17	<0.1	52
BlkUSGS SimBrac	Simulated brackish water	<15	<0.005	55	0.01	1490	<0.1	152
Chalm 1-USGS	Simulated brackish water	<15	<0.005	60	0.04	1340	<0.1	168
Chalm 1D-USGS	Simulated brackish water	<15	<0.005	62	0.03	1300	<0.1	183
Chalm 2-USGS	Simulated brackish water	70	<0.005	65	0.02	1260	<0.1	175
Chalm 2D-USGS	Simulated brackish water	<15	<0.005	66	0.01	1300	<0.1	179
Blank USGS SPLP	Modified SPLP	<15	<0.005	0.2	0.02	9.9	<0.1	0.2
Chalme 1-USGS	Modified SPLP	<15	0.01	10	0.44	<0.9	<0.1	16
Chalme 1D-USGS	Modified SPLP	<15	0.008	9	0.23	<0.9	<0.1	15
Chalmette 2USGS	Modified SPLP	<15	0.02	15	0.7	<0.9	<0.1	15
Chalm 2DUSGS	Modified SPLP	<15	0.03	14	0.66	<0.9	<0.1	14
Blank USGS FLT	USGS FLT	<15	<0.005	0.07	<0.01	<0.9	<0.1	0.02
Chalm 1USGS	USGS FLT	<15	<0.005	2.4	0.04	<0.9	<0.1	4.2
Chalm1D-USGS	USGS FLT	<15	<0.005	4.2	0.09	<0.9	<0.1	6.4
Chalm2-USGS	USGS FLT	<15	<0.005	2.7	0.1	<0.9	<0.1	3.9
Chalm2D-USGS	USGS FLT	<15	0.01	11	0.54	1	<0.1	9.6
Blank NEIC-TCLP	TCLP 1311	<15	<0.005	0.4	0.01	8.9	<0.1	0.03
Chalmette1-NEIC	TCLP 1311	<15	0.007	14	0.13	7	<0.1	39
Chalmette1D-NEIC	TCLP 1311 duplicate	<15	0.006	14	0.14	12	<0.1	41
Chalmette2-NEIC	TCLP 1311	<15	0.05	24	1.1	5.4	<0.1	53
Chalmette2D-NEIC	TCLP 1311 duplicate	<15	0.07	24	1.0	12	<0.1	54
Ref. Standard	Standard T-103		<0.005	3.6	0.02	29	<0.1	34
Ref. Standard2	Standard M-112		<0.005	3.3	<0.01	2.3	<0.1	3.0

Table 6.

6a. Blank, leachate concentrations

NA = not analyzed

Field ID	Analysis Description	ICPMS_LEACH Mn ug/L	ICPMS_LEACH Mo ug/L	ICPMS_LEACH Na mg/L	ICPMS_LEACH Nb ug/L	ICPMS_LEACH Nd ug/L	ICPMS_LEACH Ni ug/L	ICPMS_LEACH P mg/L
Blank USGS TCLP	Modified TCLP	<0.2	6.3	1400	<0.2	0.02	1.4	<0.01
Chalmette 1-USGS	Modified TCLP	1370	3	1470	<0.2	0.12	4.6	0.3
Chalmette1D-USGS	Modified TCLP	1300	<2	1420	<0.2	0.2	4.8	0.3
Chalmette 2-USGS	Modified TCLP	7500	<2	1440	<0.2	0.99	33	0.1
Chalmette2D-USGS	Modified TCLP	6950	<2	1420	<0.2	0.83	32	0.2
BlkUSGS SimBrac	Simulated brackish water	9.1	<2	1710	<0.2	0.02	3.5	0.05
Chalm 1-USGS	Simulated brackish water	3.9	6.2	1800	<0.2	0.02	1.2	0.04
Chalm 1D-USGS	Simulated brackish water	4	11	1970	7.4	0.06	0.8	0.1
Chalm 2-USGS	Simulated brackish water	1780	8.7	1900	<0.2	0.03	2.1	0.08
Chalm 2D-USGS	Simulated brackish water	1840	7.4	1940	<0.2	<0.01	2.5	0.05
Blank USGS SPLP	Modified SPLP	5.3	<2	3.4	<0.2	<0.01	4	<0.01
Chalme 1-USGS	Modified SPLP	15	9	182	<0.2	0.46	9.7	<0.01
Chalme 1D-USGS	Modified SPLP	13	5.4	168	<0.2	0.22	4.6	<0.01
Chalmette 2USGS	Modified SPLP	207	7.2	196	<0.2	0.76	5.3	0.07
Chalm 2DUSGS	Modified SPLP	179	7.2	185	<0.2	0.58	5	0.06
Blank USGS FLT	USGS FLT	<0.2	<2	1.2	<0.2	<0.01	<0.4	<0.01
Chalm 1USGS	USGS FLT	1.2	<2	49	<0.2	0.03	<0.4	<0.01
Chalm1D-USGS	USGS FLT	0.2	<2	80	<0.2	0.04	<0.4	<0.01
Chalm2-USGS	USGS FLT	11	<2	43	<0.2	0.09	<0.4	<0.01
Chalm2D-USGS	USGS FLT	41	<2	160	<0.2	0.55	5.7	<0.01
Blank NEIC-TCLP	TCLP 1311	<0.2	<2	1450	<0.2	0.02	1.0	<0.01
Chalmette1-NEIC	TCLP 1311	1430	<2	1520	<0.2	0.17	6.3	0.4
Chalmette1D-NEIC	TCLP 1311 duplicate	1510	<2	1550	<0.2	0.22	6.8	0.4
Chalmette2-NEIC	TCLP 1311	7110	<2	1480	<0.2	1.4	38	0.02
Chalmette2D-NEIC	TCLP 1311 duplicate	7260	<2	1480	<0.2	1.5	39	<0.01
Ref. Standard	Standard T-103	7.2	32	122	<0.2	0.02	9.5	0.4
Ref. Standard2	Standard M-112	0.3	4.8	45	<0.2	<0.01	<0.4	1.2

Table 6.

