

**Desktop Environmental
Review, Former U.S. Military
Facility, Northwest Point, NL**



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1.0 INTRODUCTION

Stassinu Stantec Limited Partnership (Stantec) was retained by Newfoundland and Labrador Department of Municipal Affairs and Environment (NLDMAE) to conduct a Desktop Environmental Review for the Former U.S. Military Facility known as Northwest Point located at Northwest Point in Newfoundland and Labrador (NL) (see Drawing No. 121410105-EE-01A in Appendix A), herein referred to as the “Site”.

The Desktop Environmental Review was conducted for NLDMAE in support of environmental due diligence of the Site. The purpose of the Environmental Review was to review available historical environmental reports for the Site and to identify sources of potential environmental contamination associated with the Site, which may exist as a result of past activities. The scope of work did not include a site visit or environmental sampling of soil, water or sediment.

1.1 Regulatory Framework

1.1.1 Management of Impacted Sites – Newfoundland and Labrador

The Newfoundland and Labrador Department of Municipal Affairs and Environment (NLDMAE) released soil and groundwater remediation guidelines for petroleum hydrocarbons and other chemicals of concern on February 22, 2005 under Department Policy Document PPD05-01. These criteria are outlined in the Guidance Document for the Management of Impacted Sites, Version 2.0 (January 2014). The purpose of this guidance document is to provide a clear process for the management of impacted sites in Newfoundland and Labrador that result in the satisfactory resolution of environmental impacts. The guidance document is applicable to all chemicals of concern (COCs) that have been released into the environment and is applicable to historical and active impacts.

Based on NLDMAE (2014), the guiding principles of the document include:

1. Human health and the environment must be protected through the timely and proper management of impacted sites.
2. The Person Responsible for an impacted site must ensure that the Impacted Site Management Process is taken to completion to provide adequate protection of human health and the environment.
3. The Site Professional providing the technical expertise and final documentation is responsible for the results of their work.
4. The Department requires final documentation of the Site Professional’s opinion stating the condition and safe uses of the site. This is achieved through completion of a Record of Site Condition by the Site Professional and subsequent acknowledgement by the Pollution Prevention Division of the Department (PPD) or Service NL.
5. The management process shall be applicable to all impacted sites and provide a flexible, cost-effective approach to achieving regulatory closure for identified impacts.

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The Newfoundland and Labrador Guidance Document for the Management of Impacted Sites is mandatory for all impacted sites that are privately/publicly owned, provincially owned/controlled, governed provincially, or subject to divestiture to provincial agencies. If the site is federally owned or controlled, a federal approach applies. If chemical impacts are identified on a property and it is determined to be privately/publicly owned, provincially owned/controlled, governed provincially, or subject to divestiture to provincial agencies, as discussed above, the Newfoundland and Labrador Guidance Document for the Management of Impacted Sites applies.

A key party that must be initially identified is the Person Responsible. NLDMAE defines the Person Responsible as “the person, association of person, corporate entity, or municipally determined, by the Province, to be responsible for the remediation of an impacted site”. Note that the Person Responsible is not necessarily the polluter.

Based on NLDMAE (2014), the Impacted Site Management Process is divided into five steps as follows:

1. Initial Actions – All active and historical spills must be reported to Service NL or the Pollution Prevention Division (PPD) of NLDMAE.
 - a) For active impacts, an Environmental Protection Office (EPO) will assess the type and potential extent of contamination, determine the presence of human and ecological concerns including sensitive receptors on or near the site, determine the Person Responsible, determine if initial emergency response is satisfactory, and issue an impacted sites letter to the Person Responsible informing them of their requirement to hire a Site Professional to complete an Environmental Site Assessment (ESA).
 - b) For historical impacts, the initial actions of the EPO may vary depending on site-specific information.
2. Environmental Site Assessment and Risk Assessment – The Person Responsible must employ a Site Professional to complete an ESA that meets the Minimum Site Assessment Requirements set out by Atlantic PIRI (2012, updated 2015). The Site Professional must determine which COCs are present and if concentrations exceed Tier I guidelines. If the concentrations exceed Tier I guidelines, the Site Professional may recommend remediation or conduct a Tier II or Tier III risk assessment. The Site Professional must also complete the Atlantic PIRI Ecological Screening Checklist. Note that if actual or potential impacts are identified at the property line, the Person Responsible must notify third parties.
3. Remedial Action Planning and Implementation – Remediation or risk management would be required wherever impacts exceed the applicable guidelines (i.e., Tier I, II or III) and in some cases, may require submission of a remedial action plan to Service NL or PPD for review and approval. Details of monitoring also require submission to Service NL or PPD.
4. Regulatory Closure – Once impacts at the site have been addressed, the Site Professional prepares a Closure Report including a Record of Site Condition for submission to Service NL or PPD. NLDMAE may approve final closure (situations where remediation is complete and no further work is required) or conditional closure (all remediation is complete and a monitoring program is required to verify that all the remedial objectives have been achieved).



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5. Decommissioning of Monitor Wells – Any monitor wells and remedial infrastructure require decommissioning, where applicable. Decommissioning is per the Protocol presented in NLDMAE (2014).

Note that there is a review process for NLDMAE with respect to remedial action plans and risk assessments. The review of remedial action plans is generally a four to six-week process while the review of risk assessments is generally an eight-week process.

The Management of Impacted Sites in Newfoundland and Labrador is a three-tiered approach. The tiered approach generally involves applying generic guidelines and is applicable to a variety of chemicals and each tier has an equivalent level of health protection.

Tier I

The Tier I approach involves applying generic guidelines. For petroleum hydrocarbons, this includes application of the Tier I Risk Based Screening Levels (RBSLs) which were calculated using the Atlantic RBCA Toolkit using conservative default parameters typical of sites in Atlantic Canada. The RBSLs are protective of human health. To apply the Tier I RBSLs, the following must be satisfied:

1. All Minimum Site Assessment Requirements as set out by Atlantic PIRI (2012, updated 2015) must be fulfilled. If some of these requirements are not met, full professional justification acceptable to PPD or Service NL must be provided;
2. All mandatory conditions as listed in the Minimum Site Assessment Requirements must be met; and
3. All default site characteristics as listed in the Minimum Site Assessment Requirements must be applicable to the site and surrounding properties.

Atlantic PIRI also publishes the Tier I Ecological Screening Levels (ESLs) which are protective of ecological health.

For most other chemicals, the Tier I approach involves applying the Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines (CEQGs).

Tier II

The Tier II approach for petroleum hydrocarbons involves the application of site-specific or pathway-specific guidelines generated by a Site Professional. Generally, the Tier II approach is only applied to the protection of human health.

For petroleum hydrocarbons, a Tier II approach may involve the application of Tier II Pathway Specific Screening Levels (PSSLs) or the calculation of site specific target levels (SSTLs) using the Atlantic RBCA Toolkit. The PSSLs can be applied when certain exposure pathways are not active at the site if there is no building present or planned for a site, the indoor air exposure pathway can be excluded. To apply the Tier II PSSLs or the to use the Atlantic RBCA Toolkit, the same conditions must be satisfied as for the Tier I RBSLs.



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For chemicals other than petroleum hydrocarbons, CCME provides pathway specific guidelines in their fact sheets specific to each chemical. Similar to the PSSs, these guidelines may be applied when an exposure pathway can be excluded. SSTLs may also be calculated using CCME's *Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines* or Health Canada's *Guidance on Human Health Preliminary Quantitative Risk Assessment*.

Tier III

The Tier III approach involves the use of additional risk assessment models or alternate scientific approaches. The Tier III approach is usually applied when the Tier II approach is not applicable or does not fully address the range of issues present at the site. Soil vapour testing and ecological risk assessment are examples of Tier III assessments.

1.1.2 Applicable Guidelines for the Site Going Forward

The Site is crown land property; therefore, NLDMAE soil and groundwater remediation guidelines for petroleum hydrocarbons and other chemicals of concern under Department Policy Document PPD05-01 are applicable.

For petroleum hydrocarbons in soil and groundwater, the NLDMAE guidance document recommends the current version of the Atlantic RBCA (Risk-Based Corrective Action) guidance (Version 3.0 User Guidance Document, July 2012, revised 2015).

The applicable criteria for other chemicals such as volatile organic carbons (VOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and/or metals in soil, surface water and sediment are the CCME CEQGs and its associated documents.

For chemicals such as VOCs, PAHs, PCBs and/or metals in groundwater, preference is given to the CCME Environmental Quality Guidelines. In the absence of CCME, guidelines or other types of benchmarks from other Canadian or American agencies would be identified and adopted. If a guideline for a particular chemical or pathway was not provided, the next jurisdiction in the hierarchy was referenced until an appropriate environmental quality standard could be established.

The 2011 Phase III ESA, Human Health and Ecological Risk Assessment (HHERA) and Remedial Action Plan (RAP) for the Site (Stantec, 2011) developed SSTLs for PAHs (Benzo(a)pyrene TPE) (23 mg/kg), total petroleum hydrocarbons (TPH) (2,100 mg/kg) and PCBs (1.5 mg/kg) in soil and for TPH (500 mg/kg) in sediment.

Stantec understands that Atlantic PIRI is currently developing regulatory guidance for COCs other than petroleum hydrocarbons in groundwater, sediment and surface water. The Atlantic PIRI guidance would likely be adopted by NLDMAE and incorporated into their Guidance Document for the Management of Impacted Sites. Should the guidance become available before or during future site assessments for the Site, the Atlantic PIRI guidance would likely be applicable.



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2.0 SITE DESCRIPTION

2.1 General

The Site, which covers an area of 450 hectares, is located in central Labrador, west of Lake Melville, and north of Happy Valley-Goose Bay (refer to Drawing No. 121410105-EE-01A, Appendix A). The Site is located 6 km west of the Innu Community of Sheshatshiu and is accessed via a gravel road from Sheshatshiu. The land is covered by thick woods, mainly aspen and poplar with alder and willow in grown-in disturbed areas. Pockets of shallow perched groundwater are present in some areas of the Site. Boggy areas are present in portions of the Site and several small streams and drainage ditches are present in the site area. The Site is bounded to the north and east, and partly to the west, by Lake Melville and to the south and partly to the west by undeveloped crown land.

The Site is a former United States Military Facility, constructed in the early 1950s. It was reportedly decommissioned in 1965. The Site was used for long and short range communications. Historical activities included diesel power generation, large-scale storage and distribution of petroleum hydrocarbons, transformer oil and glycol, solid waste disposal, liquid waste discharge and disposal, boiler operation and equipment maintenance. Several small cabins were present on the Site at the time of the field work for the Phase III ESA in 2008.

Based on previous environmental reports, the Site was divided into 18 smaller sites (refer to Drawing No. 121410105-EE-01B, Appendix A) as follows:

1. North Bulk Fuel Storage Site
2. South Bulk Fuel Storage Site
3. East Bulk Fuel Storage Site
4. East Generator Site
5. West Generator Site
6. Transmitter Building
7. Camp Road Dump Site
8. Camp Road Drum Storage Site
9. Service Site (including desalination plant, boiler site and garbage freezer)
10. Oil Shed Site
11. Lake Melville Dump Site
12. Underground Pipeline System
13. Sewer System
14. Dock Road Drum Storage Site
15. VOR Site
16. Helicopter Pad
17. Surface Water and Drainage Ditches
18. Innu Healing Ground



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2.2 Topography, Regional Drainage and Geology

The Site is fairly level, with gently sloping land. Surface drainage and groundwater flow in the area of the Site are expected to follow local topography and flow to the north, east and west towards Lake Melville. Based on local topography, the directions of groundwater flow at each site are inferred to be as follows:

1. Sewer System - north towards Lake Melville
2. North Bulk Fuel Storage Site, West Generator Site, Transmitter Building, Service Site and Oil Shed Site - northeast towards Lake Melville
3. Lake Melville Dump Site, Underground Pipeline System, Dock Road Drum Storage Site and Helicopter Pad - northwest towards Lake Melville
4. South Bulk Fuel Storage Site, East Bulk Fuel Storage Site, East Generator Site, Camp Road Dump Site and Camp Road Drum Storage Site - east towards Lake Melville
5. VOR Site - radial to the east, west and south towards Lake Melville

It should be noted that the direction of the shallow groundwater flow in limited areas can also be influenced by the presence of underground utility corridors and is not necessarily a reflection of regional or local groundwater flow or a replica of the Site or area topography.

Based on an available bedrock geology map, bedrock in the area of the Site is mapped as part of the Double Mer Formation consisting of conglomerates and sandstones. Bedrock was not encountered in the boreholes or test pits completed during previous investigations at the Site up to depths of over 15 mbgs.

Based on surficial geology maps of the area as well as subsurface data collected during previous investigations, the principal natural overburden material at the Site consists primarily of sand with some cobbles and silt and underlain at some locations by a layer of clay or dense silt.

2.3 Property Information

The following property descriptions for each of the smaller sites are based on information gathered during the field investigation in 2008 for the Phase III ESA.

2.3.1 North Bulk Fuel Storage Site

The North Bulk Fuel Storage Site was a former aboveground storage tanks (AST) location approximately 170 m north of the Main Access Road. A site plan is provided in Drawing No. 121410105-EE-02A in Appendix A. The site was accessible from a rough excavator path off Main Access Road. The original road to the site was overgrown and obscured. Based on information collected to date, the tank was filled via a 150 mm to 200 mm outside diameter (OD) underground steel pipeline and, from there, supplied fuel to different areas of the facility via a single run of smaller 50 mm to 75 mm OD underground steel fuel line. The former AST capacity was estimated at 1.1 million litres.

The site was made up of an area of little to no vegetation surrounded by moderate tree and bush cover with some boggy areas. The terrain was relatively level. Surface water runoff was directed to a ditch that ran to the north and was located adjacent to the sewer line.



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2.3.2 South Bulk Fuel Storage Site

The South Bulk Fuel Storage Site was a former AST location south of VOR road. A site plan is provided in Drawing No. 121410105-EE-03A in Appendix A. The site was accessible from VOR Road via a former roadway which was alder covered. Based on information collected to date, the tank was filled via a 150 mm to 200 mm OD underground steel pipeline. As with other AST locations, no information has been obtained to indicate the presence of smaller 50 mm to 75 mm OD underground steel fuel lines associated with this AST. It is possible that this tank served as a back-up to the other two tanks (at the North and East Bulk Fuel Sites, respectively) via the fill pipeline. The former AST capacity was estimated at 1.1 million litres.

The site was a sandy, open area with sparse to low vegetation. The terrain sloped mildly downwards in a southerly direction. There was a drainage swell located within the southern portion of the site and some boggy areas surrounding the site. Surface runoff drained to a boggy area to the south. Light hydrocarbon odours were noticed downwind of the site during previous investigations.

2.3.3 East Bulk Fuel Storage Site

The East Bulk Fuel Storage Site was a former diesel fuel AST location on the west side of Dock Road. A site plan is provided in Drawing No. 121410105-EE-04A in Appendix A. The site was easily accessible from Dock Road. Based on information collected to date, the tank was filled via a 150 mm to 200 mm OD underground steel pipeline and, from there, supplied fuel to different areas of the facility via two separate runs of smaller 50 to 75 mm OD underground steel fuel lines. The former AST capacity was estimated at 1.1 million litres.

The centre of the site was a sandy open area with little to no vegetation. The perimeter of the site was heavily treed with tall stands of common native deciduous trees and scattered native coniferous trees. The terrain was relatively level and surface water runoff was directed to a ditch on the west side of Dock Road. Modest to strong hydrocarbon odours were noted downwind of the site during previous investigations.

2.3.4 East Generator Site

The East Generator Site was one of two sites used by the US Military for diesel generation of electric power. As indicated in Drawing No. 121410105-EE-05A in Appendix A, the site was located on the north side of Camp Road about 120 m east of the intersection of Camp Road and Dock Road. The site was easily accessible from Camp Road and Dock Road.

Based on the presence of ruins of a tank crib array at the site, at least two diesel day aboveground fuel storage tanks were present at the site, immediately west of the foundation ruins. It was likely that these tanks were filled via 50 to 75 mm OD underground steel fuel lines running from the East Bulk Fuel Storage Site. The site was likely used as a primary power source during construction of the facility. After the facility was constructed, it may have been decommissioned or used as a back-up to the West Generator Site.

The site was covered with low alder and scrub brush. A few small areas of the ground surface had no vegetation and consisted of sand with light to moderate staining. The terrain was level and no preferred



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direction of surface water flow could be determined. A drainage ditch was present along Camp Road, southeast of the main site area. Modest hydrocarbon odours were previously noticed downwind of the site during previous investigations.

2.3.5 West Generator Site

The West Generator Site was one of two sites used by the US Military for diesel generation of electric power. As indicated in Drawing No. 121410105-EE-06A in Appendix A, the site was located near the centre of the facility on the west side of the Transmitter Building. The site was accessible from Crossover Road which was heavily overgrown with alders via a rough excavator road.

Based on information collected to date, the site contained at least two large diesel day fuel tanks which supplied the generators. The capacity of these ASTs was estimated at 45,000 litres each. It was likely that these tanks were filled via 50 to 75 mm OD underground steel fuel lines, however the locations and orientations of these lines had not been confirmed. The site was larger than the East Generator Site and was likely to have been the main source of power for the facility during operation.

With the exception of the areas where foundation ruins are present, the site was heavily overgrown with alders. The terrain was level and some boggy areas had developed in the west and southern fringes of the site. Foundations, steel and concrete debris were scattered throughout the site.

2.3.6 Transmitter Building

The Transmitter Building Site was located at the centre of the military facility. A site plan is provided in Drawing 121410105-EE-07A in Appendix A. Access to the site was via the Crossover Road, the Main Access Road and the VOR Road. Based on information collected to date, the site was the centre of the facility containing a single, large, two-storey building. The building was reported to have housed electronic communications equipment, barracks and recreational areas. The building may have also contained a boiler for heating purposes.

The terrain was hummocky, likely due to stockpiling of the Transmitter Building demolition debris. It was reported that upon closure of the facility, all re-usable materials were salvaged and the structure bull-dozed and covered with a layer of sand fill. The entire site was covered with heavy alder and willow re-growth. Boggy areas have developed in low lying areas to the south of the building. A small section of the building ruins were visible at the surface on the west end of the building location.

2.3.7 Camp Road Dump Site

The Camp Road Dump Site was located on the south side of Camp Road near the Innu Meeting Ground. A site plan showing the extent of debris is provided in Drawing No. 121410105-EE-08A in Appendix A. The terrain was hummocky with light to heavy tree cover. The site was accessible from Camp Road via a meandering trail through the Innu Meeting Ground.

In 1999, the site was characterized by a significant quantity of surface debris including empty steel drums, machinery parts, pipe, cans and domestic waste.



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2.3.8 Camp Road Drum Storage Site

The Camp Road Drum Storage Site was a former drum storage area located on the south side of Camp Road just west of the East Generator Site as shown on Drawing No. 121410105-EE-10A in Appendix A. The site was accessible from Camp Road via a narrow foot path.

The ground was covered with alternating patches of bare sand and low alder bushes. At the centre of the site, modest surface staining was visible over an area of 10 m² during previous investigations. The terrain was relatively level with no standing water and slopes very gently towards Lake Melville. The perimeter of the site was heavily treed with large fir and spruce trees.

2.3.9 Service Site

The Service Site was located southwest of the intersection of Site Access Road and Crossover Road as shown on Drawing No. 121410105-EE-10A in Appendix A. Based on information collected to date, the site contained two single storey buildings containing garage, workshop, kitchen and dining areas. Other infrastructure reportedly present included a boiler, seawater desalination unit and a large garbage freezer. At least one AST was reported to have been on site, possibly serving as a day tank for the boiler and desalination units.

The terrain at the site was level and no preferred direction of surface runoff route could be identified. The westerly portion of the site had several hummocky features or mounds. Two large foundation ruins and some surface debris were identified at the site. The site was heavily overgrown with alders.

2.3.10 Oil Shed Site

The Oil Shed Site was located across from the Service Site, approximately 10 m north of the Main Access Road as shown on Drawing No. 121410105-EE-11A in Appendix A. Based on information collected to date, the site contained a small wooden shed which was used to store oils and lubricants, including transformer oil.

The ground was covered with heavy alder growth. The terrain was relatively level with no standing water. No preferred direction of surface water drainage could be identified.

2.3.11 Lake Melville Dump Site

The Lake Melville Dump Site was one of two dump sites identified in previous ESAs. The site was located near the shore of Lake Melville in the first cove to the southwest of the dock as indicated by Drawing No. 121410105-EE-12A in Appendix A. The site had modest tree and alder bush cover. The land sloped modestly towards Lake Melville, with boggy areas at lower elevations. The site was accessible both from the shore of Lake Melville and from Dock Road via a rough trail made by an excavator.

In 2001, all exposed rubble was flattened and levelled. Rubble that was identified in the lower boggy area and throughout the large growth trees was removed, compressed and buried on site. A 300 mm layer of site sand and topsoil was then redistributed and spread over the majority of the site to act as a cover.



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2.3.12 Underground Pipeline System

Six distinct runs of underground fuel pipelines have been identified at the facility. Potential pipeline locations were located previously by conducting an EM-31 survey. These locations were then investigated with test pit excavations. Pipelines located were then traced using a Metrotech 810 instrument.

A 170 mm OD fuel supply line began at an exposed end on the Lake Melville shoreline at the end of Dock Road. A flexible segment was attached to the pipe end, likely for ease of connection to a tanker. This line travelled along the west side of Dock Road to a location approximately 450 m from the East Bulk Fuel Storage Site where it had been cut and removed from the ground. It was believed that the portion of the line that had been removed from the ground would have then continued on in a southerly direction to the East Bulk Fuel Storage Site.

A similar 170 mm OD line ran north from the East Bulk Fuel Storage Site to the North Bulk Fuel Storage Site crossing the Main Access Road and then the VOR Road. These large diameter lines were believed to have served as the AST fill lines for each of the three fuel storage sites.

Two smaller lines (50 mm OD) ran south from the pump block at the East Bulk Fuel Storage Site towards the East Generator Site. One of these lines ended near a surface riser pipe near previous test pit P-TP37. The other crossed Dock Road and took a right turn to the East Generator Site, ending near the tank cribs. A third line ran west from the same pump block towards the Transmitter Building and West Generator Sites. The end of this line at the Transmitter Building and West Generator Sites had not been established. A fourth line ran from the pump block at the North Bulk Fuel Storage Site in a southerly direction towards the Transmitter Building and West Generator Sites. The end of this line at the Transmitter Building and West Generator Sites had not been established. No smaller diameter line was found to be associated with the South Bulk Fuel Storage Site. It was believed that these smaller diameter fuel lines supplied fuel to various day tanks and other demands throughout the facility. It was possible that the South Bulk Fuel Storage Site was used as a reservoir to fill the ASTs at the East and North Bulk Fuel Storage Sites via the larger diameter line.

At all locations, the larger diameter pipelines were coated with a black fibre tar material (rust-proofing). Laboratory analysis of a sample of the coating reported an asbestos content (chrysotile) content of 15%.

2.3.13 Sewer System

The historical understanding of the sewer system suggested it began with a concrete tank located approximately 5 m north of Main Access Road as shown on Drawing 121410105-EE-14A in Appendix A. The tank was likely a settling tank designed to separate liquids and solids. The tank collected upstream liquids via an inlet sewer pipe. The inlet pipe entered the southern end of the tank and was oriented in the direction of the Transmitter Building. Three manholes were located in the vicinity of the settling tank and appeared to provide access and clean-outs for the tank, as well as inlet and outlet pipes.

The outlet pipe continued underground in a northerly direction from the tank at a depth of approximately 2.4 m through at least two additional manholes, ending at an outfall structure approximately 50 m from the

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shore of Lake Melville. Water flowed from the end of the pipe down onto a concrete pad and onward overland towards Lake Melville.

2.3.14 Dock Road Drum Storage Site

The Dock Road Drum Storage Site was a former drum storage area located on the east side of Dock Road northeast of the Lake Melville Dump Site as shown on Drawing 121410105-EE-15A in Appendix A. Based on information collected to date, the site was used by the US Military for drum storage. The site was accessible from Dock Road via narrow footpaths and an excavator trail.

The terrain was relatively level, but sloped very gently downwards towards Lake Melville. Boggy areas with ponded surface water had developed in low lying areas. Heavy alder and willow cover was present throughout the site. A significant quantity of drums and scattered surface debris (i.e., engine blocks, pipe, cable, steel drums, cast iron heaters, car wrecks and lockers) were removed from the site in 2001.

Previous subsurface investigations revealed petroleum hydrocarbon odours and staining that extended from the surface to a depth of 2.0 mbgs (DDS-TP2) and mild hydrocarbon impacts detected in a soil sample collected at 1.5 mbgs (DDS-TP2).

2.3.15 Helicopter Pad

The Helicopter Pad was located on Dock Road, west of the dock and north of the Lake Melville Dump Site, as shown on Drawing 121410105-EE-16A in Appendix A. The terrain was relatively level, but sloped very gently downwards towards Lake Melville. No previous investigations have been carried out at this site.

2.3.16 VOR Site

The VOR (i.e., Variable Omni-directional Range) Site was located approximately 1.6 km south of the main facility at the end of VOR Road. The site was accessible via the VOR Road; however, several sections of the road had been overgrown with alders.

