Phase I Environmental Site Assessment
Cape Breton Development Corporation Properties
Cape Breton County, Nova Scotia

GROUP B PROPERTIES

Final Report Submitted to:

Public Works and Government Services Canada

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FINAL REPORT

(GROUP B PROPERTIES)

PHASE I ENVIRONMENTAL SITE ASSESSMENT
CAPE BRETON DEVELOPMENT CORPORATION PROPERTIES
CAPE BRETON COUNTY, NS

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TABLE OF CONTENTS

Figures

Tables

Appendices

1. INTRODUCTION

1.1 BACKGROUND

Between July 21, 2003 and December 3, 2003, SNC-Lavalin (SNCL) carried out a Property Screening Program involving 639 Cape Breton Development Corporation (CBDC) owned properties, which collectively cover an area of over 4,400 hectares. The work identified potential environmental contamination and public safety liabilities present at the time of each site inspection.

The field program identified potential environmental liabilities on the CBDC-owned properties. The locations of all areas of concern were recorded with professional grade hand-held GPS units that are capable of sub-meter accuracy. All field data collected during the screening process was uploaded to an interactive GIS-based web site. All properties in the Property Screening Program were ranked for future action and/or consideration by CBDC.

Upon request of Public Works and Government Services Canada (PWGSC), a Phase I Environmental Site Assessment (ESA) was conducted for CBDC-owned properties that had an environmental ranking score of 49 or greater, indicating that further action is likely required (i.e., Class 1, 2, and 3 sites).

The subject properties included in the Ph I ESA program were divided into four groups: A, B, C and D. Group B included properties located in the community of Glace Bay. In order to efficiently evaluate the properties within Group B, it was necessary to divide the properties into 12 sites for reporting purposes. Figure 1-1 illustrates the sites.

1.2 METHODOLOGY

A Phase I ESA has been completed for each property (PID). A report, which provides separate conclusions and recommendations for each PID, has been prepared. The report clearly defines potential environmental concerns from historical and current land use and outlines the properties (PIDs) for which Phase II ESA programs are recommended.

As requested by PWGSC, SNCL has reviewed potential environmental liabilities observed during the CBDC Screening Program to determine the degree of risk (low, medium, or high) each feature poses to human health and the environment. Only properties having environmental liabilities with medium or high risk were recommended for Phase II ESAs.

The Phase I ESA was conducted in accordance with the recommended requirements of the Canadian Standards Association (CSA) Phase I Environmental Site Assessment Protocol Z768-94.

The scope of work for the Phase I ESA included:

- review of GIS data from the Property Screening Program conducted by SNCL in 2003;
- review of historical records;
- interviews with individuals familiar with the property and adjacent properties;
- interviews with regulatory and civic officials familiar with the property and adjacent properties;
- a search of the Nova Scotia Department of Environment and Labour's Environmental Registry; and
- a review of aerial photography (supplied by PWGSC) from 1930 – 1999.

Results of the NSDEL Registry Search were not available when this report was finalized. A letter report summarizing the findings of the NSDEL Registry Search will be submitted after NSDEL completes this task.

The Phase I ESA did not include any intrusive testing of soil, sediment, groundwater, surface water, building materials or any other substances. The assessment did not include assessments of buildings present on the sites. The assessment also did not include a lien search or legal survey of the subject properties.

Figure 1-1: Overview of Group B Properties

2. FORMER DOMINION #20 COLLIERY

2.1 FORMER DOMINION #20 COLLIERY– SITE DESCRIPTION

2.1.1 PROPERTY DESCRIPTION

The Former Dominion #20 Colliery consists of two properties (PIDs) located in the New Aberdeen section of Glace Bay. Figure 2-1 illustrates the site plan and photo log.

The former surface operations were conducted on both properties, which can be accessed from West Avenue. All surface works, buildings and infrastructure have been removed.

Evidence of remediation work conducted in 1999 was observed during the site inspection. Sections of both properties were contoured and re-grading with native fill and topsoil. The site appears to be re-vegetating well.

According to the property data supplied by PWGSC during the CBDC Property Screening Program, these properties are owned by CBDC and collectively cover an area of 25.9 ha. Table 2-1 provides a summary of the property information.

Table 2-1: PID Summary – Former Dominion #20 Colliery

PID	Location	Owner	Area (ha)
15531023	New Aberdeen	CBDC	18.6
15531353	New Aberdeen	CBDC	7.3

2.1.2 WATER SUPPLY/GROUNDWATER USAGE

Water usage was not observed on the subject properties during the site inspection to the Former Dominion #20 Colliery. Historically, the subject properties were supplied by Municipal Water from the Town of Glace Bay. The water main and service lines were not removed during the site remediation in 1999 and are suspected to still exist on the subject properties. Potential environmental impacts are not suspected.

Figure 2-1: Site Plan and Photo log – Former Dominion #20 Colliery

2.1.3 SOIL, TOPOGRAPHY, AND DRAINAGE

The Nova Scotia Department of Mines and Energy Surficial Geology Map of Nova Scotia (1992) describes the surficial geology of the area as stony till plain and drumlins, consisting of stony sandy till which may contain silty till.

The Geological Map of Nova Scotia (J. D. Keppie, 2000) describes the underlying bedrock as being from the Sydney Mines Formation and consisting of mudstone, shale, siltstone, sandstone, limestone and coal.

The upper site (PID 15531023) slopes gently to the northeast and storm water would be directed off-site in the same direction. The lower site (PID 15531353) is relatively flat and surface waters would likely be directed towards the reservoir to the southwest.

2.1.4 ON-SITE BUILDINGS AND STRUCTURES

CBDC-owned buildings and/or structures were not observed on the Former Dominion #20 Colliery at the time of the site inspection. A house and shed were observed near the eastern boundary of PID 15531023. Potential environmental impacts are not suspected.

The scope of work for the Property Screening Program did not include an assessment of the interior of the shed.

2.1.5 FORMER BUILDINGS AND STRUCTURES

According to a Surface Layout Plan obtained from CBDC (Plan #147T Cab 39), there were 35 buildings/structures associated with the subject properties. The former buildings on the Former Dominion #20 Colliery site are presented in Table 2-2.

Table 2-2: Former Buildings and Structures on the Former Dominion #20 Colliery Site

Building/Structure Name	Location (PID)	Potential Environmental Impact
Supt's Office (adj property)	15444417	Not suspected
Drager House (adj property)	15444417	Not suspected

Building/Structure Name	Location (PID)	Potential Environmental Impact
Smoke House (adj property)	15444417	Not suspected
Sand House (adj property)	15444417	Not suspected
Pit Props (adj property)	15444417	Unknown
Steming (adj property)	15444417	Unknown
Carpenter Shop (adj property)	15444417	Not suspected
Machine Shop (adj property)	15444417	Suspected
Wash House (adj property)	15444417	Not suspected
Boiler House (adj property)	15444417	Not suspected
Powder Magazine	15531023	Not suspected
Stone Dust Building	15531023	Not suspected
Caps Building	15531023	Not suspected
Powder Building	15531023	Not suspected
Hoist and Compressors	15531023	Suspected
Pickling Pit	15531023	Suspected
Air Shaft	15531023	Not suspected
Man Shaft	15531023	Not suspected
Fan House	15531023	Not suspected
Engine House	15531023	Suspected
Lamp House	15531023	Not suspected
Electrical Shop	15531023	Not suspected
Stone Disposal	15531023	Not suspected
Coal Shaft	15531023	Not suspected
Bankhead	15531023	Suspected
Warehouse and Electrical Storage	15531023	Suspected
Bender Shop	15531023	Not suspected
Coal Crusher	15531023	Not suspected
Oil House	15531353	Suspected
Hoist Building	15531353	Suspected
Oil Spray House	15531353	Suspected
Scale	15531353	Not Suspected
Office	15531353	Not Suspected
Old Coal Trestle	15531353	Not Suspected
Hoist	15531353	Suspected

Past operations for some of the buildings are unknown.

PID 15531023

Potential environmental impacts are suspected from historical leaks and spills of POL in the vicinity of the Hoists and Compressors, Engine House, Warehouse and Electrical Storage.

Transformers were located on the eastern side of the Warehouse and Electrical Storage Building. Long term use and maintenance of transformers would create the potential for leaks and spills. Potential environmental impacts are suspected.

PID 15531353

Potential environmental impacts are suspected from the historical leaks and spills POL in the vicinity of the Oil House, Hoist Building, Oil Spray House, Bankhead, and another Hoist.

PID 15531353 and PID 15531023

The number and density of former building and structures supports a conclusion the lead and mercury based paints may have contaminated soils. Potential environmental impacts are suspected.

Building/Structure Name	Location (PID)	Potential Environmental Impact
Supt's Office (adj property)	15444417	Not suspected
Drager House (adj property)	15444417	Not suspected
Smoke House (adj property)	15444417	Not suspected
Sand House (adj property)	15444417	Not suspected
Pit Props (adj property)	15444417	Unknown
Steming (adj property)	15444417	Unknown
Carpenter Shop (adj property)	15444417	Not suspected
Machine Shop (adj property)	15444417	Suspected
Wash House (adj property)	15444417	Not suspected
Boiler House (adj property)	15444417	Not suspected

The machine shop is located directly adjacent to the subject properties. The historic use of POL in machine operations may have resulted in leaks and spill that may have migrated into the subject property. Potential environmental impacts are suspected.

2.1.6 ADJACENT PROPERTIES

A summary of the adjacent properties is presented in Table 2-3.

Table 2-3: Summary of Adjacent Property Use

Direction	Land Use	Potential Environmental Impacts
North	Residential (Former Mine Site)	Suspected
Northeast	Residential	Not suspected
East	Residential	Not suspected
Southeast	Residential	Not suspected
South	Residential, Former Railway	Not suspected
Southwest	Reservoir, Parkland	Not suspected
West	Reservoir, Parkland	Not suspected
Northwest	Residential	Not suspected

Typical concerns associated with residential land use is fuel oil storage, dumpsites, and burn pits. An effort was made to inspect the adjacent properties. The inspection revealed nothing to suggest an immediate concern. Many residential fuel oil tanks are in poor condition, however this is not isolated to this community.

These adjacent properties are not suspected to have impacted the Former Dominion #20 Colliery site.

2.2 FORMER DOMINION #20 COLLIERY – HISTORIC USE

Historically, surface operations associated with the Former Dominion #2, #9, and #20 Collieries have been carried out on this site between 1899 and 1971. The #2 and #9 Collieries shared a common bankhead and the #20 Colliery was accessed from #2 Colliery. After 1971, the site was used as a Central Warehouse for the distribution of goods (with the exception of POL and explosives) used at other CBDC Mine Sites.

Between 1899 and 1971, approximately 50 million tons of coal was produced from the three collieries. A summary of past operation is presented in Table 2-4.

Table 2-4: Summary of Past Operations

Colliery Name	Years of Operation	Coal Seam Mined	Coal Production (tons)
Former #2 Colliery	1900 - 1949	Phalen	27 Million
Former #9 Colliery	1899 - 1924	Harbour	6.5 Million
Former #20 Colliery	1931 - 1971	Harbour	16 Million

A Phase I ESA of the subject properties was conducted by CBDC personnel in 1995. All of the buildings, with the exception of three buildings on adjacent land to the northwest, were removed in 1997. Two of these three buildings were later removed in 1999 during a Site Clean-up and Environmental Remediation carried out by CBDC. SNCL requested documentation for all three events; however, only the "Site Clean-up and Environmental Remediation" report could be located.

The site remediation program conducted by CBDC in 1999 involved the removal of two buildings and surface features (including fencing, rail lines, asphalt, and foundations). All inert materials (asphalt and concrete) were buried on site, while other debris was disposed at the Municipal Landfill. Soils contaminated with oils and coal fines were excavated and disposed at the Victoria Junction Coal Preparation Plant (VJCPP). Subsurface features such as the former slope and air tunnels were infilled while the reservoir overflow ditch was cleaned and the culvert inlet that directs the overflow was rebuilt.

A limited number of material and soil samples were collected during the remedial activities. Two asphalt samples (20A and 20F), one asbestos sample (20G), and four soil samples (20 B, 20C, and 20D - unknown depth intervals) from former transformer locations were collected by CBDC personnel and submitted to ESL for laboratory analysis. Soil samples were collected to determine if the contaminated soil contained PCBs before the excavation activities were carried out. Confirmatory soil samples were not collected before the excavated areas were filled and re-graded. Laboratory results were not compared to remedial guidelines in the report.

The analytical results were compared to Atlantic PIRI remedial guidelines. Elevated TPH levels were identified by the laboratory in Samples 20B (25, 756 mg/kg), 20C (63, 725 mg/kg), and 20E (15, 780.6 mg/kg). These levels exceeded the least conservative Atlantic PIRI guideline (ie. Fine grained Non-Potable Commercial). Levels in 20A, 20D, and 20F were undetected, 67.8 mg/kg, and 0.15 mg/kg,

respectively. The concentration in 20D did not exceed Residential Non-potable Fine grained guidelines.

PCB levels were non-detectible in all six samples. Based on the analytical results, metals, PAHs, and VOC levels in the vicinity of the sample locations are below the industrial remedial criteria and are not suspected to pose an immediate risk to human health and the environment.

According to the Environmental Liability Assessment conducted by SENES Consultants Limited in 1999, the Former Electrical Shop was used for application of wood preservatives to telephone and power poles.

A review of aerial photographs from 1930, 1954, 1969, 1983 and 1999 was undertaken. Table 2-5 summarizes the observations.

Table 2-5: Aerial Photograph Review – Former Dominion #20 Colliery

Year	Aerials	Observations by PID
1930	43474-23	15531023 - Not available 15531353 - Not available
1954	A13712-84	15531023 – Mine buildings are visible. It is unclear if the domestic coal yard exists. 15531353 – Site appears similar to 1930; Extensive rail yard is evident
1969	NSA30221-111	15531023 – Site appears similar to 1954, with the exception that a large coal laydown area is evident in the domestic coal yard 15531353 – Site appears similar to 1954; Extensive rail yard is evident.
1983	83302-145	15531023 – Site appears similar to 1969, with the exception that the large coal laydown area is not evident. 15531353 – Site appears similar to 1969; Extensive rail yard is evident.
1999	99323-7	15531023 – No buildings present. Evidence of remedial work observed. 15531353 - No buildings evident, extensive rail yard is not evident. Evidence of remedial work observed

Potential impacts are suspected in the vicinity of the Hoist Houses, the transformer storage areas, all former ASTs/USTs locations, the Pickling Pit, Compressor House, Oil Spray House, and the Electrical Shop.

2.3 ADJACENT PROPERTIES – HISTORICAL USE

A review of aerial photographs from 1930, 1954, 1969, 1983 and 1999 was undertaken. Table 2-6 summarizes the observations.

Table 2-6: Aerial Photograph Review – Former Dominion #20 Colliery (Adjacent Properties)

Year	Aerials	Adjacent Property Description
1930	43474-23	15531023 – Not available 15531353 - Not available
1954	A13712-84	15531023 – Mine buildings (approx. 10) noted on adjacent property to the northwest; property is surrounded by residential lots 15531353 – Adjacent property appears similar to 1930; property is surrounded by residential lots and the reservoir to the southwest is present
1969	NSA30221-111	15531023 - Adjacent property appears similar to 1954. No major changes in adjacent land use were observed. 15531353 – Adjacent property appears similar to 1954. No major changes in adjacent land use were observed.
1983	83302-145	15531023 – John Bernard Croak School is observed to the northwest 15531353 - Adjacent property appears similar to 1969. No major changes in adjacent land use were observed.
1999	99323-7	15531023 – Adjacent property appears similar to 1983. Carpenter Shop (only building remaining after site remediation) still present on adjacent property. 15531353 - Adjacent property appears similar to 1969. No major changes in adjacent land use were observed.

According to a Surface Layout Plan obtained from CBDC (Plan #147T Cab 39) and review of aerial photography, there were formerly 10 buildings on adjacent property PID 15444417. A summary of these buildings is presented in Section 2.1.1.5. The historical use of these buildings is suspected to pose a low risk to human health and the environment.

2.4 EVALUATIONS AND FINDINGS FOR FORMER DOMINION #20 COLLIERY

The Phase I ESA was undertaken to identify potential environmental concerns associated with the subject properties. The findings of this assessment are based on the site inspection, review of historical data, interviews with individuals knowledgeable with the property and adjacent properties. Areas of potential environmental concern are illustrated on Figure 2-3.

2.4.1 FUEL HANDLING AND STORAGE

At the time of the site inspection, there were no above ground storage tanks (ASTs) or fuel handling observed on the subject properties.

PID 15531023

According to the Hazardous Materials Compliance Audit conducted by Vaughan Engineering Ltd. in 1992, two bulk underground storage tanks (USTs) existed near the Warehouse in 1992. It is unknown if the tanks were removed during the remediation program in 1999. Details of the former USTs are presented in Table 2-7.

Table 2-7: Summary of POL Storage Tanks (1992)

Nearest Building/ Structure	Location	Type	Material	Volume	Contents	Year Est.	Present (Y/N)
Warehouse	Outside	UST	Unknown	4,500 L	Diesel	Unknown	N
Warehouse	Outside	UST	Unknown	13, 650 L	Fuel Oil	Unknown	N

According to former CBDC personnel, diesel and gas ASTs (unknown size and material of tank) were also located near the northeast corner of the Warehouse. Potential environmental impacts are suspected in the vicinity of all storage tank locations.

A 205 L plastic barrel being used a fuel oil tank was observed on the southeast corner of PID 15531023 (adjacent to PID 15445778). Although no signs of leakage were observed at the time of the site inspection, condensation was observed on the exterior of the tank. The plastic barrel being used as a fuel tank does not comply with provincial and federal regulations. It is recommended this tank be removed.

Figure 2-2: Areas of Potential Environmental Concern – Former Dominion #20 Colliery

PID 15531353

Historically, fuels were handled in the vicinity of the Oil House. According to former CBDC personnel, a diesel AST was located west of the Former Oil House.

The high volume of fuel use would likely result in the occasional leak or spill. Potential environmental impacts are suspected in the vicinity of all storage tank locations.

2.4.2 Spills and Stained Areas

PID 15531023

Acid rock drainage was observed in a drainage ditch during the site inspection. Drainage observed from former coal mines, pits, and bedrock outcrops is not uncommon and typical of the regional geology. The past remedial efforts will reduce infiltration and minimize acid generation. This drainage is suspected to pose a low risk to human health and the environment. Potential environmental impacts are not suspected

2.4.3 Dangerous Goods Handling and Storage

According to the Hazardous Materials Compliance Audit conducted by Vaughan Engineering Ltd. in 1992, hazardous goods were stored on the subject properties. CBDC personnel confirmed this during interviews. These materials included, but were not limited to, paints and solvents in the Warehouse and Dearborn products in the Engine Room. All of these products were stored inside.

The high volume of dangerous goods used over the many years of operation would suggest a number of leaks and spills have occurred. The spills and leaks would likely be concentrated around the Former Warehouse Building. This building would also likely have had a dry well sump that would have collected spills. This sump would be a source of potential contamination. Potential environmental impacts are suspected.

2.4.4 ASBESTOS

Asbestos sheathing was reported to be in one of the buildings demolished in 1999. The material was removed by a licensed contractor and disposed at a local landfill. Potential environmental contamination is not suspected.

2.4.5 POLYCHLORINATED BIPHENYLS (PCBS)

Sources of PCBs were not observed on the subject properties during the site inspection. Prior to remedial activities in 1999, CBDC personnel collected four soil samples (unknown depth intervals) in the vicinity of four separate transformer storage locations and submitted the samples to ESL for PCB analysis. The analytical results did not detect PCBs in the soils. Potential environmental impacts are not suspected in these areas.

PID 15531023

According to a Surface Layout Plan obtained from CBDC (Plan #147T Cab 39), transformers were located on the eastern side of the Warehouse and Electrical Storage Building. Long term use and maintenance of transformers would create the potential for spills and leaks. Potential environmental impacts are suspected.

2.4.6 OZONE DEPLETING SUBSTANCES (ODS)

PID 15531023

A freezer with a compressor was observed on this property during the site inspection. This area is considered to pose a low risk to human health and the environment. It is recommended that this debris be removed from CBDC property.

2.4.7 LEAD/MERCURY

Sources of lead/mercury were not observed or suspected on the subject properties during the site inspection. Historically, there is potential for former buildings to have been painted with lead and/or mercury based paints. Many of these areas have been filled and re-graded, the historical use of lead and/or mercury based paints are considered to pose a risk to human health and the environment. Potential environmental impacts are suspected (see Section 2.1.1.5).

2.4.8 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

UFFI was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

2.4.9 WASTE WATER

Sources of wastewater are not generated on the subject properties. Potential environmental impacts are not suspected.

2.4.10 WATER COURSES, DITCHES OR STANDING WATER

PID 15531023

Acid rock drainage was observed in a drainage ditch located in the southern section of this property during the site inspection. It is unknown if it is being discharged from underground workings (room and pillar sections of the No. 7 Colliery that underlays part of the No. 20 site) or being generated from mine waste still existing on the subject property. Drainage observed from former coal mines, pits, and bedrock outcrops is not uncommon and typical of the regional geology. The past remedial efforts will reduce infiltration and minimize acid generation. This drainage is suspected to pose a low risk to human health and the environment.

2.4.11 PESTICIDES/HERBICIDES

Pesticide and/or herbicide use was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

2.4.12 RADON

CBDC personnel indicated that there was no use of radioactive isotopes in their operations. The Nova Scotia Department of Health map "Potential Occurrence of Radon Gas in Nova Scotia" indicates there is little or no uranium, thorium, or naturally occurring radioactive elements in the soil in the area. Potential environmental impacts are not suspected.

2.4.13 ELECTROMAGNETIC FREQUENCY (EMF)

Sources of EMF were not observed on or near the subject properties during the site inspection. Potential environmental impacts are not suspected.

2.4.14 SEWAGE DISPOSAL

Sewage is not currently generated on the subject properties. Historically, sanitary wastewater was discharged to the Town of Glace Bay sewer system. According to the CBDC Remediation Report, there is evidence that the local municipality is discharging sewage into the No. 7 Shaft. The shaft was not observed during the site inspection. Potential liabilities that fall under the responsibility of Cape Breton Regional Municipality (CBRM) are not considered to be in the scope of this program.

2.4.15 SOLID WASTE

General

Multiple small localized dumpsite consisting of items such as domestic garbage, ash, creosote timbers, and domestic appliances were observed during the site inspection. These areas are considered to pose a low risk to human health and the environment. It is recommended that this debris be removed from CBDC property.

Coal fines were observed on both properties in areas not remediated. These areas are considered to pose a low risk to human health and the environment. Potential environmental impacts are not suspected.

2.4.16 STRESSED VEGETATION

Stressed vegetation was not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

2.4.17 AIR QUALITY

Odours or air emissions from the subject or adjacent properties were not noted during the site inspection. Potential environmental impacts are not suspected.

2.4.18 FILL

Native overburden and imported fill was redistributed on the subject properties after the remedial activities were completed in 1999. Suspected waste rock material was observed scattered throughout the subject properties. Potential environmental impacts are not suspected.

2.5 CONCLUSIONS – FORMER DOMINION #20 COLLIERY

The Phase I ESA conducted on the Former Dominion #20 Colliery in Glace Bay, Cape Breton County, Nova Scotia between October 20th and November 26th, 2003 has revealed potential for environmental contamination. The results of the investigation are summarized below:

Table 2-8: Areas of Potential Environmental Concern – Former Dominion #20 Colliery

PID	Potential Concerns	Description	Degree of Risk	Media	Contaminants of Concern
15531023	Historical Land Use	Potential environmental impacts from suspected historical POL spills and leaks in the vicinity of the Hoists and Compressors, Engine House, Warehouse and Electrical Storage. According to a Surface Layout Plan obtained from CBDC (Plan #147T Cab 39), transformers were located on the eastern side of the Warehouse and Electrical Storage Building. Long term use and maintenance of transformers would create the potential for spills and leaks.	Medium Medium	Soil GW Soil	TPH Metals TPH PCBs
15531023	Fuel Handling and Storage	According to the Hazardous Materials Compliance Audit conducted by Vaughan Engineering Ltd. in 1992, two bulk storage tanks (USTs) existed near the Warehouse in 1992. It is unknown if the tanks were removed during the remediation program in 1999. According to former CBDC personnel, diesel and gas ASTs were also located	Medium to High	Soil GW	TPH Metals

PID	Potential Concerns	Description	Degree of Risk	Media	Contaminants of Concern
		near the northeast corner of the Warehouse. The high volume of fuel use would likely result in the occasional leak or spill.			
15531023	Fuel Handling and Storage	A 205 L plastic barrel being used as a fuel oil tank was observed on the southeast corner. Although no signs of leakage were observed at the time of the site inspection, condensation was observed on the exterior of the tank. The plastic barrel being used as a fuel tank does not comply with provincial and federal regulations. It is recommended this tank be removed.	Medium	N/A	N/A
15531023	Lead/ Mercury	The number and density of former building and structures supports a conclusion the lead and mercury based paints may have impacted soils.	Medium	Soil	Metals
15531353	Historical Land Use	Potential environmental impacts are suspected from suspected historical POL spills and leaks in the vicinity of the Oil House, Hoist Building, Oil Spray House, Bankhead, and another Hoist.	Medium	Soils GW	TPH Metals
15531353	Fuel Handling and Storage	According to former CBDC personnel, a diesel AST was located west of the Former Oil House. The high volume of fuel use would likely result in the occasional leak or spill.	Medium	Soils GW	TPH Metals
15531353	Lead/ Mercury	The number and density of former building and structures supports a conclusion the lead and mercury based paints may have impacted soils.	Medium	Soil	Metals
15531353	Fuel Handling and Storage	According to former CBDC personnel, a diesel AST was located west of the Former Oil House. The high volume of fuel use would likely result in the occasional leak or spill.	Medium	Soils GW	TPH Metals

A Phase II ESA is recommended to determine if potential environmental impacts exist in all above-mentioned locations.

3. FORMER DOMINION #26 COLLIERY (GLACE BAY)

3.1 FORMER DOMINION #26 COLLIERY - SITE DESCRIPTION

3.1.1 PROPERTY DESCRIPTION

The #26 Colliery consists of four properties (PIDs) located on O'Neil's Point in the northwest section of the Glace Bay area. Figure 3-1 illustrates the site plan and photo log.

The subject properties are located at the end of 1-B Road where access to the properties, with the exception of PID 15598360, has been restricted by a fence.

A mine water treatment facility was constructed in 2003. The facility was constructed by PWGSC to pump and treat mine waters from the Former 1B Mine. The northern segment of this property is covered in a layer of waste rock. Concrete and metal debris from the demolition of the former structures on the subject properties has been dumped over the shoreline cliff into the Atlantic Ocean. As well, numerous outfall pipes were observed in the shoreline cliff.

A settling pond constructed in 2002 is located on PIDs 15442247 and 15441355. Effluent is pumped to the pond by an above ground pipeline from the adjacent property (PID 15447998). Outfall pipes were observed along the shoreline cliff and outfall pipes for the settling pond were observed on PID 15441355. A Miner's Memorial is located adjacent to the 1B access road.

PID 15598360 is a vacant property. The remainder of building foundations, scattered debris piles were observed throughout the subject property. Concrete and metal debris dumped over the shoreline cliff from the Former 1B and No. 26 Colliery are all that remain on the subject property.

Figure 3-1: Site Plan and Photo Log – Former Dominion #26 Colliery

According to the property data supplied by PWGSC during the CBDC Property Screening Program, these properties are owned by CBDC and collectively cover an area of 14.97 ha. Table 3-1 provides a summary of the property information.

Table 3-1: PID Summary - #26 Colliery (Glace Bay)

PID	Location	Owner	Area (ha)
15442247	Northwest Section of Glace Bay	CBDC	2.3131
15598360	Northwest Section of Glace Bay	CBDC	3.4929
15441355	Northwest Section of Glace Bay	CBDC	5.0974
15447998	Northwest Section of Glace Bay	CBDC	4.0718

3.1.2 WATER SUPPLY/GROUNDWATER USAGE

Both PIDs 15442247 and 15441355 are serviced by the municipal water supply with a fire hydrant on PID 15442247 and a water valve on PID 15441355.

Water supply sources or groundwater usage were not observed on PID 15598360 during the site inspection. Mine water pumped to the surface on PID 15447998 is treated with lime slurry to balance the pH. The resulting effluent is then pumped to PIDs 15442247 and 15441355, where potential contaminants are allowed to precipitate out into a settling pond.

3.1.3 SOIL, TOPOGRAPHY, AND DRAINAGE

The Nova Scotia Department of Mines and Energy Surficial Geology Map of Nova Scotia (1992) describes the surficial geology of the area as stony till plain and drumlins, consisting of stony sandy till which may contain silty till.

The Geological Map of Nova Scotia (J. D. Keppie, 2000) describes the underlying bedrock as being from Sydney Mines Formation and consisting of mudstone, shale, siltstone, sandstone, limestone and coal.

PID 15447998, 15442247, and 15441355

The subject properties are slope gently toward the north allowing surface water run off to drain towards the Atlantic Ocean.

PID 15598360

The subject property is relatively flat. Surface water from the property collects along the edge of the railway. It is then directed underneath the railway by a culvert and then flows towards the ocean.

3.1.4 ON-SITE BUILDINGS AND STRUCTURES

Three buildings were observed on the Former No. 26 Colliery site at time of site inspection. The locations of the buildings are summarized in Table 3-2.

Table 3-2: On-site Buildings and Structures – Former #26 Colliery

Building Name	Location (PID)	Potential Environmental Impact
Man Shaft	15447998	Suspected
Electrical Building	15447998	Not observed or suspected
Storage Shed	15447998	Not observed or suspected
Silo	15447998	Not observed or suspected
Wet well	15447998	Not observed or suspected
Settling Pond	15442247, 15441355	Not observed or suspected

The scope of work for the Property Screening Program did not include an assessment of the interior of any buildings. Potential environmental impacts are suspected from potential spills and leaks of POL in the vicinity of the Man Shaft.

3.1.5 FORMER BUILDINGS AND STRUCTURES

A review of site plans (193-T CAB 67) revealed the existence of the following buildings and structures on the former mine site;

Table 3-3: Former Buildings on the Former # 26 Colliery Site

Building Name	PID	Potential Environmental Impact
Administration Building	15598360	Not suspected
Boiler House (coal fired)	15598360	Not suspected
Carpenter Shop, Forge, Machine Shop, Warehouse (All part of one structure)	15598360	Suspected
Load-Out	15598360	Not suspected
Dispensing Magazine	15772668	Not suspected
Oil House	15598360	Suspected
Security Building	15598360	Not suspected

Building Name	PID	Potential Environmental Impact
Storage building	15598360	Not suspected
Warehouse	15598360	Not suspected
Office	15447998	Not suspected
Air Shaft	15447998	Not suspected
Man Shaft	15447998	Not suspected
Coal Shaft	15447998	Not suspected
Breaker Building	15447998	Not suspected
Capacitor	15447998	Suspected
Compressor House	15447998	Suspected
Electrical Shop	15447998	Not Suspected
Fan House	15447998	Not Suspected
Hoist House	15447998	Suspected
Iron Workers Building	15447998	Not Suspected
Load Out	15447998	Not Suspected
Man Hoist	15447998	Suspected
Pump house	15447998	Not Suspected
Sand House	15447998	Not Suspected
Transformers	15447998/ 15442247	Suspected

PID 15598360

Potential environmental impacts are suspected from the potential spills and leaks of POL in the vicinity of the Shops and Oil House. The concentration of buildings on the subject property would represent an increased risk of metals impacts in soils from paints, ash from the boilers, and coke waste from the boilers.

PID 15447998

Potential environmental impacts are suspected from the potential spills, leaks of POL in the vicinity of the Compressor House, Hoist House, and the Man Hoist.

Potential environmental impacts are suspected from the historical spills and releases of PCB oils in the vicinity of the capacitors and the Transformer Area.

PID 15442247

Potential environmental impacts are suspected from the historical spills and releases of PCB oils in the vicinity of the Transformer Area.

PIDs 15447998

Historic building and structures located on the subject property may have impacted local soils with lead and mercury from paint coatings.

3.1.6 ADJACENT PROPERTIES

A summary of the adjacent properties is presented in Table 3-4.

Table 3-4: Summary of Adjacent Property Use

Direction	Land Use	Potential Environmental Impacts
North	Atlantic Ocean	Not suspected
Northeast	Atlantic Ocean	Not suspected
East	Residential	Not suspected
Southeast	Residential	Not suspected
South	Residential/Undeveloped lots	Not suspected
Southwest	Residential	Not suspected
West	Former railway (CBDC)/Undeveloped	Not suspected
Northwest	Atlantic Ocean	Not suspected

Potential environmental impacts are not suspected from adjacent property use.

