APPENDIX K

SYDNEY TAR PONDS JOINT REVIEW PANEL 55 RECOMMENDATIONS

9 CONCLUSIONS AND RECOMMENDATIONS

The Panel concludes that the Project and the technically and economically feasible means of carrying out the Project are unlikely to result in significant adverse environmental effects provided that the recommendations of the Panel are followed and implemented.

1. *Recommendation to NSEL:* The Panel recommends that the Nova Scotia Minister of Environment and Labour approve the undertaking subject to conditions which address the recommendations in this report.

2. *STPA Mitigation Measures:* The Panel recommends that the Government of Canada and the Government of Nova Scotia ensure that mitigation measures proposed by the Sydney Tar Ponds Agency as an integral part of the Project are implemented.

3. *Toxic Substances Management Policy:* The Panel recommends that Environment Canada, with the assistance of Health Canada, provide advice to PWGSC to ensure the Project is in full compliance with the *Toxic Substances Management Policy*. The federal departments should ensure that an analysis of risks, costs and benefits is completed of the North Pond PCB removal alternative. That analysis should give appropriate consideration to social issues. The results of the analysis should determine if the PCBs in the North Pond hot spot are to be removed or if minimizing PCB exposure and the site's potential risks are to be addressed by way of the *Full Containment, No Incineration* project alternative. The Panel recommends that PWGSC and NSEL require STPA to conduct the same analysis of South Pond PCBs.

4. *Combined Emissions and Expected Ambient Air Concentrations*: The Panel recommends that NSEL and PWGSC require STPA to calculate the total expected ambient air concentrations due to the combination of all Project-related emission sources and the existing pollutant levels in the local air shed. The results of this analysis may affect the ecological and human health risk assessments. NSEL and PWGSC should require STPA to re-evaluate the risk assessments and incorporate the results into the Project design and applications for regulatory approvals, as appropriate.

5. *The Solidification / Stabilization Process and Air Emissions:* The Panel recommends that NSEL and PWGSC require STPA, as part of a pilot in-situ study of the solidification / stabilization process (Recommendation 13), evaluate the potential for air-borne emissions and implement appropriate mitigation measures and integrate these measures within the Project design.

6. *Remediation and the Air Monitoring and Follow-Up Program*: The Panel recommends that NSEL and PWGSC require STPA (with the appropriate involvement of Environment Canada, Health Canada, the Medical Officer of Health, the Cape Breton District Health Authority, and the Project Community Liaison Committee) to design an Air Monitoring and Follow-up Program for the Project. The program should be based on technically sound principles and procedures with special consideration given to:

- Incorporating the results of the proposed evaluation of the existing monitoring network, including an evaluation of the causes of and responses to recent air quality incidents at the Tar Ponds and Coke Ovens sites;
- Development of conservative, unambiguous and practical air quality monitoring criteria;
- Appropriate responses to exceedances of air quality monitoring criteria;
- The need for real-time data, early warning and early reporting of deteriorating air quality;
- The need for a public communication plan providing results and, if required, an indication of effects on public health;
- Monitoring of the PM2.5 and PM10 fractions of particulates;
- PCB monitoring near Tar Ponds excavations;
- Reporting real-time air quality exceedances at the perimeter of the sites or off-site to the Medical Officer of Health; and
- Periodically reporting back to the NSEL and PWGSC on the accuracy of the air quality predictions and the effectiveness of any measures taken to mitigate adverse air quality effects.

7. *Groundwater and Surface Water Protection Design Requirements:* The Panel recommends that, prior to providing funds or issuing approvals to proceed with solidification / stabilization, NSEL and PWGSC require STPA to:

    - Incorporate hydrogeological modelling results into the final design of the groundwater and surface water control measures and the monitoring network;
    - Provide detailed calculations of the volume of groundwater that could flow through the Coke Ovens site following surface water diversion and the installation of the underground barriers and the surface cap;
    - Assess potential hydrostatic mounding that may be generated when groundwater flow encounters cut-off walls and address the impact of mounding, if required.; and
    - Define and model the flow pattern of both ground water intrusion from the Coke Oven site and infiltration of sea water from the harbour to identify the amount of water that could collect under the monolith, including seasonal changes.

