

**LCP Chemicals Superfund Site**  
**Consent Decree – Marsh – Operable Unit One**  
**Comments from the Glynn Environmental Coalition**  
**September 6, 2016**



The following comments were presented to the U.S. Assistant Attorney General concerning United States v. Honeywell International Inc. and Georgia Power Company, D.J. Ref. No. 90-11-2-1237/3, also known as the Consent Decree for the LCP Chemicals Superfund Site, Brunswick, Glynn County, Georgia, on September 6, 2016. (Assistant Attorney General Environment and Natural Resources Division, United States v. Honeywell International Inc. and Georgia Power Company. D.J. Ref. No. 90-11-2-1237/3)

For a summary of the LCP Chemicals Superfund Site Consent Decree, see:

<http://www.glynnenvironmental.org/images/stories/pdf/LCP-CD-TAR8-16-16Web.pdf>

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## **Human Health – A Failure to Protect Our Community**

### **Introduction**

The EPA has been aware of the risk to public health from the LCP Chemicals Superfund Site for at least 36 years. For the past 26 years, the EPA has been involved in an effort to complete the “Superfund” process with varying degrees of success. Throughout the process, very little effort (if any at all) has been made to protect human health. The Consent Decree continues this pattern and action is needed by the Assistant Attorney general to correct this injustice, which appears intentional and pervasive on many levels. The following comments strive to identify the problems and recommends corrective actions to be included in the Consent Decree.

### **Human Health Baseline Risk Assessment Comments, Problems Identified, and Corrective Actions**

**Comment 1.** - The only appropriate way to start the review of the Human Health Baseline Risk Assessment (HHBRA) is with the following two quotes from studies that do, unlike the EPA or the Potentially Responsible Parties (Settling Defendants), fully realize the serious and dangerous situation facing people residing around the LCP Chemicals Superfund Site, the need to evaluate the dolphin data, studies and reports; and, in particular anyone consuming seafood from the St. Simons Sound estuarine system.

“Moreover, PCB signatures in dolphin blubber closely resembled those in local preferred prey fish species, strengthening the hypothesis that inshore *T. truncatus* populations exhibit long-term fidelity to specific estuaries and making **them excellent sentinels for assessing the impact of stressors on coastal ecosystem health** (Pulster, 2008)”.

“The severity of the effects suggests that the PCB mixture to which the Georgia dolphins were exposed has **substantial toxic** potential and further studies are warranted to elucidate mechanisms **and potential impacts on other top-level predators, including humans, who regularly consume fish from the same marine waters** (Schwacke, 2011).”

When reviewing the Human Health Baseline Risk Assessment (HHBRA) it is important to keep in mind the saying “garbage in garbage out”. In case of the HHBRA, there was plenty of garbage to go around. The ramifications to Glynn County and the surrounding Brunswick community are real, serious, and have significant ramifications to the future health and welfare of the citizens of Glynn County, and anyone from the surrounding coastal Georgia Counties catching and consuming seafood from the contaminated areas. Furthermore, the area of contamination delineated appears incomplete and limiting the remedial activities to the site property boundaries could be grossly inadequate. The failure to produce a viable document is a real threat to human health. Like the Baseline Ecological Risk Assessment, what is missing from the report is more notable than what is in the report. In addition to the dismal quality of the report, the EPA has a

long history of less than competent efforts to protect human health and the environment around the LCP Chemicals Superfund site spanning the past 26 years. This indicates the EPA has never had a firm grasp on the seriousness of the problem at the LCP Chemicals Superfund Site. Further aggravating the problem is the numerous changes in s EPA Remedial Project Managers, which is not meant to reflect on the character of the Remedial Project Managers but rather another indicator of the EPA management's inability to put a lucid and comprehensive plan together for the LCP Chemicals Superfund Site and move the cleanup ahead in a timely manner.

Numerous action items were identified for the EPA to implement in the Brunswick, Glynn County community to protect people from the risks from the LCP Chemicals Superfund Site. These include, but are not limited to, the following recommendations from the Agency for Toxic Substances and Disease Registry (ATSDR, 1994, 1996, 1999, 2014):

- Raise awareness about the fishing advisories among residents and healthcare providers.
- Improve the fishing advisory signs so that they are more easily seen.
- Maintain the fishing advisory until the source of contamination is removed.
- Continue public education regarding the hazards of consuming Mercury contaminated seafood with a focus on pregnant and nursing women, children, the elderly, and those with compromised immune systems. Evaluate the feasibility of developing a fact sheet based on the Georgia DNR guidelines for eating fish from Georgia waters, specific for fishing areas in Glynn County to be made available were fishing licenses are sold.

**The EPA and the Settling Defendants (SD) have failed to fund or implement programs to raise awareness about fishing advisories among residents and healthcare providers.**

**The EPA and the SD have failed to take any action to make the fishery advisory signs so they are more easily seen.**

**The proposed \$250,000 budget in the Consent Decree for the entire Institutional Control program is grossly inadequate. The Institutional Control program should be funded at a minimum of \$250,000 PER YEAR until seafood is safe to eat for the most susceptible user groups. Due to the plan proposed in the Consent Decree NOT returning the seafood to safe levels for unlimited consumption, the Institutional Control program will likely be needed for many generations to come.**

**The EPA should implement a public screening program directed to high quantity seafood consumers with a focus on pregnant and nursing women, children, the elderly, and those with compromised immune systems.**

EPA implementation of the Institutional Controls recommended by ATSDR, WITHOUT FURTHER DELAY, is critical since institutional controls are being considered the sole method for protection of human health. The Consent Decree should clearly prioritize fully funding the Institutional Controls and implementation without further delay. The EPA's performance over the past 26 years in implementing recommendations protective of human health is very disturbing and indicates a lack of knowledge about the severity of the problem. Indications are the EPA is inept and does not have the management continuity to implement or manage a competent program of Institutional Controls. Therefore, at a minimum, the EPA should immediately make available sufficient funding for a comprehensive Institutional Control program and assure appropriate actions are implemented on the local level for as long as the threat from contaminated seafood remains.

**The Assistance Attorney General should make every effort to expedite the appropriation of funds to implement the recommendations intended to help protect human health without further delay.**

**Comment 2.** – In the LCP Chemicals Superfund Site documents, the EPA has a long history of excluding data concerning seafood consumption by African Americans and including predominantly “Caucasian data”. Predominantly African Americans live on the Brunswick Peninsula and consume seafood from the surrounding waters, which are the most contaminated by the chemicals from the LCP Site. Many of those living on the Brunswick Peninsula have incomes below the poverty level or low income and depend upon local seafood as a significant protein source. The EPA and SD have grossly understated the actual seafood consumption rates through careful exclusion of data from African American Communities.

The stated goal of the HHBRA is: The overall goal of this risk assessment is to develop essential scientific information that can be used in decision-making regarding the LCP Chemicals Site estuary in support of an evaluation of the need for remedial action.

Agency for Toxic Substances and Disease Registry (ATSDR) Public Health Assessment (PHA) found the 1999 Department of Health and Human Services (DHHS) report on seafood consumption from the turtle River area to be inappropriate for estimating risk to the African-American population in Brunswick and Glynn County Georgia. Specifically, ATSDR noted:

“And finally, it should be noted that African-Americans made up only 4% (9 out of 211) of the people who participated in the study. African-Americans make up 26% of the population of Glynn County and nearly 40% of the population within four miles of the LCP Chemicals Site. Therefore, African-Americans are underrepresented in the Brunswick fish study.

A study of fishers along the Savannah River showed that African-Americans

- Eat more fish meals per month than whites (average, 5.4 vs. 2.9),
- Eat slightly larger portions than whites (average, 13.7 oz. vs. 13.1), and
- Eat higher amounts of fish per month than whites (average, 75 ounces vs. 41 ounces).

It is reasonable to assume that the fish-eating habits of African-Americans in Brunswick, Georgia, are similar to African-Americans along the Savannah River. Therefore, African Americans who fish along the Turtle River are likely to have higher exposure to mercury from eating fish than whites. The results of the Brunswick fish study should not be applied to African Americans in the Brunswick area for those reasons.” (ATSDR, 2014a)

Notable is that the EPA’s own database found 72% the population within 1 ½ miles of the LCP site reported their race as black, or African American. In addition based on reported 1999 household income 32% reported under \$15,000, and 18% under \$25,000 (EPA, 2015).

