



Mobile Bay National Estuary Program Science Advisory Committee Meeting

10 am – 12:00 pm September 13, 2019
Killian Room, International Trade Center
250 N. Water Street Mobile, AL 36602

Agenda

Welcome - review and approval of minutes from previous meeting

Dr. Amy Hunter, Alabama Department of Conservation and Natural Resources

Updates and Presentations

Habitat Classification Update

Don Blancher, Moffat and Nichol

Plant Barry Hydrogeologic Conditions Summary

Marlon Cook, Cook Hydrogeology, LLC

Other Business

Continuation of Coal Ash Discussion

Adjourn



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Science Advisory Committee Meeting
Killian Room, International Trade Center, Mobile AL
September 13, 2019**



The Mobile Bay National Estuary Program Science Advisory Committee was established to bring area experts together to provide advice, guidance, and recommendations to ensure that MBNEP activities will be conducted in a scientifically relevant and rigorous manner.

In attendance:

Alex Beebe, Don Blancher, Jacob Blandford, Wade Burcham, Marlon Cook, Rich Fulford, Patric Harper, Rob Howell, Amy Hunter, Webb Jackson, Steve Jones, Julien Lartigue, Fred Leslie, John Mareska, Mark Ornelas, Missy Partyka, Scott Phipps, Eric Schneider, Randy Shaneyfelt

Phone-in: Patty Sobecky, Bret Webb

MBNP Staff: Jason Kudulis, Roberta Swann, Christian Miller, Katie Dylewski, Herndon Graddick, Ben Brenner, and Bethany Dickey

Dr. Amy Hunter called the meeting to order at 10:04 CST. Minutes from the May meeting were shared prior to meeting. Dr. Don Blancher made a motion to accept the minutes. Mr. Randy Shaneyfelt seconded.

First on the agenda, Dr. Don Blancher with Moffat and Nichol presented an update on developing a standard habitat classification scheme. This classification update project was a revision of previous work and an attempt to marry those efforts with the most recent imagery. Unfortunately, there was not a 1:1 match between 2005 and 2016 imagery, partly due to edge effect from varying resolutions of the imagery and the classification schemes employed. Project team currently has a revised dataset they are reviewing that will have improved accuracy and exist in one meaningful format. Another aspect of the project reviewed Google Earth Engine's (GEE) potential to develop a more objective classification as we move into the future. GEE is a programmed interface that has a code editor and cloud access to petabytes of information to pull in. Current classification scheme within GEE (spectral, radar, and other physical layers) that can be inserted into a machine learning classification scheme (random forest algorithm). Next steps are to ensure GEE classifier image registration and resolution are the same and how they compare with 2016 Radiance collected data, and to check consistency between 2005 and 2016 to generate a trend analysis.

Next, Mr. Marlon Cook presented a summary of hydrogeologic conditions of Alabama Power's ash pond at Plant Barry on the Mobile River. Mr. Cook was asked by Alabama Power and MBNEP to review their publicly available data regarding hydrogeologic site conditions at Plant Barry. Mr. Cook is not employed by Alabama Power and was not compensated in any way for his efforts to review this information. Information presented was his unbiased conclusions.

Three primary hydrogeologic issues have been publicized, related to the Plant Barry coal ash disposal pond.

First, is the material isolated from the surrounding surface-water and groundwater environment? Isolation means that hydrogeologic characteristics of the area around and under the ash disposal pond will keep it and its chemical constituents from migrating beyond the pond. Second, will future migration of the Mobile River channel threaten the coal ash pond? Third, will combinations of rising sea level, upstream flooding, and severe tropical storms cause catastrophic flooding that will threaten the ash pond?