8. *Groundwater Monitoring Program:* The Panel recommends that, prior to providing funds or issuing approvals to proceed with the Project, NSEL and PWGSC require STPA to develop a detailed groundwater monitoring program for the various Project areas, including the intermediate and deeper bedrock zones. The program should demonstrate:

    - How the distribution and location of the water sampling wells would (a) detect the amount of water that would penetrate to the contaminated material through the cap and as a result of the modified groundwater flow regime, and (b) identify potential underground flows of contamination from the Coke Ovens site; and
    - How the flow of leachate from the municipal landfill site would be monitored and mitigated.

9. *Cap Design*: The Panel recommends that, prior to providing funds or issuing approvals to proceed with solidification / stabilization, NSEL and PWGSC require STPA to:

   - Develop scientific and engineering criteria to design the Tar Ponds cap, including thickness and hydraulic conductivity criteria for the various layers; and
   - Describe how the final design and implementation of both Tar Ponds and Coke Ovens site caps would respond potential problems such as exposure to repeated freeze / thaw cycles, non-aqueous phase layer (NAPL) migration, generation and migration of gas under the capping layer, erosion, and fissures.

10. *Cap Monitoring Program*: The Panel recommends that, prior to providing funds or issuing approvals to proceed with solidification / stabilization, NSEL and PWGSC require STPA to develop a cap monitoring program with an aim to:

    - Ensure that the physical integrity of the caps at the Tar Ponds and Coke Ovens sites can be effectively managed;
    - Assess the integrity of the monolith structure within saline conditions; and
    - Assess the permeability of the monolith cap under freeze / thaw conditions.

11. *Solidification / Stabilization Criteria:* The Panel recommends that, prior to providing funds or issuing approvals to proceed with solidification / stabilization, NSEL and PWGSC require STPA to:

    - Develop criteria for the solidification / stabilization process to be used for treating the North Tar Pond sediment, South Tar Pond sediment, incinerator bottom ash, Tar Cell materials and Coke Ovens Brook sediments;
    - As part of criteria development establish site-specific leachate criteria for PAHs and PCBs and data quality objectives to demonstrate that remedial activities would not significantly increase contaminant mobility; and
    - Provide the results of the above to Environment Canada and NSEL for review and comment.

12. *Treatability Study:* The Panel recommends that, prior to providing funds or issuing approvals to proceed with solidification / stabilization, NSEL and PWGSC require STPA to:

    - Assess the heterogeneity of Tar Ponds sediments and Tar Cell materials for characteristics relevant to solidification / stabilization;
    - Use the results of the above to conduct a laboratory solidification / stabilization treatability study on the South Tar Ponds sediment;
    - Based on the laboratory results develop interim specifications on the solidification / stabilization treatment formula (additives and dosage rates) to be used for the North and South Tar Ponds and Tar Cell; and
    - Provide the results of the above to Environment Canada and NSEL for review and comment.

13. *Pilot Scale Study:* The Panel recommends that, prior to providing funds or issuing approvals to proceed

with solidification / stabilization, NSEL and PWGSC require STPA to:

- Conduct a pilot in-situ study on both ponds including site specific evaluations of the proposed solidification / stabilization process;
- The evaluation should include use of the treatment formula specifications developed above and use of at least one type of construction technique proposed for full-scale application; and
- Conduct a sampling and testing program of the S / S products over time where samples of the in place product are collected and tested to determine compliance with the pre-established criteria; and
- Provide the results of the above to Environment Canada and NSEL for review and comment.

14. *Wastewater Treatment:* The Panel recommends that NSEL require STPA, when submitting information in support of approvals to discharge wastewaters, to:

- Provide details of the wastewater treatment methods to be employed;
- Identify the contaminants to be treated and their related numerical discharge criteria; and
- Provide information on how compliance with the requirements under Section 36 of the *Fisheries Act* would be demonstrated.

