

Georgia Department of Natural Resources

2 Martin Luther King, Jr. Drive, S.E., Suite 1152 East Tower, Atlanta, Georgia 30334-9000

Mark Williams, Commissioner

F. Allen Barnes, Director

Environmental Protection Division

404/656-4713

February 16, 2011

Colonel Jeffrey M. Hall
U.S. Army Corps of Engineers
Savannah District
PO Box 889
Savannah, Georgia 31402-0889

Re: Water Quality Certification
November 15, 2010 Joint Public Notice
Navigation Channel Improvements
Savannah River Harbor
Deepening and Maintenance Activities
Savannah River Basin
Chatham County

Dear Colonel Hall:

Pursuant to Section 401 of the Federal Clean Water Act, the State of Georgia issues this certification to the U.S. Army Corps of Engineers (USACE), Savannah District, an applicant for a federal permit or license to conduct an activity in, on or adjacent to the waters of the State of Georgia.

The State of Georgia certifies that there is no applicable provision of Section 301; no limitation under Section 302; no standard under Section 306; and no standard under Section 307, for the applicant's activity. The State of Georgia certifies that the applicant's activity will comply with all applicable provisions of Section 303, contingent upon the following conditions:

1. All work performed during construction will be done in a manner so as not to violate applicable water quality standards.
2. No oils, grease, materials or other pollutants will be discharged from the construction activities that reach public waters.

3. Savannah's Industrial and Domestic Drinking Water Treatment Facility

With respect to the City of Savannah's Industrial and Domestic (I&D) drinking water facility, elevated chlorides are a treatment cost and public health concern. The public health concern is related to the uncertainty of how increased chloride levels will impact the lead and copper concentrations in the water provided to the customers of the Savannah I&D system and the purchase water systems. The industrial concerns relate to potential negative impacts on industrial processes.

The City withdraws water from Abercorn Creek, a tributary of the Savannah River located upstream of the Savannah Harbor Expansion Project (SHEP). The Chloride Modeling for the SHEP (document dated December 15, 2010) predicts elevated chloride levels at the Savannah I&D drinking water intake. The USACE is continuing to evaluate the science, modeling and impacts regarding this issue and as part of that evaluation, the USACE is working with the City of Savannah and key industries supplied by the City of Savannah's I&D drinking water system to determine the effects of potential elevated chlorides. Those additional analyses will be completed and included in the Final Environmental Impact Statement (EIS).

The Georgia Environmental Protection Division (Georgia EPD) will evaluate the results of the aforementioned studies. Once the pending studies have been completed as discussed above, the USACE will include, within the Final EIS, the chloride information, impacts, and its determination based on the studies regarding any mitigation remedy selected. The schedule for completion of the selected mitigation will be in conjunction with the start of the SHEP and will be dependent on the aforementioned study results. Mitigation will be based on the Savannah I&D treatment plant design capacity of 62.5 MGD. Any proposed adjustments in the water treatment process to mitigate the increased chloride concentrations must address simultaneous compliance with all drinking water regulations. In addition, after consultation and agreement with the Georgia EPD, the schedule, sampling locations and parameters for the selected mitigation's monitoring program (to include the case where mitigation may not be required) will be specified in the Final EIS. Pursuant to Special Condition 14, the issues associated with increased chlorides at the Abercorn Creek drinking water intake will be carefully reviewed on an ongoing basis throughout the life of the project.

4. Chloride Migration into the Floridan Aquifer

The Floridan Aquifer Analysis is based on the initial Study Report of September 2003 and the Supplemental Study of September 2005. The aquifer is the main water supply throughout most of South Georgia.

Monitoring and Reporting. To insure early detection of chloride migration, the USACE shall establish monitoring stations at appropriate locations throughout the project to monitor salinity seepage through the Miocene sediments. Annual chloride monitoring reports shall be provided to the Georgia EPD by January 31st of each year following initiation of dredging.

Monitoring Along Groundwater Flow Paths (Sentry Wells). Monitoring of chloride in the Upper Floridan aquifer must be conducted along critical groundwater flow paths where chloride migrating downward through the confining unit beneath the Savannah River could move toward Savannah area production wells. Sentry wells along critical groundwater flow paths must be installed at two depths:

- Near the top of the aquifer to monitor downward migration of chloride through the confining unit; and
- Deeper in the aquifer to monitor how horizontal flow of fresh water within the aquifer mixes with and dilutes the chloride.