Vertical isolation: Are the clay layers underlying the ash pond homogeneous, impervious, and continuous? No, the clay layers are not homogeneous. There are massive clay layers (4 to 28 feet thick), but in some areas the unit contains silt and fine-grained sand. Overall, average permeability is 10^{-7} . Mr. Cook's conclusion was that the clay unit is an effective aquiclude. Mr. Cook discussed why contaminants have been found in the most recent groundwater compliance sampling event if the clay layers underlying the ash pond are an effective aquiclude. He noted that the aquiclude is not homogeneous and is variable in lithology and thickness. The ash pond is essentially a surface-water impoundment and coal ash chemical constituents are mobilized in water. Water in the pond forms a substantial hydraulic head that forces pond water and ash chemical constituents downward in places through the aquiclude. One of the primary tasks in the ash pond closure plan is to dewater the ash. This will accomplish two important goals 1) mobilization of chemical constituents will not occur in dry ash, and 2) dewatering the ash and removing free water in the pond will reduce the hydraulic head in the pond, thereby reducing the downward pressure and means for introduction of contaminants into the alluvial aquifer. Additionally, Mr. Cook shared a review of data from 16 monitoring wells constructed in the alluvial aquifer surrounding the ash pond. Data shows the wells have positive hydraulic heads. Mr. Cook indicated that based on the positive hydraulic pressure, the clay layers underlying the ash pond form an effective confining unit.

Horizontal Isolation: What is the direction of groundwater flow in the Plant Barry area and what impact does the Mobile River have on groundwater flow? The worry here is that if contaminants get into the alluvial aquifer, where will they go and is there any possibility that contaminants move into the Miocene aquifer. All regional groundwater flow in the Plant Barry area is eastward to the Mobile River. Mr. Cook noted that the hydraulic gradient in the alluvial aquifer in the ash pond area is extremely flat and groundwater flow velocity calculated for the site is 2.92 feet per year. However, contaminants in the alluvial aquifer would eventually flow into the Mobile River. Horizontal movement if the coal ash at ground surface is dependent on the dike around the pond. The dike is an engineered structure and was not evaluated in Mr. Cook's assessment.

Mobile River Channel Migration: What is the potential for the Mobile River channel to relocate through Plant Barry and the coal ash pond? The Mobile River is an old age, meandering stream with fluvial features such as meanders, cut banks, point bars, and oxbow lakes that indicate lateral migration of the river channel over geologic time. The Plant Barry ash pond is located on a bend of the river inside the meander belt. However, cut banks on either side of the Plant Barry facility are 1.7 miles apart. Any potential channel cutoff and relocation of the river channel, that would threaten the pond, would occur in a geologic time scale. But more importantly, the pond is located on a point bar, with a cut bank on the opposite side of the river, which means that the river channel is migrating eastward, away from the pond.

Flooding: Is it possible for Mobile River flooding to overtop the coal ash pond dike? The current dike surrounding the coal ash pond was designed to protect from a 1,000-year 24-hour storm rainfall event in the pond area. However, the Mobile River level at Plant Barry responds to tidal influx and the Gulf of Mexico area is in a period of sea-level rise. Therefore, in the future, combinations of high tide with higher sea level,

major upstream rainfall, and a major tropical storm could cause catastrophic flooding of the Mobile River. No modeling has been performed to simulate these catastrophic conditions. It is recommended that Alabama Power perform modeling to simulate multiple flood scenarios to estimate river levels and flow velocities at Plant Barry and the coal ash pond. These simulations will inform decisions related to plans for pond closure.

Following Mr. Cook's presentation, the committee continued to discuss the issue of coal ash and what may be an appropriate role for the SAC regarding coal ash and similar environmental/social issues in the future. Committee members did not feel it was the SAC's role to advocate a position or make a recommendation regarding the Plant Barry ash pond closure plan. Attendees wondered if there is a need for a third-party independent review, particularly if regulators have approved the closure plan? A contractor was recently selected to develop a Mobile-Tensaw Delta Watershed Management Plan. Should this part of their scope perhaps? Discussion continued that a more appropriate role for the committee is to review available scientific information and/or develop products or undertake exercises to consider habitat, ecosystem/human services, and stressor combination priorities to weigh impacts using the expertise of the committee. In 2012, the SAC vetted an evaluation matrix that prioritized coastal Alabama habitats, considered environmental stressors, and any ecosystem services provided. A well-developed matrix could allow the SAC to plug in any number of stressors and potential impacts, not just coal ash. Dr. Missy Partyka volunteered to work with MBNEP staff to flesh out a draft stressor matrix that will be shared at the next meeting. Additionally, meeting attendees stated they would like to have someone present an unbiased scientific case for coal ash removal to an off-site facility.

At 12:06 pm, Dr. Hunter made the motion to adjourn and Mr. Fred Leslie seconded it.