REVIEW OF THE REPORT

POTENTIAL GROUND-WATER IMPACTS

Savannah Harbor Expansion

Feasibility Study

March 1998

Review by HydroVision, Inc.

April 2000

HYDRO VISION

Hydrogeologists, Engineers, Geologists, and Geophysicists

RECOMMENDATION FOR FURTHER STUDY

- **Evaluate the potential effects of Savannah Harbor Expansion (dredging) on the Upper Floridan aquifer**
- **Answer with increased confidence the question: "Will dredging cause or increase leakage of saline water from the Savannah River to the Upper Floridan aquifer?"**

FINDINGS OF THE REVIEW

- **Results of the study, as reported, can not lead to the stated conclusion that harbor expansion will have no noticeable effect on the quality and quantity of water in the Upper Floridan aquifer**
  - **Scope of the study was limited**
  - **Additional work is suggested**

REPORT SHORTCOMINGS AND REASONS

- ***Laboratory***-derived ***permeability*** of ***core***
  rather than
- ***Field***-derived ***hydraulic conductivity*** of the ***site***
- ***Hypothetical, average*** conditions
  rather than
- ***Actual, field observed*** conditions
- ***Single, poorly defined***, leakage
  rather than
- ***Field supported, spatially distributed*** leakage

PROPOSED SOLUTION

- Conduct a hydrogeologic field investigation to determine aquifer and confining unit properties
- Develop a conceptual and numerical model of the hydrogeologic system
- Compute leakage along the affected reach of the river under pre-and post-dredging conditions and compare to estimated lateral downgradient flow in the Upper Floridan

APPROACH

- Assemble, compile, evaluate, and review existing data and reports
- Reanalyze data as necessary
- Determine field site, gain access, and install test-observation wells
- Collect lithologic, geophysical, and other ancillary site data

APPROACH, Cont.

- Collect core, extract fluid, and determine salinity
- Conduct field hydrologic testing
- Analyze data and derive estimates of aquifer and confining-unit properties
- Interpret all data and extrapolate hydraulic properties up and down the affected river reach

APPROACH, Cont.

- Develop a conceptual model of the hydrogeologic system
- Develop a numerical model of the ground-water flow system
- Compute leakage between the river and the Upper Floridan aquifer, for present-day conditions and those resulting from dredging

APPROACH, Cont.

- Compute lateral, downgradient flow in the Upper Floridan across the river reach under present-day conditions
- Perform sensitivity analyses of a reasonable range of hydrologic conditions and field data
- Analyze and interpret data and information, draw conclusions, *and*

APPROACH, Cont.

Write Report

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