3.2 FORMER DOMINION #26 COLLIERY– HISTORICAL USE

In 1921, Dominion No. 1B shaft was sunk at O'Neil's Point on the western limits of Glace Bay and shared its surface operations and main underground haulage way with No. 26 Colliery. To protect the colliery from coastal erosion, all mine debris that was hoisted from the shaft was dumped over the Cliffside to act as a barrier. Electric trolleys moved the output from the working sections to the shaft. The haulage way was mostly double tracked with a repair shop located near the bottom of the pit. All buildings on the subject properties were made of concrete. The original steam driven equipment at the colliery was replaced in 1949 and all services were then electrically operated. The boiler plant supplied steam only for the washhouse and heating system by two 100 horsepower Matheson boilers. The No. 1B mine was closed in 1955 because of high production costs, at which time it had produced a total of 19,065,716 tons. The Dominion No. 26 colliery was opened in 1943 to work the Harbour seam in front of Dominion 1B colliery. The haulage and intake tunnel was 700 metres long and was located 5,000 metres from the Former 1B-hoisting shaft. It shared the hoisting shaft and main haulage way and surface plant of 1B as well as the 1B surface plant. The mine caught fire in April of 1984 and causing the closure of the colliery, it had been in operation for seventy years.

According to the Hazardous Materials Compliance Audit conducted by Vaughan Engineering Ltd. in 1992, a tire recycling plant had been located on the subject property (PID 15598360) after the mine closure. The Former Warehouse was used for a tire recycling plant. This industry went bankrupt and left stacks of tires on the subject property. Vaughan Engineering Ltd also identified an oil leak caused by oil from the Hoist House around the exterior of the man shaft (PID 15447998).

The following is information obtained through interviews with CBDC personnel:

CBDC personnel indicated that stone was dumped over the bank. Much of this stone has been washed away. Mining equipment dumped in the ocean was an attempt to prevent erosion and washing away of stone. Mine water discharge for No. 26 Colliery was pumped and discharged into the ocean.

Some structures such as the bank head, tipples and cooling pond are not shown on the site plan. CBDC staff indicated that there was a conveyor from the tipples to the breaker. Tipples were used to tip coal out of cars. The cooling ponds were for the compressors.

CBDC personnel indicated that the older buildings had asbestos siding. There were approximately six transformers located historically near the Hoist House. In the 1970's one of the transformers blew up. Four shafts existed on site. Three were filled and the man shaft is now used to pump mine water. Shafts were filled with clay borrow, no coal was used as fill (NSDEL). Shafts were not capped; additional fill was used to level the shafts each year (subside approximately 5 m/yr)

CBDC personnel indicated that the storage building was used for oils, varsol, ethylene glycol, hydraulic fluid, etc. The Oil House was built at a later date (1978-1979). A Diesel AST was located near the Warehouse. Diesel was sent into the mine in 200 litre tanks for the locomotives. It was often dispensed with hand pumps. Diesel also was used for the tractor (loading materials). Former No.26 Colliery operations did not use gas vehicles. Vehicles used at No. 26 Colliery were based out of #20 Colliery. The mine used a significant quantity of hydraulic fluids.

The parking area east of 1B road was used as Dump/Disposal Site for construction, demolition, and decommissioned materials. Wire rope was also burned here. This area is where the new settling pond is now located.

Most equipment was left underground because of mine access and set-up (shafts/tipples). A Coal/Waste Rock dump is located to the southwest of the Rotary Breaker. Material was dumped during the period when the rotary breaker was being constructed. (1981)

A review of aerial photographs from 1930, 1953, 1969, 1983 and 199 was undertaken. Table 3-5 summarizes the observations.

Table 3-5: Aerial Photograph Review – Former Dominion No.26 Colliery Site

Year	Aerials	Former Dominion No. 26 Colliery Site - Observations by PID
1930	A3474-25	15442247: Railway runs through site. 15598360: 1-B/No. 26 Mine Site, numerous buildings 15441355: Railway runs through site. 15447998: 1-B/No. 26 Mine Site, numerous buildings
1953	A13712-84	15442247: Railway runs through site. 15598360: 1-B/No. 26 Mine Site, numerous buildings 15441355: Railway runs through site. 15447998: 1-B/No.26 Mine Site, numerous buildings
1969	NSA30221-111	15442247: Railway runs through site. 15598360: 1-B/No. 26 Mine Site, numerous buildings 15441355: Railway runs through site. 15447998: 1-B/No. 26 Mine Site, numerous buildings
1983	83302-95	15442247: Railway runs through site. 15598360: 1-B/No. 26 Mine Site, numerous buildings 15441355: Railway runs through site. 15447998: 1-B/No. 26 Mine Site, numerous buildings
1999	99323-6	15442247: Railway vacant, uncertain if track were removed 15598360: Buildings removed 15441355: Railway vacant, uncertain if track were removed 15447998: Buildings removed

PID 15598360

Potential environmental impacts are suspected from leaks and spills of POL in the vicinity of the Shops and Oil House. Lead and mercury contaminated paint is suspected to have been used on all structures.

PID 15447998

Potential environmental impacts are suspected from the leaks and spills of POL in the vicinity of the Compressor House, Hoist House, Man Hoist, and the Man Shaft. Lead and mercury contaminated paint is suspected to have been used on all structures.

Potential environmental impacts are suspected from the historical spills of PCB fluids in the vicinity of the capacitors and the Transformer Area.

PID 15442247

Potential environmental impacts are suspected from the historical spills of PCB fluids in the vicinity of the Transformer Area.

3.3 ADJACENT PROPERTIES – HISTORICAL USE

A review of aerial photographs from 1930, 1953, 1969, 1983 and 1999 was undertaken. Table 3-6 summarizes the observations.

Table 3-6: Aerial Photograph Review – Former Dominion No.26 Colliery Site (Adjacent property)

Year	Aerial Photograph Number	Former Dominion No. 26 Colliery Site - Observations by PID
1930	A3474.25	15442247: West: 1-B Mine Site; East: railway; South: Undeveloped. 15598360: North: 1-B Mine Site; West: railway; East: Undeveloped and Railway; South: undeveloped. 15441355: East west and south: Undeveloped. 15447998: South: 1-B Mine Site; West: railway; East: railway.
1953	A13712-84	15442247: West: 1-B/No.26 Mine Site; East: railway; South: Residential properties. 15598360: North: 1-B/No.26 Mine Site; West: railway; East: railway and Disturbed area, suspected parking lot; South: undeveloped. 15441355: East: railway; West: undeveloped; South: residential. 15447998: South: 1-B Mine Site; West: railway; East: railway.
1969	NSA30221-111	15442247: South: Parking lot; West: No.26 Mine Site; East: railway. 15598360: South: Undeveloped Lots, West: railway; East: railway and Parking lot. 15441355: West: railway and undeveloped, South: Residential / Undeveloped; East: railway. 15447998: South: No. 26 Mine Site; East: railway and parking lot; West: railway.
1983	83302-95	15442247: South: Parking lot, West: No.26 Mine Site; East: railway. 15598360: North: No. 26 Mine Site; South: Undeveloped Lots, on PID 15772668 portion of land appears to be

Year	Aerial Photograph Number	Former Dominion No. 26 Colliery Site - Observations by PID
		disturbed, possible activity from mine; West: railway; East: railway and Parking lot. 15441355: West: railway and undeveloped; South: Residential / Undeveloped, East: Undeveloped 15447998; South: No. 26 Mine Site; East: railway and parking lot; West: railway.
1999	99323-6	15442247: South: Vacant lot; West: Building foundations; East: former railway (Uncertain if tracks remain). 15598360: South: Undeveloped Lots, areas previously disturbed re-vegetated; West: former railway (Uncertain if tracks remain); North: Vacant lot. 15441355: West: former railway (uncertain if tracks remain) and undeveloped; South: Residential / Undeveloped; East: Undeveloped. 15447998: South: Building foundations; East: former railway (uncertain if tracks remain) and vacant lot (re-vegetated); West: former railway.

Based on examination of aerials from 1930 to 1999, the adjacent properties immediately bordering the Dominion No. 26 Colliery Sites have remained undeveloped or used for residential properties. Potential environmental impacts are not suspected.

3.4 EVALUATIONS AND FINDINGS FOR FORMER DOMINION #26 COLLIERY

The Phase I ESA was undertaken to identify potential environmental concerns associated with the subject properties. The findings of this assessment are based on the site inspection, review of historical data, and interviews with individuals knowledgeable with the property and adjacent properties, and a search through the provincial databases. Figure 3-2 illustrates the nature and location of former structures and areas of potential environmental concern.

Figure 3-2: Areas of Potential Environmental Concern – Former Dominion #26 Colliery

3.4.1 Fuel Handling and Storage

PID 15598360

Fuel handling and storage was not observed on this property during the site inspection.

Historical usage and storage of petroleum was reported in the Former Oil House and Machine Shop. CBDC personnel indicated that the storage building was used for oils, varsol, ethylene glycol, and hydraulic fluid. An interview with CBDC personnel indicated that a diesel above ground storage tank was located near the Shops. Potential environmental impacts are suspected.

PID 15447998

Fuel handling and storage was not observed on this property during the site inspection. Historical usage of petroleum products was reported in the Hoist Buildings (2). CBDC personnel indicated the mine site used a large quantity of hydraulic fluids in the vicinity of the Former Compressor House. The location of suspected POL storage tanks are illustrated in Figure 3-3. Potential environmental impacts are suspected.

3.4.2 Spills and Stained Areas

The Former #26 Colliery site has been re-graded and contoured in several areas since the mine closed. Many of the former structure locations are not apparent, except where foundations are still visible. Surficial soil disturbances would have covered potentially stained areas.

PID 15598360

A petroleum stain in the soil next to the concrete pad of what is believed to be the Former Oil House was observed during the site inspection. Potential environmental impacts are suspected.

PID 15447998

Several stains were observed on the subject property during the site inspection. Staining was observed near the treated effluent discharge location. This area is suspected to pose a low risk to human health and the environment. Potential environmental impacts are not suspected.

3.4.3 DANGEROUS GOODS HANDLING AND STORAGE

PID 15598360

Handling and storage of dangerous goods was not observed on the subject property during the site inspection. CBDC personnel indicated that the Former Mine Site Storage Building dedicated to the storage of oils, varsol, ethylene glycol, and hydraulic fluid. The location of the storage building is presented on Figure 3-2. The high volume of dangerous goods used over the many years of operation would suggest a number of leaks and spills have occurred. The spills and leaks would likely be concentrated around the Former Storage Building. This building would also likely have had a dry well sump that would have collected spills. This sump would be a source of potential contamination. Potential environmental impacts are suspected.

3.4.4 ASBESTOS

PID 15598360

One dumpsite on the property was suspected to have asbestos siding amongst other construction materials. CBDC staff indicated that the older buildings had asbestos siding. It is recommended that a licensed contractor remove these materials. Potential environmental impacts are suspected.

3.4.5 POLYCHLORINATED BIPHENYLS (PCBS)

PID15447998/PID 15442247

Sources of PCBs were not observed on the subject properties during the site inspection. Historically, PCBs were used in the vicinity of the Capacitor Storage Area (PID 15447998) and the Transformer Storage Area (PID 15442247). Transformer failures and spills would result in PCB contaminated dielectric fluids being released to the surrounding soils. Although mobility of these fluids is very low, there remains a potential for concern. Potential environmental impacts are suspected in the vicinity of these areas.

3.4.6 OZONE DEPLETING SUBSTANCES (ODS)

Sources of ODS were not observed on the subject properties during the site inspection. Historic use of bulk refrigerants was not reported or suspected. Potential environmental impacts are not suspected.

3.4.7 LEAD/MERCURY

PID 15598360

Paint containers were observed in dumpsites on the subject property during the site inspection. Former buildings on the subject property may have been painted with lead and/or mercury based paints (see Section 3.1.1.5). Although the buildings have been removed, the soils around these former structures are likely impacted by heavy metals from paint. Soils around all former buildings are suspected to pose a low risk to human health and the environment. Further investigations may be required depending upon land-use. Potential environmental impacts are suspected.

3.4.8 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

UFFI was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

3.4.9 WASTE WATER

General

Effluents from mine site operations would include dewatering, process flow, cooling waters (pumps), stormwater, sanitary effluent, and washdown waters. Potential environmental impacts are not suspected.

PID 15447998

Seven outfall sites (unknown sources) were observed along the shoreline cliff during the site inspection. Treated mine waters, which are monitored and comply with effluent discharge guidelines, are discharged from the subject property when the treatment facility is active. Potential impacts are not suspected from this outfall. Potential liabilities from sewer outfalls are the responsibility of Cape Breton Regional Municipality (CBRM) and are not considered to be in the scope of this program.

PID 15598360

A corroded and perforated pipe was observed on this property during the site inspection. Potential environmental impacts are not suspected.

PID 15441355

An outfall site from a settling pond compound is present on the property. All

effluents from this new treatment process are monitored and comply with effluent discharge guidelines. This area is suspected to pose a low risk to human health and the environment.

PID 15441355

A suspected municipal sewer outfall was observed on this property during the site inspection. Potential liabilities associated with sewer discharges are the responsibility of Cape Breton Regional Municipality (CBRM) and are not considered to be in the scope of this program.

3.4.10 WATER COURSES, DITCHES OR STANDING WATER

PID 15447998

A stormwater related erosion cut was observed in a coastal cliff on the subject property during the site inspection. This area is not suspected to pose a risk to human health and the environment.

PID 15441355

A drainage channel on the subject property was observed to be cut through areas of coal, ash, creosote timber and waste rock. Stormwater discharging from the subject property may be degraded by contact with these materials, however this flow infiltrated into the overburden and ultimately discharges into the marine environment. Potential risks to human health and the environment are considered low. Potential environmental impacts are not suspected.

3.4.11 PESTICIDES/HERBICIDES

Use of pesticides and herbicides are not suspected on the subject properties. Potential environmental impacts are not suspected.

3.4.12 RADON

The Nova Scotia Department of Health map "Potential Occurrence Radon Gas in Nova Scotia" indicates there is little or no uranium, thorium, or naturally occurring radioactive elements in the soil in the area. Potential environmental impacts are not suspected.

3.4.13 ELECTROMAGNETIC FREQUENCY (EMF)

Sources of EMF were not observed near the subject properties during the site inspection. Potential environmental impacts are not suspected.

3.4.14 SEWAGE DISPOSAL

PID 1544355

A suspected municipal sewage outfall discharging into the Atlantic Ocean was observed on this property during the site inspection. Potential liabilities associated with sewer discharges are the responsibility of Cape Breton Regional Municipality (CBRM) and are not considered to be in the scope of this program.

3.4.15 SOLID WASTE

PID 15442247

A layer of coal fines surrounding the area of a former railway was observed during the site inspection. This is suspected to pose a low risk to human health and the environment. Potential environmental impacts are not suspected.

PID 15447998

Former buildings, waste rock, and debris of unknown content have been dumped over the shoreline cliff. There are no signs of environmental impact. Potential environmental impacts are not suspected.

PID 15598360

A large area of debris from the demolition of the Former Carpenter Shop, Forge, Machine Shop, and Warehouse Structure remains on the subject property. Content of the debris pile is unknown, however the majority of the debris appears to be concrete and inert material. It should be noted that multiple 10 to 20L oil containers (some with product) were observed in this area. Also, suspected asbestos siding was discovered within the debris pile. Potential environmental impacts are suspected in this area.

Numerous hydraulic hoses were found in a dumpsite. No staining was observed at time of the site inspection. This concern is suspected to pose a low risk to human health and the environment. Removal of the debris is recommended.

Waste rock was observed covering a large portion of the western section during the site inspection. A large amount of concrete and metal debris from former structures has also been dumped over the shoreline cliff in the vicinity of the waste rock disposal area. Potential environmental impacts are suspected.

Coal fines were observed at several locations on the subject property during the site inspection. Some were mixed with ash. This area is suspected to pose a low risk to human health and the environment.

Several small dumpsites were observed during the site investigation. Debris included empty oil and paint containers, asphalt shingles, metal debris, wooden structure debris, asbestos siding, hydraulic hoses, corroded barrels, rope wire, scrap metal, gypsum sealer, timbers and creosote rail ties. This area is suspected to pose a low risk to human health and the environment. Removal of the debris is recommended. Potential environmental impacts are not suspected.

3.4.16 STRESSED VEGETATION

Stressed vegetation was not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

3.4.17 AIR QUALITY

No odours or air emissions from the subject or adjacent properties were noted during the site inspection. Potential environmental impacts are not suspected.

3.4.18 FILL

PID 15598360

Several fill areas are present on the subject property. The contents of the fill varied; one was composed of gravel and sand, another large fill area had mixed contents, a third had gravel fill over coal fines. Two fill areas had fill mixed with debris. Fill debris was also found in a dumpsite along a coastal cliff. These concerns are suspected to pose a low risk to human health and the environment. Potential environmental impacts are not suspected.

3.5 CONCLUSIONS – FORMER DOMINION #26 COLLIERY

The results of the Phase I ESA investigation conducted at #26 Colliery in Glace Bay between October 24th and November 10th, 2003 (PIDs 15442247, 15598360, 15441355 and 15447998) are summarized below:

Table 3-6: Areas of Potential Environmental Concern – Former #26 Colliery

PID	Potential Concerns	Description	Degree of Risk	Media	Contaminants of Concern
15442247	Historical Land Use	Historically, PCB leaks are suspected in the vicinity of the Transformer Area.	Medium	Soil	TPH PCBs
15447998	Historical Land Use/Fuel Handling and Storage	Historically, bulk quantities of POL were used in the vicinity of the Compressor House, Hoist House, and the Man Hoist. Spills and leaks are suspected in these areas. According to the Hazardous Materials Compliance Audit conducted by Vaughan Engineering Ltd. in 1992, there was an oil leak caused by oil from the Hoist House around the exterior of the Man Shaft. Historically, PCB leaks are suspected in the vicinity of the capacitors and the Transformer Area.	Medium Medium	Soil GW Soil	TPH Metals TPH PCBs
15447998	Historical Land Use	Former buildings, waste rock, and debris of unknown content have been dumped over the shoreline cliff. Historic buildings and structures located on the subject properties may have impacted local soils with lead and mercury from paint coatings.	Medium Medium	Sed Soil	TPH Metals Metals
15598360	Historical Land Use/Fuel Handling and Storage/Dangerous Goods	Historically bulk quantities of POL were used and/or stored in the vicinity of the Shops and Oil House. CBDC personnel indicated that a diesel AST was located near the Shops and	Medium	Soil GW	TPH Metals

PID	Potential Concerns	Description	Degree of Risk	Media	Contaminants of Concern
		this building was also used for storing oils, varsol, ethylene glycol, and hydraulic fluid. Spills and leaks are suspected in these areas. The concentration of buildings on the subject property would represent an increased risk of metals impacts in soils from paints, ash from the boilers, and coke waste from the boilers.	Medium	Soil	Metals pH
15598360	Staining	A suspected petroleum stain in the soil next to the concrete pad of what is believed to be the Former Oil House was observed.	Medium	Soil GW	TPH Metals
15598360	Solid Waste	A large area of debris from the demolition of the Former Carpenter Shop, Forge, Machine Shop, and Warehouse Structure remains on subject property. Content of the debris pile is unknown, however the majority of the debris appears to be concrete and inert material. It should be noted that multiple 10 to 20L oil containers (some with product) were observed in this area. Also, suspected asbestos siding was discovered within the debris pile. A large area of waste rock was observed covering a portion of the western section of this property.	Medium Medium	Soil GW Soil GW	TPH Metals Metals pH

A Phase II ESA is recommended to determine if potential environmental impacts exist in all above-mentioned locations.

4. DOMINION #8 PUMPING SHAFT

4.1 DOMINION #8 PUMPING SHAFT - SITE DESCRIPTION

4.1.1 PROPERTY DESCRIPTION

The Pre 1967 Site 41 (Dominion #8 Pumping Shaft) consists of one property (PID) located in the Glace Bay area. Figure 4-1 illustrates the site plan and photo log. The lot is situated beside the railway crossing of Wallace Road, opposite Tupper Street in New Aberdeen. During the site inspection this PID was observed to be a brush-covered lot with an 8m by 7m concrete cap covering the former shaft.

According to the property data supplied by PWGSC during the CBDC Property Screening Program, the subject property is owned by CBDC and collectively covers an area of 1.0865 ha. Table 4-1 provides a summary of the property information.

Table 4-1: PID Summary - Dominion #8 Pumping Shaft

PID	Location	Owner	Area (ha)
15442692	Northwest Section of Glace Bay	CBDC	1.0865

4.1.2 WATER SUPPLY/GROUNDWATER USAGE

Water supply or groundwater usage was not observed during the site inspection.

Figure 4-1: Site Plan and Photo Log – Former Dominion #8 Pumping Shaft

4.1.3 SOIL, TOPOGRAPHY, AND DRAINAGE

The Nova Scotia Department of Mines and Energy Surficial Geology Map of Nova Scotia (1992) describes the surficial geology of the area as stony till plain and drumlins, consisting of stony sandy till which may contain silty till.

The Geological Map of Nova Scotia (J. D. Keppie, 2000) describes the underlying bedrock as being from the Sydney Mines Formation and consisting of mudstone, shale, siltstone, sandstone, limestone and coal.

Wallace's Brook, located in the immediate vicinity of the subject property, drains northward to the Atlantic Ocean. An overgrown drainage ditch presently connects the former pump shaft to the brook. Historically, mine water discharge was directed past the brook using a flume.

4.1.4 ON-SITE BUILDINGS AND STRUCTURES

A former pumping shaft is located on the property. An 8m by 7m concrete cap is present, covering the former shaft.

4.1.5 FORMER BUILDINGS AND STRUCTURES

A 1906 site plan of the area entitled "Colliery No.8 Layout at Water Shaft with Profile of Flume" shows three former structures on the subject property. These are in Table 4-2.

Table 4-2: Present/ Former Buildings and Structures on Dominion #8 Pumping Shaft

Building Name	Status
Shaft	Present (2003), currently capped
Suspected Hoist Engine House	Former
Suspected Head Frame	Former

According to the plan, the ditch ran west past the current property boundary where the flow was directed across Wallace's Brook using a flume. Past the brook the ditch resumed, then turned northward and continued to the coast.

The unlabelled building was located to the south of the shaft, between the shaft and the railway. It is suspected to be the Former Hoist Engine House.

4.1.6 ADJACENT PROPERTIES

The adjacent properties include CBDC owned PIDs 15442395, 15442700 and 15528961. PID 15528961 is a section of the railway, and PIDs 15442395 and 15442700 are undeveloped. A summary of the adjacent properties is presented in Table 4-3.

Table 4-3: Summary of Adjacent Property Use Dominion #8 Pumping Shaft

Direction	Land Use	Potential Environmental Impacts
North	Residential	Not suspected
South	CBDC owned railway (PID 15528961), Residential	Low risk from coal fines and ash, waste rock, and creosoted timbers
East	Residential	Not suspected
West	CBDC owned undeveloped lots (PIDs 15442395 and 15442700)	Not suspected

The adjacent property to the south is railway PID 15528961. According to the Phase I Assessment of the Former Railways in Glace Bay, creosote treated timbers, coal fines and ash, and waste rock fill were identified as sources of potential impacts on PID 15528961. These sources are suspected to be low risk to human health and the environment. Potential environmental impacts are not suspected.

4.2 PRE 1967 – DOMINION #8 PUMPING SHAFT – HISTORICAL USE

In 1999 the Department of Natural Resources (DNR) conducted a Site Identification and Preliminary Assessment of the subject property, which included the following historical summary:

> *"Shaft was sunk to a depth of 375 feet in 1906 by the International Mining Company. The shaft intersected the barrier pillar between the International Colliery and the Dominion #9 Colliery down dip. A drift was driven from the deepest portion of the International Colliery to intersect the shaft. Back in 1902 a shaft had been sunk at the #9 Colliery with the intention to connect with the workings of the International. This shaft would aid in the pumping of the lower workings in the International Colliery, which were being inundated with surface waters whose source was believed to be subsidence cracks near the crop. The connection between the collieries was never made.*

In 1907 the International Colliery was taken over by the Dominion Coal Company and became known as the #8 mine. The mine eventually closed in July of 1914, after having worked out the resource block available between it and the Dominion #9 and Sterling Collieries in Glace Bay.

Although it is known that the water level at the International Colliery was maintained up until at least 1924 to aid in the pumping of the #1 and #5 Collieries on the Phalen Seam, it is not known if this shaft was kept in operation.

The shaft was reportedly capped in 1977 at the request of a neighbouring landowner."

A 1906 site plan of the area entitled "Colliery No.8 Layout at Water Shaft with Profile of Flume" shows four former structures on the subject property: the shaft, a flume, and structures believed to be the pumping shaft hoisting engine house and head frame, both located in the vicinity of the shaft. The pumping station buildings are shown near the railway to the west, at a distance that places them outside of PID 15442692 (see Figure 4-2)

Aerial photographs of the area were reviewed for 1930, 1953, 1969, 1980 and 1999. The findings are summarized in Table 4-4.

Table 4-4: Aerial Photograph Review – Dominion #8 Pumping Shaft

Year	Aerial Photo Number	Observations (PID 5442692)	Potential Environmental Impacts
1930	A3474-25	Building is present on the subject property (believed to be pumping shaft hoisting engine house)	None (see below)
1953	A13712-84	Building or slab foundation is visible	None
1969	NSA30221-111	Remnants of building visible	None
1980	83302-95	Remnants of building visible	None
1999	99323-6	Road or trail running parallel to railway is visible on former location of building	None

According to CBDC, the pumping shaft engine house likely ran by compressed air, based on the era of operation. The engine house would have been used to remove

material when advancing shaft and for shaft repair, and would have also had a water separator. CBDC suspects this station was abandoned when station at 1B was established, around 1925. Use of oils for gearbox and lubrication of the compressed air lines are potential environmental impacts that are typically associated with hoist engine house operations. Potential environmental impacts are suspected.

4.3 ADJACENT PROPERTIES – HISTORICAL USE

Limited development on adjacent properties is depicted on the 1906 site plan. The Sydney and Louisburg railway runs along the southern property boundary. To the west near the railway is located a pumping station, with three other nearby buildings. A ditch runs from the railway near this pumping station to the shoreline. The ditch running west from the Dominion #8 pump shaft turns northward near the ditch from the pumping station and these two ditches run parallel to the shoreline.

A small reservoir and Wallace's Brook are west of the present day pumping shaft. A flume connects the ditch from the pump shaft on either side of the brook, carrying mine waters across. Three buildings are depicted on the adjacent properties to the north. There is no illustration of property use to the east.

Aerial photographs of the area were reviewed for 1930, 1953, 1960, 1980 and 1999. The findings are summarized in Table 4-5.

Table 4-5: Aerial Photograph Review – Dominion #8 Pumping Shaft (Adjacent Properties)

Year	Aerial Photo Number	Adjacent Property Description – Observations	Potential Environmental Impacts
1930	A3474-25	North: Residential, mainly open land with some houses. East: Undeveloped open land South: Railway, residential land that is mostly open West: Open land, with flume and ditch visible.	Not suspected

Year	Aerial Photo Number	Adjacent Property Description – Observations	Potential Environmental Impacts
1953	A13712-84	North: Residential with more buildings than 1930 photo East: \Residential South: Railway, residential with more buildings than 1930 photo West: Open land, ditch visible	Not suspected
1969	NSA30221-111	North: Residential East: Residential South: Railway, residential West: Residential, ditch not visible	Not suspected
1983	83302-95	North: Residential East: Residential South: Railway, residential West: Residential, ditch visible	Not suspected
1999	99323-6	North: Residential East: Residential South: Railway, residential West: Residential, ditch visible but overgrown	Not suspected

Potential environmental impacts are not suspected from the historic uses of adjacent lands.

4.4 EVALUATIONS AND FINDINGS FOR DOMINION #8 PUMPING SHAFT

The Phase I ESA was undertaken to identify potential environmental concerns associated with the subject property. The findings of this assessment are based on the site inspection, review of historical data, interviews with individuals knowledgeable with the property and adjacent properties, and a search through the provincial databases. The findings of the search through the provincial databases are to be included with the final report. Areas of potential environmental concern are presented in Figure 4-2.

Figure 4-2: Areas of Potential Environmental Concern – Former Dominion #8 Pumping Shaft

4.4.1 Fuel Handling and Storage

Fuel storage tanks were not observed on the subject property during the site inspection and there was no indication of fuel handling or storage in the past. Potential environmental impacts are not suspected.

4.4.2 Spills and Stained Areas

Staining was not observed on the subject property during the site inspection. Potential environmental impacts are not suspected.

4.4.3 Dangerous Goods Handling and Storage

Handling and storage of dangerous goods was not observed or suspected on the subject property during the site inspection. Potential environmental impacts are not suspected.

4.4.4 Asbestos

Sources of asbestos were not observed or suspected on the subject property during the site inspection. Potential environmental impacts are not suspected.

4.4.5 Polychlorinated Biphenyls (PCBs)

Sources of PCBs were not observed or suspected on the subject property during the site inspection. PCBs are a common environmental concern related to former pumping operations due to their historic use in transformers for electric power. Based on the era of operations of the Dominion #8 Pumping shaft, PCB were not invented when this site was in operation. Potential environmental impacts are not suspected.

4.4.6 Ozone Depleting Substances (ODS)

Sources of ODS were not observed or suspected on the subject property during the site inspection. Potential environmental impacts are not suspected.

4.4.7 LEAD/MERCURY

Materials potentially containing lead and mercury were not observed or suspected on the subject property during the site inspection. Potential environmental impacts are not suspected.

4.4.8 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

UFFI was not observed or suspected on the subject property during the site inspection. Potential environmental impacts are not suspected.

4.4.9 WASTE WATER

Waste water generation or disposal was not observed on the subject property during the site inspection. Potential environmental impacts are not suspected.

4.4.10 WATER COURSES, DITCHES OR STANDING WATER

According to the 1906 site plan, a ditch carried water from the pump shaft to the ocean. This ditch was directed across Wallace's Brook by a flume, just offsite to the west. The plan shows an area beside the brook "made slightly swampy by water from the flume," This suggesting some leakage of the flume occurred. This ditch is currently overgrown.

Mine waters present a potential for elevated pH and dissolved metals. However, a long time that has elapsed since this ditch was used to channel mine waters (over 70 years). The absence of staining or stressed vegetation suggests that any potential impacts from the mine water have been mitigated by natural processes. Potential environmental impacts are not suspected.

4.4.11 PESTICIDES/HERBICIDES

Pesticides or herbicides were not observed or suspected on the subject property. Potential environmental impacts are not suspected.

4.4.12 RADON

The Nova Scotia Department of Health map "Potential Occurrence Radon Gas in Nova Scotia" indicates there is little or no uranium, thorium, or naturally occurring radioactive elements in the soil in the area. Potential environmental impacts are not suspected.

4.4.13 ELECTROMAGNETIC FREQUENCY (EMF)

Sources of EMF were not observed near the subject property during the site inspection. Potential environmental impacts are not suspected.

4.4.14 SEWAGE DISPOSAL

Source of sewage generation or disposal was not observed at the subject property during the site inspection. Potential environmental impacts are not suspected.

4.4.15 SOLID WASTE

Wood debris was observed on the subject property during the site inspection. Potential environmental impacts are not suspected.

Burned domestic waste was observed at a dumpsite. This area is suspected to present a low risk to human health and the environment.

4.4.16 STRESSED VEGETATION

Stressed vegetation was not observed on the subject property during the site inspection. Potential environmental impacts are not suspected.

4.4.17 AIR QUALITY

Odours or air emissions from the subject or adjacent properties were not noted during the site inspection. Potential environmental impacts are not suspected.

4.4.18 FILL

One mounded fill area (the contents of which are unknown) was observed on the subject property during the site inspection. No evidence of environmental impacts (stains, debris) were found from examination of the exterior of the fill. Potential environmental impacts are not suspected.

4.5 CONCLUSIONS – DOMINION #8 PUMPING SHAFT

The Phase I investigation conducted at the Pre 1967 – Site 41 (Dominion #8 Pumping Shaft) on October 30th, 2003 (PID 15442692) revealed the following potential environmental impacts on the subject property:

Table 4-6: Areas of Potential Environmental Concern – Dominion #8 Pumping Shaft

PID	Potential Concerns	Description	Degree of Risk	Media	Contaminants of Concern
15442692	Historical Use	Former hoist engine house suspected to use oils for gearbox and lubrication of the compressed air lines.	Low to Medium	Soil GW	TPH Metals

Note: GW = Groundwater; SW= Surface Water; Sed = Sediment

A Phase II ESA is recommended to determine if potential environmental impacts exist in the above-mentioned locations.

5. SHORELINE AT BURNT HEAD

5.1 SHORELINE AT BURNT HEAD - SITE DESCRIPTION

5.1.1 PROPERTY DESCRIPTION

The Pre 1967 Site 42 (Glace Bay), also known as Burnt Head, consists of two properties (PIDs) located in the northern section of the Glace Bay area. Figure 5-1 illustrates the site plan and photo log.

The subject properties are located along the coastline of the Atlantic Ocean. Both properties are open vacant lands consisting of steep cliffs and rocky shoreline. Access is restricted at the end of Ninth Street and Eleventh Street by a steel guardrail with a no trespassing sign. Activity was not observed on the subject properties at the time of the site inspection.

