

**REMEDICATION OF THE TAR PONDS AND COKE
OVEN SITES
DESIGN AND CONSTRUCTION OVERSIGHT
SERVICES
ENVIRONMENTAL MONITORING
SUMMARY REPORT
August 2011 MONTHLY REPORT
97919-MONTHLY-REP-N-043 R1**

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Acronyms used in Report

Agency	Sydney Tar Ponds Agency
All-Tech	All Tech Environmental Services Limited
AMP	Air Monitoring Program
AQMC	Air Quality Monitoring Consultant
AST	Above ground storage tank
CBRM	Cape Breton Regional Municipality
CBNS	Cape Breton and Central Nova Scotia Railway
CO1	Coke Oven Brook Connector Sediment Removal and Disposal
DE	Design Engineer
EIL	Environmental Inspection Log
EM	Environmental Monitor
EPP	Environmental Protection Plan
EMP	Environmental Management Plan
ET	Environmental Technician
FSDS	Ferry Street Dissipation Structure
IEC	Independent Environmental Consultant
IQAC	Independent Quality Assurance Consultant
MHASP	Master Health and Safety Plan (Sydney Tar Ponds Agency)
MBJV	Marine-Beaver Joint Venture
MSDS	Material Safety Data Sheet
NMHP	North Material Handling Pad
NCR	Non-Conformance Report
NSE	Nova Scotia Environment

PAH	Polycyclic Aromatic Hydrocarbons
PID	Photoionization device
PM	Particulate matter
PWGSC	Public Works and Government Services Canada
RFA	Request for Action
SI	Supplemental Instruction
S/S	Stabilization/Solidification
SSP	Steel Sheet Piles
TP6B	Solidification, Stabilization and Channel Construction
TP6A	Flow Diversion
VOC	Volatile organic compound
WHMIS	Workplace Hazardous Materials Information System
WTP	Water Treatment Plant

Units used in Report

dBa	decibels
L	liters
L _{eq}	equivalent sound
m	meters
mm	millimeters
NTU	Nephelometric Turbidity Units
ppm	parts per million
µg/m ³	micrometer per cubic meter

1. INTRODUCTION

The Government of Canada and Province of Nova Scotia are committed to remediate the Sydney Tar Ponds and Coke Ovens Sites, a project that is managed and implemented by the Sydney Tar Ponds Agency (the Agency). The Agency awarded AECOM and CBCL the bid for Design Engineer (DE) and to implement Construction Oversight. The project's goals are to reduce the health and ecological risks to area residents and the environment from existing soil, sediment and water contamination as well as to enhance the development potential of the land to drive economic investment in the Cape Breton Regional Municipality (CBRM). The [Project Environmental Protection Plan](#) (EPP) and the [Environmental Management Plan](#) (EMP) are the governing documents of the environmental aspects of the remediation work, and are available for public viewing on the Agency's website www.tarpondscleanup.ca. An EPP is also designed specific to each of the construction elements, and these are available at the Agency's library located at 1 Inglis Street in Sydney, Nova Scotia. One (1) of the EPP requirements is for the Design Engineer to provide a monthly summary of environmental activities on Site, which this report fulfills.

1.1. Overview of Active Elements

Construction activities continued throughout August, 2011 on the Flow Diversion (TP6A), Solidification and Stabilization (S/S) and channel construction of the Tar Ponds (TP6B), and Tar Ponds Surface Cap (TP7).

The activities on these three (3) active elements followed protocols outlined in the EPP and EMP. In general, the Contractors agree to monitor their construction activities for potential environmental impacts to determine whether the mitigation measures developed for the activity are effective. The Contractors designate an Environmental Monitor (EM) to ensure that work being carried out on Site is being performed in compliance with the EPP and EMP and that sources of contaminants are identified before they impact the receiving environment.

As set out by the EPP, the Contractors' EMs are required to conduct environmental inspections every four (4) hours during active construction: at TP6A by MB2-Beaver Marine Joint Venture's (MBJV), at TP6B by Nordly's and at TP7 by Hazco's. The EM uses the Environmental Inspection Logs (EILs) as a guide and as a log to record observations while inspecting the work activities and environmental protection measures such as silt fences, oil absorbent booms, hazardous materials containment, etc. and in addition, sampling sheets may be attached to the EILs if relevant. Field representatives from the DE check the

EILs on a daily basis to ensure that field observations match those recorded by the EM in the logs. In the event that environmental protection measures are not being followed or are not effective, the EM directs the Site Supervisor to take corrective action and notifies the Design Engineer's Environmental Coordinator or field representative. In the event that the EPP is not being adhered to and the issue is not resolved in the field, the DE may issue a Request for Action (RFA) or Non-Conformance Report (NCR) to the Contractor requesting improvement. A summary table of the NCRs, RFAs and Supplemental Instructions (Sis) are highlighted in Section 5.

This Environmental Monitor Summary Report covers the key areas addressed in the EILs throughout August, 2011 and will report environmental concerns, if any, that developed from remediation activities at TP6A, TP6B and TP7 including how those issues were resolved. Past [Environmental Monitoring Summary Reports](#) are also available on the Agency's website, and at the Agency's library.

1.2. Environmental Reporting by Others

Other publicly available environmental reports are prepared by various parties involved with the Project. These reports are available either on the Agency's website, www.tarpondscleanup.ca, or from the Agency's library located at 1 Inglis Street in Sydney, Nova Scotia.

Construction monitoring of surface water and noise levels are captured in the Contractor Quality Control Monthly Reports, which are completed by Contractors for each active work element. These reports contain detailed testing results from surface water and noise monitoring, and can be found at the Agency's library.

Air monitoring reports, completed by All-Tech, the Air Quality Monitoring Consultant (AQMC), can be accessed on-line at the Agency's website. The Real-time Air Monitoring Program (results discussed below in Sections 2.6, 3.6 and 4.6) monitors air emissions at the Project fence line associated to each active element and the [Air Monitoring Reports](#) contain data from these monitoring activities. The Ambient Air Monitoring Program monitors the ambient air at monitoring stations throughout the community. The [Preliminary Event Reports](#) contain invalidated, preliminary data. The data is then compiled, validated and comprises the monthly [Ambient Air Monitoring Monthly Reports](#). The Preliminary Event Reports are removed from the website once the associated monthly report has been produced and uploaded. Also available on the Agency's website is the [Question and Answer for Odour Concerns Reporting Program](#) which discusses frequently asked questions regarding Project odour issues.