Based on historical information, the site was used as an aircraft communications centre and contained at least one single-storey building structure. One abandoned underground storage tank (approximately 900 L) was previously identified at the site, immediately adjacent to a concrete foundation pad (approximately 5 m by 10 m). It was likely that this UST was used to store fuel for heating or back-up power generation.

The terrain was relatively level and the site was covered with dense vegetation. No significant hydrocarbon impacts were previously identified at the location of the abandoned UST.

In 2001, the concrete foundation pad was covered with approximately 600 mm of sand and gravel and gently sloped to help blend with the surrounding topography. The surrounding trees were left to assist in the revegetation process.



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2.3.17 Innu Healing Ground

An area within the Former U.S. Military Site that was not used as an active site during site operations was selected as a background sampling location. The site is located west of Dock Road, south of the Lake Melville Dump Site. The site is located hydraulically upgradient of the Lake Melville Dump Site.

2.4 Current Site Operations

The former U.S. military facility at Northwest Point is primarily a vacant “brownfield” site, with no known existing buildings or aboveground structures as of the field work for the Phase III ESA in 2008. Foundation ruins and surface debris from former buildings and structures and abandoned underground fuel pipelines and a sewer system were present on the Site in 2008.

Existing reports indicated that portions of the Site were regularly used by the Innu and the residents of Northwest River as campgrounds and meeting places. The eastern side of the Point, near Camp Road, contained several Innu owned summer cabins (refer to Drawing No. 121410105-EE-01B in Appendix A). Existing reports indicated that some on-site streams were used by the Innu as a source of drinking water. Area residents reportedly pick berries on and around the site. Small mammals such as mice, rabbits and partridge and larger mammals such as moose were reported to be present on and around the Site. Area residents reportedly hunt rabbits and partridge in the general site area. Atlantic salmon were harvested near the shore on the northern and western side of the Point by the Innu and the residents of Northwest River.

2.5 Historical Land Use

The Site is a former United States Military Facility, constructed in the early 1950s. It was reportedly decommissioned in 1965. The Site was used for long and short range communications. The facility would have been staffed by less than 50 personnel at times of peak operation. Historical activities included diesel power generation, large-scale storage and distribution of petroleum hydrocarbons, transformer oil and glycol, solid waste disposal, liquid waste discharge and disposal, boiler operation and equipment maintenance. Decommissioning of the Site was initiated in 1965.

3.0 REVIEW OF AVAILABLE HISTORICAL ENVIRONMENTAL REPORTS

The following reports were reviewed as part of this Desktop Environmental Review:

1. Limited Phase I/II Reconnaissance Testing Program, Former US Military Facility, Northwest Point, Labrador, AGRA Earth and Environmental Limited, November 1998
2. Environmental Site Assessment, Former US Military Facility, Northwest Point, Labrador, AGRA Earth and Environmental Limited, May 2000



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3. 2001 Site Remediation and Assessment Program, Former US Military Facility, Northwest Point, Labrador, AMEC Earth and Environmental Limited (AMEC), May 2002
4. Implementation Plan for Environmental Site Assessment, Human Health and Ecological Risk Assessments and Remediation - Former U.S. Military Facility, Northwest Point, Newfoundland and Labrador, Jacques Whitford Limited (now Stantec), March 2008
5. Phase III ESA, Human Health and Ecological Risk Assessment (HHERA), Remedial Action Plan, Northwest Point, Stantec, Project No. 121410105, November 2011

The following sections summarize the previous investigations conducted at the site.

3.1 Limited Phase I/II Reconnaissance Testing Program (AGRA, 1998)

The Limited Phase I/II program carried out in 1998 (AGRA, 1998) included the excavation of 42 test pits and collection of soil, groundwater and surface water samples for selected analysis of petroleum hydrocarbons, VOCs, PAHs, PCBs, and/or metals. The investigation did not include an assessment of the entire site. Free phase petroleum product was encountered at several locations on the Site. Petroleum hydrocarbons, PAHs and metals were identified in site soils at levels above the applicable guidelines in place at the time of the investigation. BTEX parameters (benzene, toluene, ethylbenzene and xylenes) in the settling tank for the sewer system also exceeded the applicable regulatory guidelines in place at the time of the investigation. Building foundations and demolition debris were observed on the Site, primarily in the main compound area.

Based on a review of the previous Limited Phase I ESA (Agra, 1998), the following former infrastructure were part of the facility:

1. Three bulk fuel storage sites, referred to as the North, South and East Bulk Fuel Storage Sites, each with one large capacity AST
2. Two diesel fired electric power generator sites, referred to as the East and West Generator Plant Sites
3. A seawater desalination plant for the production of potable water with an intake pipeline extending into Lake Melville
4. A drilled well for potable water and a potable water pump house
5. Three ASTs and one UST
6. Numerous communications towers with control centre buildings
7. Several support structures comprising the Main Compound Area (i.e., Mess Hall, Barracks, Bar, Main Control Centre, Garage, Oil Shed, Warehouse, Storage Shed) and the Dock
8. An extensive buried pipeline network
9. Extensive buried and aboveground electrical cable network
10. One helicopter landing pad
11. Two dump sites referred to as the Lake Melville and Camp Road Dump Sites
12. Two drum storage areas referred to as the Dock Road and Camp Road Drum Storage areas
13. Two boiler plants
14. A large walk-in freezer building



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15. Access roads
16. A sanitary sewer system with settling tanks

3.2 Environmental Site Assessment (AGRA, 2000)

The purpose of the ESA carried out in 1999 (AGRA, 2000) was to delineate the extent of impacts in soil and groundwater, to identify the site use and to recommend remedial options. The assessment included a geophysical survey of the pipeline network, the excavation of 93 test pits and the collection of soil, groundwater, surface water and berry samples for selected analysis of petroleum hydrocarbons, VOCs, PAHs and/or metals.

In summary, the primary issues identified at the former military facility were petroleum hydrocarbons, PAHs and metals impacts (i.e., above applicable guidelines at the times of the investigations) in soil and groundwater, petroleum hydrocarbons and metals impacts in surface water, waste disposal sites, surface debris (i.e., scrap metal, foundations, tower rubble and building debris, etc.) and free phase petroleum product.

3.3 Site Remediation and Assessment Program (AMEC, 2002)

The purpose of the Phase II ESA carried out in 2001 (AMEC, 2002) was to delineate the extent of impacts at selected areas of the Site, to assess potential remedial alternatives and provide cost estimates for further investigation or remedial action. The assessment was limited to a survey to determine underground pipeline locations, delineation of impacts at the North and South Bulk Fuel Storage Sites and the East and West Generator Sites, and assessment of the Pipelines and Sewer System. The assessment included the excavation of several test pits and the collection of soil, groundwater and surface water samples for selected analysis of petroleum hydrocarbons, VOCs, PAHs and/or metals. Free phase petroleum product was encountered at several locations on the Site. Petroleum hydrocarbons, PAHs and metals were identified in site soils at levels above the applicable regulatory guidelines in place at the time of the investigation. Metals, including mercury, and PAHs were identified in groundwater samples from the Site at concentrations that exceeded the applicable regulatory guidelines in place at the time of the investigation.

In 2001, a limited remediation and assessment program was carried out at the Site. The remediation program included free product recovery at two areas of the Site (i.e., the North and South Bulk Fuel Storage Sites), removal of surface debris from several areas of the Site and removal or covering of foundations at several areas of the Site. The assessment program included the installation of three monitor wells and the excavation of additional test pits at the South Bulk Fuel Storage Site. The assessment program included the collection of soil, groundwater and surface water samples for selected analysis of petroleum hydrocarbons, VOCs, PAHs, PCBs and/or metals. A preliminary risk assessment was conducted at the South Bulk Fuel Storage Site as part of the Site remediation and assessment program in 2001. The risk assessment indicated the potential for unacceptable risks to human receptors and terrestrial ecological receptors at the Site.

In summary, the primary issues identified at the former military facility were petroleum hydrocarbons, PAHs and metals impacts (i.e., above applicable guidelines at the times of the investigations) in soil and



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groundwater, petroleum hydrocarbons and metals impacts in surface water, waste disposal sites, surface debris (i.e., scrap metal, asbestos-containing materials, foundations and building debris, etc.) and free phase petroleum product.

3.4 Implementation Plan (Stantec, 2008)

In 2008, the NLDMAE commissioned an Implementation Plan for the former military facility (Stantec, 2008). The Implementation Plan was developed following a desktop review of the three available environmental assessment reports that were previously completed for the Site. The Implementation Plan served as a framework for development and implementation of remedial action plans/risk management plans for the former Northwest Point military facility. During the review of existing reports, various data gaps and outstanding actions were identified. The Implementation Plan suggested the completion of various studies and investigations at the former military facility prior to the development of overall remedial action plans for the area.

The information contained in the Implementation Plan was used extensively to develop the scope of work for the Phase III ESA carried out in 2009 and, where possible, data gaps identified were addressed. The field component of the 2009 Phase III ESA consisted of the identification of debris and physical hazards, the excavation of 70 test pits, the drilling of 44 boreholes complete with monitor well installation and associated soil and groundwater sampling and analysis. It also included the collection of 57 surface soil samples, 15 sediment samples, 12 surface water samples, nine benthic invertebrate samples, 24 vegetation samples, 19 berry samples and 29 small mammal, rabbit and fish samples for laboratory analysis of various parameters. Field work was performed between August and November 2009.

During the Phase III ESA, sheens were observed on groundwater encountered in test pits and extracted from monitor wells at various sites. Measurable free product was detected on water at the following locations:

1. 09-MW4 (Service Site): No measurable product was detected on groundwater on August 27, 2009 and 4 mm of product was measured on groundwater on October 18, 2009.
2. 09-MW20 (East Generator Site): 100 mm of product was measured on groundwater on August 27, 2009. Free product/groundwater was extracted from the well using a bailer on August 27, 2009 and was disposed of at a licensed treatment facility. 1 mm of product was measured on groundwater on October 18, 2009.
3. Second manhole (Sewer System Site) - 150 mm of product was measured on sewer water in the manhole. A sample of this product was collected (09-Product1) and the laboratory results identified one product in the fuel oil range resembling weathered diesel.

3.5 Phase III ESA (Stantec, 2011)

Results of the soil, groundwater, surface water and sediment sampling conducted as part of the Phase III ESA carried out in 2009 (Stantec, 2011) as well as the results of the investigations previous to 2009 are summarized below by site.



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3.5.1 North Bulk Fuel Storage Site

Previous subsurface investigations to 2009 revealed significant quantities of weathered free product and groundwater entering test pits at shallow depths. TPH impacts were identified in subsurface soil (0.5 mbgs) and in groundwater entering two of the test pits. Chromatograms for soil and groundwater samples with elevated concentrations of TPH resembled diesel. In 2001, free product removal was conducted at the site. A cache of tower sections, which were painted with lead-based paints (see Drawing 121410105-EE-02B in Appendix A), was also removed from the site in 2001.

The Phase III ESA carried out in 2009 identified TPH impacts in soil and groundwater and metals impacts in soil and groundwater exceeding applicable guidelines at the time of the assessment. As per Atlantic PIRI (Partnership in RBCA (Risk-Based Corrective Action) Implementation guidance), remediation or risk management would be required in the following areas:

1. Petroleum hydrocarbon remediation of site soil would be required in the vicinity of test pits NF-TP1, NF-TP5, P-TP22, 09-TP1, 09-TP2, 09-TP3, 09-TP4, 09-TP5 and 09-MW2D and petroleum hydrocarbon remediation of shallow groundwater would be required in the vicinity of samples NF-TP6, S-TP2 and monitor wells 09-MW1 and 09-MW2S in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-2B in Appendix A shows the estimated extent of the petroleum hydrocarbon-impacted soil and groundwater at the site. The actual impacted areas may be smaller or larger than the estimated areas. Based on available analytical and field data, an estimated area of approximately 1,711 m² has TPH levels in soil above 140 mg/kg and an estimated area of approximately 523 m² has petroleum hydrocarbon levels in groundwater above 20 mg/L.
2. Metals remediation of site soil would be required in the vicinity of surface soil sample 09-SS42, metals remediation of shallow groundwater would be required in the vicinity of sample NF-TP6 and metals remediation of surface water would be required in the drainage ditch in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-2C in Appendix A shows the estimated extent of the metal (i.e., lead) impacted soil, metal (i.e., mercury) impacted groundwater and metal (i.e., mercury) impacted surface water at the site. The actual impacted areas may be smaller or larger than the estimated areas. Based on available analytical and field data, an estimated area of approximately 42 m² has lead levels in soil above 140 mg/kg and an estimated area of approximately 87 m² has mercury levels in groundwater above 0.12 µg/L.

If a risk-based remedial approach is not followed for the site, further field sampling and laboratory analysis would be required to determine the extent of TPH and metals impacts on soil, TPH, metals and general chemistry impacts groundwater, and metals and general chemistry impacts in surface water above the generic guidelines.

3.5.2 South Bulk Fuel Storage Site

Previous subsurface investigations to 2009 revealed significant quantities of weathered free product and groundwater entering test pits at shallow depths. TPH impacts were identified in subsurface soil (> 0.5 mbgs) and in groundwater entering two of the test pits and mercury impacts were identified in groundwater entering two of the test pits and in monitor wells. Chromatograms for soil and groundwater samples with



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elevated concentrations of TPH resembled diesel and heavy oil. In 2001, trenching activities were carried out at the site for free product removal. A sheen of weathered fuel was observed on the surface of groundwater within the trenches and was removed using oil absorbent pads. The volume of free product removed from the site was not specified in the 2001 site remediation report. Trenches were backfilled following the removal of free product.

The Phase III ESA carried out in 2009 identified TPH/BTEX impacts in soil and groundwater and metals impacts in groundwater and surface water exceeding applicable guidelines at the time of the assessment. As per Atlantic PIRI guidance, remediation or risk management would be required in the following areas:

1. Petroleum hydrocarbon remediation of site soil would be required in the vicinity of test pits SF-TP1 (1999), SF-TP8 (1999), SF-TP10 (1999), SF-TP14 (1999), SF-TP31 (1999), SF-TP15 (2001), SF-TP16 (2001), SF-MW1 (2001), 09-TP21, 09-TP22, 09-TP23, 09-TP25 and monitor wells 09-MW14 and 09-MW34D, and petroleum hydrocarbon remediation of shallow groundwater would be required in the vicinity of test pit SF-TP7 (1999) and monitor wells SF-MW1 (2001), 09-MW13S and 09-MW14 in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-3B in Appendix A shows the estimated extent of the petroleum hydrocarbon-impacted soil and groundwater at the site. The actual impacted areas may be smaller or larger than the estimated areas. Based on available analytical and field data, an estimated area of approximately 1,222 m² has TPH levels in soil above 140 mg/kg and an estimated area of approximately 483 m² has petroleum hydrocarbon levels in groundwater above 20 mg/L.
2. BTEX remediation of site soil would be required in the vicinity of test pits SF-TP14 (1999) and 09-TP23 and monitor well 09-MW14, and BTEX remediation of shallow groundwater would be required in the vicinity of monitor well 09-MW14 in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-3C in Appendix A shows the estimated extent of the BTEX-impacted soil and groundwater at the site. The actual impacted areas may be smaller or larger than the estimated areas. Based on available analytical and field data, an estimated area of approximately 546 m² has benzene and xylenes levels in soil above the Tier I RBSLs (0.16 mg/kg and 17 mg/kg, respectively) and an estimated area of approximately 93 m² has ethylbenzene and xylene levels in groundwater above 20 mg/L.
3. Metals remediation of shallow groundwater would be required in the vicinity of test pits SF-TP7 (1999), SF-TP11 (1999) and monitor well SF-MW1D (2001) and metals remediation of surface water would be required in the ditch at the site in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-3D in Appendix A shows the estimated extent of the metal (i.e., mercury) impacted groundwater and metals (i.e., aluminum, cadmium, chromium, copper, iron, lead and mercury) impacted surface water at the site. The actual impacted areas may be smaller or larger than the estimated areas. Based on available analytical and field data, an estimated area of approximately 174 m² has mercury levels in groundwater above 0.12 µg/L.

If a risk-based remedial approach is not followed for the site, further field sampling and laboratory analysis would be required to determine the extent of TPH and BTEX impacts on soil, TPH, BTEX, metals and



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general chemistry impacts groundwater and metals and general chemistry impacts on surface water above the generic guidelines. Petroleum hydrocarbon impacted groundwater is not expected to be migrating towards the adjacent bog; however, further delineation is required.

3.5.3 East Bulk Fuel Storage Site

Previous subsurface investigations to 2009 revealed significant quantities of weathered free product and groundwater entering test pits at shallow depths. TPH impacts were identified in subsurface soil (> 0.5 mbgs) and in groundwater entering one of the test pits. Chromatograms for soil and groundwater samples with elevated concentrations of TPH resembled diesel.

The Phase III ESA carried out in 2009 identified TPH impacts in soil and groundwater exceeding applicable guidelines at the time of the assessment. As per Atlantic PIRI guidance, remediation or risk management would be required in the following areas:

1. Petroleum hydrocarbon remediation of site soil would be required in the vicinity of test pits EF-TP1 (1999), EF-TP8 (1999), EF-TP9 (1999), EF-TP35 (1999), EF-TP37 (1999), 09-TP27, 09-TP28, 09-TP29, 09-TP30, monitor wells 09-MW16 and 09-MW17, and surface soil samples 09-SS18 and 09-SS19, and petroleum hydrocarbon remediation shallow groundwater would be required in the vicinity of test pit EF-TP3 (1999) and monitor wells 09-MW15, 09-MW16 and 09-MW17 in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-4B in Appendix A shows the estimated extent of the petroleum hydrocarbon-impacted soil and groundwater at the site. The actual impacted areas may be smaller or larger than the estimated areas. Based on available analytical and field data, an estimated area of approximately 2,609 m² has TPH levels in soil above 140 mg/kg and an estimated area of approximately 353 m² has petroleum hydrocarbon levels in groundwater above 20 mg/L. (Note: area of impacted soil surrounding P-TP37 and area of impacted groundwater surrounding 09-MW17 are not included in these areas, but are included in the areas calculated for the East Generator Site.)

If a risk-based remedial approach is not followed for the site, further field sampling and laboratory analysis would be required to determine the extent of TPH impacts on soil and TPH and general chemistry impacts groundwater above the generic guidelines.

3.5.4 East Generator Site

Previous subsurface investigations to 2009 revealed significant quantities of weathered free product and groundwater entering test pits at shallow depths. TPH impacts were identified in subsurface soil (> 0.5 mbgs) and mercury impacts were noted in groundwater entering two test pits. Chromatograms for soil samples with elevated concentrations of TPH resembled diesel. However, since the groundwater samples were not collected from a properly installed and purged monitor well, some of the groundwater results are not likely representative of the actual groundwater chemistry on the site.

The Phase III ESA carried out in 2009 identified free product, TPH impacts in soil and groundwater and PAH and metals impacts in groundwater exceeding applicable guidelines at the time of the assessment. As per Atlantic PIRI guidance, remediation or risk management would be required in the following areas:



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1. Free product recovery would be required in the vicinity of monitor well 09-MW20. It appears that the free product is localized to the area surrounding monitor well 09-MW20, in the area of the former diesel ASTs; however, given that no wells were drilled immediately southwest of 09-MW20, the extent of free product has not been fully delineated. Based on an estimated area of approximately 100 m² and a product thickness of 1 mm, there is an estimated 100 L of free product present on groundwater in the vicinity of monitor well 09 MW20. Additional monitor wells would be required to fully delineate the extent of free product present in this area. Additional monitor wells would also provide additional locations to facilitate removal if the free product plume was found to be more extensive.
2. Petroleum hydrocarbon remediation of site soil would be required in the vicinity of test pits EG-TP1 (1999), EG-TP3 (1999), EG-TP4 (1999), EG-TP7 (1999), 09-TP32-BS2 and 09-TP33-BS2, and monitor wells 09-MW19 and 09-MW20, and petroleum hydrocarbon remediation shallow groundwater would be required in the vicinity of monitor well 09-MW20 in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-5B in Appendix A shows the estimated extent of the petroleum hydrocarbon-impacted soil and groundwater at the site. The actual impacted areas may be smaller or larger than the estimated areas. Based on available analytical and field data, an estimated area of approximately 1,158 m² has TPH levels in soil above 140 mg/kg and an estimated area of approximately 507 m² has petroleum hydrocarbon levels in groundwater above 20 mg/L.
3. Metals remediation of site groundwater would be required in the vicinity of test pits EG-TP2 and P-TP34 in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-5C in Appendix A shows the estimated extent metals (i.e., mercury) impacted groundwater at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 127 m² has levels of metals (i.e., mercury) parameters in groundwater above the applicable guidelines.
4. PAH remediation of site groundwater would be required in the vicinity of monitor well 09 MW20 in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-5D in Appendix A shows the estimated extent PAH impacted groundwater at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 96 m² has levels of PAH parameters in groundwater above the applicable guidelines.

If a risk-based remedial approach is not followed for the site, further field sampling and laboratory analysis would be required to determine the extent of TPH impacts on soil and TPH, PAH and general chemistry impacts groundwater above the generic guidelines.

3.5.5 West Generator Site

Previous subsurface investigations to 2009 revealed significant quantities of weathered free product and groundwater entering test pits at shallow depths. TPH impacts were identified in subsurface soil (> 0.5 mbgs). Chromatograms for soil samples with elevated concentrations of TPH resembled diesel.

The Phase III ESA carried out in 2009 identified TPH/BTEX and PAH impacts in soil and groundwater, metals impacts in groundwater and surface water and TPH and metal impacts in sediment exceeding



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applicable guidelines at the time of the assessment. As per Atlantic PIRI guidance, remediation or risk management would be required in the following areas:

1. Petroleum hydrocarbon remediation of site soil would be required in the vicinity of test pits WG-TP3 (1999), WG-TP6 (1999), WG-TP10 (1999), WG-TP11 (1999), WG-TP12 (1999), 09-TP11, 09-TP13, 09-TP14, and monitor wells 09-MW7, 09-MW8 and 09-MW9, petroleum hydrocarbon remediation shallow groundwater would be required in the vicinity of monitor wells 09-MW7 and 09-MW8a and petroleum hydrocarbon remediation of site sediment would be required in the drainage ditch at the site in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-6B in Appendix A shows the estimated extent of the petroleum hydrocarbon-impacted soil, groundwater and sediment at the site. The actual impacted areas may be smaller or larger than the estimated areas. Based on available analytical and field data, an estimated area of approximately 120 m² has TPH levels in soil above 140 mg/kg, an estimated area of approximately 161 m² has petroleum hydrocarbon levels in groundwater above 20 mg/L and an estimated area of approximately 38 m² has TPH levels in sediment above 1,500 mg/kg.
2. Metals remediation of site surface water and sediment would be required in the drainage ditch on the site in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-6C in Appendix A shows the estimated extent metals impacted surface water and sediment at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 40 m² has cadmium and zinc levels in surface water and sediment above the applicable guidelines.
3. PAH remediation of site soil would be required in the vicinity of test pit WG-TP11 (1999) and surface soil sample 09-SS51, and PAH remediation of site groundwater would be required in the vicinity of monitor well 09-MW7 in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-6D in Appendix A shows the estimated extent PAH impacted soil and groundwater at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 120 m² has PAH levels in soil above the applicable guidelines and an estimated area of approximately 96 m² has levels of PAH parameters in groundwater above the applicable guidelines.

If a risk-based remedial approach is not followed for the site, further field sampling and laboratory analysis would be required to determine the extent of TPH, BTEX and PAH impacts on soil, TPH and PAH impacts groundwater, metals impacts on surface water, and TPH and metals impacts on sediment above the generic guidelines.

3.5.6 Transmitter Building

Previous subsurface investigations to 2009 at the site indicated the presence of covered and intact concrete floor and wall slabs at the east end of the former building location. A small amount of surface debris was scattered throughout the site.



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The Phase III ESA carried out in 2009 identified TPH and PAH impacts in soil and TPH and metals impacts in groundwater exceeding applicable guidelines at the time of the assessment. As per Atlantic PIRI guidance, remediation or risk management would be required in the following areas:

1. Petroleum hydrocarbon remediation of site soil would be required in the vicinity of test pits WG-TP10 (1999) and 09-TP18, and petroleum hydrocarbon remediation shallow groundwater would be required in the vicinity of monitor well 09-MW11 in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-7B in Appendix A shows the estimated extent of the petroleum hydrocarbon-impacted soil and groundwater at the site. The actual impacted areas may be smaller or larger than the estimated areas. Based on available analytical and field data, an estimated area of approximately 203 m² has TPH levels in soil above 140 mg/kg and an estimated area of approximately 37 m² has petroleum hydrocarbon levels in groundwater above 20 mg/L.
2. Metals remediation of site groundwater would be required in the vicinity of sample WG-TP10 in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-7C in Appendix A shows the estimated extent metals (i.e., mercury) impacted soil at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 31 m² has metals (i.e., mercury) levels in groundwater above the applicable guideline.
3. PAH remediation of site soil would be required in the vicinity of samples 09-SS47 and 09-SS50 in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-7D in Appendix A shows the estimated extent PAH impacted soil at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 405 m² has PAH levels in soil above the applicable guidelines.

If a risk-based remedial approach is not followed for the site, further field sampling and laboratory analysis would be required to determine the extent of TPH and PAH impacts on soil and TPH and general chemistry impacts groundwater above the generic guidelines.