6a. Blank, leachate concentrations

NA = not analyzed **Field ID**	**Analysis Description**	**ICPMS_LEACH** **Pb** ug/L	**ICPMS_LEACH** **Pr** ug/L	**ICPMS_LEACH** **Rb** ug/L	**ICPMS_LEACH** **Sb** ug/L	**ICPMS_LEACH** **Sc** ug/L	**ICPMS_LEACH** **Se** ug/L	**ICPMS_LEACH** **SiO2** mg/L
Blank USGS TCLP	Modified TCLP	0.2	<0.01	0.4	<0.3	<0.6	5.1	<0.2
Chalmette 1-USGS	Modified TCLP	2.9	0.04	7.8	<0.3	<0.6	6.8	5.1
Chalmette1D-USGS	Modified TCLP	2.7	0.03	7.5	<0.3	<0.6	14	4.4
Chalmette 2-USGS	Modified TCLP	9	0.2	13	<0.3	<0.6	6.9	8.8
Chalmette2D-USGS	Modified TCLP	7.6	0.14	12	<0.3	<0.6	5.9	8.5
BlkUSGS SimBrac	Simulated brackish water	0.1	<0.01	8.2	<0.3	<0.6	52	<0.2
Chalm 1-USGS	Simulated brackish water	0.1	0.01	14	<0.3	<0.6	53	1.8
Chalm 1D-USGS	Simulated brackish water	0.4	0.01	14	<0.3	<0.6	54	1.5
Chalm 2-USGS	Simulated brackish water	0.2	0.01	15	<0.3	<0.6	53	3.2
Chalm 2D-USGS	Simulated brackish water	0.2	<0.01	16	<0.3	<0.6	54	3.1
Blank USGS SPLP	Modified SPLP	0.2	<0.01	<0.01	<0.3	<0.6	4.4	<0.2
Chalme 1-USGS	Modified SPLP	3.2	0.1	3.9	<0.3	<0.6	7.4	1.7
Chalme 1D-USGS	Modified SPLP	0.4	0.06	4.0	<0.3	<0.6	6.5	2
Chalmette 2USGS	Modified SPLP	0.7	0.2	5.2	<0.3	<0.6	9.7	3.9
Chalm 2DUSGS	Modified SPLP	0.6	0.2	5.2	<0.3	<0.6	6.4	3.6
Blank USGS FLT	USGS FLT	<0.05	<0.01	<0.01	<0.3	<0.6	3.6	<0.2
Chalm 1USGS	USGS FLT	0.1	0.02	0.8	<0.3	<0.6	4.6	<0.2
Chalm1D-USGS	USGS FLT	0.1	0.03	1.6	<0.3	<0.6	6.4	<0.2
Chalm2-USGS	USGS FLT	0.1	0.02	0.9	<0.3	<0.6	3.7	<0.2
Chalm2D-USGS	USGS FLT	1.8	0.1	3.7	<0.3	<0.6	7.1	<0.2
Blank NEIC-TCLP	TCLP 1311	0.2	<0.01	0.02	<0.3	<0.6	2.7	<0.2
Chalmette1-NEIC	TCLP 1311	3.4	0.05	8.1	<0.3	<0.6	8.3	4.3
Chalmette1D-NEIC	TCLP 1311 duplicate	3.6	0.05	8.5	<0.3	<0.6	5.4	4.9
Chalmette2-NEIC	TCLP 1311	27	0.3	14	<0.3	<0.6	6.7	9.9
Chalmette2D-NEIC	TCLP 1311 duplicate	27	0.3	14	<0.3	<0.6	8.2	9.4
Ref. Standard	Standard T-103	8.4	<0.01	2.0	9.1	0.8	5	8
Ref. Standard2	Standard M-112	<0.05	<0.01	1.0	<0.3	<0.6	<1	4.1

Table 6.

6a. Blank, leachate concentrations

NA = not analyzed **Field ID**	**Analysis Description**	**ICPMS_LEACH** **Sm** ug/L	**ICPMS_LEACH** **Sr** ug/L	**ICPMS_LEACH** **Ta** ug/L	**ICPMS_LEACH** **Tb** ug/L	**ICPMS_LEACH** **Th** ug/L	**ICPMS_LEACH** **Ti** ug/L	**ICPMS_LEACH** **Tl** ug/L
Blank USGS TCLP	Modified TCLP	<0.01	30.5	<0.02	<0.005	<0.2	<0.5	<0.1
Chalmette 1-USGS	Modified TCLP	0.05	338	<0.02	0.01	<0.2	3	<0.1
Chalmette1D-USGS	Modified TCLP	<0.01	333	<0.02	<0.005	<0.2	1.2	<0.1
Chalmette 2-USGS	Modified TCLP	0.2	620	<0.02	0.04	<0.2	0.5	<0.1
Chalmette2D-USGS	Modified TCLP	0.2	524	<0.02	0.03	<0.2	1.8	<0.1
BlkUSGS SimBrac	Simulated brackish water	<0.01	1600	<0.02	<0.005	<0.2	5.6	<0.1
Chalm 1-USGS	Simulated brackish water	<0.01	1420	<0.02	<0.005	<0.2	5.6	<0.1
Chalm 1D-USGS	Simulated brackish water	0.09	1450	4.3	<0.005	<0.2	25	0.2
Chalm 2-USGS	Simulated brackish water	<0.01	1430	0.7	<0.005	<0.2	14	<0.1
Chalm 2D-USGS	Simulated brackish water	<0.01	1450	<0.02	<0.005	<0.2	9.6	<0.1
Blank USGS SPLP	Modified SPLP	<0.01	3	<0.02	<0.005	<0.2	3.5	<0.1
Chalme 1-USGS	Modified SPLP	0.03	94	<0.02	0.02	<0.2	18	<0.1
Chalme 1D-USGS	Modified SPLP	0.02	86	<0.02	0.006	<0.2	7.8	<0.1
Chalmette 2USGS	Modified SPLP	0.1	102	<0.02	0.01	<0.2	25	<0.1
Chalm 2DUSGS	Modified SPLP	0.1	99	<0.02	0.02	<0.2	25	<0.1
Blank USGS FLT	USGS FLT	<0.01	<0.5	<0.02	<0.005	<0.2	2.2	<0.1
Chalm 1USGS	USGS FLT	<0.01	25	<0.02	<0.005	<0.2	3	<0.1
Chalm1D-USGS	USGS FLT	0.02	37	<0.02	<0.005	<0.2	2.7	<0.1
Chalm2-USGS	USGS FLT	<0.01	28	<0.02	<0.005	<0.2	2.8	<0.1
Chalm2D-USGS	USGS FLT	0.06	62	<0.02	0.005	<0.2	8.5	<0.1
Blank NEIC-TCLP	TCLP 1311	<0.01	1.6	<0.02	<0.005	<0.2	<0.5	<0.1
Chalmette1-NEIC	TCLP 1311	<0.01	324	<0.02	0.005	<0.2	3.4	<0.1
Chalmette1D-NEIC	TCLP 1311 duplicate	<0.01	343	<0.02	0.01	<0.2	5	0.4
Chalmette2-NEIC	TCLP 1311	0.6	532	<0.02	0.05	<0.2	5.5	0.2
Chalmette2D-NEIC	TCLP 1311 duplicate	0.3	544	<0.02	0.05	<0.2	<0.5	0.3
Ref. Standard	Standard T-103	<0.01	787	0.2	<0.005	<0.2	2.4	2.2
Ref. Standard2	Standard M-112	<0.01	78	<0.02	<0.005	<0.2	1.4	<0.1

Table 6.