According to the property data supplied by PWGSC during the CBDC Property Screening Program, the subject properties are owned by CBDC and collectively cover an area of 6.4192 ha. Table 5-1 provides a summary of the property information.

Table 5-1: PID Summary – Shoreline at Burnt Head

PID	Location	Owner	Area (ha)
15440969	Northeast Section of Glace Bay	CBDC	1.3561
15526668	Northeast Section of Glace Bay	CBDC	5.0631

5.1.2 WATER SUPPLY/GROUNDWATER USAGE

Water supply sources or groundwater usage were not observed or suspected on the subject properties during the site inspection.

Figure 5-1: Site Plan and Photo Log - Site 42 (Glace Bay)

5.1.3 SOIL, TOPOGRAPHY, AND DRAINAGE

The Nova Scotia Department of Mines and Energy Surficial Geology Map of Nova Scotia (1992) describes the surficial geology of the area as stony till plain and drumlins, consisting of stony sandy till which may contain silty till.

The Geological Map of Nova Scotia (J. D. Keppie, 2000) describes the underlying bedrock as being from the Sydney Mines Formation and consisting of mudstone, shale, siltstone, sandstone, limestone and coal.

The subject properties gently slope north towards the cliff, allowing surface water run off to drain towards the Atlantic Ocean.

5.1.4 ON-SITE BUILDINGS AND STRUCTURES

General

There were no buildings present on the subject properties during the site inspection. Potential environmental impacts were not observed or suspected.

PID 15440969

A small timber bridge, crossing to the adjacent property to the west, was observed on this property. Potential environmental impacts were not observed or suspected.

PID 15526668

Evidence of former bootleg operations and crib working remain in the shoreline cliff. The historical use of the crib work is unknown. Potential environmental impacts were not observed or suspected.

5.1.5 FORMER BUILDINGS AND STRUCTURES

A review of historical documents, aerial photographs (1930, 1953, 1969, 1983, and 1999), and interviews with CBDC personnel has not revealed any buildings previously existing on the subject properties.

5.1.6 ADJACENT PROPERTIES

Potential environmental concerns were not observed on the properties adjacent to the subject properties. A summary of the adjacent properties is presented in Table 5-2.

Table 5-2: Summary of Adjacent Property Use - Site 42 (Glace Bay)

Direction	Land Use	Potential Environmental Impacts
North	Atlantic Ocean	Not suspected
Northeast	Atlantic Ocean	Not suspected
East	Residential	Not suspected
Southeast	Residential	Not suspected
South	Residential	Not suspected
Southwest	Residential	Not suspected
West	Residential	Not suspected
Northwest	Atlantic Ocean	Not suspected

5.2 SHORELINE AT BURNT HEAD – HISTORICAL USE

In 1999 the Department of Natural Resources (DNR) conducted a Site Identification and Preliminary Assessment of the Shoreline at Burnt Head. The historic summary is as follows:

"The Hub Seam was first worked by French Troops at Burnt Head sometime prior to 1745. From 1745 to 1752 the English took over the property and erected a blockhouse with surrounding moat to enable them to fend off attacks from natives. The Fortress of Louisbourg was the main recipient of the coal up until 1752 when a fire in the pit spread to infrastructure at surface and the colliery was abandoned.

In 1863 Mr. Archbold, President of the Glace Bay Mining Company, re-opened the old French and English workings at Burnt Head, in conjunction of the opening of a new colliery on the Hub Seam at Table Head. No details are available on the operations at Burnt Head, but it is believed that no interconnection was made between the old workings and the new colliery.

In 1897 the Dominion Coal Company completed a survey of the old French and English workings at Burnt Head.

The small size of the pillars within the old French and English workings has led to a number of documented subsidence events, with the last major one recorded in 1940.Local residents indicate that a one-foot thick rider seam was also worked by bootleggers in the late 1940s up to the late 1950s."

CBDC personnel indicated that they did not know anything about bootleg operations in the 1940's and 50's; however, they were aware of subsidence holes that were filled in this area in 2002. It was speculated that this area was likely bootlegged during a major strike in 1949. The technique used to recover the coal would probably have been pick and shovel.

Historic aerial photography was reviewed for the subject properties. The findings are summarized in Table 5-3.

Table 5-3: Aerial Photograph Review – Pre 1967 Site 42 Subject PIDs

Year	Aerial Photo Number	Pre 1967 Site 42 - Observations by PID
1930	A3474-24	15440969:Undeveloped 15526668: Undeveloped
1953	A13712-84	15440969: Undeveloped 15526668: Undeveloped
1969	NSA30221-112	15440969: Undeveloped 15526668: Undeveloped
1983	83302-96	15440969: Undeveloped 15526668: Undeveloped
1999	99323-7	15440969: Undeveloped 15526668: Undeveloped

Potential environmental impacts are not suspected from historical land use.

5.3 ADJACENT PROPERTIES – HISTORICAL USE

A review of aerial photographs from 1930, 1953, 1969, 1983 and 1999 was undertaken. Table 5-4 summarizes the observations.

Table 5-4: Aerial Photograph Review – Pre 1967 Site 42 Subject PIDs

Year	Aerial Photo Number	Pre 1967 Site 42 - Observations by PID
1930	A3474-24	15440969: Southeast, residential; West: undeveloped, east, undeveloped 15526668: Southeast, residential; West: undeveloped, east, undeveloped
1953	A13712-84	15440969: Southeast, residential; West: undeveloped, east, undeveloped

Year	Aerial Photo Number	Pre 1967 Site 42 - Observations by PID
		15526668:South: residential, east, undeveloped, west residential
1969	NSA30221-112	15440969: Southeast, residential; West: undeveloped, east, undeveloped 15526668: Southeast, residential; West: undeveloped, east, undeveloped
1983	83302-96	15440969: Southeast, residential; West: undeveloped, east, undeveloped 15526668: Southeast, residential; West: undeveloped, east, undeveloped
1999	99323-7	15440969: Southeast, residential; West: undeveloped, east, undeveloped 15526668: Southeast, residential; West: undeveloped, east, undeveloped

Based on examination of aerials from 1930 to 1999, the adjacent properties immediately bordering the Pre 1967 – Site 42 have either never been developed or used for residential properties. Potential environmental impacts are not suspected.

5.4 EVALUATIONS AND FINDINGS FOR SHORELINE AT BURNT HEAD

The Phase I ESA was undertaken to identify potential environmental concerns associated with the subject properties. The findings of this assessment are based on the site inspection, review of historical data, and interviews with individuals knowledgeable with the properties and adjacent properties, and a search through the provincial databases.

5.4.1 FUEL HANDLING AND STORAGE

Fuel storage tanks were not observed on the subject properties during the site inspection and there was no indication of fuel handling or storage in the past. Potential environmental impacts are not suspected.

5.4.2 SPILLS AND STAINED AREAS

Spills or stains were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

5.4.3 DANGEROUS GOODS HANDLING AND STORAGE

Handling and storage of dangerous goods was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

5.4.4 ASBESTOS

Sources of asbestos were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

5.4.5 POLYCHLORINATED BIPHENYLS (PCBS)

Sources of PCBs were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

5.4.6 OZONE DEPLETING SUBSTANCES (ODS)

Sources of ODS were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

5.4.7 LEAD/MERCURY

PID 15526668

Paint cans were discovered in two dumpsites on the subject property during the site inspection. A lead battery was found at another dumpsite. The number of paint cans was less than 5. These dump sites are suspected to pose a low risk to human health and the environment. Potential environmental impacts are not suspected.

5.4.8 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

UFFI was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

5.4.9 WASTE WATER

PID 15526668

Water drainage from former bootleg workings was observed to be discharging into the Atlantic Ocean during the site inspection. Evidence of acid rock drainage was not observed during the time of the site inspection.

On February 26, 2002, CBDC personnel collected a water sample. This test was accessed at www.devco.ca/projects/cbdcproj/minewaterindex.html. The results, which were analysed for trace metals and pH, were below the CCME Marine Aquatic Guidelines. The sampling protocol used by CBDC personnel is not discussed on the web site and the methodology that was used to collect the sample is unclear. Clear effluent (ie. no acid mine drainage) was observed flowing from this outfall at the time of the site inspection. Potential environmental impacts are not suspected.

5.4.10 WATER COURSES, DITCHES OR STANDING WATER

PID 15526668

Three erosion cuts were observed on the subject property on top of the shoreline cliff through waste rock covering the area. Evidence of acid rock drainage was not observed during the site inspection, however a limited amount of waste rocks and coal fines were observed. These areas are suspected to pose a low risk to human health and the environment.

5.4.11 PESTICIDES/HERBICIDES

Evidence of pesticide or herbicide use was not observed or suspected on the subject properties. Potential environmental impacts are not suspected.

5.4.12 RADON

The Nova Scotia Department of Health map "Potential Occurrence Radon Gas in Nova Scotia" indicates there is little or no uranium, thorium, or naturally occurring radioactive elements in the soil in the area. Potential environmental impacts are not suspected.

5.4.13 ELECTROMAGNETIC FREQUENCY (EMF)

Sources of EMF were not observed near the subject properties during the site inspection. Potential environmental impacts are not suspected.

5.4.14 SEWAGE DISPOSAL

PID 15526668

Four suspected sewage outfall sites are on the subject property. Effluent, suspected to be sewage, was observed discharging into the Atlantic Ocean from a concrete and metal pipe. These pipes are suspected to discharge sewage generated from adjacent residential properties. Potential liabilities that fall under the responsibility of Cape Breton Regional Municipality (CBRM) are not considered to be in the scope of this program.

PID 15440969

A suspected sewage outfall pipe was observed discharging over the shoreline cliff into the Atlantic Ocean. This pipe is suspected to discharge sewage generated from residential properties to the south. Potential liabilities that fall under the responsibility of Cape Breton Regional Municipality (CBRM) are not considered to be in the scope of this program.

5.4.15 SOLID WASTE

PID 1552668

Several small dumpsites were observed on the subject property during the site inspection. The debris found in the dumpsites included; paint cans, domestic debris, 4L oil containers, ash, auto parts, a lead battery, asphalt shingles, a burning drum, coal fines and creosote ties. These dumpsites are suspected to pose a low risk to human health and the environment. Removal of these items is recommended. Potential environmental impacts are not suspected.

PID 1552668

Waste rock mixed with coal fines covers was observed on the western segment of the subject property during the site inspection. Erosion cuts (less than 1m deep) run though this area, but indications of acid rock drainage was not observed. These areas are suspected to pose a low risk to human health and the environment.

5.4.16 STRESSED VEGETATION

Stressed vegetation was not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

5.4.17 AIR QUALITY

Odours or air emissions from the subject or adjacent properties were not noted during the site inspection. Potential environmental impacts are not suspected.

5.4.18 FILL

PID 15440969

Former subsidence areas on this property have been recently filled. Although the origin of the fill is unknown, there was no visual or olfactory evidence of impacts in the fill material. These areas are suspected to pose a low risk to human health and the environment. Potential environmental impacts are not suspected.

5.5 CONCLUSIONS – SHORELINE AT BURNT HEAD

The results of the Phase I ESA investigation conducted at the Pre 1967 – Site 42 in Glace Bay during October 24th and 30th, 2003 (PIDs 15440969 and 15526668) did not reveal any potential areas of environmental concern.

6. FORMER DOMINION #7 COLLIERY (ROOST COLLIERY)

6.1 FORMER DOMINION #7 COLLIERY - SITE DESCRIPTION

6.1.1 PROPERTY DESCRIPTION

The Pre 1967 – Site 43, formerly known as the Roost Colliery or the Shoreline at Table Head, consists of two properties (PIDs) located in the Glace Bay area. Figure 6-1 illustrates the site plan and photo log. The property consists of steep cliffs and a beach, and a portion of open land at the top of the cliffs.

According to the property data supplied by PWGSC during the CBDC Property Screening Program, these subject properties are owned by CBDC and collectively cover an area of 1.4441 ha. A summary of the property information is included in the following table.

Table 6-1: PID Summary – Former Dominion #7 Colliery (Roost Colliery

PID	Location	Owner	Area (ha)
15445273	Eastern Section of Glace Bay	CBDC	1.2971
15699937	Eastern Section of Glace Bay	CBDC	0.147

6.1.2 WATER SUPPLY/GROUNDWATER USAGE

Water supply and groundwater usage was not observed or suspected at PIDs 15445273 or 15699937 during the site inspection.

Figure 6-1: Site Plan and Photo Log - Dominion #7 Colliery

6.1.3 SOIL, TOPOGRAPHY, AND DRAINAGE

The Nova Scotia Department of Mines and Energy Surficial Geology Map of Nova Scotia (1992) describes the surficial geology of the area as stony till plain and drumlins, consisting of stony sandy till which may contain silty till.

The Geological Map of Nova Scotia (J. D. Keppie, 2000) describes the underlying bedrock as being from the Sydney Mines Formation and consisting of mudstone, shale, siltstone, sandstone, limestone and coal.

Steep cliffs of sedimentary rock are present on the subject properties with a beach of coarse grey sand at the base. The Atlantic Ocean is the direct recipient of site runoff. An on-site culvert is believed to be connected to the residential storm sewer system and may receive Acid Mine Drainage from the underground workings of the Dominion #7 colliery, and/or surface drainage from the Dominion #20 Colliery.

6.1.4 ON-SITE BUILDINGS AND STRUCTURES

Other than an access road or a path to the beach present on 15445273, buildings or structures were not present on PIDs 15445273 or 15699937.

6.1.5 FORMER BUILDINGS AND STRUCTURES

The historical review has not revealed any buildings or structures previously existing on PIDs 15445273 or 15699937.

6.1.6 ADJACENT PROPERTIES

A summary of the adjacent properties is presented in Table 6-2.

Table 6-2: Summary of Adjacent Property Use – Former Dominion #7 Colliery

Direction	Land Use	Potential Environmental Impacts
North	Residential	Not suspected
	Marconi National Historic Site (including a museum)	Not suspected
South	Residential	Not suspected
	CBDC owned undeveloped lot	Not suspected
East	Atlantic Ocean	Not suspected

Direction	Land Use	Potential Environmental Impacts
West	Residential	Not suspected

CBDC owned PID 15393085 is also located nearby to the south, separated from PID 15445273 by a residential property. Waste rock, coal fines and coal were observed on the lot, believed to be from the #20 Colliery. These are considered to be of low risk to human and environmental health and environmental impacts on the subject properties are not suspected.

6.2 FORMER DOMINION #7 COLLIERY – HISTORICAL USE

The Shoreline at Table Head is the historic location of a mine started in 1858, which later became part of the Roost Colliery, later known as the Dominion #7 Colliery and also referred to as the Hub.

According to a Dominion Coal Company plan of the Roost Colliery provided to SNCL, most of the mine workings described were located to the west and north of PIDs 15445273 and 15699937. Southern portions of PID 15445273 are not shown on the Roost Colliery plan. Workings driven in from the shore are visible in the northern portion of PID 15445273. A feature labelled "mouth of slope" is labelled nearby to the west, with a dotted connection to the coast near the southern portion of PID 15699937. Southern portions of PID 15445273 are not shown on the Roost Colliery plan.

A 1999 Site Identification and Preliminary Assessment conducted by DNR assessed the shoreline mine opening as a safety hazard, and noted that there was evidence of recent public access in the area. The DNR assessment reports that the opening was sealed by CBDC in January 2003.

Historic aerial photography was reviewed for the subject property. The findings are summarized in Table 6-3.

Table 6-3: Aerial Photograph Review – Dominion #7 Colliery Shoreline at Table Head by PID

Year	Aerial Photograph	Pre 1967 Site 43 Shoreline at Table Head - Observations by PID	Potential Environmental Impacts (PID)
1930	3474-23	PID 15699937: undeveloped PID 15445273: undeveloped	None
1953	A13712-93	PID 15699937: undeveloped PID 15445273: undeveloped	None
1969	30209-84	PID 15699937: undeveloped PID 15445273: undeveloped	None
1980	83302-145	PID 15699937: undeveloped PID 15445273: undeveloped	None
1999	99322-148	PID 15699937: undeveloped PID 15445273: undeveloped	None

6.3 ADJACENT PROPERTIES – HISTORICAL USE

In 1999 the Department of Natural Resources (DNR) conducted a Site Identification and Preliminary Assessment of the Shoreline at Table Head. The historic summary from that assessment describes the Roost/ Dominion #7 colliery. According to the Dominion Coal Company plan of the Roost Colliery most operations were located to the west and north of PIDs 15445273 and 15699937, with the exception of the early shoreline workings. The historic summary is as follows:

> *In 1858 Mr. E.P. Archbold opened the Hub seam at Table Head by driving a level from the shore. Just to the northwest a slope was sunk through rock at a high angle to intersect the seam and provide a means of ventilating the workings. As the workings proceeded to the west a second slope was driven through rock (reportedly at a grade of 25%) and this became the main upcast for the mine.*
>
> *In 1866 the Glace Bay Mining company, whose President was Mr. Archbold, sank what would later become the Main shaft for the Dominion #7 Colliery. This shaft was sunk to the north of the Main slope to act as a pumping station. At this time the colliery was known as the Roost. In 1868 a new shaft was sunk to the dip of the main shaft and it would later become the Dominion #7 Fan Shaft.*
>
> *In 1872 production at the Roost Colliery was halted by fire. Over the next three years attempts to isolate the fire in the pit failed and the colliery was abandoned and allowed to flood in 1875.*
>
> *In 1895 the Dominion Coal company dewatered the old Roost workings and enlarged the Main pumping shaft. This shaft was now the Main shaft for what was still called the*

Roost Colliery. Two years later the company proceeded to drive the main deeps offshore to obtain the required cover to access the offshore resource.

The colliery was closed in 1899 for unknown reasons, but was re-opened in 1903 and named the Dominion #7 Colliery. The following year, with development work proceeding offshore, pillar extraction, in what was known as the Marconi Section, was initiated. The pillar extraction in this area at Table Head would continue on and off up until 1915.

In December of 1906 the colliery was closed by another large fire. Both the Main shaft and Fan shaft were sealed and an attempt was made to flood the workings by opening the Roost water level. Given that the level was located above the high water mark the company found it necessary to blast a level into the workings during low tide in order to flood the mine. Subsequently dams were constructed at the location of the inflows and the colliery was back in operation within a couple of months.

The colliery continued to be a steady producer up until its closure during the summer of 1918. At that time the bulk of the workers were transferred to the Dominion #2 & #9 Collieries, where it was felt that the production per man could far exceed that at the #7 colliery.

In the Dominion Coal Company plan of the Roost Colliery, a railway runs north-south to the west of PIDs 15445273 and 15699937. Colliery buildings are located about 500m to the north. The footprint of the wireless telegraph station is shown to the north of PID 15699937. Drawings of underground workings show absence of pillars in the vicinity of the wireless telegraph station. This may be the Marconi section where pillar extraction was reported to occur between 1904 and 1915.

According to CBDC personnel the wireless telegraph was the original Marconi Station. There are a series of boreholes (both pumping and wiring) on the Dominion #7 site that were never officially decommissioned. A map provided by CBDC shows the boreholes at the northwest corner of the Dominion #7 surface operations, where the Table Head shoreline turns to the west (PID 15437510, owned by the Cape Breton Regional Municipality).

Historic aerial photography for the area was reviewed, and is summarized in Table 6-4.

Table 6-4: Aerial Photograph Review – Dominion #7 Colliery (Adjacent Properties)

Year	Adjacent properties	Potential Environmental Impacts (PID)
1930	Residential to west and south. North: open	None
1953	Residential to north, west, and south	None
1969	Residential to north, west, and south	None
1983	Residential to north, west, and south	None
1999	Residential to north, west, and south	None

According to the aerial photography, residential land use in the immediate vicinity has been consistent for the past 74 years. All five residential streets currently present to the west are visible in the 1953 photo; in the 1930 photo there are four, the northernmost is not shown. Three residential streets are also shown in a 1918 site plan of the Dominion #7 colliery in the Public Archives of Nova Scotia.

6.4 EVALUATIONS AND FINDINGS FOR DOMINION #7 COLLIERY (ROOST COLLIERY)

The Phase I ESA was undertaken to identify potential environmental concerns associated with the subject properties. The findings of this assessment are based on the site inspection, review of historical data, interviews with individuals knowledgeable with the property and adjacent properties, and a search through the provincial databases.

6.4.1 FUEL HANDLING AND STORAGE

Fuel storage tanks were not observed on the subject properties during the site inspection and there was no indication of fuel handling or storage in the past. Potential environmental impacts are not suspected.

6.4.2 SPILLS AND STAINED AREAS

PID 15445273

Acid rock drainage staining was observed at the water outfall on PID 15445273 during the site inspection.

Coal deposits melted by the heat of a fire at the former shaft were observed on PID 15445273 during the site inspection. Coal ash remnants were observed in this area, however the amount of ash present at the surface is small and the rest of the burnt area is sealed within the cliffside. This area is suspected to present a low

risk to human health and the environment. Potential environmental impacts are not suspected.

A localized stain, suspected to be from burned debris, was observed on the subject property during the site inspection. This area is suspected to present a low risk to human health and the environment. Potential environmental impacts are not suspected.

6.4.3 DANGEROUS GOODS HANDLING AND STORAGE

Handling and storage of dangerous goods was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

6.4.4 ASBESTOS

Sources of asbestos were not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

6.4.5 POLYCHLORINATED BIPHENYLS (PCBS)

Sources of PCBs were not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

6.4.6 OZONE DEPLETING SUBSTANCES (ODS)

Sources of ODS were not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

6.4.7 LEAD/MERCURY

PID 15445273

Peeling paint was observed on a fence and guardrail on PID 15445273, on the open land above the cliff. It is possible that this fence has been on the subject property since before 1980, when the use of paints containing lead and/or mercury was common. However, because the painted surface area of the fence and guardrail is

small the peeling paint is suspected to present a low risk to human health and the environment. Potential environmental impacts are not suspected.

6.4.8 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

UFFI was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

6.4.9 WASTE WATER

Wastewater generation or disposal was not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

6.4.10 WATER COURSES, DITCHES OR STANDING WATER

PID 15445273

Erosion cut through waste rock was observed on PID 15445273 during the site inspection. Potential environmental impacts are not suspected at the erosion cut.

A water outfall at the tide line is present on PID 15445273, below the access road. Acid rock drainage staining is present at the outfall. According to the DNR Site Identification and Preliminary Assessment notes that the culvert is likely drainage from the Dominion #7 workings. According to CBDC personnel, overflow from the Dominion #20 reservoir runs through bootleg working on the #20 Colliery and discharges on at the shoreline. The outflow may be a combination of these suspected sources and its composition and rate of flow is expected to vary with precipitation in the area.

Previous water samples collected from the outfall include a January 15, 2002 test conducted by Devco. This test was accessed at www.devco.ca/projects/cbdcproj/minewater/waterindex.html. The measured pH was 6.3, which is below the CCME Marine Aquatic Life guideline range of 7.0 to 8.7. Metals tested in that sample were all below the CCME guidelines for Marine Aquatic Life. The Senes Consultants Ltd 1999 Environmental Closure Liability Assessment relays the findings of a 1993 Jacques Whitford report (Colliery Water Study Project # 8728) in which the ph at the #7 mine discharge was 7.12.

Potential environmental impacts are not suspected in sediments at the outfall.

6.4.11 PESTICIDES/HERBICIDES

Use of pesticides/herbicides is not suspected at the subject properties during the site inspection. Potential environmental impacts are not suspected.

6.4.12 RADON

The Nova Scotia Department of Health map "Potential Occurrence Radon Gas in Nova Scotia" indicates there is little or no uranium, thorium, or naturally occurring radioactive elements in the soil in the area. Potential environmental impacts are not suspected.

6.4.13 ELECTROMAGNETIC FREQUENCY (EMF)

Sources of EMF were not observed or suspected at the subject properties during the site inspection. Potential environmental impacts are not suspected

6.4.14 SEWAGE DISPOSAL

Source of sewage generation or disposal was not observed at the subject properties during the site inspection. Potential environmental impacts are not suspected.

6.4.15 SOLID WASTE

PID 15445273

A burning area (small circular area) for domestic waste was found on PID 15445273. Creosote treated poles were found on the ground of PID 1544527. Coal fines and coal ash were observed at several locations on PID 15445273. These potential areas of concern are isolated and do not present a risk to human and environmental health. Potential environmental impacts are not suspected.

6.4.16 STRESSED VEGETATION

Stressed vegetation was not observed on the subject properties during the site investigation. Potential environmental impacts are not suspected.

6.4.17 AIR QUALITY

Odours or air emissions from the subject or adjacent properties were not noted during the site investigation. Potential environmental impacts are not suspected.

6.4.18 FILL

Fill was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

6.5 CONCLUSIONS – DOMINION #7 COLLIERY (ROOST COLLIERY)

The results of the Phase I ESA investigation conducted at the Pre 1967 – Site 43 (Shoreline at Table Head) on November 5, 2003 (PIDs 15445273 and 15699937) has not revealed any potential areas of environmental concern.

7. FORMER QUARRY POINT AIR SHAFT

7.1 FORMER QUARRY POINT AIR SHAFT - SITE DESCRIPTION

7.1.1 PROPERTY DESCRIPTION

Pre 1967 – Site 44 (Glace Bay), formerly known as the Quarry Point Air Shaft, consists of one property (PID) located in the eastern section of the Glace Bay area. Figure 7-1 illustrates the site plan and photo log.

The subject property is currently vacant and is located at the end of Blackett Street where vehicle access is restricted by a steel guardrail with a no trespassing sign. The remains of an old concrete foundation were observed on the subject property. Two outfall sites were located along the cliff, one is suspected to be the former mine water discharge area and the other may be a sewage outfall. Activity was not observed on the subject property at the time of the site inspection.

According to the property data supplied by PWGSC during the CBDC Property Screening Program, the subject property is owned by CBDC and covers an area of 4.7017 ha. A summary of the property information is included in the following table.

Table 7-1: PID Summary – Former Quarry Point Air Shaft

PID	Location	Owner	Area (ha)
15423999	Eastern Section of Glace Bay	CBDC	4.7017

7.1.2 WATER SUPPLY/GROUNDWATER USAGE

Water supply sources or groundwater usage were not observed on the subject property during the site inspection.

Figure 7-1: Site Plan and Photo Log - Site 44 (Glace Bay)

7.1.3 SOIL, TOPOGRAPHY, AND DRAINAGE

The Nova Scotia Department of Mines and Energy Surficial Geology Map of Nova Scotia (1992) describes the surficial geology of the area as stony till plain and drumlins, consisting of stony sandy till which may contain silty till.

The Geological Map of Nova Scotia (J. D. Keppie, 2000) describes the underlying bedrock as being from the Sydney Mines Formation and consisting of mudstone, shale, siltstone, sandstone, limestone and coal.

This subject property slopes towards the Atlantic Ocean, allowing surface water runoff to drain towards the ocean. Surface water is also channelled towards the ocean by a drainage ditch located on the southeastern segment of the subject property.

7.1.4 ON-SITE BUILDINGS AND STRUCTURES

There are presently no buildings on the subject property. A concrete foundation was discovered in the vicinity of the Former Pump House.

7.1.5 FORMER BUILDINGS AND STRUCTURES

A review of CBDC Surface plans indicates the former air shaft consisted of two structures, an Air Shaft and a Pump House (CBDC Plan No. D-34 N-2D). Three boreholes (labelled water, wire, and water hole) existed on the subject property (CBDC Plan 68

A review of the DNR report Pre 1967 - Site 44 indicates that a small metal building was placed over the former pumping shaft after the original structure was torn down. This building has since been removed.

7.1.6 ADJACENT PROPERTIES

Potential environmental concerns were not observed on the properties adjacent to the subject property during the site inspection. A summary of the adjacent properties is presented in Table 7-2.

Table 7-2: **Summary of Adjacent Property** Use – Former Quarry Point Air Shaft

Direction	Land Use	Potential Environmental Impacts
North	Atlantic Ocean	Not suspected
Northeast	Atlantic Ocean	Not suspected
East	Atlantic Ocean	Not suspected
Southeast	Undeveloped lot (Miners Museum at far end of property)	Not suspected
South	Residential/ Undeveloped lot (Miners Museum at far end of property)	Not Suspected
Southwest	Residential	Not Suspected
West	Residential	Not suspected
Northwest	Atlantic Ocean	Not suspected

7.2 FORMER QUARRY POINT AIR SHAFT– HISTORICAL USE

In 1999 the Department of Natural Resources (DNR) conducted a Site Identification and Preliminary Assessment of the Shoreline at Burnt Head. The historic summary is as follows:

"In 1948 construction of this airshaft was started and it was completed to a depth of 545 feet the following year. The shaft was built to aid in the ventilation of the extensive offshore workings of the Dominion #4 Colliery, which operated on the Phalen Seam. The shaft was not put into operation until 1951, when the old intake shafts, near the main shaft, were abandoned.

The colliery ceased production in May of 1961, due to the operation being termed uneconomical given the current market conditions. At that time all openings to the mine were either filled or secured.

The shaft at Quarry point remained open, and in 1965 it was converted to a pumping shaft to aid in the removal of water which had been migrating into the Dominion 1A, 1B, 2, 3, 4, 5 and 26. All of these collieries are interconnected, but the only one operating at this time was the No 26. This mine was closed by fire in 1984, but the Quarry point shaft was kept open, but idle, until a decision was to be made on whether the No 1B and No 26 collieries would be used for methane drainage. The shaft has been filled with rubble resultant from the demolition of the Central Shops in Glace Bay."

Based on interviews with CBDC personnel, Buildings related to the former air shaft and pump house do not exist on the subject property. Approximately two years ago, the shaft was filled with demolition debris from Central Shops. Historically, the mine water, which was not treated, was discharged into the ocean.

A review of aerial photographs from 1930, 1953, 1969, 1983 and 1999 was undertaken. Table 7-3 summarizes the observations.

Table 7-3: Aerial Photograph Review – Former Quarry Point Air Shaft

Year	Aerial Photo Number	Pre 1967 Site 44
1930	A3473-62	Undeveloped
1953	A13712-93	Two buildings appear on the subject property near the center of the site
1969	NSA30209-85	One of the two buildings appear to be removed
1983	83302-145	One building on the subject property at same location
1999	99322-93	Buildings appear to be removed and replaced by a small structure at same location

Potential environmental impacts are not suspected.

7.3 ADJACENT PROPERTIES – HISTORICAL USE

A review of aerial photographs from 1930, 1953, 1969, 1983 and 1999 was undertaken. Table 7-4 summarizes the observations.

Table 7-4: Aerial Photograph Review – Former Quarry Point Air Shaft

Year	Aerial Photo Number	Pre 1967 Site 44
1930	A3473-62	North: Atlantic Ocean East: Undeveloped / Residential South: Residential properties West: Undeveloped Lot
1953	A13712-93	North: Atlantic Ocean East: Undeveloped / Residential South: Residential properties, West: Undeveloped Lot
1969	NSA30209-85	North: Atlantic Ocean East: Undeveloped (Miners Museum Developed on far end of property)/ Residential South: Residential properties West: Undeveloped Lot

Year	Aerial Photo Number	Pre 1967 Site 44
1983	83302-145	North: Atlantic Ocean East: Undeveloped (Miners Museum) / Residential South: Residential properties, West: Undeveloped Lot
1999	99322-93	North: Atlantic Ocean East: Undeveloped (Miners Museum) / Residential South: Residential properties, West: Undeveloped Lot

Based on examination of aerials from 1930 to 1999, the adjacent properties immediately bordering the Pre 1967 – Site 44 site have either never been developed or are used for residential properties. Potential environmental impacts are not suspected.

7.4 EVALUATIONS AND FINDINGS FOR FORMER QUARRY POINT AIR SHAFT

The Phase I ESA was undertaken to identify potential environmental concerns associated with the subject property. The findings of this assessment are based on the site inspection, review of historical data, and interviews with individuals knowledgeable with the property and adjacent properties. Areas of potential environmental concern are presented on Figure 7-2.

7.4.1 FUEL HANDLING AND STORAGE

Fuel storage tanks were not observed on the subject property during the site inspection. The type of heating used for the Pump House is unknown. Historically, the bulk storage of fuels may have occurred on the subject property; however, the locations of ASTs/USTs are not located on the CBDC site plans and could not be determined during interviews. Based on the information available, there is no evidence that bulk storage of fuels occurred on this subject property.

Figure 7-2: Areas of Potential Environmental Concern – Former Quarry Point Air Shaft

7.4.2 Spills and Stained Areas

Rust coloured staining, suspected to be from former mine water discharge, was observed in surficial sediment on the face of the cliff in the vicinity of the 36-inch discharge pipe during the site inspection. This stained area is suspected to pose a low risk to human health and the environment. Potential environmental impacts are not suspected.

7.4.3 Dangerous Goods Handling and Storage

Handling and storage of dangerous goods was not observed or suspected on the subject property during the site inspection. Potential environmental impacts are not suspected.