15. *Fish Migration*: The Panel recommends that NSEL and PWGSC require STPA to consult with DFO in the design of the Project's constructed watercourses and in the design of a long-term aquatic biodiversity monitoring study of the Coke Ovens Brook and Wash Brook watersheds.

16. *Landfarming:* The Panel recommends that, prior to providing funds or issuing approvals, STPA revaluate the need to undertake landfarming at the Coke Ovens site and provide the rationale for the decision to the Project's funding partners for approval.

17. *Water Quality Monitoring:* The Panel recommends that PWGSC and NSEL require STPA to:

- Monitor the quality and discharge rate of both the ground water and the surface water to the marine environment during the entire construction phase of the and the Tar Ponds and Coke Ovens site remediation project; and
- Establish a permanent water quality monitoring program at the discharge of the channel to Sydney Harbour.

18. *Ecological Risk Assessment:* The Panel recommends that PWGSC require STPA to undertake a quantitative assessment of the risk of remedial activities to marine receptors within the South Arm of Sydney Harbour. The risk assessment should incorporate changes in the flux of contaminants from the Tar Ponds during and following completion of the Project.

19. *Long-Term Monitoring of Sydney Harbour:* The Panel recommends that PWGSC, in consultation with NRCan, DFO, Environment Canada, and STPA, design a long-term monitoring program to document improvements in the environmental quality of Sydney Harbour. DFO should assume the lead for long-term monitoring.

20. *Air Dispersion Modelling & Risk Assessment:* The Panel recommends that

NSEL and PWGSC require STPA to conduct additional dispersion and risk assessment modeling once the number of incinerators and details of the incinerator design are finalized to confirm the predictions presented in the EIS. This analysis should be provided to Environment Canada, Health Canada, and NSEL for review and comment.

21. *Pollution Control and Monitoring Technology:* The Panel recommends that:

- EC and NSEL develop criteria for PCBs, dioxins and furans, and hexachlorobenzene in incinerator emissions incorporating the principle of best available techniques as it is defined by the Stockholm Convention;
- NSEL use the developed criteria in the drafting of regulatory approvals for incineration; and
- NSEL require STPA to identify and use best available technologies and best environmental practices when monitoring air emissions of PCBs, dioxins and furans, and hexachlorobenzene from the incinerator.

22. *Enclosure of Incinerator Facilities:* The Panel recommends that STPA be required by NSEL and PWGSC to enclose the incinerator and all ancillary storage areas for feedstock, bottom ash and fly ash in order to capture and monitor any fugitive emissions and to prevent adverse weather effects.

23. *Effects on Wells at the VJ Site:* The Panel recommends that NSEL and PWGSC require STPA to monitor the affect of Project water usage at the VJ site on the underlying aquifer and on private wells drawing from the aquifer, and to develop an appropriate mitigation plan should adverse effects be identified.

24. *Monitoring of Surface Water Resources:* The Panel recommends that NSEL and PWGSC require STPA to monitor the environmental effects of incinerator operations on surface water bodies and aquatic resources. Monitoring techniques should employ best environmental practices and results reported to the public and to the operators of local water supply systems.

25. *Phalen Site Water Supply:* Should an incinerator be sited at Phalen, the Panel recommends that NSEL and PWGSC require STPA to consult with CBRM and confirm that the municipality will be able to supply the required volume of water.

26. *Incinerator Bidders' Track Record:* The Panel recommends that, when requesting proposals for incineration services, STPA require bidders to provide full disclosure of their track record in constructing and operating comparable facilities including their record of regulatory compliance, and this information be (a) placed on the public record, and (b) be given significant weighting in the bidder evaluation process.