6a. Blank, leachate concentrations

NA = not analyzed **Field ID**	**Analysis Description**	**ICPMS_LEACH** **Tm** ug/L	**ICPMS_LEACH** **U** ug/L	**ICPMS_LEACH** **V** ug/L	**ICPMS_LEACH** **W** ug/L	**ICPMS_LEACH** **Y** ug/L	**ICPMS_LEACH** **Yb** ug/L	**ICPMS_LEACH** **Zn** ug/L
Blank USGS TCLP	Modified TCLP	<0.005	<0.1	<0.5	<0.5	0.04	0.03	283
Chalmette 1-USGS	Modified TCLP	<0.005	<0.1	3.5	<0.5	0.2	0.02	574
Chalmette1D-USGS	Modified TCLP	<0.005	<0.1	3.3	<0.5	0.2	0.03	443
Chalmette 2-USGS	Modified TCLP	0.01	0.5	5.7	<0.5	1.2	0.08	1140
Chalmette2D-USGS	Modified TCLP	0.02	0.4	4.9	<0.5	1.1	0.1	1000
BlkUSGS SimBrac	Simulated brackish water	<0.005	<0.1	0.8	<0.5	0.03	0.01	72
Chalm 1-USGS	Simulated brackish water	<0.005	<0.1	0.8	<0.5	0.05	0.03	212
Chalm 1D-USGS	Simulated brackish water	<0.005	0.7	3.3	<0.5	0.2	<0.005	208
Chalm 2-USGS	Simulated brackish water	<0.005	0.7	1.3	<0.5	0.05	<0.005	135
Chalm 2D-USGS	Simulated brackish water	<0.005	0.7	1.2	<0.5	0.09	0.005	128
Blank USGS SPLP	Modified SPLP	<0.005	<0.1	<0.5	<0.5	<0.01	0.01	4
Chalme 1-USGS	Modified SPLP	0.005	<0.1	1.9	<0.5	0.3	0.04	101
Chalme 1D-USGS	Modified SPLP	<0.005	<0.1	1.3	<0.5	0.1	0.02	15
Chalmette 2USGS	Modified SPLP	0.008	0.3	2.4	<0.5	0.4	0.02	26
Chalm 2DUSGS	Modified SPLP	<0.005	0.4	1.8	<0.5	0.3	0.06	3.6
Blank USGS FLT	USGS FLT	<0.005	<0.1	<0.5	<0.5	<0.01	<0.005	4.2
Chalm 1USGS	USGS FLT	<0.005	<0.1	0.6	<0.5	0.02	<0.005	70
Chalm1D-USGS	USGS FLT	<0.005	<0.1	1.5	<0.5	0.06	0.01	94
Chalm2-USGS	USGS FLT	<0.005	<0.1	0.5	<0.5	0.05	0.02	50
Chalm2D-USGS	USGS FLT	<0.005	0.5	2.8	<0.5	0.2	0.01	37
Blank NEIC-TCLP	TCLP 1311	<0.005	<0.1	<0.5	<0.5	<0.01	0.01	125
Chalmette1-NEIC	TCLP 1311	<0.005	<0.1	6.9	<0.5	0.2	0.05	352
Chalmette1D-NEIC	TCLP 1311 duplicate	<0.005	<0.1	6.9	<0.5	0.2	0.03	336
Chalmette2-NEIC	TCLP 1311	0.02	1.2	2.7	<0.5	1.8	0.1	3620
Chalmette2D-NEIC	TCLP 1311 duplicate	0.02	1.1	2.6	<0.5	1.8	0.1	3720
Ref. Standard	Standard T-103	<0.005	6.5	39	<0.5	0.04	<0.005	22
Ref. Standard2	Standard M-112	<0.005	0.3	8	1.8	<0.01	<0.005	<0.5

Table 6.

6a. Blank, leachate concentrations

NA = not analyzed

Field ID	Analysis Description	ICPMS_LEACH Zr ug/L
Blank USGS TCLP	Modified TCLP	<0.2
Chalmette 1-USGS	Modified TCLP	0.2
Chalmette1D-USGS	Modified TCLP	0.8
Chalmette 2-USGS	Modified TCLP	<0.2
Chalmette2D-USGS	Modified TCLP	0.6
BlkUSGS SimBrac	Simulated brackish water	<0.2
Chalm 1-USGS	Simulated brackish water	<0.2
Chalm 1D-USGS	Simulated brackish water	<0.2
Chalm 2-USGS	Simulated brackish water	<0.2
Chalm 2D-USGS	Simulated brackish water	<0.2
Blank USGS SPLP	Modified SPLP	<0.2
Chalme 1-USGS	Modified SPLP	0.4
Chalme 1D-USGS	Modified SPLP	0.3
Chalmette 2USGS	Modified SPLP	1.0
Chalm 2DUSGS	Modified SPLP	1.1
Blank USGS FLT	USGS FLT	<0.2
Chalm 1USGS	USGS FLT	<0.2
Chalm1D-USGS	USGS FLT	<0.2
Chalm2-USGS	USGS FLT	0.4
Chalm2D-USGS	USGS FLT	0.4
Blank NEIC-TCLP	TCLP 1311	<0.2
Chalmette1-NEIC	TCLP 1311	<0.2
Chalmette1D-NEIC	TCLP 1311 duplicate	0.2
Chalmette2-NEIC	TCLP 1311	0.2
Chalmette2D-NEIC	TCLP 1311 duplicate	<0.2
Ref. Standard	Standard T-103	0.2
Ref. Standard2	Standard M-112	<0.2

6b. Data recalculated as mg leached per kg of solid (wet weight) NA = not analyzed **Field ID**	**Analysis Description**	**pH**	**Spec. conduct.** µS/cm	**Alkalinity CaCO3** mg/kg	**IC-Aq Cl** mg/kg	**IC-Aq F** mg/kg	**IC-Aq NO3** mg/kg	**IC-Aq SO4** mg/kg
Blank USGS TCLP	Modified TCLP	NA	NA	NA	NA	NA	NA	NA
Chalmette 1-USGS	Modified TCLP	NA	NA	NA	NA	NA	NA	NA
Chalmette1D-USGS	Modified TCLP	NA	NA	NA	NA	NA	NA	NA
Chalmette 2-USGS	Modified TCLP	NA	NA	NA	NA	NA	NA	NA
Chalmette2D-USGS	Modified TCLP	NA	NA	NA	NA	NA	NA	NA
BlkUSGS SimBrac	Simulated brackish water	NA	NA	NA	NA	NA	NA	NA
Chalm 1-USGS	Simulated brackish water	NA	NA	NA	NA	NA	NA	NA
Chalm 1D-USGS	Simulated brackish water	NA	NA	NA	NA	NA	NA	NA
Chalm 2-USGS	Simulated brackish water	NA	NA	NA	NA	NA	NA	NA
Chalm 2D-USGS	Simulated brackish water	NA	NA	NA	NA	NA	NA	NA
Blank USGS SPLP	Modified SPLP	NA	NA	69.35	60	<4	65	455
Chalme 1-USGS	Modified SPLP	NA	NA	959	14050	<4	155	3130
Chalme 1D-USGS	Modified SPLP	NA	NA	995	14400	<4	150	3140
Chalmette 2USGS	Modified SPLP	NA	NA	2017	16450	<4	85	3100
Chalm 2DUSGS	Modified SPLP	NA	NA	1999	14050	<4	80	2800
Blank USGS FLT	USGS FLT	NA	NA	199	<4	<4	<4	<80
Chalm 1USGS	USGS FLT	NA	NA	426	4450	<4	40	455
Chalm1D-USGS	USGS FLT	NA	NA	571	2350	<4	10	275
Chalm2-USGS	USGS FLT	NA	NA	407.8	1270	<4	10	225
Chalm2D-USGS	USGS FLT	NA	NA	1338	5150	<4	20	335
Blank NEIC-TCLP	TCLP EPA-NEIC	NA	NA	NA	NA	NA	NA	NA
Chalmette1-NEIC	TCLP EPA-NEIC	NA	NA	NA	NA	NA	NA	NA
Chalmette1D-NEIC	TCLP EPA-NEIC-duplicate	NA	NA	NA	NA	NA	NA	NA
Chalmette2-NEIC	TCLP EPA-NEIC	NA	NA	NA	NA	NA	NA	NA
Chalmette2D-NEIC	TCLP EPA-NEIC-duplicate	NA	NA	NA	NA	NA	NA	NA