The authors of the HHBRA put great weight in the average yearly income of the coastal Georgia residents in evaluating seafood consumption patterns. The HHBRA reports the average yearly income of coastal Georgia ZIP Codes as being \$38,193. Obviously the EPA’s own data indicates the actual income level of over 50% of the people is less than half that was what is reported in the report. The HHBRA stated:

“There were very few consumers of Striped Mullet and Spot. Census data can provide the average income per zip code. The average income of the zip codes of anglers harvesting Spot and Striped Mullet were obtained from databases maintained by the Missouri Census Data Center (MCDC, 2006). The average yearly income of the zip codes of the coastal Georgia residents harvesting Spot from 2001 to 2005 was \$35,240. The average yearly income of the zip codes of the coastal Georgia residents harvesting Striped Mullet from 2001 to 2005 was \$37,847. The average yearly income of all the coastal Georgia zip codes was \$38,193. These income values seem quite similar.”

**The EPA failed to review their own demographic data for the area around the LCP Chemicals Superfund site when reviewing the HHBRA (EPA, 2015).**

**The EPA failed to advise the authors of the HHBRA that they could find more accurate demographic data and household income data on the EPA’s website (EPA, 2015).**

It is obvious the authors of the HHBRA were struggling to find data. Even data points of a single fisherman appeared to be important to them. It is obvious the authors were struggling to find demographic data. As noted in the HHBRA:

“It is interesting to note that of the group of nine anglers who harvested Spot from 2001 through 2005, **only one came from Brunswick** (emphasis added) whereas four came from Savannah. The average zip code income of this single Brunswick angler was \$23,898. The average zip code income of the Savannah anglers ranged from \$18,830 to \$60,182. In addition, there may be income variability within a single zip code but income data for smaller areas are not available.”

And,

“It is possible that some subsistence anglers lived in the Savannah zip code in which the average income was \$18,830. However, none of these anglers were from the Brunswick area and there remains no evidence that there were subsistence anglers in the Brunswick area.”

If the authors of the HHBRA were using income as an indicator of whether fishermen were or were not subsistence anglers, 32% of people living within 1 ½ miles of the LCP Site having an annual household income of under \$15,000 would have been very significant and the only conclusion that could be made is that there are a very significant number of subsistence fishers in Brunswick, Georgia, based upon the metrics utilized in the HHBRA.

**The EPA failed to utilize the income data from their website to modify the HHBRA to indicate there’s a high likelihood of a significant numbers of subsistence (or high consumption rate) fishers within close proximity to the LCP site.**

Over and over the authors of the HHBRA utilize data from a relative small number of people. They found two Glynn County residents identifying themselves as subsistence fishers as being significant. As noted in the HHBRA:

“Appendix B of the HHBRA - Because the ATSDR/GCHD seafood survey (DHHS, 1999) included two Glynn County residents who identified themselves as "subsistence" fishers, this risk assessment included an evaluation of hypothetical high quantity consumers of fish.”

It was obvious while reading the HHBRA that the authors were going to great extent to disprove through data on income and demographics that they were not subsistence fishers. Long and detailed discussions about what was or was not a subsistence fisher filled the HHBRA. It was obvious the authors lost site of the purpose of the HHBRA and that is to establish the likely amount in seafood being consumed by the local population. Furthermore the HHBRA should utilize ecological data as an indicator of potential impacts to human health and the environment. The BERA appeared to selectively exclude data that would have provided the needed information through sentinel species such as dolphins. But the plight of the dolphins and its implication to human health and the environment is not lost on researchers in coastal Georgia (Schwacke, 2012). A great deal of research and study has been conducted on the resident dolphin population. The extremely high levels noted in the dolphins led to significant concerns about the human population consuming seafood in coastal Georgia. Sampling of nine humans did take place in the area of Sapelo Island and the results were reported to the personnel from stakeholder agencies and the EPA Remedial Project Managers working on the LCP Chemicals Superfund Site (ATSDR, 2014b). **Without doubt the presentation was about the LCP Site since it specifically mentioned the LCP Site 25 times.** Also notable is the authors of the HHBRA use the same dolphins studies that were used to link the PCBs found in humans to the LCP Site to define Aroclor 1268 (Pulster, 2005; Pulster 2008). Actually, the studies quoted by the HHBRA authors unequivocally identified the chemical signature as being linked with the LCP site and noted this potential to harm human health and the environment.

“Legacy organochlorine (OC) contaminants continue to pose a **potential risk to ecological and human health in coastal aquatic ecosystems of the southeastern United States.**” (Pulster, 2005)

The September 3, 2014 presentation, *Polychlorinated Biphenyls (PCBs) in Georgia Coastal Environments and Populations*, did provided helpful information about the quantities of fish consumed in coastal Georgia. Based upon the surveyed fishermen, the appropriate annual number of seafood meals to be utilized for calculations in the HHBRA would be 156 (3 meals per week X 52 weeks = 156 meals per year) rather than the 40 utilized for risk-based calculations in the HHBRA. Notable is the 8 of the people sampled were from a community of 195 people and represent over 4% of the population. The high consumption consumer might exceed 156 meals per year and the EPA should consider a greater number of meals per year than 156. **Notable is 6, or 67%, were African American. The EPA excluded this very important data from the LCP Chemicals Superfund Site Administrative Record, even though they were in attendance at the September 3, 2014 presentation concerning the impact of the Site on seafood consumers.**

**The EPA failed to set the annual number of seafood meals consumed by the high quantity consumer at 156 or higher.**



**The EPA failed to increase the size of the meal to reflect those consumed by African-Americans as reported in the Public Health Assessment (ATSDR, 2014a).**

**Comment 3.** – The HHBRA fails to accurately describe the actual preparation of seafood in coastal Georgia. Repeatedly, the seafood samples have been prepared to remove the fatty parts where the most chemical contamination is present. In other words, the data represents the best case scenario and not the real world situation where the Site and local seafood consumers reside. **The combination of low-balling the seafood consumption rates and sample preparation to produce results with lower levels of contaminants than actually consumed results in a very significant understating of risk to seafood consumers.**

As noted in a real world survey of coastal Georgia fish consumers, the following consumption habits were documented (ATSDR, 2014b). The actual seafood consumption habits are far different than the assumptions used in calculating risk, which were based upon filets only, and did not consider fish egg (roe) consumption. Actual consumption patterns were:

- Filet with skin removed -11%
- Filet with skin on – 33%
- Whole fish (gutted) – 56%
- Whole fish (not gutted) – 11%
- Fish eggs – 44%

An effort should be made to obtain and include in the Administrative Record the sampling results, and the reported high and low level of total PCBs observed, from the nine sampled human subjects (ATSDR, 2014b). The numerical total PCB data in conjunction with the total PCB data from fish and shellfish could be utilized to better set maximum health-based remedial action goals. Good data is critical to accurate assessments through the calculations used to determine risk and set remedial action goals protective of human health and the environment.

### **In Closing**

The risk to human health from the LCP Chemicals Superfund Site has been grossly understated. The Assistant Attorney general should be as concerned as we are about the exclusion of African American data from the Administrative Record and the implications to the protection of public health. A robust program to raise community awareness about the extent and severity of the seafood contamination should be implemented without further delay and funded to an appropriate level.

# Feasibility Study – Don’t Look Behind the Curtain

## Introduction

The Assistant Attorney General and the United States Department of Justice (DOJ) should reject the proposed Consent Decree because the Remedial Investigation and Feasibility Study (RI/FS) have NOT been completed. Furthermore, the DOJ should recommend the completion of the RI/FS and the subsequent Remedial Design and Remedial Action be conducted by a competent contractor, and without any further delay.