Sentry wells must be located west of the locations of exploratory borings SHE-11 and SHE-13, and on Cocks spur Island near Fort Pulaski. Existing wells can be used as sentry wells if the existing wells were constructed to allow monitoring near the top of the aquifer and deeper in the aquifer. The Georgia EPD must approve locations and depths of sentry wells.

Upgradient Background Wells. Monitoring wells must be installed upgradient of critical groundwater flow paths to provide information on background chloride concentrations associated with groundwater withdrawals in the Savannah area independent of SHEP dredging activities. Background wells must be installed near the top of the aquifer and deeper in the aquifer. The Georgia EPD must approve locations and depths of background wells.

Establish Background Concentrations. Background chloride concentrations at sentry and background wells must be established. At least four background samples must be collected from each sentry and background well and statistical methods must be used to establish background chloride concentrations at each

entry and background well. The Georgia EPD must approve the collection of background samples and the statistical methods used to establish background chloride concentrations. Background sampling must be conducted before any SHEP dredging activities are started.

Annual Monitoring. Monitoring of entry and background wells must occur annually for the life of the project, which may be 50 years. Groundwater samples collected for monitoring must be analyzed for chloride. Samples may be analyzed for specific conductance if chloride is also analyzed. At no time during the monitoring will analyses for specific conductance be substituted for analyses of chloride.

In the annual monitoring reports, differences in the long-term trends of chloride concentrations in the entry and background wells must be used to evaluate impacts of SHEP dredging activities from impacts of groundwater withdrawals on chloride concentrations in the Upper Floridan aquifer. SHEP dredging activities include the initial dredging and maintenance dredging over the 50-year project period. The Georgia EPD must approve the methods used to evaluate impacts of SHEP dredging activities.

Benchmark Concentrations and Analysis. A benchmark chloride concentration must be established for each entry well. The USACE must also determine what chloride concentrations caused by SHEP dredging activities would result in a measurable increase in chloride concentrations at Savannah area production wells. The benchmark chloride concentrations must be protective of the Savannah area production wells. Savannah area production wells include industrial, commercial, municipal, agricultural, and other un-permitted wells. Benchmark concentrations must be established for each pair of entry wells and for entry wells near the top of the Upper Floridan aquifer and deeper in the aquifer. The Georgia EPD must approve each benchmark concentration.

If benchmark concentrations are exceeded at any entry well, and it has been determined that the exceedence is due to SHEP dredging activities, all entry wells must immediately be resampled for chloride. If exceedence of a benchmark concentration is confirmed at any entry well, additional evaluation of wells must be conducted to determine if any new monitoring wells are warranted. The Georgia EPD must approve locations and depths of additional monitoring wells.

Remediation Plan and Implementation. If it is determined that the chloride entering the Upper Floridan aquifer through the confining unit beneath the Savannah River could affect Savannah area production wells the USACE shall develop a remediation and implementation plan. The plan must account for adaptive management measures specific to accelerated chloride intrusion into the aquifer.

Mitigation must be implemented if sampling of additional monitoring wells indicates that Savannah area production wells may be affected by downward migration of chloride through the confining unit as a result of SHEP dredging activities. The Georgia EPD must approve mitigation activities. Pursuant to Special Condition 14, these migration issues will be carefully reviewed on an ongoing basis throughout the life of the project.

5. Cadmium Monitoring

Cadmium is present throughout the sediments in the Savannah River Harbor. Therefore, the USACE shall conduct the following monitoring:

- (a) During the Savannah River Harbor deepening activities (project depth + advance dredging + overdepth) cadmium concentrations shall be monitored weekly at the point of discharge from those Confined Disposal Facilities (CDF) receiving sediments from the four known reaches within the harbor having elevated cadmium concentration in the sediments. US EPA laboratory testing methodology must have a detection limit of at least 0.7 micrograms per liter (ug/l). Monitoring shall continue at these CDF discharge points as long as discharge is present and until all dredged sediments have been dewatered, stabilized and capped as per the Final EIS. Data shall be reported to the Georgia EPD quarterly in micrograms per liter (ug/l) within 30 days of the end of each calendar quarter.
- (b) Following the installation of a stable clean cap within the CDFs that receive cadmium bearing sediments, cadmium shall be monitored weekly at the point of discharge for a period of one year. Data shall be reported to the Georgia EPD quarterly in ug/l within 30 days of the end of each calendar quarter.
- (c) For maintenance dredging in known reaches of high cadmium concentration identified in the Final EIS, accumulated sediments to be dredged within 45 days shall be sampled for cadmium from two locations

within that reach that are representative of average sediment accumulation for that reach. This protocol shall remain in effect through two complete maintenance dredging cycles for each reach identified in the Final EIS at which time the Georgia EPD will review all data and determine if additional monitoring shall be required for future maintenance dredging.