6b. Data recalculated as mg leached per kg of solid (wet weight) NA = not analyzed **Field ID**	**Analysis Description**	ICPMS_LEACH **SO4** mg/kg	ICPMS_LEACH **Ag** mg/kg	ICPMS_LEACH **Al** mg/kg	ICPMS_LEACH **As** mg/kg	ICPMS_LEACH **Ba** mg/kg	ICPMS_LEACH **Be** mg/kg	ICPMS_LEACH **Bi** mg/kg
Blank USGS TCLP	Modified TCLP	350	<0.06	0.1	0.07	4.8	0.002	0.004
Chalmette 1-USGS	Modified TCLP	1350	<0.06	1.6	0.3	7.2	0.004	<0.004
Chalmette1D-USGS	Modified TCLP	1500	<0.06	1.3	0.3	5.6	0.001	<0.004
Chalmette 2-USGS	Modified TCLP	1400	<0.06	1.1	0.7	7.7	0.008	<0.004
Chalmette2D-USGS	Modified TCLP	1350	<0.06	1.2	0.6	7.6	0.01	<0.004
BlkUSGS SimBrac	Simulated brackish water	18700	<0.06	0.07	0.2	2.1	<0.001	<0.004
Chalm 1-USGS	Simulated brackish water	20350	<0.06	0.4	0.2	3.8	<0.001	<0.004
Chalm 1D-USGS	Simulated brackish water	21200	<0.06	1.2	0.2	3.8	<0.001	<0.004
Chalm 2-USGS	Simulated brackish water	21400	<0.06	0.4	0.2	3.2	<0.001	<0.004
Chalm 2D-USGS	Simulated brackish water	21550	<0.06	0.2	0.2	3.1	<0.001	<0.004
Blank USGS SPLP	Modified SPLP	1100	<0.06	0.2	<0.02	0.05	<0.001	<0.004
Chalme 1-USGS	Modified SPLP	3500	<0.06	3.7	<0.02	3.0	<0.001	<0.004
Chalme 1D-USGS	Modified SPLP	3150	<0.06	3.8	0.04	0.3	<0.001	<0.004
Chalmette 2USGS	Modified SPLP	3350	<0.06	4.2	0.04	1.1	<0.001	<0.004
Chalm 2DUSGS	Modified SPLP	3250	<0.06	5.3	0.02	0.5	<0.001	<0.004
Blank USGS FLT	USGS FLT	750	<0.06	0.06	<0.02	0.4	<0.001	<0.004
Chalm 1USGS	USGS FLT	850	<0.06	0.8	<0.02	3.2	<0.001	<0.004
Chalm1D-USGS	USGS FLT	1300	<0.06	1.3	<0.02	3.8	<0.001	<0.004
Chalm2-USGS	USGS FLT	1100	<0.06	1.0	<0.02	3.7	<0.001	<0.004
Chalm2D-USGS	USGS FLT	1500	<0.06	4.2	0.04	0.4	<0.001	<0.004
Blank NEIC-TCLP	TCLP EPA-NEIC	700	<0.06	0.3	<0.02	1.9	<0.001	<0.004
Chalmette1-NEIC	TCLP EPA-NEIC	1250	<0.06	3.0	0.4	5.2	0.001	<0.004
Chalmette1D-NEIC	TCLP EPA-NEIC-duplicate	1350	<0.06	2.3	0.4	5.3	0.004	<0.004
Chalmette2-NEIC	TCLP EPA-NEIC	1700	<0.06	3.9	0.7	8.1	0.02	<0.004
Chalmette2D-NEIC	TCLP EPA-NEIC-duplicate	1650	<0.06	1.8	0.7	8.8	0.02	<0.004

6b. Data recalculated as mg leached per kg of solid (wet weight) NA = not analyzed **Field ID**	**Analysis Description**	**ICPMS_LEACH Ca** mg/kg	**ICPMS_LEACH Cd** mg/kg	**ICPMS_LEACH Ce** mg/kg	**ICPMS_LEACH Co** mg/kg	**ICPMS_LEACH Cr** mg/kg	**ICPMS_LEACH Cs** mg/kg	**ICPMS_LEACH Cu** mg/kg
Blank USGS TCLP	Modified TCLP	19	0.002	0.0002	0.001	<0.02	0.0004	0.04
Chalmette 1-USGS	Modified TCLP	1460	0.002	0.007	0.07	0.07	0.0004	0.07
Chalmette1D-USGS	Modified TCLP	1460	0.002	0.006	0.09	0.06	<0.0004	0.04
Chalmette 2-USGS	Modified TCLP	5200	0.001	0.03	0.3	0.2	0.0004	0.04
Chalmette2D-USGS	Modified TCLP	4070	<0.0004	0.03	0.2	0.08	0.0006	0.04
BlkUSGS SimBrac	Simulated brackish water	2590	0.01	<0.0002	0.002	0.09	0.0024	0.09
Chalm 1-USGS	Simulated brackish water	3145	<0.0004	0.001	0.002	0.07	0.0004	0.07
Chalm 1D-USGS	Simulated brackish water	3255	0.0008	0.001	0.003	0.03	<0.0004	0.10
Chalm 2-USGS	Simulated brackish water	3830	0.001	0.0004	0.006	0.04	<0.0004	0.06
Chalm 2D-USGS	Simulated brackish water	3945	<0.0004	0.0004	0.006	0.04	<0.0004	0.06
Blank USGS SPLP	Modified SPLP	19	0.0006	<0.0002	0.0008	0.03	<0.0004	<0.01
Chalme 1-USGS	Modified SPLP	412	0.003	0.02	0.006	0.2	<0.0004	0.2
Chalme 1D-USGS	Modified SPLP	346	<0.0004	0.009	0.002	0.04	<0.0004	0.03
Chalmette 2USGS	Modified SPLP	595	0.0004	0.03	0.005	0.06	<0.0004	0.03
Chalm 2DUSGS	Modified SPLP	565	0.0004	0.03	0.007	0.05	<0.0004	0.02
Blank USGS FLT	USGS FLT	<10	<0.0004	<0.0002	<0.0004	<0.02	<0.0004	<0.01
Chalm 1USGS	USGS FLT	104	<0.0004	0.001	0.0008	<0.02	<0.0004	<0.01
Chalm1D-USGS	USGS FLT	151	<0.0004	0.003	0.0086	<0.02	<0.0004	0.03
Chalm2-USGS	USGS FLT	157	<0.0004	0.003	0.001	<0.02	<0.0004	0.01
Chalm2D-USGS	USGS FLT	327	0.003	0.02	0.004	<0.02	<0.0004	0.04
Blank NEIC-TCLP	TCLP EPA-NEIC	<10	0.0006	<0.0002	0.001	0.03	<0.0004	0.1
Chalmette1-NEIC	TCLP EPA-NEIC	1485	0.004	0.005	0.07	0.06	<0.0004	0.05
Chalmette1D-NEIC	TCLP EPA-NEIC-duplicate	1540	0.004	0.005	0.07	0.08	<0.0004	0.09
Chalmette2-NEIC	TCLP EPA-NEIC	4130	0.1	0.04	0.3	0.10	0.0004	0.2
Chalmette2D-NEIC	TCLP EPA-NEIC-duplicate	4215	0.1	0.04	0.3	0.09	<0.0004	0.2

