MEMORANDUM REGARDING FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION COMMENTS ON ECOLOGICAL RISK ASSESSMENT PORTIONS OF DRAFT RESOURCE CONSERVATION AND RECOVERY ACT FACILITY INVESTIGATION NAS KEY WEST FL

2/28/1997

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

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State of Florida
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Interoffice Memorandum

TO: Mr. Jorge Caspary

THROUGH: Dr. William Coppenger
Dr. Landon Ross

FROM: Steve Wolfe

DATE: February 12, 1997

SUBJECT: Projects—Miscellaneous; ecological risk assessment - NAS Key West

I've looked over the ecological risk assessment portions of the Draft NAS Key West RCRA Facility Investigation and Remedial Investigation Report and have a number of comments.

I must admit that I found the document quite confusing, with frequent reference to appendixes required to understand what the summary statements were trying to convey, and why they were trying to convey it. I'd think the document would benefit from more of the actual information being included in the report itself. Thanks for providing the various additional documents that were required for me to understand the ecological risk assessment portions.

I didn't identify any big problems with how the sampling and testing rationale for the ecological risk assessment was developed. The concerns to be addressed and the methods chosen to address them appeared reasonable. However, I do have concerns regarding the quality of the actual analyses and in how the resulting data were interpreted.

In the report, Brown and Root stated that toxicity testing of sediments and soils had resulted in confusing and contradictory results so they were recommending no further testing be performed.

I looked at the bioassay interpretation and the data in the appendix. I believe the 'contradictory' statement in the report results from one of their three background sites showing toxicity in a number of the tests while another background site suffered from problems with controls. In investigating the raw data included in the appendix, it is readily apparent that there were problems with the testing:

1) Erratic results among replicates of the same test exposure suggest laboratory difficulties.

2) The test protocols were altered by using six control replicates and two sample replicates, resulting in a heavily unbalanced statistical design with resulting loss of statistical sensitivity.

3) No data was included in printouts of the statistical analyses to indicate the results of testing the data for normal distribution, however it is common that small numbers of replicates like these require arc sign square root transformation when using proportional data (e.g., percent survival). It seems likely that they should have either transformed their data or used the number surviving rather than the percent surviving in the calculation. While this would not necessarily be expected to create significant changes in the results, it does suggest a lack of expertise.

4) Improper protocols for salinity-acclimation of test organisms were followed for the low-salinity samples. This may have contributed control problems in tests of one of the background sites.

5) Examining the toxicity test data in conjunction with the physical-chemical data suggests that the second background site may have been affected by some pollutant.

The sum of these problems casts doubt on the interpretations of the toxicity test results. It would be desirable to revisit the status of data used in the ecological risk assessment portion of the study and see if further studies might be necessary to provide sufficient data to minimize the uncertainty of the risk assessment.

SHW/fm