Reporting: (1) Analysis of cadmium in the sediments shall be reported as mg cadmium / kilogram sediment (mg/kg). (2) Sampling results shall be provided to Georgia EPD prior to initiation of dredging within the reach to be dredged over the next 45 days.

6. Water Quality Monitoring of Dewatering Discharge from the Confined Disposal Facility

Dewatering discharge from all CDFs shall be monitored by USACE and reported to the Georgia EPD monthly and due within 30 days following the end of each reporting period. Monitoring reports shall include the location of the discharge point, dates of discharge, total suspended solids, dissolved oxygen, pH, temperature, salinity, turbidity and conductivity. The USACE will monitor weekly when there is a discharge and provide monthly reports to the Georgia EPD within 30 days of the end of each reporting period.

7. Striped Bass Recovery

- (a) No dredging should be conducted upstream of Sta. 63 during the striped bass spawning period from April 1 to May 15 of each year. A variance to this condition may be granted by the Georgia EPD 1) where navigational safety is compromised and it can be demonstrated that the channel or other navigational water had been at project depth within 90 days prior to the commencement of dredging closure on April 1, or 2) if salinity conditions at a proposed dredging location are lethal to striped bass larvae.
- (b) Water quality and hydrodynamic models of the proposed deepening of the inner Savannah River Harbor to -48 feet Mean Low Water (MLW) demonstrate striped bass life stages habitat may be adversely impacted. The USACE shall mitigate for this impact through compensatory mitigation to the Georgia Department of Natural Resources (Georgia DNR) Fisheries Section for continuation of the existing striped bass management/stocking program in the Savannah River.

8. Sea Turtles

- (a) All hopper dredging activities (deepening and maintenance) should be restricted to December 15 through March 31 when sea turtles are least abundant. Hopper dredges must have fully functional inflow and outflow screening and protected species observers. Sea turtle takes must be reported to the Georgia Wildlife Resources Division and the Georgia EPD within 24 hours. Hopper dredging activities should be halted if sea turtle takes exceed the limits specified by NOAA. Bed leveling equipment may not be used unless approved by the Georgia EPD.
- (b) Other types of dredging (non-hopper) activities should be restricted to the following windows based on the location of the placement of fill material: Deepening activities involving the placement of dredge material at any near shore site within 1,000 feet of MLW is restricted to September 1 through March 31. Deepening activities involving the placement of dredge material at any near shore site beyond 1,000 feet of MLW may occur year-round. Operation and maintenance activity involving the placement of dredge material at any near shore site within 1,000 feet of MLW is restricted to November 1 through March 31. Operation and maintenance activity involving the placement of dredge material at any near shore site beyond 1,000 feet of MLW is restricted to September 1 through March 31.

9. Dissolved Oxygen Water Quality Criteria

The Georgia Rules and Regulations for Water Quality Control establishes the Dissolved Oxygen criteria for the section of the Savannah River with a designated use of "Coastal Fishing", which includes the Savannah River Harbor.

The USACE must install continuous water quality monitoring equipment on the Front River, Middle River, and Back River at Houlihan Bridge, and the Savannah River at I-95. This equipment will collect water temperature, conductivity, pH, dissolved oxygen, and water depth data every fifteen minutes and the data will be made available on the web. The monitoring equipment is to be installed before the flow altering mitigation and Savannah River Harbor deepening begins and continue until the post-construction monitoring is complete and the dissolved oxygen mitigation is working and effective.

The oxygen injection systems on Hutchinson Island shall be installed and operational prior to commencement of channel deepening in the inner harbor

(inside the harbor entrance, Sta. 0+000). The oxygen injection system near Georgia Pacific shall be operational within one year of commencement of channel deepening in the inner harbor. The monitoring data will be used to evaluate the effectiveness of the oxygen mitigation. Pursuant to Special Condition 14, these oxygen mitigation issues will be carefully reviewed on an ongoing basis throughout the life of the project.