6b. Data recalculated as mg leached per kg of solid (wet weight) NA = not analyzed Field ID	Analysis Description	ICPMS_LEACH Dy mg/kg	ICPMS_LEACH Er mg/kg	ICPMS_LEACH Eu mg/kg	ICPMS_LEACH Fe mg/kg	ICPMS_LEACH Ga mg/kg	ICPMS_LEACH Gd mg/kg	ICPMS_LEACH Ge mg/kg
Blank USGS TCLP	Modified TCLP	0.005	<0.0001	<0.0001	<1	<0.001	<0.0001	<0.001
Chalmette 1-USGS	Modified TCLP	<0.0001	0.0001	0.0006	<1	<0.001	0.001	<0.001
Chalmette1D-USGS	Modified TCLP	0.0006	0.0004	0.0002	<1	0.001	0.0008	0.001
Chalmette 2-USGS	Modified TCLP	0.003	0.002	0.002	544	0.002	0.006	0.002
Chalmette2D-USGS	Modified TCLP	0.004	0.002	0.002	590	0.002	0.005	<0.001
BlkUSGS SimBrac	Simulated brackish water	<0.0001	<0.0001	<0.0001	<1	<0.001	0.0002	<0.001
Chalm 1-USGS	Simulated brackish water	<0.0001	0.0002	<0.0001	<1	<0.001	0.0001	<0.001
Chalm 1D-USGS	Simulated brackish water	<0.0001	0.0001	<0.0001	<1	0.0014	0.0006	<0.001
Chalm 2-USGS	Simulated brackish water	<0.0001	<0.0001	<0.0001	<1	<0.001	0.0006	<0.001
Chalm 2D-USGS	Simulated brackish water	<0.0001	0.0002	<0.0001	<1	<0.001	0.0002	<0.001
Blank USGS SPLP	Modified SPLP	<0.0001	<0.0001	0.0002	<1	<0.001	0.0004	<0.001
Chalme 1-USGS	Modified SPLP	0.0008	0.0002	0.0006	<1	<0.001	0.002	<0.001
Chalme 1D-USGS	Modified SPLP	0.0006	0.0001	0.0002	<1	0.001	0.0008	<0.001
Chalmette 2USGS	Modified SPLP	0.002	0.004	0.0004	<1	0.002	0.003	<0.001
Chalm 2DUSGS	Modified SPLP	0.001	0.001	0.0006	<1	0.002	0.002	<0.001
Blank USGS FLT	USGS FLT	<0.0001	<0.0001	0.0001	<1	<0.001	0.0004	<0.001
Chalm 1USGS	USGS FLT	<0.0001	0.0002	<0.0001	<1	<0.001	0.0002	<0.001
Chalm1D-USGS	USGS FLT	<0.0001	<0.0001	0.0004	<1	<0.001	0.0006	<0.001
Chalm2-USGS	USGS FLT	<0.0001	<0.0001	0.0002	<1	<0.001	0.001	0.001
Chalm2D-USGS	USGS FLT	0.001	0.0004	0.0004	<1	0.002	0.002	<0.001
Blank NEIC-TCLP	TCLP EPA-NEIC	<0.0001	<0.0001	<0.0001	<1	<0.001	<0.0001	<0.001
Chalmette1-NEIC	TCLP EPA-NEIC	0.0002	0.0002	0.0002	<1	<0.001	0.0008	<0.001
Chalmette1D-NEIC	TCLP EPA-NEIC-duplicate	0.0001	0.0002	0.0004	<1	<0.001	0.0014	0.001
Chalmette2-NEIC	TCLP EPA-NEIC	0.006	0.003	0.002	<1	0.004	0.01	0.004
Chalmette2D-NEIC	TCLP EPA-NEIC-duplicate	0.004	0.004	0.002	<1	0.002	0.01	0.004

6b. Data recalculated as mg leached per kg of solid (wet weight) NA = not analyzed Field ID	Analysis Description	CVAFS Hg mg/Kg	ICPMS_LEACH Ho mg/kg	ICPMS_LEACH K mg/kg	ICPMS_LEACH La mg/kg	ICPMS_LEACH Li mg/kg	ICPMS_LEACH Lu mg/kg	ICPMS_LEACH Mg mg/kg
Blank USGS TCLP	Modified TCLP	<0.0003	<0.0001	117	0.0002	0.1	<0.002	0.001
Chalmette 1-USGS	Modified TCLP	<0.0003	0.0002	775	0.003	0.5	<0.002	0.8
Chalmette1D-USGS	Modified TCLP	<0.0003	0.0001	750	0.003	0.4	<0.002	0.8
Chalmette 2-USGS	Modified TCLP	<0.0003	0.001	1230	0.02	0.3	<0.002	1.1
Chalmette2D-USGS	Modified TCLP	<0.0003	0.0006	1210	0.01	0.3	<0.002	1.0
BlkUSGS SimBrac	Simulated brackish water	<0.0003	<0.0001	2760	0.0002	30	<0.002	3.0
Chalm 1-USGS	Simulated brackish water	<0.0003	<0.0001	2990	0.0008	27	<0.002	3.4
Chalm 1D-USGS	Simulated brackish water	<0.0003	<0.0001	3075	0.0006	26	<0.002	3.7
Chalm 2-USGS	Simulated brackish water	0.001	<0.0001	3255	0.0004	25	<0.002	3.5
Chalm 2D-USGS	Simulated brackish water	<0.0003	<0.0001	3295	0.0002	26	<0.002	3.6
Blank USGS SPLP	Modified SPLP	<0.0003	<0.0001	10	0.0004	0.2	<0.002	0.004
Chalme 1-USGS	Modified SPLP	<0.0003	0.0002	499	0.009	<0.018	<0.002	0.3
Chalme 1D-USGS	Modified SPLP	<0.0003	0.0002	467	0.005	<0.018	<0.002	0.3
Chalmette 2USGS	Modified SPLP	<0.0003	0.0004	735	0.01	<0.018	<0.002	0.3
Chalm 2DUSGS	Modified SPLP	<0.0003	0.0006	710	0.01	<0.018	<0.002	0.3
Blank USGS FLT	USGS FLT	<0.0003	<0.0001	3.5	<0.0002	<0.018	<0.002	0.0004
Chalm 1USGS	USGS FLT	<0.0003	<0.0001	119	0.0008	<0.018	<0.002	0.08
Chalm1D-USGS	USGS FLT	<0.0003	<0.0001	209	0.002	<0.018	<0.002	0.1
Chalm2-USGS	USGS FLT	<0.0003	<0.0001	133	0.002	<0.018	<0.002	0.08
Chalm2D-USGS	USGS FLT	<0.0003	0.0002	570	0.01	0.02	<0.002	0.2
Blank NEIC-TCLP	TCLP EPA-NEIC	<0.0003	<0.0001	18	0.0002	0.2	<0.002	0.0006
Chalmette1-NEIC	TCLP EPA-NEIC	<0.0003	0.0001	685	0.003	0.1	<0.002	0.8
Chalmette1D-NEIC	TCLP EPA-NEIC-duplicate	<0.0003	0.0001	715	0.003	0.2	<0.002	0.8
Chalmette2-NEIC	TCLP EPA-NEIC	<0.0003	0.001	1190	0.02	0.1	<0.002	1.1
Chalmette2D-NEIC	TCLP EPA-NEIC-duplicate	<0.0003	0.001	1190	0.02	0.2	<0.002	1.1