3.5.7 Camp Road Dump Site

Previous subsurface investigations to 2009 indicated that most waste material was at or very near the surface. In 2001, a site clean-up program was carried out at various areas of the Former U.S. Military site, including the Camp Road Dump Site. The non-recyclable, non-hazardous waste recovered from the overall site during the clean-up program was consolidated and disposed of in 4 m deep pits along the north side of the existing landfill at the Camp Road Dump Site. A 300 mm thick sand cap was spread over the majority of the site; however, due to the onset of winter, the south perimeter of the site was not capped. The cover material used was excess material excavated during the non-recyclable rubble burial activities at the site.

The Phase III ESA carried out in 2009 identified TPH and metals impacts in soil and metals and PAH impacts in groundwater exceeding applicable guidelines at the time of the assessment. As per Atlantic PIRI guidance, remediation or risk management would be required in the following areas:



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1. Petroleum hydrocarbon remediation of site soil would be required in the vicinity of test pits 09-TP39 in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-8B in Appendix A shows the estimated extent of the petroleum hydrocarbon-impacted soil at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 195 m² has TPH levels in soil above 140 mg/kg.
2. Metals remediation of site soil would be required in the vicinity of samples 09-SS10 and 09-SS14 and metals remediation of site groundwater would be required in the vicinity of monitor well 09-MW23 in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-8C in Appendix A shows the estimated extent metals impacted soil and groundwater at the site. The actual impacted areas may be smaller or larger than the estimated areas. Based on available analytical and field data, an estimated area of approximately 528 m² has metals (i.e., chromium, copper, lead, molybdenum or zinc) levels in soil above the applicable CCME guidelines and approximately 242 m² has mercury levels in groundwater above the applicable guideline.
3. PAH remediation of site groundwater would be required in the vicinity of monitor well 09-MW23D in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-8D in Appendix A shows the estimated extent PAH impacted groundwater at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 173 m² has PAH levels in groundwater above the applicable guidelines.

If a risk-based remedial approach is not followed for the site, further field sampling and laboratory analysis would be required to determine the extent of TPH and metals impacts on soil, and metals and PAHs impacts groundwater above the generic guidelines.

3.5.8 Camp Road Drum Storage Site

Previous subsurface investigations to 2009 revealed significant impacts to subsurface soil (0.5 mbgs) as evidenced by staining and strong hydrocarbon odours from the surface to subsurface. Chromatograms for soil samples with elevated concentrations of TPH resembled heavy oil and diesel. Modest hydrocarbon odours were noticed downwind of the site during previous investigations.

The Phase III ESA carried out in 2009 identified TPH impacts in soil exceeding applicable guidelines at the time of the assessment. As per Atlantic PIRI guidance, remediation or risk management would be required in the following areas:

1. Petroleum hydrocarbon remediation of site soil would be required in the vicinity of test pit CDS-TP1 (1999) in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-9B in Appendix A shows the estimated extent of the petroleum hydrocarbon-impacted soil at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 86 m² has TPH levels in soil above 140 mg/kg.



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If a risk-based remedial approach is not followed for the site, further field sampling and laboratory analysis would be required to determine the extent of TPH impacts on soil above the generic guidelines.

3.5.9 Service Site

Previous subsurface investigations to 2009 revealed significant impacts to soil at modest depths as evidenced by staining and strong hydrocarbon odours from subsurface. Building demolition debris is buried at the site.

The Phase III ESA carried out in 2009 identified free product, TPH and metal impacts in soil and TPH impacts in groundwater exceeding applicable guidelines at the time of the assessment. As per Atlantic PIRI guidance, remediation or risk management would be required in the following areas:

1. Free product recovery would be required in the vicinity of monitor well 09-MW4. Given that there was no evidence of free product in test pits or monitor wells surrounding monitor well 09-MW4, it appears that the free product is localized to the area surrounding the well. Based on an estimated area of approximately 100 m² and a product thickness of 4 mm, there is an estimated 400 L of free product present on groundwater in the vicinity of monitor well 09 MW4.
2. Petroleum hydrocarbon remediation of site soil would be required in the vicinity of test pits SS-TP1 (1999), WG-TP6 (1999), 09-TP7 and 09-TP10 and petroleum hydrocarbon remediation of shallow groundwater would be required in the vicinity of monitor well 09 MW4 in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-10B in Appendix A shows the estimated extent of the petroleum hydrocarbon-impacted soil and groundwater at the site. The actual impacted areas may be smaller or larger than the estimated areas. Based on available analytical and field data, an estimated area of approximately 528 m² has TPH levels in soil above 140 mg/kg and an estimated area of approximately 86 m² has petroleum hydrocarbon levels in groundwater above 20 mg/L.
3. Metals remediation of site soil would be required in the vicinity of sample 09-SS55 in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-10C in Appendix A shows the estimated extent metals impacted soil at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 87 m² has lead levels in soil above the 210 mg/kg.

If a risk-based remedial approach is not followed for the site, further field sampling and laboratory analysis would be required to determine the extent of TPH and metals (i.e., lead) impacts on soil and TPH, metals (i.e., copper) and general chemistry impacts in groundwater above the generic guidelines.

3.5.10 Oil Shed Site

Previous subsurface investigations to 2009 revealed impacts to soil as evidenced by staining and modest hydrocarbon odours from the surface downwards. At the centre of the site, modest surface staining was visible over an area of approximately 10 m² during previous investigations.



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The Phase III ESA carried out in 2009 identified TPH impacts in soil and metal impacts in groundwater exceeding applicable guidelines at the time of the assessment. As per Atlantic PIRI guidance, remediation or risk management would be required in the following areas:

1. Petroleum hydrocarbon remediation of site soil would be required in the vicinity of test pit O-TP1 (1999) in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-11B in Appendix A shows the estimated extent of the petroleum hydrocarbon-impacted soil at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 86 m² has TPH levels in soil above 140 mg/kg.
2. Metals remediation of site groundwater would be required in the vicinity of monitor well 09-MW25 in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-11C in Appendix A shows the estimated extent of metals impacted groundwater at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 87 m² has silver levels in groundwater above 1.2 µg/L.

The extent of petroleum hydrocarbon impacts on soil have been delineated horizontally. If a risk-based remedial approach is not followed for the site, further field sampling and laboratory analysis would be required to determine the extent of metals (i.e., silver) impacts in groundwater above the generic guidelines.

3.5.11 Lake Melville Dump Site

Previous subsurface investigations to 2009 revealed significant quantities of leachate and groundwater entering test pits at shallow to modest depths. TPH impacts were identified in subsurface soil (1.5 mbgs). Chromatograms for the soil sample with an elevated concentration of TPH resembled motor oil. An area of standing water was present at the site, down-gradient of an area of surface debris. A sheen was observed on the surface of the standing water during the current sampling program.

The Phase III ESA carried out in 2009 identified TPH, PAH and PCB impacts in soil and metal impacts in groundwater, surface water and sediment exceeding applicable guidelines at the time of the assessment. As per Atlantic PIRI guidance, remediation or risk management would be required in the following areas:

1. Petroleum hydrocarbon remediation of site soil would be required in the vicinity of test pits LD-TP1 (1999) and 09-MW27 in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-12B in Appendix A shows the estimated extent of the petroleum hydrocarbon-impacted soil at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 105 m² has TPH levels in soil above 140 mg/kg.
2. Metals remediation of site groundwater would be required in the vicinity of monitor well 09-MW28 and metals remediation of site surface water and sediment would be required in the area of standing water in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-12C in Appendix A shows the estimated extent of metals (i.e., mercury) impacted groundwater, surface water and sediment at the site. The actual impacted areas



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may be smaller or larger than the estimated areas. Based on available analytical and field data, an estimated area of approximately 146 m² has mercury levels in groundwater above 0.12 µg/L and an estimated area of approximately 45 m² (i.e., the approximate area of the area of standing water) has cadmium, chromium, iron and lead levels in surface water and lead in sediment above the applicable guidelines.

3. PAH remediation of site soil would be required in the vicinity of monitor well 09-MW27 and soil sample 09-SS32 in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-12D in Appendix A shows the estimated extent of PAH impacted soil at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 70 m² has PAH levels in soil above the applicable guidelines.
4. PCB remediation of site soil would be required in the vicinity of soil sample 09-SS33 in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-12E in Appendix A shows the estimated extent of PCB impacted soil at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 64 m² has PCB levels in soil above 1.3 mg/kg.

The extent of petroleum hydrocarbon impacts on soil has been delineated horizontally. The extent of impacted surface water and sediment is expected to be limited to the boundaries of the area of standing water. If a risk-based remedial approach is not followed for the site, further field sampling and laboratory analysis would be required to determine the extent of PAH and PCB impacts in soil and metals impacts in groundwater above the generic guidelines.

3.5.12 Underground Pipeline System

The sections of the underground pipeline assessed as part of the 2008 Phase III ESA consisted of the area where the pipeline began, on the Lake Melville shoreline at the end of Dock Road and the area near intersection of Main Access Road and Dock Road. These areas are shown on Drawing 121410105-EE-13A in Appendix A. A drainage ditch was present along Dock Road east of the underground pipeline. The drainage ditch was dry at the time of surface water and sediment sampling carried out as part of the 2008 Phase III ESA.

The Phase III ESA carried out in 2009 identified TPH and BTEX impacts in soil exceeding applicable guidelines at the time of the assessment. As per Atlantic PIRI guidance, remediation or risk management would be required in the following areas:

1. Petroleum hydrocarbon remediation of site soil would be required in the vicinity of test pit P-TP16 Cable Wrap (1999) and surface soil sample 09-SS22 in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-13B in Appendix A shows the estimated extent of the petroleum hydrocarbon-impacted soil at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 110 m² has TPH levels in soil above 140 mg/kg.



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The extent of petroleum hydrocarbon impacted soil near test pit P-TP16 has been delineated horizontally. If a risk-based remedial approach is not followed for the site, further field sampling and laboratory analysis would be required to determine the extent of TPH impacts in soil above the generic guidelines.

3.5.13 Sewer System

Previous subsurface investigations to 2009 at the location of the structure revealed possible impacts to groundwater as evidenced by a sheen on the groundwater at the test pit locations. Impacts to subsurface soil were noted within the test pits as evidenced by staining and modest to strong hydrocarbon odours. Diesel product was visible in the tank during previous investigations.

The Phase III ESA carried out in 2009 identified free product, TPH impacts in soil, sewer water and groundwater exceeding applicable guidelines at the time of the assessment. As per Atlantic PIRI guidance, remediation or risk management would be required in the following areas:

1. Free Product recovery would be required within the second manhole. It is recommended that the sewer system, including the settling tank and sewer outfall be properly cleaned and filled with clean sand or dismantled.
2. Petroleum hydrocarbon remediation of site soil would be required in the vicinity of test pits S-TP3 (1999), S-TP7 (1999), S-TP10 (1999) and S-TP12 (1999) and petroleum hydrocarbon remediation of site groundwater would be required in the vicinity of test pits S-TP2 (1999), S-TP6 (1999) and S-TP12 (1999) and monitor well 09-MW31 in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-14B in Appendix A shows the estimated extent of the petroleum hydrocarbon-impacted soil and groundwater at the site. The actual impacted areas may be smaller or larger than the estimated areas. Based on available analytical and field data, an estimated area of approximately 340 m² has TPH levels in soil above 140 mg/kg and an estimated area of approximately 232 m² has TPH levels in groundwater above 20 mg/L.

If a risk-based remedial approach is not followed for the site, further field sampling and laboratory analysis would be required to determine the extent of TPH, PAH and PCB impacts in soil and metals impacts in groundwater above the generic guidelines. It is recommended that the sewage system be decommissioned.

3.5.14 Dock Road Drum Storage Site

Previous subsurface investigations to 2009 revealed petroleum hydrocarbon odours and staining that extended from the surface to a depth of 2.0 mbgs (DDS-TP2) and mild hydrocarbon impacts detected in a soil sample collected at 1.5 mbgs (DDS-TP2).

The Phase III ESA carried out in 2009 identified TPH impacts in soil and sediment and BTEX and metal impacts in surface water exceeding applicable guidelines at the time of the assessment. As per Atlantic PIRI guidance, remediation or risk management would be required in the following areas:



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1. Petroleum hydrocarbon remediation of site soil would be required in the vicinity of test pit DDS-TP2 (1999) and petroleum hydrocarbon remediation of site sediment would be required in the vicinity of sediment sample 09-SED5, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-15B in Appendix A shows the estimated extent of the petroleum hydrocarbon-impacted soil and sediment at the site. The actual impacted areas may be smaller or larger than the estimated areas. Based on available analytical and field data, an estimated area of approximately 86 m² has TPH levels in soil above 140 mg/kg and an estimated area of approximately 86 m² has TPH levels in sediment above 1,500 mg/kg.
2. BTEX remediation of site surface water would be required in the vicinity of surface water sample 09-SW5 in accordance with provincial regulations, unless a Tier II risk assessment is conducted to determine a risk-based remedial approach for the site. Drawing No. 121410105-EE-15C in Appendix A shows the estimated extent of the BTEX-impacted soil at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 86 m² has toluene levels in surface water above 0.005 mg/L.
3. Metals remediation of site surface water would be required in the vicinity of surface soil sample 09-SW5 in accordance with provincial regulations, unless a risk-based remedial approach is followed for the site. Drawing No. 121410105-EE-15D in Appendix A shows the estimated extent of metals (i.e., aluminum, cadmium, copper, lead and zinc) impacted surface water at the site. The actual impacted area may be smaller or larger than the estimated area. Based on available analytical and field data, an estimated area of approximately 87 m² has metals levels in surface water above the applicable guidelines.

If a risk-based remedial approach is not followed for the site, further field sampling and laboratory analysis would be required to determine the extent of TPH, impacts in soil and sediment and the extent of metals and general chemistry impacts in surface water above the generic guidelines.

3.5.15 Helicopter Pad

The Phase III ESA carried out in 2009 did not identify TPH, PAH or PCB impacts in soil exceeding applicable guidelines at the time of the assessment. Refer to Drawing No. 121410105-EE-16A in Appendix A for the sample locations.

3.5.16 VOR Site

The VOR Site was not investigated during the Phase III ESA carried out in 2009 because the vegetation was too dense and several sections of the road have been overgrown with alders. It was recommended that the site be assessed during the late fall during a later site visit to assess for possible environmental issues related to the abandoned 900 L UST.

3.5.17 Streams

Streams, ditches and areas of standing water encountered on the Former U.S. military site were assessed during the Phase III ESA carried out in 2008. One stream was encountered at the Site and flows east and discharges into Lake Melville. A site plan (Drawing No. 121410105-EE-17A) showing the location of



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samples collected from the streams during the current and previous investigations is provided in Appendix A.

During the previous sampling events, surface water in streams was sampled at six locations throughout the Site (SW1 to SW6). Three surface water samples (SWC1, SWC2 and SWC3) were collected outside the known boundaries of the facility, from streams along the Main Access Road at locations well upstream of the road. Results of these samples are expected to be representative of background concentrations of parameters in the area. Site plans showing the 2001 sampling locations (i.e., SWC1, SWC2 and SWC3) were not provided for review, therefore these locations are not shown on the site plans.

Ditches were generally present along roads and did not appear to discharge into Lake Melville. The majority of the ditches did not contain considerable amounts of water during the October 2009 surface water sampling program.

3.5.18 Innu Healing Ground

The Phase III ESA carried out in 2009 did not identify TPH or metals impacts in soil or groundwater exceeding applicable guidelines at the time of the assessment. Refer to Drawing No. 121410105-EE-18A in Appendix A for the sample locations.

3.5.19 Clean Background Area

An area of native, undeveloped ground with similar regional geological soil conditions as the Former U.S. Military Site, located approximately 50 m west of the Service Site, was selected as the background sampling area. Based on local topography maps, the clean background area was located hydraulically upgradient of the Former U.S. military sites assessed. Three areas in Lake Melville, located at least 400 m from site surface water discharge points, were also selected for background sampling.

The Phase III ESA carried out in 2009 did not identify TPH or metals impacts in soil, groundwater, sediment or surface water exceeding applicable guidelines at the time of the assessment. Refer to Drawing No. 121410105-EE-19A in Appendix A for the sample locations.

3.5.20 Surface Debris and Physical Hazards

Surface debris and physical hazards were encountered at various locations throughout the Former U.S. Military Site as detailed below based on the Phase III ESA carried out in 2009. Items were encountered within or in close proximity to the boundaries of the following sites. Drawing No. 121410105-EE-20A in Appendix A shows the locations of the surface debris and physical hazards encountered at the Site. A log of surface debris and physical hazards encountered at the Former U.S. Military Site, including photos and GPS coordinates, is provided in Appendix B.

North Bulk Fuel Storage Site

Buried debris was not encountered in the six test pits excavated in 2009 as part of the Phase III ESA. Surface debris and physical hazards at the North Bulk Fuel Storage Site were generally found along the



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southern portion of the site. Drawing No. 121410105-EE-02A in Appendix A shows the locations of the surface debris encountered. Items encountered on the North Bulk Fuel Storage Site consisted of the following:

1. 09-SD23 - Domestic debris, old snowmobile, outboard motor, tire
2. 09-SD24 - Manhole cover
3. 09-SD25 - 12 m long 200 mm diameter steel pipe, valve
4. 09-SD26 - 0.3 m of 50 mm diameter steel pipe protruding from ground, valve
5. 09-SD27 - two empty 200 L steel drums

West Generator Site

Some metal debris was encountered near the surface of test pit 09-TP11 excavated in 2009 as part of the Phase III ESA. Buried debris was not encountered in the other four test pits.

Surface debris and physical hazards at the West Generator Site were generally found along the southern portion of the site. Drawing No. 121410105-EE-06A in Appendix A shows the locations of the surface debris encountered. Items encountered on the West Generator Site consisted of the following:

1. 09-SD29 - 10 m³ of partially buried pipe, metal and concrete debris
2. 09-SD30 - 100 m stretch of partially buried metal and concrete debris (50 mm, 200 mm and 300 mm diameter pipes, metal sheeting, drums, valves, cable, etc.)

Transmitter Building

Debris was encountered near the surface in monitor well 09-MW11 and test pit 09-TP19 completed in 2009 as part of the Phase III ESA and consisted of concrete, metal and pipe. Buried debris was not encountered in the other four test pits.



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Surface debris and physical hazards at the Transmitter Building Site were generally found along the northern and eastern portions of the site and to the south of the site near VOR road. Drawing Nos. 121410105-EE-07A in Appendix A and 121410105-EE-20A in Appendix A show the locations of the surface debris encountered. Items encountered on the Transmitter Building Site consisted of the following:

1. 09-SD18 - 0.4 m of 75 mm diameter steel pipe protruding from the ground
2. 09-SD31 - 6 m long 200 mm diameter steel pipe (partially buried), 1 m³ of concrete debris
3. 09-SD33 - Tower Debris

Camp Road Dump Site

Debris was encountered near the surface in monitor wells 09-MW23S and 09-MW23D and test pits 09-TP39, 09-TP40 and 09-TP41 completed in 2009 as part of the Phase III ESA, and consisted of a car chassis, cable, a creosote utility pole, sheet metal, wood, glass, steel drums, cans and bottles.

Surface debris and physical hazards at the Camp Road Dump Site were generally found throughout the site. Drawing No. 121410105-EE-08A in Appendix A shows the locations of the surface debris encountered. Items encountered on the Camp Road Dump Site consisted of the following:

1. 09-SD16 - Partially buried and surface metal debris (i.e., drums, pipe, cans, etc.)

Camp Road Drum Storage Site

No debris was encountered in test pits or monitor wells at the site completed in 2009 as part of the Phase III ESA. Surface debris and physical hazards were identified to the southwest of the Camp Road Drum Storage Site. Drawing No. 121410105-EE-09A in Appendix A shows the location of the surface debris encountered. Items encountered on the Camp Road Drum Storage Site consisted of the following:

1. 09-SD17 - 7 m of 200 mm diameter open steel pipe and 0.9 m of a 200 mm diameter open steel pipe protruding from the ground

Service Site (including desalination plant, boiler site and garbage freezer)

Buried debris was encountered in test pits 09-TP07, 09-TP49 and 09-TP50 completed in 2009 as part of the Phase III ESA and consisted of pipe, a culvert, metal, concrete and wood. Buried debris was not encountered in the other three test pits.

Surface debris and physical hazards at the Service Site were generally found between the two foundation ruins. Drawing No. 121410105-EE-10A in Appendix A shows the location of the surface debris encountered. Items encountered on the Service Site consisted of the following:

1. 09-SD32 – 10 m long 50 mm diameter steel pipe, 10 m long 25 mm diameter conduit (partially buried)



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Lake Melville Dump Site

Buried debris was encountered in test pits 09-TP62 and 09-TP65 completed in 2009 as part of the Phase III ESA and consisted of drums, metal, cans, bottles, plastic, wood, asphalt, shingles and glass. Buried debris was not encountered in the other six test pits.

Surface debris and physical hazards at the Lake Melville Dump Site were generally found in the northwest portion of the site, near Lake Melville. Drawing No. 121410105-EE-12A in Appendix A shows the location of the surface debris encountered. Items encountered on the site consisted of the following:

1. 09-SD15 – Five 200 L drums, small amounts of surface and partially buried debris (metal, batteries, etc.)

Underground Pipeline System

No debris was encountered in the test pits at the site completed in 2009 as part of the Phase III ESA. Surface debris and physical hazards at the Underground Pipeline System site were generally found near Lake Melville and between Dock Road and the Helicopter Pad Site. Drawing No. 121410105-EE-13A in Appendix A shows the locations of the surface debris encountered. Items encountered on the site consisted of the following:

1. 09-SD1 – 1 m³ concrete block and steel cable
2. 09-SD2 – 1.5 m³ concrete anchor block
3. 09-SD3 – 6 m long 200 mm diameter steel pipe and valve
4. 09-SD4 – 4 m of pipe protruding from ground
5. 09-SD5 - 10 m of steel cable

Sewer System

Buried debris was not encountered in the test pits at the site completed in 2009 as part of the Phase III ESA. Surface debris and physical hazards at the Sewer System Site were generally found near the settling tank, in the vicinity of Main Access Road. Drawing No. 121410105-EE-14A in Appendix A shows the location of the surface debris encountered. Items encountered on the site consisted of the following:

1. 09-SD19 – 20 m of steel cable
2. 09-SD20 – Sewer manhole and 20 m of steel cable
3. 09-SD21 – Sewer manhole
4. 09-SD22 – Sewer manhole
5. 09-SD28 – Steel drum, partially buried concrete debris



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Dock Road Drum Storage Site

Buried debris was not encountered in the test pits at the site completed in 2009 as part of the Phase III ESA. Surface debris and physical hazards at the Dock Road Drum Storage Site were found throughout the site. Drawing No. 121410105-EE-12A in Appendix A shows the locations of the surface debris encountered. Items encountered on the site consisted of the following:

1. 09-SD7 – two empty 200 L steel drums
2. 09-SD9 – 5 m long 500 mm diameter galvanized steel pipe
3. 09-SD10 – 10 by 30 m area of scattered surface and partially buried debris (plate steel, pipe, steel cable, drums, etc.)
4. 09-SD11 – 20 m steel cable, 5 m long 50 mm diameter galvanized steel pipe
5. 09-SD12 – Partially buried rear end of car
6. 09-SD13 – 1 m² piece of steel
- 09-SD14 – 2 m by 3 m tail gate

Helicopter Pad

Buried debris was not encountered in either of the test pits at the site completed in 2009 as part of the Phase III ESA. Surface debris and physical hazards were found in west of the Helicopter Pad. Drawing No. 121410105-EE-16A in Appendix A shows the locations of the surface debris encountered. Items encountered near the site consisted of the following:

1. 09-SD6 – One empty 200 L steel drum
2. 09-SD8 – Remnants of an old trailer, aluminum, wood debris

South Bulk Fuel Storage Site, East Bulk Fuel Storage Site, East Generator Site, Oil Shed Site, Innu Healing Ground

Buried debris was not encountered in the test pits excavated at these sites and no surface debris or physical hazards were encountered in 2009 as part of the Phase III ESA.

3.5.21 HHERA Results

The end goals of the risk assessment (Stantec, 2011) were to quantify risk associated with the identified chemicals of concern at the Former U.S. Military Site in Northwest Point for the various receptor pathways that humans, animals and other biota may be exposed to. These receptor pathways were determined for the overall site and associated risk evaluated for each of these pathways and SSTLs were calculated for the overall site. This output will assist NLDMAE in focusing on those areas that require remedial efforts and provide more realistic clean up goals than those provide in Section 3 above, that are site specific and protective of both human health and ecological components, hence providing a cost effective approach to risk manage the Site. Public consultation will be an essential component for remedial efforts at this Site.

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For the purposes of the HHERA, the Site was separated into two smaller areas (shown on Drawing No. 121410105-EE-24A) for assessment. These areas include:

1. North Area (0.50 km²): Dock Road Drum Storage Site, Lake Melville Dump Site, Sewer Discharge Area, Helicopter Pad Site, Underground Pipeline, Innu Healing Ground
2. South Area (0.56 km²): North Bulk Fuel Storage Site, Oil Shed Site, West Generator Site, Service Site, Transmitter Building Site, East Generator Site, Camp Road Dump Site, South Bulk Fuel Storage Site, East Bulk Fuel Storage Site, Camp Road Drum Storage Site

The SSTLs calculated for the overall site are present in Table 3.1 below.