## Feasibility Study Comment, Questions, and Recommendations

**Comment 1.** - The Feasibility Study (FS) cannot be fully evaluated for a number of reasons. Most frequently, there was an insufficient amount of information or the technologies previously identified for consideration by the stakeholder agencies were not carried through the FS evaluation process. Much of the data utilized over the 26 years the FS was produced became outdated or otherwise discredited. More current data was produced about the state and condition of the ecosystem, cultural seafood consumption preferences, and demographics of the populations most impacted from the Site. To a large extent, the current data was not incorporated into the LCP site documents, and therefore not utilized in the FS. The FS became dated, lost continuity of process over the extended number of years, and otherwise became disconnected with the realities of Site conditions and the surrounding community.

Significant deficiencies identified in the FS were:

- The seafood consumption data underlying risk calculations was discredited by ATSDR and new data became available to evaluate human exposure to Site COCs (ATSDR, 2014a; ATSDR, 2014b). The appropriate meals per year number appear to be closer to 156 than the 40 previously used. The assumption that people consume only the fish filet has been proven to be wrong, also. The recalculation of risk and cleanup goals could significantly change the scope of work and the technologies considered for remediation.

- Dioxin and furan chemicals were not tested for, nor did the LCP Site documents include available data. Without inclusion of the dioxin and furan data, an accurate risk assessment and remedial action plan cannot be completed. It appears the FS is based upon assumptions and not data concerning dioxin and furan, and ignores these chemicals would be additive to the cancer and non-cancer risks associated with PCBs due to the similar structure of the molecules and similar modes of action. Without the dioxin and furan data, the risk calculations can only be assumed to grossly understate the actual risks. Furthermore, with the addition of the observation that toxicity tests found unexplained levels of toxicity in the sediments, the incompleteness of the Chemicals of Concern (COC) list might extend beyond dioxin and furans. At a minimum, the cleanup should be driven by the observed toxicity (empirical data) and not the modeling data. Empirical data always trumps modeling data. Modeling data should always be compared with the empirical data to assure the model holds up to real world conditions at the Site. When sampling

and analysis fail to identify the toxic compounds, the observed toxicity should drive the remedial decision-making. **Notable is the Consent Decree Statement of Work proposes to complete the Remedial Investigation (RI) (dioxin sampling) and the Feasibility Study (FS) (geophysical properties of the marsh soils, thin cap feasibility test plot...) after the finalizing the Consent Decree. The SDs wants to finalize the proposed Remedial Design (RD) and Remedial Action (RA) before completion of the Remedial Investigation and Feasibility Study. The proposed completion of the RI/FS without a defined timeline or evaluation criteria will delay the RD and RA indefinitely. The U.S. Department of Justice should consider that it has taken the SDs 26 years to produce an incomplete RI/FS.**

- Technologies utilizing coffer dams, sheet piling, or other methods of confining sediments during remedial activities were not evaluated, even though the stakeholder agencies had identified these as preferred (NOAA, 2000). Furthermore, utilizing a containment structure and dry excavation method would have resulted in very significant changes in the approach to the remediation. 1.) Remedial Action mobilization and access to the marsh would have been from the uplands. 2.) “Marsh Disturbance Beyond Remedy (acres)” would have been minimized, as would the potential to re-suspend COCs and distribute throughout the marsh or remediated areas. 3.) The project could be accessed from a single access point and single decontamination of equipment point established. 4.) Technologies using other than dredging could have been evaluated and implemented. Notable is coffer dams were previously used at the LCP Site during the EPA Emergency Response and Removal. The proposed remedial activities adjacent to the existing coffer dams can be accessed from these previously remediated areas, and new temporary coffer dam structure could be built off of the existing structures.

- Areas identified as Marsh Disturbance Beyond Remedy (acres)” were not described in the FS. While the authors of the FS argue minimal disturbance is needed to preserve the marsh ecosystem, the technologies selected and the methods of implementation are prone to marsh disturbance, and all proposed remedies “disturb” more acreage than is being remediated. Significant potential to disturbed Chemicals of Concern (COC) contaminated sediments exists but could not be evaluated due to these areas not being identified.

- The source areas were not sufficiently described and significant data gaps were evident, including but not limited to the following:

- Spartina was not analyzed, investigated, or evaluated as a source of COCs in the marsh. Spartina is the base of the marsh food chain, known to bioaccumulate COCs present from the LCP Site, and appears to be intentionally avoided for remediation. Therefore, the FS appeared to be “fatally flawed” and detached from the realities of a Spartina-based marsh ecosystem.

- The depth of sediment samples was less than the expected depth of COCs in the marsh. It appeared the sampling was conducted with a maximum remedial depth already determined. **The Site sampling should provide information for the selection of a remedial method instead of supporting a predetermined remedy. Repeatedly, stakeholders commented about the sampling depth being insufficient to evaluate remedies.**

- The depth of bioturbation was not accurately described or quantified. The authors of the FS did not appear to grasp the importance of knowing and identifying the biota causing bioturbation, the depth of disturbance, and the quantity of sediment brought to the surface on

an annual basis. Particularly with remedies considering capping, fully quantifying bioturbation and the potential impact to the remedy is crucial. The lack of any such evaluation of bioturbation strains the credibility of the FS and questions the FS authors understanding of a Spartina-based marsh ecosystem inhabited by excavating/burrowing biota such as fiddler crabs.

- Keystone ecological species are missing from the documents used to develop the FS. These include mink, dolphin, manatee, and diamondback terrapin. Notable is the large volume of data available on the resident and transient dolphin population, which is conspicuously missing from the FS decision-making process (Balmer, 2011; Balmer, 2013a; Balmer, 2013b; Hart, 2012; Hickie, 2013; NOAA, 2013; Pulster, 2005; Pulster, 2008; Schwacke, 2012). The LCP Site documents utilize the dolphin data to argue for sampling and analysis of only Aroclor 1268 with the dolphin studies, but failed to also realize the ecological impact or include this data in the BERA. The selective nature of data usage throughout all the documents supporting the FS is very noticeable.

- **Noticeable is the FS and Consent Decree do NOT contain measurable goals for assessing the recovery of the eco-system or a timeline to take goal measurements and conduct evaluations.** Even more noticeable is the exclusion of the keystone species by which a remedial action would be assessed and the recovery measured. These species include mink, diamondback terrapin, and dolphin, and would cover mammal marine mammal, and reptile. An avian and herbivore indicator species should also be included. A full suite of seafood species should be analyzed on an annual basis, and whole, filet samples of juvenile and adult specimens collected and analyzed for all COCs. Dioxin and furan should be analyzed routinely at every sampling event and included on the COCs list.

- The FS and Consent Decree do NOT identify actions to implement if the remedy fails to meet remedial goals on a set timeline. There is a three-part problem:

1. No measurable goals for the remedial action.
2. No timeline or measurement metrics for evaluating the remedial action.
3. No identified actions to be implemented if the remedial goals are not met by a specific date.

### **In Closing**

**There were other indications the authors of the FS were significantly disconnected from the realities of the LCP Site, the conditions present on and around the Site, and in the community. These “disconnects” have the potential to be a significant threat to public health, and should not be taken lightly by the EPA, U.S. Department of Justice, or the community. When those charged with a cleanup upon which the public health and welfare is dependent show a profound lack of understanding of the situation, the EPA should move quickly and decisively to remove remedial activities from the Potential Responsible Parties and into the hands of a competent contractor. Furthermore, the EPA should order the contractor to move ahead with all due diligence and speed.**

**The SDs has publicly stated that they believe no action is needed at the Site. The proposed Consent Decree and Statement of Work appear to assure no meaningful action will ever**

**take place at the Site, which will leave human health, the environment, and local economy at risk for an indeterminable period of time. It is incumbent upon the U.S Department of Justice to assure the interests of the community are a factor when considering the Consent Decree.**

## Marsh – Understanding How it Works – or Ignoring

### Introduction

The failure of the Settling Defendants (SDs) to demonstrate an understanding of the ecological importance of Cordgrass (*Spartina Alterniflora*), also known as Spartina, epitomizes the problems encountered in obtaining a lucid and comprehensive cleanup plan for the LCP Chemicals Superfund Site (Site). A cleanup in the marsh should look at the marsh, or so one would think. In the planning for the cleanup of this site, the most basic information about the area to be cleaned has been ignored. Most troubling is the demonstrated lack of understanding about how cordgrass moves and otherwise mobilizes and transports the Chemicals of Concerns (COC) to the surface and throughout the ecosystem. The observed lack of data or study of the marsh, and Cordgrass (*Spartina Alterniflora*) in particular, might be an indication of intent to exclude removal as a remedial option prior to the Remedial Investigation (RI) and Feasibility Study (FS).