The Project is also subject to extensive environmental effects monitoring for air, surface water, groundwater and marine water quality. The Project's Independent Environmental Consultant (IEC), Dillon Consulting, was retained to undertake environmental effects monitoring and to collect data during Project remediation activities. This data is used to detect environmental impacts resulting from the Project, as well as to determine long-term trends. Environmental effects reports are available on the Agency's website, and at the Agency's library. For surface water monitoring, data is collected regularly and [Monthly Compliance Reports](#) are prepared and submitted to the Agency. For groundwater quality and quantity information, data is collected and [Quarterly Groundwater Reports](#) are prepared and submitted to the Agency. For activities in the marine environment, data is collected according to a required schedule and an [Annual Marine Report](#) is prepared and submitted to the Agency. Sydney Harbour is monitored for changes in sediment chemistry, crab and bi-valve tissue chemistry and species diversity. A Biodiversity Study Report is currently its second draft revision, and will be available to the public once complete.

2. TP6A – FLOW DIVERSION

The TP6A element provides the flow diversion necessary to conduct Stabilization/Solidification (S/S) work within the isolated sections of the North and South Tar Ponds. TP6A also includes the construction of energy dissipation outlet structures that are utilized during dewatering of the Tar Ponds under TP6B, as well as provisions for temporary bridges and water well decommissioning. As this element deals directly with diverting bodies of water, namely Wash Brook, Coke Ovens Brook, CBRM storm drains and the Tar Ponds, the most important environmental concerns relate to water. Surface water monitoring, sediment control structures and aquatic life protection are of particular interest for this element. Silt curtains, oil absorbent booms and fish screens are the most commonly deployed environmental control measures at TP6A.

2.1. Summary of Construction Activities

During August, 2011 the TP6A Contractor operated pumps at Wash Brook and Coke Ovens Brook pumping structures as part of Phase II of the pump around, and monitored the discharge and control structures at the Narrows dissipation structure (NDS). Activities completed by the TP6A Contractor during August, 2011 consisted primarily of maintaining pumping stations, extending a Rail America outfall, removing and disposing of silt curtains, and maintaining environmental controls.

2.2. Dewatering

As part of Phase II of the Pump Around, Coke Ovens Brook, Wash Brook and the Phase I CBRM storm outfalls are diverted around the South and North Tar Pond and discharged at the NDS. The pumps involved in this task were operational every day during August, 2011.

Sump pumps between the steel sheet pile (SSP) and stop-logs at the NDS were used to mitigate water re-entering the North pond as required.

2.3. Sediment Control Structures, Stabilization Areas, Silt Curtain and Oil-Absorbent Booms

The TP6A Contractor has silt curtains and oil absorbent booms at the Narrows, as measures to prevent sediments and product from exiting outside of the discharge structure. During August 2011, the Contractor monitored and maintained these structures throughout the month to ensure that they were effective as possible.

On August 23, 2011 the Contractor extended the Rail America Cape Breton and Central Nova Scotia (CBNS) railway outfall so that it discharges into Phase III. Prior to commencing work, appropriate sediment controls were in place including a silt curtain and an oil absorbent boom.

2.4. Surface Water Monitoring

Turbidity samples are taken by boat within the Tar Ponds every four (4) hours and during Phase II this occurs outside the Narrows silt curtains. At times, taking turbidity samples in the Tar Ponds by boat is not possible due to low tides causing the boat to agitate bottom sediments skewing turbidity results or if high winds make it unsafe to use a boat. The EILs from August, 2011 report occasions where it was more appropriate to collect water samples from the shoreline or the Narrows catwalk rather than from the boat due to environmental concerns, such as low tides, health and safety concerns such as high winds, and extremely high water flow. In these cases a thirteen (13) metre pole is used to collect samples far from the water's edge. Reasons for collecting from the shoreline were detailed in each occurrence's respective EIL.

Rain fall on August 23, 2011 caused visibly high turbidity upstream of both the Wash Brook and Coke Ovens Brook pumping stations (see Photo 2-1). At the request of the DE, the Contractor collected turbidity samples upstream of each pumping station for information purposes. Turbidity in Coke Ovens Brook was 64.9 nephelometric units (NTU) and in Wash Brook was 52.6 NTU.



Photo 2-1: Turbid Water in Coke Ovens Brook Entering the Pumping Station

All of the surface water turbidity samples collected met the criteria outlined by the TP6A EPP and were therefore deemed acceptable every day during the month of August, 2011.

2.5. Access Roads

Primary access roads were watered by the Agency during August 2011, to prevent high dust, generating conditions. No concerns were raised about the site access roads during August, 2011.

2.6. Air Monitoring and Particulate Matter Control Measures

All-Tech, the Ambient Air Monitor, did not report high particulate or high volatile organic compound (VOC) concentrations associated with TP6A activities in August, 2011.

2.7. Product Storage, Fueling and Waste Disposal

As reported in the previous Environmental Monthly Summary Report, a leak from the battery on pump 81017 at Wash Brook was observed on July 31, 2011. Impacted materials were contained and removed on immediately. On the following day, August 1, 2011, the battery was removed from site and disposed of properly.



Photo 2-2: Removing Damaged Battery from Pumping Station

Pumps are checked on a regular basis to prevent spills and leaks, and to verify effectiveness of oil absorbent materials that are strategically placed to catch possible drips of oil, fuel, radiator fluid and other products. Oil absorbent materials are replaced as necessary.

All products and fuel stored on site were done so according to the protocols outlined in the TP6A EPP. Environmental controls which were being disposed of were placed in the appropriate waste storage bins to be removed by a professional disposal service.

The TP6A Contractor reported no spills or leaks on site during August, 2011.

2.8. Noise Control Measures

Noise monitoring was conducted four (4) times in August, 2011 at three (3) perimeter locations for two (2) hour averages to determine if the noise levels on site are under the EPP requirement of 65_{Leq} (dBA). The Quest 2900 was used to perform sound monitoring at the TP6A Site.

