

Laying waste to toxic waste

by Barbara Webber

Controversy swirls around the Sydney Tar Ponds procurement

SYDNEY, LOCATED ON Cape Breton Island, Nova Scotia, is home to a chemical soup known as the Sydney Tar Ponds – called, rightly or wrongly, the worst toxic waste site in Canada. After a long, often frustrating process, the cleanup of the Tar Ponds is underway. The project is estimated to cost \$400 million with the federal share being \$280 million and the province's share coming in at \$120 million. Ron Russell, the Nova Scotia minister responsible for the Sydney Tar Ponds Agency (STPA) has stated the province will not pay more than the \$120 million – the cost for cleaning up the provincially owned portions of the site.

In the beginning

The story of the Tar Ponds goes back over 100 years. In 1899, the Dominion Iron & Steel Company Ltd. (DISCO) began construction of a steel plant on the eastern shore of Wintering Cove in Sydney Harbour. When DISCO began production in 1901, it was the largest steel mill in North America. As the price of steel fluctuated and new owners took over the mill, the slag from the steel was spread over the area around the plant. In 1957, Dominion Tar and Chemical Co. (Domtar) abandoned its chemical plant at the northwest corner of the Coke Ovens, leaving derelict tanks behind. When the last private owner of the steel mill, Hawker-Siddeley, announced closure of the plant in 1967, the provincial government felt it had no choice but to buy the plant to save jobs in that part of Nova Scotia. In 1968, the province bought the plant, and formed Sydney Steel Corp. (SYSCO) as a Crown corporation to run it. That same year the Canadian government

bought the Coke Ovens, and also formed a Crown corporation, Cape Breton Development Corporation (Devco), to operate the facility and Cape Breton's ailing coal mines. The Coke Ovens closed in 1988 when new processes online at the steel plant no longer required coke. The steel plant closed forever in 2001.

The first official sign of problems in the area was the discovery, in 1982, of PAHs (polynuclear aromatic hydrocarbons) from the Tar Ponds in Sydney Harbour lobsters. In 1986, Canada and Nova Scotia signed a \$34.5 million agreement to dredge the Tar Ponds. The concept was to pump sediment through a mile-long pipeline to an incinerator and power plant that would generate electricity. Five years later with 90 percent of the work on the incinerator complete, the cost-share agreement expired and Nova Scotia continued the project alone. Although the incinerator was commissioned and passed air emissions tests, problems with the pipeline prevented this project from going into operation. Currently there are approximately 750,000 tons of PAH and PCB material in the Tar Ponds.

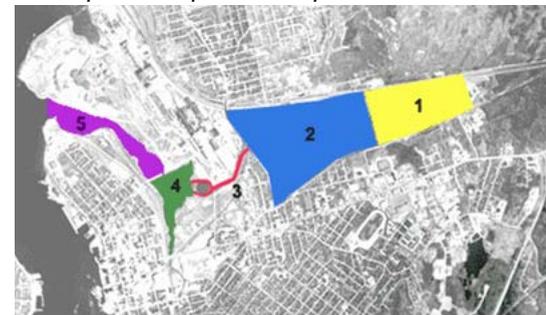
The mid-1990s were a pivotal time for the area. In 1996, the province proposed to bury the Tar Ponds under slag from the steel plant. That brought condemnation from some residents. That same year, federal and provincial ministers met to consider a community-based process to find acceptable solutions. That produced the JAG (Joint Action Group) whose members – local residents, business people, and representatives of three levels of government and youth – ultimately provided cleanup recommendations to government seven years later. In 1999, the federal government,

Nova Scotia, and CBRM (Cape Breton Regional Municipality) signed a \$62 million cost-sharing agreement to fund scientific studies, a surface cleanup and JAG activities. In 2004, Canada and Nova Scotia committed \$400 million to jointly cleanup the Tar Ponds and the Coke Ovens with a new provincial agency, the STPA, managing the project. The agency seeks to safely destroy the worst contaminants – PCBs in the Tar Ponds and the contents of the Tar Cell at the Coke Ovens – using technology proven safe and effective on similar sites.