Table 3.1 Summary of SSTLs to be applied to the Former U.S. Military Site

Chemical	SSTL (mg/kg)	Source	Areas Requiring Remediation
Soil			
PAHs (Benzo(a)pyrene TPE)	23	HHRA	Lake Melville Dump Site (Drawing No. 121410105-EE-25C, Appendix A)
TPH	2,100	ERA	East Bulk Fuel Storage Site (Drawing No. 121410105-EE-25A, Appendix A) ¹
PCBs	1.5	ERA	Lake Melville Dump Site (Drawing No. 121410105-EE-25C, Appendix A) ¹
Sediment			
TPH	500 ²	ERA	Lake Melville Dump Site (Drawing No. 121410105-EE-25C, Appendix A)
Notes: 1 = Additional sampling required prior to remediation, as described in the following section 2 = Benchmark value used in the ecological risk assessment			

The exposure point concentration (EPC) is an estimate of a reasonable upper limit value for the average chemical concentration in a medium, determined for each exposure unit through statistical analysis (USEPA, 1989). The areas of soil requiring remediation were selected in order to obtain area-wide EPCs that are less than the SSTLs for PAHs (i.e., Benzo(a)pyrene TPE), TPH and PCBs.

3.5.22 Remedial Action Plan

The following actions, remedial activities, and risk management strategies were recommended as part of the Phase III ESA (Stantec, 2011) for the control of hazards related to petroleum hydrocarbon, PCBs, PAHs and metals impacts at the Site. Some of these recommendations were intended to be flexible, and would be modified as appropriate, depending upon the results of consultation with regulators and local residents.

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Actions

1. An area of TPH impacted soil exceeding the SSTL generated for protection of ecological health was identified at the East Bulk Fuel Storage Site (Drawing No. 121410105-EE-25A, Appendix A). However, because there were too few surface soil (i.e., <30 cm) samples analysed for TPH to calculate an EPC, the maximum concentration was used in the ecological risk assessment. In order to get an estimate of the area wide EPC, it was recommended that additional surface soil samples (< 30 cm) be collected and analysed for TPH. An area wide EPC could then be calculated and compared to the SSTL generated for protection of ecological receptors to determine if remediation is necessary.
2. An area of PCB impacted soil exceeding the SSTL generated for the protection of ecological health was identified at the Lake Melville Dump Site (Drawing No. 121410105-EE-25C, Appendix A). Because there were too few soil samples analysed for PCBs to calculate an EPC, the maximum concentration of PCBs was used in the ecological risk assessment. Therefore, additional soil samples should be collected from this area to calculate an area wide EPC and to further delineate the PCB impacts prior to conducting site remediation.
3. One surface water and one sediment sample were collected from the stream running through the Former U.S. Military Site during the 2009 field program. Concentrations of aluminum and iron and the pH value in the surface water sample exceeded the generic CCME and Health Canada guidelines. Because only one surface water sample was collected, it was uncertain if additional portions of the stream were impacted. A stream survey to determine the location of the streams on the Site as well as the collection of surface water samples and sediment samples from various portions of the stream were required in order to conduct an aquatic ecological risk assessment. Analysis should include TPH/BTEX and metals as well as PCBs and PAHs which had not been previously tested in sediment or surface water.
4. According to AMEC (2001), Innu from the area use surface water from the stream for drinking water. A pipe had been placed in the area of surface water sample SW1 for obtaining drinking water. Interviews with local residents (e.g., cabin owners) should be conducted to establish the use of surface water at the Site to confirm that areas being used for drinking water are properly sampled.
5. Soil samples were selected for analysis of petroleum hydrocarbons based on the measured soil vapor concentrations, field observations and site usage and history. No surface soil samples from the Service Site were analysed for petroleum hydrocarbons. Petroleum hydrocarbons were present in the subsurface soil at the site, but it is unknown if the impacts were present in the surface soil. Because the knowledge of the presence of petroleum hydrocarbons in the surface soil is essential for the ecological risk assessment, surface soil samples should be collected and analysed for petroleum hydrocarbons at this site.
6. It was recommended that further sampling be conducted at the Helicopter Pad Site to confirm the presence/absence of pesticides in surface soil.
7. Due to the dense vegetation present at the VOR site at the time of the site visit, a thorough site inspection could not be completed. It was recommended that the site be inspected in the late fall during a later site visit to assess for possible environmental issues related to the abandoned 900 L underground storage tank (UST).

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8. If site conditions or land uses change (e.g., residential usage, use of potable groundwater or further development on the Site), the results of the on-site risk assessment may need to be revisited to ensure that there are no additional or increased risks to potential receptors, on-site or off-site.
9. It was recommended that if vegetable gardens are grown in the future, they are kept away from contaminated areas of the Site. Clean imported topsoil should be brought in for this purpose.
10. It is our understanding that there is no current groundwater use for potable drinking water. The assumption is made that prior to any future use of groundwater for potable drinking water or other human use (i.e., showering, washing), the groundwater will be tested to demonstrate that groundwater quality is within the Guidelines for Canadian Drinking Water Quality.

Remedial Activities

1. Remove soil, metal and other debris from the area of soil sample 09-SS14, which was located at the Camp Road Dump Site (121410105-EE-25B, Appendix A). The Camp Road Dump Site was used for the disposal of non-recyclable, non-hazardous waste recovered during the 2001 remediation program conducted by AMEC. Waste was placed into 10 m² by 4 m deep pits along the north side of the site. This may explain the elevated metals concentrations in soil sample 09-SS14. The items would be transported by truck to a lay-down area where metals leachability swab sampling would be conducted. Surface soil in the area of sample 09-SS14 should be resampled for metals leachability. Based on the results of leachability testing, soil (approximately 129 m³), metal and other debris the area of 09-SS14 would be transported by truck to the local landfill or handled as hazardous waste and transported to an appropriate approved disposal facility.
2. The pH in surface water sample (09-SWM6) that was collected in the vicinity of the sewage discharge structure was low (4.55). Because aluminum can be a potential concern for aquatic receptors at pH values lower than six, the sewage discharge should be removed from this area of Lake Melville. The abandoned sewage discharge structure would be emptied of sludge by qualified personnel, following standard procedures. The removed sludge would be disposed of at local approved facilities. The discharge structure would be cleaned and removed from the Site. The discharge structure would be disposed of at the local landfill. Sewer piping would be left in place and capped.
3. An area of PAH impacted soil exceeding the SSTL (i.e., 23 mg/kg for Benzo(a)pyrene TPE) generated for protection of human health was identified at the Lake Melville Dump Site (Drawing No. 121410105-EE-25C, Appendix A). Soil in this area should be remediated to a depth of 1.5 mbgs to be protective of human health. Based on the remedial options evaluation, the preferred option for remediation of PAHs-impacted soil was to excavate soil and transport to a soil treatment facility or an out-of province hazardous waste landfill (dependant on the results of leachability testing).
4. The sediment sample collected from a small area of standing water at the Lake Melville Dump Site had a TPH concentration that exceeded the benchmark value of 500 mg/kg used in the ecological risk assessment. Concentrations of TPH are expected to be similar throughout the approximately 45 m² area of standing water. This area provides habitat for ecological receptors as evidenced by the presence of several tadpoles in the water during the 2009 field program. It was recommended that the sediment be removed from the area of standing water in the late fall season. Based on the remedial options evaluation, the preferred option for remediation of TPH-impacted sediment was to excavate sediment and transport to local landfill.



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Recommendations
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5. Free phase petroleum product was observed at the following sites: South Bulk Fuel Storage Site (09-TP21), Service Site (09-MW4), East Generator Site (09-MW20), Sewer System Site (second manhole). Because the Atlantic PIRI RBCA model is only applicable to sites where free product is not present, it is recommended that the free product be removed from these areas. Prior to the selection of a remedial option for free phase petroleum products on groundwater, it is recommended that further delineation be conducted at the South Bulk Fuel Storage Site, the Service Site and the East Generator Site. Free product should be purged from the sewer line and the sewer line should be decommissioned through capping.

Soil removal operations would be inspected on a continuous basis by an environmental consultant. Confirmatory soil sampling would be carried out in remediated areas to demonstrate that remedial objectives are obtained. Approval is needed from the local landfill, soil treatment facility and/or out-of-province hazardous waste landfill before soil can be sent there for disposal. It was assumed that approval would be received from the local landfill to accept the TPH-impacted soil described in the previous sections, based on the site characterization information which describes the acceptable levels of contaminants in soil disposed of at the landfill.

Once all soils and sediment requiring remediation have been removed from the Site and the EPCs for the Site are below the SSTLs and the identified human health and ecological risks at the Site have been mitigated, a summary report would be prepared and submitted to NLDMAE to obtain site closure for the property.

4.0 RECOMMENDATIONS

Based on the results of the current desktop review of available environmental assessment reports for the Site, Stantec recommends to follow the recommendations detailed in the Report for Phase III ESA (Stantec, 2011).

5.0 CLOSURE

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

This report provides an evaluation of selected environmental conditions associated with the identified portion of the property that was assessed at the time the work was conducted and is based on information obtained by and/or provided to Stantec at that time. There are no assurances regarding the accuracy and completeness of this information. All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.



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Closure
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The opinions in this report can only be relied upon as they relate to the condition of the portion of the identified property that was assessed at the time the work was conducted. Activities at the property subsequent to Stantec's assessment may have significantly altered the property's condition. Stantec cannot comment on other areas of the property that were not assessed.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report, and are based solely on the scope of work described in the report, the limited data available and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report.

The report is limited by the following:

1. The Desktop Environmental Review did not include a site visit or interviews with persons associated with the Site.

The conclusions are based on the site conditions encountered by Stantec at the time the work was performed at the specific testing and/or sampling locations, and conditions may vary among sampling locations. Factors such as areas of potential concern identified in previous studies, site conditions (e.g., utilities) and cost may have constrained the sampling locations used in this assessment. In addition, analysis has been carried out for only a limited number of chemical parameters, and it should not be inferred that other chemical species are not present. Due to the nature of the investigation and the limited data available, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire site. As the purpose of this report is to identify site conditions which may pose an environmental risk; the identification of non-environmental risks to structures or people on the site is beyond the scope of this assessment.

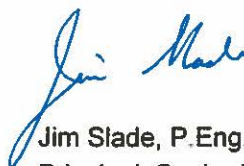
If any conditions become apparent that differ significantly from our understanding of conditions as presented in this report, we request that we be notified immediately to reassess the conclusions provided herein. This report was prepared by Paula Brennan, M.A.Sc., P.Eng. and reviewed by Jim Slade, P.Eng., P.Geo. We trust that this report meets your present requirements. If you have any questions or require additional information, please contact our office at your convenience.

Respectfully submitted,

STANTEC CONSULTING LTD.



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Principal, Senior Environmental Engineer



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References
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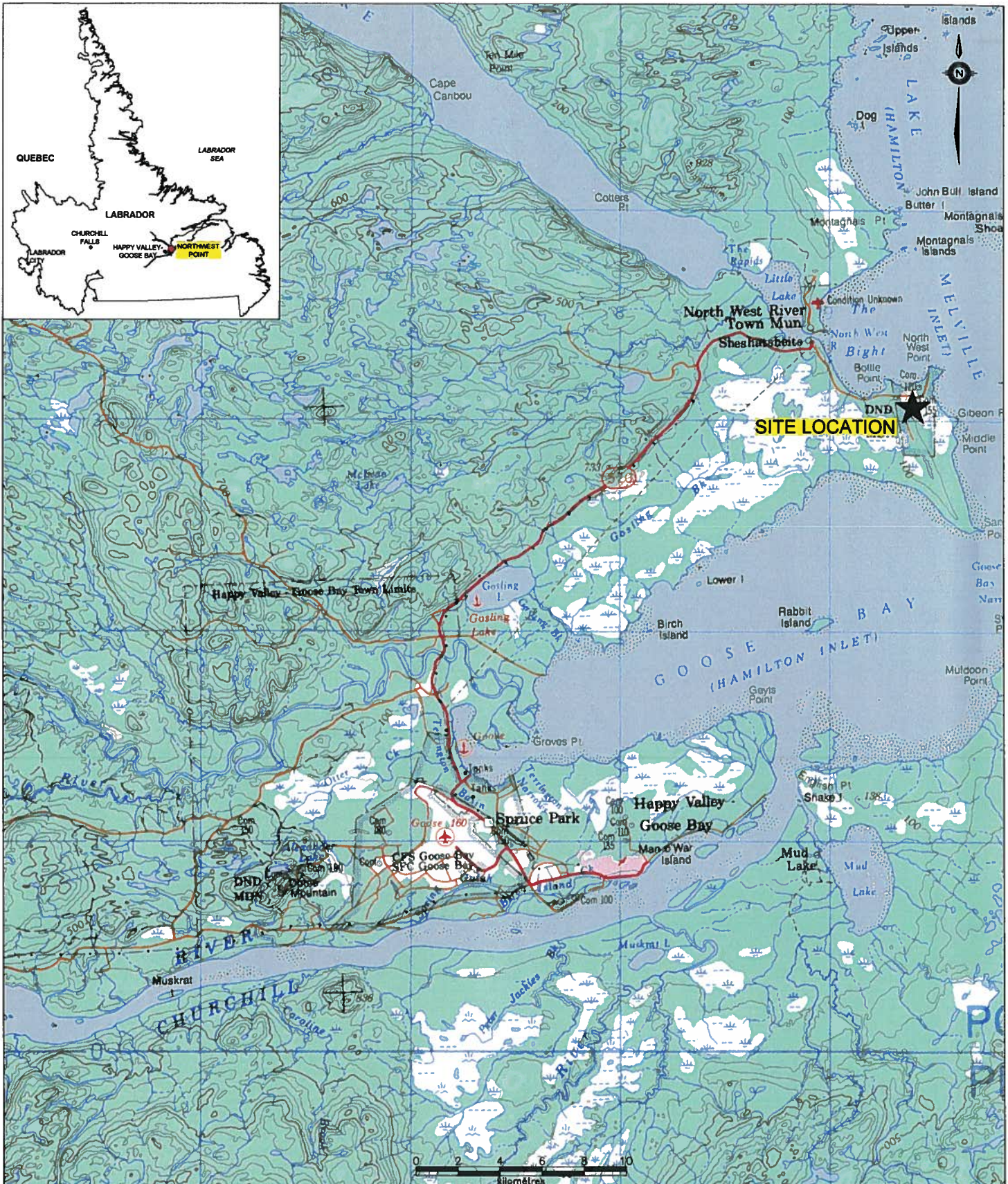
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APPENDIX A

Drawings

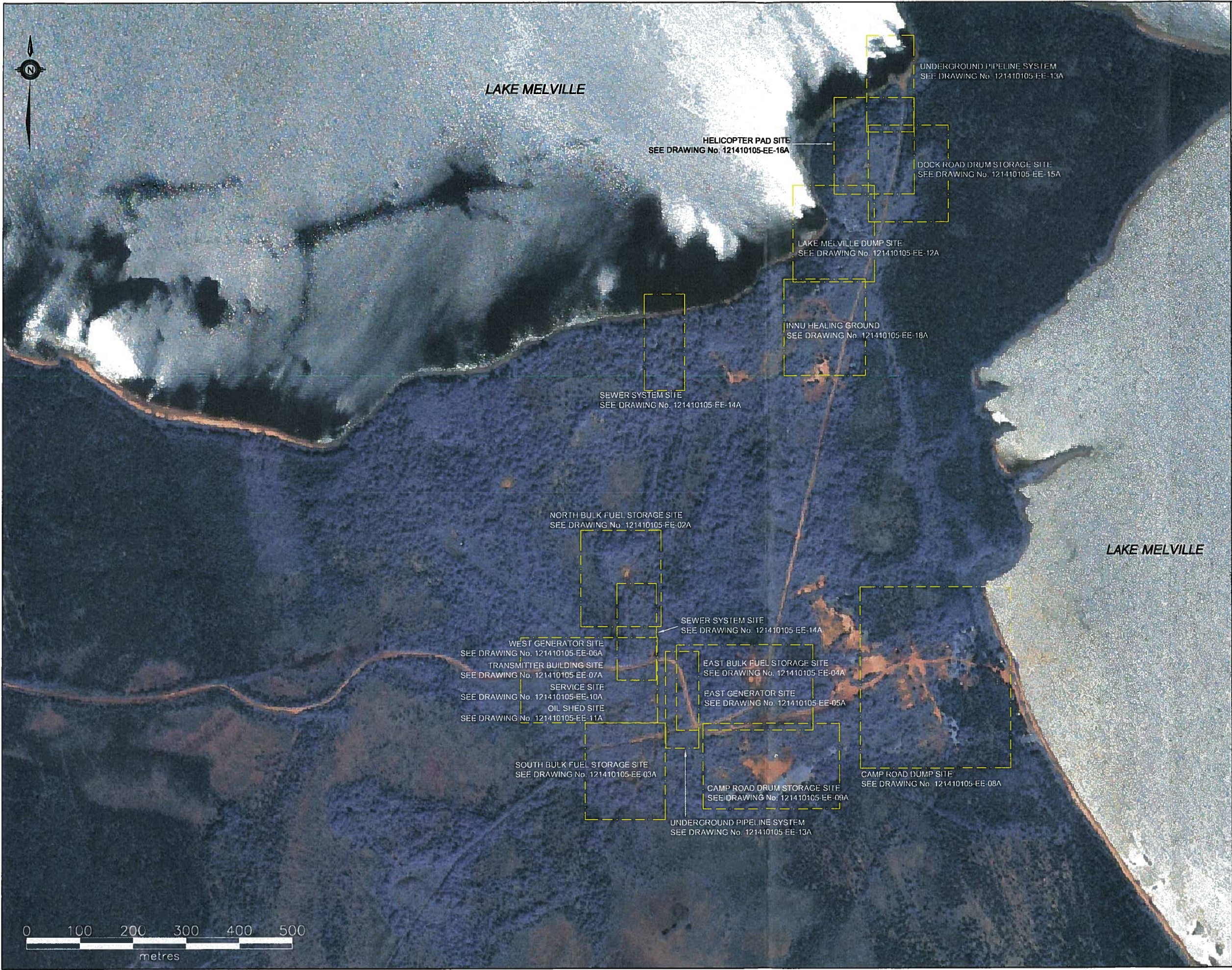


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	PROJECT TITLE:	PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL		DRAWN BY:	N.M.	CHECKED BY:
DRAWING TITLE:		SITE LOCATION PLAN		EDITED BY:	-	REV. No.
				DRAWING No.:	121410105-EE-01A	
			CAD FILE:	1044857-EE-09.DWG		



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LAKE MELVILLE

LAKE MELVILLE



LEGEND

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ENVIRONMENT AND CONSERVATION**


PROJECT TITLE:

**PHASE III ENVIRONMENTAL SITE
ASSESSMENT, HUMAN HEALTH AND
ECOLOGICAL RISK ASSESSMENTS,
REMEDIAL ACTION PLAN FOR
THE FORMER U.S. MILITARY FACILITY
OF NORTHWEST POINT, NL**

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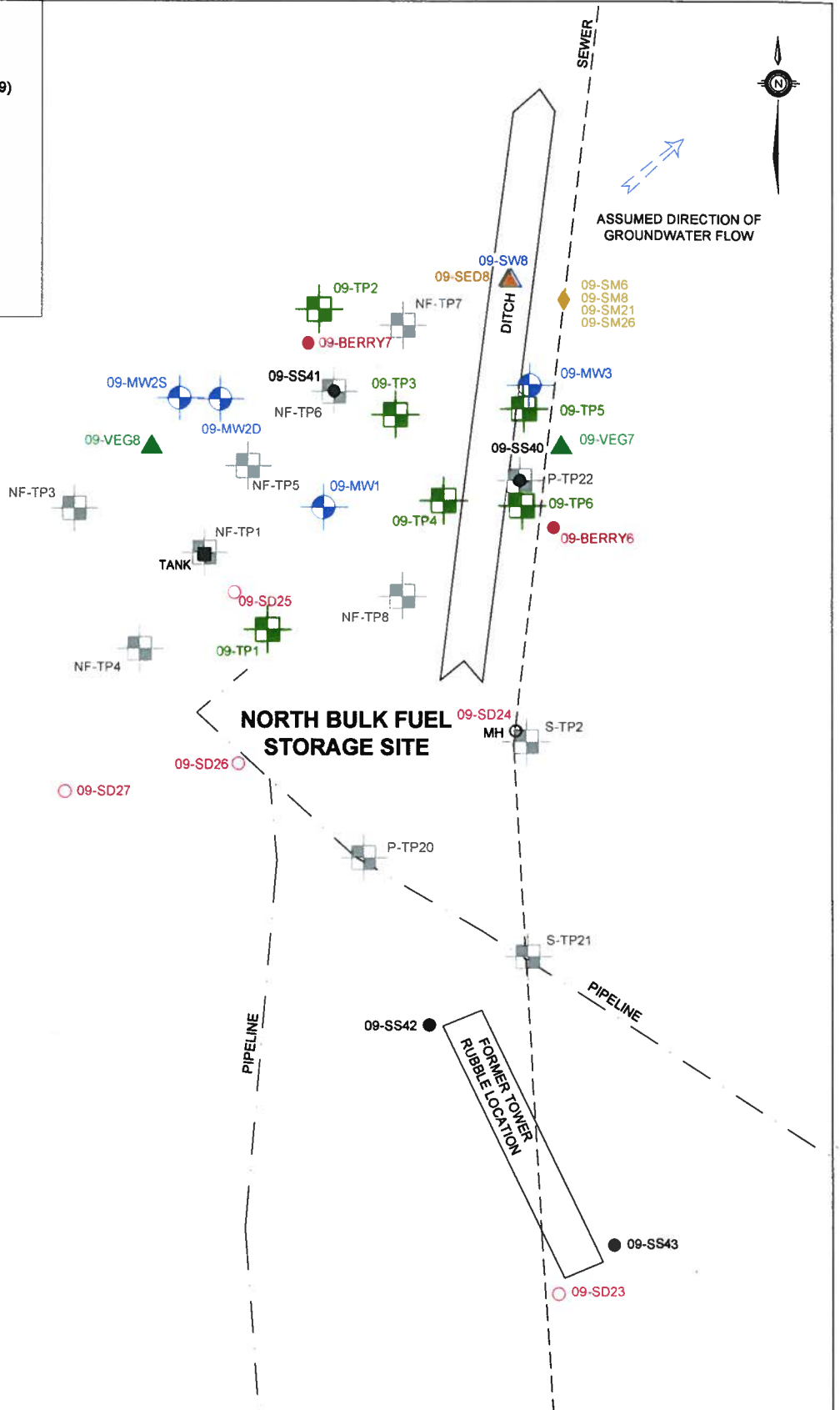
SITE PLAN

Stantec Consulting Ltd.

