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MINUTES FROM RESTORATION ADVISORY BOARD MEETING DATED 14 JANUARY 2003  
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RESTORATION ADVISORY BOARD

**CHARLESTON NAVAL COMPLEX  
RESTORATION ADVISORY BOARD MEETING**

**January 14, 2003, 5:30 p.m.**

**The Olde North Charleston Meeting Place  
1077 East Montague Avenue  
North Charleston, SC**

RAB MEMBERS

Tony Hunt	Navy Co-Chair
Dann Spariosu	U.S. EPA
Wannetta Mallette	Community member
Jerry Stamps	S.C. DHEC
Lou Mintz	Community member

VISITORS

Genesis Pratt	Community member
Gil Rennhack	S.C. DHEC
Tom Beisel	CH2M-Jones
Gary Foster	CH2M-Jones
Dean Williamson	CH2M-Jones
Charlie Vernoy	EnSafe Inc.
Keith Johns	EnSafe Inc.
Ivan Chou	ECT

Introduction and Administrative Remarks

Tony Hunt opened the meeting and asked the RAB members and visitors to introduce themselves. There were no comments on the minutes of the November 2002 RAB meeting. Visitors and RAB members were encouraged to ask or write questions during and after the meeting.

Subcommittee Reports

Mr. Hunt said that no community relations subcommittee meeting was held this month. He said he would arrange a community relations subcommittee meeting before the next RAB. He noted that the last fact sheet was published in July of 2002, and a lot of events are happening and they need to be publicized.

Status of Finding of Suitability to Transfer

The Finding of Suitability to Transfer (FOST) and Environmental Baseline Survey have been in the regulatory agencies' hands for review. The Navy expects comments from US Environmental Protection Agency and SC Department of Health and Environmental Control by the end of the month.

## Environmental Cleanup Progress Report

### *Long-Term Groundwater Monitoring Plans*

Tom Beisel (CH2M-Jones) provided a presentation on what groundwater monitoring activities will take place after the property transfers are complete. The monitoring plan combines information from many studies and documents. The purpose of the monitoring plan is to evaluate potential contaminants that may leave the site and pose a threat to the environment or people's health. This program will look at key wells, to be referred to as "sentinel" wells. Additional wells have been added at some sites because of new information and wells have been removed from other sites that have been cleaned up. Some sites have annual monitoring and other sites are monitored more frequently. Mr. Beisel reported that there are currently 162 wells in this sentinel program. This program documents the minimum monitoring that CH2M-Jones will be doing. The actual number of wells included in the monitoring plan will vary from year to year based on the status of the remedial effort at the sites.

CH2M-Jones will report their findings to the SC Department of Health and Environmental Control (DHEC) for the duration of their contract. Mr. Beisel offered to show figures on these sites to anyone interested.

The purpose of the groundwater monitoring is to check the progress of the natural degradation and migration of contaminants in the groundwater at the different sites. Land use restrictions would extend a distance beyond the well network to ensure people are not exposed to the contaminants. Land use restriction monitoring is part of the Operation and Maintenance plan that is part of the cleanup remedy.

Mr. Beisel said that necessary long-term operations and administrative type mechanisms will remain in place for many years. Permits and deeds can be revised to include land use controls and restrictions.

The land near the Hess property at the northern end of the base will still be monitored for quite a while.

Mr. Hunt noted that the land use restrictions on certain sites will require that future landowners will have to contact the Navy and DHEC before any kind of soil excavation or disturbance. The Navy and DHEC would look at how the proposed excavation would affect the remedy. The Navy and DHEC would then explain to the landowners what would be involved to maintain the remedy in place or how to replace any disturbed wells.

The Navy is evaluating several ways to identify who will pay for the cost of enforcing land use restrictions. The Navy would like to structure an agreement with prospective purchasers to take over maintenance of the land use controls. If not, then the Navy would have to pay for the maintenance of the land use controls. What is being offered through Brownfield agreements is purchaser's liability protection for previous contamination in exchange for reporting and maintaining land use controls. The Navy is really talking about passive maintenance; future buyers do not have to do any monitoring, just ensure that the wells are not removed and that any other

restrictions are maintained.

With land-use controls, the deed restrictions will be conveyed from landowner to landowner. The Brownfield agreements should also be structured with the restrictions in them to be passed so that all future landowners will be part of the Brownfield agreement and receive the same liability protection. Such agreements will be with DHEC. The Navy still has an interest in making sure that the landowners are doing the right thing.

#### *Status of Oil Spill*

Mr. Hunt reported that Saturday's Charleston *Post and Courier* newspaper showed the extent of the oil spill and the fact that the oil spill cleanup has been signed off as completed. He noted that, whenever there is a release to navigable waters, the Coast Guard has jurisdiction under the 1990 Oil Pollution Act. They operate under National Oceanographic and Atmospheric Agency (NOAA) and Shoreline Assessment guidelines for visible criteria for removal and cleanup of oil products. It does not address some of the issues that the Navy is concerned about, like residual contaminants that would get into the marsh area and stay there, possibly causing problems down the line.

The phase of the cleanup that the responsible party had to do for this recent oil spill – visual removal of residue – is done. The Natural Resource Trustees will look at the natural resource damages on the Navy property, RDA property and to the birds, animals and plants along the harbor. This particular oil spill cleanup is ongoing but will not necessarily affect property transfer. The EBS for Phase 3 has been revised to document this oil spill occurred.