Noise monitoring took place on August 2, 11, 18 and 24, 2011, and results were all within the EPP established requirements.

2.9. Miscellaneous Environmental Monitoring Activities

No fish kills were observed at the Coke Ovens Brook and Wash Brook pump intake areas or the Ferry Street dissipation structure during August, 2011.

Fish screens are in place at Wash Brook to provide a more effective and permanent means of fish protection than fish nets. Fish screens and nets were cleaned regularly throughout August, 2011. After morning rain, on August 23, 2011 Coke Ovens Brook flooded causing a breach of the Inglis Street culvert fish screen. The breach lasted approximately 30 minutes. On August 27, 2011 Wayne Williams was on site to perform fish removal activities in Coke Ovens Brook between the Inglis Street culvert and the fish nets located upstream of the suction pit. No fish were observed or removed from the area.



Photo 2-3: Fish Removal Activities in Coke Ovens Brook

As mentioned in Section 2.3, on August 3, 2011 the Contractor extended the CBNS outfall. In associated with this work, they set up an Exclusion Zone (EZ) and a Contaminant Reduction Zone (CRZ) to reduce the risk of cross contamination. All impacted materials excavated during this work was removed to Phase II for S/S. Silt curtains and oil absorbent booms were in place prior to work commencing.

2.10. Summary of Environmental Monitoring Activities

The TP6A Contractor continued to operate the pumping stations at Wash Brook and Coke Ovens Brook as part of Phase II of the pump around of the South and North Tar Pond. One (1) fish screen breach at the Inglis Street culvert occurred, and was followed by fish removal activities wherein no fish were observed or captured. The Contractor removed the CBNS outfall, and no environmental issues were raised during this activity. No environmental RFAs or NCRs were issued or responded to during August, 2011.

3. TP6B – SOLIDIFICATION AND STABILIZATION (S/S)

The TP6B element involves the remediation of contaminated soils and sediments and construction of channels that will provide a pathway through the remediated sediments. Cement is imported on Site and mixed with the contaminated soils and sediments in order to encapsulate them in concrete.

3.1. Summary of Construction Activities

Construction activities during August, 2011 comprised of solidification and stabilization in North Tar Pond Phase II area, spreading slag on top of completed Phase II cells, building concrete forms at Ferry Street, cell depth determinations, water management, dust and odour suppression, and channel construction.

3.2. Dewatering

To facilitate S/S work, and to prevent release of impacted water into the surrounding environment, the TP6B Contractor utilized a series of pumps to relocate impacted water from several Phase II work areas during August, 2011. Water from the Ferry Street sump, southwest settling sump, west outfall sump, and the Channel excavation area was decanted to the northeast settling sump adjacent to the Narrows. From northeast sump, water flows through two rock check dams, and is decanted to the Narrows infiltration pit located northeast of the Narrows sump. The Ferry Street, southwest, and west pumps tie into an eight (8) inch pipe which extends from Ferry Street, and along the west site access road pump around. The Contractor controls discharge with a valve which directs flow into either a filter bag in the Narrows infiltration pit, or when the water appears visually turbid, to the northeast settling sump. To further protect the receiving environment against turbid water, the Narrows infiltration pit discharge passes through course stone before releasing into the North Tar Pond Phase III area. Also, one (1) silt curtain and two (2) oil absorbent booms surround the discharge point of the infiltration pit, also referred to as the Phase III release area.

The TP6B Contractor continued to implement a pumping system which closely adheres to their purposed Water Management Plan. The Contractor intermittently utilized the northeast settling sump area when North Tar Pond construction water was deemed too turbid for direct discharge into the Narrows infiltration pit.

On August 23, 2011 heavy rain resulted in the release of highly turbid water and flooding throughout the site. Water overflowed a berm in the Phase I area and began to flood the Ferry Street sump with red clay

laden water. (See Photo 3-1) The Contractor turned off the Ferry Street pump until the rain stopped and the clay impacted water settled out and was removed by the TP7 Contractor, described in Section 4.2. A large amount of water discharged from the CBRM combined storm/sewer outfall, causing the southwest sump to overflow. (see Photo 3-2). The channel under construction was also flooded this day. The Contractor stopped all work activities until the rain and flooding subsided, and focused solely on water management for the remainder of the day.



Photo 3-1: Clay Impacted Water Flowing into Ferry Street Sump



Photo 3-2: Sewage Impacted Water Overflowing the Southwest Sump

Throughout August, 2011 turbid water was observed on a daily basis around the Phase III release point. The Contractor/DE noted that the rise in turbidity was directly influenced by tidal action. Turbidity would increase as the tide became low, and decrease shortly after starting to rise again. The turbidity was normally a white/grey colour, indicating that water was removing fines from the slag and rock in the Narrows road (see Photo 3-3). This cycle was monitored daily throughout August, 2011.



Photo 3-3: Turbidity at Phase III Release Point

3.3. Sediment & Erosion Controls and Oil Absorbent Booms

The Contractor conducted a regular site inspection every four (4) hours to check the quality of their environmental controls. This inspection included monitoring all oil absorbent materials, and sediment and erosion controls structures.

Oil absorbent booms are in place in the southwest, west, northeast and Narrows sumps, and north of the North Tar Pond Phase III infiltration pit discharge point. The Contractor maintained and replaced oil absorbent booms as needed in August, 2011. There were no issues related to the release of oil sheen into North Tar Pond Phase III via the Narrows infiltration pit during August, 2011.

The TP6B Contractor utilized the northeast settling sump as a means of sediment control in August, 2011. North Tar Pond Phase II construction water deemed too turbid for discharge directly into the Narrows infiltration pit was decanted into the southern section of the northeast sump intermittently throughout the month. Water in the south section of the northeast sump passes through a clay and clean stone dam into the northern section of the sump, where sediment is given time to settle. The Contractor pumped water from here into a filter bag in the Narrows infiltration pit, thus eliminating the need for a spillway

connecting the northeast and Narrows sumps. A second rock check dam was built around this pump to further help settling of solids (see Photo 3-4). On occasions of high rain an extra pump was added in the northwest corner of the sump.