27. *Bond Requirements:* The Panel recommends that STPA require the successful incineration bidder to post a bond sufficient to cover the costs of completing the safe destruction, disposal or management of the contaminated materials intended for incineration, in the event that, for reasons of equipment malfunction, accidents, or failure to comply with regulatory requirements,

the bidder is unable to deliver the contracted services in a safe and timely manner.

28. *Increasing Regulatory Capacity:* The Panel recommends that NSEL review existing staff capacity in relation to the skill set and experience required to oversee an effective permitting an enforcement program for hazardous waste incineration, identify gaps and fill those gaps through appropriate training or staff acquisition.

29. *Thermal Relief Valve:* The Panel recommends that STPA be required by NSEL and PWGSC to install appropriate pollution control mechanisms on the thermal relief valve if it is technically possible to do so, and to investigate and incorporate ways to monitor emissions from the valve. STPA should also be required to develop appropriate protocols to deal with malfunctions.

30. *Monitoring Upset Conditions:* The Panel recommends that STPA be required by NSEL and PWGSC to monitor upset conditions at the incinerator and report them immediately to regulatory authorities, including the Medical Officer of Health. An appropriate response plan should also be put in place.

31. *Monitoring Environmental Effects of Incineration*: To validate the conclusions of the modeling and risk assessments the Panel recommends that NSEL and PWGSC require STPA to include the following in its monitoring and follow-up program:

- Establishing baseline conditions;
- Monitor contaminant levels in country foods such as fish and berries, and in garden produce; and
- Monitor effects of air emissions on sensitive lichen species.

32. *Community Involvement:* The Panel recommends that STPA, in collaboration with the Community Liaison Committee (see Recommendation 55) be required by NSEL and PWGSC to develop a community consultation program to engage with residents in the vicinity of the incinerator site to provide information, identify and address concerns, and establish an ongoing reporting protocol.

33. *Economic Benefits Strategy:* The Panel recommends that STPA be required by NSEL and PWGSC to develop a comprehensive economic benefits strategy to ensure that economic benefits and employment accrue locally to the greatest extent possible. The strategy should include a monitoring and reporting program to track local business and labour participation in the Project. The strategy should also address ways in which the Project can help to develop local business capacity and labour market skills in order to have lasting effects after completion of the remediation.

34. *Women's Employment Strategy:* The Panel recommends that STPA carry out a gender analysis as part of their forthcoming labour capacity study, and work with local women's organizations, business organizations and education and training institutions to develop a women's employment strategy to promote and facilitate the participation of women in the non-traditional trades

and technologies required by the Project. STPA should also monitor the participation of women throughout the life of the Project. This strategy and associated monitoring program should be integrated into the overall Economic Benefits Strategy and its reporting requirements.

35. *African Nova Scotian Employment Strategy:* The Panel recommends that STPA, in consultation with the Cape Breton Black Employment Partnership Committee, develop equity policies and training and outreach programs to promote and facilitate the training and employment of African Nova Scotians on the remediation Project, and should monitor the results throughout the life of the Project. This strategy and associated monitoring program should be integrated into the overall Economic Benefits Strategy and its reporting requirements.

36. *Transportation Management Plan:* The Panel recommends that STPA be required by NSEL and PWGSC to develop a Transportation Management Plan before Project construction begins. STPA should consult with NSTPW and CBRM in preparing the Plan, which should address infrastructure impacts, transportation routes, timing, dust management, safety issues, contractor compliance, communications, monitoring and reporting. The Plan should include an easily accessible complaints mechanism and proposed mitigation alternatives. STPA should review the Plan with the Community Liaison Committee on a regular basis (no less than once a year).

37. *Ensuring Rail Safety:* The Panel recommends that STPA be required by NSEL and PWGSC to file a Rail Safety report with NSTPW before Project approval is given. The report should document:

- The current capacity of the rail infrastructure between the Tar Ponds and incinerator sites to safely transport materials;
- Any improvements required; and
- A spill contingency plan as an integral part of the Project's Environmental Management Plan.