Cleanup begins

Before the main cleanup begins, four preliminary projects will be completed. Rerouting Coke Ovens Brook began this summer, with the contract awarded in July 2005. Engineering and screening have also been completed on relocating the Victoria Road Water Main. Work was to begin in August. Two years ago, oil was discovered bubbling up out of the Cooling Pond. Scooping the oil out proved costly, so removal of the pond is on the agenda. Finally, a dam will be constructed at the outer end

www.tarpondscleanup.ca/default.asp?T=7&M=43



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Cover image: From a position at the mouth of small a creek that runs through the former (SYSCO) steel plant and empties into the South Tar Pond, and looking away from the pond, you can see environmentally secure disposal containers that are used to transport material (coal and tar) from the Domtar tank to a disposal site.

All images © 2004 Sydney Tar Ponds Agency (STPA).

of the Tar Ponds to stop the small amount of contaminated material still leaking into Sydney Harbour.

Gary Campbell, the STPA's executive director says, "The scope of the dam project presents many challenges. There are 30 sewer outfalls flowing onto the site and it's a tidal estuary. We have to be concerned about what the tides take in and out, plus there can be flooding problems. Wash Brook, a tributary to the Tar Ponds that flows through much of Sydney, has a history of flooding. An engineering analysis has to be done there, then models have to be constructed and observed. Given the time involved, there won't be any tenders called this year for that part of the project."

And the federal government ordered another full panel environmental assessment (paid for by both the federal and Nova Scotia governments), to begin this year.

Campbell explains, "We were expecting an environmental assessment. These can go through different processes. Most common is a screening (accounting for 99 percent of all federal assessments), then a comparison study – similar to a panel except that government experts do it. The most involved and time consuming is a panel, which is the type of the upcoming assessment. The agency has no control

over the timeline for a panel assessment and we don't yet know what will be asked of us. Once we get past this assessment, which will take at least another year, we estimate it will take 7-10 years to complete the project."

Controversy reigns

The Tar Ponds have been controversial for many years with the Sierra Club (www.sierraclub.ca) and some local residents voicing opposition – and skepticism – to the various cleanup attempts through the years. To date, no contract has been awarded for the Tar Ponds cleanup, and strong opinions are held as to what should be done and how.

Bruno Marcocchio, Sierra Club's representative in Nova Scotia, has high praise for the Clean Soil Process (CSP), developed in Canada and used by TDV, an subsidiary of Thermo Design Engineering Ltd. He says TDV/TDE has designed, constructed and commissioned many plants valued at over \$100 million and that both he and TDV/TDE were under the impression that this technology was the option that would be chosen for the current cleanup.

CSP is one of several commercialized soil-washing processes – one of the most frequently applied technologies in Europe.

Les Ignasiak, consultant to TDV/TDE, says the technology, which is gaining recognition in the US, has many pluses. "Low operating costs, simplicity, application of reliable and proven equipment utilized by the mineral processing industry and an acknowledgment that washing is an environmentally friendly process are several key advantages," he says. "CSP technology is uniquely designed for cleanup of sand/soil/sediment contaminated with oils and tars. It utilizes the high affinity of coal towards organic matter, of which oils and tars are an example. The process results in the generation of clean mineral matter and carbon fuel. CSP does not use any conditioning chemicals. That makes the CSP process even more environmentally friendly by eliminating most of the problems associated with water cleanup, recycling and disposal."