7.4.4 Asbestos

Sources of asbestos were not observed or suspected on the subject property during the site inspection. Potential environmental impacts are not suspected.

7.4.5 Polychlorinated Biphenyls (PCBs)

Sources of PCBs were not observed on the subject property during the site inspection. Based on interviews with former CBDC personnel, a transformer was located on the southern side of the pump house. Transformer failures and spills would result in PCB contaminated dielectric fluids being released to the surrounding soils. Although mobility of these fluids is very low, there remains a potential for concern. Potential environmental impacts are suspected in the vicinity of the Former Pump House.

7.4.6 Ozone Depleting Substances (ODS)

Sources of ODS were not observed on the subject property during the site inspection. Potential environmental impacts are not suspected.

7.4.7 LEAD/MERCURY

Materials potentially containing lead and/or mercury were not observed on the subject property during the site inspection. Historically, lead and/or mercury paints may have been used on the subject property; however, the very few structures supports a conclusion that the potential use of these paints is suspected to pose a low risk to human health and the environment. Potential environmental impacts are not suspected.

7.4.8 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

UFFI was not observed or suspected on the subject property during the site inspection. Potential environmental impacts are not suspected.

7.4.9 WASTE WATER

Three discharge pipes, two PVC and one concrete, were observed along the cliff on the subject property during the site inspection. The 36 inch concrete pipe is suspected to be an abandoned mine water discharge pipe. At time of the site inspection, flow was not observed from these discharge pipes.

On February 13, 2002, CBDC personnel collected a water sample from the Quarry Point pumping shaft. The results of this water sample test are summarized on DEVCO's website (www.devco.ca/projects/cbdcproj/minewaterindex.html). The results, which were analysed for trace metals and pH, were below the CCME Marine Aquatic Guidelines. The sampling protocol used by CBDC personnel is not discussed on the web site and the methodology that was used to collect the sample is unclear. The subject property is no longer monitored, as the shaft is now filled. Signs of mine water discharge were not observed at the time of the site inspection. Potential environmental impacts are not suspected.

7.4.10 WATER COURSES, DITCHES OR STANDING WATER

There is a drainage ditch leading into the ocean from the eastern section of the subject property. There was no flow in the ditch at the time of the site investigation and no visual evidence of impacts was observed. Potential environmental impacts are not suspected.

7.4.11 PESTICIDES/HERBICIDES

Evidence of pesticide or herbicide use was not observed or suspected on the subject property during the site inspection. Potential environmental impacts are not suspected.

7.4.12 RADON

The Nova Scotia Department of Health map "Potential Occurrence Radon Gas in Nova Scotia" indicates there is little or no uranium, thorium, or naturally occurring radioactive elements in the soil in the area. Potential environmental impacts are not suspected.

7.4.13 ELECTROMAGNETIC FREQUENCY (EMF)

Sources of EMF were not observed near the subject property during the site inspection. Potential environmental impacts are not suspected.

7.4.14 SEWAGE DISPOSAL

Two suspected sewage discharge pipes were observed on the property during the site inspection. These pipes are suspected to discharge sewage generated from residential properties to the south. Potential liabilities that fall under the responsibility of Cape Breton Regional Municipality (CBRM) are not considered to be in the scope of this program.

7.4.15 SOLID WASTE

Burning of domestic debris was observed to have taken place on the subject property. Small petroleum containers (1L) were likely used to start the fire. Signs of staining were not observed during the site inspection. Limited areas of coal fines were observed at two locations on the subject property. These areas are suspected to pose a low risk to human health and the environment. Potential environmental impacts are not suspected.

7.4.16 STRESSED VEGETATION

Stressed vegetation was not observed on the subject property during the site inspection. Potential environmental impacts are not suspected.

7.4.17 AIR QUALITY

Odours or air emissions from the subject or adjacent properties were not noted during the site inspection. Potential environmental impacts are not suspected.

7.4.18 FILL

Rubble originally from the Former Central Shops site has been used to fill the former air shaft. The former airshaft is concrete lined and 545 feet deep. This filled area is suspected to pose a low risk to human health and the environment. Potential environmental impacts are not suspected.

7.5 CONCLUSIONS – FORMER QUARRY POINT AIR SHAFT

The results of the Phase I ESA investigation conducted at the Pre 1967 – Site 44 in the Glace Bay area during November 6th, 2003 (PID 15423999) are summarized below:

Table 7-5: Areas of Potential Environmental Concern – Quarry Point Air Shaft

PID	Potential Concerns	Description	Degree of Risk	Media	Contaminants of Concern
15423999	PCBs	Sources of PCBs were not observed on the subject property. Based on interviews with former CBDC personnel, a transformer was located on the southern side of the pump house. Transformer failures and spills would result in PCB contaminated dielectric fluids being released to the surrounding soils. Although mobility of these fluids is very low, there remains a potential for concern.	Low to Medium	Soil	TPH PCBs

Note: GW = Groundwater; SW= Surface Water; Sed = Sediment

8. FORMER DOMINION #3 COLLIERY

8.1 FORMER DOMINION #3 COLLIERY SITE DESCRIPTION

8.1.1 PROPERTY DESCRIPTION

The Pre 1967 Site 49, commonly known as the Former Dominion #3 Colliery, consists of one property (PID) located in the southeast section of Glace Bay. Figure 8-1 illustrates the site plan and photo log.

The subject property consists of a right-of-way that leads to the location of the Former Dominion #3 Colliery, which was located on the western section of this property. The subject property is mostly open, as it was probably cleared during its use as a mine site. A cliff is present in the central section of the former mine site, which slopes steeply from high ground in the north to low ground in the south. During the site inspection, evidence of bootleg activities (crop pits) was observed in the vicinity of the western section of the subject property.

According to the property data supplied by PWGSC during the CBDC Property Screening Program, the subject property is owned by CBDC and covers an area of 1.91 ha. A summary of the property information is presented in Table 8-1.

Table 8-1: PID Summary – Former Dominion #3 Colliery

PID	Location	Owner	Area (ha)
15433444	Southeast Section of Glace Bay	CBDC	1.91

8.1.2 WATER SUPPLY/GROUNDWATER USAGE

A municipal fire hydrant on the subject property probably serves the subdivision to the east. There was no municipal water or groundwater usage observed on the subject property during the site inspection.

Figure 8-1: Site Plan and Photo Log – Former Dominion #3 Colliery

8.1.3 SOIL, TOPOGRAPHY, AND DRAINAGE

The Nova Scotia Department of Mines and Energy Surficial Geology Map of Nova Scotia (1992) describes the surficial geology of the area as stony till plain and drumlins, consisting of stony sandy till which may contain silty till.

The Geological Map of Nova Scotia (J. D. Keppie, 2000) describes the underlying bedrock as being from the Sydney Mines Formation and consisting of mudstone, shale, siltstone, sandstone, limestone and coal.

Renwick Brook is located approximately one kilometre east of this property. Surface runoff would be directed towards the east.

8.1.4 ON-SITE BUILDINGS AND STRUCTURES

There were no buildings present on the subject property at the time of the site inspection. Two concrete structures were located in the vicinity of the Former Fan House. Potential environmental impacts are not observed in the vicinity of the former buildings.

8.1.5 FORMER BUILDINGS AND STRUCTURES

Former buildings and structures that existed on this subject property are identified in Table 8-2:

Table 8-2: Former Buildings on the Former Dominion #3 Colliery Site

Building/Structure Name	Location (PID)	Potential Environmental Impact
Office	15433444	Not suspected
Wash House	15433444	Not suspected
Fan House	15433444	Not suspected
Boiler House	15433444	Suspected
Unidentified Buildings (5)	15433444	Unknown
Air Receiver	15433444	Not suspected

SNCL personnel observed two building foundations on the western section of the property. DNR personnel conducted a site inspection on November 19th, 1999 and also observed the same foundations, which they reported to be in the vicinity of the fan shaft.

The concentration of buildings on the subject property would represent an increased risk of metals impacts in soils from paints, ash from the boilers, and coke waste from the boilers. Potential environmental impacts are suspected.

8.1.6 ADJACENT PROPERTIES

The subject property is adjacent to the Former Dominion #11 Colliery (PID 15430002), located to the southeast. The actual mine site is approximately 750 meters from the eastern boundary of the subject property.

A CBDC owned property (PID 15433543) is about 30 meters northeast. A discarded 900L oil tank (with an unknown volume of product) was observed more than 100m from the subject property. No signs of staining or spills were observed near the tank, which was observed to be in good condition at the time of the site inspection. The tank is not suspected to impact the Former Dominion #3 Colliery.

8.2 FORMER DOMINION #3 COLLIERY - HISTORICAL USE

The following historical information was extracted from reports by Department of Natural Resources, the Frost Papers, and site plans provided by CBDC.

The Dominion #3 Colliery was a submarine colliery that opened on the Phalen seam to recover coal between #4 and #5 collieries. The seam was 7'6" in thickness. The mine utilized room and pillar mining techniques and shared a common bankhead with Dominion #11 Colliery. It produced 3,976,690 tons of coal between 1900 and 1915.

The Dominion #3 Colliery was interconnected with the Dominion #4 Colliery at Caledonia, in 1903. Concrete dams were erected and water was pumped from the #3 mine into the workings of the #4 Colliery. The water was then pumped to surface from a shaft along the banks of Renwick Brook in downtown Glace Bay. The location of this shaft was not indicated on site plans for either the Dominion #3 or the Dominion #4 Colliery. The reason for the Colliery interconnection was that the mine water being discharged from the Dominion #4 mine was highly acidic and the Dominion #3 water acted as a buffer. The acidity of the water in the Dominion

#4 Colliery was due in part to the large amount of seepage of surface water into the mine via subsidence occurrences at surface.

The original air shaft at the Dominion #3 Colliery was replaced in 1904 by a new shaft as the original fan could not cope with the interference in the ventilation of the mine caused by collapse of the ground above near surface workings.

It is believed that the Dominion #3 Colliery is interconnected with the Dominion #5 Colliery to the west. No mention of this is made in any reports, but on the final plan of the Dominion #3 Colliery it appears as though the barrier pillar separating the two was breached on the Dominion #3 and Dominion #4 west levels.

The Phalen Seam, in the vicinity of the Dominion #3 Colliery has been heavily bootlegged. This bootlegging has impacted the stability of the ground underlying Dominion Street, which is the main thoroughfare connecting Reserve Mines and Glace Bay. Bootlegging in this area has been documented into the mid 1980's and may be ongoing today. During the site inspection, SNCL personnel observed pits and holes where recent bootlegging is suspected to have occurred.

A review of aerial photographs from 1930, 1953, 1969, 1983 and 1999 was undertaken. The Dominion #3 Colliery closed in 1915; evidence of former activity on the subject property was not visible in the photographs. Table 8-3 summarizes the observations.

Table 8-3: Aerial Photograph Review – Former Dominion #3 Colliery

Year	Aerial photograph	Subject Property
1930	A3471-84	Road/track leads from east to west side of property. Suspected residential area to the west, either on the subject or the adjacent property.
1953	A13722-67	Land use similar to 1930, no major changes were observed.
1969	NSA 30209-101	Road/track leads from east to west side of property. Clearing on west side of property.
1983	83303-45	Land use similar to 1969, no major changes were observed.
1999	99322-37	Road/track leads from east to west side of property. Otherwise wooded.

The subject property has not operated as a submarine colliery in approximately 100 years. Potential environmental impacts are not suspected.

8.3 ADJACENT PROPERTIES – HISTORICAL USE

The Former Dominion #11 Colliery (PID 15430002) is located southeast of the subject property. The road/railway on the subject property used to extend to the Bankhead of the Former Dominion #11 Colliery.

A review of aerial photographs from 1930, 1953, 1969, 1983 and 1999 was undertaken to determine adjacent property use. Table 8-4 summarizes the observations.

Table 8-4: Aerial Photograph Review Dominion #3 Colliery

Year	Aerial photograph	Adjacent Property Description
1930	A3471-84	Residential buildings/ structures visible to the east. In all other directions adjacent land is wooded.
1953	A13722-67	Residential buildings/ structures visible to the east. In all other directions adjacent land is wooded with some cleared areas.
1969	NSA 30209-101	Land use similar to 1953, no major changes were observed.
1983	83303-45	Residential buildings/ structures visible to the east. In all other directions adjacent land is wooded.
1999	99322-37	Land use similar to 1983, no major changes were observed.

Potential environmental impacts are not suspected from adjacent properties.

8.4 EVALUATIONS AND FINDINGS FOR DOMINION #3 COLLIERY

The Phase I ESA was undertaken to identify potential environmental concerns associated with the subject property. The findings of this assessment are based on the site inspection, a review of historical data and interviews with individuals knowledgeable with the property and adjacent properties. Areas of potential environmental concern are illustrated on Figure 8-2.

Figure 8-2: Areas of Potential Environmental Concern – Former Dominion #3 Colliery

8.4.1 Fuel Handling and Storage

Fuel handling and storage was not observed or suspected on the subject property during the site inspection. Presently, it is unknown if any ASTs/USTs were formerly located on the subject property. Based on information currently available, potential environmental impacts are not suspected.

8.4.2 Spills and Stained Areas

Staining was observed in a large fire pit that was smouldering at the time of the site inspection. The area of potential concern is a suspected former shaft or bootleg pit. The types and volumes of debris burned in the pit are unknown. Potential environmental impacts are suspected.

8.4.3 Dangerous Goods Handling and Storage

A 205L drum (unknown volume and content) could potentially contain a hazardous substance. The barrel appeared to be in good condition at the time of the site inspection and therefore is suspected to pose a low risk to human health and the environment. It is recommended that a licensed contractor remove the barrel from the subject property.

8.4.4 Asbestos

Sources of asbestos were not observed or suspected on the subject property during the site inspection. Potential environmental impacts are not suspected.

8.4.5 Polychlorinated Biphenyls (PCBs)

Sources of PCBs were not observed or suspected on the subject property during the site inspection. The Former Dominion #3 Colliery closed in 1915, before PCBs were invented. Potential environmental impacts are not suspected.

8.4.6 OZONE DEPLETING SUBSTANCES (ODS)

A dumped refrigerator with a compressor was observed on the subject property during the site inspection. This is suspected to pose a low risk to human health and the environment. It is recommended that a licensed contractor remove the refrigerator from the subject property.

8.4.7 LEAD/MERCURY

Paint cans and a car battery were found dumped on the subject property during the site inspection. It is not known whether the paint cans contained any product, but no stains or spills were observed at the time of the site inspection. These items may contain lead and/or mercury and are suspected to pose a low risk to human health and the environment. It is recommended remove these items from the subject property. Potential environmental impacts are not suspected.

8.4.8 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

UFFI was not observed or suspected on the subject property during the site inspection. Potential environmental impacts are not suspected.

8.4.9 WASTE WATER

Waste water generation or disposal was not observed on the subject property during the site inspection. Potential environmental impacts are not suspected.

8.4.10 WATER COURSES, DITCHES OR STANDING WATER

Water courses, ditches, or standing water were not observed on the subject property during the site inspection. Potential environmental impacts are not suspected.

8.4.11 PESTICIDES/HERBICIDES

Herbicide or pesticide use was not observed or suspected on the subject property during the site inspection. Potential environmental impacts are not suspected.

8.4.12 RADON

The Nova Scotia Department of Health map "Potential Occurrence of Radon Gas in Nova Scotia" indicates there is little or no uranium, thorium, or naturally occurring radioactive elements in the soil in the area. Potential environmental impacts are not suspected.

8.4.13 ELECTROMAGNETIC FREQUENCY (EMF)

Sources of EMF were observed on or near the subject property during the site inspection. Potential environmental impacts are not suspected.

8.4.14 SEWAGE DISPOSAL

Source of sewage generation or disposal was not observed at the subject property during the site inspection. Potential environmental impacts are not suspected.

8.4.15 SOLID WASTE

The subject property has numerous areas where domestic debris has been dumped and burned. Some of the debris encountered at the dumpsites includes: 900L oil tanks (two separate locations), a propane tank, an oilcan, a car battery, paint cans, derelict automobiles, a water heater, rusted scrap metal, asphalt shingles and a tar bucket, glass, wire rope, tire and other domestic debris and garbage.

An active domestic burn pit was found in a suspected former shaft or bootleg pit. This potential concern was previously discussed in Section 8.4.2. Potential environmental impacts are suspected.

The quantity of product remaining in the discarded 900L oil tanks is unknown. The locations of the oil tanks are identified on Figure 8-3. Potential environmental impacts are suspected.

All other materials observed in the dumpsites are suspected to pose a low risk to human health and the environment. It is recommended that the items in the dumpsites be removed from the subject property.

Waste rock and coal fines were evident throughout the property. No evidence of acid rock drainage was observed in these locations, which are suspected to pose a low risk to human health and the environment.

8.4.16 STRESSED VEGETATION

Stressed vegetation was not observed on the subject property during the site inspection. Potential environmental impacts are not suspected.

8.4.17 AIR QUALITY

Odours or air emissions from the subject or adjacent properties were not noted during the site inspection. Potential environmental impacts are not suspected.

8.4.18 FILL

Fill was not observed or suspected on the subject property during the site inspection. Potential environmental impacts are not suspected.

8.5 CONCLUSIONS – DOMINION #3 COLLIERY

The results of the Phase I ESA investigation conducted at Dominion #3 Colliery (PID 15433444) on November 4th, 2003 are summarized below:

Table 8-5: Areas of Potential Environmental Concern – Former Dominion #3 Colliery

PID	Potential Concerns	Description	Degree of Risk	Media	Contaminants of Concern
15433444	Staining/Solid Waste	Staining was observed in a large fire pit that was smouldering at the time of the site investigation. The area of potential concern is a suspected former shaft or bootleg pit. The types and volumes of debris burned in the pit are unknown. Potential environmental impacts are suspected.	Medium	Soil	TPH Metals PAHs
15433444	Solid Waste	Discarded 900-litre oil tanks (unknown volume of product) were observed in two locations.	Medium	Soil GW	TPH
15433444	Historic Use	The concentration of buildings on the subject property would represent an increased risk of metals impacts in soils from paints, ash from the boilers, and coke waste from the boilers.	Medium	Soil	Metals PAHs
15433444	Former Structures	Lead/mercury impacts from historic use of paint	Medium	Soil	Metals

Note: GW = Groundwater; SW= Surface Water; Sed = Sediment

A Phase II ESA is recommended to determine if potential environmental impacts exist in the above-mentioned locations.

9. FORMER DOMINION #11 COLLIERY

9.1 FORMER DOMINION #11 COLLIERY - SITE DESCRIPTION

9.1.1 PROPERTY DESCRIPTION

The Pre 1967 Site 50, formerly known as the Former Dominion #11 Colliery, consists of two properties (PIDs) located in the Glace Bay area. Figure 9-1 illustrates the site plan and photo log. Vehicle access to the subject properties from Brookside Street has been limited by a locked gate, and a large soil mound limits access from the end of Emery Street.

The western section of the property was the Former Dominion #11 Stone Dump, which was remediated as part of the cleanup of the Former Municipal Landfill (landfill is adjacent property to the southwest). The remediation program involved re-grading, contouring, re-vegetating, and installing methane vents. The eastern side of the subject properties was predominantly wooded. Renwick Brook runs through the central section of the subject properties, from west to northeast. No activity was observed on the subject property during the site inspections.

According to the property data supplied by PWGSC during the CBDC Property Screening Program, the subject properties are owned by CBDC and collectively cover an area of 16.0 ha. A summary of the property information is presented in Table 9-1.

Table 9-1: PID Summary – Former Dominion #11 Colliery

PID	Location	Owner	Area (ha)
15430002	Southeast Section of Glace Bay	CBDC	15.64
15501760	Southeast Section of Glace Bay	CBDC	0.36

9.1.2 WATER SUPPLY/GROUNDWATER USAGE

Use of a municipal water supply or any groundwater wells was not observed on the subject properties during the site inspection.

Figure 9-1: Site Plan and Photo Log - Dominion #11 Colliery

9.1.3 SOIL, TOPOGRAPHY, AND DRAINAGE

The Nova Scotia Department of Mines and Energy Surficial Geology Map of Nova Scotia (1992) describes the surficial geology of the area as stony till plain and drumlins, consisting of stony sandy till which may contain silty till.

The Geological Map of Nova Scotia (J. D. Keppie, 2000) describes the underlying bedrock as being from the Sydney Mines Formation and consisting of mudstone, shale, siltstone, sandstone, limestone and coal.

Renwick brook runs through the central section of the property. The Atlantic Ocean is about one kilometre southeast of the subject properties. Surface runoff from the subject properties would travel towards Renwick Brook and ultimately be discharged into the ocean.

9.1.4 ON-SITE BUILDINGS AND STRUCTURES

Buildings or structures were not observed on the subject properties during the site inspections.

9.1.5 FORMER BUILDINGS AND STRUCTURES

The subject property is the site of the Former Dominion #11 Colliery. The surface operations, which operated from 1899 to 1949, included twenty buildings:

Table 9-2: Former Buildings on the Former Dominion #11 Colliery

Building Name	PID	Potential Environmental Impact
Boiler House	15501752	Not suspected
Haulage House	15501752/ 15430002	Suspected
Bankhead	15430002	Suspected
Compressor House	15430002	Suspected
Repair Shop	15430002	Not suspected
Pump House	15430002	Not suspected
Stables	15430002	Not suspected
Warehouse	15430002	Suspected
Forge	15430002	Not suspected
Carpenter Shop	15430002	Not suspected

Building Name	PID	Potential Environmental Impact
Fan House	15430002	Not suspected
Lamp House	15430002	Not suspected
Wash House	15430002	Not suspected
Firemen's Parlour	15430002	Not suspected
Powder House	15430002	Not suspected
Office	15430002	Not suspected
Electrical Equipment Storage Facility	15430002	Suspected
Two Unidentified Buildings	15430002	Unknown
Unidentified Building	15220403	Unknown

The surface operation was shared with #3 Colliery. A review of aerial photographs from 1930, 1953, 1969, 1983 and 1999 was undertaken. Table 9-3 summarizes the observations.

Table 9-3: Aerial Photograph Review – Former Dominion #11 Colliery

Year	Aerial photograph	Description
1930	A3471-86, A3472-21,	Railway runs through property, several buildings/structures visible
1953	A13722-69	Railway through property, several buildings/structures visible
1969	NSA 30209-99 NSA 30209-101	Railway through property, buildings/ structures on property or adjacent
1983	83303-45 83303-47	Railway through property, buildings/ structures on property or adjacent
1999	99322-39	Railway through property, buildings/ structures on property or adjacent

There is a potential for leaks and spills of petroleum, oils, and lubricants (POL) in the vicinity of the Bankhead and rope runs, the Haulage House, the Compressor House, the Repair Shop, and the Electrical Equipment Storage Building. Potential environmental impacts are suspected.

The use of lead and mercury based paints on the former buildings has likely resulted in elevated levels of metals in soil around the buildings. Potential environmental impacts are suspected.

The operation of the forge may have generated ash, coke and slag. This material may have been dumped near the building. Potential environmental impacts are suspected.

9.1.6 ADJACENT PROPERTIES

A summary of the adjacent properties is presented in Table 9-4.

Table 9-4: Summary of Adjacent Property Use – Former Dominion #11 Colliery

Direction	Land Use	Potential Environmental Impacts
North	Residential	Not observed or suspected
Northeast	Residential	Not observed or suspected
East	Residential	Not observed or suspected
Southeast	Residential	Not observed or suspected
South	Former Municipal Landfill	Suspected
Southwest	Former Municipal Landfill	Suspected
West	Residential	Not observed or suspected
Northwest	Residential	Not observed or suspected

A Former Municipal Landfill which accepted medical, industrial, and domestic waste is located on the adjacent properties to the south and southwest. It is assumed because of the age of the landfill that it was not equipped with an impermeable liner and leachate detection system. The subject properties may be impacted from potentially contaminated groundwater from the Former Municipal Landfill (PIDs 15501752 and 15501737). Potential environmental impacts are suspected.

9.2 FORMER DOMINION #11 COLLIERY – HISTORICAL USE

The Former Dominion #11 Colliery, located just south of Passchendale, was opened in 1899 from the outcrop of the Phalen seam and produced coal from the Emery seam. Operations were suspended in 1901 and resumed in 1913. The average height of coal was 1.2m but it narrowed down to 1m and less. This made operating costs prohibitive and resulted in the closing of the mine 1949 after producing 7,543,358 tons of coal. The #3 Colliery, which worked the Phalen seam, shared the bankhead with the #11 Colliery. It is assumed that the 3,976,000 tons which were produced at the #3 Colliery would have been screened at the Former #11 Bankhead (Frost Papers)

The method of working the mine was mainly room and pillar. The long wall method of working was tried for a short time on the west section of the mine. Horses,

compressed air and electricity were used to transport coal. A 6000 cubic foot compressor provided air for machinery. The boiler was rated at 1166 BHP. The make of the water was 460 gallons per minute discharged through a 12 inch diameter borehole twelve inches in diameter. The discharge site is not known. The water was not acidic. (Frost Papers)

CBDC personnel indicated that subsidence occurred near the slope of the #11 Colliery. The subsidence areas were dug up and filled with soil and concrete slabs. The dates when this work took place were not supplied.

According to CB-79 Crown Land Forestry Series Map, (not dated) there is a slag pile in the vicinity of the southwest section of the subject properties. Waste rock from Dominion #11 Colliery was disposed on the southwestern section of the subject properties (on both PIDs 1543002 and 15501760). This area is illustrated on Figure 9-2. The area was re-graded and contoured when remediation work was carried out on the Former Municipal Landfill. There is potential for materials other than slag and waste rock to be buried on the subject property. The types and depth of buried material on the subject property is unknown. Potential environmental impacts are suspected.

The southernwestern section later became part of the Former Municipal Landfill [CBDC Acquisition Plan Sheet No. 18, Dec. 1981). Lorne Fraser (Department of Public Works, Cape Breton Regional Municipality (CBRM)] reported that all types of materials were brought to the landfill, including medical, industrial and domestic waste. He said that the landfill was closed for approximately fifteen to twenty years and then remediation work was undertaken.

Joe Parsons Construction completed the remediation work, which involved re-grading, contouring, re-vegetating, and installing methane vents. The Department of Public Works (CBRM) did not have a copy of the report available to them at this time. Joe Parsons was not available at the time of the writing of this report. It is assumed because of the age of the landfill that it was not equipped with containment cells and an impermeable liner.

9.3 ADJACENT PROPERTIES – HISTORICAL USE

The site of the Dominion #4 Colliery was located approximately one kilometre to the east of the subject properties. The buildings and structures associated with the Dominion #4 Colliery were located northwest of the mine site (Site Plan 144T Cab 67), and not on CBDC-owned property. Potential environmental impacts are not suspected.

The Dominion #4 rock dump is located approximately 750m northeast of the Former Dominion #11 Colliery. Potential environmental impacts are not expected from this property as staining from acid rock drainage (ARD) was not observed to be migrating onto the subject property at the time of the site inspection.

A review of aerial photographs from 1930, 1953, 1969, 1983 and 1999 was undertaken. Table 9-5 summarizes the observations.

Table 9-5: Aerial Photograph Review – Former Dominion #11 Colliery

Year	Aerial photograph	Adjacent Property Description
1930	A3471-86 A3472-21	North: Residential South, East, West: Mostly open land, scattered rural residential properties
1953	A13722-69	North, West, East: residential South: Mostly open land, scattered rural residential properties
1969	NSA 30209-99 NSA 30209-101	North, West, East: Residential South: Large disturbed area (suspected to be Former Landfill), scattered rural residential properties
1983	83303-45 83303-47	North, West, East: Residential South: Large disturbed area (suspected to be Former Landfill), rural residential properties
1999	99322-39	North, West, East: Residential South: Large disturbed area (suspected to be Former Landfill), rural residential properties

9.4 EVALUATIONS AND FINDINGS FOR THE FORMER DOMINION #11 COLLIERY

The Phase I ESA was undertaken to identify potential environmental concerns associated with the subject properties. The findings of this assessment are based on the site inspection, review of historical data and interviews with individuals knowledgeable with the property and adjacent properties. Areas of potential environmental concern are illustrated on Figure 9-2.

Figure 9-2: Areas of Potential Environmental Concern - Dominion #11 Colliery

9.4.1 Fuel Handling and Storage

PID 15430002

A dumpsite containing 900-litre oil tanks (with unknown volume of product) was observed on the subject property during the site inspection. Potential environmental impacts are suspected.

9.4.2 Spills and Stained Areas

PID 15430002

Staining from acid rock drainage was observed in the vicinity of Renwick Brook during the site inspection. Potential environmental impacts are suspected.

9.4.3 Dangerous Goods Handling and Storage

PID 15430002

A dumpsite containing two barrels of emulsified asphalt bitumen was observed on the subject property during the site inspection. No staining or spillage from the barrels was evident at the time of the site inspection. A low risk to human health and the environment is expected. Removal of the barrels is recommended.

Historically, dangerous goods were likely stored in the Warehouse. Due to the high volume of dangerous goods used over the many years of operation, it is possible that a number of leaks and spills have occurred. The spills and leaks would likely be concentrated around the Former Warehouse Building. Potential environmental impacts are suspected.

9.4.4 Asbestos

Sources of asbestos were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

9.4.5 POLYCHLORINATED BIPHENYLS (PCBS)

PID 15430002

Sources of PCBs were not observed during the site inspection. Historically, transformers were stored in the vicinity of the Electrical Equipment Storage Facility, which is approx. 10m from the southwest boundary of this property. It is unknown if they were stored within the building or in a compound surrounding it. Potential environmental impacts are suspected.

9.4.6 OZONE DEPLETING SUBSTANCES (ODS)

Sources of ODS were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

9.4.7 LEAD/MERCURY

PID 15430002

Dumpsites containing a refrigerator, scrap metal, paint cans, and domestic debris were observed on the subject property during the site inspection. Paint cans may contain lead and/or mercury based paints, which, in the small quantities expected here, pose a low risk to human health and the environment. No peeling paints were observed on the refrigerator and scrap metal, so a low risk to human health and the environment is expected. Removal of these items is recommended.

Former buildings on the subject property may have been painted with lead and/or mercury based paints. Although the buildings have been removed, the soils around these former structures are likely impacted by heavy metals from paint. Further investigations may be required depending upon future land-use (see Section 9.1.5).

PID 15501760

Wood debris with peeling paint was observed on the property during the site inspection. Paint may be lead and/or mercury based, but, in the small quantity observed, poses a low risk to human health and the environment. Removal of the wood debris is recommended.

9.4.8 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

UFFI was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

9.4.9 WASTE WATER

Wastewater generation or disposal was not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

9.4.10 WATER COURSES, DITCHES OR STANDING WATER

PID 15430002

Seepage from acid rock drainage was observed along Renwick Brook during the site inspection. Potential environmental impacts are suspected in Renwick Brook. Potential environmental impacts are suspected.

9.4.11 PESTICIDES/HERBICIDES

Pesticide and/or herbicide use was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

9.4.12 RADON

The Nova Scotia Department of Health map "Potential Occurrence of Radon Gas in Nova Scotia" indicates there is little or no uranium, thorium, or naturally occurring radioactive elements in the soil in the area. Potential environmental impacts are not suspected.

9.4.13 ELECTROMAGNETIC FREQUENCY (EMF)

Sources of EMF were not observed on or near the subject properties during the site inspection. Potential environmental impacts are not suspected.

9.4.14 SEWAGE DISPOSAL

Sources of sewage generation or disposal were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

9.4.15 SOLID WASTE

PID 15430002

Multiple small dumpsites containing household garbage, asphalt shingles, glass and other debris were observed on the subject property during the site inspection. Several areas where waste was burned were also observed. These areas are suspected to pose a low risk to human health and the environment. Removal of the items is recommended.

Coal fines, coal, and coal ash were observed on the property. These areas are suspected to pose a low risk to human health and the environment.

Waste rock and slag were also observed throughout the subject property. These materials, reported to have been piled on the western section of the subject property, may have been transported throughout the site when the property was re-graded and contoured as part of the remediation of the Former Landfill. Potential environmental impacts are suspected.

PID 15501760

Coal fines and suspected waste rock were observed the ground surface of the subject property during the site inspection. No evidence of acid rock drainage was observed on this property at the time of the site inspection. Potential environmental impacts are suspected to pose a low threat to human health and the environment. Potential environmental impacts are not suspected.

9.4.16 STRESSED VEGETATION

Stressed vegetation was not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

9.4.17 AIR QUALITY

Odours or air emissions from the subject or adjacent properties were not noted during the site inspection. Potential environmental impacts are not suspected.

9.4.18 FILL

Sources of fill were not observed on the subject properties during the site inspection. Regrading activities reported during remediation programs graded existing materials. Potential environmental impacts are not suspected.