### Cordgrass (*Spartina alterniflora*) Comments, Problems Identified, and Corrective Actions

**Comment 1.** - The Baseline Ecological Risk Assessment (BERA) recognized Spartina as key to the functioning of the estuarine system, and the burden of Chemicals of Potential Concern (COPCs) were higher than biota at reference stations. Literature identifies Spartina as the base of the nutrient sharing system, and as such a key component to all life cycles in the estuarine system. Also noted was the Site is primarily vegetated with Spartina, which is also known as cordgrass and marsh grass.

The BERA fails to identify why the marsh ecosystem is important, and in particular the nutrient transport system with *Spartina alterniflora* as the key species.

**The BERA fails to describe the marsh ecosystem in a manner that shows an understanding and knowledge about the movement of nutrients and Chemicals of Concern (COCs) within the ecosystem.**

**In the entire 1002 page BERA, is *Spartina alterniflora* detritus potential to transport COCs not mention even once.**

**Spartina was identified as an initial vector for mobilization of sediment bound chlorinated hydrocarbons, such as PCBs, into the estuarine food chain (Mrozek, 1982).**

**Studies show Spartina to be a key factor in bioaccumulation of PCB in detritus and an important means of entry for this pollutant into estuarine food webs (Marinucci, 1982).**

**Comment 2.** - The LCP Marsh Remedial Investigation reported:

“Sorption to organic carbon is the primary mechanism controlling the mobility and bioavailability of PCBs and PAHs in sediment, and also one of several mechanisms affecting bioavailability of divalent metals, including lead and mercury. Organic carbon is abundant in marsh habitat (e.g., detritus within the *Spartina* mud flats and dissolved organic carbon (DOC) from plant exudates, specifically fulvic and humic acids within the root zone of sediments). Sorption to soot, pitch, coke, and other black carbon forms can greatly decrease bioavailability of many hydrophobic organic compounds compared to amorphous organic carbon (Cornelissen et al., 2005).”

The statement from the LCP Marsh Remedial Investigation indicates the authors understood the importance of *Spartina* to bioaccumulation up the food chain, transport of COCs throughout the ecosystem, and movement through the food web. Glaring absent was sampling of all parts of the *Spartina* plant during the remedial investigation. Scientific literature noted a differentiation between the root rhizome, stem, and leaves and *Spartina*'s ability to bioaccumulate PCBs. As noted in *Sustainable Development in the Southeastern Coastal Zone* noted PCBs at .33 ppm in *Spartina* shoots, 2.80 ppm in roots (Army Corps of Engineers). **The very limited sampling of *Spartina*, and limiting sampling to only a section 15 centimeters above the sediments, would fail to fully characterize COCs throughout the *Spartina* plant.**

### Cordgrass (*Spartina*) and Mercury

**Comment 3.** - The Baseline Ecological Risk Assessment (BERA) noted:

“Cordgrass (*Spartina alterniflora*) was characterized by concentrations of total mercury that ranged from a mean of 0.02 mg/kg (dw) in the Purvis Creek area to a mean of 0.147 mg/kg (dw) in the Main Canal area vs. 0.005 mg/kg in the Troup Creek reference location (Table 4-6a). Methylmercury frequently could not be detected in cordgrass and, when detected, averaged just 9.93 percent of concentration of total mercury (Appendix F).”

Like with PCBs, BERA limit testing for mercury to a section of the leaf 15 cm above the sediment. *Spartina* testing most frequently and routinely sample the root, rhizome, stem, leaf, and detritus due to the selective bioaccumulation noted with *Spartina* (Mrozek, 1982; Windham, 2001). **The Remedial Investigation does not articulate the decision-making process used to limit sampling to just a small section of the leaf, which is know from literature to be the part of the plant with the least bioaccumulation potential.** Furthermore, the BERA authors did not appear to show awareness about the seasonal *Spartina* biomass fluctuations. In the fall, the root-rhizome material makes up 78% of the total live biomass and by spring this decreases to 53% (Schubauer and Hopkinson 1984).

Considering the objective was a BERA, the authors did not explain why they failed to consider the Manatee. The Manatee grazes on the *Spartina* in the LCP Site area. It is unknown why the SDs did NOT consult stakeholder agencies such as the National Oceanographic and Atmospheric Association (NOAA) or U.S. Fish and Wildlife consulted before the *Spartina* sampling plan was limited to just the leaf 15 cm above the sediment.

It is unknown why the BERA did NOT consider the potential for Spartina to bioaccumulate metals like mercury from sediment and excrete them from the leaf (Weis, 2003; Windham, 2001). Known biotransport by Spartina is notably missing throughout Site documents. At a minimum, the implications of Spartina growing on top of mercury contaminated sediments should be evaluated and incorporated into the decision-making for the proposed remedies. The BERA could have easily examined mercury transport via Spartina (Weise, 2003; Windham, 2001). Notable is the BERA fails to mention the same Spartina glands that excrete salt do excrete mercury. **Removing Spartina from mercury contaminated sediments would result in less transport from sediments into the ecosystem.**

**The U.S. Department of Justice should demand an explanation for the reasoning in the BERA to exclude this critical fact about the excretion and bioaccumulation properties of Spartina. The exclusion of critical information about Spartina biotransport and bioaccumulation appears to be solely for the purpose of furthering the decision to leave the contamination in place and argue against remedies with removal components.**

**Comment 4.** – Failure to including mercury excretion along with salt from Spartina leaves could be interpreted by a reasonable individual as the selective use of data or the censorship of data. The U.S. Department of Justice should demand an EPA explanation for such a critical piece of information, such as mercury excretion, being excluded from the BERA. **In addition, how the exclusion of mercury excretion data impacted the risk calculations used to develop the Feasibility Study should be evaluated.**

#### **Cordgrass (*Spartina*) and Aroclor 1268**

**Comment 5.** - The Baseline Ecological Risk Assessment (BERA) noted:

Aroclor 1268 concentrations in cordgrass from the Site ranged from a mean of 0.096 to 0.261 mg/kg, in comparison to 0.0134 mg/kg at the reference location. The maximum concentration of 0.614 mg/kg occurred in Domain 1 at the AB Seep Location.

The BERA appears focused on Aroclor 1268 even though the following Aroclors were also found at the LCP Site – Aroclor 1016, Aroclor 1221, Aroclor 1248, Aroclor 1254, and Aroclor 1260 (ATSDR, 2014a). The PCB congeners found in Aroclor 1016, Aroclor 1221, Aroclor 1248, Aroclor 1254, Aroclor 1260, and Aroclor 1268 include those with dioxin and furan properties. The BERA does not explain why the Spartina PCB analysis was limited to just Aroclor 1268. Failure to analyze all PCB congeners in Spartina resulted NO non-dioxin-like and dioxin-like effects of the specific PCB congeners analysis in the BERA, and only a general Aroclor 1268 analysis was conducted. Again, it should be noted the results were from Spartina samples collected 15 cm above the sediment, which is NOT the normal Spartina sampling protocol.

**Comment 6.** - “The BERA limited Chemical of Concern (COCs) in Spartina (sp.) were limited to three - Mercury, Aroclor 1268, and lead.”



**The only reason limit the COCs examined in Spartina is to produce data in support of a Feasibility Study and Remedial Action that would NOT consider removal of the source of contamination. The U.S. Department of Justice should NOT accept such blatant conduct by the SDs.**

### **In Closing**

**The Spartina alterniflora nutrient recycling system, critical to the estuarine marsh system, is notably missing from the BERA.** The BERA is devoid of any discussion about the PCB bioaccumulation properties of Spartina in marsh environments. The BERA is devoid of any discussion about the mercury biotransportation properties of Spartina in marsh environments. The potential for Spartina to be a significant reservoir of PCBs in the environment has not been identified or quantified, which would be a major factor in the FS to identify areas for removal and determining total PCB and mercury mass calculation. As a major, if not the most primary and basic mechanism for transporting PCB and mercury to biota at the base of the food chain, the lack of any information in the BERA is a glaring shortcoming in the report. **Failure to be cognoscente of the potential for Spartina to bioaccumulate PCBs and mercury and incorporate them into the base of the food chair raises doubts about the technical expertise of the authors of the BERA work plan, or points to development of a work plan design to produce predictable results with the intent to under report actual levels of COCs.** Regardless of the reason or intent, the fact remains that a major flaw in the BERA needs to be rectified. The U.S. Department of Justice should rectify the situation by hiring a competent contractor to complete the Baseline Ecological Risk Assessment properly.