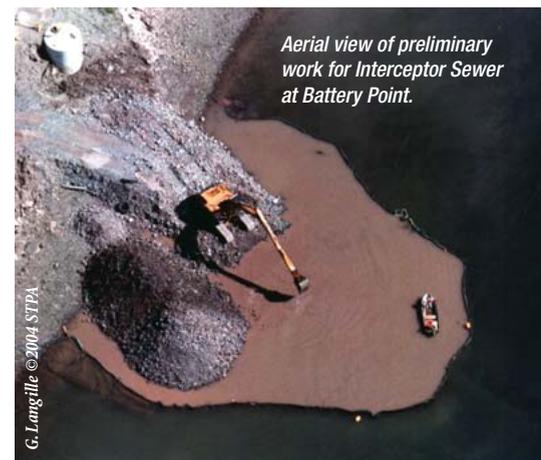
Ignasiak explains why TDV/TDE thought CSP would be the chosen option for the Tar Ponds cleanup. "In 1994-96, CSP technology was extensively evaluated by the federal [government] departments of Environment Canada, Industry Canada and the

National Research Council. Through the Environmental Technologies Commercialization Program, the federal government invested \$2.4 million into commercialization of the CSP. The Sydney Tar Ponds and Coke Ovens site was one of two sites recommended by Industry Canada for an application of the CSP technology."

In 2002, a bench and pilot scale demonstration of CSP technology was carried out on the Tar Ponds, using low PCB content sediment for the Remedial Technologies Demonstration Program managed by Vaughan Engineering Ltd. (<http://tarponds.cleanup.ca/reports/CBCL-31.pdf>)

Parker Donham, spokesperson for the STPA says, "CSP fared poorly in these tests. The process reduced the volume of contaminated material requiring destruction by only 25 percent, and the so-called clean material did not meet environmental standards for disposal in a landfill. Even after further treatment with more complex technologies, it still had metal content that precluded disposal in a normal landfill."

Ignasiak says, "Seventy-five percent of the Tar Ponds content would be converted into carbon fuel product that would be utilized, at no cost, by St. Lawrence Cement. The remaining 25 percent is mineral matter of which a part may require additional cleanup using direct thermal desorption – a very common process for removing volatiles from contaminated soils at a temperature of 300 to 400 degrees Celsius."



Aerial view of preliminary work for Interceptor Sewer at Battery Point.

G. Langille © 2004 STPA

Choices, choices

Between 1997-2003, a consortium of three engineering companies were contracted by the Nova Scotia and federal governments to develop fully fledged approaches to the Tar Ponds and Coke Ovens site remediation. In 2003, the *Remedial*

Action Evaluation Report (RAER) presented six cleanup options for the Tar Ponds and four for the Coke Ovens site. In the spring of 2003, following a period of extensive consultation and evaluation of the *RAER* options, 1,700 Cape Breton residents attended workshops and filled out workbooks listing their preferred options. Although there was no clear winner, Option 3, a complex string of technologies that included soil washing as one of several elements, received the greatest support. In the end, JAG recommended a different option.

Ignasiak says, “[They] disregarded the wishes of the Cape Breton community and selected incineration/capping as the technology. Ironically, the technology selected was identified by the community as the least desirable cleanup option.”

Ignasiak claims that because of the presence of tar/coke/coal in the sediment, CSP is the only remediation technology that should be used for the Tar Ponds. He refers to the *Final Report – Bench Scale Demonstration of Treatment*, co-funded by the Nova Scotia Department of Transportation and Public Works, which details the results obtained using CSP technology. He says, “Vaughan Engineering collected all the results. This report (August 2003) clearly states that the TD Enviro report is the best and most detailed report.” (Three months before, on May 15, 2003, TD Enviro and Thermo Design submitted a *Remediation Technologies Technical Demonstration Program Report* that includes all the information stated above by Ignasiak.)

The STPA categorically rejects these assertions. “CSP is not the only technology that will work on Tar Ponds sediments. In fact, it did not fare well in bench and pilot tests,” says Donham. He points to the United States Environmental Protection Agency Superfund website. “A quick look [at that website] will demonstrate that many, many technologies have been used successfully at hundreds of similar sites.”

But Ignasiak says, “A thorough review of US EPA data shows that none of the Superfund sites remediated so far has any resemblance in terms of variety of contaminants, their concentrations, site size and soil matrix to Sydney Tar Ponds and Coke Oven sites.”

Ignasiak says the *RAER* cost estimate for Option 3 is \$521 million, but the STPA estimates it could be as much as \$1 billion.