38. *Use of Rail to Transport Construction Materials:* The Panel recommends that wherever possible, STPA identify and employ additional opportunities to transport construction materials by rail to the Project sites to reduce transportation impacts.

39. *Future Use Plan:* The Panel recommends that STPA, in collaboration with CBRM, develop a future use plan for the remediated Tar Ponds and Coke Ovens site that addresses the requirements of the evolving Port to Port Corridor concept, the community's interest in active living open space opportunities, the issues and concerns of adjacent neighbourhoods, the practical realities of the remediation process and subsequent monitoring and maintenance. The plan should draw on examples of best practice in brown field redevelopment wherever possible, and identify the resources necessary for implementation.

40. *Minimizing Restrictions on Future Uses Through Site Design Enhancements:* The Panel recommends that STPA, in collaboration with CBRM and other stakeholders review the Project design with respect to maximizing the capacity of the two sites to support a variety of

future uses, as identified through the future use planning process addressed in Recommendation 39. The Panel further recommends that STPA incorporate all feasible site enhancements, such as bearing capacity and cap design improvements, and conduits for future site services, which fall within the designated funding.

41. *Maximizing Aquatic Habitat Restoration as Part of Future Use Planning:* The Panel recommends that STPA, in consultation with NSEL, NSDNR, DFO and EC, develop a detailed habitat restoration plan for the Tar Ponds area, drawing the disciplines of remediation engineering and landscape architecture. The goal of the restoration plan is to increase the area of reclaimed estuarine habitat, while still enabling the effective encapsulation of contaminated sediments.

42. *Tree Planting:* The Panel recommends that STPA, in consultation with CBRM and other community stakeholders develop a native tree planting plan for both sites, together with a strategy for early implementation. The species of trees and shrubs selected should be compatible with the type of managed terrestrial ecosystem required to ensure the integrity of the caps. The Panel also recommends that STPA consider creating a native tree species nursery on site to provide the necessary planting stock which may otherwise be difficult to obtain.

43. *Maintenance of Community Open Space:* The Panel recommends that, in the event that STPA and CBRM do not identify viable alternative commercial or institutional uses for the remediated lands site that are acceptable to the community, STPA be required by NSEL and PWGSC to set aside a portion of the annual monitoring and maintenance budget to contribute funds over a 25-year period to cost-share the operation and maintenance of a trail and open space system on the remediated lands. This set aside would be part of STPA's responsibility to ensure the continued integrity and function of the encapsulation and drainage systems. If alternative land uses are pursued, the Panel recommends that sufficient land be set aside to provide an active transportation link between Whitney Pier and downtown Sydney, and that STPA ensure that remediation design (bearing capacity, cap design, soil cover etc) minimizes the cost of developing the facility.

44. *Perimeter Enhancement Strategy:* The Panel recommends that STPA's final Project design be required by NSEL and PWGSC to include a perimeter enhancement strategy to mitigate any interactions between the Project and local residents at the perimeter of the site and to add value to adjacent residential areas through added amenity at the interface area (landscaping, community facilities etc.). In the process of developing the strategy, STPA should consult with residents of the adjacent neighbourhoods through the Community Liaison Committee.

45. *Property Value Protection Program:* The Panel recommends that STPA, in consultation with CBRM, be required by NSEL and PWGSC to develop a property value protection program to be applied to properties in the immediate vicinity of the remediation sites and at most risk of being affected by noise, odour, dust or transportation.

46. *Contingency Planning for Heritage Resources:* The Panel recommends that when STPA develops the contingency plan related to archaeology and heritage resources to be included in the Environmental Management Plan, this information should be shared with parties with an interest or a potential role to play upon discovery of items of significance. These include First Nations representatives, government, academic and community interests.