Photo 3-4: Northeast Sump

3.4. Surface Water Monitoring

Visual monitoring of all dewatering activities continued throughout August, 2011 as outlined in the TP6B EPP Section 3.2.4.2. Throughout August, 2011 several pumps were operating to facilitate construction activities (see Section 3.2. Dewatering). Pump intakes and outlets were visually monitored by the Contractor's EM. Water relocation primarily involved outfalls along the North Tar pond (southwest sump, west outfall, northwest outfall, Ferry Street sump), channel excavation and Phase II S/S activities. When high turbidity was observed the Contractor was responsive in changing dewatering activities to manage the turbid water. As mentioned, turbid water was normally redirected to the northeast settling sump. In other cases the Contractor was compliant in turning pumps off.

3.5. Access Roads

Access roads were dry and dusty on most days throughout August, 2011. On these days, the Contractor deployed a water truck on the TP6B working area. This truck along with the Agency's water truck kept the roads wet to mitigate dust. The Contractor also utilized a front end loader to scrape black sediment from site roads on all work days in August, 2011.



Photo 3-5: Water Trucks Deployed for Dust Control

3.6. Air Monitoring and Particulate Matter Control Measures

Off-site air monitoring is conducted by All-Tech at the perimeter fence and measures particulate matter (PM) and volatile organic carbon (VOC) with action levels of $155 \mu\text{g}/\text{m}^3$ and 0.66 parts per million (ppm), respectively. The Contractor continued Ferry Street concrete form construction, Phase II S/S work and channel excavation in August, 2011. The Contractor applied dust and odour control measures during these and other intrusive activities.

The Contractor used Con Cover 180, BioSolve and short term foam to suppress odours throughout the month.

3.7. Product Storage, Fueling and Waste Disposal

The Contractor continued product storage, fueling and waste disposal practices according to the TP6B EPP in August, 2011. The TP6B Contractor utilizes the area adjacent to the Hackett building as their product and equipment lay down area. No leaks related to product storage or fueling were reported or observed during August, 2011.

In the morning of August 16, 2011, a hydraulic hose broke on an excavator while mixing cell #664 on the east side of the North Tar Pond (see Photo 3-6). The operator immediately shut down the excavator and the majority of the leaked hydraulic fluid spilled into the cell. The Contractor approximated that the amount of the hydraulic fluid in the range of 20 - 30 liters based on the amount of fluid put back into the excavator upon completion of hose repair. While the excavator was being repaired, oil absorbent pads

were laid to contain further spills. The spilled fluid was mixed into the cell upon repair of the excavator hydraulic hose. The Contractor submitted a spill report for this incident.



Photo 3-6: August 16, 2011 Hydraulic Fluid Leak

On the afternoon of August 19, 2011 the TP6B Contractor reported a spill in the channel excavation near station 1+100. Product was spilled onto clean slag. Oil absorbent pads were placed under the excavator to contain product from migrating (see Photo 3-7). The excavator was fixed the following work day, and the impacted slag was removed and set aside to be mixed into a future cell. When the hydraulic oil was replaced in the machine, it was estimated that between 80 and 90 litres of fluid were spilled.



Photo 3-7: August 19, 2011 Hydraulic Fluid Leak

Table 3-1: Summary of TP6B Spills in August 2011

Date (dd/mm/yy)	Nature of Spill	Quantity	Location	Release to Env?	Contractor Response
16/08/2011	Hydraulic fluid; leaked from broken hydraulic hose on 400 excavator.	20-30 L	East section of North Tar Pond Phase II, cell #N0664	Yes	Turned off equipment upon discovery of leak Placed absorbent pads on top of and around hydraulic fluid Scraped up affected pads and material and placed in Phase II S/S
19/08/2011	Hydraulic fluid; leaked from broken hydraulic hose on 220 excavator	80-90 L	Channel 1+100.	Yes	Turned off equipment upon discovery of leak Placed absorbent pads on top of and around hydraulic fluid Scraped up affected pads and material and placed in Phase II S/S

3.8. Noise Control Measures

The Contractor's EM completed noise monitoring four (4) times in August, 2011; each event was comprised of three (3) two (2) hour readings. On August 2, 10, 18 and 22, 2011 noise monitoring was conducted at the Narrows Westside, the West Gate, and the east Hilltop. The 65_{Leq} dBA action level for noise monitoring conducted in August, 2011 was exceeded three (3) out of the twelve (12) recordings.

The first exceedance was 74.28_{Leq} dBA on August 02, 2011, the second exceedance was 66.14_{Leq} dBA on August 10, 2011, and the third exceedance was 65.57_{Leq} dBA on August 22, 2011. Each exceedance was observed at the West Gate. The Contractor reported excavator and tandem traffic, as well as train activity in the vicinity of the monitoring station as the cause for all three (3) exceedances.

3.9. Miscellaneous Environmental Monitoring Activities

A total of four (4) areas in Phase II and III were identified and documented in previous reports by others as containing polychlorinated byphenols (PCBs) in excess of 50ppm. On August 17, 2011 the DE issued an SI with a set of standard operating procedures (SOPs) outlining how the TP6B Contractor will properly manage these PCB hotspots. The SOPs were issued to protect worker health and safety, decontamination of equipment and debris and to comply with federal PCB regulations. During August, 2011 two (2) PCB hotspots in Phase II were delineated. Starting on August 29, 2011 S/S activities took

place in the two (2) PCB zones identified in the Phase II work area (see Photo 3-6). To comply with the delineation SOP, extra environmental controls were implemented prior to construction activities. A snow fence was installed around the zone to delineate PCB areas from surrounding impacted areas. Slag was placed around the inside of the snow fence to provide a safer working area and minimize contact with highly PCB impacted materials. The Contractor also implemented SOP compliant controls to decontaminate personnel and equipment. At the end of each decontamination zone, the Agency conducted swab testing on the excavator, dust conveyance boxes, and tools to detect possible PCB contamination. All swabs came back negative for PCBs. No reportable environmental issues were raised while the Contractor was working in the PCB hotspots.

3.10. Summary of Environmental Monitoring Activities

The building of concrete forms at Ferry Street, Phase II S/S, depth determinations and channel excavation were the principal construction activities performed by the TP6B Contractor during August, 2011. Two (2) relatively large hydraulic fluid spills occurred and two (2) odour complaints were filed by external sources. One heavy rain event occurred which resulted in flooding of the North Pond work areas. The TP6B Contractor made minor changes to their water management setup throughout August, 2011. By the end of August, 2011 the TP6B Contractor was adhering closely to their proposed Water Management Plan. Odour control, dust suppression, water management and erosion control were conducted in August, 2011. S/S activities commenced within the PCB zones of the site.