 Stantec	SCALE: 1:7000	DATE: JUNE 18, 2010
	DRAWN BY: N.M.	CHECKED BY: A.R.
	EDITED BY: -	REV. No. 0
	DRAWING No: 121410105-EE-01B	
	CAD FILE: 1044857-EE-08.DWG	

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- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- ⊕ TEST PIT (STANTEC 2009)
- ⊕ MONITOR WELL (STANTEC 2009)
- ⊕ TEST PIT (AGRA 1999)



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PROJECT TITLE:
PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL
ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL

DRAWING TITLE:

SITE PLAN - NORTH BULK FUEL STORAGE SITE

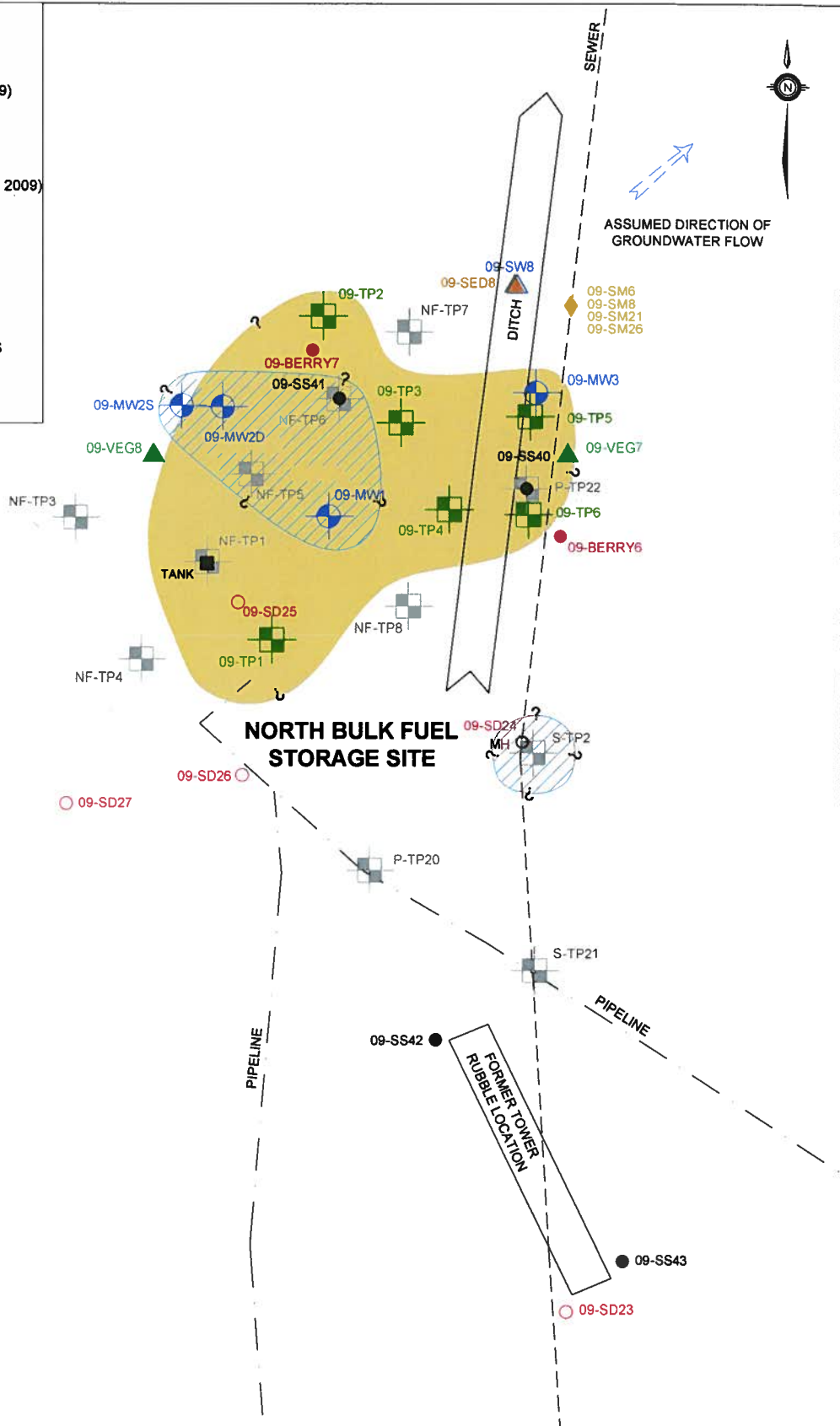
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LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
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- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF TPH IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES

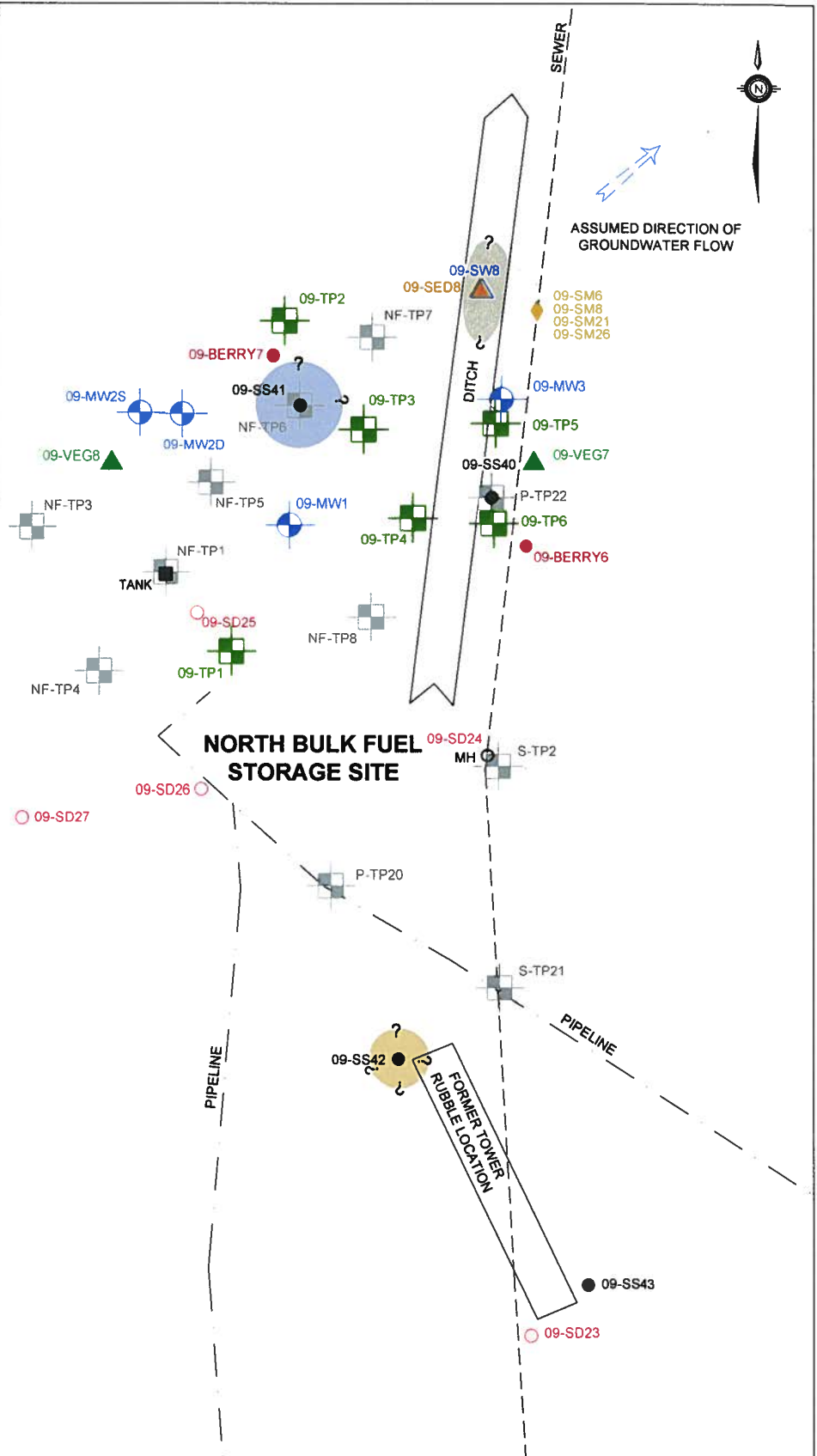


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- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- MONITOR WELL (STANTEC 2009)
- TEST PIT (AGRA 1999)
- APPROXIMATE EXTENT OF METALS IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF METALS IMPACTS IN SURFACE WATER EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF METALS IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES

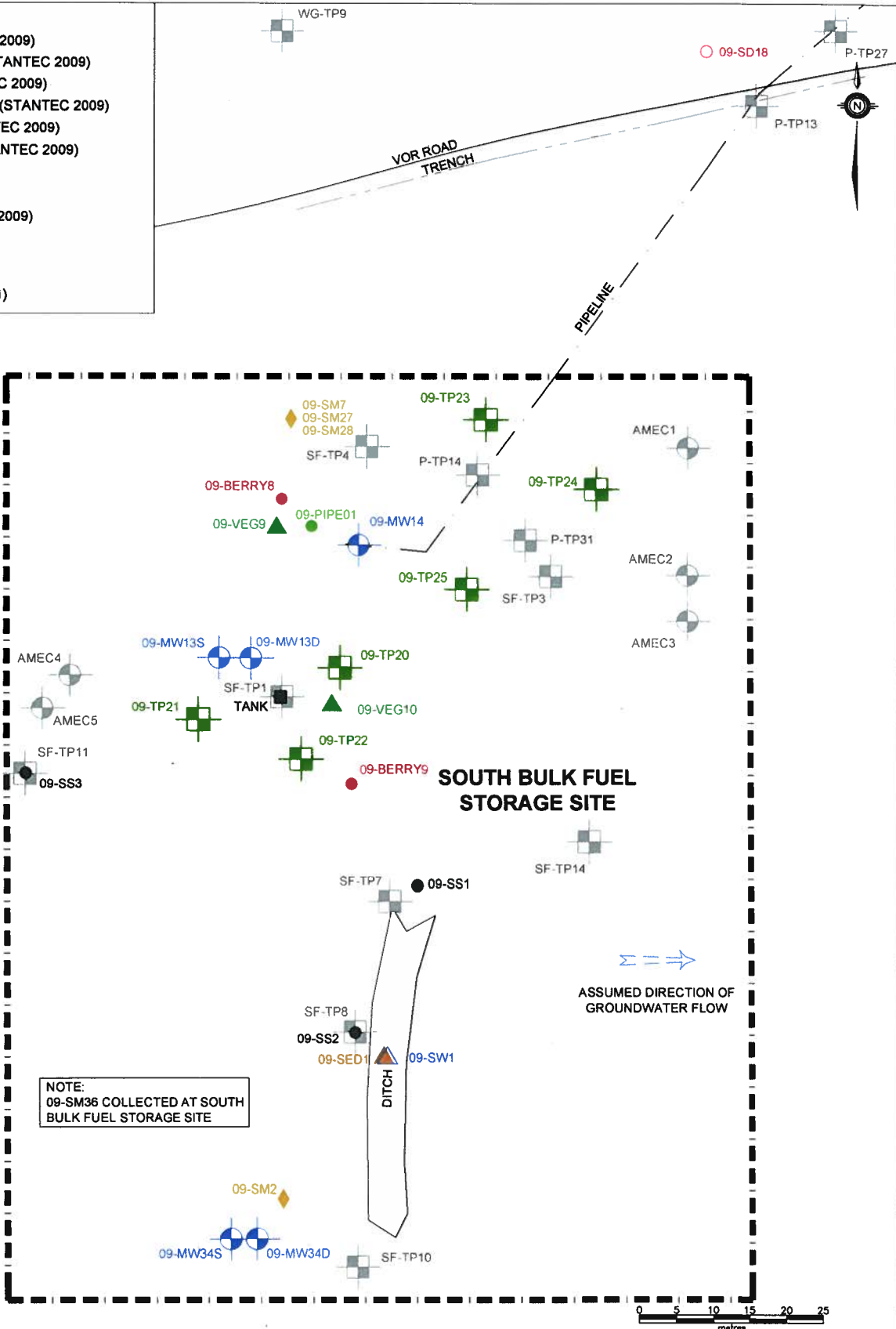


NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.



CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:800	DATE: JUNE 21, 2010	
	DRAWN BY: N.M.	CHECKED BY: A.R.	
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	EDITED BY: -	REV. No. 0	
	DRAWING No: 121410105-EE-2C		
DRAWING TITLE: APPROXIMATE EXTENT OF METALS IMPACTS EXCEEDING GENERIC GUIDELINES - NORTH BULK FUEL STORAGE SITE	CAD FILE: 1044857-EE-11.DWG		

LEGEND

- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- ⊠ TEST PIT (STANTEC 2009)
- ⊕ MONITOR WELL (STANTEC 2009)
- ⊠ TEST PIT (AGRA 1999)
- ⊕ MONITOR WELL (AMEC 2001)

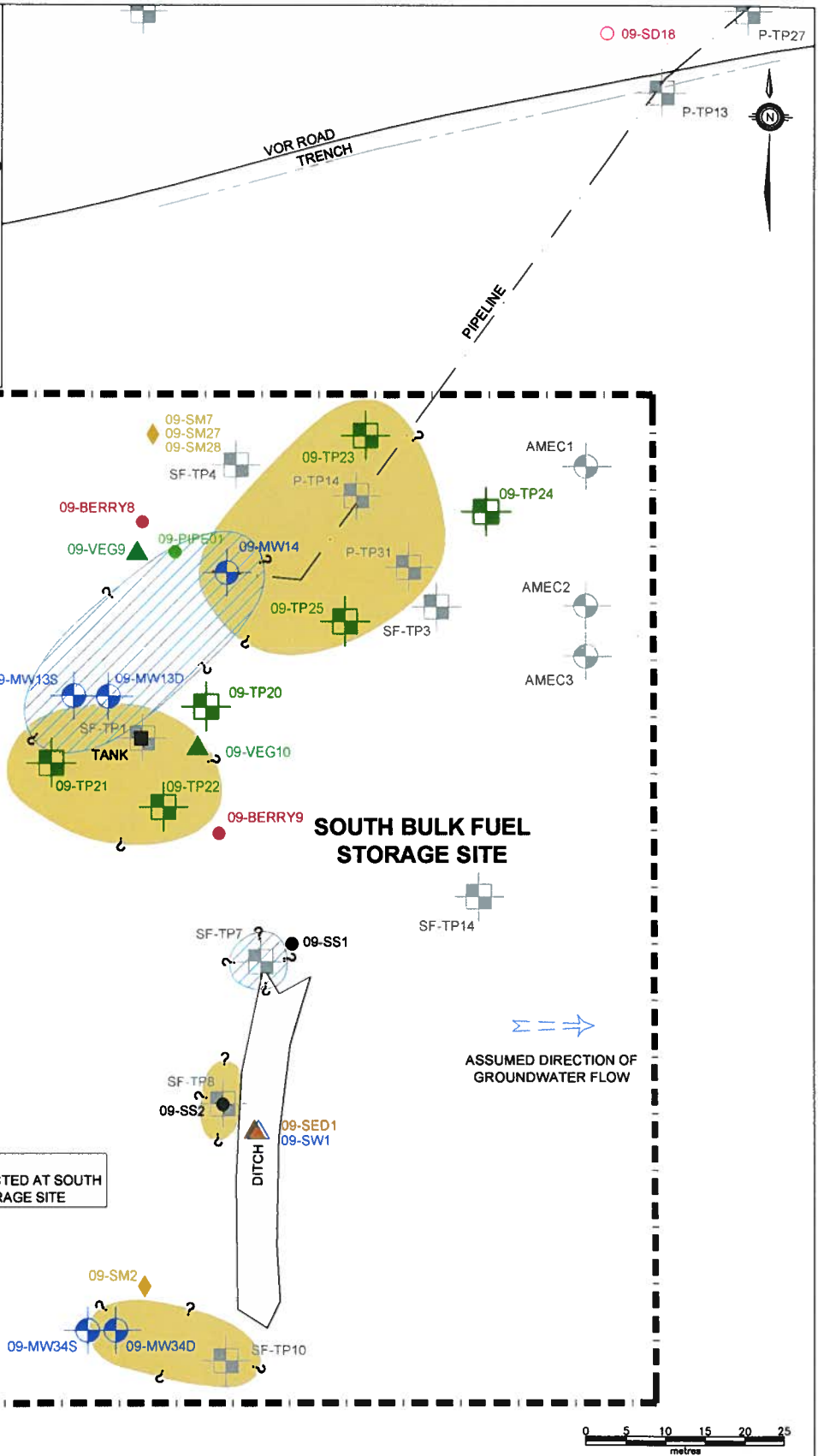


NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:800	DATE: JUNE 17, 2010	
	DRAWN BY: N.M.	CHECKED BY: A.R.	
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	EDITED BY: -	REV. No: 0	
	DRAWING No: 121410105-EE-03A		
DRAWING TITLE: SITE PLAN - SOUTH BULK FUEL STORAGE SITE	CAD FILE: 1044857-EE-07.DWG		Stantec

LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- ▨ APPROXIMATE EXTENT OF TPH IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES



NOTE:
09-SM36 COLLECTED AT SOUTH
BULK FUEL STORAGE SITE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT:	NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION
PROJECT TITLE:	PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL
DRAWING TITLE:	APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - SOUTH BULK FUEL STORAGE SITE

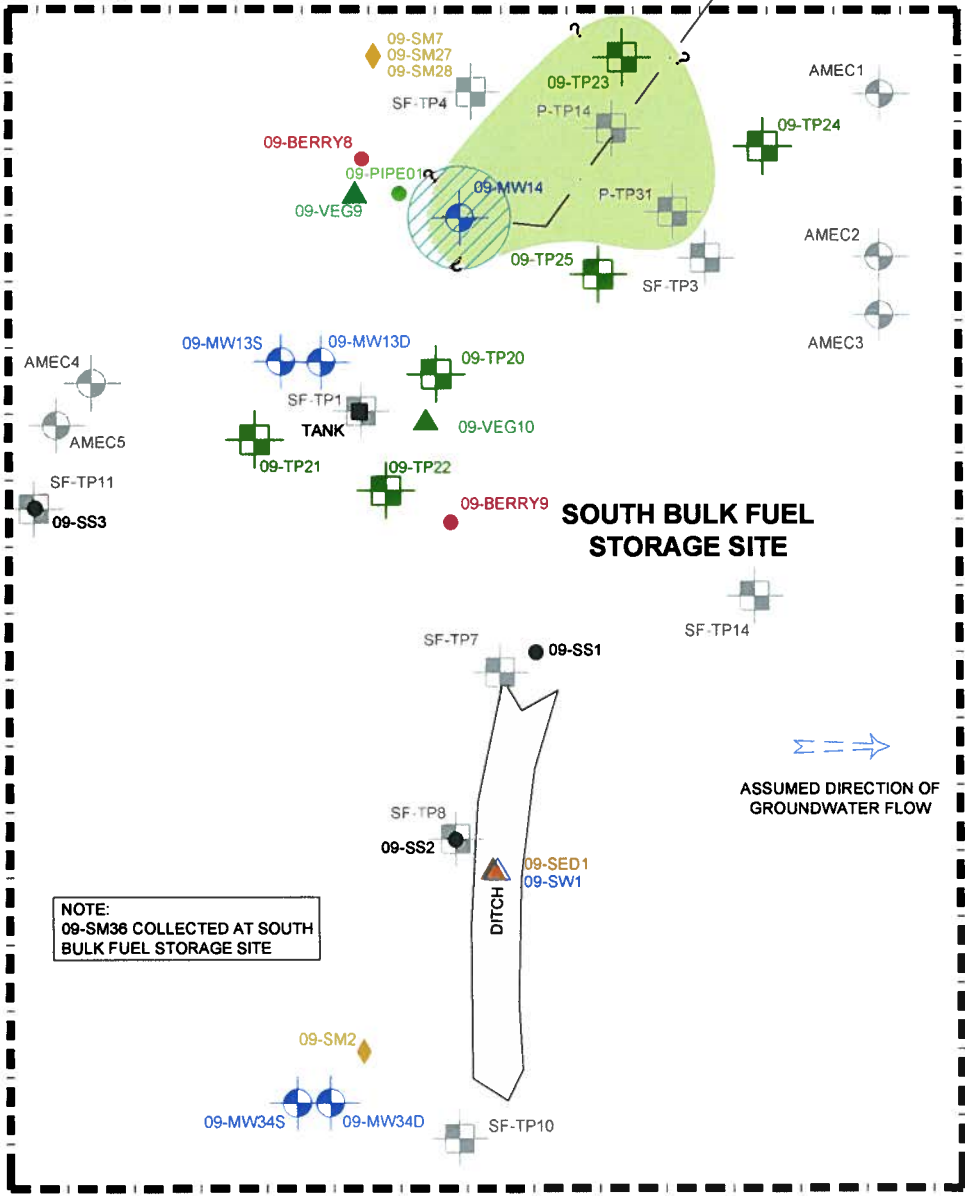
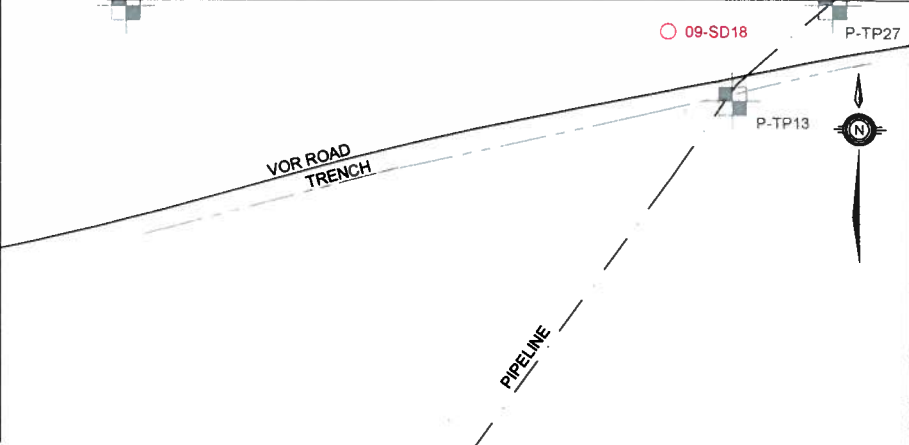
SCALE:	1:800	DATE:	JUNE 17, 2010
DRAWN BY:	N.M.	CHECKED BY:	A.R.
EDITED BY:	-	REV. No.	0
DRAWING No.:	121410105-EE-03B		
CAD FILE:	1044857-EE-10.DWG		



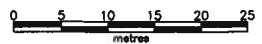
Stantec

LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF BENZENE AND XYLENE IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF ETHYLBENZENE AND XYLENE IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES



NOTE:
09-SM36 COLLECTED AT SOUTH
BULK FUEL STORAGE SITE

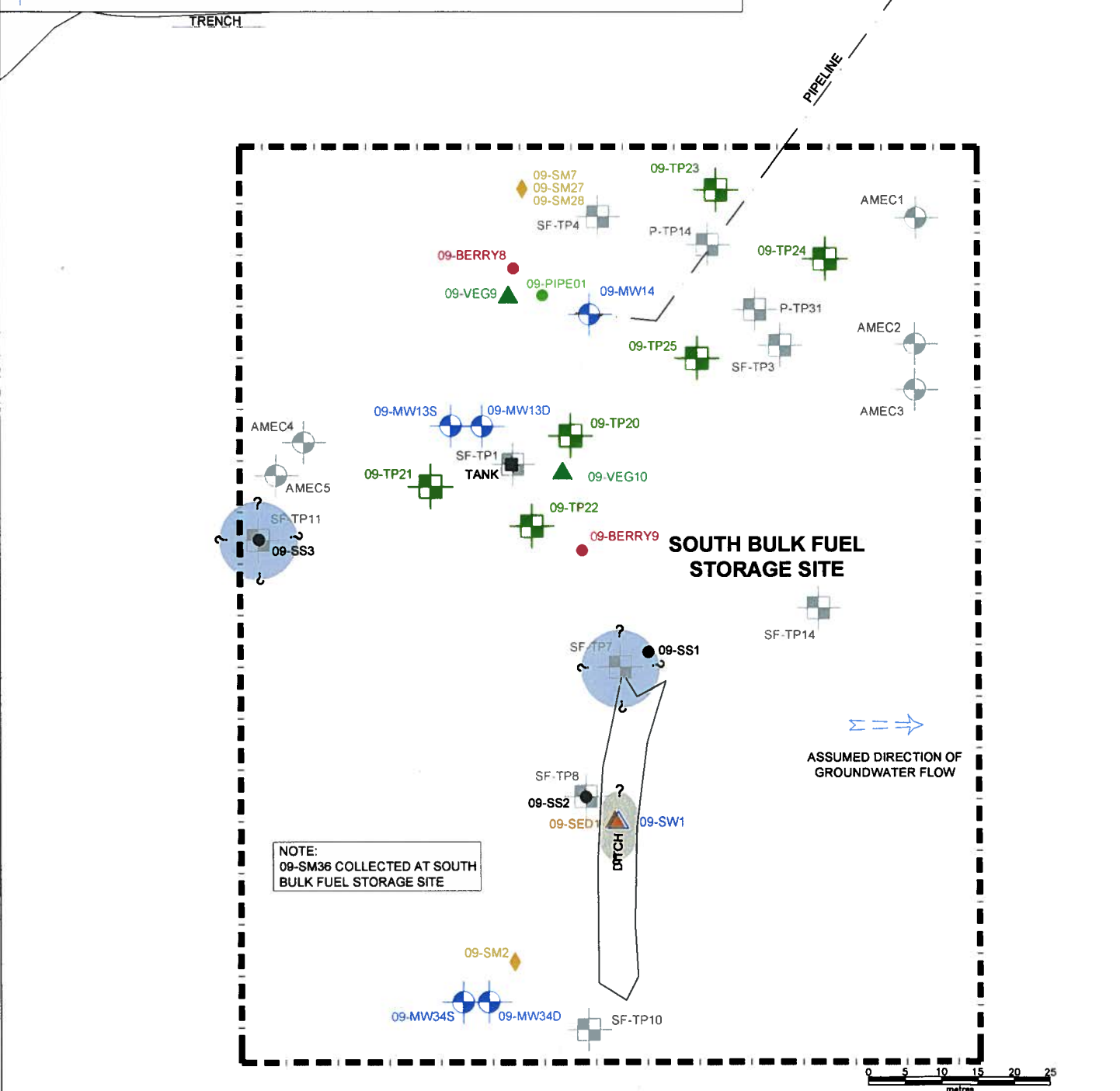


NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

<p>CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</p>	<p>SCALE: 1:800</p> <p>DRAWN BY: N.M.</p> <p>EDITED BY: -</p>	<p>DATE: JUNE 17, 2010</p> <p>CHECKED BY: A.R.</p> <p>REV. No: 0</p>	
<p>PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</p>	<p>DRAWING No: 121410105-EE-03C</p>		
<p>DRAWING TITLE: APPROXIMATE EXTENT OF BTEX IMPACTS EXCEEDING GENERIC GUIDELINES - SOUTH BULK FUEL STORAGE SITE</p>	<p>CAD FILE: 1044857-EE-15.DWG</p>		

