Glynn County Superfund Sites
Environmental Cleanup Newsletter
Draft Feasibility Studies-LCP Chemical Site
August 2013

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This update and more information about the Glynn County Superfund Sites can be accessed at:
www.glynnenvironmental.org

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LCP Chemical Site-Turtle River

Background

The LCP Chemical Site has multiple, related, contamination problems, most of which were created over 80 years of industrial operations at the site. Potentially responsible parties such as: Atlantic Refining Company, Georgia Power, Dixie Paint and Varnish Company, Allied Chemical and Dye Corporation, and the LCP Chemical Company work together to clean up the site. The site is managed as 3 areas that are called operable units or areas of concern; the estuary as operable unit 1, groundwater as operable unit 2, and upland soils as operable unit 3.

The estuary is a large area of tidally influenced creeks, rivers, and channels running throughout a salt marsh. It is home to many species of fish, birds, aquatic mammals, turtles, marsh grasses, snails, crabs and worms. Turtle River crosses the estuary, and is connected to Purvis Creek through multiple creeks and ditches.

Background (continued)

Contaminants **o**f **c**oncern (COCs) include **p**oly-**c**hlorinated **b**iphenyls (PCBs) and **p**olycyclic **a**romatic **h**ydrocarbons (PAHs). Lead and Mercury are also a concern because metals are more readily dissolved in harsh salty water, such as that found in the Caustic Brine Pool. Methyl mercury, a compound formed from dissolved mercury, has also been detected. Methyl mercury is a larger concern because it is more easily absorbed and stored in wildlife tissues.

The upland soils area is further broken into 4 quadrants in the **H**uman **H**ealth **B**aseline **R**isk **A**ssessment (HHBRA). As the map for the upland soils shows, chemicals in these areas are from past activities on site. The risk assessment examined human exposure from soil, groundwater, and contaminated wildlife. The main chemicals here are lead, methyl mercury, and PCBs just like in the estuary. However, the upland soil is also affected by benzene, naphthalene, methylnaphthalene, dichloromethane, and various forms of trimethylbenzene.

Estuary-(Operable Unit 1)

The draft Feasibility study for the estuary was released March 29, 2013 to present several options for site cleanup; we are concerned about some aspects of the Feasibility Study.

Please see the note at the end of this newsletter if you wish to get the full technical comments. Below are *highlights of the technical comments submitted to the EPA*:

The landfill in the area labeled Domain 3 needs to be sampled, especially where waste is still visible. This area also needs to be properly closed/contained so it will not continue to pollute the site.

Cleanup levels need to be chosen before the different options for cleanup are evaluated against regulations (CERCLA). Only then can a best option be selected. Cleanup levels should be based on **s**urface-**w**eighted **a**verage **c**oncentrations (SWACs) and **r**emedial **g**oal **o**ptions (RGOs) based on the benthic community, more commonly known as bottom-dwelling organisms. We found the study's approach of mixing cleanup options, acreages, and cleanup levels within the study to be confusing and unusual. The alternatives should not be a choice among acreage of cleanup, cleanup levels, and how well the remedial technologies might work to cleanup the chemicals.

CERCLA (**C**omprehensive **E**nvironmental **R**esponse, **C**ompensation, and **L**iability **A**ct) 1980 Congressional law, commonly known as Superfund, that created a tax base and authority to respond directly to hazardous releases impacting the public health or environment.

(*estuary comment highlights* continued)

The feasibility study identified sediment removal as a likely option for cleanup, so the document should focus on the long-term effectiveness of sediment removal compared to capping or covering with a thin layer of sand. A thin cover of six inches at the site will do little to keep contamination from becoming disturbed, because animals such as clams, worms, and crabs can burrow to these depths. These animals can re-suspend chemicals, making them biologically available to re-contaminate the site and the wildlife.

Furthermore, this salt marsh experiences high tidal ranges (10 feet or more), flooding, and harsh weather, which could also re-suspend contaminants. These factors are not considered in this study.

A re-planting program of native salt marsh grass (*Spartina),* should be a first step after clean up. Planting *Spartina* will speed up ecosystem recovery and attract other native plants and wildlife. The feasibility study relied mainly on a report that indicated unassisted marsh plant regrowth within two years; however, native plant regrowth should not be the only measure of marsh health. Another indicator of marsh health is the total organic content of the marsh soil, which remains low in regions of re-grown marsh. A further indicator of marsh health is the diversity and abundance of the animal community. Therefore, the presence of marsh grasses is not the only indicator for a healthy, functioning marsh ecosystem.