4. TP7 – TAR PONDS SURFACE CAP

The scope of the TP7 Contractor involves constructing a multi-layered cap over the S/S'ed Tar Ponds monolith. The Contractor places large quantities of exposed cohesive soil followed by topsoil adjacent to constructed and natural water courses and therefore erosion and sediment control measures are a important aspects of the TP7 contract.

4.1. Summary of Construction Activities

Construction activities at TP7 during August, 2011 consisted primarily of importing and placing cohesive soil, top soil and riprap, constructing Phase II channel berms, constructing a receiving pit in Phase II, constructing drainage for the Hospital Drain, grading the landfill, reconstructing the berm at Phase I access ramp, installing and maintaining silt fence, and applying GeoPerm.

4.2. Dewatering

The berm located near the Phase I access ramp breached on August 23, 2011 releasing clay laden water into TP6B Contractor's sump. The TP6B Contractor shut off their pump immediately and the TP7 Contractor deployed a water truck to remove impacted water from the sump. The TP7 Contractor released the water into the grassy area on top of the former landfill for infiltration (see Photo 4-1).



Photo 4-1: Discharging Clay Laden Water to the Former Landfill for Infiltration

4.3. Sediment Control Structures, Stabilization Areas, Silt Curtain and Oil-Absorbent Booms

On August 9, 2011 sediment-laden water from the TP7 cohesive soil surface entered the Main and Coke Oven Brook Channels as erosion and sediment control measures were lacking in the area. As a response, on August 12, 2011 the DE issued NCR-TP7-007 Erosion Control stating that the Contractor was responsible for implementing appropriate erosion and sediment control measures along bare surfaces, in particular applying GeoPerm. The Contractor responded on August 15, 2011 arguing that weather and construction activities delayed the application of GeoPerm. On August 16, 2011 erosion issues were again evident here, as turbid water was observed flowing under the silt fence. The DE re-issued the NCR on August 18, 2011 as silt fencing had yet to be repaired and GeoPerm had not been applied. The Contractor placed straw bales along the silt fence where the silt fence breached as a temporary solution on August 16, 2011, and permanently repaired silt fence and applied GeoPerm by August 18, 2011. The Contractor responded to the revised NCR on August 25, 2011 outlining the corrective actions they took.

As mentioned in Section 4.2, the berm located near the Phase I access ramp breached on August 23, 2011 releasing clay laden water into TP6B Contractor's sump (see Photo 4-2).



Photo 4-2: Clay Laden Water Enters TP6B Sump Area

The pump was turned off immediately and a water truck deployed to remove impacted water from the sump. The following day the TP7 Contractor repaired the damaged berm and raised it by two (2) feet (ft)

to better prevent future breaches (see Photo 4-3). GeoPerm was applied to the berm on August 26, 2011. On August 23, 2011 the DE issued NCR-TP7-008 Clay Laden Water Breach, which outlines the incident. The Contractor had not responded to the NCR before the end of the reporting period.



Photo 4-3: Reconstructing Berm near Phase I Access Ramp

There are filter bags in the catch basins along Ferry and Inglis Street to manage any material left by truck traffic exiting the site. A street cleaner is used by the Contractor on the public roadways to clean any debris tracked on site and some of this material is tracked into the catch basins. These filter bags within the catch basins, were inspected and cleaned on a regular basis in August, 2011.

4.4. Surface Water Monitoring

No surface water monitoring was conducted by the TP7 Contractor during August, 2011 as no construction activities took place near active watercourses.

4.5. Access Roads

During August, 2011 the TP7 Contractor maintained a clean haul strategy as the areas they were working in had already been remediated. The Contractor managed on-site roads by applying water as a dust mitigation technique.

The TP7 Contractor also maintained public roads affected by hauling activities. All truck traffic exiting the TP7 site goes through a Contractor supplied wheel wash to reduce off-site tracking. Despite the wheel

wash there is some imported material that is tracked on the public roadways. The TP7 Contractor removed material from public roads as necessary throughout August, 2011 by use of a water truck and street sweeper. As mentioned in Section 4.3, the Contractor uses filter bags in the catch basins to capture any sediment that is swept into the drains.

At the request of All-Tech TP7 Contractor deployed water trucks along the Port Side Aggregate access Road to control dust generation on a number of occasions throughout August, 2011.

4.6. Air Monitoring and Particulate Matter Control Measures

Air monitoring is conducted by All-Tech at the perimeter fence and measures particulate matter (PM) and volatile organic carbon (VOC) with action levels of $155 \mu\text{g}/\text{m}^3$ and 0.66 parts per million (ppm), respectively. All-Tech did not report any TP7 related air monitoring exceedances in August, 2011.

4.7. Product Storage, Fueling and Waste Disposal

Approximately 10 L of hydraulic fluid released from an End Dump Trailer when a hydraulic hose ruptured on August 19, 2011. The truck operator stopped immediately, and absorbent pads were used to contain spill (see Photo 4-4). The affected ground beneath the truck was scraped up, and was placed in hazardous waste bags along with oil absorbent pads for off-site disposal.



Photo 4-4: Absorbent Pads Used to Contain Hydraulic Fluid Leak

4.8. Noise Control Measures

The Contractor's EM completed noise monitoring five (5) times in August, 2011. The 65_{Leq} dBA action level was not exceeded during this testing period. Noise monitoring occurred on August 1, 13, 18, 24 and 30, 2011. Details are provided in the Contractor's EILs.

4.9. Miscellaneous Environmental Monitoring Activities

There are no miscellaneous issues to report.

4.10. Summary of Environmental Monitoring Activities

During August 2011, the Contractor maintained on- and off-site roads, responded to one (1) hydraulic fluid leak, conducted noise monitoring and faced challenges with their sediment and erosion controls. A number of incidents involving erosion, sedimentation and release of sediment laden water occurred throughout August, 2011. The DE issued two (2) environmental NCRs related to sediment and erosion controls.

