The Corps is giving new life to the *Potter*. Page 2

Jan de Nul has a brand new hopper dredge. Page 10.

Copenhagen in the Spring! Conference on the Øresund link. Page 14.

Removing contaminated sediment at the Gould Superfund Site. Pages 3 and 6.
Four Seasons Uses Auger Dredge to Remove Hazardous Sediment in Superfund Contract

The 10-inch auger dredge pumped a maximum of 600 feet to the filter press. Troy Guidry, environmental technician, works from a small boat collecting water samples and monitoring the turbidity barrier.

Stockpiled sediments are covered with heavy plastic. The dredge is pumping to a processing area behind the stacks.

Jeff Grist, national dredging manager for Four Seasons Environmental, briefs workers on the East Doane Lake Remnant cleanup.

Four Seasons Environmental used a 10-inch auger dredge to move 11,000 cubic yards of contaminated material from a Superfund site in Portland, Oregon. The $3 million cleanup project began the first of August, 1998 and was completed by the end of November.

The Gould Superfund Site is one of many locations registered on the National Priorities List by the United States Environmental Protection Agency (USEPA). It is a hazardous waste site near the Willamette River in an industrial area of Portland. In the center of the site was 4.6-acre East Doane Lake Remnant, a shallow impoundment containing toxic lead sediments. From 1949 to the present, waste materials made up in part of several types of hazardous substances including, but not limited to lead, sulfuric acid, arsenic, cadmium, chromium and zinc were disposed of at this site. The soils and lake sediments contained an estimated 87,000 tons of lead waste with up to 19 percent by weight lead concentration.

The Gould Superfund Site Respondents, along with Advanced GeoServices Corporation, an engineering oversight firm, selected Four Seasons Environmental, Inc. of Port Allen, Louisiana as the primary contractor to conduct an “early remedial action” cleanup, that involved dredging and volume reduction of toxic sediments from the lake remnant.

Jeff Grist, national dredging manager for Four Seasons Environmental, used a 10-inch IMS 4010 Versi-Dredge to remove 11,000 cubic yards of highly contaminated toxic sediment from the lake. The dredge has an eight-foot, heavy duty horizontal auger with special cutter knives that could handle the rubbish that the dredge encountered and move it to the processing area. Besides the contaminated silt, the pond contained cables, batteries, air cylinders, concrete blocks, steel slag material, tires and other typical industrial debris. Much of this was removed by divers before dredging began, but the dredge ran into objects throughout the project. The dredge, designated PB-4006 by Four Seasons, is powered by a Cummins 177 hp Cummins diesel engine, and was propelled using an anchor and cable traversing system. It pumped a maximum of 600 feet to a filter press on shore.

The company also owns two Mud Cats and several Crissafulli dredges.

Four Seasons modified the dredge by installing a WINOPS Dredge Positioning System from Lyman Bur & Associates, interfaced with two Trimble NT 300D DGPS receivers. The DGPS antennas were mounted at centerline on the bow and stern of the dredge, eliminating the requirement for a gyro to establish heading.

“The quality of the positions from the receivers was sub-meter and precise enough to compute the dredge heading with surprising results,” said Burk. A sensor on the cutterhead determined the z axis. It was important to position the cutterhead as accurately as possible because of the need for surgically accurate removal of the contaminated sediment.

“It was a challenge to install a system of this complexity on a 25-foot dredge,” said Burk. “Power was the biggest problem, and several supplies for 100 VAC/12VDC were attempted,” he said.

A gas generator with 12 VDC charging circuit and lead acid battery finally kept the system operating. Also a challenge was the implementation of site health and safety. Because of the highly toxic nature of the work area, all workers inside an established perimeter were required to wear protective suits with special gloves and boots. This included the dredge operators, surveyors and filter press operators.

“This was not my normal dredge experience,” said Burk.

Grist stated that it is unusual for a small environmental dredge to have such sophisticated positioning equipment.