In addition, the USACE must secure approval from the Georgia EPD for a plan for monitoring dissolved oxygen in the proximity of all maintenance dredging operations in the Savannah River Harbor.

Dredging operations must maintain a daily average of 5.0 mg/L and an instantaneous average of 4.0 mg/L throughout the water column during those times of year when the natural condition in the waterbody has a dissolved oxygen level above these values. If it is determined that the natural condition in the waterbody is less than these values, the criteria will revert to the "natural condition" and the water quality standard will allow for a 0.1 mg/L deficit from the "natural" dissolved oxygen value. Up to a 10% deficit will be allowed if it is demonstrated that resident aquatic species shall not be adversely affected. Since the available dissolved oxygen deficit has already been allocated, the USACE will only be able to conduct maintenance dredging when the dissolved oxygen, one meter from the bottom, is 3.0 mg/L or greater and the maintenance dredging does not affect the dissolved oxygen levels in the Savannah River Harbor. Variances for maintenance dredging when dissolved oxygen levels are less than 3.0 mg/L may be granted if the additional oxygen is effectively injected into the Savannah River Harbor as appropriate.

The USACE shall provide monitoring reports monthly due within 30 days of the end of each reporting period. Reports shall include locations of dredging by river mile station, tidal flow direction, and dissolved oxygen in the downstream tidal flow of the dredge activity.

10. Maintenance Dredging Schedules

The USACE shall provide the Georgia EPD with an annual schedule by January 1 of each year for expected maintenance dredging that provides dredge locations, times, sediment amounts and placement locations with the consideration of 401 conditions, federal funding and other applicable planning issues.

11. Restoration of Confined Disposal Facility 1S

Restoration of CDF 1S is proposed to offset unavoidable direct impacts to approximately 15.68 acres of salt/brackish marsh habitat. Up to approximately 42 acres of salt marsh will be restored at this site. Restoration of this mitigation element must comply with the USEPA and USACE Final Rule for Compensatory Mitigation for Losses of Aquatic Resources of April 10, 2008 and the Savannah District USACE, Regulatory Division Mitigation SOP.

12. Buffer Variances

Various elements of the project are going to require the USACE to be granted buffer variances from the State of Georgia. Because the USACE's Draft EIS and Draft General Re-evaluation Report (GRR) do not provide the level of design necessary for variance application submittal, as various elements move toward design and construction the USACE shall submit a buffer application to the Georgia EPD. Such elements may include, but are not limited to, shore bank stationing of oxygen injection systems, a recreational boat launch, various elements of the marsh mitigation proposal, cut closures, bank stabilization, etc. Completed applications shall be submitted 90 days prior to such land disturbing activities. In accordance with the Georgia DNR's Rules for Erosion and Sedimentation Control, once the Georgia EPD has proposed issuance of a stream buffer variance, the USACE must publish a public notice to provide a 30-day public comment period.

13. Fish Passage at the New Savannah Bluff Lock and Dam

Adequate fish passage shall be established at the New Savannah Bluff Lock and Dam to provide unencumbered movement upstream of shortnose sturgeon. Georgia EPD shall review and concur with final design prior to construction.

14. Reopener for Section 401 Certification

The project shall be periodically reviewed by the Georgia EPD and the USACE to consider new dredging technologies, shoaling rates, environmental conditions, laws, regulations, any modifications to the Draft EIS and Draft GRR, additional harbors located on the Savannah River, and any other changes to the construction, maintenance and operation of the Savannah River Harbor for the life of the project as it may effect this Section 401 Certification. It is expected that

these reviews would generally be performed every 5 years. The 401 certification will be modified as appropriate.

15. Annual meeting

This is a complex project using an adaptive management approach with potential long-term impacts. EPD and USACE will meet annually to review the status of these Water Quality Certification conditions.

This certification does not relieve the applicant of any obligation or responsibility for complying with the provisions of any other laws or regulations of other federal, state or local authorities.

It is your responsibility to submit this certification to the appropriate federal agency.

Sincerely,



F. Allen Barnes
Director

FAB:kp

cc: William Bailey, USACE
Hope Moorer, GPA
David Baize, SCDHEC
Ken Rentiers, SCDNR
Spud Woodward, CRD
John Biagi, WRD