5. CONCLUSION

The TP6A Contractor continued to operate the pumping stations at Wash Brook and Coke Ovens Brook as part of Phase II of the pump around of the South and North Tar Pond. TP6A activities completed by during August, 2011 consisted primarily of removal of waste environmental controls (silt curtains, oil booms, etc) for proper disposal, extending the RailAmerica maintaining and monitoring pumps and environmental controls.

The TP6B Contractor commenced delineation of the two (2) PCB hotspots in Phase II. Their water management in August, 2011 improved compared to July, 2011 and they adhered closely to their proposed Water Management Plan. They responded to two (2) hydraulic fluid leaks and two (2) external odour complaints were lodged by the public. Odour control, dust suppression, water management and erosion control were conducted in August, 2011. The Contractor commenced S/S in the PCB hotspot locations.

During August 2011, the TP7 Contractor faced a number of erosion and sediment control issues, and release of sediment laden water. Two (2) NCRs were issued regarding these issues. They responded to each incident, and by the end of the month had installed additional silt fencing, applied GeoPerm throughout much of Phase I and augmented the berm near the Phase I access ramp.

MBJV's, Hazco and Nordly's EMs performed routine inspections of the Sites using the EIL to verify that remedial work activities did not cause any environmental concerns. Ongoing environmental concerns are addressed to the Contractors both verbally on site and through written NCR or RFAs. At TP6A, TP6B and TP7 AECOM personnel sign and review the EILs on a daily basis to ensure field conditions match the reporting by the EM. A summary table of the NCRs, RFAs and SIs are highlighted in Section 5.

Table 5-1: Overview of Environmental Disciplinary Reports (RFAs, NCRs)

Report No.	Description	Issued	Cause	Action	Responded To	Long Term Action	Closed Date
NCR-TP6B-029	Spill Reporting	August 2, 2011	<p>A spill report for a 40-60L hydraulic oil spill was issued approximately 24 hours after the spill occurred. The DE was not immediately notified of the spill because the Contractor's EM was not aware of the spill until the following day. This spill was not reported on the EILs for July 28, 2011.</p>	<p>On August 3, 2011, the topic was reviewed at the morning safety huddle discussing the need to report all spills to the Environment Department in a timely manner.</p>	August 16, 2011	<p>Spills will be reported to the DE. Machine maintenance is an ongoing activity. Mechanic is on site on a regular basis. The two spills are unrelated events.</p>	August 30, 2011
NCR-TP6B-030	Contractor's EM	August 2, 2011	<p>Nordlys proposed in a submittal that Steve MacCormack be the TP6B Contractor's Environmental Monitor (EM). This proposal was accepted by the Agency and the DE. Recently, John Fowler has taken a more prominent role as the TP6B Contractor's EM</p>	<p>Mr. Steve MacCormack is the approved EM for Nordlys and is responsible for the management of the CEPP. The EM conducts regular site visits and is well aware of the environmental issues. Mr. John</p>	August 16, 2011	N/A	Pending

Report No.	Description	Issued	Cause	Action	Responded To	Long Term Action	Closed Date
			and Steve MacCormack is not as involved. John Fowler is not an approved EM and therefore, unless his CV is submitted and accepted by the DE as a replacement, it is required that Mr. MacCormack be fully in charge and knowledgeable on all environmental activities related to this Contractor's work.	Fowler has been on site since May 02, 2011, and is responsible for environmental inspections (EILs) and documentation of the active site conditions. Mr. Fowler and Mr. MacCormack along with Johnathan Passerini (Environmental EIT) are in regular communication on site and work in tandem to ensure compliance.			
NCR-TP7-007 R1	Erosion Control	August 18, 2011	During the rain event on August 9, 2011 sediment-laden water from the TP7 cohesive soil surface entered the Main and Coke Oven Brook Channels as a result from a lack of erosion and sediment	Continued application of Geo Perm to "at risk" and uncovered areas of cohesive soils.	August 25, 2011	As of August 18, 2011 damaged silt fence has been replaced/repared and GeoPerm has been applied to the clay surface in the SE corner as of August 19, 2011.	August 30, 2011

Report No.	Description	Issued	Cause	Action	Responded To	Long Term Action	Closed Date
			<p>control (ESC) measures in that area. Although silt fencing was repaired since this event, the risk of reoccurrence is high and immediate action is required. Revised (August 18, 2011):</p> <p>The TP7 Contractor had erosion issues at the same location on Monday, August 16, as their silt fence tore and still no GeoPerm has been applied to the clay.</p>				
NCR-TP7-008	Clay Laden Water Breach	August 23, 2011	A heavy rain event amounting to approximately 20 mm over several hours on the morning of August 23, 2011 overwhelmed the berm designed to collect and hold run off from the clay cap at 0800 with excessive runoff from site roads	TP6B Contractor stopped pumping water from sump and TP7 water truck was deployed to collect and relocate clay laden water to infiltration area adjacent to South Pond look	Pending formal response	Repairs were made to berm and the height was raised by approximately 600 mm. Repairs to berm were completed on 24 Aug 2011.	Pending

Report No.	Description	Issued	Cause	Action	Responded To	Long Term Action	Closed Date
			and the clay cap. The breach of this berm caused clay-laden water to enter the sump that is being operated by the TP6B Contractor.	off.			
RFA-TP6B-053 R1	Tar Weeps	July 12, 2011	Additional cells containing Tar Weeps were identified. The increase in the number of tar weeps is directly related to increased amount of tar encountered while mixing in the North Pond Phase 2.	Nordlys will remove the tar weeps and place in a cell to be solidified. As outlined in RFA 003, Nordlys will fill any required excavations with clay. The Nordlys field personnel will coordinate with the DE field staff.	July 25, 2011	N/A	August 16, 2011
RFA-TP6B-055	Residual SS in the Channel	June 28, 2011	Excavated SS material remains in the main channel between stations 640 and 692. This material needs to be removed to a minimum of elevation -	Nordlys will remove the S/S material to an elevation of -0.25 meters and transport to either the southwest	July 26, 2011	Future crossings will be constructed to an elevation of -0.25 meters.	August 15, 2011