Four Seasons sub-contracted David Evans & Associates (DEA) to perform a complete debris location and pre-dredge hydrographic survey. Using an 18-foot jet sled and 14-foot survey boat, they did a complete survey of the pond using an InnerSpace 440 echo sounder, towing a side scan sonar, magnetometer and underwater video. The towed equipment was provided by Golder Associates of Redmond, Washington.

Using the event-based video camera, they tagged and mapped each piece of debris. Divers then removed most of the large items before the dredging began.

Pat Smith, survey project manager, provided Lyman Burk with the lake coordinates and the pre-dredge survey, which Burk input to the WINOPS software, providing a baseline record for the dredge operator. The software computed removal limits as the dredge progressed, and clearly displayed them for the dredge operator. Manual tide or lake level was entered each shift to maintain accurate vertical geometric depth of the cutterhead.
The filter press, located on the bank a maximum of 600 feet from the dredge. The worker is outfitted in protective clothing, which was required for everyone working in the area.

The DEA team surveyed behind the dredge, creating maps and calculating quantities. The lake was divided into 12 sectors for sediment removal, and the thickness of the sediment to be removed varied from one to five feet. DEA developed a technique called Dredge Monitoring Survey, with models in the software for each area. This allowed them to produce maps and contours of each isolated area as the project progressed.

Four Seasons isolated the clean areas from areas still to be tested using impermeable turbidity barriers. They backfilled with six to nine-inch aggregate as soon as the sediments in the area were determined to be clear of contaminants, using 95,000 tons of rock to completely fill the lake.

The slurry was pumped into holding tanks, dewatered via large filter presses, and volume-reduced into filter cakes, which were stockpiled and covered. This is the third phase a long-term cleanup, which will be completed this year.

Contractors will continue to consolidate the contaminated materials on the site into a RCRA-designed (Resource Conservation Recovery Act) landfill, which will be monitored regularly in the coming years. The land will eventually be used in an industrial application.

Four Seasons Environmental, Inc. is a $70 million a year company specializing in small river and lake reclamation projects, refineries and other projects for the petrochemical industry. Headquartered in Greensboro, North Carolina, the company has offices in Port Allen, Louisiana; Columbus, Ohio; Nashville, Tennessee and Charlotte, North Carolina. It is a subsidiary of Great Lakes Chemical Corporation. The staff of 400 employees includes engineers, environmental technicians, site superintendents and project managers.

The company is now working on a municipal sludge project in St. Helens, Oregon.

In IDR issues to come:
The largest hopper dredge ever built is delivered to Penta-Ocean Construction
A new port is planned in Egypt
A massive land reclamation project in Singapore will link five offshore islands
Larry Patella retires from the Port of Portland

Ports Disappointed
In 105th Congress

U.S. public ports gave the 105th Congress an incomplete grade for its failure to enact the Water Resources Development Act (WRDA) legislation this session. WRDA legislation, among other things, authorizes deepening and modification of federal navigation projects at the nation's ports.

"Essential navigation dredging projects for ports around the nation were held hostage by election-year politics," said Kurt J. Nagle, president of the American Association of Port Authorities (AAPA).

"Congress' inability to take action on this critical bill contradicts their focus on global trade as the foundation for our strong (U.S. economy)," he added.

Although the Senate approved a Water Resources Development Act (WRDA) bill in early October, further progress was blocked in the House over provisions in the House bill relating to a flood control project in Sacramento, California.

"We appreciate the hard work of Assistant Secretary of the Army for Civil Works, Dr. Joseph Westphal, the Senate Environment and Public Works and the House Transportation and Infrastructure Committees to try to find a solution that would let the bill move," said Nagle. "Unfortunately, inaction won over legislation that serves to benefit the entire country."

Keeping federal navigation channels open for trade is a critical issue for the country as well as for ports. Passage of the landmark WRDA in 1986 revived the water resources development program by placing greater financial responsibilities on local project sponsors. Congress

Continued on page 15...

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