LEGEND

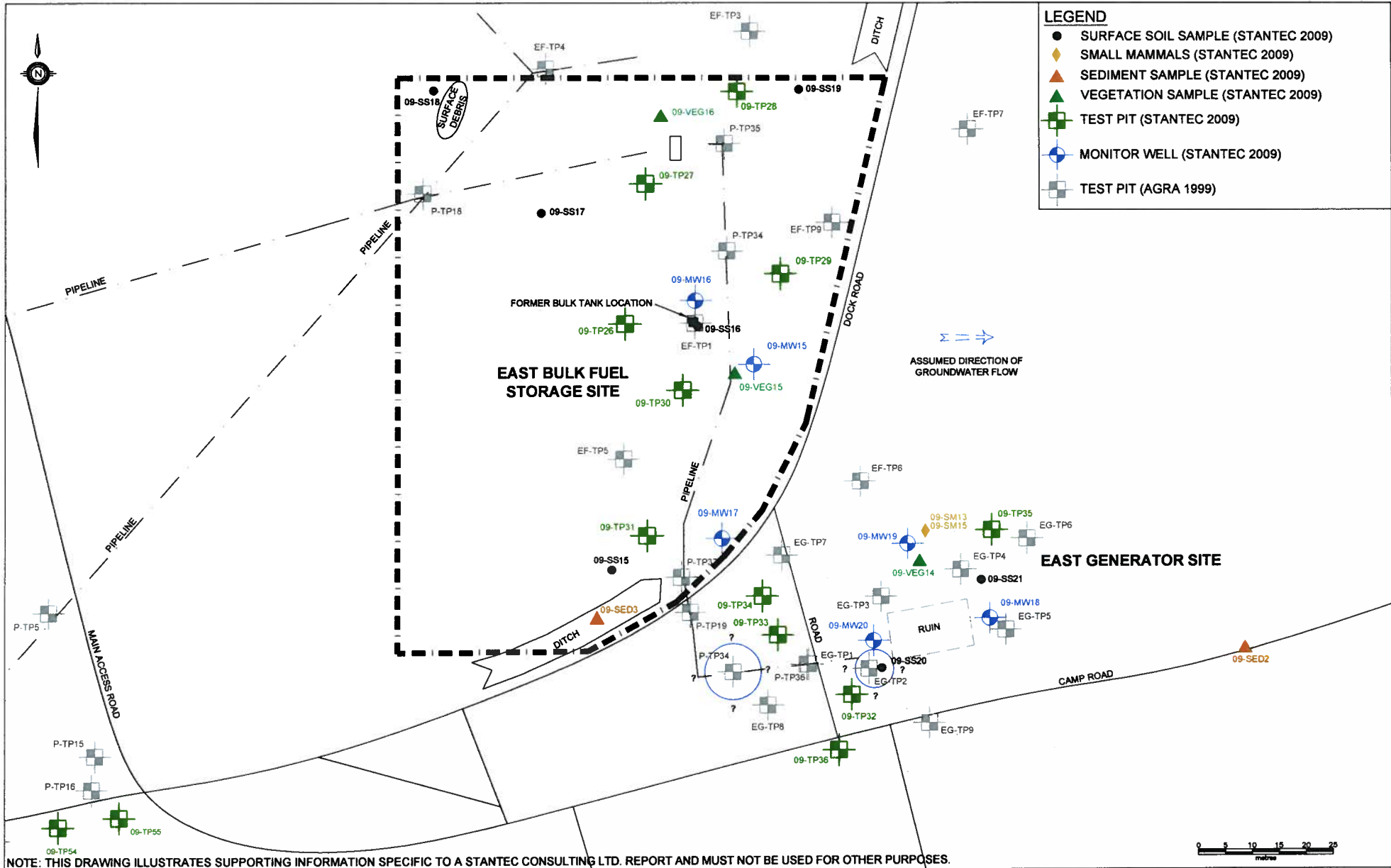
- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- ⊠ TEST PIT (STANTEC 2009)
- ⊕ MONITOR WELL (STANTEC 2009)
- ⊠ TEST PIT (AGRA 1999)
- ⊕ MONITOR WELL (AMEC 2001)
- APPROXIMATE EXTENT OF METALS IMPACTS IN SURFACE WATER EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF METALS IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES




NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

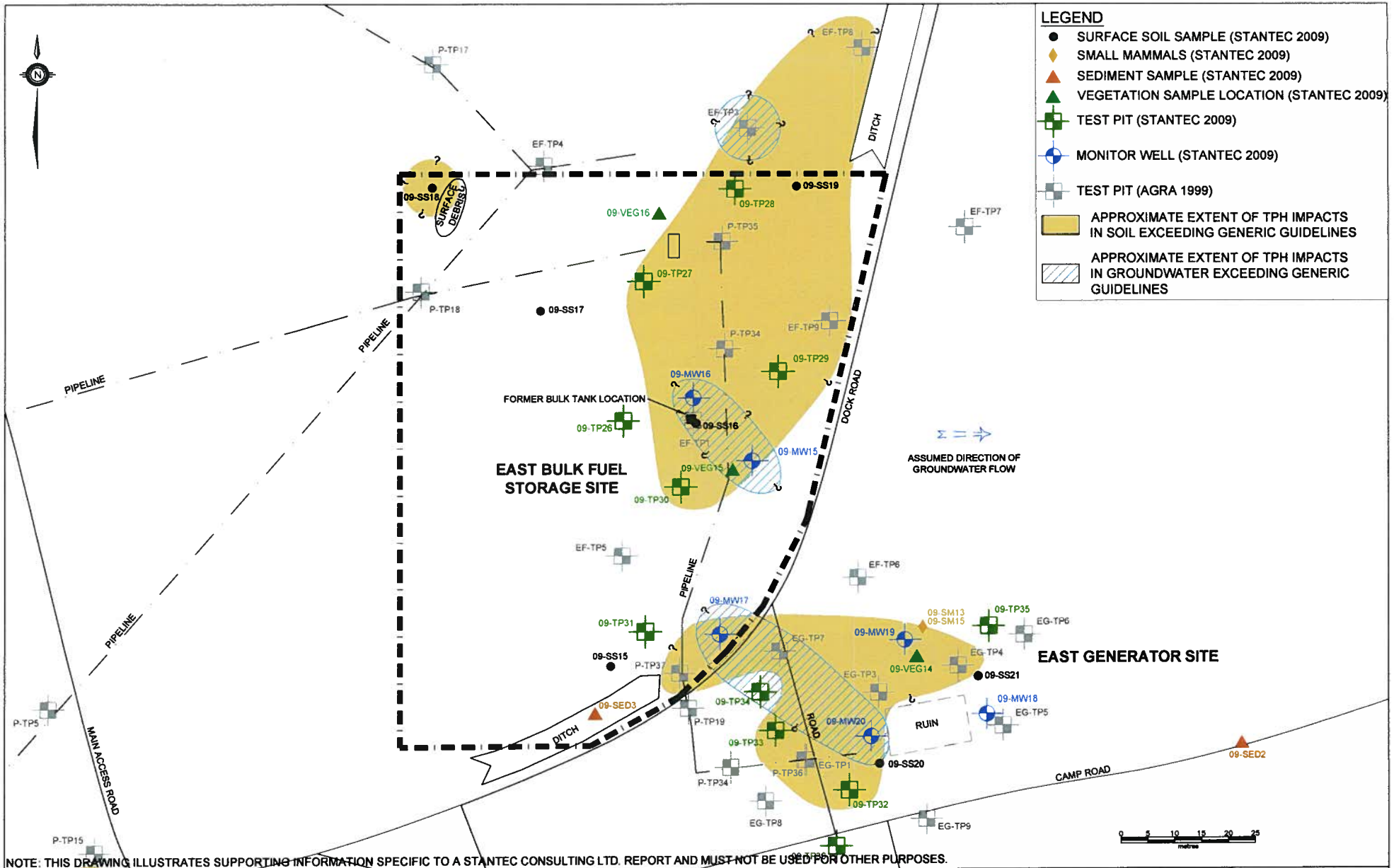
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CLIENT:	NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION		 Stantec
PROJECT TITLE:	PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL		
DRAWING TITLE:	SITE PLAN - EAST BULK FUEL STORAGE SITE		
SCALE:	1:800	DATE:	
DRAWN BY:	N.M.	CHECKED BY:	A.R.
EDITED BY:	-	REV. No.	0
DRAWING No.:	121410105-EE-04A		
CAD FILE:	1044857-EE-07.DWG		

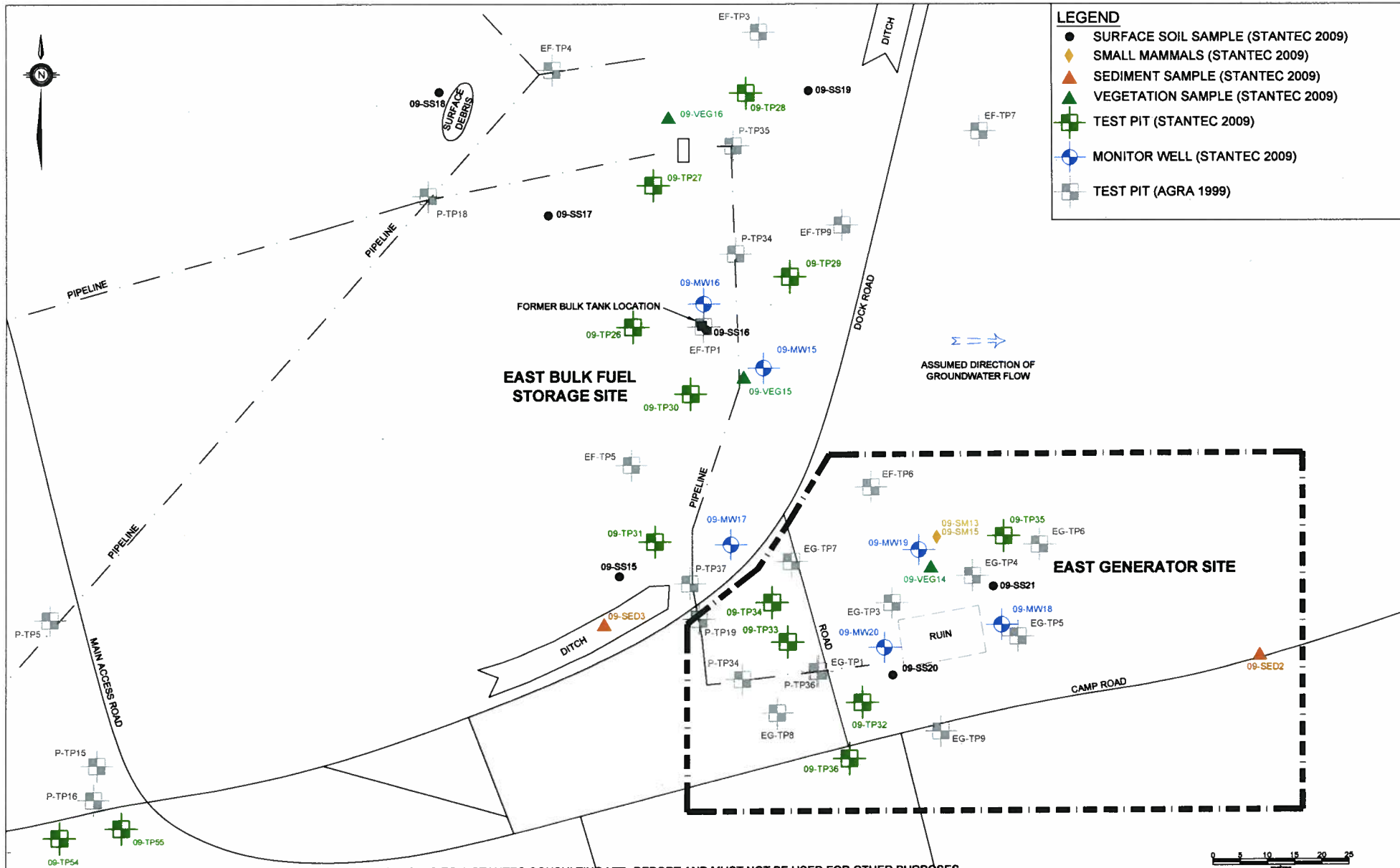


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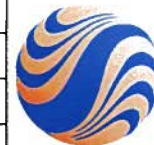
- SURFACE SOIL SAMPLE (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- MONITOR WELL (STANTEC 2009)
- TEST PIT (AGRA 1999)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- ▨ APPROXIMATE EXTENT OF TPH IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

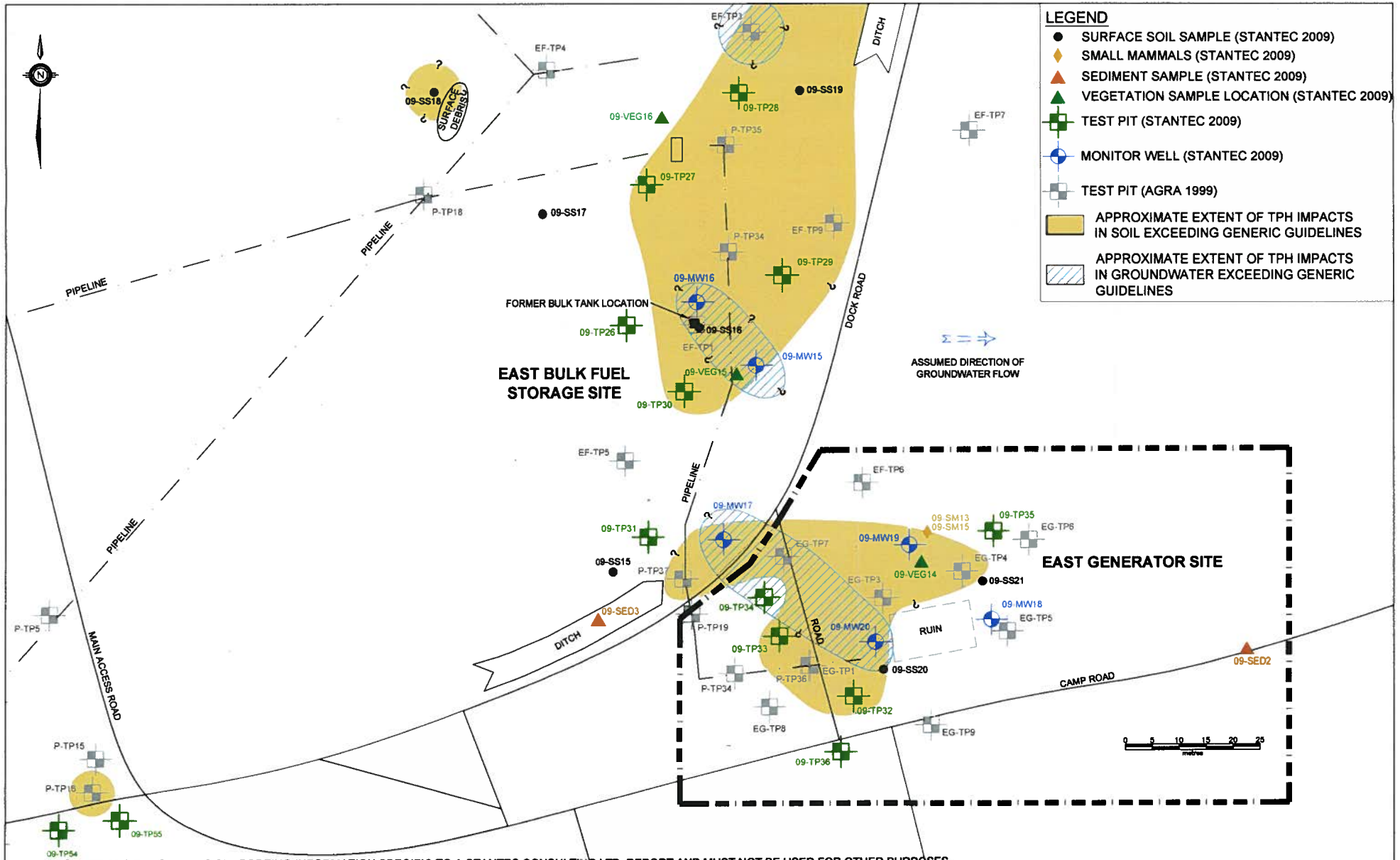
CLIENT:	NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION		
PROJECT TITLE:	PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL		
DRAWING TITLE:	APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - EAST BULK FUEL STORAGE SITE		
SCALE:	1:800	DATE: JUNE 18, 2010	
DRAWN BY:	N.M.	CHECKED BY: A.R.	
EDITED BY:	-	REV. No. 0	
DRAWING No.:	121410105-EE-04B		
CAD FILE:	1044857-EE-10.DWG		




CLIENT:	NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE:	1:800	DATE:	JUNE 17, 2010
PROJECT TITLE:	PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	DRAWN BY:	N.M.	CHECKED BY:	A.R.
DRAWING TITLE:	SITE PLAN - EAST GENERATOR SITE	EDITED BY:	R.L.	REV. No.:	0
		DRAWING No.:	121410105-EE-05A		
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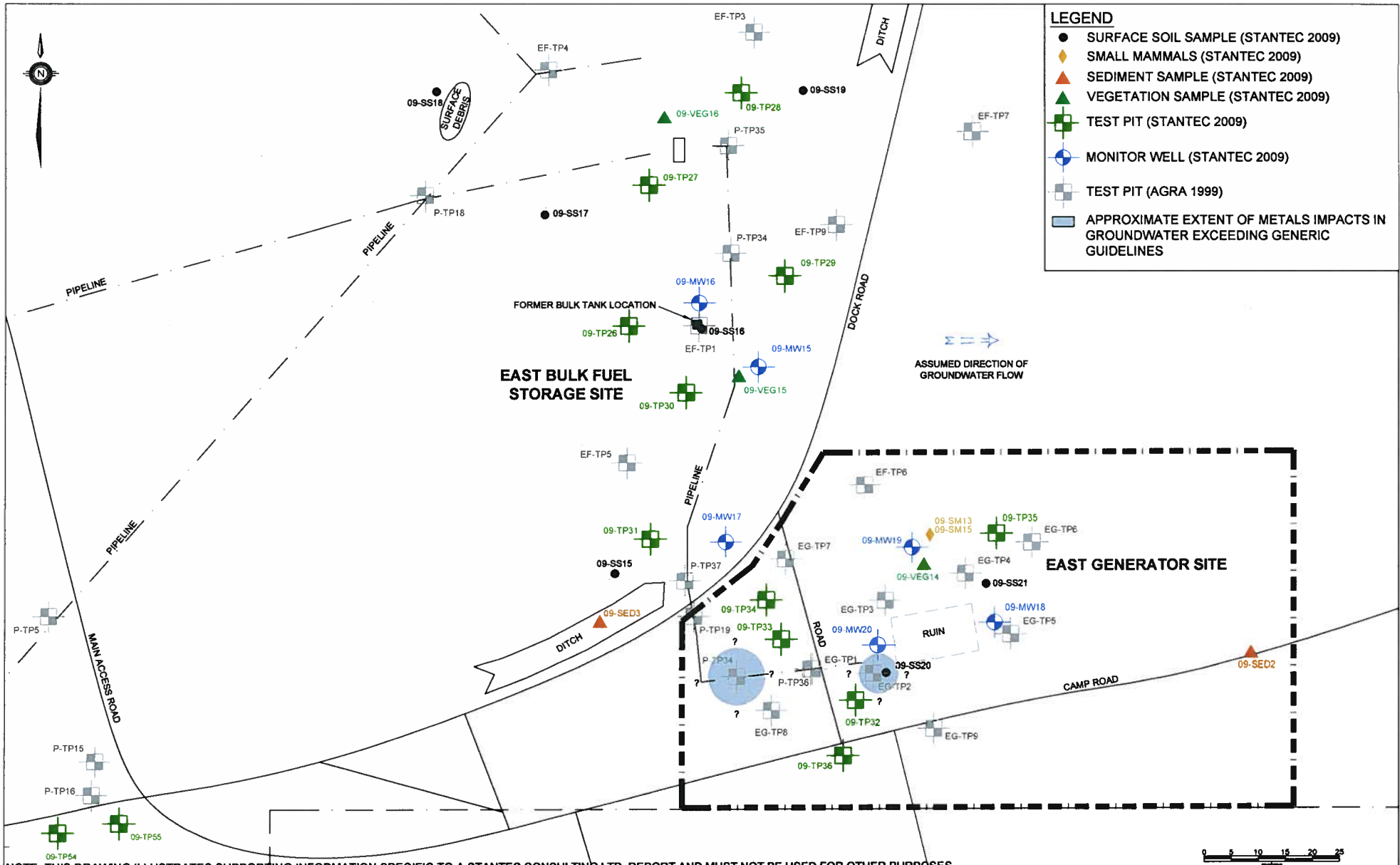


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CLIENT:	NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE:	1:800	DATE:	JUNE 18, 2010	 Stantec
PROJECT TITLE:	PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	DRAWN BY:	N.M.	CHECKED BY:	A.R.	
DRAWING TITLE:	APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - EAST GENERATOR SITE	EDITED BY:	-	REV. No.:	0	
		DRAWING No.:	121410105-EE-5B			
		CAD FILE:	1044857-EE-10.DWG			



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CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION

SCALE: 1:800 DATE: JUNE 17, 2010

PROJECT TITLE: PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL

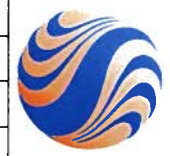
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EDITED BY: R.L. REV. No. 0

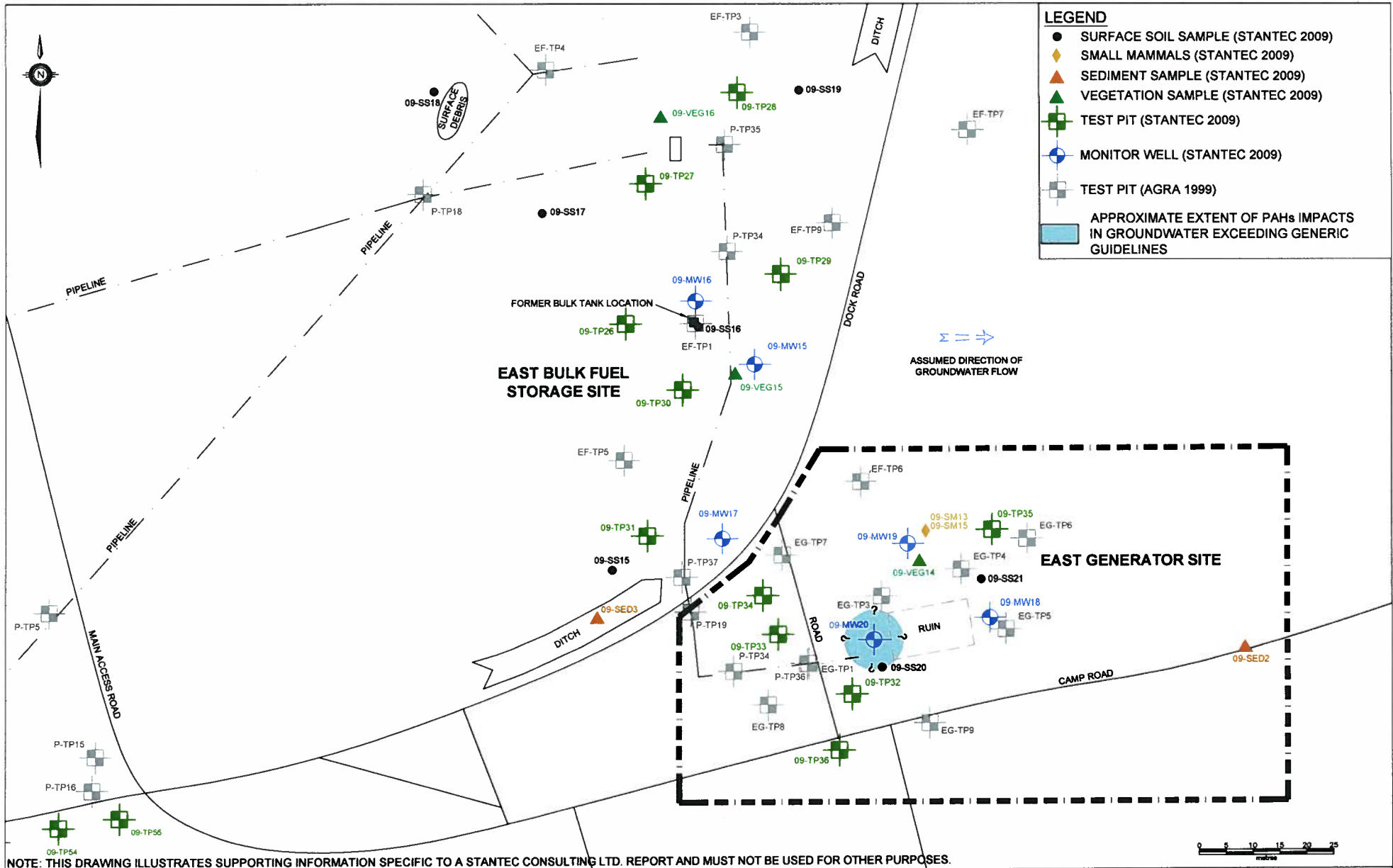
DRAWING TITLE: APPROXIMATE EXTENT OF METALS IMPACTS EXCEEDING GENERIC GUIDELINES - EAST GENERATOR SITE

DRAWING No: 121410105-EE-05C

CAD FILE: 1044857-EE-07.DWG



Stantec



- LEGEND**
- SURFACE SOIL SAMPLE (STANTEC 2009)
 - ◆ SMALL MAMMALS (STANTEC 2009)
 - ▲ SEDIMENT SAMPLE (STANTEC 2009)
 - ▲ VEGETATION SAMPLE (STANTEC 2009)
 - TEST PIT (STANTEC 2009)
 - MONITOR WELL (STANTEC 2009)
 - TEST PIT (AGRA 1999)
 - APPROXIMATE EXTENT OF PAHs IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.