Several assumptions within this feasibility study are not fully explained. These assumptions include: the current storm surge influences on sediment movement and transport, recreational use levels, habitat and wildlife assessments, regional high quantity fish consumption levels, and sampling of chemicals in the sediment and surface waters. All of these topics should be expanded in more detail in the text of the Final Feasibility Study.

Thin Cap Layering in a Salt Marsh

Thin **L**ayer **C**apping (TLC) is a technique which uses a thin layer of capping material with a high absorption capacity to reduce contaminant bioavailability. TLC should not be confused with sediment caps, which are predominantly thick (50-100 cm) and are more comprehensively studied and utilized at contaminated sites. While this study claims capping is a well studied technique, fewer than ten thin layer or absorbent-amended caps have been placed at contaminated sites in the US, at this time. Many of the examples noted in the feasibility study's Appendix E are actually lakes or bays in the EPA Region 4 (Southeastern USA, EPA region map: http://www.epa.gov/oust/regions/regmap.htm). The estuary for this site is most comparable to southeast river salt marshes, not lakes or bays, so these results may not apply to a salt water marsh environment.

A recent study of thin layer capping examined it's effects on the benthic ecosystem. The study reported moderate negative effects on bottom dwelling organisms from thin-layer capping, such as: disrupted feeding behavior, reduced growth rate, and increased mortality of individual species.

It is important to note that the capping remedy relies heavily on living animals to mix the clean cap material with underlying contaminated sediment (bioturbation). The feasibility study agrees they are relying on animals to jump start natural recovery. The report goes on to argue that it will occur only in the upper 15 cm (about 6 inches) of sediment. If biological activity occurs too deeply or not deep enough, the cleanup may not take place as hoped.

Bioturbation is the disturbance of soil or sediments by living things, such as plant roots and soil organisms like earthworms or benthic (bottom-dwelling) organisms like clams, etc.

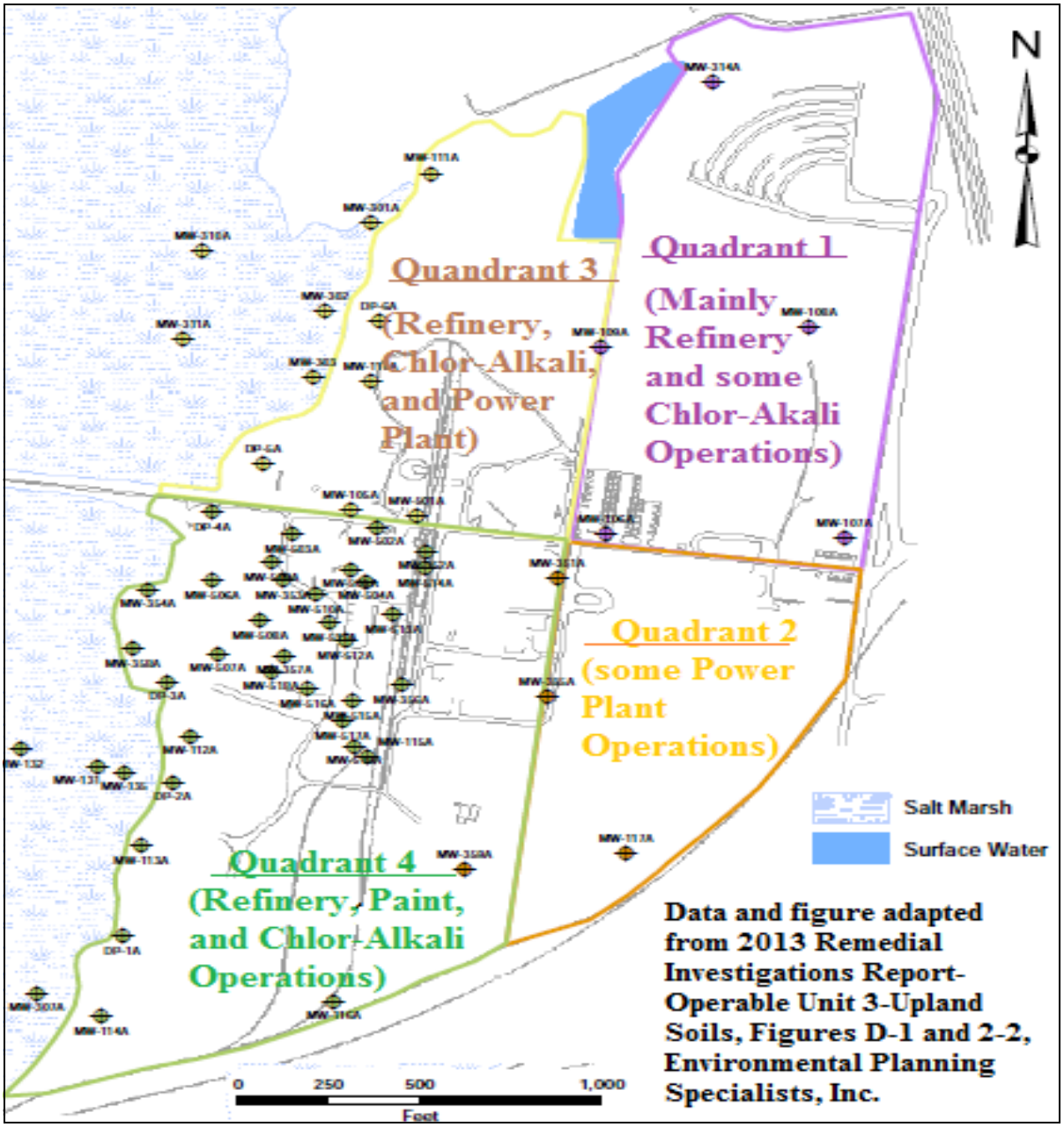
While the studies cited in Appendix E appear very positive towards capping, the reports focus on the short term regrowth of plants and marsh cover. These rates are one possible indicator of site recovery, but it is important to look at the long term sustained growth. In fact, case studies indicate a fertilizer effect is noticeable for approximately three years after placement of cover materials. In the future, marsh dieback - noted as prevalent in portions of this estuary site- may slow the marsh vegetation recovery. A short term fertilizer effect is not a long term guarantee for recovery.