9.5 CONCLUSIONS – FORMER DOMINION #11 COLLIERY

The results of the Phase I ESA investigation conducted at the Former Dominion #11 Colliery between November 4th and November 7th, 2003 (PID 15430002 and 15501760) are summarized below:

Table 9-6: Areas of Potential Environmental Concern – Dominion #11 Colliery

PID	Potential Concerns	Description	Media	Contaminants of Concern
15430002	Historical land use	Potential spills and leaks of petroleum, oil and lubricating products (POL) is suspected in the vicinity of the Bankhead and rope runs, the Haulage House, and the Compressor House.	Soil GW	TPH Metals
		Waste rock from Dominion #11 operations was disposed on the southwestern section of the subject property. According to CB-79 Crown Land Forestry Series Map, (not dated) there is a slag pile in the vicinity of south and southwest sections of this property.	Soil GW	Metals PAHs pH
		Based on a review of aerial photography and interviews with CBRM personnel, potential environmental impacts are suspected on the subject property from the Former Municipal Landfill, which likely operated on this property. The types and	Soil GW	TPH Metals PCBs PAHs

PID	Potential Concerns	Description	Media	Contaminants of Concern
		depth of buried material on the subject property is unknown.		
15430002	Historical Adjacent Land Use	Potential environmental impacts are suspected on the subject property from the Former Municipal Landfill located to the south and southwest (PIDs 15501737 and 15501752).	GW	TPH PAHs PCBs Metals
15430002	Fuel Handling and Storage	A dumpsite containing 900- litre oil tanks with unknown volume of product was observed on this property.	Soil GW	TPH
15430002	Spills and Stained Areas	Staining from acid rock and/or mine drainage was observed in the vicinity of Renwick Brook.	SW Sed	Metals
15430002	Water courses, ditches or standing water	Seepage from acid rock and/or mine drainage was observed along Renwick Brook.	Sed SW	PH Metals
15501760	Historical Land Use	Waste rock from Dominion #11 operations was disposed on this property. According to CB-79 Crown Land Forestry Series Map, (not dated) there is a slag pile suspected to be on the southern section of this property. Based on a review of aerial photography and interviews with CBRM personnel, potential environmental impacts are suspected on the subject property from the Former Municipal Landfill, which likely operated on this property. The types and depth of buried material on the subject property is unknown.	Soil GW	Metals PAHs pH TPH Metals PCBs PAHs
15430002	Former Buildings and Structures	Lead/mercury based paints Slag/coke (Forge) PCB (Transformers) at Electrical Storage Building	Soil	Metals PCB's

Note: GW = Groundwater; SW= Surface Water; Sed = Sediment

A Phase II ESA is recommended to determine if potential environmental impacts exist in the above-mentioned locations.

10. FORMER DOMINION #4 STONE DUMP

10.1 FORMER DOMINION #4 STONE DUMP - SITE DESCRIPTION

10.1.1 PROPERTY DESCRIPTION

The Pre 1967 Site 51 (Glace Bay), commonly known as the Former Dominion #4 Colliery stone dump, consists of five properties (PIDs) located in the southeast section of Glace Bay. Figure 10-1 illustrates the site plan and photo log. The subject properties consist of a peat bog, small pond, and the Former # 4 Stone Dump.

The stone dump covers approximately 6 hectares and is located in the northern section of the subject properties. The dump is bordered on the west by a small pond and peat bog area. A ditch runs from the south corner of the stone dump through the peat bog to a larger ditch behind properties on Lake Road. A large peat bog was observed to the south of the stone dump.

According to the property data supplied by PWGSC during the CBDC Property Screening Program, these subject properties are owned by CBDC and collectively cover an area of approximately 8.9 ha. A summary of the property information is included in the following table.

Table 10-1: PID Summary – Former Dominion #4 Stone Dump

PID	Location	Owner	Area (ha)
15418072	Southeast Section of Glace Bay	CBDC	1.40
15418221	Southeast Section of Glace Bay	CBDC	6.03
15782279	Southeast Section of Glace Bay	CBDC	0.13
15782287	Southeast Section of Glace Bay	CBDC	0.12
15782303	Southeast Section of Glace Bay	CBDC	0.35

10.1.2 WATER SUPPLY/GROUNDWATER USAGE

Use of a municipal water supply or any groundwater wells was not observed on these properties during the site inspection.

Figure 10-1: Site Plan and Photo Log - Dominion #4 Stone Dump

10.1.3 SOIL, TOPOGRAPHY, AND DRAINAGE

The Nova Scotia Department of Mines and Energy Surficial Geology Map of Nova Scotia (1992) describes the surficial geology of the area as stony till plain and drumlins, consisting of stony sandy till which may contain silty till.

The Geological Map of Nova Scotia (J. D. Keppie, 2000) describes the underlying bedrock as being from the Sydney Mines Formation and consisting of mudstone, shale, siltstone, sandstone, limestone and coal.

The Atlantic Ocean is less than one kilometre southeast of the subject properties. There are wetland areas on PIDs 15782279, 15782287, and adjacent PID 15782295. Surface waters would drain into the wetland located on the southern section of the subject properties.

10.1.4 ON-SITE BUILDINGS AND STRUCTURES

There were no buildings or structures observed on the subject properties at the time of the site inspection.

10.1.5 FORMER BUILDINGS AND STRUCTURES

Based on available information, there is no evidence of former buildings and/or structures on the subject properties.

Table 10-2 summarizes the changes observed in the area during review of aerial photographs for the years 1930, 1953, 1969, 1983 and 1999. It is not possible to determine from the photographs whether any of the subject PIDs had buildings or structures on them in the past.

Table 10-2: Aerial Photograph Review – Former Dominion #4 Stone Dump

Year	Aerial photograph	Subject Properties
1930	A3471-86, A3472-21,	No buildings/structures observed.
1953	A13722-69	No buildings/structures observed.
1969	NSA 30209-99	No buildings/structures observed. Northwest section: Stone dump is visible and acid rock drainage (ARD) is observed to the south.

Year	Aerial photograph	Subject Properties
1983	83303-47	No buildings/structures. Northwest section: Stone dump observed and multiple areas of acid rock drainage are evident.
1999	99322-39	No buildings/structures. Northwest section: Stone dump beginning to revegetate.

10.1.6 ADJACENT PROPERTIES

PID 15418072

This property is adjacent to CBDC-owned properties along its easternmost, and southernmost boundaries. The northern and western boundaries are adjacent to residential properties (Crest Street).

PID 15418221

This property is adjacent to CBDC properties along its easternmost, northernmost, and southernmost boundaries. The western boundaries are adjacent to residential properties. A peat bog was also observed along the southern boundary.

PID 15782279

This property is adjacent to CBDC properties along its western, eastern and southern boundaries. The northern boundary is adjacent to undeveloped property.

PID 15782287

The property is adjacent to CBDC properties along its western and eastern boundaries. Along its northern and southern boundaries, the property is adjacent to a residential property.

PID 15782303

The western boundary of this property is adjacent to CBDC property. The western, southern and northern boundaries of this property are adjacent to residential properties.

Potential environmental impacts are not suspected from adjacent properties.

10.2 FORMER DOMINION #4 STONE DUMP – HISTORICAL USE

Pre 1967 Site 51 (Glace Bay) is the site of the Former Dominion #4 Colliery Stone Dump. The stone dump covers an area of approximately six hectares and was formed by the dumping of mine rock from the Dominion #4 Colliery. Following the closure of #4 Colliery in 1961, the stone dump was leveled and contoured to blend with surrounding terrain. (CBDC, June 2001) A review of aerial photography from revealed extensive acid rock drainage during 1969 and 1999.

On aerial photographs from 1969, 1983 and 1999, the stone dump is evident, as is an orange stained area suggestive of acid rock drainage. Since the adjacent Dominion #11 Colliery operated from 1899 to 1949 and the nearby Dominion #3 Colliery operated from 1900 to 1915, and since there was no visual evidence of a stone dump in the earlier aerial photographs, it is assumed that all rock was from the Dominion #4 Colliery, as its name suggests.

Concerns about the water quality of a small brook entering Nova Scotia Power Inc (NSPI) property were discussed on March 15,2001 during a meeting between CBDC and NSPI. NSPI had monitored the brook for a number of years and results had consistently indicated a pH of around 3.5. NSPI suggested that the possible source of this low pH could be acid rock drainage (ARD) from the Former Dominion Coal Company #4 Colliery Stone Dump. CBDC investigated the problem of low pH in the brook and possible impacts, if any, from adjoining CBDC properties. Three days of field investigation were conducted in early May 2001. (CBDC Environmental Services, June 2001).

CBDC Environmental Staff observed that the stone dump had been levelled and minor natural seeding had occurred over time. Ditches located along the railway up gradient of the stone dump had helped to reduce the amount of water flow across the subject properties. Erosion channels were not observed across the top of the dump and only minor channels were observed along the sides. One active acid rock drainage (ARD) seep was observed approximately one hundred feet southwest of the southeast corner of the stone dump. The seep was observed to have impacted approximately 25 square meters with iron precipitate. (CBDC Environmental Services, June 2001).

CBDC Environmental Staff collected samples from the ARD seep and from eight other locations on this property and adjacent CBDC properties. These nine sources

combine with water from other properties to the east to form the water chemistry of the brook entering NSPI property. (CBDC Environmental Services, June 2001).

CBDC Environmental Staff concluded that impact to the brook was minor. Two parameters, cadmium and pH, exceeded the CCME Marine Water guidelines. Cadmium was slightly over and would warrant additional samples to confirm findings prior to any remediation effort. CBDC staff expected the pH of the surface water leaving the subject properties would be low because of the large peat bog. CBDC staff commented that low pH should be considered background for the site. (CBDC Environmental Services, June 2001).

Since the former analytical results exceed CCME Marine Water guidelines and a review of aerial photography shows evidence of acid rock drainage, potential environmental impacts are suspected.

10.3 ADJACENT PROPERTIES – HISTORICAL USE

The Former Dominion #4 and Former Dominion #11 Collieries are located approximately 500m northwest and 750m southwest of the subject properties.

Several buildings and structures were associated with the Dominion #4 Colliery. According to the site plan for Dominion #4 Colliery (144T Cab 67), buildings were located about 500 meters northwest of the subject properties, on CBDC-owned property. These buildings were not located adjacent to the subject properties.

The Dominion #4 Colliery opened in 1866 and closed in 1961. It produced 28,627,961 tons of coal during its operation. The coal contained an average of 6.6 percent sulphur and 13.8 percent ash. The mine water was so acidic that water was mixed with water from the abandoned Dominion #3 Colliery before being pumped into Renwick Brook at a rate of 940 gallons per minute. (Frost Papers)

According to Ernie Hennick and Peter Weaver the #4 Colliery site includes PIDs 15418221, 15418072, 15427180 (CBDC owned), 15418312 and 15487457. According to the site plan (144T Cab 67) for the Dominion #4 Colliery, the buildings and structures associated with the Dominion #4 Colliery were located to the northwest of the subject area, not on CBDC owned property.

The Dominion #11 Colliery was located on PID 15430002, about 750 meters southwest of the subject properties. Several buildings and structures were associated with the adjacent Dominion #11 Colliery, and were located on PID 15430002 (CAB73 89R). The surface operation was shared with #3 Colliery.

Table 10-3 summarizes the adjacent land use observed in the area during review of aerial photographs for the years 1930, 1953, 1969, 1983 and 1999.

Table 10-3: Aerial Photograph Review – Former Dominion #4 Rock Dump

Year	Aerial photograph	Adjacent Property Description
1930	A3471-86 A3472-21	North and west: residential South: Open area East: Rural residential and wooded/open land
1953	A13722-69	North and west: residential South: Open area East: Rural residential and wooded/ open land
1969	NSA 30209-99 NSA 30209-101	North and west: residential South: Open area East: Industrial, air emissions visible
1983	83303-45 83303-47	North and west: residential South: Open area East: Industrial, air emissions visible
1999	99322-39	North and west: residential South: Open area East: Industrial, air emissions visible

There was no evidence of impacts from adjacent properties observed at the time of the site inspection. Potential environmental impacts are not suspected from adjacent property use.

10.4 Evaluations and Findings for the Former Dominion #4 Stone Dump

The Phase I ESA was undertaken to identify potential environmental concerns associated with the subject properties. The findings of this assessment are based on the site inspection, review of historical data, and interviews with individuals knowledgeable with the property and adjacent properties. Areas of potential environmental concern are illustrated on Figure 10-2.

Figure 10-2: Areas of Potential Environmental Concern - Dominion #4 Stone Dump

10.4.1 FUEL HANDLING AND STORAGE

Fuel storage tanks were not observed on the subject properties during the site inspection and there were no indications of fuel handling or storage in the past. Potential environmental impacts are not suspected.

10.4.2 SPILLS AND STAINED AREAS

PIDs 15782279, 15782287, and 15782303

Staining observed in a wetland area on these subject properties is suspected to have been caused by ARD. Potential environmental impacts are suspected.

10.4.3 DANGEROUS GOODS HANDLING AND STORAGE

Handling and storage of dangerous goods was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

10.4.4 ASBESTOS

Sources of asbestos were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

10.4.5 POLYCHLORINATED BIPHENYLS (PCBS)

Sources of PCBs were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

10.4.6 OZONE DEPLETING SUBSTANCES (ODS)

Sources of ODS were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

10.4.7 LEAD/MERCURY

Sources of lead and/or mercury were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

10.4.8 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

UFFI was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

10.4.9 WASTE WATER

Wastewater generation or disposal was not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

10.4.10 WATER COURSES, DITCHES OR STANDING WATER

PID 15418221

A pond was observed on this property during the site inspection. Due to the large amount of waste rock in the vicinity of the pond, potential environmental impacts are suspected.

PIDs 15782279, 15782287, and 15782303

Staining in the wetland area on these subject properties is suspected to have been caused by ARD. Potential environmental impacts are suspected.

10.4.11 PESTICIDES/HERBICIDES

Pesticides and herbicides were not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

10.4.12 RADON

The Nova Scotia Department of Health map "Potential Occurrence of Radon Gas in Nova Scotia" indicates there is little or no uranium, thorium, or naturally occurring radioactive elements in the soil in this area. Potential environmental impacts are not suspected.

10.4.13 ELECTROMAGNETIC FREQUENCY (EMF)

Sources of EMF were not observed on or near the subject properties during the site inspection. Potential environmental impacts are not suspected.

10.4.14 SEWAGE DISPOSAL

Sources of sewage generation or disposal were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

10.4.15 SOLID WASTE

PID 15418072

Waste rock mixed with coal fines was observed throughout this property during the site inspection. This area is suspected to be part of the waste rock disposal area for the Former Dominion #4 Colliery. Potential environmental impacts are suspected.

PID 15418221

Waste rock mixed with coal fines was observed throughout this property during the site inspection. This area is suspected to contain most of the waste rock disposed from the Former Dominion #4 Colliery. Potential environmental impacts are suspected.

A dumpsite containing a rusted axle from an automobile was observed during the site inspection. This item is suspected to pose a low risk to human health and the environment. Removal of the axle is recommended,

10.4.16 STRESSED VEGETATION

Stressed vegetation was not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

10.4.17 AIR QUALITY

Odours or air emissions from the subject or adjacent properties were not noted during the site inspection. Potential environmental impacts are not suspected.

10.4.18 FILL

Fill was not observed on any of the subject properties during the site inspection. Potential environmental impacts are not suspected.

10.5 CONCLUSIONS – DOMINION #4 STONE DUMP

The results of the Phase I ESA investigation conducted at the Former Dominion #4 Stone dump on November 7, 2003 (PIDs 15418072, 15418221, 15782279, 15782287 and 15782303) are summarized below:

Table 10-4: Areas of Potential Environmental Concern – Former Dominion #4 Stone Dump

PID	Potential Concerns	Description	Media	Contaminants of Concern
15418072	Historical land use	Waste Rock from the Former Dominion #4 Colliery was disposed on this property.	Soil GW	Metals pH
15418072	Solid Waste	Waste rock mixed with coal fines was observed throughout this property. This area is suspected to be part of the waste rock disposal area for the Former Dominion #4 Colliery.	Soil GW	Metals pH
15418221	Historical land use	Waste Rock from the Former Dominion #4 Colliery was disposed on this property.	Soil GW	Metals pH
15418221	Solid Waste	Waste rock mixed with coal fines was observed throughout this property. This area is suspected to contain most of the waste rock disposed from the Former Dominion #4 Colliery.	Soil GW	Metals pH
15418221	Water courses, ditches or standing water	A pond on this property may be impacted from the former waste rock disposal area.	SW Sed	Metals pH
15782279	Staining/ Water courses, ditches or	Staining observed in a wetland area on this property is suspected to have been caused by ARD.	SW Sed	Metals pH

PID	Potential Concerns	Description	Media	Contaminants of Concern
	standing water			
15782287	Staining/ Water courses, ditches or standing water	Staining observed in a wetland area on this property is suspected to have been caused by ARD.	SW Sed	Metals pH
15782303	Staining/ Water courses, ditches or standing water	Staining observed in a wetland area on this property is suspected to have been caused by ARD.	SW Sed	Metals pH

Note: GW = Groundwater; SW= Surface Water; Sed = Sediment

A Phase II ESA is recommended to determine if potential environmental impacts exist in the above-mentioned locations.

11. RESIDENTIAL

11.1 RESIDENTIAL PROPERTIES - SITE DESCRIPTION

11.1.1 PROPERTY DESCRIPTION

Three distinct sections of residential properties located in Glace Bay are included in the CBDC Phase 1 ESA. The residential properties, eight in total, are located in the northeastern, eastern, southern and western sections of Glace Bay. Figures 11-1 through 11-3 illustrate the site plan and photo logs.

According to the property data supplied by PWGSC during the CBDC Property Screening Program, these properties are owned by CBDC and collectively cover an area of 0.8383 ha. A summary of the property information is included in the following table.

Table 11-1: PID Summary – Residential Properties

PID	Location	Owner	Area (ha)
15438195	Northeast Section of Glace Bay	CBDC	0.0475
15445596	Northeast Section of Glace Bay	CBDC	0.0583
15436702	Northeast Section of Glace Bay	CBDC	0.1562
15393622	Eastern Section of Glace Bay	CBDC	0.2571
15416696	South Section of Glace Bay	CBDC	0.1254
15427693	South Section of Glace Bay	CBDC	0.093
15431471	South Section of Glace Bay	CBDC	0.0545
15416548	South Section of Glace Bay	CBDC	0.0463

PID 15438195

This 0.0475 ha. property is proposed residential lot that was never developed. The property, which is adjacent to Khalsa Drive, is relatively flat and consists of an open field.

PID 15445596

This 0.0583 ha. property is proposed residential lot that was never developed. The property, which is adjacent to Hay Street, consists of an open field and encroaching garage and shed. Debris from the garage was observed to be stored on the subject property at the time of the site inspection.

Figure 11-1: Site Plan and Photo Log – Residential Properties

Figure 11-2: Site Plan and Photo Log – Residential Properties

Figure 11-3: Site Plan and Photo Log – Residential Properties

PID 15436702

This 0.1562 ha. property is proposed residential lot that was never developed. The property, which is adjacent to Fourth Street, appears to be currently used as a driveway for the adjacent residential properties. Fill material consisting of waste rock was observed on this property.

PID 15493622

This 0.2571 ha. property is an undeveloped triangular shaped property. The property, which is adjacent to North Street, consists of an open field. Two underground storage tanks were observed on this property at the time of the site inspection.

PID 15416696

This 0.1254 ha. property is an undeveloped residential property, which is maintained by an adjacent property owner (ie. grass was cut at time of site inspection). Manse Street runs through the subject property (southwest to southeast). An encroaching residential garage was observed on this property.

PID 15427693

This 0.093 ha. property is an undeveloped residential property. The property, which is adjacent to Lake Road, is covered with mixed hardwood and surrounded by residential houses. An encroaching residential garage and construction and Demolition (C&D) debris was discarded on this property.

PID 15431471

This 0.0545 ha. property is an undeveloped residential property. The property, which is adjacent to Mansfield Road, is an open field surrounded by residential houses. An encroaching shed and derelict truck is located on this property.

PID 15416548

This 0.0463 ha. property is an undeveloped residential property. The property, which is adjacent to Winona Street, is an open field surrounded by residential houses. An encroaching shed with vinyl siding is located on this property.

11.1.2 WATER SUPPLY/GROUNDWATER USAGE

A municipal water shut off valve was located on PID 15427693, however no sources using municipal water were observed on this property during the site inspection.

Activity and water usage were not observed during the site inspections to the remaining residential properties.

11.1.3 SOIL, TOPOGRAPHY, AND DRAINAGE

The Nova Scotia Department of Mines and Energy Surficial Geology Map of Nova Scotia (1992) describes the surficial geology of the area as stony till plain and drumlins, consisting of stony sandy till which may contain silty till.

The Geological Map of Nova Scotia (J. D. Keppie, 2000) describes the underlying bedrock as being from the Sydney Mines Formation and consisting of mudstone, shale, siltstone, sandstone, limestone and coal.

Northeastern and Eastern Properties

Based on local topography, surface water runoff would be directed to the northeast, towards the Atlantic Ocean.

Southern Properties

Based on local topography, surface water runoff would be directed to the west, towards Renwick Brook (PIDs 15416696, 15427693, and 15416548). Surface would from PID 15431471 would also be directed towards Renwick Brook, which is east of this property.

11.1.4 ON-SITE BUILDINGS AND STRUCTURES

There were no CBDC owned buildings on the subject properties, but the following buildings were observed on the subject properties. Table 11-2 presents a summary of these buildings.

Table 11-2: On-site Buildings and Structures – Residential Properties

PID	Building/structure	Potential Impacts
15416548	Residential shed (encroaching)	Not suspected
15427693	Residential garage (encroaching)	Not suspected
15431471	Residential shed (encroaching)	Not suspected
15416696	Residential garage (encroaching)	Not suspected
15445596	Residential garage and shed (encroaching)	Not suspected

The interiors of the buildings were not assessed as part of the site investigation. A legal survey was not part of the scope of work. The exact location of structures could not be confirmed on the subject property. Environmental impacts are not suspected.

Some adjacent residential properties have clearly encroached upon the CBDC lands. The site inspection identified structures on each of the subject property. The structures are barns, sheds, and vehicle garages and do not represent an immediate risk of environmental impact.

11.1.5 FORMER BUILDINGS AND STRUCTURES

A historical review of documents and interviews has not confirmed any buildings or structures previously existing on the subject properties.

11.1.6 ADJACENT PROPERTIES

The residential properties in the community are primarily surrounded by residential, and undeveloped lots. Typical environmental concerns associated with residential land use are fuel oil storage, waste disposal and fire pits. A survey of the adjacent properties did not reveal anything to suggest environmental impacts. Table 11-3 present properties that do not fall within that category:

Table 11-3: Summary of Adjacent Property Use – Residential Properties

PID	Direction	Land Use	Potential Environmental Impacts
15427693	North	Residential	Not suspected
15427693	Northeast	Undeveloped lot	Not Suspected
15427693	East	Residential, Lake Road	Not suspected
15427693	Southeast	Undeveloped lot	Not suspected
15427693	South	Residential, Railway (CBDC)	Not suspected

PID	Direction	Land Use	Potential Environmental Impacts
15427693	Southwest	Undeveloped lot	Not suspected
15427693	West	Residential, undeveloped	Not suspected
15427693	Northwest	Residential	Not suspected

The investigation of adjacent properties revealed several potential concerns related to the condition of fuel oil storage, waste management, and housekeeping, but no issue was determined to represent a risk of environmental impact. Potential environmental impacts are not suspected.

11.2 RESIDENTIAL PROPERTIES – HISTORICAL USE

A historical review of documents and interviews has not revealed any historical significance with the residential properties as it relates to encroachment. Aerial photographs from 1930, 1953, 1969, 1983 and 1999 were reviewed. Table 11-4 summarizes the observations.

Table 11-4: Aerial Photograph Review – Residential Lots - Subject PIDs

PID	Year	Aerial Photograph	Property Description	Potential Environmental Impacts
15438195	1930	A3474-24	Undeveloped	Not suspected
	1953	A13712-84	Undeveloped	Not suspected
	1969	NSA30221-111	Undeveloped	Not suspected
	1983	83302-95	Undeveloped	Not suspected
	1999	99323-6	Undeveloped	Not suspected
15415596	1930	A3474-23	Undeveloped	Not suspected
	1953	A13712-93	Undeveloped	Not suspected
	1969	NSA30221-111	Undeveloped	Not suspected
	1983	83302-145	Undeveloped	Not suspected
	1999	99322-148	Undeveloped	Not suspected
15438702	1930	A3474-23	Railway to coastal rock dump may run through site	Not suspected
	1953	A13712-84	Similar to 1930	Not suspected
	1969	NSA30221-111	Similar to 1930	Not suspected
	1983	83302-96	Railway appears to have been removed.	Not suspected
	1999	99323-7	Similar to 1999	Not suspected
15393622	1930	A3474-23	Undeveloped	Not suspected
	1953	A13712-93	Suspected garage is located at north of lot in close proximity to two USTs located during the field program	Suspected spillage/ leakage of bulk POL

PID	Year	Aerial Photograph	Property Description	Potential Environmental Impacts
	1969	NSA30221-111	Similar to 1969	Suspected spillage/ leakage of bulk POL
	1983	83302-145	Similar to 1969	Suspected spillage/ leakage of bulk POL
	1999	99322-148	Suspected garage has been removed	Not suspected
15416696	1930	A3472-21	Undeveloped, Mance Street is present	Not suspected
	1953	A13722-69	Similar to 1930	Not suspected
	1969	NSA 30209-100	Similar to 1930	Not suspected
	1983	83303-47	Similar to 1930	Not suspected
	1999	99322-39	Similar to 1930	Not suspected
15427693	1930	A3471-86	Undeveloped	Not suspected
	1953	A13722-69	Undeveloped	Not suspected
	1969	NSA 30209-101	Undeveloped	Not suspected
	1983	83303-47	Undeveloped	Not suspected
	1999	99322-39	Undeveloped	Not suspected
15431471	1930	A3471-86	Undeveloped	Not suspected
	1953	A13722-69	Many residential buildings in general area; it is possible that some are located on the property	Not suspected
	1969	NSA 30209-100	Undeveloped	Not suspected
	1983	83303-45	Undeveloped	Not suspected
	1999	99322-39	Undeveloped	Not suspected
15416548	1930	A3472-21	Undeveloped	Not suspected
	1953	A13722-69	Undeveloped, or possible small residential buildings (sheds)	Not suspected
	1969	NSA 30209-100	Undeveloped	Not suspected
	1983	83303-47	Undeveloped. The lot appears to be fenced in, connected to adjacent residence to NE.	Not suspected
	1999	99322-39	Undeveloped	Not suspected

PID 15393622

During an interview, CBDC personnel indicated that a former garage operated on a property adjacent to PID 15393622 approximately 20 to 30 years ago. Two underground storage tanks (USTs) suspected to contain free product for the garage were located on the subject property. Details are provided in Section 11.4.1. Potential environmental impacts are suspected.

11.3 ADJACENT PROPERTIES – HISTORICAL USE

A historical review of documents and interviews revealed potential environmental impacts for the residential PID 15416548, which is adjacent to the Dominion #4 Rock Dump and PID 15415596 which is next to the Dominion #20 Colliery. Details of these potential liabilities for Dominion #4 Rock Dump and Dominion #20 Colliery are presented in the Ph I ESA for each former mine site. It is recommended that these potential liabilities be addressed during the recommended Ph II ESA for each of these sites. A review of aerial photographs from 1930, 1953, 1969, 1983 and 1999 was undertaken. Table 11-5 summarizes the observations.

Table 11-5: Aerial Photograph Review – Residential Lots- Adjacent Property Description

PID	Year	Aerial Photograph	Property Description	Potential Environmental Impacts
15438195	1930	A3474-24	Undeveloped	Not suspected
	1953	A13712-84	Undeveloped	Not suspected
	1969	NSA30221-111	Residential developments to south, one residential property visible to NW.	Not suspected
	1983	83302-95	Similar to 1969	Not suspected
	1999	99323-6	Similar to 1969	Not suspected
15415596	1930	A3474-23	Residential to north, east, and south. Dominion #20 Colliery is to the west. Large coal banks are present.	Recommend potential for impacts to be addressed in Phase II ESA for #20 Colliery
	1953	A13712-93	Similar to 1930. No coal banks present.	See above comment
	1969	NSA30221-111	Similar to 1954	See above comment
	1983	83302-145	Similar to 1954	See above comment
	1999	99322-148	Similar to 1954	See above comment
15438702	1930	A3474-23	Residential area with rock dump at coast to north. Railway to rock dump runs through or near subject property. To the east is open land, (location of boreholes Dominion #7 Colliery for Coastline is nearby to east, west, north.	Not suspected
	1953	A13712-84	Similar to 1930	Not suspected
	1969	NSA30221-111	Similar to 1930	Not suspected
	1983	83302-96	Residential to south and west. Rock dump appears unused, washed-out by sea	Not suspected

PID	Year	Aerial Photograph	Property Description	Potential Environmental Impacts
	1999	99323-7	Similar to 1983	Not suspected
15393622	1930	A3474-23	Some residential development to south and west, otherwise undeveloped	Not suspected
	1953	A13712-93	Residential or commercial development in all directions	Not suspected
	1969	NSA30221-111	Similar to 1954	Not suspected
	1983	83302-145	Similar to 1954	Not suspected
	1999	99322-148	Similar to 1954	Not suspected
15416696	1930	A3472-21	Residential lots, some undeveloped to west	Not suspected
	1953	A13722-69	Mainly residential. Undeveloped lots to west are now residential. Several buildings to the north have been removed since 1930.	Not suspected
	1969	NSA 30209-100	Similar to 1953	Not suspected
	1983	83303-47	Similar to 1953	Not suspected
	1999	99322-39	Similar to 1953	Not suspected
15427693	1930	A3471-86	Residential and undeveloped	Not suspected
	1953	A13722-69	Similar to 1930	Not suspected
	1969	NSA 30209-101	Similar to 1930	Not suspected
	1983	83303-47	Similar to 1930. A residential garage on the property to the southeast is now apparent.	Not suspected
	1999	99322-39	Similar to 1983	Not suspected
15431471	1930	A3471-86	Residential	Not suspected
	1953	A13722-69	Residential	Not suspected
	1969	NSA 30209-101	Residential	Not suspected
	1983	83303-45	Residential	Not suspected
	1999	99322-39	Residential	Not suspected
15416548	1930	A3471-86	Residential to west and south, rail lines of dominion #4 Rock Dump to north and east	Recommend potential for impacts be addressed in Phase II ESA for Rock Dump
	1953	A13722-69	Similar to 1930	See above comment
	1969	NSA 30209-100	Similar to 1930	See above comment
	1983	83303-47	Similar to 1930. Residential developments have replaced #4 Site to north	See above comment
	1999	99322-39	Similar to 1983. #4 Rock Dump lands to west appear to be reclaimed	See above comment

11.4 EVALUATIONS AND FINDINGS FOR RESIDENTIAL PROPERTIES

The Phase I ESA was undertaken to identify potential environmental concerns associated with the subject properties. The findings of this assessment are based on the site inspection, review of historical data, and interviews with individuals knowledgeable with the property and adjacent properties. Areas of potential environmental concern are presented in Figures 11-4 to 11-5.

11.4.1 FUEL HANDLING AND STORAGE

PID 15393622

Two underground storage tanks (USTs) suspected to contain free product were observed on PID 15393622 during the SNCL site inspection on Nov 7, 2003. The tanks were in close proximity to each other. PWGSC was notified of this finding and Sullivan's Fuels pumped out the two tanks last fall. During this task, it was discovered that one tank was full of diesel fuel and the other was half full of water and diesel. Approximately 5000 litres of diesel/water was removed from the tanks. CBDC personnel indicated that these tanks were likely used by a former garage that existed on an adjacent property approximately 30 years ago.

The tanks (2000L and 3000L, respectively) were removed on April 23, 2004. Four soil samples were collected from the excavation. According to CBDC personnel, analytical results indicated that diesel was detected in two of these four samples. It is unknown if qualified personnel supervised the tank removal and conducted the soil sampling. The potential for historical leaks and spills from use of these storage tanks warrants further testing of soils and groundwater at the location of the former tanks and down-gradient of this location. Potential environmental impacts are suspected.

11.4.2 SPILLS AND STAINED AREAS

Staining was not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

Figure 11-4: Areas of Potential Environmental Concern – Residential Properties

Figure 11-5: Areas of Potential Environmental Concern – Residential Properties

11.4.3 DANGEROUS GOODS HANDLING AND STORAGE

PID 15445596

A drum containing an unknown chemical was observed next to a residential garage on this property during the site inspection. There were no signs of spillage/staining at the time of the site inspection. It is recommended that the drum be removed from the CBDC-owned property.

11.4.4 ASBESTOS

Sources of asbestos were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

11.4.5 POLYCHLORINATED BIPHENYLS (PCBS)

Sources of PCBs were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

11.4.6 OZONE DEPLETING SUBSTANCES (ODS)

Sources of ODS were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

11.4.7 LEAD/MERCURY

Materials potentially containing lead and mercury were not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

11.4.8 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

UFFI was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

11.4.9 WASTE WATER

PID 15427693

A drain in the floor of a garage on the subject property could be used for wastewater disposal. No staining was observed at time of inspection. This concern is considered to be a low risk to human health and the environment. Potential environmental impact is not suspected.

