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Water Quality Update

Oklahoma, EPA join in effort to eliminate bureaucratic duplication

The Oklahoma Department of Environmental Quality (DEQ) and U.S. Environmental Protection Agency (EPA) Region 6 have joined in an effort to eliminate duplication between the agencies. The program is called the "Performance Partnership Agreement," and redefines the partnership between the agencies.

Mark Coleman, executive director of the Oklahoma DEQ said, "The focus of our agreement is twofold: first, we want to capture whatever joint resources we can. Instead of EPA looking over our shoulder, I would rather they work side by side with my people. I would like to change the focus from review to front-line work."

The second part of the agreement is openness of information. "I believe EPA has a statutory duty to perform oversight, so our information will be fully open to EPA. Instead of spending all our staff time preparing reports for EPA, by making our data completely available to EPA, they can access them at any time, even electronically. They can directly extract any information they want," he said.

The partnership agreement was first proposed by Oklahoma DEQ a year ago. Since then, the EPA has recommended that all state-level environmental agencies negotiate similar agreements.

Oklahoma DEQ and the Region 6 EPA negotiated the partnership agreement which represents a fundamental shift in some roles from the federal government to the state level in Oklahoma.

"With this agreement we recognize and support the primary role of DEQ in administering both the federal and state programs for which it is authorized," according to Jane Saginaw, EPA Region 6 administrator.

The Oklahoma DEQ will have responsibility for permit review and determination; facility inspection; administrative and compliance; compliance assistance; and environmental education.

EPA Region 6 will oversee permit peer review; criminal enforcement training of DEQ personnel; standards setting in cooperation with DEQ; technical assistance to DEQ; and interstate issues.

"This agreement with Oklahoma DEQ is the first of many we anticipate in our region. We look forward to seeing the future success of this agreement repeated with other partners in environmental protection," Saginaw said.

⇒ *Texas & Southwest Environmental News*, July, 1996, Vol. 6(5)

◆ New Process Uses Molasses to Clean Up Ground water ◆

The U.S. Patent Office has awarded Geraghty & Miller, Inc., a patent for an environmental remediation process which uses a molasses extract to clean up ground water contaminated with dissolved heavy metals.

The process is known as *In Situ Reactive Zones for Precipitation of Dissolved Heavy Metals*. It can be used to treat the ground water in situ, or in place.

Existing treatment methods for removing and disposing of dissolved heavy metals from ground water are very complex and more costly, involving more capital and labor intensive techniques, according to company spokesmen.

The concept of in situ reactive zones is based on the creation of a subsurface zone where migrating contaminants are intercepted and permanently

immobilized or degraded into harmless end products. Geraghty & Miller's precipitation approach involves injecting a carbohydrate and sulfate solution into the affected area of the aquifer via a series of injection wells.

Blackstrap molasses, which has carbohydrates and sulfates in it, is used as the reagent. The micro-organisms in the water consume the sucrose solution, and in the metabolic process utilize all of the oxygen supply in the ground water. Depletion of oxygen causes anaerobic conditions, resulting in the dissolved metal ions combining with the sulfide ions to form a precipitate, which becomes immobilized in the soil.

Suthan Suthersan, Vice President and Director of Remediation Engineering for the firm, describes this innovative treatment process in his forthcoming book, *Remediation Engineering: Design Concepts.* The book is scheduled for release in the fall.

The process has already been used to purify ground water which has been contaminated with heavy metals in several locations across the U.S., and has yielded outstanding results, according to Arul Ayyaswami, an engineer at Geraghty & Miller who has worked with Suthersan as project manager on several of the sites.

"This process uses the capacity of soil and sediments to retain metals," said Ayyaswami. "Remarkably, the process starts to have an effect within weeks of injection. Cleanup is usually complete within three to six months."

Ayyaswami said tests have shown ground water within 30 feet of the injection to be 80 to 90 percent free of contamination within six months or less. "And there is no contaminated sludge to dispose of," he added. He said the technology shows great promise.

For more information on reactive zone technology contact Suthersan at 215-752-6840. ♦

⇒ adapted from *U.S. Water News*, August, 1996, Vol. 13(2)

RED RIVER...federal and state agencies debate an expensive desalinization proposal and are rubbing salt in old wounds

What is clean water worth, who should pay, and what are we willing to sacrifice? These are the salient questions behind a battle that crosses state lines and makes for some surprising bedfellows.

The controversy arises around a $300 million water project to remove natural salts from the Red River. According to the Red River Authority (RRA) of Texas, the river is so salty that more than 1,000 miles of streams in the river system are severely contaminated by naturally occurring brine.