Upland Soils-(Operable Unit 3)

The draft Remedial Investigation for the upland soils was released on February, 2013, and the Feasibility study followed on April 15, 2013. We are concerned with the way these documents interpret or disregard some of the findings from the recent health risk assessment. Some items need more detail or to be corrected in the final Feasibility Study.

The site reference map, below, shows the four quadrants referenced in the background section.

Please see the note at the end of this newsletter, if you are interested in reading the full technical comments. The following pages have *highlights of the technical comments submitted to the EPA*:



In order to protect humans and wildlife, the contaminant levels and limits to exposure both need to be controlled. To limit human exposure, we recommend using the most protective and conservative levels for all site contaminants. This approach includes using a future residential scenario within the **H**uman **H**ealth **B**aseline **R**isk **A**ssessment (HHBRA) and not eliminating data from the **B**aseline **E**cological **R**isk **A**ssessment (BERA) or the HHBRA for purposes of recalculating and obtaining lower risks.

The Feasibility Study states that there is no intention to allow any future residential use of the site, so they will be using cleanup goals based on future industrial and commercial worker exposure. Cleanup standards for commercial use are less protective. However, the Remedial Investigation for this same site states that Glynn County has purchased 35 acres onsite for a planned detention facility. If the remedial plan will leave the site with contaminant levels that are not acceptable for residential or recreational use, then the city, county, state and EPA will need to agree to the appropriateness of these lessened remedial goals. Specifically, the neighborhood

community associations must be consulted about a choice other than remedial goals based upon future residential usage.

The EPA uses and recommends a specific approach for assessing PCBs based on individual forms of PCBs (there are 209 forms) at a site, not based on commercial mixtures of PCBs, known as Aroclors. Both the Feasibility Study and Remedial Investigation, however, report the PCB contamination as Aroclor 1268, not as specific PCBs. The assessment of PCBs should be revised in line with the more

A concrete rip-rap placed along the bottom of a slope helps to stabilize the bank as adjacent uplands removal action is completed. (SOURCE: (1/23/2013 PRP response letter).

Rip-rap is when rock or other rubble material is used to secure shorelines, streambeds, ditches, and other similar waterways or water containment areas with erosion potential. The rip-rap slows water flow and energy to reduce erosion risk.

straightforward method of addressing contamination by using the individual PCB forms found in site soil samples, not Aroclor 1268 concentrations.

There are many scientific studies of PCBs that examine how these chemicals affect animals. Scientific reports show that the most sensitive mammals are the mink, river otters and related animals . The Feasibility Study needs to be based on up-to-date PCB toxicity information so it properly assesses the clean up required and protects these sensitive species. Proper soil analysis using EPA-approved methods and current PCB toxicity values for mink will allow a accurate assessment of the PCB contamination. Without these steps, the conservative assumption would be that the area is contaminated with enough PCBs to pose an unacceptable risk to wildlife. In this case, removal or a treatment that detoxifies the soil would be best.