11.4.10 WATER COURSES, DITCHES OR STANDING WATER

Watercourses, ditches, or standing water were not observed on the residential properties during the site inspection. Potential environmental impacts are not suspected.

11.4.11 PESTICIDES/HERBICIDES

Pesticides or herbicides were not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

11.4.12 RADON

The Nova Scotia Department of Health map "Potential Occurrence Radon Gas in Nova Scotia" indicates there is little or no uranium, thorium, or naturally occurring radioactive elements in the soil in the area. Potential environmental impacts are not suspected.

11.4.13 ELECTROMAGNETIC FREQUENCY (EMF)

Sources of EMF were not observed near the subject properties during the site inspection. Potential environmental impacts are not suspected.

11.4.14 SEWAGE DISPOSAL

Source of sewage generation or disposal was not observed at the subject properties during the site inspection. Potential environmental impacts are not suspected.

11.4.15 SOLID WASTE

PID 15431471

A derelict vehicle was observed on the property during the site inspection. It is uncertain if the gas tank is still on the vehicle; there is a possibility of petroleum hydrocarbon leakage from the gas tank. Removal to a landfill is recommended. One vehicle does not represent a significant risk. Potential environmental impacts are not suspected.

A small pile of coal ash was observed on the subject property. This concern is considered to be a low risk to human health and the environment.

PID 15438195

Coal ash pile of sufficient volume to warrant a concern. Potential environmental impacts are suspected.

PID 15436702

A discarded 900 Litre oil tank (with unknown volume of product) was observed within a debris pile during the site inspection. Potential environmental impacts are suspected.

PID 15445596

A barrel (in good condition) and auto parts were observed adjacent to an encroaching garage on the subject property at the time of the site inspection. These items are suspected to pose a low risk to the environment. Potential environmental impacts are not suspected.

11.4.16 STRESSED VEGETATION

Stressed vegetation was not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

11.4.17 AIR QUALITY

Odours or air emissions from the subject or adjacent properties were not noted during the site inspection. Potential environmental impacts are not suspected.

11.4.18 FILL

PID 15416548

A fill area of slag and waste rock was observed on the subject property during the site inspection. Due to the small amount of the fill this area is considered a low risk to human health and the environment. Potential environmental impacts are not suspected.

PID 15436702

The use of coal and waste rock for road fill was observed on the subject property during the site inspection. Due to the small amount of the fill this area is considered low risk to human health and the environment. Potential environmental impacts are not suspected.

11.5 CONCLUSIONS – RESIDENTIAL PROPERTIES (GLACE BAY)

The results of the Phase I ESA investigation conducted at the Residential properties (Glace Bay) between October 30th, and November 13th, 2003 (PIDs 15393622, 15416696, 15416548, 15427693, 15431471, 15438195, 15436702, and 15445596) are summarized below:

Table 11-6: Areas of Potential Environmental Concern – Residential Properties (Glace Bay)

PID	Potential Concerns	Potential Environmental Concerns	Degree of Risk	Media	Contaminants of Concern
15393622	Fuel Handling and Storage	Two underground storage tanks (USTs) for diesel were observed on the property during the site inspection. One fill pipe had no cap and an odour was evident. The other fill pipe was unlocked. The potential for historical leaks and spills from use of these storage tanks warrants testing of soils and groundwater at the location of the former tanks and down-gradient of this location.	Medium to High	Soil GW	TPH Metals
15438195	Solid Waste	Coal ash pile of sufficient size to warrant concern.	Medium	Soil	Metals PAHs

Note: GW = Groundwater; SW= Surface Water; Sed = Sediment

A Phase II ESA is recommended to determine if potential environmental impacts exist in all above-mentioned locations.

12. UNDEVELOPED PROPERTIES

12.1 UNDEVELOPED PROPERTIES - SITE DESCRIPTION

12.1.1 PROPERTY DESCRIPTION

The undeveloped Properties in the community of Glace Bay consist of 29 PIDs. On 23 of the subject PIDs, no activity or land use was observed at the time of the site inspections. On the other six PIDs, activity or land use was observed, or suspected, based on structures observed on the properties.

According to the property data supplied by PWGSC during the CBDC Property Screening Program, these properties are owned by CBDC and collectively cover an area of 41.61 ha. Tables 12-1 through 12-6 presents a summary of the property information. Figures 12-1 through 12-6 illustrate the site plan and photo log for the subject properties.

Table 12-1: PID Summary – Undeveloped Properties

PID*	Location	Owner	Area (ha)
15107303	Northern Section of Glace Bay	CBDC	0.0866
15448228	Northern Section of Glace Bay	CBDC	0.6725
15448277	Northern Section of Glace Bay	CBDC	0.7839
15448418	Northern Section of Glace Bay	CBDC	11.63
15448665	Northern Section of Glace Bay	CBDC	12.644
15449291	Northern Section of Glace Bay	CBDC	0.3165
15449457	Northern Section of Glace Bay	CBDC	0.6395
15450182	Northern Section of Glace Bay	CBDC	1.1607
15599715	Northern Section of Glace Bay	CBDC	0.1371
15782212	Northern Section of Glace Bay	CBDC	0.1234

* see Figure 12-1

Figure 12-1: Site Plan and Photo Log – Undeveloped Properties

Figure 12-2: Site Plan and Photo Log – Undeveloped Properties

Figure 12-3: Site Plan and Photo Log – Undeveloped Properties

Figure 12-4: Site Plan and Photo Log – Undeveloped Properties

Figure 12-5: Site Plan and Photo Log – Undeveloped Properties

Figure 12-6: Site Plan and Photo Log – Undeveloped Properties

Table 12-2: PID Summary – Undeveloped Properties

PID*	Location	Owner	Area (ha)
15436579	Northeast Section of Glace Bay	CBDC	0.0414
15437742	Northeast Section of Glace Bay	CBDC	0.8499
15441702	Northeast Section of Glace Bay	CBDC	0.2545
15526619	Northeast Section of Glace Bay	CBDC	0.0945
15528755	Northeast Section of Glace Bay	CBDC	0.0474
15531064	Eastern section of Glace Bay	CBDC	0.4422
15637614	Northeast Section of Glace Bay	CBDC	0.0736
15738131	Northeast Section of Glace Bay	CBDC	0.1535

* see Figure 12-2

Table 12-3: PID Summary – Undeveloped Properties

PID*	Location	Owner	Area (ha)
15393085	Eastern Section of Glace Bay	CBDC	0.6602
15524598	Eastern Section of Glace Bay	CBDC	0.1232

* see Figure 12-3

Table 12-4: PID Summary – Undeveloped Properties

PID*	Location	Owner	Area (ha)
15419427	Southeast Section of Glace Bay	CBDC	2.245
15782220	Southeast Section of Glace Bay	CBDC	0.0271
15782550	Southeast Section of Glace Bay	CBDC	0.1343
15782311	Southeast Section of Glace Bay	CBDC	1.4900

* see Figure 12-4

Table 12-5: PID Summary – Undeveloped Properties

PID*	Location	Owner	Area (ha)
15431885	Southern Section of Glace Bay	CBDC	0.9047
15433543	Southern Section of Glace Bay	CBDC	0.4788

*** see Figure 12-5**

Table 12-6: PID Summary – Undeveloped Properties

PID*	Location	Owner	Area (ha)
15387285	Western Section of Glace Bay	CBDC	0.9395
15451149	Western Section of Glace Bay	CBDC	1.9395
15451164	Western Section of Glace Bay	CBDC	2.5156

* see Figure 12-6

PID 15107303

This 0.0866 ha. property is adjacent to a former railway. The property is a narrow linear plot, which separates the railway and the adjacent residential properties. The inspection revealed no structures or activity. Coal fines and waste rock were observed through out the property.

PID 15393085

This 0.6602 ha. property is located adjacent to the Atlantic Ocean along Upper North Street. The property is undeveloped and is typical of seashore topography in this area. The inspection revealed the subject property was used as a waste rock dumpsite into the ocean.

PID 15387285

This 0.9395 ha. property is located along McLeods Road and Reserve Street. The property appears to be the right-of-way between residential Properties. The subject property is undeveloped and used by local residence as open space, and for storage. Several small dumpsites were observed.

PID 15419427

This 0.9047 ha. property is located behind the residential properties along Quarry Road. The subject property is flat and undeveloped. The backyards of each residential property extend into this subject property. There are several areas that appear to have been graded and filled. The subject property also has low areas and areas suspected to be marshy.

PID 01531885

This 0.9047 ha. property is located adjacent to the Atlantic Ocean across from Emery Street. The subject property exhibits similar characteristics of coastal lands. The subject property is undeveloped and there are signs the adjacent residential properties use this land for storage, disposal.

PID 15433543

This 0.4788 ha. property is an undeveloped woodlot located adjacent to Steeles Hill road. The subject property is covered with mixed hardwood and is bounded to the south by a small brook. The inspection revealed several depressions and signs of dumping of debris.

PID 15436579

This small 0.0414 ha. property is a residential undeveloped lot on Third Street, Glace Bay. The subject property is undeveloped but serviced. The subject property is used by the adjacent residential properties for walking access to Fourth Street. The subject property has a few small areas of coal fines and waste rock.

PID 15441702

This 0.8499 ha. property is a rectangle size site located between Centre Avenue and East Avenue in Glace Bay. It appears to be an undeveloped residential plot. The subject property is adjacent to Sixth Street along its southeast perimeters. The subject property is flat and covered with short brush. Trails and on occasional pile of debris were observed.

PID 15441702

This 0.2545 ha. property is located on Churchill Street in Glace Bay. The property is long and narrow and may be a right-of-way. The property is undeveloped. There is a pathway running down the middle of the property. The subject property is flat with no noticeable depressions.

PID 15448228

This 0.6725 ha. property is located north of Connaught Avenue. The subject property is flat with a few depressions along the north perimeter. The property is undeveloped and covered with low brush.

PID 15448277

This 0.7839 ha property is located north of Connaught Avenue. It is adjacent to PID 15448228. It is undeveloped and covered with low brush.

PID 15448418

This 11.63 ha. property is located north of Connaught Avenue and west of McIntyre Lane in glace Bay. The rectangle shaped property is bounded to the north by the Atlantic Ocean. The property is undeveloped but there are signs of fill areas and waste disposal areas. The subject property is flat and slopes gradually to a cliff face at the ocean.

PID 15448665

This 12.644 ha. property is located directly adjacent to PID 15448418 and is bounded by the Atlantic Ocean to the north and Connaught Avenue to the south. The subject property is undeveloped with low scrub brush typical of the coastal terrain in this area. Several small dumpsites were observed.

PID 15449291

This 0.3165 ha. property is located behind the residential properties west of Station Street. The property is flat and undeveloped. The residential properties along Station Street appear to be using this property for storage and for small dumpsites.

PID 15449457

This 0.6395 ha. arrow shaped property is located south of the former railway and south of Station Street. The property appears to include two rights of ways. The subject property is undeveloped but cleared and signs of waste disposal, coal fines and waste rock were observed in several areas. The area along the former railway is covered with coal fines. Water courses were not observed on the property.

PID 15450182

This 1.1607 ha. property is located between the former railway and Connaught Street in Glace Bay. The property is bounded to the west by residential properties along Cross Street and undeveloped open areas to the east. The subject property is covered in low scrub and several mounds/fill areas were observed. Several waste disposal piles were also observed.

PID 15451149

This 1.9395 ha. property is located between Reserve Street to the south and Phalen Road to the north. The subject property is flat and has several wooded areas and open scrub areas. Dumpsites were observed throughout the subject property. Coal ash, waste rock piles and signs of depressions were also observed.

PID 15451164

This 2.5156 ha. property is located directly east of PID 15451149 and separated by a narrow right-of-way. The property is bounded to the north and south by residential development. The inspection revealed the subject property is being used for storage and for dumping. Several wooded areas were also observed.

PID 15524598

This small 0.1232 ha. property is located behind the residential properties along Lower North Street in Glace Bay. The subject property is higher than the adjacent properties and covered with scrub brush. The topography suggests a fill area may be the cause for the increased elevation. There were no signs of disturbance.

PID 15526619

This small 0.0945 ha. property is a residential lot located west of Shea's Lane. The subject property is bounded by residential properties and the local road. The subject property is lower than the adjacent properties and covered with scrub bushes. Some fill and debris disposal was observed.

PID 15528755

This small 0.0474 ha. property is a residential lot located directly east of PID 15526619. The same characteristics were observed. A coal ash pile was observed on this subject property.

PID 15531064

This 0.4422 ha. property is located directly south of West Avenue across from the school. The subject property is a long linear property that is undeveloped and relatively flat. Waste rock was observed throughout the property. The property was also observed to be wet in many areas.

PID 15599715

This 0.0246 ha. property is located north of Connaught Avenue. The property is flat and covered with scrub brush.

PID 15637614

This small 0.0736 ha. property is located north Fifth Street in Glace Bay. The property is on undeveloped residential lot bordered on both sides by residential Properties with homes. The subject property is flat and covered with short scrub bushes.

PID 15738131

This 0.1535 ha. property is located on Churchill Street in Glace Bay. The property is a long rectangular residential lot that has not been developed. The subject property is flat and is covered with grass and bushes.

PID 15782212

This 0.1234 ha. property is located adjacent to a former railway south of Connaught Avenue in Glace Bay. The subject property is a long linear property that separated the railway from the adjacent residential area. The subject property is covered with coal fines.

PID 15782220

This small triangular 0.0271 ha. property is located on Quarry Road, Glace Bay. The property is a small undeveloped open lot that may be been a remnant of historic lot sub-division. The property is covered in grass.

PID 15782550

This 0.1343 ha. property is located behind the residential Properties on Quarry Road. The lot is a triangle shaped property that is undeveloped. The property has some historic structures and foundations observed in the southern most corner.

PID 15782311

This 1.49 ha. property is located south of Crest Street and north of the stone dump (No. 4) properties to the south. The subject property is flat, with several piles of ash observed along the northern perimeter. The subject property has also been used as a burn site for domestic garbage (burn drum) and there is a considerable amount of litter remaining on the subject property.

12.1.2 WATER SUPPLY/GROUNDWATER USAGE

Properties are undeveloped. Municipal water supply or groundwater supply was not observed or suspected on the subject properties during the site inspections. Monitoring wells were observed on PIDs 15107303 and 15448665.

12.1.3 SOIL, TOPOGRAPHY, AND DRAINAGE

The Nova Scotia Department of Mines and Energy Surficial Geology Map of Nova Scotia (1992) describes the surficial geology of the area as stony till plain and drumlins, consisting of stony sandy till which may contain silty till.

The Geological Map of Nova Scotia (J. D. Keppie, 2000) describes the underlying bedrock as being from the Sydney Mines Formation and consisting of mudstone, shale, siltstone, sandstone, limestone and coal.

Tables 12-7 through 12-12 outline the distance from each property to the nearest surface water body. Surface water flow in each case is towards the direction of the water body.

Table 12-7: Nearest Surface Water Body – Undeveloped Properties

PID*	Nearest Surface Water Body	Direction	Distance
15107303	Atlantic Ocean	North	1 km
15448228	Atlantic Ocean	North	500m
15448277	Atlantic Ocean	North	500m
15448418	Atlantic Ocean	North	Adjacent
15448665	Atlantic Ocean	North	Adjacent
15449291	Atlantic Ocean	North	6 km
15449457	Atlantic Ocean	North	1 km
15450182	Atlantic Ocean	North	500m
15599715	Atlantic Ocean	North	500m
15782212	Atlantic Ocean	North	1 km

* see Figure 12-1

Table 12-8: Nearest Surface Water Body – Undeveloped Properties

PID*	Nearest Surface Water Body	Direction	Distance
15436579	Atlantic Ocean	North	300m
15437742	Atlantic Ocean	North	150m
15441702	Atlantic Ocean	North	500m
15526619	Atlantic Ocean	North	250m
15528755	Atlantic Ocean	North	500m
15531064	Atlantic Ocean	North	1 km
15637614	Atlantic Ocean	North	500m
15738131	Atlantic Ocean	North	500m

* see Figure 12-2

Table 12-9: Nearest Surface Water Body – Undeveloped Properties

PID*	Nearest Surface Water Body	Direction	Distance
15393085	Atlantic Ocean	East	Adjacent
15524598	Atlantic Ocean	East	60m

* see Figure 12-3

Table 12-10: Nearest Surface Water Body – Undeveloped Properties

PID*	Nearest Surface Water Body	Direction	Distance
15419427	Renwick Brook	Northwest	500m
15782220	Big Glace Bay Lake	Southeast	500m
15782550	Renwick Brook	Northwest	500m
15782311	Big Glace Bay Lake	Southeast	500m

* see Figure 12-4

Table 12-11: Nearest Surface Water Body – Undeveloped Properties

PID*	Nearest Surface Water Body	Direction	Distance
15431885	Renwick Brook	East	Adjacent
15433543	Renwick Brook	Intersects	N/a

* see Figure 12-5

Table 12-12: Nearest Surface Water Body – Undeveloped Properties

PID*	Nearest Surface Water Body	Direction	Distance
15387285	Atlantic Ocean	North	2.5 km
15451149	Atlantic Ocean	North	2 km
15451164	Atlantic Ocean	North	1.5 km

* see Figure 12-6

Most surface runoff from the subject properties would travel to the nearest surface water body, as indicated above. All of the subject properties are within close proximity of the Atlantic Ocean; surface runoff travelling first to Renwick Brook and Big Glace Bay Lake would ultimately travel to the Atlantic Ocean.

12.1.4 ON-SITE BUILDINGS AND STRUCTURES

Table 12-13: Activity/ Structures/Land Use - Undeveloped Properties

PID	Activity/ Structures/ Land Use Observed
15437742	Parking lot for a building (encroachment)
15387285	Residential barn (encroachment)
15449457	Driveway for an adjacent residential property
15449457	Fenced area on the property, no observed use at time of the site inspection
15451149	Storage area and storage shed encroaching onto the south of subject property Residential land use encroachment onto the north of the subject property
15637614	Roadway

Buildings were observed on six of the undeveloped properties during the site inspection, as follows:

PID 15387285 (Figure 12-6)

A residential barn not belonging to CBDC was observed on the property during the site inspection. The interiors of the buildings were not assessed as part of the site investigation. The inspection revealed nothing to suggest environmental impacts.

PID 15431885 (Figure 12-5)

Two one-storey buildings, not belonging to CBDC, were observed on or near the property during the site inspection. The interiors of the buildings were not assessed as part of the site investigation. The inspection revealed nothing to suggest environmental impacts.

PID 15437742 (Figure 12-2)

Two buildings, not belonging to CBDC, were observed on or near the property boundary during the site inspection. The interiors of the buildings were not assessed as part of the site investigation. The inspection revealed nothing to suggest environmental impacts.

PID 15441702 (Figure 12-2)

A one-storey building, not belonging to CBDC, was observed at the time of the site inspection. It was approximately four meters by five meters. The interior of the building was not assessed as part of the site investigation. The inspection revealed nothing to suggest environmental impacts.

PID 15448277 (Figure 12-1)

A swing and an animal pen were observed on the southern section of the subject property during the site investigation.

PID 15524598 (Figure 12-3)

A one-storey garden shed, not belonging to CBDC, was present on the subject property at the time of the site inspection. The building area was approximately nine square meters. The interior of the building was not assessed as part of the site investigation. The inspection revealed nothing to suggest environmental impacts.

The investigation of the other 22 properties did not identify buildings or structures.

12.1.5 FORMER BUILDINGS AND STRUCTURES

Several small buildings were observed on the undeveloped Properties in a review of historical aerial photos; these are reported in the historical review. Environmental impacts were not suspected for these former buildings.

12.1.6 ADJACENT PROPERTIES

PID 15107303 (Figure 12-1)

North, northeast, east and southeast are residential properties. South is CBDC – owned property. Southwest and west are residential and CBDC- owned properties. Northwest is CBDC-owned property and a wooded area. Environmental concerns relating to adjacent land use include coal fines, waste rock, and creosoted rail ties on the former rail bed south of the subject property (PID 15528961). Since there was no evidence of acid rock drainage migrating onto the subject property, coal fines and waste rock are considered to pose a low threat to human health and the environment. Creosoted rail ties also pose a low threat to human health and the environment. Potential impacts not suspected.

PID 15393085 (Figure 12-3)

North is CBDC-owned and residential property. Northeast, east and southeast is the Atlantic Ocean. South, southwest, west and northwest are residential properties. Potential environmental impacts are not suspected from adjacent land use.

PID 15387285 (Figure 12-6)

North are residential properties and Reserve Street. Northeast and east are undeveloped. Southeast, south and southwest are operations of a construction and demolition company. West and northwest are residential properties.

Potential environmental impacts are suspected from activities observed on the adjacent properties to the south and southeast, from the operations of the construction and demolition company (see Photo #1). Several 900 L tanks (with unknown volume of product) were observed near the property boundary, and a dumpsite from this operation is present on PID 15387285. Contents of this dumpsite are unknown; scrap metals and asphalt were visible.

PID 15419427 (Figure 12-4)

North are CBDC-owned, and residential properties. In all other directions, land use is residential. Potential environmental impacts are not suspected from adjacent land use.

PID 15431885 (Figure 12-5)

North, west and northwest are residential properties. Southwest is CBDC-owned, and residential property. In all other directions, land is CBDC-owned. The CBDC property is part of Pre 1967 Site 50, the Dominion #11 Colliery. During the site inspections to Pre 1967 Site 50, environmental concerns observed included: seepage along a brook, acid rock drainage, and waste rock and coal fines. A Phase II ESA was recommended for the Dominion #11 colliery; the potential for impacts on 15431885 should be addressed as part of that investigation.

Sheds, a garden and storage area was observed to be encroaching from adjacent properties. Potential environmental impacts associated with these encroachments were not observed or suspected.

PID 15433543 (Figure 12-5)

This PID is surrounded by residential properties in all directions. Potential environmental impacts are not suspected from adjacent land use.

PID 15436579 (Figure 12-2)

This PID is surrounded by residential properties in all directions. Potential environmental impacts are not suspected from adjacent land use.

PID 15437742 (Figure 12-1)

To the north and northeast is a mix of CBDC-owned property, residential property and the Atlantic Ocean. East, southeast and southwest are residential properties. South is residential and recreational property. West and northwest is a mix of CBDC-owned and residential properties. Potential environmental impacts are not suspected from adjacent land use.

PID 15441702 (Figure 12-2)

To the north is a CBDC property, and residential properties. In all other directions there are residential properties. Potential environmental impacts are not suspected from adjacent land use.

PID 15448228 (Figure 12-1)

North, northeast and northwest are CBDC owned properties with some wetland areas. East and west are also CBDC owned properties. Southeast and southwest is a mix of CBDC owned properties and residential properties. South there are residential properties. Potential environmental impacts are not suspected from adjacent land use.

PID 15448277 (Figure 12-a)

North are CBDC-owned properties and wetland areas. Northeast is a mix of CBDC-owned property, wetland and residential property. East is a mix of CBDC-owned property and residential property. Southeast, south and southwest are residential properties. West and northwest are CBDC owned properties. Potential environmental impacts are not suspected from adjacent land use.

PID 15448418 (Figure 12-1)

North of the subject property is the Atlantic Ocean. Northeast is the Atlantic Ocean and a vacant lot. East and southwest are CBDC owned and residential properties. Southeast and south are residential properties. Potential environmental impacts are not suspected from these adjacent land uses. West is CBDC owned undeveloped PID 15448665. PIDs 15448665 and 15448418 are believed to be a former municipal landfill/ dump. Potential environmental impacts are suspected to be common between these two PIDs.

PID 15448665 (Figure 12-1)

The property is adjacent to the Atlantic Ocean to the north. Northeast is CBDC-owned property and the ocean. East is CBDC-owned property (PID 15448418). Southeast, south, southwest and west are residential properties. Northwest are residential properties and the ocean. Potential environmental impacts are not suspected from adjacent residential land use. PIDs 15448665 and 15448418 are believed to be a former municipal landfill/ dump. Potential environmental impacts are suspected to be common between these two PIDs.

PID 15449291 (Figure 12-1)

Southwest there are residential properties and an auto body repair shop. Based on available information and results of the site investigation, there is no evidence to suggest this shop is impacting the subject property in all other directions, land use is residential. Potential environmental impacts are presently not suspected from adjacent land use.

PID 15449457 (Figure 12-1)

North, northeast, east, and southeast of the subject property are a combination of CBDC-owned properties and residential properties. South is a wooded area and southwest is a mix of recreational, residential and school properties. West and northwest are residential properties. Potential environmental impacts are not suspected from adjacent land use.

PID 15450182 (Figure 12-1)

North, northeast, east and southeast are residential properties. South is a vacant lot, and southwest, west and northwest there are vacant Properties and CBDC-owned properties. Potential environmental impacts are not suspected from adjacent land use.

PID 15451149 (Figure 12-6)

North, the adjacent land is CBDC-owned and residential. Northeast and east the adjacent properties are CBDC owned. In all other directions, the adjacent properties are residential. Potential environmental impacts are not suspected from adjacent land use.

PID 15451164 (Figure 12-6)

North, northeast, south and southeast are residential properties. To the east is a wooded area. Southwest and northwest are CBDC owned and residential properties. West is CBDC owned property and wetland areas. Potential environmental impacts are not suspected from adjacent land use.

PID 15524598 (Figure 12-3)

The subject property is surrounded by residential properties in all directions. Potential environmental impacts are not suspected from adjacent land use.

PID 15526619 (Figure 12-2)

North and northwest of the subject property are CBDC owned properties. Northeast and east are CBDC owned and residential properties. Southeast, south, southwest and west the adjacent properties are residential. Potential environmental impacts are not suspected from adjacent land use.

PID 15528755 (Figure 12-2)

North and northwest are CBDC owned properties. South and southwest are residential properties. In all other directions, there are CBDC owned and residential properties. Potential environmental impacts are not suspected from adjacent land use.

PID 15531064 (Figure 12-2)

North and northeast are industrial properties. East and southeast are residential properties. South, southwest and west are CBDC owned properties that are reclaimed areas of the Former #20 Colliery. The Phase I ESA conducted for the #20 Colliery found potential for environmental impacts that could migrate to the present subject property. Phase II ESA for the #20 Colliery was recommended. If this testing confirms the presence of impacts on the properties adjacent to PID 15531064, further Phase II testing should be conducted to determine if these impacts affect PID 1553106.

Northwest of PID 15531064 are CBDC owned and residential properties. Potential environmental impacts are not suspected from other adjacent land use.

PID 15599715 (Figure 12-1)

North, southeast, south and southwest are residential properties. East and west are CBDC owned properties. Northeast are residential, CBDC owned and vacant properties. Northwest are residential and vacant properties. Potential environmental impacts are not suspected from adjacent land use.

PID 15637614 (Figure 12-2)

North, northeast and northwest are CBDC owned properties and residential properties. In all other directions, adjacent properties are residential. Environmental impacts are suspected from former mining activity on adjacent PID 15526668, which is part of Pre 1967 Site 42. However, as the subject property is up gradient of Pre 1967 Site 42, migration of contaminants onto the subject property is unlikely. Potential environmental impacts are not suspected from adjacent land use.

PID 15738131 (Figure 12-12)

West are CBDC owned and residential properties. In all other directions, land use is residential. Potential environmental impacts are not suspected from adjacent land use.

PID 15782212 (Figure 12-1)

North of the subject property is a wooded area. Northeast are wooded and residential properties. East, west and northwest are CBDC owned properties. Southeast are CBDC owned and residential properties. South and southwest are CBDC owned properties and wooded areas. Environmental concerns relating to adjacent land use include coal fines, waste rock, and creosoted rail ties on the former rail bed south of the subject property (PID 15528961). Since there was no evidence of acid rock drainage migrating onto the subject property, coal fines and waste rock are considered to pose a low threat to human health and the environment. Creosoted rail ties also pose a low threat to human health and the environment. Potential environmental impacts are not suspected.

PID 15782220 (Figure 12-4)

West are vacant, industrial and residential properties. In all other directions, adjacent properties are residential. Potential environmental impacts are not suspected from adjacent land use.

PID 15782550 (Figure 12-4)

North are residential and recreational properties. Southeast are CBDC owned and residential properties. In all other directions, adjacent properties are residential. Potential environmental impacts are not suspected from adjacent land use.

PID 15782311 (Figure 12-4)

North are residential properties. South is the former waste dumpsite and former railway. Potential environmental impacts are suspected.

12.2 UNDEVELOPED PROPERTIES - HISTORICAL USE

The historical use of the undeveloped Properties was interpreted from inspection of aerial photographs from 1930, 1953, 1969, 1983, and 1999. Based on the photos, suspected environmental impacts were interpreted for PID 15448418. Disturbed land believed to be the former town dump is visible in the northeast corner of the PID 15448418 in the 1969, 1983 and 1999 photos. Burning activity in this location is visible in the 1983 photo. It is possible that large amounts of solid waste remain buried on site. Potential environmental impacts are suspected.

Based on site observations of a ditch, solid waste and fill, it is also believed that this landfill was also located at the north of PID 15448665.

The findings are summarized in Table 12-14.