The Red River Basin Chloride Control Project (RRCC) proposes to more fully utilize the surface water supplies in Texas, Oklahoma, Louisiana and Arkansas and received its original congressional authorization in 1962.

Initially, the U.S. Fish and Wildlife Service (USFWS), the Texas Parks and Wildlife Department (TPWD) and the Oklahoma Department of Wildlife Conservation (ODWC) didn't object to the project, but have since had second thoughts. "Our fund of environmental knowledge has changed considerably in the last 20 years. Had we known what we know now, we probably have done things differently," said Charlie Scott of the USFWS.

"The River is available. The project will not dewater the river, but be a supplemental source for water. We'd rather use the Red River than develop off site reservoirs," said Ronald Glenn, general manager of the Red River Authority. "Developing additional surface lakes takes land, and here are environmental concerns with that, too."

According to Dean Englund, RRCC project manager for the Tulsa District Army Corps of Engineers, which is in charge of planning and constructing it, the project will make 315 million gallons of water available and provide $30 million in benefits annually. Englund said that 75 percent of that will provide 240 million gallons of water for the Texas counties of Collin, Dallas, Marsh, Grayson, Denton, Tarrant and Ellis.

The remaining 25 percent of the project will allow 600,000 acres of dryland farm ground to be converted to irrigation. The Corps projects a

gradual conversion of 106,000 Oklahoma acres and 154,000 in Texas by the year 2045.

According to Scott, the USFWS does not oppose the use of the water, but rather the removal of a natural constituent from the river. Scott, said "The objective of the project is not to provide a water supply for agriculture, municipalities or industry. The objective is to remove salt from the river. If they reformulated the project, they could pursue other alternatives. Let's go back to the drawing board. Technology has changed since this project was passed. There are better ways to accomplish the same thing. Lets look at some of them. We just think they should remove chloride at the point of use rather than changing the river."

As it currently stands, the cost of the project is being borne entirely by the U.S. taxpayer. Scott's idea to desalinate the water after it leaves the river would put the expense on the end-user. However, this would price it out of the agriculture market.

Federal and state resource managers are also worried that the cost of purifying the water will be measured in more than dollars. Their greatest area of concern is the diverse aquatic ecosystem of the upper Red River. Three species of fish found there are unique to the Red River above Lake Texoma.

"This is one of the last intact prairie stream ecosystems. Upstream from Lake Texoma, the river looks the same today as it did 200 years ago. It's changed very little in physical features and fish composition. Studies show the fish species are already under pressure now from development within the basin. The project will stress them even more," Scott said.

The original Environmental Impact Statement for the project was completed in 1977, but concerns raised by the USFWS, TPWD, and ODWC officials merited another look at the proposed project. The Corps expects to have the Supplemental Environmental Impact Statement available by mid August.

Scott said one of the problems is that the agencies involved don't know all the answers to the environmental impact questions yet, but the Corps and the RRA are unwilling to wait. He said, "This is untested engineering. We don't know for sure what will happen when we remove a natural constituent from the river. We all agree there will be a negative impact. We can't agree on how severe it will be."

The Red River ecosystem is not the only one the resource managers are concerned about. Once the salt is removed from the river, it must be disposed of. The Corps plans to pump what they term "waste-water" to brine disposal reservoirs. Truscott and Crowell Brine Lakes are located in Knox County and Foard County, Texas, respectively; a third, Root Creek Lake, is proposed for Greer County, Oklahoma.

Eventually these reservoirs will become so salty they will no longer support aquatic life. The chloride deposits remaining after evaporation will also contain selenium, which in high concentrations is toxic to the migratory waterfowl.

Another point of contention between the two sides is the fishery at Lake Texoma which is fed by the Red River. Sport fishing on Lake Texoma is big business, and stripers are the main draw. Texoma is one of the few freshwater lakes where the saltwater fish reproduce naturally.

Bruce Hysmith, TPWD fisheries biologist at the lake, is direct with his criticism for the project. "This is the Corps' last fandango. The project has been approved by Congress, it has funding, and they're staffed for it, so they want to run with it. Mother Nature made this 200 million years ago and has done just fine without any help from man."

Construction has been delayed on the next phase of the project pending completion of the Supplemental Environmental Impact Statement. Because of this delay, the project has not required further funding, and has, in fact, a $10.7 million carryover.

Although there is a construction moratorium, two design contractors are still involved and are working with the Corps. ♦

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