Report No.	Description	Issued	Cause	Action	Responded To	Long Term Action	Closed Date
			0.25 metres. Excavated S/S material was left in place between stations 640 and 692 to provide access for Phase II construction activities. This was discussed in RFI-124rev1, which was received by Nordlys on 6/23/11.	corner of the North Pond or to the Northeast Corner of the South Pond. Both areas will need relief from the Max S/S elevation as changed in SI 15 and 42 respectively. The material will then be placed according to Specification Section 03 26 09 Placement of Excavated S/S Sediment.			
RFA-TP7-007	Sedimentation in CO Brook	June 28, 2011	Following heavy rainfall the DE noted sediment present in the channel as the water level in the channel receded. Sediment appeared to be concentrated in areas with flowing pressure relief valves. Cohesive	Slopes at edges of reconstructed channel have been compacted to mitigate risk of erosion and GeoPerm will be applied to the surface when final grade is reached and the surface is	June 30, 2011	Continue with compaction of slope at edge of reconstructed channel and application of GeoPerm in sequence.	August 4, 2011

Report No.	Description	Issued	Cause	Action	Responded To	Long Term Action	Closed Date
			soil on the south side of the Coke Oven Brook was not compacted near the edges of the reconstructed channel, and therefore some of that material was deposited into the channel bottom.	prepared.			

Table 5-2: Overview of Environmental Supplemental Instructions (SIs)

Report No.	Description	Issued	Objective	Procedure	Action Taken
SI-TP6B-044	PCB SOP	August 17, 2011	To follow SOP developed by the Agency when working within the PCB Hotspots identified in the SI.	Decontamination and delineation protocols when working within the PCB hotspots. Decontamination protocols are specifically for equipment, personnel and debris within the hotspots. The SOP also discussed water management within the zone.	Contractor delineated the area effectively and did not encounter debris. Water was managed within the PCB zone.
SI-TP7-007	Phase II low permeable material berm	August 5, 2011	The objective is to construct a low permeable, cohesive soil berm along the channel footprint of the Phase II work area.	<p>The area of the low permeable, cohesive soil berm construction and the slope of the berm is described in the Drawing-TP7-SI-007-DWG-A. The top elevation of the berm will be 1.25 m geodetic. The berm will be constructed as a standalone berm the top is 4 m wide and has a 2:1 slope.</p> <p>During the installation of the west berm a temporary allowance will have to be made for the 2 outfalls at stations 0+928 and 1+289.</p> <p>The berm for the channel will be constructed of low permeable, cohesive soil that meets the TP7 specifications from the Contract. Management, placement, compaction and all other handling and/or applications of the material to meet the specifications described in Section 31 22 16, Cohesive Soil Backfill in the Contract.</p>	Contractor constructed berm along Phase II channel and Phase II receiving pit.

Report No.	Description	Issued	Objective	Procedure	Action Taken
				<p style="text-align: center;">Phase II Receiving Pit Berm</p> <p>Fill immediately north of Ferry Street in the southwest corner of Phase II in between the road and the 1 m Contour to an elevation of 1.5 m below the existing Ferry Street elevation. North of this point a 1:1 slope will be constructed.</p>	

Environmental Inspection Log

Appendix A

Remediation of the Sydney Tar Ponds and Coke Ovens Sites Environmental Inspection Log (EIL)

Design Element: _____
 Date: (D/M/Y): _____
 Time (24 hrs): _____

Weather Conditions: _____

Daily Construction Activities: _____

EIL Completed by (printed name and signature): _____ EM Name _____ EM Signature _____

EIL Reviewed by (DE name, signature, date, time): _____ DE Name _____ DE Signature _____ DD/MM/YYYY, 24:00 _____

DAILY CHECKLIST ITEM:	DESCRIPTION	ACCEPTABLE	NOT ACCEPTABLE ¹	NOT APPLICABLE	Comment # (See P.2)
1. Sediment Control Structures:					
	Hay	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Silt Fences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Dissipation Measures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Silt Curtains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Oil Absorbent Boom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2. Stabilization Areas					
3. Noise Control Measures					
4. Dust Control Measures					
5. Air Emission Control Measures					
6. Materials, Product & Equip. Storage					
7. Fueling and Maintenance Area					
8. Waste Disposal/Debris					
9. Access Roads					
10. Dewatering					
	Hoses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
11. Decontamination Areas (ONCE DAILY)					
	Workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Equipment/Vehicles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
12. Barriers for Disposal, Storage & Work Areas (ONCE DAILY)					
13. Other Specific EM Activities:					
	Type:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Type:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	Type:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
14. Field Sampling:					
	Type:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

¹ Criteria for Acceptable and Not Acceptable for each checklist item is given on Pages 3 to 6.

- Where a checklist item is not acceptable, comments must be provided below detailing: the nature of the concern; the extent of any environmental impacts; the remediation measures undertaken; the requirement for any further remediation measures; if notification of a regulatory body was required, and if so, the response; any recommendations for improvements/follow-up; and any other relevant information.

Criteria to determine if Mitigation Effectiveness is Acceptable or Non-acceptable

1. Sediment Control Structures:

- a. Acceptable: If instantaneous turbidity readings are within 8 Nephelometric Turbidity Units (NTU) above background (upstream sample location) if background concentrations are less than 80NTU. If background is greater than 80 NTU, and samples are within 10% of background levels on downstream side of the structure, the structure is deemed to be functioning as intended. During visual inspection, if the sediment control structures are intact, with no gaps, tears, slumping or weathering of the materials and no noticeable impact in the receiving water “downstream” of the sediment control structures.
- b. Not Acceptable: If instantaneous turbidity readings are greater than 8NTU if background is less than 80NTU, or if readings are greater than 10% of background levels on downstream side of the structure, the structure is deemed to be not functioning as intended. During visual inspection, if the sediment control structures are not intact, with gaps, tears, slumping or weathering of the materials and noticeable impact in the receiving water “downstream” of the sediment control structures.

2. Stabilization Areas:

- a. Acceptable: During visual inspection, if there is no apparent sloughing banks or erosional processes occurring in an area of disturbance created by the Project.
- b. Not Acceptable: During visual inspection, if there is sloughing banks or erosional processes occurring in an area of disturbance created by the Project.