Table 12-14: Aerial Photograph Review – Undeveloped Properties - Subject PIDs

PID	Year	Aerial photograph	Property Description	Potential Environmental Impacts
15107303	1930	A3474-26	Undeveloped	None
	1953	A13712-82	Undeveloped	None
	1969	30221-110	Undeveloped	None
	1983	83302-94	Undeveloped	None
	1999	99323-6	Undeveloped	None
15437742	1930	A3474-23	Undeveloped, pond visible at center of lot	None
	1953	A13712-83	Undeveloped, pond visible at center of lot	None
	1969	30221-111	Undeveloped	None
	1983	83302-96	Undeveloped	None
	1999	99323-7	Undeveloped	None
15436579	1930	A3474-23	Undeveloped	None
	1953	A13712-83	House on lot	None
	1969	30221-111	Small buildings/ features on lot	None
	1983	83302-96	Undeveloped	None
	1999	99323-7	Undeveloped	None
15393085	1930	A3474-23	Undeveloped, railway crossing site or nearby to west	None
	1953	A13712-83	Appears to be used to access coast from North St.	None
	1969	30221-111	Similar to 1953	None
	1983	83302-145	Similar to 1953	None
	1999	99323-148	Similar to 1953	None
15419427	1930	A3472-22	Undeveloped	None
	1953	A13722-70	Undeveloped	None
	1969	30209-83	Undeveloped	None
	1983	83302-198	Undeveloped	None
	1999	99322-91	Undeveloped	None
15441702	1930	A3474-24	Undeveloped	None
	1953	A13712-83	Undeveloped	None
	1969	30221-111	Undeveloped	None
	1983	83302-96	Undeveloped	None
	1999	99323-7	Undeveloped	None
15448228	1930	A3474-26	Undeveloped	None
	1953	A13712-82	Undeveloped	None
	1969	30221-110	Undeveloped	None
	1983	83302-94	Undeveloped	None

PID	Year	Aerial photograph	Property Description	Potential Environmental Impacts
	1999	99323-6	Undeveloped	None
154482777	1930	A3474-26	Undeveloped	None
	1953	A13712-82	Undeveloped	None
	1969	30221-110	Undeveloped	None
	1983	83302-94	Undeveloped	None
	1999	99323-6	Undeveloped	None
15448418	1930	A3474-26	Undeveloped	None
	1953	A31712-82	Undeveloped, road running across to coast.	None
	1969	30221-110	Road running across to coast and disturbed area at coastline	Suspected dump/landfill: See Commentary
	1983	83302-93	Road running across to coast. Bare areas at coastline, burning activity occurring at coastline	Suspected dump/landfill: See Commentary
	1999	99323-4	Smaller bare areas at coastline, road running across to coast	Suspected dump/landfill: See Commentary
15448665	1930	A3474-26	Undeveloped, road to coast via 15448418	None
	1953	A31712-82	Undeveloped, road to coast via 15448418	None
	1969	30221-110	Undeveloped, road to coast via 15448418	None
	1980	83302-93	Undeveloped, road to coast via 15448418	None
	1999	99323-4	Undeveloped, road to coast via 15448418	None
15449291	1930	A3473-55	Undeveloped	None
	1953	A13712-82	Undeveloped	None
	1969	30221-110	Undeveloped	None
	1983	83302-141	Undeveloped	None
	1999	99323-4	Undeveloped	None
15449457	1930	A3473-55	Undeveloped	None
	1953	A13712-82	Mainly undeveloped. Railway building at or adjacent to northeast corner	None
	1969	30221-110	Undeveloped, building at Northeast corner is absent	None
	1983	83302-141	Undeveloped, driveway crossing property	None
	1999	99323-4	Undeveloped, driveway crossing property	None

PID	Year	Aerial photograph	Property Description	Potential Environmental Impacts
15450182	1930	A3473-55	Undeveloped	None
	1953	A13712-82	Undeveloped	None
	1969	30221-110	Undeveloped	None
	1983	83302-141	Undeveloped	None
	1999	99323-4	Undeveloped. Possible small buildings encroaching from property to west	None
15451149	1930	A3472-25	Undeveloped, forest and wetland	None
	1953	A13712-96	Undeveloped, pond is pronounced	None
	1969	30209-81	Undeveloped, wetlands visible	None
	1983	83302-194	Undeveloped, wetlands visible	None
	1999	99322-88	Undeveloped	None
15451164	1930	A3471-25	Undeveloped, forest with trail	None
	1953	A13712-96	Undeveloped, forest with trail	None
	1969	30209-81	Undeveloped, forest with trail	None
	1983	83302-194	Undeveloped, forest with trail	None
	1999	99322-88	Undeveloped, trail overgrown	None
15431885	1930	A3471-85	Undeveloped	None
	1953	A13722-69	Undeveloped	None
	1969	30209-83	Undeveloped	None
	1983	83303-46	Undeveloped	None
	1999	99322-39	Undeveloped	None
15433543	1930	A3471-85	Undeveloped	None
	1953	A13722-69	Undeveloped	None
	1969	30209-83	Undeveloped	None
	1983	83303-46	Undeveloped	None
	1999	99322-39	Undeveloped	None
15524598	1930	A3473-59	Undeveloped. Possible encroaching outhouses.	None
	1953	A13712-83	Undeveloped	None
	1969	30221-111	Undeveloped	None
	1983	83302-145	Undeveloped	None
	1999	99323-148	Undeveloped	None
15526619	1930	A3474-24	Undeveloped, possible encroaching building at west of lot	None
	1953	A13712-83	Undeveloped	None
	1969	30221-111	Undeveloped	None
	1983	83302-96	Undeveloped	None
	1999	99323-7	Undeveloped	None
15528755	1930	A3474-24	Undeveloped	None
	1953	A13712-83	Undeveloped	None
	1969	30221-111	Undeveloped	None
	1983	83302-96	Undeveloped	None
	1999	99323-7	Undeveloped	None
15531064	1930	A3474-23	Undeveloped	None
	1953	A13712-83	Undeveloped	None

PID	Year	Aerial photograph	Property Description	Potential Environmental Impacts
	1969	30221-111	Undeveloped	None
	1983	83302-145	Undeveloped	None
	1999	99323-148	Undeveloped	None
15599715	1930	A3474-26	Undeveloped	None
	1953	A13712-82	Undeveloped	None
	1969	30221-110	Undeveloped	None
	1983	83302-94	Undeveloped	None
	1999	99323-6	Undeveloped	None
15637614	1930	A3474.23	Undeveloped	None
	1953	A13712.83	Undeveloped	None
	1969	30221-111	Undeveloped	None
	1983	83302-96	Undeveloped	None
	1999	99323-7	Undeveloped	None
15738131	1930	A3474.24	Undeveloped	None
	1953	A13712.83	Undeveloped	None
	1969	30221-111	Undeveloped	None
	1983	83302-96	Undeveloped	None
	1999	99323-7	Undeveloped	None
15782212	1930	A3474-26	Undeveloped	None
	1953	A13712-82	Undeveloped	None
	1969	30221-110	Undeveloped	None
	1983	83302-94	Undeveloped	None
	1999	99323-6	Undeveloped	None
15782220	1930	A3472-22	Undeveloped	None
	1953	A13722-70	Undeveloped	None
	1969	30209-83	Undeveloped	None
	1983	83302-198	Undeveloped	None
	1999	99322-91	Undeveloped	None
15782311	1930	A3472-22	Undeveloped	None
	1953	A13722-70	Undeveloped	None
	1969	30209-83	Undeveloped	None
	1983	83302-198	Undeveloped	None
	1999	99322-91	Undeveloped	None
15782550	1930	A3472-22	Undeveloped	None
	1953	A13722-70	Undeveloped	None
	1969	30209-83	Undeveloped	None
	1983	83302-198	Undeveloped	None
	1999	99322-91	Undeveloped	None

12.3 ADJACENT PROPERTIES – HISTORICAL USE

Adjacent properties where potential environmental impacts were interpreted from the aerial photographs, and findings are summarized in Table 12-15.

Several properties were observed to have been adjacent to railways. Environmental concerns relating to railway land use include coal fines, waste rock, and creosoted rail ties. Unless evidence of acid rock drainage migrating onto the subject property is noted, coal fines and waste rock are considered to pose a low risk to human health and the environment. Creosoted rail ties also pose a low risk to human health and the environment. The properties where adjacent land use is suspected to have impacted the environment are discussed below.

PID 15387285 (Figure 12-6)

Review of aerial photographs revealed that activity has been taking place adjacent to the south of PID 15387285 since approximately the 1950's. The activities could not be determined but during the 1960's the operations expanded around the southern edge of the subject property. It is suspected that the activities visible in the photographs are related to the construction and demolition company currently operating in the area. Based on observations made during the site inspection (noted in section 1.1.6 Adjacent Properties) potential environmental impacts are suspected on PID 15387285 from oil tanks observed near the property boundary and solid waste on the property.

PID 15431885 (Figure 12-5)

Properties immediately adjacent to this subject property have been residential and undeveloped. A nearby property to the south (PID 15430002) is CBDC owned and is part of Pre 1967 Site 50, Dominion #11 Colliery. The waste rock pile formed during mining operations later became the site for the Glace Bay Town Dump. The town dump has been closed and remediated. However, during site inspections to Pre 1967 Site 50, SNCL personnel observed seepage along a brook, acid rock drainage, and waste rock and coal fines. A Phase II ESA is recommended for the #11 Colliery, potential for impacts on PID 1541885 is to be addressed in that investigation.

PID 15448665 and PID 15448418 (Figure 12-1)

A landfill/ dump is visible in the aerial photographs of 15448418. From the site inspection, it is believed that this dump also included a portion of PID 15448665. Potential environmental impacts are suspected to be common between these two adjacent properties.

PID 15531064 (Figure 12-2)

Adjacent to the south, southwest and west is the Former #20 Colliery. The Phase I ESA conducted for the #20 Colliery found potential for environmental impacts that could migrate to the present subject property. Phase II ESA for the #20 Colliery was recommended. If this testing confirms the presence of impacts on the properties adjacent to PID 15531064, further Phase II testing should be conducted to determine if these impacts affect PID 1553106.

PID 15637614 (Figure 12-2)

Coal fines on PID 15637614 from the rock dumping and the nearby coastline were visible in the 1969 photo of this site, and coal fines and waste rock were encountered during the site inspection. Based on the absence of staining or stressed vegetation, potential environmental impacts are suspected to be low risk. The large volumes of waste rock deposited over the cliff, visible in the 1969, are believed to have been removed by erosion.

Table 12-15: Aerial Photograph Review – Undeveloped Properties (Glace Bay) Adjacent Properties

PID	Year	Aerial photograph	Adjacent Property Description	Potential Environmental Impacts
15107303	1930	A3474-26	Railway to south, other directions undeveloped	None
	1953	A13712-82	Similar to 1930	None
	1969	30221-110	Similar to 1930	None
	1983	83302-94	Railway to south, Residential street (MacNamara) to north	None
	1999	99323-6	Similar to 1999	None
15387285	1930	A3471-25	Undeveloped	None
	1953	A13712-96	Disturbed land to south (believed to be construction & demolition property)	Impacts suspected: see commentary
	1969	30209-81	Disturbed land expands to south and southwest	Impacts suspected: see commentary

PID	Year	Aerial photograph	Adjacent Property Description	Potential Environmental Impacts
	1983	83302-194	Similar to 1969	Impacts suspected: see commentary
	1999	99322-88	Similar to 1983	Impacts suspected: see commentary
15531064	1930	A3474-23	North: road and disturbed land East: Residential SE, South: Mound associated with Dominion #20 Colliery SW and West: Railway	Large volume of coal and waste rock: see commentary
	1953	A13712-83	Similar to 1930. South is disturbed open land.	None
	1969	30221-111	Similar to 1953. To west is dirt road to Dominion #20	None
	1983	83302-145	Similar to 1969. Road at west is paved	None
	1999	99323-148	Similar to 1969: North: New buildings across road appear commercial/industrial. Road at west is gone.	None
	1999	99322-88	Similar to 1969. Barren area has increased	None
15393085	1930	A3474-23	West: Railway running north-south. East: Atlantic ocean. All other adjacent lands are undeveloped.	None
	1953	A13712-83	North and west: Residential South: Undeveloped East: Ocean	None
	1969	30221-111	Similar to 1953	None
	1983	83302-145	Similar to 1953	None
	1999	99323-148	Similar to 1953	None
15419427	1930	A3472-22	Undeveloped	None
	1953	A13722-70	Residential along NW edge. Residential developments in other directions	None
	1969	30209-83	Similar to 1953, disturbed lands adjacent to SE edge	None
	1983	83302-198	Similar to 1953. Former road visible along SE edge	None
	1999	99322-91	Adjacent properties are residential in every direction	None
15431885	1930	A3471-85	Residential to west, undeveloped in other directions	None
	1953	A13722-69	West and north: Residential South and east: Undeveloped	None

PID	Year	Aerial photograph	Adjacent Property Description	Potential Environmental Impacts
	1969	30209-83	Similar to 1953	None
	1983	83303-46	Similar to 1953	None
	1999	99322-39	Similar to 1953	None
15433543	1930	A3471-85	Undeveloped	None
	1953	A13722-69	North, east, south: Residential West undeveloped	None
	1969	30209-83	Similar to 1954	None
	1983	83303-46	Similar to 1953	None
	1999	99322-39	Similar to 1953, possible excavations to the west.	None
15436579	1930	A3474-23	Residential properties in all directions	None
	1953	A13712-83	Similar to 1930	None
	1969	30221-111	Similar to 1930	None
	1983	83302-96	Similar to 1930	None
	1999	99323-7	Similar to 1930	None
15437742	1930	A3474-23	North: undeveloped properties South: recreational (Sports field) East and West: Residential	None
	1953	A13712-83	Similar to 1930. New streets to north and south of lot. Some houses to north	None
	1969	30221-111	Similar to 1953	None
	1983	83302-96	Similar to 1969	None
	1999	99323-7	Similar to 1983. House apparent on immediately adjacent lot at east corner	None
15441702	1930	A3474.23	North, South, and West: Undeveloped East: Schoolyard	None
	1953	A13712.83	North and West: Undeveloped East: Schoolyard South: Residential	None
	1969	30221-111	Similar to 1953	None
	1983	83302-96	Similar to 1953	None
	1999	99323-7	Similar to 1953	None
15448228	1930	A3474.26	South: Residential or farmland Other directions: undeveloped	None
	1953	A13712-82	South: Residential Other directions: undeveloped	None
	1969	30221-110	Similar to 1953, with increased residential development	None
	1983	83302-94	Similar to 1969, with increased residential development	None
	1999	99323-6	Similar to 1983, with increased residential development	None
15448277	1930	A3474.26	South: Residential or farmland Other directions: undeveloped	None

PID	Year	Aerial photograph	Adjacent Property Description	Potential Environmental Impacts
	1953	A13712-82	South: Residential Other directions: undeveloped	None
	1969	30221-110	Similar to 1953, with increased residential development	None
	1983	83302-94	Similar to 1969, with increased residential development	None
	1999	99323-6	Similar to 1983, with increased residential development	None
15448418	1930	A3474-26	North: Ocean East: Farmlands South: Undeveloped land and road West: Undeveloped	None
	1953	A31712-82	North: Ocean East: Residential at end of MacIntyre lane, undeveloped lands South: Undeveloped land and road West: Undeveloped	None
	1969	30221-110	Similar to 1953, Increased residential development to east	None
	1983	83302-93	Similar to 1969	None
	1999	99323-4	Similar to 1969	None
15448665	1930	A3474-26	North: Ocean; South: Road; East: Undeveloped West: Farmland, residential street	None
	1953	A31712-82	North: Ocean; South: Road and barren area; East: undeveloped West: undeveloped lands, residential street	None
	1969	30221-110	Similar to 1953	None
	1983	83302-93	Similar to 1953. Barren area is recognizable as baseball field	None
	1999	99323-4	Similar to 1953	None
15449291	1930	A3473-55	East, South and West: Residential North: Channel or other linear feature running north to coast	None
	1953	A13712-82	Similar to 1930, channel less pronounced	None
	1969	30221-110	Residential in all directions. At north a ditch running east-west is visible	None
	1983	83302-141	Similar to 1969	None
	1999	99323-4	Similar to 1969. A building believed to be the present day auto shop is visible to the south; it is not in the 1983 photo.	None

PID	Year	Aerial photograph	Adjacent Property Description	Potential Environmental Impacts
15449457	1930	A3473-55	North: Railway East: Small buildings or features near railway South and west: Residential and roads	None
	1953	A13712-82	Similar to 1930, with a railway building at the northeast	None
	1969	30221-110	Similar to 1953. No building at northeast, school is present to southeast	None
	1983	83302-141	Similar to 1969, school enlarged. Properties to east appear to be school sports fields	None
	1999	99323-4	Similar to 1983	None
15450182	1930	A3473-55	North: road, residential East: open land West: house, farmland South: railway	None
	1953	A13712-82	Similar to 1930, additional house to southwest	None
	1969	30221-110	Similar to 1953, house to southwest present, house to west is absent	None
	1983	83302-141	Similar to 1969. Residential streets to the west	None
	1999	99323-4	Similar to 1983. Undeveloped lands to east appear more wooded	None
15451149	1930	A3471-25	North, south: farmlands, road East: undeveloped West: farmland	None
	1953	A13712-96	Similar to 1930	None
	1969	30209-81	North, south: residential, roadway East, west: undeveloped	None
	1983	83302-194	Similar to 1969	None
	1999	99322-88	Similar to 1969	None
15451164	1930	A3471-25	North, south: residential, roadway East, west: undeveloped	None
	1953	A13712-96	North, south: residential, roadway East, west: undeveloped	None
	1969	30209-81	North, south: residential, roadway East: Trail loop or track visible West: undeveloped	None
	1983	83302-194	Similar to 1969	None
	1999	99322-88	North, south: residential, roadway East, west: undeveloped	None
15526619	1930	A3474-24	Undeveloped in all directions	None

PID	Year	Aerial photograph	Adjacent Property Description	Potential Environmental Impacts
	1953	A13712-83	South: Residential Other: undeveloped	None
	1969	30221-111	Similar to 1953	None
	1983	83302-96	East, west, south: Residential Other: Undeveloped	None
	1999	99323-7	Similar to 1999	None
15524598	1930	A3473-59	North, East, SE: Residential South, West: Farmland or open land, 1 house	None
	1953	A13712-83	Similar to 1930	None
	1969	30221-111	Similar to 1930	None
	1983	83302-145	Similar to 1930, with ballpark on formerly open land to west.	None
	1999	99323-148	Similar to 1999	None
15528755	1930	A3474.24	Undeveloped in all directions	None
	1953	A13712.83	South: Residential Other: undeveloped	None
	1969	30221-111	Similar to 1953	None
	1983	83302-96	East, west, south: Residential Other: Undeveloped	None
	1999	99323-7	Similar to 1999	None
15599715	1930	A3474.26	South: Residential or farmland Other directions: undeveloped	None
	1953	A13712-82	South: Residential Other directions: undeveloped	None
	1969	30221-110	Similar to 1953, with increased residential development	None
	1983	83302-94	Similar to 1969, with increased residential development	None
	1999	99323-6	Similar to 1983, with increased residential development	None
15637614	1930	A3474.23	South and west: residential North: Atlantic Ocean East: Rock dumping at coastline	None
	1953	A13712.83	Similar to 1930	None
	1969	30221-111	Similar to 1930, darkened colouration suggests coal fines impacts on subject property from adjacent activities	None: see commentary
	1983	83302-96	Residential to south and west. Rock dump appears unused, washed-out by sea	None
	1999	99323-7	Similar to 1983	None
15738131	1930	A3474.23	Undeveloped to North, west and south. Large building to east, possibly a schoolhouse	None

PID	Year	Aerial photograph	Adjacent Property Description	Potential Environmental Impacts
	1953	A13712.83	North: Residential South and west: Undeveloped East: Schoolyard	None
	1969	30221-111	Similar to 1953	None
	1983	83302-96	North, west and south: Residential East: Schoolyard	None
	1999	99323-7	Similar to 1983	None
15782212	1930	A3474.26	Railway to south, other directions undeveloped	None
	1953	A13712-82	Similar to 1930	None
	1969	30221-110	Similar to 1930	None
	1983	83302-94	Similar to 1930	None
	1999	99323-6	Similar to 1930	None
15782220	1930	A3472-22	Dominion #4 (Caledonia) mine to SE, residential land in other directions	None
	1953	A13722-70	Similar to 1930	None
	1969	30209-83	Similar to 1930	None
	1983	83302-198	Residential in all directions	None
	1999	99322-91	Similar to 1983	None
15782550	1930	A3472-22	Undeveloped in all directions	None
	1953	A13722-70	Adjacent lands undeveloped at north, residential in all other directions	None
	1969	30209-83	Similar to 1953	None
	1983	83302-198	Similar to 1953	None
	1999	99322-91	Similar to 1953	None
15782311	1930	A3472-22 A3471-86	North and West: Residential South and East: Railway	None
	1953	A13722-70	Similar to1930, with rock dump visible beyond railway to SE	None
	1969	30209-83	Similar to 1953	None
	1983	83302-198	Similar to 1953	None
	1999	99322-91	Similar to 1953. Former rock dump area appear re-vegetated	None

12.4 EVALUATIONS AND FINDINGS FOR UNDEVELOPED PROPERTIES

The Phase I ESA was undertaken to identify potential environmental concerns associated with the subject properties. The findings of this assessment are based on the site inspection, review of historical data, interviews with individuals knowledgeable with the property and adjacent properties. Potential areas of environmental concern are presented in Figure 12-7 to 12-9.

Figure 12-7: Areas of Potential Environmental Concern – Undeveloped Properties

Figure 12-8: Areas of Potential Environmental Concern – Undeveloped Properties

Figure 12-9: Areas of Potential Environmental Concern – Undeveloped Properties

12.4.1 FUEL HANDLING AND STORAGE

PID 15441702 (Figure 12-2)

Environmental concerns observed on adjacent properties include ash piles and use of 900-litre domestic oil tanks. Risks of environmental impacts on PID 15441702 are suspected to be low.

PID 15433543 (Figure 12-5)

An abandoned 900L oil tank (with unknown volume of product) was observed less than 1m off of PID 15433543 to the north. The condition and proximity of this tank presents a medium to high risk of environmental impacts on the subject property.

12.4.2 SPILLS AND STAINED AREAS

Staining was not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected

12.4.3 DANGEROUS GOODS HANDLING AND STORAGE

Handling and storage of dangerous goods was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

12.4.4 ASBESTOS

Sources of asbestos were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

12.4.5 POLYCHLORINATED BIPHENYLS (PCBS)

Sources of PCBs were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

12.4.6 OZONE DEPLETING SUBSTANCES (ODS)

Sources of ODS were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

12.4.7 LEAD/MERCURY

The paint and batteries as potential sources of lead and or mercury impacts were observed during the site inspection on the following undeveloped properties:

PID 15419427: Paint cans.

PID 15433543: Paint cans

PID 15441702: Paint cans were observed

PID 15450182: Paint cans, car battery, painted debris

PID 15451164: Paint cans

PID 15524598: Painted wood

Impacts from these sources are suspected to be a low risk to human health and the environment. Potential environmental impacts are not suspected.

12.4.8 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

UFFI was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

12.4.9 WASTE WATER

Wastewater generation or disposal was not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

12.4.10 WATER COURSES, DITCHES OR STANDING WATER

PID 15431885(Figure 12-5)
Stormwater drainage from a residential property was observed on the subject property during the site inspection. Potential environmental impacts are not suspected.

Acid rock drainage impacts were observed at the Pre-1967 Site 50 (the Dominion #11 Colliery). Potential exists for transport of impacts to PID 15431885 via Renwick Brook. Further investigation (Phase II ESA) was recommended for Pre-1967 Site 50; if impacts are confirmed then additional Phase II testing is recommended determine if these impacts affect PID 15431885.

PID 15448665 (Figure 12-7)

The property is suspected to be part of the former municipal landfill. A drainage ditch skirting the dump area has been impacted. Erosion cut on the cliff edge may carry contaminants from the subject property as surface water leaves the area. Potential environmental impacts are suspected.

12.4.11 PESTICIDES/HERBICIDES

Pesticide and or herbicide use were not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

12.4.12 RADON

The Nova Scotia Department of Health map "Potential Occurrence of Radon Gas in Nova Scotia" indicates there is little or no uranium, thorium, or naturally occurring radioactive elements in the soil in the area. Potential environmental impacts are not suspected.

12.4.13 ELECTROMAGNETIC FREQUENCY (EMF)

Sources of EMF were not observed on or near the subject properties during the site inspection. Potential environmental impacts are not suspected.

12.4.14 SEWAGE DISPOSAL

PID 15431885

A suspected sewage outfall area is present was observed on this property during the site inspection. Potential liabilities from sewer outfalls fall under the responsibility of Cape Breton Regional Municipality (CBRM) and are not considered to be in the scope of this program.

12.4.15 SOLID WASTE

Potential environmental impacts from solid waste are suspected on four of the undeveloped properties, as follows:

PID 15387285 (Figure 12-9): A dumpsite containing asphalt shingles, auto parts, and burned debris with coal ash, scrap metals and asphalt debris. This dumpsite is large and extends across the southern property boundary. Several discarded 900 litre oil tanks (with unknown volume of product) on the adjacent property approximately 10 metres southwest of the property boundary. Potential environmental impacts are suspected.

PID 15448665 and 15448418 (Figure 12-7): A former town dump is suspected to be located at the north end of these properties, potentially containing a large amount of buried solid waste. Potential environmental impacts are suspected.

PID 15431885: Coal and waste rock were observed on the subject property. In this location, seepage along the brook and staining in the stream suggest that coal and waste rock may be contributing to acid rock drainage problems. Potential environmental impacts are suspected.

Several occurrences of solid waste were encountered on the undeveloped properties in Glace Bay that are judged to present a low risk to human health and the environment. These include findings of coal ash and waste rock where no evidence of acid rock drainage is observed; creosote-treated timbers, scrap metal where no peeling paint is observed. Many sites showed recent or former evidence of burning and had burning tanks, barrels, tubs and pits. In these cases it is recommended that the material be removed from the subject property, however further environmental assessment is not recommended.

Asphalt shingles were observed at several PIDs. Asphalt shingles may contain asbestos, for which special disposal requirements apply. Removal of these shingles is recommended.

The undeveloped properties with various solid waste deposits are listed below. Each debris pile was evaluated to determine if the risk of environmental impacts warranted further study. The investigation has determined that none of these debris piles represents on immediate risk to the environment. Removal to a landfill is recommended.

PID 15107303: Coal fines and waste rock.

PID 15393085: Waste rock, coal fines and coal ash.

PID 15419427: Scrap metal with no peeling paint, domestic debris, garbage burning barrel, ash, glass and domestic appliances.

PID 15431885: A burning area and burning tub; suspected burning of domestic debris.

PID 15433543: Scrap metal, no peeling paint. Domestic waste.

PID 15436579: Domestic waste burning site.

PID 15437742: Asphalt debris, ash pile.

PID 15441702: Rubber, scrap metal (no peeling paint). Paint cans.

PID 15448228: Derelict refrigerator.

PID 15448277: Construction Waste, scrap metal (no peeling paint), domestic waste, wood scrap, steel drum (disintegrating).

PID 15448665: Wood and asphalt shingle debris, burning barrel, corroded scrap metal (no peeling paint), vinyl siding, auto parts, and coal fines on road.

PID 15449291: Coal ash and yard waste.

PID 15450182: Coal fines and coal, large ash pile, wood debris, residential garbage.

PID 15451149: Coal ash pile, corroded steel drum and burning drums.

PID 15451164: Scrap metal (no peeling paint). Asphalt Shingles.

PID 1552598: Burnt debris, metal.

PID 15526619: Coal ashes.

PID 15528755: Ash dump.

PID 15599715: Ash pile.

PID 15738131: Coal ash pile.

PID 15782220: Waste rock pile.

PID 15782212: Coal fines, waste rock.

PID 15637614: Waste rock, coal fines.

12.4.16 STRESSED VEGETATION

Stressed vegetation was not observed during the site investigation. Potential environmental impacts are not suspected.

12.4.17 AIR QUALITY

Odours or air emissions from the subject or adjacent properties were not noted during the site investigation. Potential environmental impacts are not suspected.

12.4.18 FILL

The following areas of fill were noted on the undeveloped properties:

PID 15393085: Fill included waste rock.

PID 15419427: Fill from a residential yard.

PID 15448418: Suspected former burning and dumpsite. Fill was observed at the northeast corner of the property at the cliffside. It is believed that this is part of the suspected town dump, for which potential environmental impacts are suspected.

PID 15637614: Roadway fill.

12.5 CONCLUSIONS – UNDEVELOPED PROPERTIES

The results of the Phase I ESA investigation conducted at 29 undeveloped properties in Glace Bay between August 22nd and November 19th, 2003 are summarized below:

Table 12-16: Areas of Potential Environmental Concern – Undeveloped Properties

PID	Potential Concerns	Description	Degree of Risk	Media	Contaminants of Concern
15387285	Solid waste, Adjacent property	Several 900 litre oil tanks (with unknown volume of product) were observed to be approximately 10 metres southwest of the subject property border. These are part of a large dumpsite (unknown content) from the adjacent property which extends onto the southern portion of the subject property.	Medium	GW	TPH Metals
15448418	Solid Waste	Together with 15448665, subject property is suspected to be historically used as a landfill	Medium	Soil GW	Metals TPH
15448665	Solid Waste	Together with 15448418, subject property is suspected to be historically used as a landfill	Medium	Soil GW	Metals PH TPH
	Solid Waste	A significant volume of ash is dumped on this subject property.	Medium	Soil	Metals

Note: GW = Groundwater; SW= Surface Water; Sed = Sediment

A Phase II ESA is recommended to determine if potential environmental impacts exist in all above-mentioned locations. For PIDs 15431885 and 15531064, Phase II ESAs would only be applicable if impacts were confirmed on the adjacent properties indicated.

13. FORMER RAILWAYS (GLACE BAY)

13.1 FORMER RAILWAYS (GLACE BAY) - SITE DESCRIPTION

13.1.1 PROPERTY DESCRIPTION

Three distinct segments of former railway, consisting of 33 properties (PIDs), located in Glace Bay are included as subject sites of the CBDC Phase I ESA. The railways are located in the northeastern, southeastern, and northwestern sections of Glace Bay. Figure 13-1 through 13-4 illustrate the site plan and photo log.

According to the property data supplied by PWGSC during the CBDC Property Screening Program, these properties are owned by CBDC and collectively cover an area of 33.91ha. Tables 13-1 through 13-4 provide a summary of the property information.

Table 13-1: PID Summary – Former Railways (Glace Bay)

PID*	Location	Owner	Area (ha)
15449812	Northwest Section of Glace Bay	CBDC	2.2506
15449853	Northwest Section of Glace Bay	CBDC	0.6941
15528961	Northwest Section of Glace Bay	CBDC	3.8384
15599632	Northwest Section of Glace Bay	CBDC	4.0718
15599749	Northwest Section of Glace Bay	CBDC	3.7763
15736846	Northwest Section of Glace Bay	CBDC	0.369
15738032	Northwest Section of Glace Bay	CBDC	2.1183
15782527	Northwest Section of Glace Bay	CBDC	0.3721
15782535	Northwest Section of Glace Bay	CBDC	0.3259

* see Figure 13-1

Figure 13-1: Site Plan and Photo log – Former Railways

Figure 13-2: Site Plan and Photo log – Former Railways

Figure 13-3: Site Plan and Photo log – Former Railways

Figure 13-4: Site Plan and Photo log – Former Railways

Table 13-2: PID Summary – Former Railways (Glace Bay)

PID*	Location	Owner	Area (ha)
15739477	Northeast Section of Glace Bay	CBDC	1.7715
15773815	Northeast Section of Glace Bay	CBDC	0.0578
15773823	Northeast Section of Glace Bay	CBDC	0.0743
15531304	Northeast Section of Glace Bay	CBDC	0.3876
15531320	Northeast Section of Glace Bay	CBDC	0.3193
15531338	Northeast Section of Glace Bay	CBDC	0.1496

* see Figure 13-2

Table 13-3: PID Summary – Former Railways (Glace Bay)

PID*	Location	Owner	Area (ha)
15773807	Northeast Section of Glace Bay	CBDC	0.1888
15060585	Southeast Section of Glace Bay	CBDC	0.1626
15060940	Southeast Section of Glace Bay	CBDC	0.2142
15061005	Southeast Section of Glace Bay	CBDC	0.4392
15061021	Southeast Section of Glace Bay	CBDC	0.1072
15061054	Southeast Section of Glace Bay	CBDC	0.8853
15061062	Southeast Section of Glace Bay	CBDC	1.2535
15564149	Southeast Section of Glace Bay	CBDC	0.7674

* see Figure 13-3

Table 13-4: PID Summary – Former Railways (Glace Bay)

PID*	Location	Owner	Area (ha)
15220403	Southeast Section of Glace Bay	CBDC	3.3589
15220411	Southeast Section of Glace Bay	CBDC	0.8609
15220692	Southeast Section of Glace Bay	CBDC	0.4403
15427180	Southeast Section of Glace Bay	CBDC	1.8315
15452097	Southeast Section of Glace Bay	CBDC	0.2378
15452212	Southeast Section of Glace Bay	CBDC	0.3625
15782238	Southeast Section of Glace Bay	CBDC	0.44795
15782246	Southeast Section of Glace Bay	CBDC	0.70399
15782253	Southeast Section of Glace Bay	CBDC	0.86469
15782261	Southeast Section of Glace Bay	CBDC	0.20736

* see Figure 13-4

The segment located in the northwestern quadrant of the community of Glace Bay runs between the community boundaries of Dominion the Former No. 20 Colliery and No. 26 Colliery sites. This section of railway is comprised of nine PIDs (PIDs 15449853, 15528961, 15599632, 15599749, 15736846, 15738032,

15782527, 15782535 and 15449812) totalling approximately 3.5 km in length. The tracks have been removed from portions and coal fines remain on the properties.

The segment located in the northeastern quadrant of the community of Glace Bay extends from the No. 20 Colliery to the Central Shops. This section of former railway is comprised of seven PIDs (15531338, 15531304,15531320, 15773823, 15773815, 15739477 and 15773807) totalling approximately 1.6 km in length. The tracks in this area have been removed and coal fines remain on the properties.

The segment located in the southeastern quadrant of the community of Glace Bay extends from the Central Shops area to the Former Dominion #11 Colliery and Former Dominion #4 Rock Dump. This section of former railway is comprised of seventeen PIDs (PIDs 15060585, 15060940, 15061005, 15061021, 15061054, 15061062, 15220403, 15220411, 15220692, 15427180, 15452097, 15452212, 15564149, 15782238, 15782246, 15782261, and 15782253) totalling approximately 3.5 km in length. Suspected waste rock fill was observed on the rail bed of these properties. The tracks have been removed from portions and coal fines remain on the properties.

13.1.2 WATER SUPPLY/GROUNDWATER USAGE

Water supply sources or groundwater usage were not observed on the former railways during the site inspection.

13.1.3 SOIL, TOPOGRAPHY, AND DRAINAGE

The Nova Scotia Department of Mines and Energy Surficial Geology Map of Nova Scotia (1992) describes the surficial geology of the area as stony till plain and drumlins, consisting of stony sandy till which may contain silty till.

The Geological Map of Nova Scotia (J. D. Keppie, 2000) describes the underlying bedrock as being from the Sydney Mines Formation and consisting of mudstone, shale, siltstone, sandstone, limestone and coal.

Many sections of the former rail beds are built up with both native and fill material. In most instances, storm water would be directed perpendicular to the direction the railway is running.

13.1.4 ON-SITE BUILDINGS AND STRUCTURES

There were no CBDC owned buildings on any of the subject properties. The following table illustrates the buildings and structures observed on the subject properties.

Table 13-5: Buildings/ Structures: Former Railways (Glace Bay)

PID	Building/structure	Potential Environmental Impacts
15220703	Encroaching residential shed	Not observed or suspected
15220411	Encroaching residential shed, trestle abutment	Not observed or suspected
15061054	Encroaching residential shed	Not observed or suspected
15061062	Encroaching bridge at dominion street	Not observed or suspected
15528961	Encroaching Woodward Street and Wallace Street	Not observed or suspected
15736846	Switching station	Not observed or suspected
15738032	Concrete standard for switches/lights	Not observed or suspected
15739477	Concrete standard for sign and two encroaching garages	Not observed or suspected
15773807	Concrete slab – suspected part of Central Shops	Not observed or suspected
15773823	Solectron parking lot	Not observed or suspected

Potential environmental impacts are not suspected from on-site buildings and structures.