47. *Federal-Provincial Regulatory Plan for the Tar Ponds and Coke Ovens Project:* The Panel recommends that before the Project construction begins, the federal and provincial governments prepare a coordinated regulatory plan for the Project and commit to it by signing a Memorandum of Agreement. The regulatory plan should address the following issues:

- A formal collaborative process between the federal and provincial governments to (a) share expertise and (b) coordinate relevant regulatory processes;
- How the regulation of construction phase activities on both the federal and provincial portions of the sites would be coordinated;
- Regulations, guidelines, standards and criteria to be applied to activities, emissions and discharges;
- Compliance and effects monitoring;
- Proponent reporting requirements;
- Inspection and auditing procedures;
- Staff and other resources;
- Enforcement responsibilities and procedures;
- Process required to amend the regulatory plan;
- The requirement for an annual Regulators Report to the public; and
- Opportunities for public review and feedback.

48. *Federal Expert Advice*: The Panel recommends that PWGSC seek assistance from Environment Canada, Health Canada, Fisheries and Oceans Canada, and Natural Resources Canada to ensure that mitigation measures and a follow-up program are implemented.

49. *Tying Funding to Technology Testing:* The Panel recommends that the Project's funding partners implement a performance-based funding process that would see the dispersal of funds being tied to the:

- Successful testing of solidification / stabilization (Recommendations 12 and 13);
- Successful testing and operation of the incinerator; and
- Successful implementation of mitigation measures.

50. *Tar Ponds and Coke Ovens Remediation Maintenance and Monitoring Act:* The Panel recommends that, before the completion of the construction phase at the Tar Ponds and Coke Ovens sites, the Government of Nova Scotia enact legislation to address the long-term management, maintenance, monitoring and reporting required to ensure that the containment and water control and treatment systems on the remediated sites are maintained and monitored for as long as the contaminants remaining on site present a potential risk to people or the environment. The Act should include provisions for reporting and accountability. The Act should specify

under what conditions maintenance and monitoring can cease.

51. *Provincial and Federal Ownership of Remediated Lands:* The Panel recommends that the capped portions of both the remediated Tar Ponds and Coke Ovens site remain in provincial or federal ownership until such time as the integrity of the cap is no longer a requirement as defined in Recommendation 10.

52. *Approval of Monitoring Program:* The Panel recommends that approval for the Project be contingent on STPA preparing an adequate monitoring program that addresses all issues raised during the environmental assessment process and has been reviewed and approved by all key federal and provincial departments.

53. *Tar Ponds and Coke Ovens Remediation Monitoring Oversight Board:* The Panel recommends that PWGSC and NSEL, before construction begins, appoint an independent three-member monitoring oversight board with a formal mandate tied in to the Federal-Provincial Regulatory Plan. The monitoring oversight board would act in a formal technical review capacity and to ensure the general public that the Project is proceeding within its approved guidelines. The board would meet as often as required and no less than twice a year, and would report to PWGSC and NSEL. All reports from the board would be made public. At the completion of the construction phase the role of the board would be re-evaluated and would thereafter be tied into the mandate of the Tar Ponds and Coke Ovens Remediation Maintenance and Monitoring Act.

54. *Reporting Monitoring Results:* The Panel recommends that STPA be required by PWGSC and NSEL to develop a Monitoring Results Reporting Protocol as part of the Monitoring Program, indicating what results would be reported, how, and when, and indicating the rationale for each decision. While web posting is likely to play a central role, the Protocol should identify other methods of communication required to provide access to information as widely as possible. NSEL should periodically audit STPA's compliance with its own Reporting Protocol.

55. *Community Liaison Committee:* The Panel recommends that PWGSC and NSEL require STPA to maintain its Community Liaison Committee and to modify the Committee's current terms of reference so that the appointment process is open and transparent, and that all key community interests are represented. The terms of reference should include a protocol to ensure that individual members will effectively relate to and report back to the people and organizations they represent, and should give the CLC a mandate to conduct its own community outreach activities during the Project. STPA should provide the CLC with sufficient resources to conduct its business and to report back to the community. The CLC should use an open forum such as a community meeting or open house at least once a year, and should also meet at least bi-annually with the Monitoring Oversight Board.