**DEPARTMENT OF ENVIRONMENTAL QUALITY**

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February 2, 2006

Patrice Simms
Senior Project Attorney
Natural Resources Defense Council
1200 New York Avenue, NW, Suite 400
Washington, DC 20005

RE: Response to January 4, 2006, NRDC Letter

Dear Ms. Simms:

On December 9, 2005, Vice-Admiral Thad Allen, Principal Federal Official for hurricane response, along with the Louisiana Department of Environmental Quality (LDEQ) and the Louisiana Department of Health and Hospitals (LDHH) announced the release of an environmental assessment summary for areas of Jefferson, Orleans, St. Bernard, and Plaquemines parishes that were flooded as a result of Hurricanes Katrina and Rita. This environmental assessment summary was the culmination of the review of thousands of environmental samples and more than a quarter million individual analyses by an interagency work group with participants from LDEQ, LDHH, U.S. Environmental Protection Agency (EPA), Centers for Disease Control (CDC), Agency for Toxic Substances and Disease Registry (ATSDR), Occupational Safety and Health Administration (OSHA), U.S. Army Corps of Engineers (USACE), and the Federal Emergency Management Agency (FEMA). Other agencies such as the U.S. Geological Survey (USGS), the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Food and Drug Administration (FDA) also participated by providing results of their sampling efforts.

In your letter, you take issue with the findings of this workgroup based upon an apparent misunderstanding of the environmental sampling that has been conducted to date and is still ongoing, as well as an assumption that the initial environmental assessment must necessarily have followed LDEQ's Risk Evaluation/Corrective Action Program (RECAP) protocol. I will try to answer your concerns by providing some information beyond that contained in the December 9, 2005, Environmental Assessment Summary.

You should be aware that LDEQ, EPA and our partner agencies have not indicated that evaluation of the impacted area is complete. It was noted in the December 9, 2005, statement that there are areas that will require further assessment, and that there are

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ongoing investigations into the post-hurricane environmental conditions. Further efforts to evaluate the potential long-term health effects associated with these areas are ongoing.

Specific areas identified for further evaluation include, but are not limited to, the Murphy Oil release impact area, the Agriculture Street Landfill site area, and the Thompson-Hayward site area. It is important to note that some of these continued efforts are due to an abundance of caution and in response to public concern. For example, there is no data or observed conditions in the neighborhoods near the Thompson-Hayward site that would indicate possible health risks or the need for further investigation at this time. However, it is both LDEQ and EPA's plan to conduct further joint evaluations to provide as much information as necessary to allay potential fears and concerns of area residents.

As discussed below, LDEQ and our partner agencies will continue to evaluate environmental conditions in the coming months as we follow up on focused and specific areas where a limited number of exceedances of very conservative health-based standards have been observed.

The tiered approach in the evaluation of sediment/soil following the flood event in the greater New Orleans area is discussed at length below, along with a discussion of the standards to which results have been compared, their applicability and interpretation. In addition, discussions regarding the extensive efforts to evaluate post-hurricane conditions of air, floodwater, and fish/shellfish are also included for your consideration.

*Sediment/Soil*

The sediment and/or soils in the areas impacted by Katrina floodwaters were sampled and analyzed for the presence of a wide variety of chemicals. Consistent with RECAP, a tiered approach to sediment/soil evaluation is being implemented. To date, there have been two phases of sampling conducted by EPA and LDEQ, and a third phase will commence shortly. The sediment/soil data are compiled in a database that is maintained by the EPA. These data are available at http://www.epa.gov/katrina/testresults/index.html.

In order to appropriately interpret the data generated from each of the sediment/soil sampling events, it is imperative to understand the sampling approach/objective for each event. The sampling objective ultimately defines what the data represent and the appropriate use(s) of the data.

EPA Phase I Sampling. The Phase I sampling event was initiated immediately following the unwatering of flooded areas and continued until mid-October 2005. The sampling objective was to determine if the hurricane had caused chemical releases to the environment and to identify chemicals in soil or sediment that might pose an immediate health risk to emergency response personnel. To meet this objective, sampling efforts

focused on the collection of sediment most likely to be contaminated, such as sediments with stains or odors, and sediments collected in drainage paths such as curbs, storm drains, etc. Samples collected in areas where either no visible sediments were present or where only a thin film of sediment was present, may have included soil from yards (which may be representative of concentrations pre-Katrina), road and construction debris, and other material. Therefore, due to the biased sampling approach and the variable composition of the sampled material, the resulting data have limited applicability with regard to assessing long-term exposure conditions and are generally more appropriate for making decisions concerning short-term health risks and for providing direction for further sediment sampling efforts.