3. Noise Control Measures:

- a. Acceptable: If noise measurements (based on two hour averages) are within the following limits:
 - $L_{eq,2hr} \leq 65$ dBA between 0700 to 1900 hours (Days)
 - $L_{eq,2hr} \leq 60$ dBA between 1900 to 2300 hours (Evenings)
 - $L_{eq,2hr} \leq 55$ dBA between 2300-0700 hours (Nights)
- b. Not Acceptable: If noise measurements (based on two hour averages) are not within the above limits.

4. Dust Control Measures:

- a. Acceptable: During visual inspection, dust is controlled during grading, excavation and construction activities. The exposed surfaces, stock piles or stored materials are covered with water, foam or tarps, as required. The vehicles used for excavation or transportation of materials are completely enclosed or with retractable load covers, the haul unit seals are in good working order, hoses and connections on equipment are free of leaks or drips.
- b. Not Acceptable: During visual inspection, dust is not controlled during grading, excavation and construction activities. The exposed surfaces, stock piles or stored materials are not covered with water, foam or tarps. The vehicles used for excavation or transportation of materials are not completely enclosed or with retractable load covers, the haul unit seals are not in good working order, hoses and connections on equipment have leaks or drips.

5. Air Emission Control Measures:

-
- a. Acceptable: If measurement by AQMC at halfway between fence line and source(s) is less than or equal to: 2ppm averaged over 15 minutes; or with the exception of benzene and naphthalene, 5 exceedences to the 15 minute averaging period over the workday averaged over 10 hours; or 2.5ppm for benzene and naphthalene (as confirmed by Draeger –Tubes or olfactory means) averaged over 1 hour.
 - b. Not Acceptable: If measurement by AQMC at halfway between fence line and source(s) is greater than: 2ppm averaged over 15 minutes; or with the exception of benzene and naphthalene, 5 exceedences to the 15 minute averaging period over the workday averaged over 10 hours; or 2.5ppm for benzene and naphthalene (as confirmed by Draeger –Tubes or olfactory means) averaged over 1 hour.
6. Product Storage:
- a. Acceptable: All potentially hazardous products are stored in a pre-designated, safe and secure product storage area at the work site in accordance with provincial legislation; all products shall be properly labeled according to WHMIS; any spilled products are contained and the area cleaned.
 - b. Not Acceptable: Any potentially hazardous products are not stored in a pre-designated, safe and secure product storage area at the work site in accordance with provincial legislation; or any products are not properly labelled according to WHMIS; or any spilled products are not contained; or the area has not been cleaned after a spill.
7. Fueling and Maintenance Area:
- a. Acceptable: Area is clean, well organized. All potentially hazardous products are stored in a pre-designated, safe and secure product storage area within the construction area, in accordance with provincial legislation. All products are properly labeled according to Workplace Hazardous Materials Information System (WHMIS). Material Safety Data Sheets (MSDS) are on site with the relevant product.
 - b. Not Acceptable: Area is not clean, unorganized and any of the above noted safeguards are missing.
8. Waste Disposal/Debris:
- a. Acceptable: Project site is free from any waste/debris whether it be benign solid waste or hazardous waste other than those waste stored in designated bins/areas.
 - b. Not Acceptable: Project site contains waste/debris whether it be benign solid waste or hazardous waste, is not destined for immediate disposal and requires appropriate disposal.
9. Dewatering:
- a. Acceptable: Fish have been removed prior to dewatering; fish screens are installed in pumps; and the dewatered cells are maintained during construction.
 - b. Not Acceptable: Fish have not been removed prior to dewatering; fish screens are not installed; or the dewatered cells are not maintained during construction.
10. Access Roads used by the Contractor(s)
- a. Acceptable: Upon visual inspection, the access roads used by the Contractor(s) are dust suppressed, free of debris or unnecessary materials with no spills. If applicable, silt fences appear to be working and are being maintained along toe of slope (along banks) and drainage ditches appear to be working to direct flow away from waterways.

-
- b. Non Acceptable: Upon visual inspection, the access roads used by the Contractor(s) are not dust suppressed, have debris or unnecessary materials with spills. If applicable, the silt fences appear not to be working or to not be maintained along toe of slope (along banks), and drainage ditches appear not to be working to direct flow away from waterways.

11. Other Environmental Monitoring:

Air Quality (Responsibility of the AQMC)

- a. Acceptable: Monitoring instruments are regularly calibrated. Data is collected and recorded hourly. During times periodically when there is a potential for increased emissions, real time monitoring shows compliance with previously established limits as identified above in numbers 5 and 6.
- b. Not Acceptable: Monitoring instruments are not regularly calibrated. Data is not collected or not recorded hourly. During times periodically when there is a potential for increased emissions, real time monitoring shows exceedances of limits as shown in numbers 5 and 6.

Surface water

- a. Acceptable: Monitoring instruments are regularly calibrated. Data is collected and recorded hourly. During times periodically when there is a potential for increased sediment loading (i.e. excavation), real time monitoring shows no exceedance of limits as described in Item 1.
- b. Non Acceptable: Monitoring instruments are not regularly calibrated, or data is not collected and recorded hourly. During times periodically when there is a potential for increased sediment loading (i.e. excavation), real time monitoring shows exceedance of limits as described in Item 1.

Groundwater

- a. Acceptable: If a contaminant of concern in groundwater does not have an upward trend after the fourth sample for three consecutive samples using the Mann-Kendall trend analysis; this approach will use the entire available time series of data (within the numerical constraints of the test).
- b. Not Acceptable: When an upward trend after the fourth sample for three consecutive samples using the Mann-Kendall trend analysis is identified; again, this approach will use the entire available time series of data (within the numerical constraints of the test).

12. Field sampling:

- a. Acceptable: Field sampling instruments are regularly calibrated. Field sampling Standard Operating Procedures are followed. Chain of Custody forms are completed accurately and fully, and submitted with samples for analysis. Health and Safety plans have been prepared and reviewed prior to the start of daily field sampling work.
- b. Not Acceptable: Field sampling instruments are not regularly calibrated. Field sampling Standard Operating Procedures are not followed. Chain of Custody forms are not completed, not accurate, or are not fully filled out. Chain of Custody forms are not submitted with samples for analysis. Health and Safety plans have not been prepared and/or have not been reviewed prior to the start of daily field sampling work.