6b. Data recalculated as mg leached per kg of solid (wet weight) NA = not analyzed **Field ID**	**Analysis Description**	**ICPMS_LEACH** **Mn** mg/kg	**ICPMS_LEACH** **Mo** mg/kg	**ICPMS_LEACH** **Na** mg/kg	**ICPMS_LEACH** **Nb** mg/kg	**ICPMS_LEACH** **Nd** mg/kg	**ICPMS_LEACH** **Ni** mg/kg	**ICPMS_LEACH** **P** mg/kg
Blank USGS TCLP	Modified TCLP	<0.004	0.1	70000	<0.004	0.0004	0.03	<0.5
Chalmette 1-USGS	Modified TCLP	27	0.06	73500	<0.004	0.002	0.09	15
Chalmette1D-USGS	Modified TCLP	26	<0.04	71000	<0.004	0.004	0.10	15
Chalmette 2-USGS	Modified TCLP	150	<0.04	72000	<0.004	0.02	0.7	5
Chalmette2D-USGS	Modified TCLP	139	<0.04	71000	<0.004	0.02	0.6	10
BlkUSGS SimBrac	Simulated brackish water	0.2	<0.04	85500	<0.004	0.0004	0.07	2.5
Chalm 1-USGS	Simulated brackish water	0.08	0.1	90000	<0.004	0.0004	0.02	2.0
Chalm 1D-USGS	Simulated brackish water	0.08	0.2	98500	0.1	0.001	0.02	5.0
Chalm 2-USGS	Simulated brackish water	36	0.2	95000	<0.004	0.0006	0.04	4.0
Chalm 2D-USGS	Simulated brackish water	37	0.1	97000	<0.004	<0.0002	0.05	2.5
Blank USGS SPLP	Modified SPLP	0.1	<0.04	168	<0.004	<0.0002	0.08	<0.5
Chalme 1-USGS	Modified SPLP	0.3	0.2	9100	<0.004	0.009	0.2	<0.5
Chalme 1D-USGS	Modified SPLP	0.3	0.1	8400	<0.004	0.004	0.09	<0.5
Chalmette 2USGS	Modified SPLP	4.1	0.1	9800	<0.004	0.02	0.1	3.5
Chalm 2DUSGS	Modified SPLP	3.6	0.1	9250	<0.004	0.01	0.1	3.0
Blank USGS FLT	USGS FLT	<0.004	<0.04	59	<0.004	<0.0002	<0.008	<0.5
Chalm 1USGS	USGS FLT	0.02	<0.04	2435	<0.004	0.0006	<0.008	<0.5
Chalm1D-USGS	USGS FLT	0.004	<0.04	4005	<0.004	0.0008	<0.008	<0.5
Chalm2-USGS	USGS FLT	0.2	<0.04	2130	<0.004	0.002	<0.008	<0.5
Chalm2D-USGS	USGS FLT	0.8	<0.04	8000	<0.004	0.01	0.1	<0.5
Blank NEIC-TCLP	TCLP EPA-NEIC	<0.004	<0.04	72500	<0.004	0.0004	0.02	<0.5
Chalmette1-NEIC	TCLP EPA-NEIC	29	<0.04	76000	<0.004	0.003	0.1	20
Chalmette1D-NEIC	TCLP EPA-NEIC-duplicate	30	<0.04	77500	<0.004	0.004	0.1	20
Chalmette2-NEIC	TCLP EPA-NEIC	142	<0.04	74000	<0.004	0.03	0.8	1.0
Chalmette2D-NEIC	TCLP EPA-NEIC-duplicate	145	<0.04	74000	<0.004	0.03	0.8	<0.5

6b. Data recalculated as mg leached per kg of solid (wet weight) NA = not analyzed **Field ID**	**Analysis Description**	**ICPMS_LEACH** **Pb** mg/kg	**ICPMS_LEACH** **Pr** mg/kg	**ICPMS_LEACH** **Rb** mg/kg	**ICPMS_LEACH** **Sb** mg/kg	**ICPMS_LEACH** **Sc** mg/kg	**ICPMS_LEACH** **Se** mg/kg	**ICPMS_LEACH** **SiO2** mg/kg
Blank USGS TCLP	Modified TCLP	0.004	<0.0002	0.008	<0.006	<0.012	0.1	<10
Chalmette 1-USGS	Modified TCLP	0.06	0.0008	0.2	<0.006	<0.012	0.1	255
Chalmette1D-USGS	Modified TCLP	0.05	0.0006	0.2	<0.006	<0.012	0.3	220
Chalmette 2-USGS	Modified TCLP	0.2	0.004	0.3	<0.006	<0.012	0.1	440
Chalmette2D-USGS	Modified TCLP	0.2	0.003	0.2	<0.006	<0.012	0.1	425
BlkUSGS SimBrac	Simulated brackish water	0.002	<0.0002	0.2	<0.006	<0.012	1.0	<10
Chalm 1-USGS	Simulated brackish water	0.002	0.0002	0.3	<0.006	<0.012	1.1	90
Chalm 1D-USGS	Simulated brackish water	0.008	0.0002	0.3	<0.006	<0.012	1.1	75
Chalm 2-USGS	Simulated brackish water	0.004	0.0002	0.3	<0.006	<0.012	1.1	160
Chalm 2D-USGS	Simulated brackish water	0.004	<0.0002	0.3	<0.006	<0.012	1.1	155
Blank USGS SPLP	Modified SPLP	0.004	<0.0002	<0.0002	<0.006	<0.012	0.09	<10
Chalme 1-USGS	Modified SPLP	0.06	0.003	0.08	<0.006	<0.012	0.1	85
Chalme 1D-USGS	Modified SPLP	0.008	0.001	0.08	<0.006	<0.012	0.1	100
Chalmette 2USGS	Modified SPLP	0.01	0.004	0.1	<0.006	<0.012	0.2	195
Chalm 2DUSGS	Modified SPLP	0.01	0.003	0.1	<0.006	<0.012	0.1	180
Blank USGS FLT	USGS FLT	<0.001	<0.0002	<0.0002	<0.006	<0.012	0.07	<10
Chalm 1USGS	USGS FLT	0.002	0.0004	0.02	<0.006	<0.012	0.09	<10
Chalm1D-USGS	USGS FLT	0.002	0.0006	0.03	<0.006	<0.012	0.1	<10
Chalm2-USGS	USGS FLT	0.002	0.0004	0.02	<0.006	<0.012	0.07	<10
Chalm2D-USGS	USGS FLT	0.04	0.002	0.07	<0.006	<0.012	0.1	<10
Blank NEIC-TCLP	TCLP EPA-NEIC	0.004	<0.0002	0.0004	<0.006	<0.012	0.05	<10
Chalmette1-NEIC	TCLP EPA-NEIC	0.07	0.001	0.2	<0.006	<0.012	0.2	215
Chalmette1D-NEIC	TCLP EPA-NEIC-duplicate	0.07	0.001	0.2	<0.006	<0.012	0.1	245
Chalmette2-NEIC	TCLP EPA-NEIC	0.5	0.006	0.3	<0.006	<0.012	0.1	495
Chalmette2D-NEIC	TCLP EPA-NEIC-duplicate	0.5	0.006	0.3	<0.006	<0.012	0.2	470

6b. Data recalculated as mg leached per kg of solid (wet weight) NA = not analyzed Field ID	Analysis Description	ICPMS_LEACH Sm mg/kg	ICPMS_LEACH Sr mg/kg	ICPMS_LEACH Ta mg/kg	ICPMS_LEACH Tb mg/kg	ICPMS_LEACH Th mg/kg	ICPMS_LEACH Ti mg/kg	ICPMS_LEACH Tl mg/kg
Blank USGS TCLP	Modified TCLP	<0.0002	0.6	<0.0004	<0.0001	<0.004	<0.01	<0.002
Chalmette 1-USGS	Modified TCLP	0.001	6.8	<0.0004	0.0002	<0.004	0.06	<0.002
Chalmette1D-USGS	Modified TCLP	<0.0002	6.7	<0.0004	<0.0001	<0.004	0.02	<0.002
Chalmette 2-USGS	Modified TCLP	0.004	12	<0.0004	0.0008	<0.004	0.01	<0.002
Chalmette2D-USGS	Modified TCLP	0.004	10	<0.0004	0.0006	<0.004	0.04	<0.002
BlkUSGS SimBrac	Simulated brackish water	<0.0002	32	<0.0004	<0.0001	<0.004	0.1	<0.002
Chalm 1-USGS	Simulated brackish water	<0.0002	28	<0.0004	<0.0001	<0.004	0.1	<0.002
Chalm 1D-USGS	Simulated brackish water	0.002	29	0.09	<0.0001	<0.004	0.5	0.004
Chalm 2-USGS	Simulated brackish water	<0.0002	29	0.01	<0.0001	<0.004	0.3	<0.002
Chalm 2D-USGS	Simulated brackish water	<0.0002	29	<0.0004	<0.0001	<0.004	0.2	<0.002
Blank USGS SPLP	Modified SPLP	<0.0002	0.06	<0.0004	<0.0001	<0.004	0.07	<0.002
Chalme 1-USGS	Modified SPLP	0.0006	1.9	<0.0004	0.0004	<0.004	0.4	<0.002
Chalme 1D-USGS	Modified SPLP	0.0004	1.7	<0.0004	0.0001	<0.004	0.2	<0.002
Chalmette 2USGS	Modified SPLP	0.003	2.0	<0.0004	0.0002	<0.004	0.5	<0.002
Chalm 2DUSGS	Modified SPLP	0.003	2.0	<0.0004	0.0004	<0.004	0.5	<0.002
Blank USGS FLT	USGS FLT	<0.0002	<0.01	<0.0004	<0.0001	<0.004	0.04	<0.002
Chalm 1USGS	USGS FLT	<0.0002	0.5	<0.0004	<0.0001	<0.004	0.06	<0.002
Chalm1D-USGS	USGS FLT	0.0004	0.7	<0.0004	<0.0001	<0.004	0.05	<0.002
Chalm2-USGS	USGS FLT	<0.0002	0.6	<0.0004	<0.0001	<0.004	0.06	<0.002
Chalm2D-USGS	USGS FLT	0.001	1.2	<0.0004	0.0001	<0.004	0.2	<0.002
Blank NEIC-TCLP	TCLP EPA-NEIC	<0.0002	0.03	<0.0004	<0.0001	<0.004	<0.01	<0.002
Chalmette1-NEIC	TCLP EPA-NEIC	<0.0002	6.5	<0.0004	0.0001	<0.004	0.07	<0.002
Chalmette1D-NEIC	TCLP EPA-NEIC-duplicate	<0.0002	6.9	<0.0004	0.0002	<0.004	0.1	0.008
Chalmette2-NEIC	TCLP EPA-NEIC	0.01	10.6	<0.0004	0.001	<0.004	0.1	0.004
Chalmette2D-NEIC	TCLP EPA-NEIC-duplicate	0.006	10.9	<0.0004	0.001	<0.004	<0.01	0.006