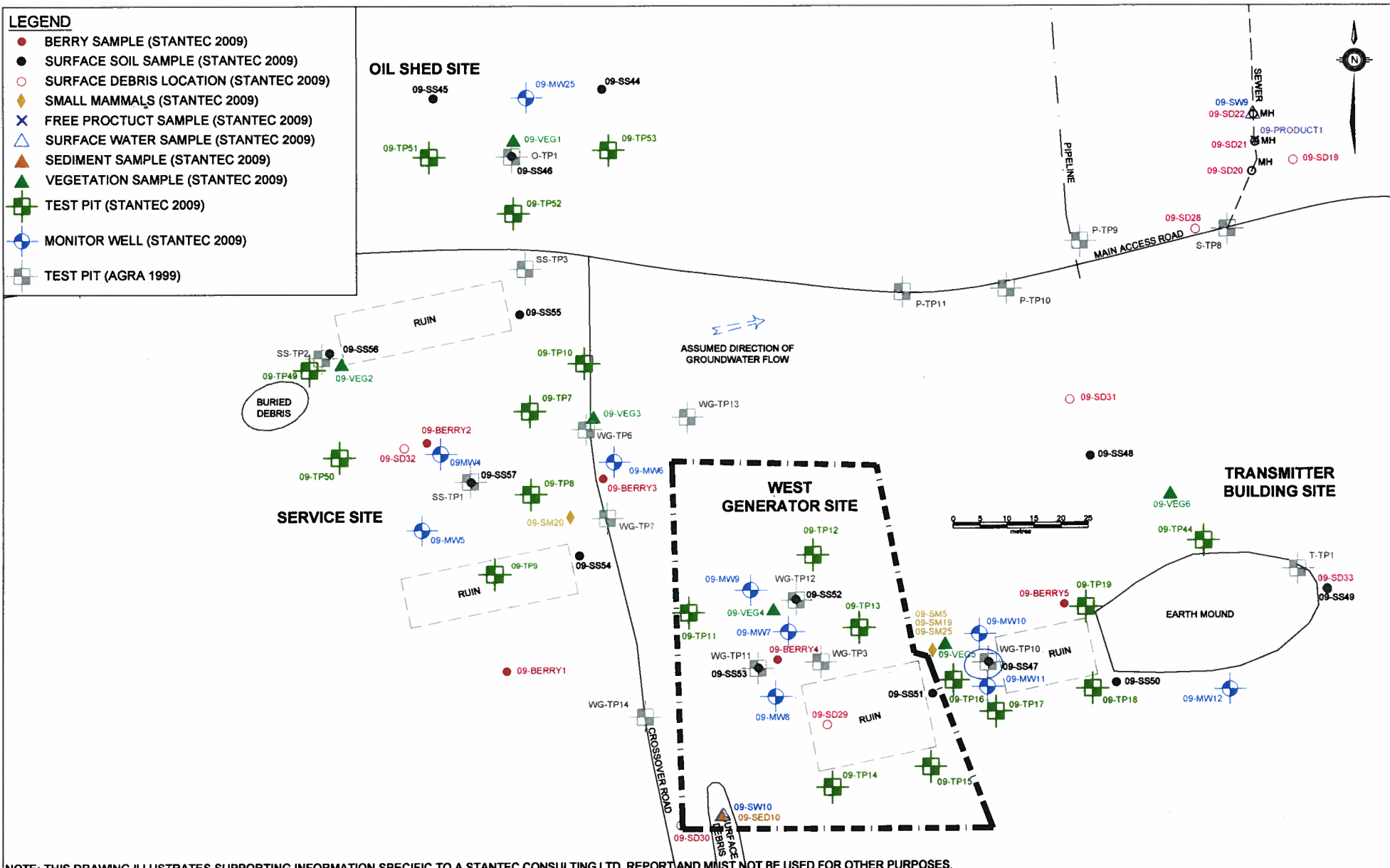
CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION		SCALE: 1:800	DATE: JUNE 21, 2010
PROJECT TITLE: PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL		DRAWN BY: N.M.	CHECKED BY: A.R.
DRAWING TITLE: APPROXIMATE EXTENT OF PAHs IMPACTS EXCEEDING GENERIC GUIDELINES - EAST GENERATOR SITE		EDITED BY: R.L.	REV. No: 0
		DRAWING No: 121410105-EE-5D	
		CAD FILE: 1044857-EE-12.DWG	



Stantec

LEGEND

- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- ✕ FREE PRODUCT SAMPLE (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- ⊠ TEST PIT (STANTEC 2009)
- ⊕ MONITOR WELL (STANTEC 2009)
- ⊠ TEST PIT (AGRA 1999)



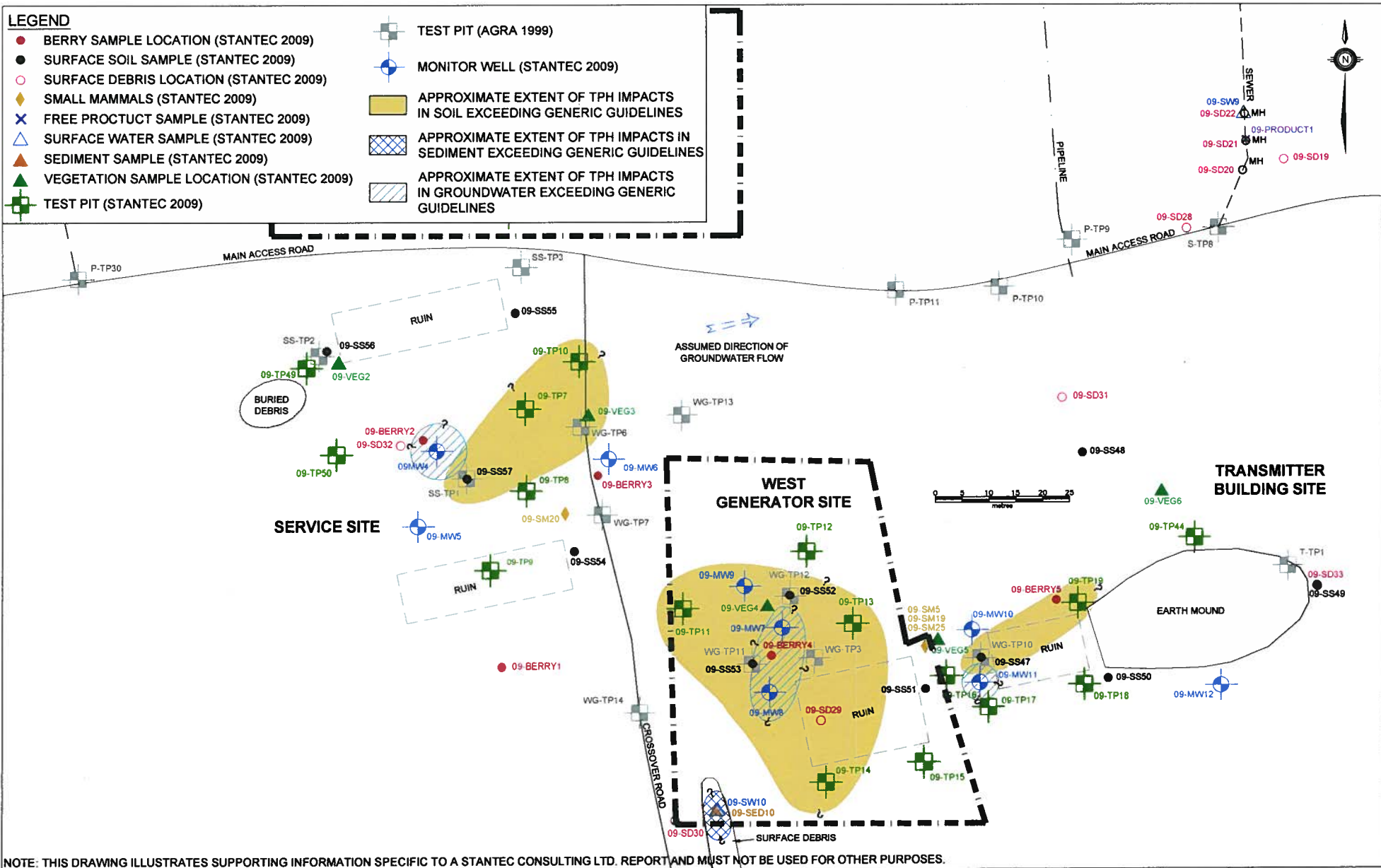
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<p>CLIENT:</p> <p style="text-align: center;">NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</p> <p>PROJECT TITLE:</p> <p style="text-align: center;">PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</p> <p>DRAWING TITLE:</p> <p style="text-align: center;">SITE PLAN - WEST GENERATOR SITE</p>	<p>SCALE: 1:800</p> <p>DRAWN BY: N.M.</p> <p>EDITED BY: -</p> <p>DRAWING No: 121410105-EE-06A</p> <p>CAD FILE: 1044857-EE-07.DWG</p>	<p>DATE: JUNE 17, 2010</p> <p>CHECKED BY: A.R.</p> <p>REV. No: 0</p>
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LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- ✕ FREE PRODUCT SAMPLE (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- ⊕ TEST PIT (STANTEC 2009)
- ⊕ TEST PIT (AGRA 1999)
- ⊕ MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- ▨ APPROXIMATE EXTENT OF TPH IMPACTS IN SEDIMENT EXCEEDING GENERIC GUIDELINES
- ▨ APPROXIMATE EXTENT OF TPH IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES



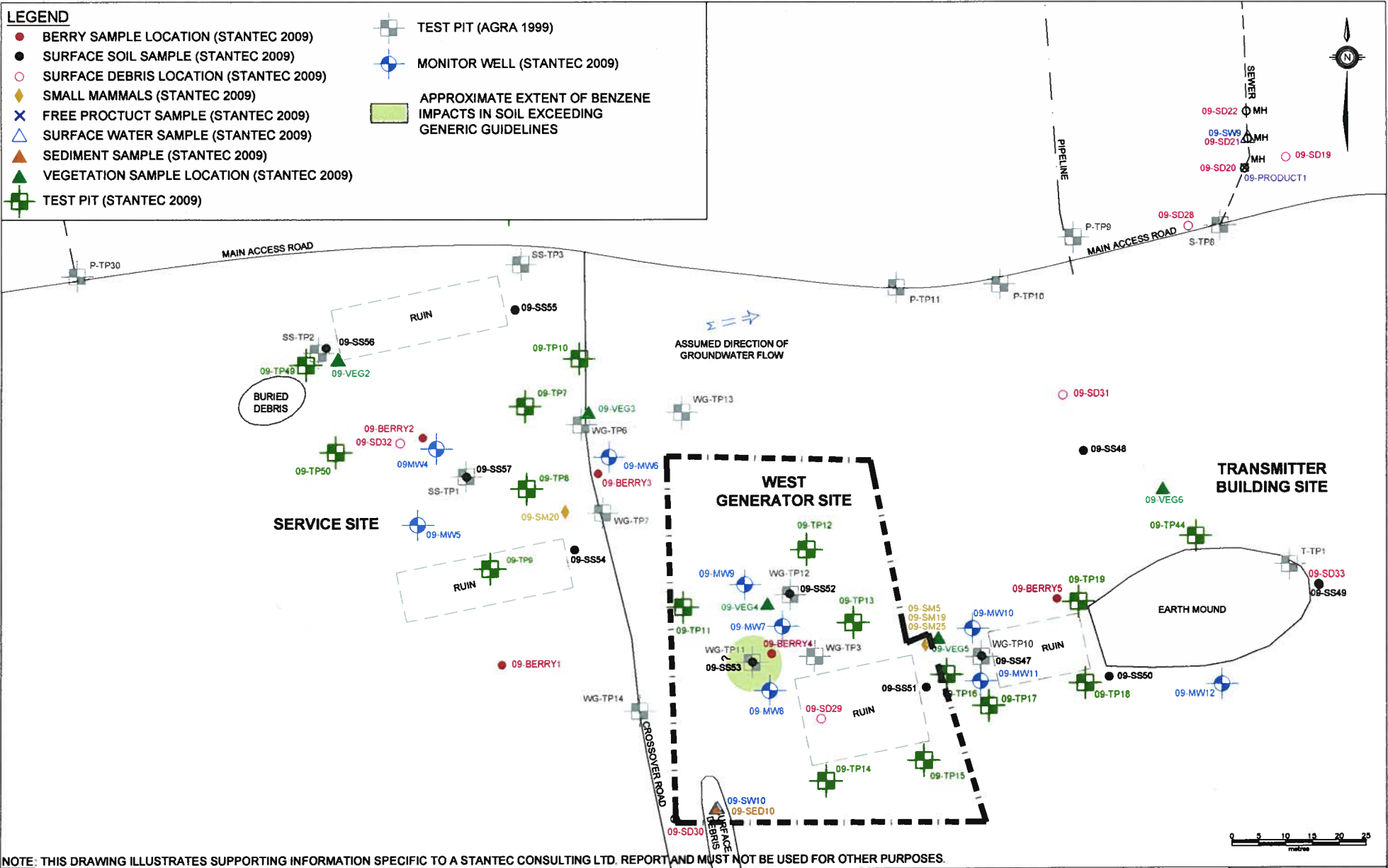
NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

<p>CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</p> <p>PROJECT TITLE: PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</p> <p>DRAWING TITLE: APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - WEST GENERATOR SITE</p>	<p>SCALE: 1:800</p> <p>DRAWN BY: N.M.</p> <p>EDITED BY: -</p> <p>DRAWING No: 121410105-EE-06B</p> <p>CAD FILE: 1044857-EE-10.DWG</p>	<p>DATE: JUNE 18, 2010</p> <p>CHECKED BY: A.R.</p> <p>REV. No: 0</p>
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Stantec

18JUN10 1:00PM



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CLIENT:	NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION
PROJECT TITLE:	PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL
DRAWING TITLE:	APPROXIMATE EXTENT OF BENZENE IMPACTS EXCEEDING GENERIC GUIDELINES - WEST GENERATOR SITE

SCALE:	1:800	DATE:	JUNE 18, 2010
DRAWN BY:	N.M.	CHECKED BY:	A.R.
EDITED BY:	-	REV. No.	0
DRAWING No.:	121410105-EE-06C		
CAD FILE:	1044857-EE-15.DWG		

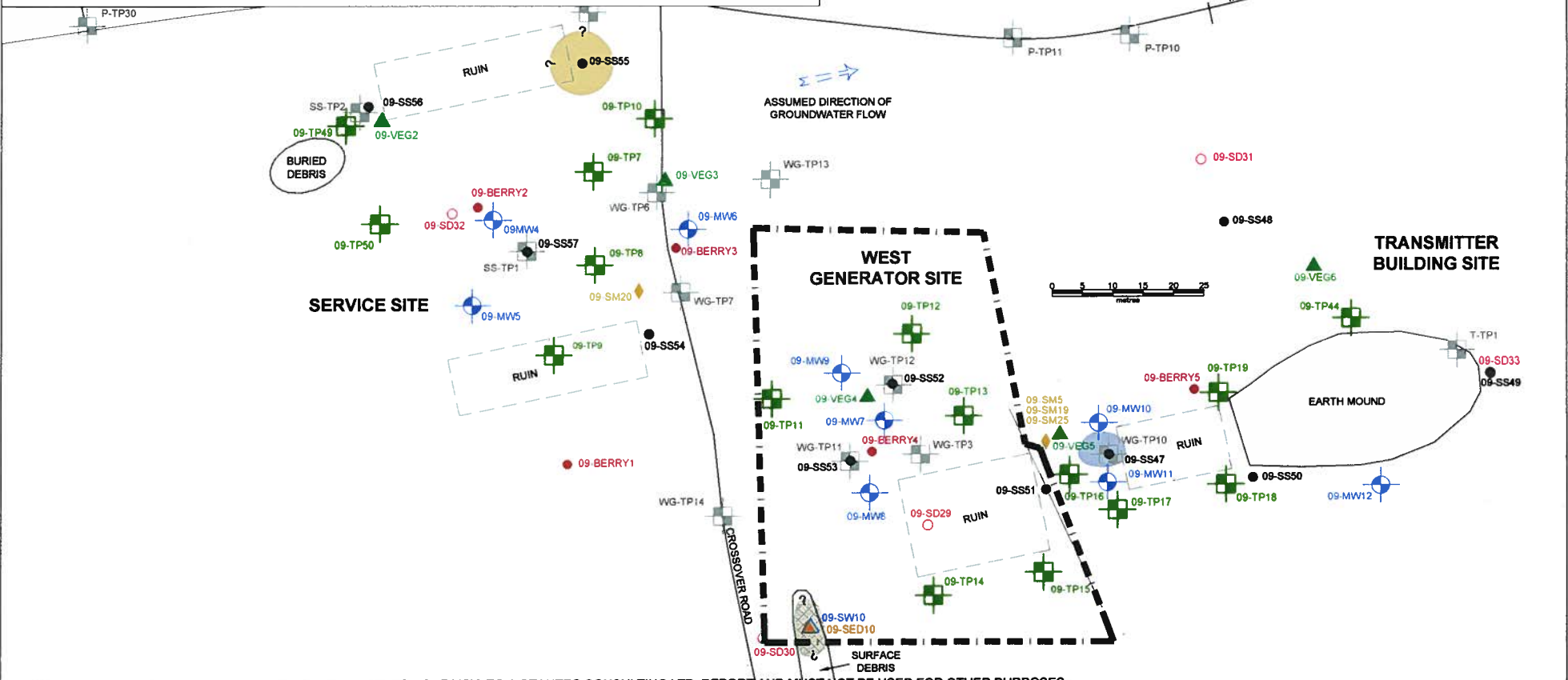


Stantec

18JUN10 1:00PM

LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- ✕ FREE PRODUCT SAMPLE (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- ⊕ TEST PIT (STANTEC 2009)
- ⊕ MONITOR WELL (STANTEC 2009)
- ⊕ TEST PIT (AGRA 1999)
- APPROXIMATE EXTENT OF METALS IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF METALS IMPACTS IN SURFACE WATER EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF METALS IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF METALS IMPACTS IN SEDIMENT EXCEEDING GENERIC GUIDELINES

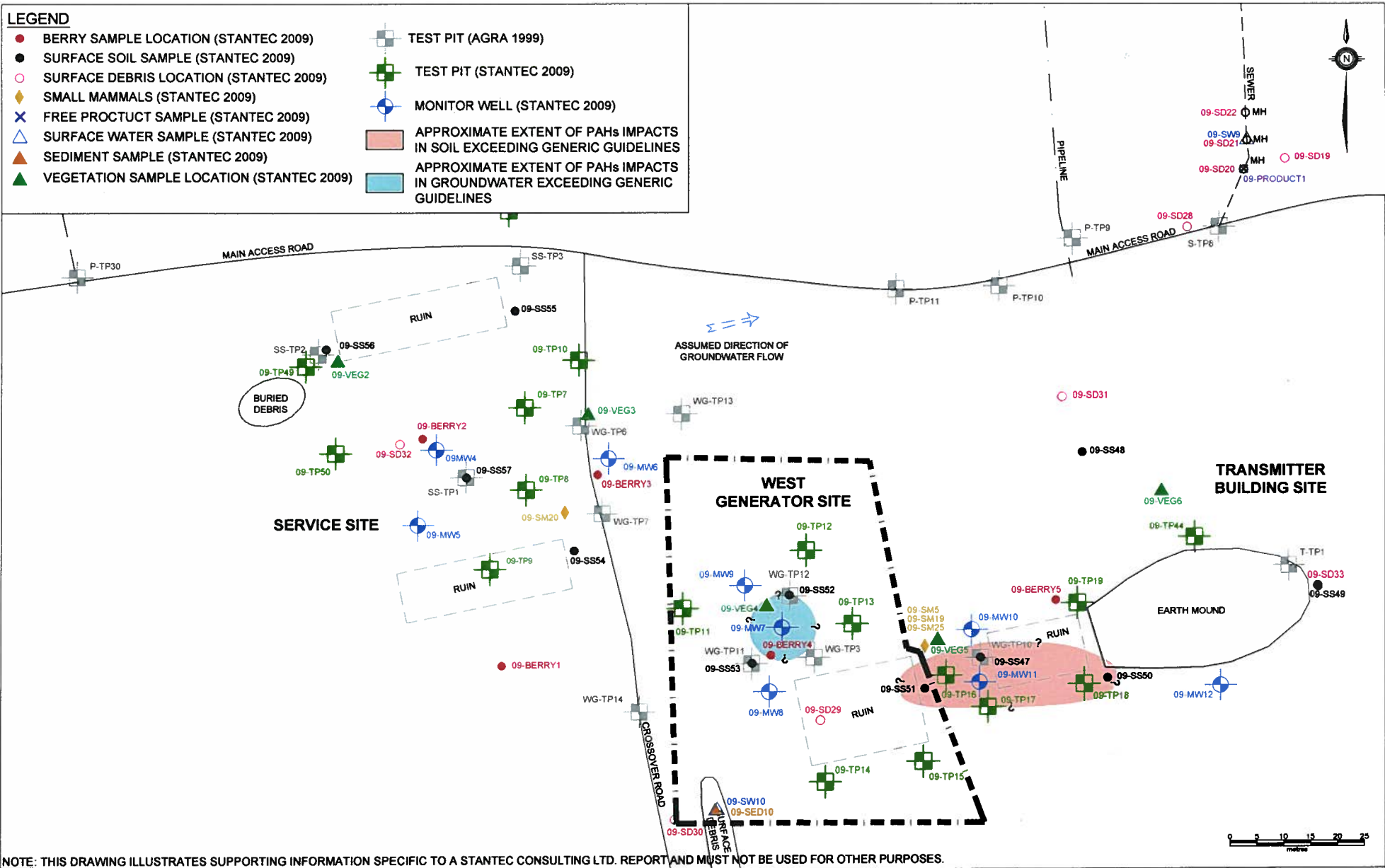


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<p>CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</p> <p>PROJECT TITLE: PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</p> <p>DRAWING TITLE: APPROXIMATE EXTENT OF METALS IMPACTS EXCEEDING GENERIC GUIDELINES - WEST GENERATOR SITE</p>	<p>SCALE: 1:800</p> <p>DRAWN BY: N.M.</p> <p>EDITED BY: -</p> <p>DRAWING No: 121410105-EE-6D</p> <p>CAD FILE: 1044857-EE-11.DWG</p>	<p>DATE: JUNE 21, 2010</p> <p>CHECKED BY: A.R.</p> <p>REV. No: 0</p>	<p>Stantec</p>
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LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- ✕ FREE PRODUCT SAMPLE (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- TEST PIT (AGRA 1999)
- TEST PIT (STANTEC 2009)
- MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF PAHs IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF PAHs IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES



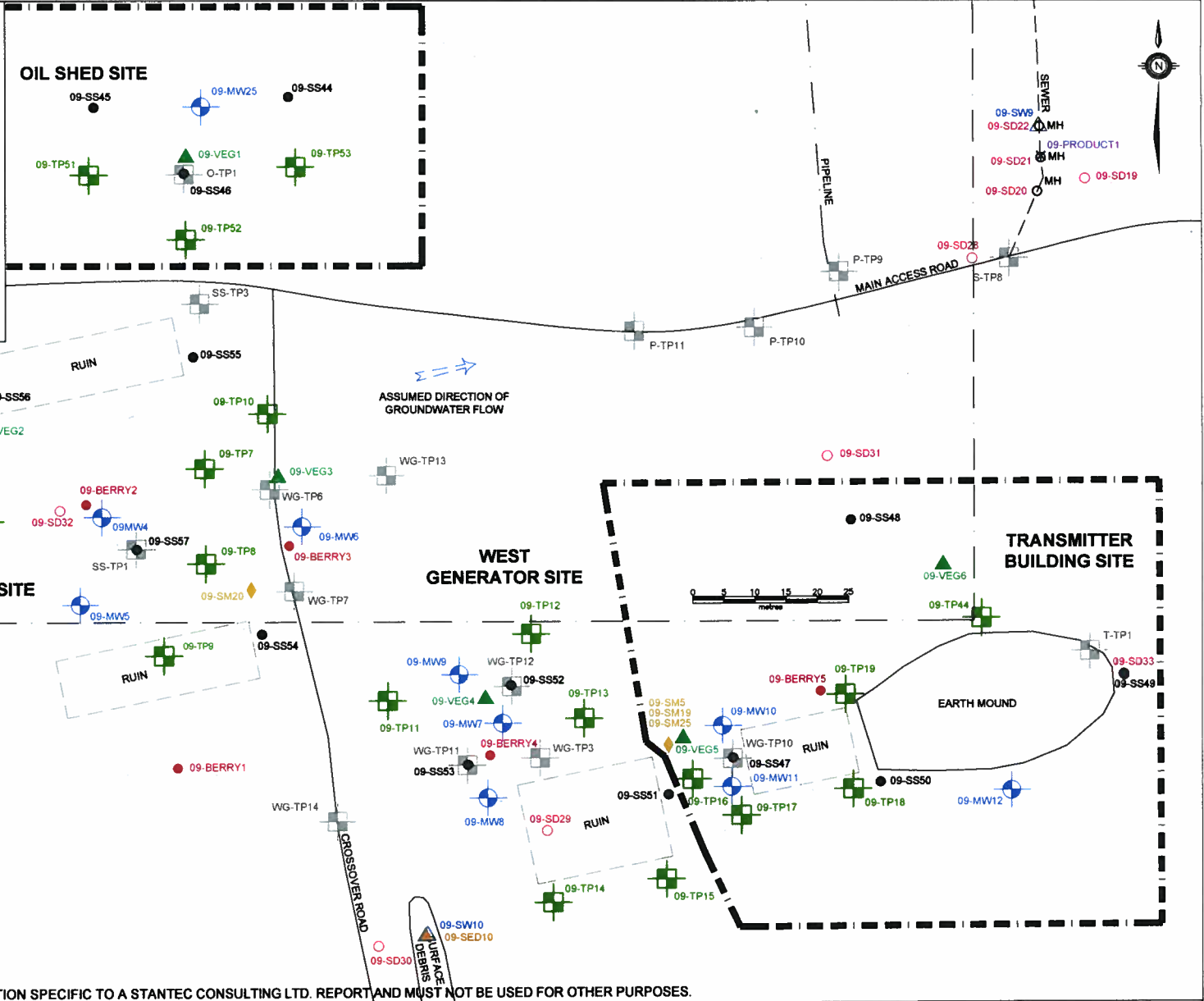
NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