He says, “In 2003, TDV/TDE provided both governments with a guaranteed cost estimate for Option 3, which was \$393 million +/- 5 percent. The cost estimates submitted by TDV to STPA over two years ago, regarding modified *RAER* Option 3, show that 10 percent engineering, 10 percent management and 25 percent contingency is built into the estimates. The cleanup budget is \$400 million.”

Donham says that the \$400-million budget includes many costs beyond cleanup technologies, including insurance, management, engineering, oversight, environmental monitoring, communications, and contingencies. “We expect actual cleanup technology costs to be well below \$400-million.”

He adds, “We are a government agency spending public money. We have to follow tendering rules that have been developed to insure fairness and transparency. I suspect sole-sourcing a \$400-million contract based on assurances there would be no cost over-runs would not sit well with Canada’s procurement community.”

As previously stated, the STPA is committed to using only proven technology. Campbell, the agency’s executive director further explains, “We instigated a tech demo program where we went to the world and said, ‘Show us your technologies.’ We hired top people from all over the world – toxicologists and engineers who worked on projects in other parts of the globe. Many companies responded, and the outcome of these consultations and the testing program all factored into our decisions on technologies, [as] did the community’s expressed preferences. But after 1,700 individuals completed the workbook sessions, no clear consensus emerged on what preference to use.”

Again Ignasiak disagrees saying, “that 66.5 percent of the individuals that completed the workbook sessions selected *RAER* Option 3 as the most acceptable. Many more would support modified Option 3 that is more environmentally friendly and costs \$393-million only.” He also says TD Enviro will be presenting at the latest environmental assessment and “will be pursuing this vigorously!”

Work proceeds

Despite these different viewpoints and the upcoming assessment panel, work is

From a resident’s yard, you can see the Sydney Steel (SYSCO) site SERL incinerator.



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proceeding at the site and behind the scenes. Timelines available on the STPA website (www.tarpondscleanup.ca) shows completion dates for many aspects of the project. These are broken down into preventative works, long-term projects, design engineering, the environmental assessment and dismantling of the Domtar tank.

At the end of June this year, bids were sought for the engineering design of the cleanup with the successful bidder also being responsible for managing construction of the project. The final engineering contractor is to be selected by year-end. The environmental assessment could take up to 18 months. The four previously mentioned projects are in various stages of development. The overall project is expected to be completed in 2012. At the end of this past June, the STPA called for applications for four directors, one each for engineering, environmental services, communications and community relations and corporate services. And on July 23, there was an RFP for the services of a consultant to conduct a labour force and business capacity study for the agency.

The local and regional communities are expected to benefit from the project too. Campbell says the agency is working on an online business registry and an economic business benefits plan. “Initially we will do an outline and present ideas. For example, we have met with the off-



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Oil-soaked sludge in the South Tar Pond.

shore people – who had some of the same challenges we have – to get ideas, and we will use many of their bid categories. We have done a project description (by an engineering firm) that proceeds to another level of details. Then further details for the tender packages will be determined.

“There will be a lot of local benefits. For example, Conostoga-Rover, Jacques Whitford, AMEC, ADI, CBCL and almost all the major engineering firms have offices in Sydney. As usual in a project of this scope, there are partnerships – AMEC has teamed up with Jacques Whitford. The online business registry will enable

the larger firms to tap into local business and take an inventory of what’s there. We are also doing a gap analysis to determine what the gaps are and find the companies to fill them.”

Campbell also says the agency is working on a procurement policy similar to the provincial one. “The issue for the agency is that in dealing with a sensitive environment sometimes, we need to move quickly. For example, we have five air stations. If we detect an issue with air quality, we need someone there right away. We are going to need specialized people for special projects and therefore we will have a slightly differ-

ent human resources policy, similar to the province’s, although we will use an alternative procurement report using the usual procurement rules.” Campbell estimates 2,000 plus person years for the project.

Although the environment assessment review will take 12-18 months, the project is a reality. There may be detours and some bumpy roads ahead, but hopefully this time the project will restore Sydney’s natural environment safely and effectively. ❧

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