## Fiddler Crabs – Small Things Can Make a Big Difference

### Introduction

Small things can make a big difference. In this case, the small things are Fiddler Crabs. One or two would not make a big difference to the cleanup of the LCP Chemicals Superfund Site marsh. But when there are 200 per square meter excavating borrows to a depth of 36 inches, the amount of sediment brought to the surface is significant and can impact a proposed remedy. When we raised the issue of Fiddler Crabs borrowing through the proposed 5 inch thin capping material purportedly designed to isolate the contamination and keep it out of the environment and ecosystem, the subject was changed to dilution of the contamination. Let's look at this argument about dilution. Five inches of thin cap and 36 inches of contaminated sediments is  $5/36 = 13.9\%$  dilution.

The implications of active bioturbation by Fiddler Crabs and other estuarine organisms must be considered as part of the Consent Decree process. The proposed Remedial Action appears to be doomed for outright failure or at least significant under performance when subjected to real world conditions. Notable is the Consent Decree calls for a demonstration, or test, of the thin cap. The proposed demonstration does not have evaluation criteria or indicate how long the evaluation will take place. Unknown is why this experiment was not conducted during the 26 year period the Feasibility Study was under development. Failure to do so underscore the point that the Consent Decree is premature and the Remedial Investigation (RI) and Feasibility Study (FS) remain incomplete.

### Fiddler Crabs (*Uca minax* or red-jointed, *Uca pugnax* or mud fiddler, *Uca pugilator* or sand fiddler)

**Comment 1.** - “The greatest mean number of crabs, 196 individuals / m<sup>2</sup> of substrate, was reported in a habitat characterized by medium-sized *Spartina* (0.5 -1.49 m in height), while 176 and 94 individuals / m<sup>2</sup> were observed, respectively, in short *Spartina* (<0.5 m tall) and on essentially barren substrate (absence of vegetation).”

Notable is the Baseline Ecological Risk Assessment (BERA) limited reporting of PCBs in fiddler crabs to Aroclor 1268 (BERA, pg. S-5). The BERA does not explain the reasoning for this limited analysis. Since fiddler crabs are near the base of the food chain, this data would have been very helpful in describing transport of Chemicals of Concern (COCs). The BERA report found fiddler crabs present in large numbers (200 young and adult crabs per square meter) in a relative pristine marsh, but did not quantify the amount of sediment brought to the surface on an annual basis. The lack of reasoning for exclusion of this critical data is glaring. Numerical quantification of the bioturbation is needed prior to approval of any capping remedial remedies.

**Comment 2.** - The BERA does not explain why Fiddler Crabs were sampled at a location previously remediated (BERA, Pg. 55). The data would NOT be appropriate for use in

evaluating areas to be remediated. This data raises questions about BERA data concerning fiddler crab abundance biased by sampling in a previously remediated area. Another example of a concern is encountering of the membrane at 40 cm being used to infer the minimum depth of the fiddler crab burrows are 15.75 inches (BERA, pg. 55). Even when the BERA stated “these burrows, which often extend to 2 ft in depth . . . (BERA, pg. E-2), the implications to the proposed remedy were not explored or quantified. The implications of sediment excavation activity (bioturbation) by fiddler crabs to remedies involving placement of capping material over the marsh must be quantified in order to consider capping remedies. The Consent Decree should be rejected until the Feasibility Study is completed.

### **In Closing**

Small things like fiddler crabs do matter. The quantity of sediment brought to the surface annually by over 200 fiddler crabs per square meter needs to be quantified in order to evaluate any remedy considering capping over the contaminated marsh sediments. In addition, the quantity of sediment brought to the surface annually by the remaining biota (other than fiddler crabs) should be quantified. **There should be a reasonable expectation that the proposed remedy will work. At this time, there is insufficient information to conclude the remedy will succeed. To the contrary, the remedy is likely to fail due to bioturbation bringing contaminated sediments back to the marsh surface.**

## **Dolphins – Sick and Seeking Help**

### **Introduction**

The lack of any information concerning the resident dolphin (*Tursiops truncatus*) population in Turtle River and coastal Georgia is a glaring omission from the Baseline Ecological Risk Assessment (BERA) for the LCP Chemicals Superfund Site. This omission is so glaring as to question the motives of the authors of the BERA. At a minimum, the omission of dolphin data seriously undermines the integrity of the documents underpinning the Consent Decree. Since at least 2004, it has been known that the coastal Georgia dolphin population is grossly contaminated and this fact has been well documented in peer reviewed journal articles by the stakeholder agencies. Furthermore stakeholder agencies have collected samples from the resident dolphin population, analyzed the samples, and have even conducted health assessments on the dolphin population. But the authors of the BERA have chosen to ignore this wealth of data.

Dolphins are called a sentinel species since they are a good indicator of what can happen to people and since people eat the same seafood as dolphins. The severity of the effects observed in dolphins suggests that the PCP mixture to which the Georgia dolphins are exposed has substantial toxic to potential impacts of other top-level predators, including humans, who regularly consume fish from the same marine waters. The implications of the dolphin observations and data to human health and integrity of the Consent Decree should not be ignored.

### **Dolphin Data - Comments, Problems Identified, and Corrective Actions**

**Comment 1.** - At a minimum, the U.S. Department of Justice should seek an explanation for the exclusion of the dolphin data from the BERA. Furthermore, determine if or why the EPA failed to communicate with the stakeholder agencies, including the Georgia Department of Natural Resources, the National Oceanic and Atmospheric Administration, and the US Fish and Wildlife Service concerning the dolphin sampling and analysis.

The EPA appears oblivious to the fact that the same people that were producing data on the LCP Chemicals Superfund site were also doing sampling and analysis on the resident dolphin

population for PCBs associated with the LCP Chemicals Superfund Site. Notable is that these people and stakeholder agencies that were sampling the dolphins and producing peer reviewed journal articles had also worked with EPA On-Scene Coordinators at the LCP Chemicals Superfund Site. It stretches the imagination to think that the EPA was not aware of the gross contamination in the resident dolphin population.

**Comment 2.** - Inshore resident dolphin (*Tursiops truncatus*) populations exhibit long-term fidelity to specific estuaries and make them excellent sentinels for assessing the impact of stressors on coastal ecosystem health (Pulster, 2008). It is not surprising that the implications to human health were obvious to those studying the dolphins and they questioned the impact to the people who regularly and habitually consumed fish from the same waters (Schwacke, 2012).

The plight of the dolphins in Turtle River has been known since at least 2004. It was noted in the PCB levels were 10 times higher than those noted in the Savannah area dolphins (Pulster, 2008). Literature reports 102 bottlenose dolphin blubber samples being analyzed from animals in Georgia (Balmer, 2011). The researchers noted that the levels of PCBs in the dolphins are associated with a point source near Brunswick, Georgia or the LCP Chemicals Superfund site. The study was robust and photo identification was used to identify individual dolphins. Also noted were that the male dolphins in Turtle River had the highest concentrations of PCBs reported for any marine mammal, worldwide. The Aroclor 1268 levels were noted to be highest in the Brunswick, Georgia area and decreasing with distance (Balmer, 2011).