The results of the Phase I sampling event indicated that the sediments did not contain chemicals at concentrations that would pose an immediate health risk to those engaged in response activities. A limited number of chemicals at approximately a third of the 430 locations initially sampled exceeded conservative, long-term screening standards but, in general, were either consistent with: 1) background levels normally associated with urban areas and/or designated land uses and/or 2) acceptable risk levels. These 150 locations were identified for further evaluation and/or resampling. At 136 of these sampled locations, sediment was no longer present and no additional samples were collected. At the remaining 14 locations where sediment was still present, samples were collected. In addition, LDEQ collected an additional 23 sediment samples from the areas that were most heavily impacted by the deposition of sediment (Lakeview, Old Gentilly, Ninth Ward, New Orleans East, and St. Bernard Parish).

The results of the Phase I re-evaluation/resampling efforts verified that the chemicals present in the sediment do not pose short-term health risks to workers. In addition, the results indicate that residual chemicals present in deposited sediment are not expected to pose long-term health risks to residents returning to their homes. Those locations that had elevated chemical concentrations but were not resampled during these follow up events have been identified for further evaluation during the Phase III sampling event.

<u>EPA Phase II Sampling</u>. EPA's Phase II sampling event took place from October 29 through November 27, 2005. The objective of Phase II was to characterize the presence of chemicals in sediment remaining in residential areas most severely impacted by sediment deposition. These areas included the Ninth Ward and St. Bernard Parish (excluding the area impacted by the Murphy Oil spill, which is being evaluated separately). The sampling design focused on the characterization of sediment within defined residential exposure units/areas for the purpose of evaluating potential long-term health risks to residents.

The Phase II data indicate that residual chemical concentrations in the Ninth Ward and St. Bernard Parish are below the level of concern for short-term and long-term health risks for residential land use with the exception of a very limited number of locations in St. Bernard Parish. These locations were revisited by EPA and LDEQ earlier this month and have been identified for further evaluation during the EPA/LDEQ Phase III sampling event tentatively scheduled for later this month.

EPA/LDEQ Phase III Sampling. The Phase III sampling event will include: 1) locations where elevated chemical concentrations were detected in areas of residential land use during Phase I, Phase II, resampling, and LDEQ sampling events; 2) the Agricultural Street Landfill; and 3) the Thompson-Hayward site. Although elevated chemical concentrations have not been detected at or near the Thompson Hayward site, this location is being re-evaluated in response to concerns expressed by the public.

Arsenic concentrations detected in soil and sediment have been mentioned as a particular concern. The concentrations of arsenic detected at the vast majority of the locations sampled were below the level of concern for long-term residential exposure. Significantly elevated concentrations of arsenic were reported at a limited number of locations during the Phase I sampling event. Further evaluation of these findings indicated that these elevated concentrations were present on, or adjacent to, golf courses and are likely due to the use of MSMA (sodium methanearsonate), an herbicide commonly used on golf courses for weed control. These elevated arsenic concentrations are not accessible to the public and therefore do not pose a long-term health risk to nearby residential areas. In addition, these concentrations, as well as the concentrations of arsenic detected in soil and sediment at other locations, were below the level of concern for long-term commercial/industrial land use. Those locations having elevated arsenic levels within or near residential areas will be re-evaluated during the Phase III sampling event in order to better characterize the concentrations and distribution of arsenic in these areas and to determine the potential for exposure to soil and sediment based on land use at these locations.

Another key factor in the interpretation of the sediment data is the appropriate selection and application of health-based standards. The sediment/soil data have been screened against a range of standards including EPA Region VI screening standards, RECAP screening standards, Management Option 1 RECAP standards, and RECAP standards based on site-specific considerations. First, it is important to understand that "screening" standards are health-based standards that identify the lowest concentration of a chemical in soil that is considered to be acceptable based on the acceptable risk range defined by EPA and LDEQ RECAP. By design, screening standards are very protective standards and in many cases are based on a number of very conservative assumptions. Secondly, consistent with RECAP, health-based standards are most appropriately compared to the average concentration of a chemical in the soil – not an individual sampling result for a single

sampling location. While screening standards are commonly compared to the maximum detected concentrations, the assessment of health risk using risk-based standards is based on a comparison of the standard to the average chemical concentration. It is important to recognize that chemical concentrations in soil vary from location to location, even within a small residential area. Therefore, as a person moves about in their yard and adjacent neighborhood areas, they come into contact with a range of chemical concentrations in the soil. Because of this, the average chemical concentration is the concentration that best represents the exposure concentration, and thus, is the most appropriate concentration for comparison to the health-based standard. Simply put, no one is exposed to a single location (or single chemical concentration) in their yard for 350 days a year for 30 years. Therefore, the detection of a single chemical concentration in soil that is greater than the screening standard does not mean that health risks exist, but rather that additional evaluation of available data and/or site conditions may be indicated.