6b. Data recalculated as mg leached per kg of solid (wet weight) NA = not analyzed Field ID	Analysis Description	ICPMS_LEACH Tm mg/kg	ICPMS_LEACH U mg/kg	ICPMS_LEACH V mg/kg	ICPMS_LEACH W mg/kg	ICPMS_LEACH Y mg/kg	ICPMS_LEACH Yb mg/kg	ICPMS_LEACH Zn mg/kg
Blank USGS TCLP	Modified TCLP	<0.0001	<0.002	<0.01	<0.01	0.0008	0.0006	5.7
Chalmette 1-USGS	Modified TCLP	<0.0001	<0.002	0.07	<0.01	0.004	0.0004	11
Chalmette1D-USGS	Modified TCLP	<0.0001	<0.002	0.07	<0.01	0.003	0.0006	8.9
Chalmette 2-USGS	Modified TCLP	0.0002	0.010	0.1	<0.01	0.02	0.002	23
Chalmette2D-USGS	Modified TCLP	0.0004	0.008	0.10	<0.01	0.02	0.0022	20
BlkUSGS SimBrac	Simulated brackish water	<0.0001	<0.002	0.02	<0.01	0.0006	0.0002	1.4
Chalm 1-USGS	Simulated brackish water	<0.0001	<0.002	0.02	<0.01	0.001	0.0006	4.2
Chalm 1D-USGS	Simulated brackish water	<0.0001	0.01	0.07	<0.01	0.004	<0.0001	4.2
Chalm 2-USGS	Simulated brackish water	<0.0001	0.01	0.03	<0.01	0.001	<0.0001	2.7
Chalm 2D-USGS	Simulated brackish water	<0.0001	0.01	0.02	<0.01	0.002	0.0001	2.6
Blank USGS SPLP	Modified SPLP	<0.0001	<0.002	<0.01	<0.01	<0.0002	0.0002	0.08
Chalme 1-USGS	Modified SPLP	0.0001	<0.002	0.04	<0.01	0.005	0.0008	2.0
Chalme 1D-USGS	Modified SPLP	<0.0001	<0.002	0.03	<0.01	0.002	0.0004	0.3
Chalmette 2USGS	Modified SPLP	0.0002	0.006	0.05	<0.01	0.007	0.0004	0.5
Chalm 2DUSGS	Modified SPLP	<0.0001	0.007	0.04	<0.01	0.006	0.001	0.07
Blank USGS FLT	USGS FLT	<0.0001	<0.002	<0.01	<0.01	<0.0002	<0.0001	0.08
Chalm 1USGS	USGS FLT	<0.0001	<0.002	0.01	<0.01	0.0004	<0.0001	1.4
Chalm1D-USGS	USGS FLT	<0.0001	<0.002	0.03	<0.01	0.001	0.0002	1.9
Chalm2-USGS	USGS FLT	<0.0001	<0.002	0.01	<0.01	0.001	0.0004	1.0
Chalm2D-USGS	USGS FLT	<0.0001	0.009	0.06	<0.01	0.005	0.0002	0.7
Blank NEIC-TCLP	TCLP EPA-NEIC	<0.0001	<0.002	<0.01	<0.01	<0.0002	0.0002	2.5
Chalmette1-NEIC	TCLP EPA-NEIC	<0.0001	<0.002	0.1	<0.01	0.004	0.001	7.0
Chalmette1D-NEIC	TCLP EPA-NEIC-duplicate	<0.0001	<0.002	0.1	<0.01	0.004	0.0006	6.7
Chalmette2-NEIC	TCLP EPA-NEIC	0.0004	0.02	0.05	<0.01	0.04	0.003	72
Chalmette2D-NEIC	TCLP EPA-NEIC-duplicate	0.0004	0.02	0.05	<0.01	0.04	0.002	74

6b. Data recalculated as mg leached per kg of solid (wet weight) NA = not analyzed **Field ID**	**Analysis Description**	**ICPMS_LEACH** **Zr** mg/kg
Blank USGS TCLP	Modified TCLP	<0.004
Chalmette 1-USGS	Modified TCLP	0.004
Chalmette1D-USGS	Modified TCLP	0.02
Chalmette 2-USGS	Modified TCLP	<0.004
Chalmette2D-USGS	Modified TCLP	0.01
BlkUSGS SimBrac	Simulated brackish water	<0.004
Chalm 1-USGS	Simulated brackish water	<0.004
Chalm 1D-USGS	Simulated brackish water	<0.004
Chalm 2-USGS	Simulated brackish water	<0.004
Chalm 2D-USGS	Simulated brackish water	<0.004
Blank USGS SPLP	Modified SPLP	<0.004
Chalme 1-USGS	Modified SPLP	0.008
Chalme 1D-USGS	Modified SPLP	0.006
Chalmette 2USGS	Modified SPLP	0.02
Chalm 2DUSGS	Modified SPLP	0.02
Blank USGS FLT	USGS FLT	<0.004
Chalm 1USGS	USGS FLT	<0.004
Chalm1D-USGS	USGS FLT	<0.004
Chalm2-USGS	USGS FLT	0.008
Chalm2D-USGS	USGS FLT	0.008
Blank NEIC-TCLP	TCLP EPA-NEIC	<0.004
Chalmette1-NEIC	TCLP EPA-NEIC	<0.004
Chalmette1D-NEIC	TCLP EPA-NEIC-duplicate	0.004
Chalmette2-NEIC	TCLP EPA-NEIC	0.004
Chalmette2D-NEIC	TCLP EPA-NEIC-duplicate	<0.004

Table 7. Sterol analytical results for samples Chalmette 1 and Chalmette 2, analyzed by the USGS GD Coastal and Marine Geology laboratory, Menlo Park, CA. Contact: Bob Rosenbauer, brosenbauer@usgs.gov.