The dolphins in the Turtle River estuary system were given a physical examination in addition to being sampled for levels of PCBs. The result of the examination was the identification of anemia, hypothyroidism, and immune suppression associated with PCB exposure (Schwacke, 2012). A high proportion of the sampled dolphins suffer from anemia (26%), which is a finding previously reported being observed with Aroclor 1254. Furthermore, the dolphins showed reduced thyroid hormone levels which were negatively correlated with PCB concentrations measured in the blubber. There was a correlation between immunity decrease and blubber PCB concentrations, which is suspected to increase susceptibility to infection and disease. Contrary to the assertions of the Potentially Responsible Parties that Aroclor 1268 is less toxic than other forms of PCBs, the re-researchers found the PCB mixture dolphins were exposed have substantial toxic potential and potential impacts on other top-level predators. Humans were identified as one of those other top-level predators consuming the same as fish species from the same estuary (Schwacke, 2012). **The significance of this empirical evidence and implications to human health appears to have been ignored by the EPA. At a minimum, the EPA has not**

**conducted due diligence by conducting a basic literature search for the Superfund Site name for data and studies pertinent to the Site and the EPA decision-making process.**

The other notable impacts to the dolphins in Georgia coastal waters were skin disease and specifically lesions. Again, the Brunswick, Georgia site was found to have the highest incidence of skin lesions in bottlenose dolphins when compared to Sapelo Island, Georgia and Sarasota Bay, Florida (Hart, 2012).

The dolphins in the Turtle River estuary having the highest PCB concentrations observed in any marine mammal has raised considerable concern for both the dolphins and humans consuming seafood from this region of the Georgia coast. Dolphin densities were compared for the Brunswick Georgia area and the Sapelo Island area. The researchers noted that dolphin density in total abundance were statistically higher in the Sapelo Island area than in Brunswick. Furthermore, anthropogenic stressors were identified as an important factor and potentially the cause of the differences in abundance density and habitat use observed (Balmer, 2013).

**Comment 3.** - Research was done to establish the level of PCBs in fish that would result in tissue levels below the health effects threshold in dolphins. The model developed estimated that a dietary PCB concentration that did not exceed 5.1 ng/g (parts per billion or ppb) would be required to be protective of 95% of the dolphin population (Hickie, 2013). Very notable is how close the proposed maximum dietary PCB concentration is to the level that is protective of human health and the high quantity seafood consumer.

The Consent Decree should establish a numerical cleanup goal for the cleanup of the LCP Chemicals Superfund Site that will protect human and wildlife receptors. The target level protective of human health and the local dolphin population is known and should be included in the Consent Decree.

**Comment 4.** - Notable is dolphin studies were not included in the BERA but were utilized in the Human Health Baseline Risk Assessment (HHBRA) to argue the Aroclor 1268 at the LCP Site is distinct and recognizable (Pulster, 2005; Pulster 2008).

As noted in the HHBRA:

“Polychlorinated Biphenyl (PCB) homologue analysis of sediment and biota were presented in Kannan et al. (1997) and Kannan et al. (1998). The homologue proportions are substantially similar to the proportions in Aroclor 1268. More recent work indicates the same conclusions (Sajwan et al., 2008; Cumbee et al., 2008; **Pulster and Maruya, 2008; Pulster et al., 2005).**”

The rationale for inclusion of the dolphin studies in the Human Health Baseline Risk Assessment (HHBRA) to argue for only Aroclor 1268 sampling and not including them in the BERA appears deliberate. The documents underpinning the Consent Decree should not “pick and choose” selective sections of data from studies and then exclude other crucial information from the Administrative Record.

**Comment 5.** – The U.S. Department of Justice should mandate that EPA Region 4 utilize all the dolphins studies identified in these comments and the corresponding references to formulate Remedial Action levels protective of the resident dolphin population and local human seafood consumers. The HHBRA discusses using the dolphin data in the rationalizing for limiting sampling to Aroclor 1268 while failing to be cognoscente of the implication of the same data to human health (Pulster, 2005; Pulster, 2008).

**Comment 6.** – The observations of sickness and world record levels of PCBs in coastal Georgia dolphins and the implications to human health led to a study of human seafood consumers on Sapelo Island. The Agency for Toxic Substance and Disease Registry (ATSDR) compared and contrasted total PCBs in fish between the Brunswick Georgia and Sapelo Island area (ATSDR, 2014b). The study’s purpose was to “Compare results in people with what is known about dolphins” (ATSDR, 2014b). ATSDR understood what is known about dolphins could be utilized to predict impacts to people eating the same fish species. ATSDR reported, “We did find that human and dolphin specimens contain qualitatively similar environmental contaminants”. The dolphin data is very important to understanding chemical exposure to people consuming local seafood contaminated by releases from the LCP Chemicals Superfund Site.

### **In Closing**

The U.S. Department of Justice should NOT take lightly the exclusion of critical data from the LCP Chemicals Superfund Site Administrative Record. The amount of reduction in contaminants

in seafood eaten by people and dolphins is known and should be made a goal clearly established in the Consent Decree. Failure to establish clear goals will result in a failure to protect human health and ecological resources important to the health and economic wellbeing of coastal Georgia.



## **Toxic Seafood – How to Let People Know**

### **Introduction**

The Consent Decree identifies Institutional Controls and the basic components but fails to provide sufficient funding for this program intended to protect human health. The purpose of these comments is to provide further details for an Institutional Control program and estimate the funding requirements. Due to the current Consent Decree favoring leaving the contaminated marsh and estuary in place and conducting a very limited Remedial Action, the Institutional Control Program will likely need to be in place for several generations, or a minimum of 60 years. The Consent Decree puts great weight upon Institutional Controls to protect human health. Therefore, the program should be fully described, adequately funded, and implemented with all due speed and diligence.

### **Institutional Controls - Comments, Problems Identified, and Corrective Actions**

**Comment 1.** - Contamination from LCP Chemical Superfund Site has been identified for institutional controls as a significant part of their strategy for protection of human health from exposure to contaminated seafood. The U. S. Environmental Protection Agency (EPA) has identified the GA-EPD as the agency responsible for issuing the seafood consumption guidelines and implementing these Superfund Site mandated institutional controls to protect people fishing and consuming seafood from the advisory areas in Glynn County.

The GA-EPD is funded to issue seafood advisories but does not have the budget to collect and analyze seafood samples or conduct a program to raise community awareness about the risk from contaminated seafood. Since the clean-up of the LCP Chemicals Superfund site will go on for decades, and decades will likely pass before all of the seafood consumption guidelines can be removed, there will be an on-going need to provided community education and awareness (i.e. Institutional Controls).

In other communities with releases from Superfund sites to surface waters that posed a threat to human health, such as up in New York in the Hudson River Valley, and Washington state, funds have been appropriated through the CERCLA process for seafood sampling and a robust seafood advisory and education program. The Glynn County area is in need of funding to establish a similar program until the seafood is safe to consume without restrictions to any user group or sub-population.

Sufficient funding is needed to implement the Institutional Controls called for by the Responsible Parties and EPA Region 4 for the LCP Chemicals Superfund Site.

It is critical for the GA-EPD to define what data is needed since the EPA has repeatedly deferred the seafood advisories, education, and outreach to the state level. In order for the state to implement the program, funding must be provided from the Superfund Site largely responsible

for the seafood consumption guidelines and the chemical contamination driving the seafood advisories.

Specific needs identified by the Glynn Environmental Coalition, in consultation with Stakeholders, Georgia Environmental Protection Division, and Georgia Department of Human Health are:

**- A robust annual seafood sampling program to provide information for the Georgia EPD to produce seafood consumption guidelines. (\$200,000)** The Settling Defendants (SDs) should fully fund a robust annual sampling and analysis program to provide the data needed by the Georgia Environmental Protection Division to update seafood advisories every year.

Furthermore, the sampling should include whole fish sampling in addition to filets to more accurately predict risk by real world consumption patterns observed and documented in coastal Georgia.

**- A State of Georgia seafood advisory website specific for the Brunswick Peninsula, St. Simons Sound, and the adjoining advisory areas and estuarine rivers and creeks. (\$6,000)**

The web site should provide annual updates to seafood advisories, a clear description of the risks, and identify sub-populations at greatest risk (women of childbearing age, children under 7, and those with compromised immune systems).

**- A seafood advisory area education program for the local population. (\$30,000)** Direct outreach to the subsistence and high quantity seafood consumer fishing areas will be needed to reach those living in poverty and low income residents.