13.1.5 FORMER BUILDINGS AND STRUCTURES

A review of aerial photographs from 1930, 1953, 1969, 1983 and 1999, and interviews with CBDC personnel has not revealed any buildings or structures previously existing on the railways, with the exception of signal sheds at railway crossings. Potential environmental impacts are not suspected.

13.1.6 ADJACENT PROPERTIES

The majority of the adjacent properties near the former railways are either residential or commercial land use. No visual signs of potential environmental impacts were observed from adjacent land use. However, there is potential for some of the former railways to be impacted from historical operations (predominantly historical spills and leaks of POL) of the former mine sites. These potential concerns are summarized in Table 13-6.

Table 13-6: Summary of Potential Environmental Concerns – Adjacent Properties

Potential Environmental Concern	Subject Property(s) Potentially Impacted	Direction of Concern in relation to Subject PID
Impacted GW -Central Shops	15773807	Northwest
Impacted GW -Central Shops	15773815	Southwest
Impacted GW -Central Shops	15773823	Southwest
Impacted GW – Dominion #11	15220411	Southwest
Impacted GW – Dominion #11	15220403	West
Impacted GW – #4 Rock Dump	15782238	Southeast
Impacted GW – #4 Rock Dump	15782246	South
Impacted GW – #4 Rock Dump	15782253	West
Impacted GW – #4 Rock Dump	15427180	Northwest
Impacted GW – #4 Rock Dump	15782261	Northwest
Impacted GW – #20 Colliery	15531304	North
Impacted GW – #20 Colliery	15531320	North
Impacted GW – #20 Colliery	15531338	North
Impacted GW – #20 Colliery	15528961	Southeast
Impacted GW – #26 Colliery	15599632	East
Impacted GW – #26 Colliery	15599749	Northeast

Details of these potential liabilities for Dominion #11 Colliery, Dominion #4 Rock Dump, Dominion #20 Colliery, and Dominion #26 Colliery are presented in the Ph I ESA for each former mine site. It is recommended that these potential liabilities be addressed during the recommended Ph II ESA for each of these subject properties. Also, it is recommended that existing groundwater wells on the Central Shops site be sampled to determine if potentially impacted groundwater is migrating off-site.

13.2 FORMER RAILWAYS (GLACE BAY)– HISTORICAL USE

According to CBDC personnel, no repairs were carried out on segments of railways; locomotives were hauled to shops in Glace Bay or to the rail center in Victoria Junction when repairs were necessary.

CBDC personnel further commented that they do not believe waste rock was used in railbeds, because of its high clay content. He did confirm that slag from the steel plant was used in railbeds in the past.

13.3 ADJACENT PROPERTIES – HISTORICAL USE

A review of aerial photographs from 1930, 1953, 1969, 1983 and 1999 was undertaken. Table 13-7 summarizes the observations.

Table 13-7: Aerial Photograph Review – Former Railways

Year	Aerial Photo Number	Former Railways
1930	A3474.25, A3471-86, A3472-21	Extensive rail yard on eastern side of No. 20 Colliery is evident Operations evident at No. 1B Colliery Buildings evident in Central Shops
1953	A13712-84, A13722-69	Similar land use as 1930. No major changes noted.
1969	NSA30221-111, NSA 30209-99, NSA 30209-101	Extensive rail yard on eastern side of No. 20 Colliery is evident Operations evident at 26 Colliery (Formerly 1B) No. 4 Rock Dump evident – ARD observed Central Shops in use
1983	83302-145, 83303-45, 83303-47	Similar land use as 1969. No major changes noted.
1999	99323-7, 99322-39	No. 20 Colliery vacant No. 26 Colliery vacant No. 4 Rock Dump evident – ARD still observed Buildings remaining on Central Shops

Based on a review of aerial photography, there is potential for some of the railways to be impacted from the Former Mine Site/Disposal Areas noted above.

13.4 EVALUATIONS AND FINDINGS FOR FORMER RAILWAYS (GLACE BAY)

The Phase I ESA was undertaken to identify potential environmental concerns associated with the subject properties. The findings of this assessment are based on the site inspection, review of historical data, and interviews with individuals knowledgeable with the property and adjacent properties. Areas of potential environmental concern are presented in Figure 13-5 to 13-8.

13.4.1 FUEL HANDLING AND STORAGE

Fuel handling and storage was not observed or suspected on the former railways during the site inspection. Potential environmental impacts are not suspected. Discarded 900L oil tanks (with unknown volume of product) were observed on PID 15220403 and PID 15739477.

Figure 13-5: Areas of Potential Environmental Concern – Former Railways

Figure 13-6: Areas of Potential Environmental Concern – Former Railways

Figure 13-7: Areas of Potential Environmental Concern – Former Railways

Figure 13-8: Areas of Potential Environmental Concern - Former Railways

13.4.2 SPILLS AND STAINED AREAS

PID 15427180 (Figure 13-4)

Acid rock drainage was observed in the drainage ditch during the site inspection. The source of staining is suspected to originate from the Former Dominion #4 Rock Dump. Potential environmental impacts are suspected.

PID 15773823 (Figure 13-2)

Staining was observed from seepage discharging through cracks in the pavement in a parking lot on the subject property during the site inspection. It is suspected the source of the seepage is related to historical spills and leaks of POL from the adjacent Central Shops site. Potential environmental impacts are suspected.

13.4.3 DANGEROUS GOODS HANDLING AND STORAGE

Handling and storage of dangerous goods was not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

13.4.4 ASBESTOS

Sources of asbestos were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

13.4.5 POLYCHLORINATED BIPHENYLS (PCBS)

Sources of PCBs were not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

13.4.6 OZONE DEPLETING SUBSTANCES (ODS)

Sources of ODS were not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

13.4.7 LEAD/MERCURY

PID 15220403 (Figure 13-4)

Painted wood within a dumpsite was observed on the subject property during the site inspection. This wood is suspected to pose a low risk to human health and the environment. Removal is recommended.

PIDs 15220411 and 15773807 (Figure 13-4)

Discarded paint cans were observed in multiple dumpsites on these properties during the site inspection. These areas are suspected to pose a low risk to human health and the environment. Removal is recommended.

13.4.8 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

Sources of UFFI were not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

13.4.9 WASTE WATER

PID 15528961

A domestic discharge pipe, suspected to be surface runoff, was observed on the subject property during the site inspection. No signs of flow, staining, or odour were observed. This outfall is suspected to pose a low risk to human health and the environment.

13.4.10 WATER COURSES, DITCHES OR STANDING WATER

PID 15220403

Coal fines were observed throughout a ditch on the subject property during the site inspection. This area is suspected to pose a low risk to human health and the environment.

PID 15220403

Acid rock drainage (seepage) was observed in a drainage ditch on this property during the site inspection, which is located downgradient of a slag/waste rock pile on the Former Dominion #11 Colliery. Potential environmental impacts are suspected.

PID 15738032

Standing water (greenish in colour), suspected to have elevated nutrient levels, was observed in the drainage ditch on this property during the site inspection. This water is not suspected to pose a risk to human health and the environment.

PID 15739477

Coal fines were observed through out a ditch on the subject property during the site inspection. This area is suspected to pose a low risk to human health and the environment.

13.4.11 PESTICIDES/HERBICIDES

Pesticides or herbicides were not observed or suspected on the subject properties during the site inspection. Potential environmental impacts are not suspected.

13.4.12 RADON

The Nova Scotia Department of Health map "Potential Occurrence Radon Gas in Nova Scotia" indicates there is little or no uranium, thorium, or naturally occurring radioactive elements in the soil in the area. Potential environmental impacts are not suspected.

13.4.13 ELECTROMAGNETIC FREQUENCY (EMF)

Sources of EMF were not observed near the subject properties during the site inspection. Potential environmental impacts are not suspected.

13.4.14 SEWAGE DISPOSAL

Source of sewage generation or disposal was not observed at the subject properties during the site inspection. Potential environmental impacts are not suspected.

13.4.15 SOLID WASTE

General

Creosoted timbers along railways were observed on the majority of the former railways (PIDs 15060940, 15061005, 15061021, 15061054, 15061062, 15220403, 15220411, 15220692, 15427180, 15452212, 15528961, 15564149, 15599749, 15738032, 15739477, 15773807, 15773815, 15782527 and 15782535) during the site inspection. These areas are suspected to pose low risk to human health and the environment. Potential environmental impacts are not suspected.

Coal Fines was observed in multiple locations along the former railways (PIDs 15599632, 15061062, 15220403, 15452097, 15452212, 15531304, 15528961, 15599749, 15739477, 15782527, 15782535, 15531320 and 15449812) during the site inspection. These areas are suspected to pose low risk to human health and the environment. Potential environmental impacts are not suspected.

PID 15061054

A burnt shed was observed on the subject property during the site inspection. The former contents and use of the shed are unknown. Potential environmental impacts are suspected.

PID 15220403

Numerous dumpsites were observed throughout the subject property during the site inspection. The dumpsites included scrap metal debris, steel pipe, and asphalt debris and coal ash piles. This area is suspected to pose a low risk to human health and the environment.

A discarded 900L domestic oil tank (with unknown volume of product) was observed on this property. Potential environmental impacts are suspected.

PID 15220411

A derelict automobile was observed on the subject property during the site inspection. A single wreck auto does not represent a significant risk. Removal is recommended. Potential environmental impacts are not suspected.

PID 15427180

A coal ash pile was observed on the subject property during the site inspection. This area is suspected to pose a low risk to human health and the environment.

Material suspected to be fly ash was observed on this property. Potential environmental impacts are suspected.

PID 15449853

A capped and locked monitoring well was observed on the subject property during the site inspection. It is suspected that the purpose of this well was to monitor mine water levels. The investigation did not reveal evidence on the subject property or on adjacent properties to suggest that the well was installed for environmental monitoring. Potential environmental impacts are not suspected.

PID 15528961

A coal ash pile was observed on the property during the site inspection. This area is suspected to pose a low risk to human health and the environment.

A capped and locked monitoring well was observed on the property. It is suspected that the purpose of this well was to monitor mine water levels. The investigation did not reveal evidence on the subject property or on adjacent properties to suggest that the well was installed for environmental monitoring. Potential environmental impacts are not suspected.

PID 15531338

A burn area for domestic debris and ash pile were observed on the subject property during the site inspection. Due to the small size of the burn area and ash pile this concern is considered to be a low risk to human health and the environment. Potential environmental impacts are not suspected.

PID 15599632

A domestic 900L fuel oil tank (with unknown volume of product) was observed in a dumpsite in a stream less than 100 m from the ocean during the site inspection. Potential environmental impacts are suspected.

Numerous dumpsites were observed throughout the subject property. The dumpsites included wire rope, corroded barrels, derelict equipment pieces and scrap metal debris. The debris was corroding. These areas are suspected to pose a low

risk to human health and the environment.

Two monitoring wells were observed on the subject property (capped, but unlocked). Due to the proximity of the property to the Former No. 26 Colliery, the presence of these monitor wells indicates that there is potential for impacted groundwater on this property. Potential environmental impacts are suspected.

PID 15736846

A residential storage dump was observed on the subject property during the site inspection. Most debris observed was inert, but a drum (unknown content) was observed within the storage dump. Potential environmental impacts are suspected.

PID 15739477

Two 900L domestic fuel oil tanks (with unknown volume of product) were observed on the subject property during the site inspection. Potential environmental impacts are suspected.

PID 15773807

Discarded one litre oil containers were observed on the subject property during the site inspection. Containers were empty and no staining was observed. This disposal area is suspected to pose a low risk to human health and the environment.

PID 15782238

Coal fines were observed on the subject property during the site inspection. Because there was no staining or iron precipitation observed on the subject property at the time of the site inspection, there is a low risk to human health and the environment.

Burned garbage was observed on the subject property. This is expected to pose a low risk to human health and the environment.

Creosote rail ties were observed along a former railway. Use of creosoted rail ties is expected to pose a low risk to human health and the environment. Removal of the rail ties is recommended.

PID 15782246

Waste rock/coal fines were observed on the subject property during the site inspection. No staining was observed on the subject property at the time of the site

inspection. This area is suspected to pose low risk to human health and the environment.

A dumpsite containing asphalt shingles was observed. This disposal area is suspected to pose a low risk to human health and the environment.

Creosote timbers, some of which were burned, were observed on the subject property. Use of creosoted rail ties is expected to pose a low risk to human health and the environment. Removal of the rail ties is recommended.

PID 15782253

Creosoted timbers were observed in two locations on the subject property during the site inspection. These areas are suspected to pose a low threat to human health and the environment. Removal of these timbers from the subject property is recommended.

Coal fines and creosoted timber were observed on this subject property. These areas are suspected to pose a low threat to human health and the environment.

PID 15782261

Coal and coal ash piles were observed on the subject property during the site inspection. No staining was observed on the subject property at the time of the site inspection. This area is suspected to pose a low risk to human health and the environment.

Creosote rail ties were present on this property. These areas are suspected to pose a low risk to human health and the environment. Removal of the rail ties is recommended.

13.4.16 STRESSED VEGETATION

Stressed vegetation was not observed on the subject properties during the site inspection. Potential environmental impacts are not suspected.

13.4.17 AIR QUALITY

Odours or air emissions from the subject or adjacent properties were not noted during the site investigation. Potential environmental impacts are not suspected.

13.4.18 FILL

General

Fill, primarily consisting of ballast rock, was observed in all the rail beds on the subject properties during the site inspection. The composition of the rail beds is suspected to pose a low risk to human health and the environment.

PID 15220403

Fill material containing asphalt was observed on the subject property during the site inspection. This concern is suspected to pose a low risk to human health and the environment.

13.5 CONCLUSIONS – FORMER RAILWAYS (GLACE BAY)

The results of the Phase I ESA investigation conducted on the Former Railways in the Glace Bay area from September 24th until November 14th, 2003 are summarized below:

Table 13-8: Areas of Potential Environmental Concern – Former Railways

PID	Potential Concerns	Concerns	Degree of Risk		Contaminants of Concern
15061054		A burnt shed was observed on the subject property. The former contents and use of the shed are unknown.	Medium	Soils	TPH PAHs
15220403	Watercourse, Ditches, and Standing Water	Acid rock drainage (seepage) was observed in a drainage ditch on this property, which is located downgradient of a slag/waste rock pile on the Former Dominion #11 Colliery.	Medium	GW SW Sed	Metals pH
15220403	Solid Waste	A discarded 900L domestic oil tank (with	Medium	Soil GW	TPH Metals

PID	Potential Concerns	Potential Environmental Concerns	Degree of Risk	Media	Contaminants of Concern
		unknown volume of product) was observed on this property.			
15427180	Staining	Acid rock drainage was observed in drainage ditch. The source of staining is suspected to originate from the Former Dominion #4 Rock Dump.	Low to Medium	SW Sed	Metals pH
15427180	Solid Waste	Potential fly ash, suspected to be from a former Nova Scotia power plant, was observed on this property.	Medium	Soil GW	TPH Metals PAHs
15599632	Solid Waste	A discarded 900L domestic 900L fuel oil tank (with unknown volume of product) was observed in a dumpsite in a stream less than 100 m from the ocean. were observed on the subject property (capped, but unlocked). Due to the proximity of the subject property to the Former No. 26 Colliery, the presence of the monitor wells indicates that there is potential for impacted groundwater on this property.	Medium	Sed	TPH Metals
15773823	Staining	Staining was observed from seepage discharging through cracks in the pavement in a parking lot on the subject property. It is suspected the source of the staining is related to historical spills and leaks from the adjacent Central Shops site.	Medium to High	Soil GW	TPH Metals

A Phase II ESA is recommended to determine if potential environmental impacts exist in all above-mentioned locations.

14. CLOSURE

The American Society for Testing and Materials Standards of Practice and the Canadian Standards Association state that no environmental site assessment can wholly eliminate uncertainty regarding the potential for recognizing potential environmental liabilities associated with a property. The intent of the assessment is to reduce, but not eliminate, uncertainty regarding the property, giving reasonable limits of time and costs.

The conclusions of this report are based in part on the information provided by others, which is assumed to be correct. The potential exists that unexpected environmental conditions may be encountered at the site in locations not specifically investigated. Should this occur, SNC-Lavalin Inc. must be notified so that we may decide if modifications to our conclusions are necessary.

The findings of this investigation are based on field investigations carried out in October 2003 and the generally accepted assessment practices of our industry. No other warranty is made.

This report has been prepared for the sole benefit of Public Works Government Services Canada (PWGSC) and Cape Breton Development Corporation (CBDC). The report may not be relied upon by any other person or entity without the expressed written consent of SNC-Lavalin, PWGSC, and CBDC.

15. REFERENCES

Canadian Standards Association Z768-01 "Phase I Environmental Site Assessment", 2001

Keppie, J. D. "Geological Map of Nova Scotia". Nova Scotia Department of Natural Resources, Minerals and Energy Branch, 2000

Nova Scotia Department of Health, "Potential Occurrence of Radon Gas in Nova Scotia"

Stea, R., H. Conley, Y. Brown, " Surficial Geology of the Province of Nova Scotia". Nova Scotia Department of Natural Resources. Map 92-3, 1992

Weaver, P., Hennick, E, "Site Identification and Preliminary Assessment Forms – CBDC Pre 1967 Sites", Nova Scotia Department of Natural Resources. 1999

APPENDIX A

Aerial Photographs

APPENDIX B

Verbal Contact Forms

SNC·LAVALIN

VERBAL CONTACT REPORT

PROJECT	CBDC Phase I ESAs		**DATE**	March 03, 2004
ORGANIZATION	PWGSC		**PAGE**	1
CONVERSATION between	Chris Roach	(SNC◆Lavalin)	**CONTACT TYPE:**	
and	Donnie Peckham		☐ Telephone ☒ Meeting	
COPY TO	file		☐ Other:	
			PROJECT No.	015962

COMMUNICATION DETAILS:

On March 3, 2004 (1:00 PM)

Discussed all properties in Group B with Donnie. We viewed them on the web so he could determine the section of Glace Bay in which they were located. I marked up my draft copy of the plans with some comments.

- Narrow strips were road reserves that were never developed (near McLeod Rd)
- Other properties (woodlots between Main St and Reserve St) were candidates for mine sites. CBDC did not advance a test hole on these properties because the workings were determined not to be deep enough (Harbour seam outcrops along this area) and difficult to get permission for access in residential area. CBDC also did not think they would hit water on these properties.
- Proposed tire factory on 26 yard in late 80's-90's. Kids got into the site and started fires. The Municipality then tore the washhouse down.
- Residential Area – two USTs were on this property. Sullivan's fuels pumped out the tanks last fall. One was full and the other was half water/diesel. CBDC broke the stems/ ragged/ and then foamed the standpipes. They were associated with a private garage that operated approx. 30 years ago.
- PID 15524598 is suspected to be part of an old railbed.
- Quarry Pt Air Shaft was intended for #26. It was shut down when #26 burned and started up again for 1B. Later shut down by NSDEL due to acidity of water
- Air Shaft on this site was also called the harbour shaft
- Stone was dumped over the bank. Much of this material has been washed away.
- Some structures such as the bankhead, tipples, and cooling pond not on plan.
- There was a conveyor from the tipples to the breaker. Tipples were used to tip coal out of the mine cars.
- The cooling ponds were for the compressors
- Transformers were located near the Hoist House (approx. 6 in a fenced area). One of the transformers blew up in the 1970's.
- Original warehouse was torn down in 1970's and replaced in 78-79.
- 4 shafts existed on site. Three were filled and the man shaft is now used to pump mine water. Shafts were filled with clay borrow (no coal was allowed as fill – NSDEL) Shafts were not capped; additional fill was used to level the shafts each year (subside approx. 15 ft/yr)

- Forge was used to manufacture tools such as long handle chisels and other tools that could not be purchased locally.
- Machine shop – small operation; central shops were used for most repairs
- Warehouse – storage of items such as fittings and clothes.
- Storage was used for oils, varsol, ethylene glycol, hydraulic fluid, etc.
- Oil House was built at a later date (78-79)
- Asked about ASTs/USTs – Donnie remembers a diesel AST near the warehouse. Diesel was sent into the mine in 45 gal tanks for the locomotives. It was often dispensed with hand pumps.
- Diesel AST was used for tractor (loading materials). #26 did not have gas vehicles.... Shared with vehicles based out of #20 Colliery.
- Boiler House was coal fired.
- Pit used a lot of hydraulic fluids.
- Rope Runs – Man Hoist to Man Shaft; Coal Hoist to Coal Shaft. Each was approx. 100 ft high.
- Electrical Building – cable repair, minor switch repair
- Sand House – traction for diesel locomotives; had a pot bellied stove (coal fired) that was used to dry the sand.
- Dump/Disposal Sites – Parking area east of 1B road --- materials (such as wood) left for locals to take. Wire rope burned here. Area is where the settling pond now is.
- Doesn't remember debris and drums buried on-site. Most left under ground because of mine set-up (shafts/tipples)
- Coal/Waste Rock Dump located to southwest of Rotary Breaker. Material was dumped during the time the rotary breaker was being constructed. (1981)
- Site decommissioning (1985) – steel trucked off-site; rubble/concrete in bottom of shafts
- Hoists sold for scrap; not sure if they were cut to grade or removed
- Equipment in ocean was to attempt to prevent erosion and washing away of stone.
- Water level is illustrated on plan. Dashed line from coal shaft.
- Tires were set on fire on site. There were plans to build tire plant.
- No coal laydown on site.
- Bldg with no name on plan is a tugger (i.e. Winch)
- Dispensing Mag – 1d inventory – detonators/explosives separated
- Main supply in other building
- Capacitors installed in 1976. Mine was modernized (new gear) and capacitors were needed to balance power factor

Interview with Donnie Peckham – March 4, 2004 at (9:00AM)

- Phase I ESA - #15 Colliery (AMEC) – Location of new Call Centre. Bruce to verify.
- Mine water discharge for #26 was pumped up coal shaft and discharged into the ocean (see dashed line on figure)
- #26 was a dry mine – approx 350 gal/min in spring/fall – water was from 1A/1B (not #26 workings)
- 1B/26 had same surface infrastructure
- Dust suppression – would likely have used calcium chloride. Not much dust in #26 yard; no coal laydown area
- In 1981 – strike – had a laydown on the site at that time (near stone dump)
- Not sure of dates of mine operations

#8 Pumping Shaft

- Engine House would have been used to remove material when advancing shaft and for shaft repair
- Doubts if it would be electric (based on era). Probably no transformers.
- Likely ran by compressed air. Would have used oils for gear box and lubrication of compressed air line. Would have also had a water separator.
- Suspects this station was abandoned when station at 1B was established (around 1925)
- Does not know details of decommissioning. Shaft is now capped.

Burnt Head

- Doesn't know anything about bootleg operations in 40's/50's. Likely occurred during a major strike (1949)
- Stated that there are subsidence problems in this area.
- Depth of seam would likely be 30-60ft in this area.
- Bootlegs operation would likely have been pick/shovel.
- There is a outfall that CBDC samples on this property (French Hub Outfall)

Dominion #7 Colliery (Roost)

- Wireless station – original Marconi Station was on this site
- Mining operations were on land. There wasn't enough cover to mine near the shoreline so the shaft had to be driven further out.
- Bootlegging occurred in this area. The bootleggers to advantage of the ventilation of the mine when extracting the pillars (i.e. A new air shaft was not needed)
- There are a series of boreholes (both pumping and wiring) on site. ADI included this site in their water investigation. Bruce C. to provide report and site plans.
- Borehole was never officially decommissioned.
- Donnie mentioned that overflow from the dam runs through bootleg working on #20 Colliery and discharges on #7 shoreline.

#20 Colliery

- Closed in 70's
- Carpenter Shop still exists and is used by the town
- #2, #9, and #20 operated from the same structures
- Pickling Pit would have been used to tar the timbers
- Transformers – only area he remembers is near warehouse
- Storage Tanks – by Oil House. Doesn't know volumes but suspects both diesel and gas with electric pumps
- Dump/Disposal Areas – doesn't know of any. Suspects that ocean dumping occurred.
- Mine Arch Building – Hydraulic Press. Sold to British Steel in 70's

- Coal crusher – suspects that it was used to make pea sized coal for stokers
- No Rotary Breaker on this site
- Tunnel drove 800-900 ft and abandoned. Never used.
- Domestic Coal Pockets – Coal tippled onto conveyor and loaded on truck by hoppers. Similar to Dominion Domestic Coal Yard Operation
- Warehouse – supplied all DEVCO Mine Sites (Central receiving/shipping). Stocked spare parts for machinery. Size of this operation decreased after Lingan was developed.
- Heating – unsure about source for early operations.... Electric blower fans used near the end of operations. Boiler House was not on the site plan.
- Lamp Repair – Lead acid batteries. Disposal – suspects that local scrap dealer were used.
- Stemming – made mud – clay for shooting explosives.
- Pit Props – for sawing lumber. The lumber was used for laggings behind arches, beams – wooden booms
- Mixing Plant – suspects it was used to mixing types of coal (i.e. for decreasing coal quality sent to power plants, etc.
- Buildings with no names – most structures near tracks were tuggers.
- 2 rope runs on site
- Methane from #26 and #20 were flared through Dominion #1A

Quarry Pt Air Shaft

- No other buildings other than the ones related to the air/pumping shaft existed on site
- Filled in approx 2 yrs ago. Used foundation from Central Shops
- Mine water was discharged into the ocean via a pipe. Effluent was not treated.
- Probably transformers on site when Hoist existed

Dominion #11 Colliery

- Groundwater flows through slopes and into Renwick Brook (Cracked aquifer)
- Structures were gone before Donnie's time
- Subsidence near slope. They were dug up and filled with soil and concrete slabs.
- #3 and #11 did not share same slope.

Dominion #3 Colliery

- Not familiar with operation and buildings. Suspects it was a different slope that #11.

Additional Contacts

Asked Donnie if there are any other current CBDC employees that would be familiar with the sites in Glace Bay. He did not think so, but suggested to ask Bob MacDonald if he was familiar with the sites. Donnie also suggested contacting the following individuals:

#20/26 – Blair Morrision – Ned/Din/John Kelly (All from Glace Bay)
#3/11 – Ask these guys if they could supply additional contacts

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VERBAL CONTACT REPORT

PROJECT	CBDC Phase I ESAs		**DATE**	March 04, 2004
ORGANIZATION	PWGSC		**PAGE**	1
CONVERSATION between	Chris Roach	(SNC♦Lavalin)	**CONTACT TYPE:**	
and	Bob MacDonald		☐ Telephone ☒ Meeting	
COPY TO	file		☐ Other:	
			PROJECT No.	015962

COMMUNICATION DETAILS:

On March 4, 2004 an interview was held with Mr. Bob MacDonald (11:30 AM)

Mr. MacDonald was not familiar with 26, 20, and other sites in Glace Bay. He spent most of his time at Lingan. He remembers tanks near warehouse. Not aware of any other tanks on that site. Doubts if there would have been any USTs.

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VERBAL CONTACT REPORT

PROJECT	CBDC Phase I ESAs		**DATE**	April 2, 2004
ORGANIZATION	CBRM Public Works		**PAGE**	1
CONVERSATION between	Chris Roach	(SNC♦Lavalin)	**CONTACT TYPE:**	
and	Employee		☒ Telephone ☐ Meeting ☐ Other:	
COPY TO	file			
			PROJECT No.	015962

COMMUNICATION DETAILS:

On April 2, 2004, I called CBRM regarding municipal sewer discharge. The following is a summary of the call:

- CBRM is aware of sewer outfalls on CBDC property;
- There is no CBRM By-Law regarding sewage discharge;
- Glace Bay does not have a sewage treatment plant; and
- CBCL did a preliminary design of a collection and treatment system for sewage.

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VERBAL CONTACT REPORT

PROJECT	CBDC Phase I ESAs	**DATE**	March 30, 2004
ORGANIZATION	CBCL	**PAGE**	1
CONVERSATION between	Chris Roach (SNC♦Lavalin)	**CONTACT TYPE:**	
and	Greg Landry	☒ Telephone ☐ Meeting ☐ Other:	
COPY TO	file	**PROJECT No.**	015962

COMMUNICATION DETAILS:

On March 31, 2004, I called Greg Landry (former CBDC employee currently working for CBCL) regarding the remediation of the #20 Colliery. The following is a summary of the call:

- Mr. Landry does not have a copy of the Phase I ESA conducted in 1995;
- There were two phases of remediation: a) a building demolition and b) a demolition of the three remaining buildings, site grading, contaminated soil removal;
- There were likely only 4 transformer storage areas (in Ph I ESA);
- He doesn't recall specific areas where contaminated soil was removed and does not believe CBDC did any confirmatory sampling;
- Two USTs were located near the Warehouse (West and South Sides). He thinks there may have been ASTs on the SW corner and east side of the site. He didn't know what buildings are close to these fuel tanks and only remembers the cradles being on site;
- Site was originally heated by a coal-fired boiler. It was only likely converted to Oil-fired Hot Water heating when site was used as a warehouse;
- Oil House is likely the "Oil Storage Area" where there were concerns referred to in the Ph I ESA summary (provided in the 1999 Site Remediation Report);
- Alan Kehoe likely knows the location of former shaft that reservoir overflow is directed towards;
- I asked about the Hoist Building near the Former Coal Trestle. Mr. Landry indicated that he knew information regarding this hoist, but was answering too many questions for not getting paid. He indicated we could hire him if we need additional information.

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VERBAL CONTACT REPORT

PROJECT	CBDC Phase I ESAs		**DATE**	April 5, 2004
ORGANIZATION	NSDEL		**PAGE**	1
CONVERSATION between	Chris Roach	(SNC♦Lavalin)	**CONTACT TYPE:**	
and	Peter Weaver		☒ **Telephone** ☐ **Meeting** ☐ **Other:**	
COPY TO	file			
			PROJECT No.	015962

COMMUNICATION DETAILS:

Peter conducted the DNR site assessments on the Pre 1967 sites. The following is a summary of the call:

- No info on bulk fuel storage and transformers.
- No info to support DNR boundary locations.
- Ernie Hennick has all records they used for the assessment in Haifax.

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VERBAL CONTACT REPORT

PROJECT	CBDC Phase I ESAs		**DATE**	April 15, 2004
ORGANIZATION	CBCL		**PAGE**	1
CONVERSATION between	Chris Roach	(SNC♦Lavalin)	**CONTACT TYPE:**	
and	Gary Ellerbrok		☒ Telephone ☐ Meeting ☐ Other:	
COPY TO	file			
			PROJECT No.	015962

COMMUNICATION DETAILS:

On April 16th, 2004 (6PM), I called Gary Ellerbrok (former CBDC) regarding the CBDC Ph I ESA program. The following is a summary of the call:

- I provided Gary with a summary of the program, and introduced the former mine sites we are investigating and typical environmental concerns.
- Gary provided some generic concerns based on the era of operations.
- He indicated that the POL handling on the sites was predominantly lubricants before the 1950's. At that time, an increase in diesel and fuel oil useage occurred. Diesel was used for underground and surface locomotives while many of the mines in this era were starting to convert to central heating with fuel oil (used coal fired boilers previously). There wasn't a fuel transport system on the mines (ie. fuel pipelines); 45 gallon drums of diesel were transported into the mine.
- Underground locomotives were repaired in the mines. An increase in hydraulic oils occurred in the 1960's as mechanization of the mines was occurring. The mechanization also introduced substances such glycols. (most predominant in #26, #20, #12, and #14 Colleries). PCB oils were also used on the mine in this era
- He was not familiar with the Compressor Houses. Suspected that lubricants would be the concern in this area. He stated that most older mines used compressed air.
- Only fuel storage tank he remembers at No. 26 is outside the Warehouse. Rope wire and axles from railcars discarded over bank (near rock pile). Most rock has washed away.
- Quarry Point - He remembers a transformer being located on the southern side of the Pump House. The site was used to monitor the water level in #4 Colliery
- Old Emery Pumping Shaft – Emery crop area is behind Tim Hortons in Reserve Mines. Does not know about pumping shaft, but suspects it was close to #5 Mine. He did not know if the Old Emery Mine operated from this subject property(Mine operated in the late 1800's).
- Dominion #6 Colliery – Does not have an explanation why there were two 20, 000 gallon ASTs formerly on the site (based on the era of the site). Water for the mine sites was usually stored in a reservoir.

- He does not have recollection of many of the stone dumps. Think that #20 Colliery Ocean dumped near the boreholes at Table Head, but stated that there was no evidence of the dump the last time he was in that area (washed away)
- Roost site – CBDC collapsed the former tunnels within the last decade because it presented a health and safety risk. Children were crawling into the former workings. Gary stated that there is potential for subsidence to be an issue in the future.
- No 1A Water Level - He stated that this outfall may become active and start discharging a significant flow of acid mine water if water pumping is stopped in the No. 5 Wellfield (ie. underground working are connected and water has potential to flow in a downward gradient within this system.)
- No. 12 and 14 Collieries are interconnected, but are not flooded yet. Suspects that discharge may occur in Irish Brook (segment near Colleries Lands Park).
- Artesian conditions are present on many of the sites. This is a concern to water drillers.
- Former Dominion #25 Colliery – Boreholes source deep water. There is an upward gradient in this area causing mine water to discharge.