Target Sterols				Concentration in sample (ug/g)*			
				Chalmette 1		Chalmette 2	
Compound	Synonym	Possible Source	Reference	wet	dry**	wet	dry**
Coprostanol	5-beta-cholestan-3-beta-ol	sewage, fecal	Chou and Liu (2004)	0.04	0.17	0.05	0.13
Epicoprostanol	5-beta-cholestan-3-alpha-ol	sewage, fecal	Chou and Liu (2004)	0.04	0.15	0.03	0.08
22-Dehydrocholesterol	cholesta-5,22E-dien-3b-ol	zoo- or phytoplankton	Jeng and Huh (2001, 2004) and references therein	0.20	0.80	0.33	0.83
Cholesterol	cholest-5-en-3-beta-ol	animals (e.g., mollusca, crustacea, zooplankton)	Jeng and Huh (2001, 2004) and references therein	1.5	6.1	2.0	4.9
Desmosterol	5,24-cholestadien-3-beta-ol	cholesterol pre-cursor	Jeng and Huh (2001, 2004) and references therein	0.80	3.2	0.69	1.7
Brassicasterol	24-methylcholesta-5,22E-dien-3-beta-ol	diatoms/dinoflagellates	Jeng and Huh (2001, 2004) and references therein	0.30	1.2	0.50	1.2
Ergosterol	24-methylcholesta-5,7,22trien-3-beta-ol	fungi/decaying plant matter	Gessner and Newell (2002)	0.14	0.57	0.26	0.64
Stigmasterol	24-ethylcholesta-5,22Edien-3-beta-ol	typically attributed to higher plants	Matsumoto et al. (2001), and references therein	1.2	4.8	1.5	3.8
beta-Sitosterol	24-ethylcholest-5-en-3-beta-ol	typically attributed to higher plants	Matsumoto et al. (2001), and references therein	2.3	9.1	5.7	14.3
Stigmastastanol	24-ethylcholestan-3-beta-ol	typically attributed to higher plants	Matsumoto et al. (2001), and references therein	2.1	8.4	1.7	4.3

*detection limit: 1 ug/ml injected or 0.01 ug/g sediment (wet)

**Based on water content: 75% (Chalmette 1) & 59.8% (Chalmette 2)

Table 8. PAH analytical results from the USGS Coastal and Marine Geology laboratory, Menlo Park, CA. Contact: Bob Rosenbauer, brosenbauer@usgs.gov

Target PAH's	Concentration in sample (ug/g)*							
	Chalmette 1			Chalmette 2				
Compound	**wet**	**dry****	**Qvalue**	**wet**	**dry****	**Qvalue**	**Carcinogenicity**	**Criteria*****
Naphthalene	0.005	0.021	15.0	0.006	0.015	15	NC	0.01
Acenaphthylene	ND	ND	NA	0.003	0.009	100	NC	0.15
Acenaphthene	ND	ND	NA	0.009	0.021	78	NC	
Fluorene	0.005	0.021	43	0.012	0.030	88	NC	0.2
Phenanthrene	0.022	0.090	100	0.056	0.14	100	NC	0.04
Anthracene	0.026	0.10	100	0.017	0.043	100	NC	0.6
Fluoranthene	0.039	0.16	100	0.16	0.40	100	NC	2
Pyrene	0.028	0.11	100	0.14	0.35	100	NC	
Benzo[a]anthracene	0.016	0.066	95	0.062	0.15	89	C	0.2
Chrysene	0.016	0.066	95	0.064	0.16	89	WC	0.2
Benzo[b]fluoranthene	0.034	0.14	71	0.092	0.23	98	C	
Benzo[k]fluoranthene	0.013	0.052	55	0.054	0.13	96	C	
Benzo[a]pyrene	0.11	0.44	96	0.075	0.19	98	SC	0.06
Indendo[1,2,3-cd]pyrene	0.016	0.062	76	0.058	0.14	93	C	
Dibenzo[a,h]anthracene	ND	ND	NA	0.016	0.041	19	C	
Benzo[ghi]perylene	0.011	0.045	76	0.041	0.10	98	NC	
2-methylnaphthalene	0.003	0.014	85	0.003	0.009	89	NC	
1-methylnaphthalene	0.004	0.017	92	0.003	0.009	98	NC	
1,5-dimethylnaphthlene	0.001	0.003	38	0.001	0.002	50	NC	
2-methylphenanthrene	0.012	0.048	98	0.060	0.15	97	NC	
3,6-dimethylphenanthrene	0.009	0.034	100	0.052	0.13	100	NC	
7,12-dimethylbenz(a)anthracene	0.002	0.007	90	0.001	0.002	1	SC	
benzo(e)pyrene	0.018	0.072	92	0.060	0.15	97	NC	
perylene	0.088	0.35	99	0.18	0.45	97	NC	

NA: Not Applicable
Qvalue: Qualifier ratio satisfaction
*detection limit: .01 ug/ml injected or 0.001 ug/g sediment (wet)
**Based on water content: 75% (Chalmette 1) & 59.8% (Chalmette 2)
Carcinogenicity: NC = non-carcinogenic; WC = weakly carcinogenic; C = carcinogenic; SC = strongly carcinogenic. (from Neff, 1979; Rugen and others, 1989; USPHS, 1990)
***recommended sediment quality criteria (ug/g dry sediment) based on 1% organic matter (proposed by Washington Dept. of Ecology, 2005)

Table 9. Aliphatic analytical results from the USGS Coastal and Marine Geology laboratory, Menlo Park, CA. Contact: Bob Rosenbauer, brosenbauer@usgs.gov

Target n-alkanes	Concentration in sample (ng/g)*			
	Chalmette 1		Chalmette 2	
compound	wet	dry**	wet	dry**
C11	62	247	ND	ND
C12	61	245	ND	ND
C13	69	277	ND	ND
C14	14	56	12	29
C15	40	162	43	107
C16	68	272	59	146
C17	374	1496	224	558
pristane	124	497	75	186
C18	142	567	81	202
phytane	118	472	91	226
C19	171	683	87	217
C20	146	584	79	196
C21	180	718	96	238
C22	147	588	67	166
C23	182	729	102	254
C24	157	629	75	186
C25	288	1152	171	424
C26	241	964	65	161
C27	709	2837	457	1137
C28	267	1067	141	351
C29	896	3586	1101	2738
C30	338	1352	334	832
C31	818	3273	1380	3432
C32	120	478	128	319
C33	363	1451	501	1247

ND: Not Detected

*detection limit: 100 ng/ml injected or 10 ng/g sediment (wet)

**Based on water content: 75% (Chalmette 1) & 59.8% (Chalmette 2)

Table 10. Forms of sulfur. Analyst- Cyrus Berry, cberry@usgs.gov

	Chalmette 1, freeze-dried from wet	Chalmette 1 wet (recalc. to dry weight)	Chalmette 2, freeze-dried from wet	Chalmette 2 wet (recalc. to dry weight)
	wt %		wt %	
Acid-volatile sulfides	0.01	0.13	0.01	0.16
Acid/H2O soluble sulfates	0.12	0.10	0.07	0.02
Disulfides	0.96	0.97	0.40	0.36
Total extractable sulfur	1.09	1.19	0.48	0.54

Table 11. Net acid production. Contact: Phil Hageman, phageman@usgs.gov. This test was developed to estimate the amount of calcium carbonate that would need to be added to a ton of sulfide-containing mine wastes to neutralize all of the acid generated by oxidation of pyrite and other sulfides (Lapakko and Lawrence, 1993)

	Chalmette 1	**Chalmette 2**
	Kg CaCO3/ton	Kg CaCO3/ton
Air-dried in hood from wet sample	31	0.1

Note: For comparison, results for Chalmette 1 are in the upper quartile of NAP for all mine wastes analyzed by this USGS laboratory.