#### *Zone J Hydrodynamic Study*

Mr. Hunt began by noting that the contaminants in the water bodies remain the Navy's responsibility. Contaminants found below the mean high water mark are not part of the fixed price contract that the Navy has with CH2M-Jones. There is just too much uncertainty where the contaminants came from. In order to address contaminated sediments in water bodies, the Project Team felt it was important to know migration pathways that contaminants might take. EnSafe hired ECT, a company from Florida to complete this study.

Mr. Hunt then introduced Ivan Chou, who is working for ECT to assist EnSafe and the Navy in studying the hydrodynamics of the Charleston Harbor area. Mr. Chou looked at two studies: the Navy's effluent study and hydrodynamic studies of the Cooper River, Noisette and Shipyard Creek. He said that EnSafe had already done an extensive study on ecological risk assessments to determine the major migration pathways of the pollutants from the City of North Charleston to the river. One of the major pathways is the storm water runoff as rainfall discharges from the base into the harbor.

Mr. Chou explained to the group that the estuary can be divided into three interconnected major portions; Noisette Creek (about 10 percent); Shipyard Creek (about 20 percent) and the Cooper River (70 percent). Their goal was to approximate where contaminants that might be washed into these water bodies might end up and also to see where they might have come from.

As background, Mr. Chou said that the major factor that causes water to move in this area is the

tide. He explained that Charleston Harbor has a six-foot tide twice a day, moving a lot of water in and out from the ocean. Several factors affect the circulation of the estuary: wind and salinity affect the circulation, and a wide and deep river moves more slowly and does not mix as much.

Similarly, Mr. Chou's study had to work with the various factors that affect pollutant transport, such as tidal current, where the pollutant source comes from, where they go into the river and the quantity and concentration of the pollutant. He noted that some pollutants are absorbed into the sediment mud, and sediments can drift with the current or settle down to the bottom. Some pollutants can break down or change into some other form in the estuary.

Mr. Chou presented a simulation of a pollutant transport study he did two years ago in the St. John's river in Florida. The presentation showed a graphical representation of a daily-discharge plume as it moves up and down the river because of the tide but also moves steadily toward the ocean. Mr. Chou pointed out that the closer to the source, the higher the concentration of pollutant. In a severe case or continuous source, contaminants can move upstream because of high tide and low flow.

The magnitude of the ebb currents is quite large. The effects of flood tide in the Wando go all the way to the end of the river.

As part of his work, Mr. Chou did an excursion analysis, which estimates how far a contaminant might travel. His study showed that if a contaminant was released at the northern boundary of the base, it could go 4.3 miles upstream during a flood tide. On the ebb tide, an item or contaminants could move down into the harbor and back into the Ashley, as far as 3.5 miles. Partly because of the physical shape of the Wando, it can travel 5.6 miles. NOAA constantly updates their tidal predictions with tidal constituents and coefficients, but these ranges are just a prediction.

Average water flow of the Ashley River is almost 5,000 cubic feet per second (CFS). The tidal flow is almost 30 times that. Cooper River tidal flow is 160,000 CFS. Combined tidal flow of the Wando and Cooper River is about 350,000 CFS. The natural tidal flow in the Cooper River can potentially provide all the dilution of pollutants.

In response to a question, Mr. Chou explained that when a water body is colder, it has more viscosity and tends to flow slower; however, a six-foot tidal force has much more impact than viscosity or temperature. The tidal force will have an effect on the density. If you have very dense water because of high salinity and fresh water at the bottom, it would change circulation of the water. If you have a pollutant on top, it would stay on top.

Mr. Chou showed the drainage area boundaries for Noisette Creek. The Navy has seven percent of the entire drainage area and 93 percent is from City of North Charleston. Their site study measuring the full velocity of Noisette Creek found that the river will flush 88 percent of its water out to the Cooper River or Harbor in half a day (one tidal cycle).

Continuing, Mr. Chou told the board that 25 percent of the Shipyard Creek drainage area is on Navy property and 75 percent is off-site. He noted that the flow velocity of Shipyard Creek is very, very slow; the creek is so deep, the tide does not move very fast. At the entrance channel, the tide moves less than 1/10th of a foot per second. In order to flush out 90 percent of the water in Shipyard Creek, it takes more than five days. This is the kind of system where things that are placed

in the creek tend to stay there and settle.

Sometime in September 2002, EnSafe asked ECT where contaminants might move if released from the base. Mr. Chou's initial study to answer this question identified low energy areas in the estuary, which Mr. Chou pointed out on a map. One area is around the base, and a shallow area is near Crab Bank. The recent oil spill partially confirmed his estimate, as oil collected in many of the same locations. The newspaper story detailing where oil is or is headed showed Crab Bank, Morris Island and the piers. Each of these is right in line with Mr. Chou's estimate.

In conclusion, Mr. Chou said that water contaminants from the City of North Charleston going into Zone J can be dispersed to a large area, including the Ashley River, the Wando River and to the ocean. The further the pollutants travel, the more they are diluted. Pollutants in the Cooper River can come from a large area because of the complexity of tidal flow.

#### Questions and Closing Remarks

There were no questions. Mr. Hunt announced that the next meeting of the RAB would take place on Tuesday, March 11.

The meeting was adjourned.