The EPA also has specific methods to estimate movement of chemicals, including movement from soil into groundwater. This study did not use the EPA method to study the site conditions and the possibility for contaminants to leak into the groundwater. It doesn't make sense to leave an area untested, especially an one such as the Caustic Brine Pool, which is known to "enhance the solubility of metals (and organics) to dissolve into groundwater."

There are only a few, poorly evaluated, cleanup alternatives noted in the feasibility study. These alternatives also do not include any newer methods that are often used at similar sites. All cleanup alternatives rely on deed restriction, prohibiting future residential use, which is already compromised with the planned Glynn County detention facility.

These comments on the Feasibility Study and Remedial Investigation documents for the estuary and upland soil sites are summaries of the full technical comments submitted to the EPA for consideration. Copies of the detailed comments are posted on the Glynn Environmental Coalition (GEC) website (http://www.glynnenvironmental.org/) under the superfund sites link. Copies of this and prior newsletters can also be accessed at the GEC website.

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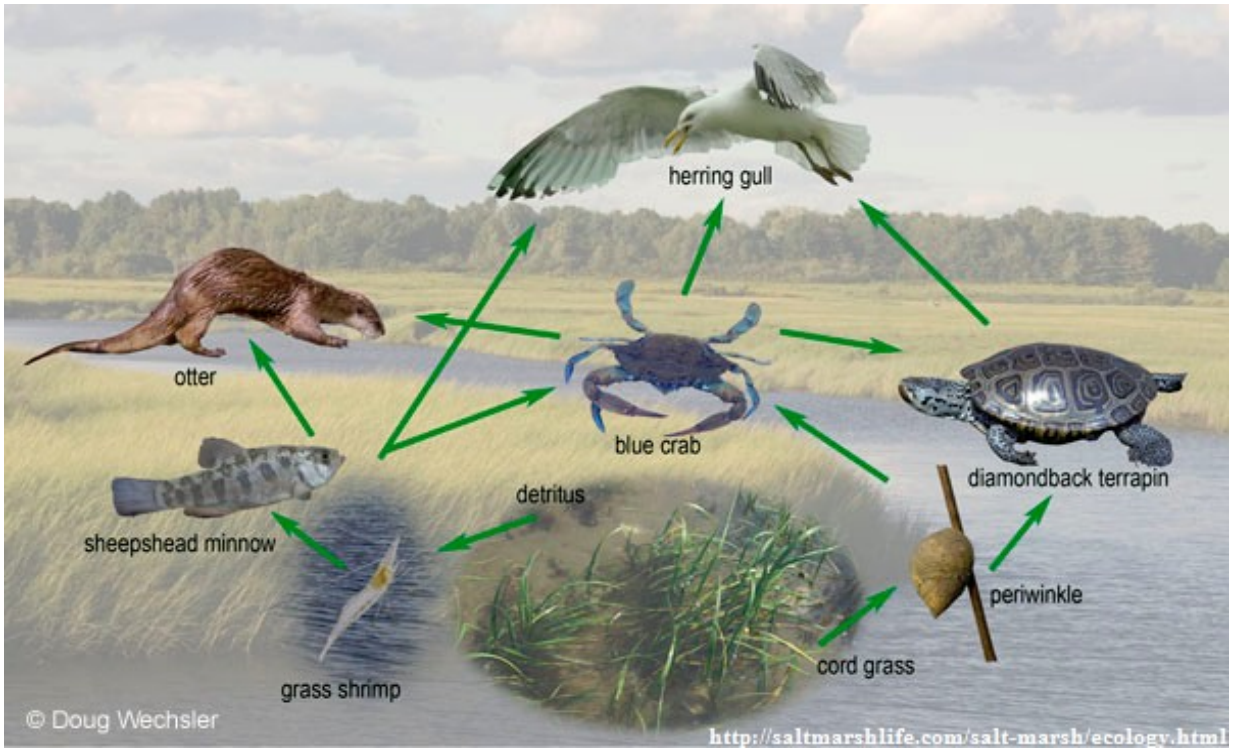

This report was produced by Environmental Stewardship Concepts, LLC (ESC, LLC) for and in cooperation with the Glynn Environmental Coalition. As a Technical Advisor, ESC, LLC provides independent analysis of the reports and data related to the Superfund Sites referenced to help support a well-informed community.

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