**- An education program for local physicians and medical community. (\$10,000)** Annual medical community training to recognize the physical and mental effects of the Chemicals of Concern from the site in high level seafood consumers and their offspring. This training would include a seafood sampling update, most recent research, and any concerns observed by local physicians.

**- An education program specifically targeted to women of childbearing age and young children. (\$20,000)** Develop and implement an education program for women of childbearing age. Pediatricians will need accurate information about current levels of the Chemicals of Concern in local seafood and potential implications to reproductive outcome and health.

**- A study to identify where signs should be placed, the most effective messaging on the signs, and placement/maintenance of the signs. ((\$40,000)** A comprehensive program to site and monitor signage will be needed. The diverse socio-economic and educational levels will need consideration according to the fishing areas being considered. An extensive trial and error period might be needed to fully and properly implement the signage program described in the Consent Decree.

**- An outreach program to the most at risk communities on the Brunswick Peninsula (populations with high and frequent seafood consumption). (\$30,000)** Chronic high seafood

consumption populations will need targeted intervention and education where they catch seafood.

**Comment 2.** – An increase in seafood contaminants is reasonably expected during the Remedial Action due to disturbance of contaminated sediments. The seafood sampling frequency should be increased and analytical results should be expedited during the Remedial Action. Production and dissemination of timely seafood sampling and analysis results should be included in the Consent Decree.

### **In Closing**

We respectfully request that the U.S Department of Justice Assistant Attorney General advocate for and order annual funding of \$336,000 to implement the Institutional Controls. The Institutional Controls have been advocated for by the EPA at the Public Meetings and Availability Sessions, should be included in the Consent Decree, and implemented without further delay. The minimum components for an effective Institutional Control program that will protect our community have been listed above. Further resources might be needed and the Consent Decree should make arrangements for the resources to implement any other appropriate Institutional Controls identified at a future date.

## **Sick Wildlife – Prefer to Ignore**

### **Introduction**

The Consent Decree fails to achieve the goals stated in the work plans for the LCP Chemicals Superfund Site. As noted in the Administrative Record:

“The derivation of the ecologically-based Clean up Levels (CULs) was also a complex process that involved consideration of the ecological relationship of the affected areas of remedy implementation to the surrounding habitat, the recovery potential of the affected ecological receptors, and the magnitude of current and predicted future effects of the COCs on local populations within the marsh.”

Previously submitted comments discuss the exclusion of the voluminous data concerning the dolphins (*Tursiops truncatus*) from the LCP Chemicals Superfund Site documents. By no means are the data deficiencies limited to just one or two species. Models should not be used to contradict the observed empirical evidence.

### **Clean up Levels (CULs) - Comments, Problems Identified, and Corrective Actions**

**Comment 1.** - Key ecological receptors such as dolphin, manatee, diamondback terrapin, and mink were NOT considered in the derivation of the ecologically-based CULs. The Administrative Record does NOT reflect an EPA realization that the dolphin, manatee, and mink are a species very susceptible to the COCs from the LCP Site, a protected species, or both susceptible and a protected species.

The Assistant Attorney General should not accept the arguments presented by the EPA to explain away major ecological damage. For instance, the mink is an indigenous species widely found in coastal Georgia. The mink is also a species at the top of the food chain and very susceptible to reproductive failure from the chemicals found at the LCP Chemicals Superfund Site. When no mink could be found at or around the LCP Site, the EPA jumped to the conclusion that there were none present instead of realizing it was a significant finding. In this case, the failure to

determine how far from the Site a viable reproducing mink populations were located was a significant omission.

Similar to the mink, Diamondback Terrapin (*Malaclemys terrapin*) was looked at early in the examination of the LCP Chemicals Superfund Site for ecological damage. The diamondback terrapins were examined. The terrapins were found to be suffering from wasting syndrome and reproductive problems. The Baseline Ecological Risk Assessment (BERA) appears to have drifted away from the empirical evidence in hand to modeling to predict impacts. The highest concentration of mercury (330 mg/kg) was found in a terrapin liver sample. The highest concentration of Aroclor 1268 (3,500 mg/kg) was also found in a terrapin liver sample, and Terrapin eggs were in excess of 600 ppm PCBs. Even after all this empirical evidence and analytical results were gathered, the EPA allowed it to be “modeled away” to a hazard index or hazard quotient less than one. The EPA needs to explain how it is possible to have reproductive failure and a hazard quotient or hazard index less than one.

As discussed in Comment 4, use of a few Chemicals of Concern (COCs) for analytical and modeling purposes is only viable when matched with the observed toxicity. The empirical evidence always trumps the models. When the models do not match or agree with the observed toxicity, the models must be discarded. The models used at the LCP Chemicals Superfund Site do NOT agree with the empirical data and observations, and should be discarded.

The interjection of models that do not agree with the observed toxicity underscores the need for an unbiased competent contractor to take over the work at the LCP Chemicals Superfund Site.

**Comment 2.** – The Administrative Record states:

“Where CULs may not be achieved and residual risks in some areas may occur, CERCLA and the NCP require monitoring no less than every five years after implementation of the final remedy. Given that COCs will be left in place, a robust monitoring program, with triggers for additional actions, will be implemented as part of the selected remedy for OU1 to monitor and ensure success of the selected remedy.”

The Consent Decree does NOT describe a “Robust Monitoring Program”, triggers for additional actions, or describe what the additional actions would entail. Since there is NOT a completed Remedial Investigation or Feasibility Study, the scope of option has not been evaluated or analyzed.

**Comment 3.** – A generic statement about a cleanup of the marsh causing more harm than good was inserted in to the Proposed Plan and Record of Decision. But there is no evaluation of the two options in the Administrative Record. The decision to limit the Remedial Action appears to be based solely upon financial concerns rather than an objective scientific analysis. The so called “short-term harm” was not described, nor was the benefits of a restoration evaluated against the alternative of no action and long term risk to the ecosystem and human health. Furthermore, specific decision-making metrics to be used for a harm/benefit analysis at the LCP Chemicals Superfund Site marsh were not in the Administrative Record.

**Comment 4.** – The Administrative Record notes a wide range of observed sediment toxicities in the LCP Chemicals Superfund Site marsh. Efforts to explain the wide range of observed toxicities has led to speculation as to the cause. Some researchers have speculated the cause might be Dioxin and Furan contamination, but data to confirm this suspicion is notably missing. As noted in the Administrative Record:

“In accordance with the EPA’s risk assessment guidance, the initial PRGs were based on the most conservative estimates, using the most sensitive sediment toxicity receptors and test endpoints. The range of mercury SECs (Sediment Effect Concentrations) was between 1.4 and 145 mg/kg. For Aroclor 1268, the SEC range was between 4 and 420 mg/kg. Similarly for PAHs and lead, the SEC concentrations ranged over an order of magnitude.”

There are likely other COCs causing the observed extreme range in toxicity. When a situation like this is encountered and a limited number of Chemicals of Concern (COCs) are being used to drive the cleanup, the lowest level of a chemical where toxicity was observed should be used as the Action Level driving the Removal Action.

**Comment 5.** – The Administrative Record repeatedly references a “Robust Monitoring Program”. As noted in the Administrative Record:

“After evaluating each alternative that was presented in the FS, it was determined that the proposed CULs would still provide substantial protection to the benthic community without undue harm to the existing marsh, especially in combination with a robust monitoring program.”

A description of the “robust monitoring program” is notably missing from the Consent Decree documents. No information could be found about how often the “robust monitoring program” be conducted (every 5 years was inferred). No information could be found about the sampling locations for the “robust monitoring program” or specifically what organisms would be analyzed.

The U.S. Department of Justice should note that the Settling Defendants have failed to complete Baseline Monitoring at the LCP Chemicals Superfund Site. The likelihood of implementation of a “robust monitoring program” does not appear likely based upon the performance of the Settling Defendants or the EPA’s ability to have basic data collected. As noted previously, the Remedial Investigation and Feasibility Study remain incomplete after 26 years. The U.S Department of Justice should take decisive action and order that a competent contractor take over the work at the LCP Chemicals Superfund Site, complete the RI/FS, and complete a viable Proposed Plan.