*Air*

The LDEQ and EPA have conducted extensive air sampling in the area impacted by Hurricane Katrina. This effort includes the following:

- Continuous criteria pollutant monitoring at Kenner for ozone, $NO_x$, $SO_2$, $H_2S$, CO and particulate matter;
- More than 60 volatile organic constituent (VOC) samples were collected at the Kenner site in Summa canisters and analyzed for nearly 100 toxic air pollutants;
- Data collection by EPA's mobile Trace Analysis Gas Analyzer (TAGA); and
- Collection of more than 150 samples among 18 sites using portable VOC and particulate samplers by an EPA contractor. Samples were analyzed for VOCs, particulates, and heavy metals.

The vast majority of the sample results, so far, show either no detectable concentrations of pollutants or detectable concentrations around normal ambient background levels. LDEQ and EPA scientists and toxicologists have studied the data and agree the results meet all federal and state standards. A review of PM 2.5 data shows all concentrations were well below the EPA 1-year screening levels. There were no detectable levels of lead or arsenic in any of the samples. The metals detected in some of the particulate samples included aluminum, antimony, barium, iron, and calcium. None of these metals were present at concentrations exceeding the EPA 1-year screening levels and appear to be consistent with normal clay-based dust. None of the samples had detectable levels of asbestos fibers or polycyclic aromatic hydrocarbons (PAHs).

The VOC samples and TAGA data showed a few elevated levels of pollutants immediately after the storm. Subsequent sampling indicated that the levels of pollutants have returned to pre-Katrina levels. All concentrations of the toxic air pollutants are below the EPA 1-year screening levels and below the Louisiana toxic air pollutant standards. The VOCs detected, such as benzene, toluene, ethylbenzene, xylene, hexane, and pentane, have all shown concentrations similar to the LDEQ VOC sampler at Kenner. The concentrations have been consistent with normal urban background levels for these pollutants and are well below the LDEQ ambient air toxics standards and the 1-year EPA screening levels.

In conclusion, all of the results collected so far seem to be very typical for this region of the state and are well below any levels of health concern.

*Floodwater*

Hundreds of floodwater samples were taken by the EPA and LDEQ from September 3-19, 2005. A variety of urban-related constituents were detected in the floodwater but on average, the concentrations detected were below the risk-based standards developed by EPA Region VI for dermal contact and incidental ingestion of water associated with direct contact exposure to floodwaters with very few exceptions. Bioassay testing of the floodwaters pumped from the flooded areas into Lake Pontchartrain presented no concerns for toxicity to aquatic organisms in the lake. As of October 11, 2005, the floodwaters were removed from the area and no longer serve as a source of exposure.

*Fish/Shellfish*

From October 6 to November 7, 2005, the FDA and LDEQ conducted fish and shellfish sampling in Lakes Pontchartrain and Borgne for the purpose of determining if the chemical and bacterial constituency of the area seafood was of concern and if a consumption advisory was warranted. Although the water quality data representing the New Orleans floodwaters, the outfall waters as they were pumped into Lake Pontchartrain, the ambient water of Lake Pontchartrain, and the surrounding estuaries were unremarkable, there was a perception by some that the seafood might not be safe. Therefore, confirmation of seafood safety became an important effort.

Nearly 540 tissue samples from Lakes Pontchartrain and Borgne were received by the FDA laboratories in Dauphin Island, Alabama and Atlanta, Georgia and were analyzed for more than 250 parameters including: VOCs, PCBs, pesticides, heavy metals, bacteria, and bacteriophages. The FDA Center for Food Safety and Applied Nutrition and the EPA National Fish and Wildlife Contaminant Program staff reviewed the preliminary tissue data and assessed the data according to existing agency protocols. As a result, on December 9, 2005, a multi-agency press release involving Louisiana, Mississippi and Alabama in

conjunction with federal partners was issued declaring that there was no reason for concern for the consumption of seafood caught from the hurricane affected areas. Recognizing that concerns exist regarding the long-term safety of seafood due to exposure to bio-accumulative compounds, although unsupported by water quality data, the involved state and federal agencies have expressed intent to return to the monitored waters for additional tissue sampling in 2 to 5 years.

Based on our initial assessment and the environmental data we have gathered and reviewed since, LDEQ and its partner environmental and public health agencies continue to support the statement that there are generally no unacceptable long-term health risks directly attributable to environmental contamination resulting from the two hurricanes.

I trust this response sufficiently addresses the questions and comments contained in your letter. Please contact Mr. Tom Harris at (225) 219-3393 if you have questions or need additional information.

Sincerely,

Mike D. McDaniel

Mike D. McDaniel, Ph.D.
Secretary

dcs

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