**Comments 6. - Will dolphins, mink, and manatees be part of the “robust monitoring program”? Since there is no description of the program, the viability of this proposal cannot be evaluated. As noted previously, the Settling Defendants have not done the needed baseline monitoring over the past 20 years needed for a “robust monitoring program”.**

### **In Closing**

The U.S. Department of Justice should evaluate the performance of the Settling Defendants, their history of recalcitrance, failure to produce a viable Remedial Investigations and Feasibility Studies, and the overall poor quality of the reports underpinning the Consent Decree. After 26 years of delays, our community deserves a competent contractor to take over the work. The Settling Defendants have stated that they do not feel any work is needed in the marsh and their actions appear to be in support of this outcome. Non-performance or underperformance of the remaining Remedial Investigation and Feasibility work will virtually assure the LCP Site remains inactive for an extended period of time. Decisive action by the Assistant Attorney General and the U.S. Department of Justice is needed to move the LCP Chemicals Superfund

Site from prolonged and substandard work to a realistic timeline via a competent contractor completing the work.



## **Onondaga Lake – Not an Excuse or Reason to Delay**

### **Introduction**

For at least 36 years, EPA Region 4 was aware of the risk to public health from the LCP Chemicals Superfund Site in Brunswick, Glynn County Georgia. Over the past 26 years, an EPA has struggled to complete the “Superfund” process with varying degrees of success. Meanwhile, two sister LCP Chemicals Superfund sites in EPA Region 7 continued through the Superfund process. These two LCP Chemicals Superfund Sites are located in: 1) Linden, New Jersey; and, 2) Onondaga Lake adjacent to the city of Syracuse in New York.

These comments compare and contrast actions at the Brunswick, Georgia and Onondaga Lake New York LCP Chemicals Superfund Site investigations and the implications.

### **Lake Onondaga Sampling and Analysis for Dioxin and Furan in Fish - Comments, Problems Identified, and Corrective Actions**

**Comment 1.** - EPA Region 4 interjected data from the Onondaga Lake LCP site located near Syracuse, New York, into the Proposed Plan and Administrative Record for the LCP site in Brunswick, Georgia. Unlike the LCP site located in Brunswick, Georgia, there was a significant amount of dioxin data collected at the LCP site located in Onondaga Lake New York (USEPA, 2002). The disparity of the testing between the two communities is stark and needs a thorough review and explanation.

**Comment 2.** - The dioxin and furan sampling at the Lake Onondaga site in New York were found a risk to wildlife (USEPA, 2002). Similar data from Brunswick Georgia is noticeably missing. The Settling Defendants (SDs) failed to conduct this sampling over a 26 year period but now want critical risk assessment Remedial Investigation (RI) sampling and analysis postponed until after the Consent Decree is finalized. The U. S. Department of Justice should delay the Consent Decree until the Remedial Investigation sampling and analysis, risk assessment, and Feasibility Study are complete before approving a Remedial Design and Remedial Action.

**Comment 3.** - EPA Region 4 should explain why data from the Onondaga Lake Site is relevant to decision-making concerning sampling of Dioxin and Furan at the LCP site in Brunswick, Georgia. In addition, explain the reasoning for a delay in sampling until after the Record of

Decision and Consent Decree are finalized. EPA Region 4 should explain the reasoning for the references to Onondaga Lake and how they utilize the data for estimating risk in Brunswick from the observations at the New York site.

There does appear to be two potential reasons articulated by EPA Region 4 for using Onondaga Lake data.

**1.) Reduce cost for the Settling Defendants.** As noted in the Responsiveness Summary:

The intent was to communicate that, due to the costs associated with PCDD/PCDF analyzes (currently in the range of \$400 and \$500 per sample), in all sites researched, not all samples are routinely analyzed for these analytes, rather an informal survey shows that between 20 and 80 percent of the samples are analyzed for PCDDs/PCDFs.

This response by EPA Region 4 does not present any rationale for not completing the Remedial Investigation until after the Consent Decree. In light of speculation in the Administrative Record that the unaccounted for toxicity observed might be due to Dioxin and Furan, the delay should be explained. Other than a ploy to continue arguing against Dioxin and Furan sampling, the Settling Defendants would not realize a reduced cost saving – unless the purpose is to stifle data production until after the Resource Damages Claim (RDC) is finalized. In this case, the Settling Defendants will be recalcitrant for at least three years as the RDC is being negotiated.

**2.) To argue against Site Remedial Goals for Dioxin and Furan and for collocation of Dioxin and Furan with PCBs.** As noted in the Responsiveness Summary:

The areas where dioxins/furans are elevated are generally co-located with areas that exceeded the lake cleanup criteria for other contaminants, which are being addressed under the lake remedy. A similar situation existed with the Ninemile Creek Superfund Site, with a similar approach was used. PCDDs/PCDFs also contributed to Site risks. These locations were to be remediated based on concentrations of other detected contaminants (e.g., mercury). Therefore, Site preliminary remediation goals for PCDDs/PCDFs in sediments were not developed.

Again, key information needed in a Remedial Investigation and considered during the development of the Feasibility Study is “argued out of the Administrative Record.” Furthermore, the Brunswick LCP Site is very different than the Onondaga Lake Superfund Site.

- Brunswick, Georgia Site has salinity ranges whereas the Onondaga lake site is fresh water.
- The Brunswick LCP Site has a 6 to 12 foot tidal range (bi-directional flow), which the Onondaga Lake Site does not.
- Water temperature ranges at the Onondaga Lake, New York are much lower than the Brunswick, Georgia LCP Site.
- The fish species and other wildlife found at Onondaga Lake are much different than the Brunswick LCP Site?
- Onondaga Lake does not have a Spartina marsh ecosystem like at the LCP Site in Brunswick, Georgia.

To my knowledge, the only similarity between the Lake Onondaga, New York Site and the Brunswick, Georgia LCP site is that people consume contaminated fish from both Sites. But unlike Onondaga Lake, was Dioxin and Furan have been found widely distributed in the Turtle River and St. Simons Sound estuarine system sediments (USEPA, 1995b). When challenged, EPA Region 4 did admit in the Responsiveness Summary that, “No, the two sites are very different.” There appears no valid reason to advocate for prolonging the delay in Dioxin and Furan sampling and analysis in sediment and biota. Still, EPA Region 4 steadfastly refuses to order the Dioxin and Furan sampling and analysis in favor of delaying for many years and until the Remedial Design. EPA Region 4 argued, “The EPA will evaluate the complete suite of dioxin/furans data, which will be supplements during the RD and, document its analysis in addenda to the risk assessments.” There is no justifiable reason to complete risk assessments after the Feasibility Study and Consent Decree decision-making process. The community is supposed to be included in the decision-making process and have appropriate and complete data with which to do so.

**Comment 4.** - “In mammals, learning behavior and development of the reproductive system appear to be among the most sensitive effects following prenatal exposure. In general, the embryo or fetus is more sensitive than the adult to dioxin-induced mortality across all species (ATSDR, 1998c, U.S. EPA, 1994a). Environmental exposure to dioxins includes various mixtures of CDDs, CDFs, and some PCBs. These mixtures of dioxin-like chemicals cause multiple effects that vary according to species susceptibility, congeners present, and interactions.” (USEPA, 1994a).

**The failure of the BERA to include the dioxin and furans within the Turtle River area in their calculations for PCBs, dioxins, and furans TEQ or the hazard quotient or the hazard index leaves an insurmountable gap in both the human and ecological risk assessments.**

Throughout the process, very little effort (if any at all) has been made by the Settling Defendants and EPA Region 4 to protect human health. The Consent Decree continues this pattern and action is needed by the Assistant Attorney General to correct this injustice, which appears intentional and pervasive on many levels. The Consent Decree should remove the Site from the Settling Defendants and hire a competent contractor to complete the Remedial Investigation (RI), risk assessments, and produce a viable Feasibility Study (FS) that assesses all the remedies proposed by the stakeholder agencies.

### **In Closing**

EPA Region 4 appears to have a far too cozy relationship with the Settling Defendants and predisposed to presenting arguments to delay the completion of the Remedial Investigation and production of data needed for the Feasibility Study. The U.S. Department of Justice should advocate for transfer of the LCP Chemicals Superfund Site to EPA Headquarters and completion of the work by a competent contractor.

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