<p>CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</p> <p>PROJECT TITLE: PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</p> <p>DRAWING TITLE: APPROXIMATE EXTENT OF PAHs IMPACTS EXCEEDING GENERIC GUIDELINES - WEST GENERATOR SITE</p>	<p>SCALE: 1:800</p> <p>DRAWN BY: N.M.</p> <p>EDITED BY: -</p> <p>DRAWING No: 121410105-EE-6E</p> <p>CAD FILE: 1044857-EE-12.DWG</p>	<p>DATE: JUNE 21, 2010</p> <p>CHECKED BY: A.R.</p> <p>REV. No: 0</p>
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LEGEND

- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- × FREE PRODUCT SAMPLE (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- MONITOR WELL (STANTEC 2009)



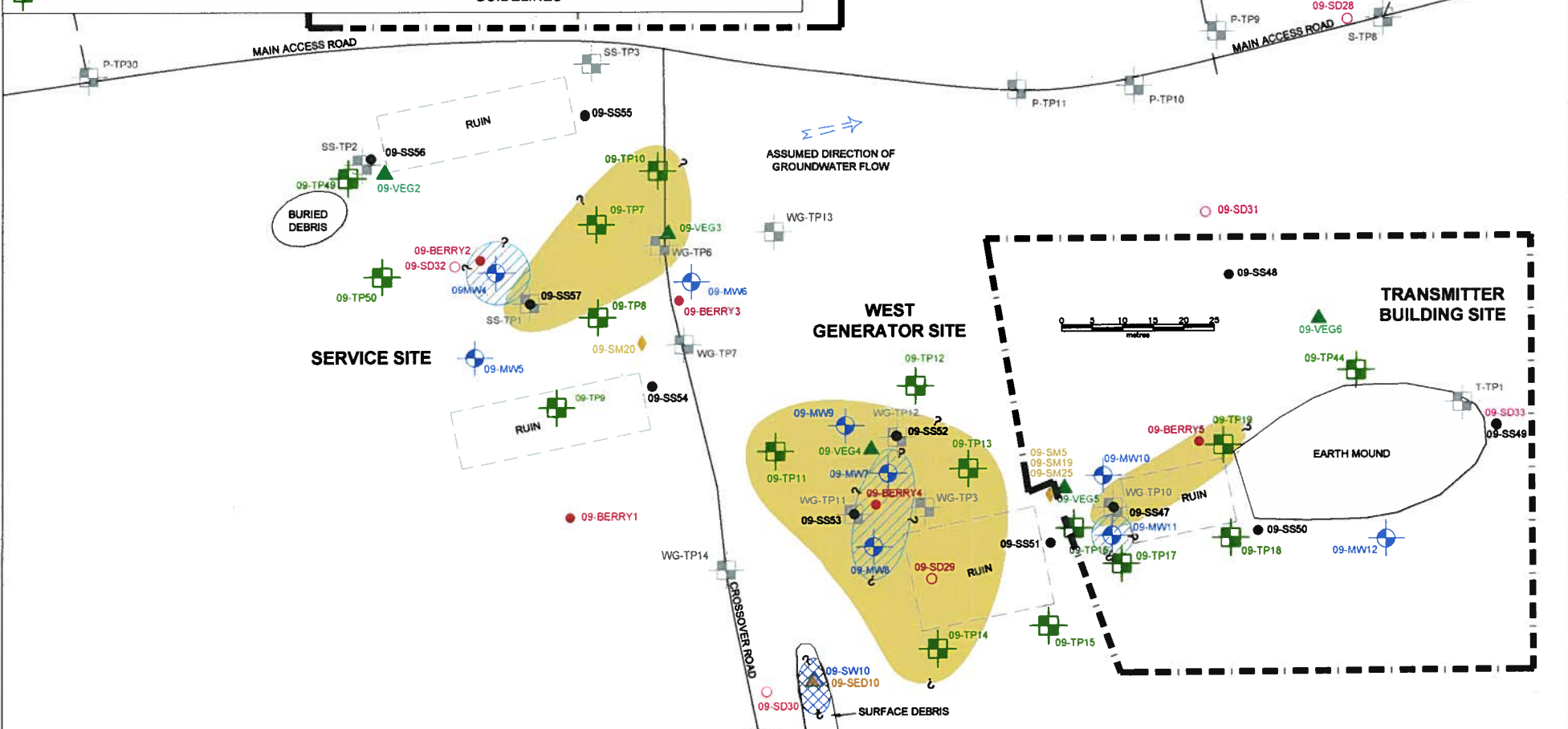
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LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◇ SMALL MAMMALS (STANTEC 2009)
- ✕ FREE PROCTUCT SAMPLE (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF TPH IMPACTS IN SEDIMENT EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF TPH IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES

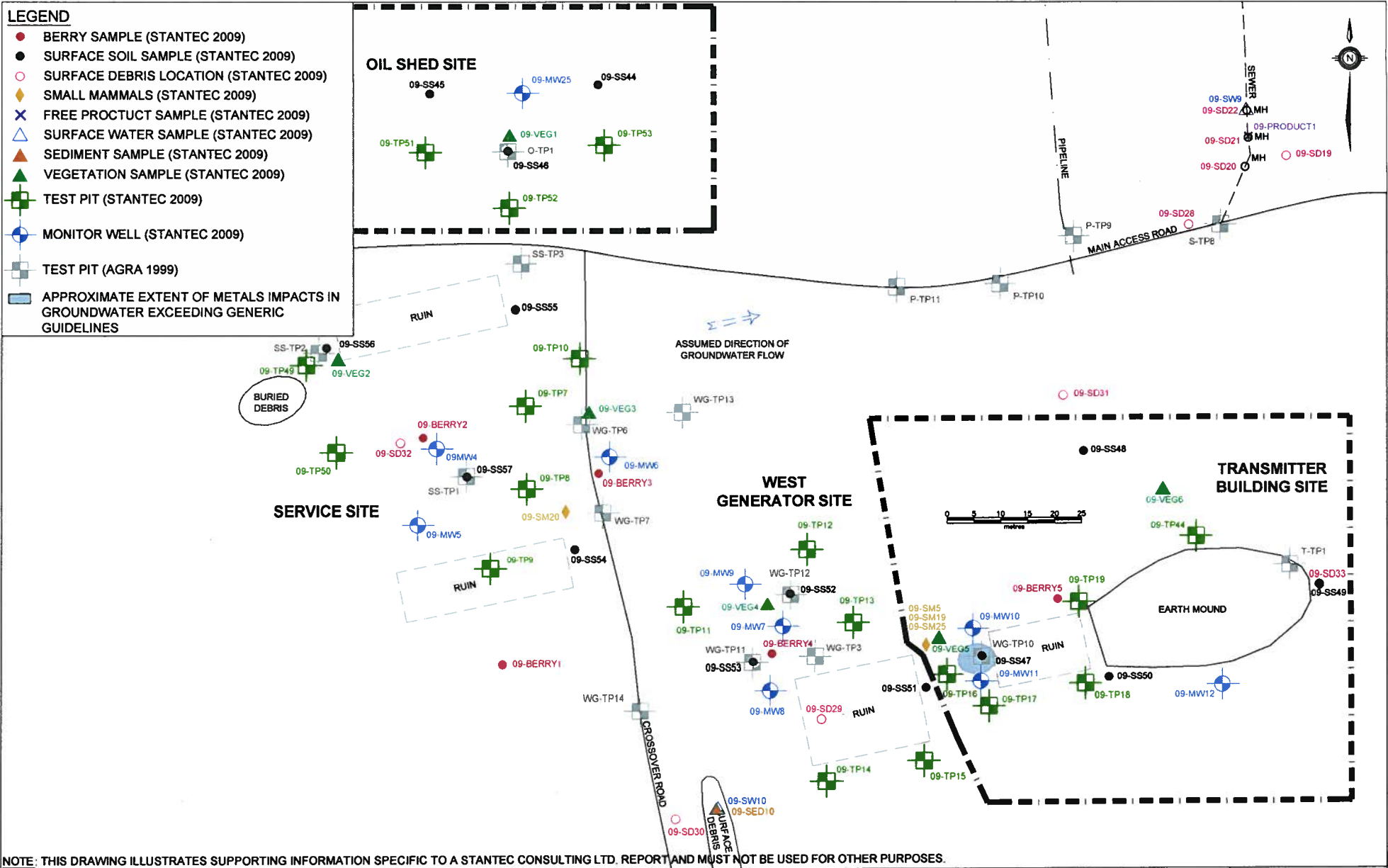


NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.


<p>CLIENT:</p> <p style="text-align: center;">NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</p> <p>PROJECT TITLE:</p> <p style="text-align: center;">PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</p> <p>DRAWING TITLE:</p> <p style="text-align: center;">SITE PLAN SHOWING CURRENT INVESTIGATION - TRANSMITTER BUILDING SITE</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">SCALE: 1:800</td> <td style="width: 50%;">DATE: JUNE 18, 2010</td> </tr> <tr> <td>DRAWN BY: N.M.</td> <td>CHECKED BY: A.R.</td> </tr> <tr> <td>EDITED BY: -</td> <td>REV. No. 0</td> </tr> <tr> <td colspan="2">DRAWING No: 121410105-EE-07B</td> </tr> <tr> <td colspan="2">CAD FILE: 1044857-EE-10.DWG</td> </tr> </table>	SCALE: 1:800	DATE: JUNE 18, 2010	DRAWN BY: N.M.	CHECKED BY: A.R.	EDITED BY: -	REV. No. 0	DRAWING No: 121410105-EE-07B		CAD FILE: 1044857-EE-10.DWG	
SCALE: 1:800	DATE: JUNE 18, 2010										
DRAWN BY: N.M.	CHECKED BY: A.R.										
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DRAWING No: 121410105-EE-07B											
CAD FILE: 1044857-EE-10.DWG											



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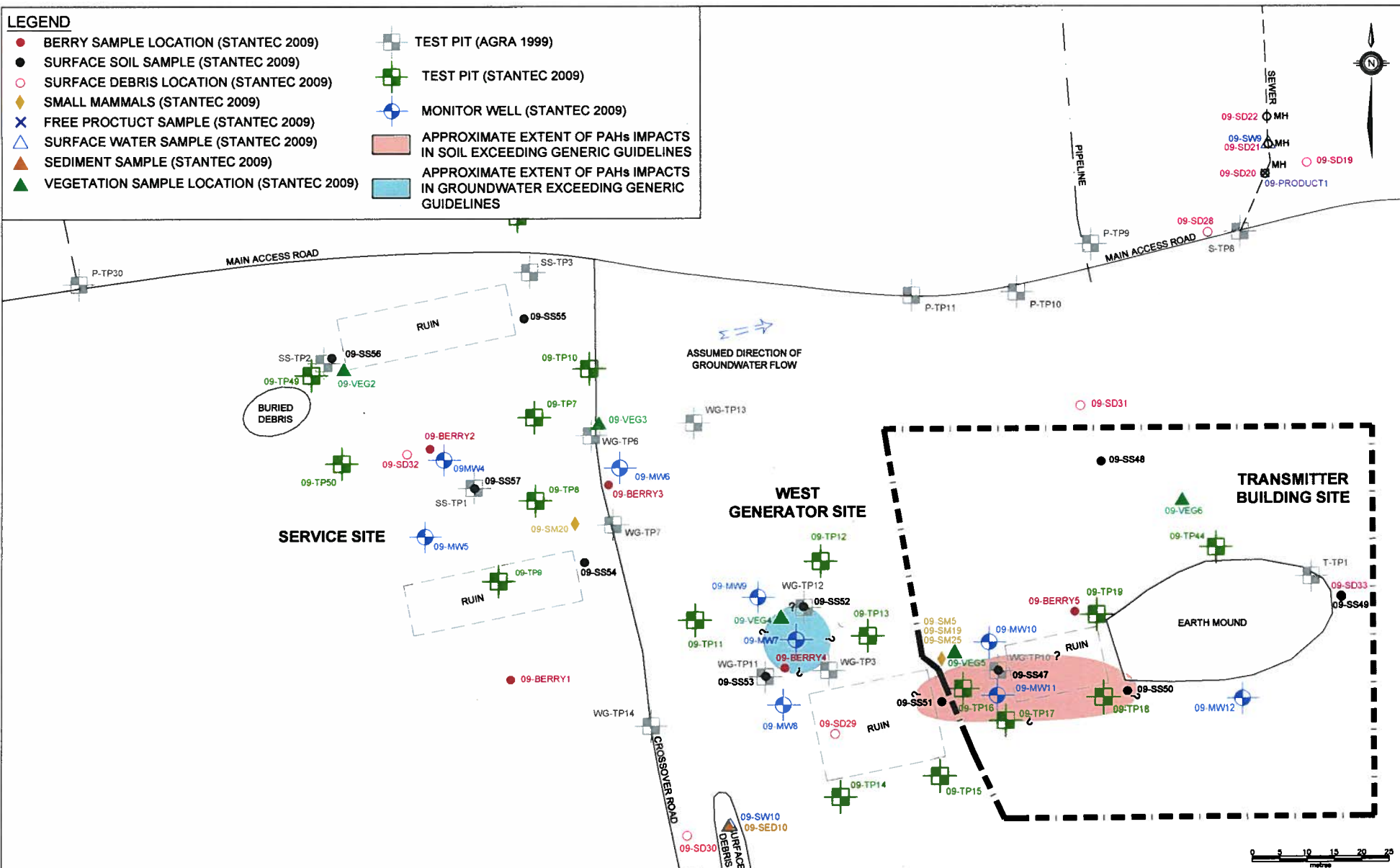


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CLIENT:		NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION		SCALE:	1:800	DATE:	JUNE 17, 2010	
PROJECT TITLE:		PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL		DRAWN BY:	N.M.	CHECKED BY:	A.R.	
DRAWING TITLE:		APPROXIMATE EXTENT OF METALS IMPACTS EXCEEDING GENERIC GUIDELINES - TRANSMITTER BUILDING SITE		EDITED BY:	R.L.	REV. No.	0	
				DRAWING No.:	121410105-EE-07C			
				CAD FILE:	1044857-EE-07.DWG			Stantec

LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- ✕ FREE PRODUCT SAMPLE (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- TEST PIT (AGRA 1999)
- TEST PIT (STANTEC 2009)
- MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF PAHs IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF PAHs IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES



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CLIENT:	NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION
PROJECT TITLE:	PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL
DRAWING TITLE:	APPROXIMATE EXTENT OF PAHs IMPACTS EXCEEDING GENERIC GUIDELINES - TRANSMITTER BUILDING SITE

SCALE:	1:800	DATE:	JUNE 21, 2010
DRAWN BY:	N.M.	CHECKED BY:	A.R.
EDITED BY:	R.L.	REV. No.	0
DRAWING No.:	121410105-EE-7D		
CAD FILE:	1044857-EE-12.DWG		



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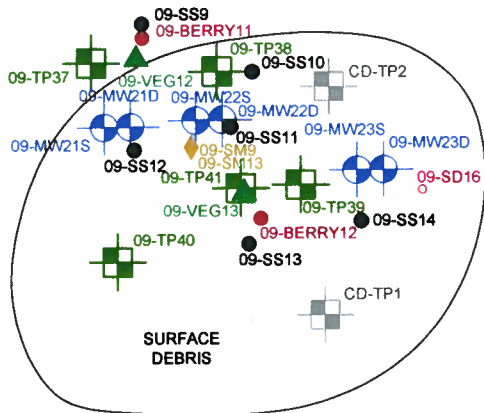
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- ▲ VEGETATION SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- ⊕ MONITOR WELL (STANTEC 2009)
- TEST PIT (AGRA 1999)
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- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- 🐟 FISH LOCATION (STANTEC 2009)



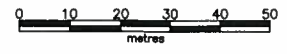
- CAMP ROAD-FS 🐟
- 09-SW2 ▲
- SSM-2-CR ▲
- 09-BENTHIC2 ▲

LAKE MELVILLE

CAMP ROAD DUMP SITE



ASSUMED DIRECTION OF GROUNDWATER FLOW



NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT:	NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION
PROJECT TITLE:	PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL
DRAWING TITLE:	SITE PLAN - CAMP ROAD DUMP SITE

SCALE:	1:1500	DATE:	JUNE 17, 2010
DRAWN BY:	N.M.	CHECKED BY:	A.R.
EDITED BY:	-	REV. No:	0
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CAD FILE:	1044857-EE-07.DWG		

Stantec

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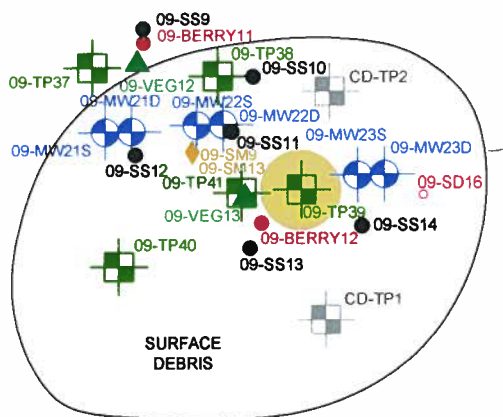
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- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)
- ⊕ TEST PIT (STANTEC 2009)
- ⊖ TEST PIT (AGRA 1999)
- ⊕ MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES



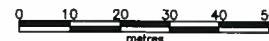
CAMP ROAD-FS
 09-SWM2
 SSM-2-CR
 09-BENTHIC2

LAKE
 MELVILLE



**CAMP ROAD
 DUMP SITE**



ASSUMED DIRECTION OF
 GROUNDWATER FLOW



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CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:1500	DATE: JUNE 18, 2010	
	DRAWN BY: N.M.	CHECKED BY: A.R.	
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	EDITED BY: -	REV. No. 0	
DRAWING TITLE: APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - CAMP ROAD DUMP SITE	DRAWING No: 121410105-EE-08B	CAD FILE: 1044857-EE-10.DWG	

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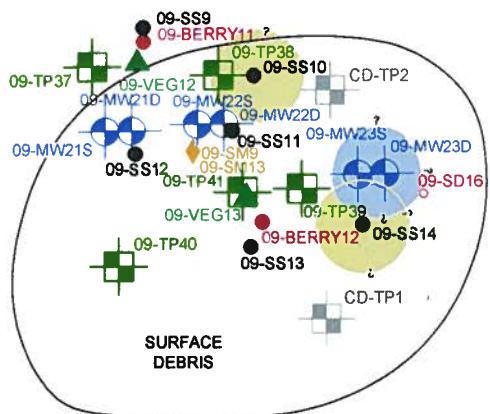
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- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- MONITOR WELL (STANTEC 2009)
- TEST PIT (AGRA 1999)
- APPROXIMATE EXTENT OF METALS IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF METALS IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES



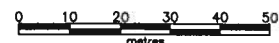
CAMP ROAD-FS
09-SW2
SSM-2-CR
09-BENTHIC2

LAKE MELVILLE



CAMP ROAD DUMP SITE



⇒ ⇒ ⇒
ASSUMED DIRECTION OF GROUNDWATER FLOW



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	DRAWN BY: N.M.	CHECKED BY: A.R.	
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	EDITED BY: R.L.	REV. No. 0	
	DRAWING No. 121410105-EE-8C		
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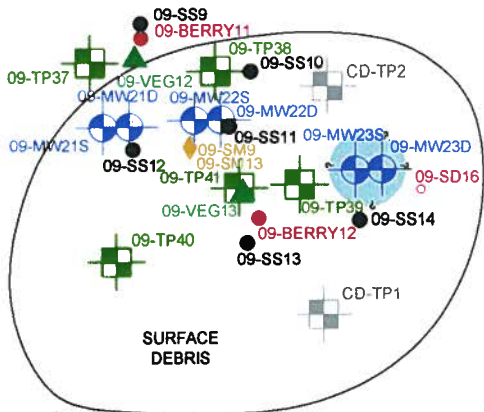
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- ▲ VEGETATION SAMPLE (STANTEC 2009)
- ⊠ TEST PIT (STANTEC 2009)
- ⊙ MONITOR WELL (STANTEC 2009)
- ⊠ TEST PIT (AGRA 1999)
- BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- FISH LOCATION (STANTEC 2009)
- APPROXIMATE EXTENT OF PAHs IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES



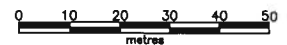
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- ▲ 09-SW2
- ▲ SSM-2-CR
- ▲ 09-BENTHIC2

LAKE MELVILLE



CAMP ROAD DUMP SITE

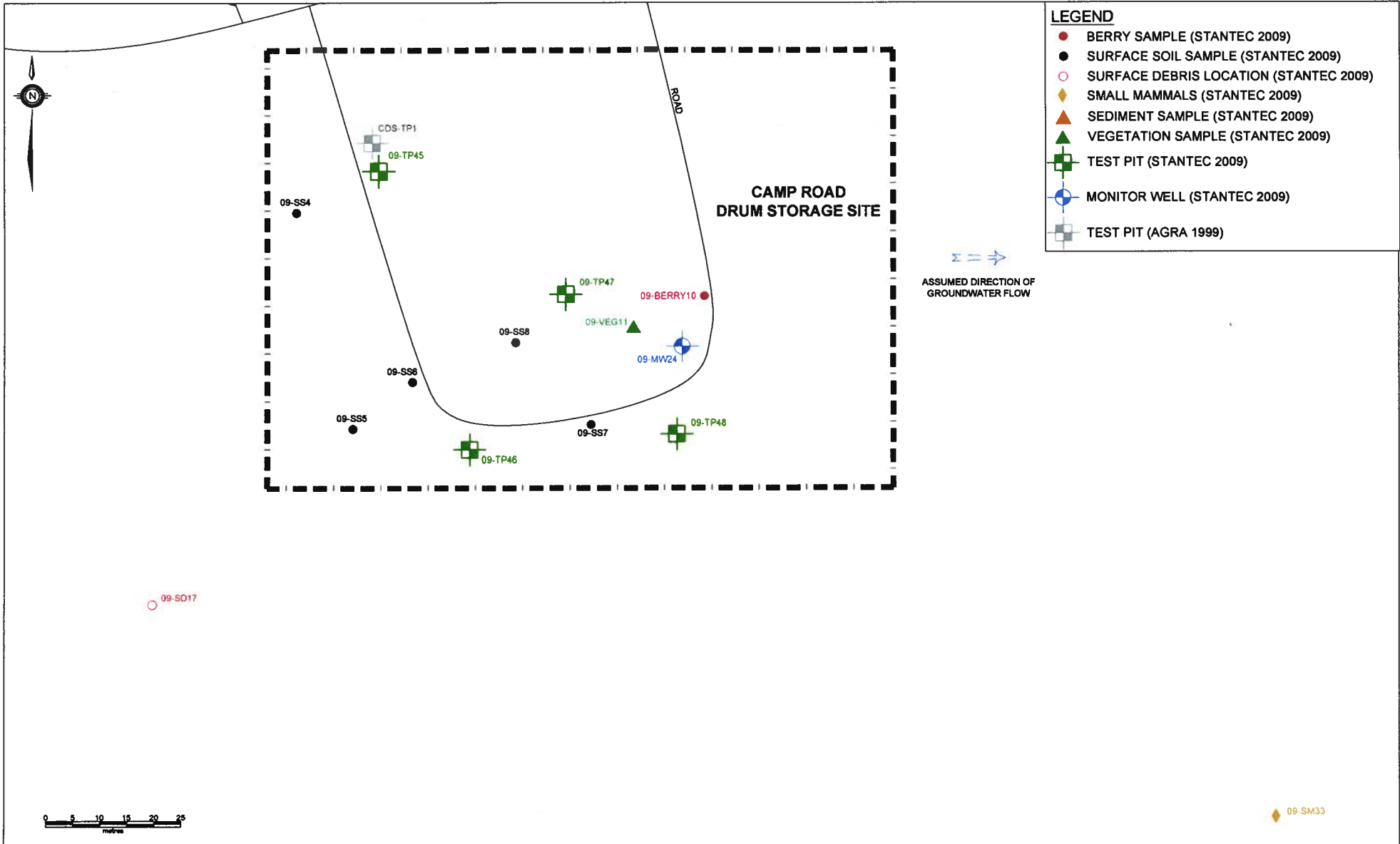


ASSUMED DIRECTION OF GROUNDWATER FLOW



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CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:800	DATE: JUNE 21, 2010	
	DRAWN BY: N.M.	CHECKED BY: A.R.	
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	EDITED BY: -	REV. No. 0	
	DRAWING No.: 121410105-EE-8D	CAD FILE: 1044857-EE-12.DWG	
DRAWING TITLE: APPROXIMATE EXTENT OF PAHs IMPACTS EXCEEDING GENERIC GUIDELINES - CAMP ROAD DUMP SITE			



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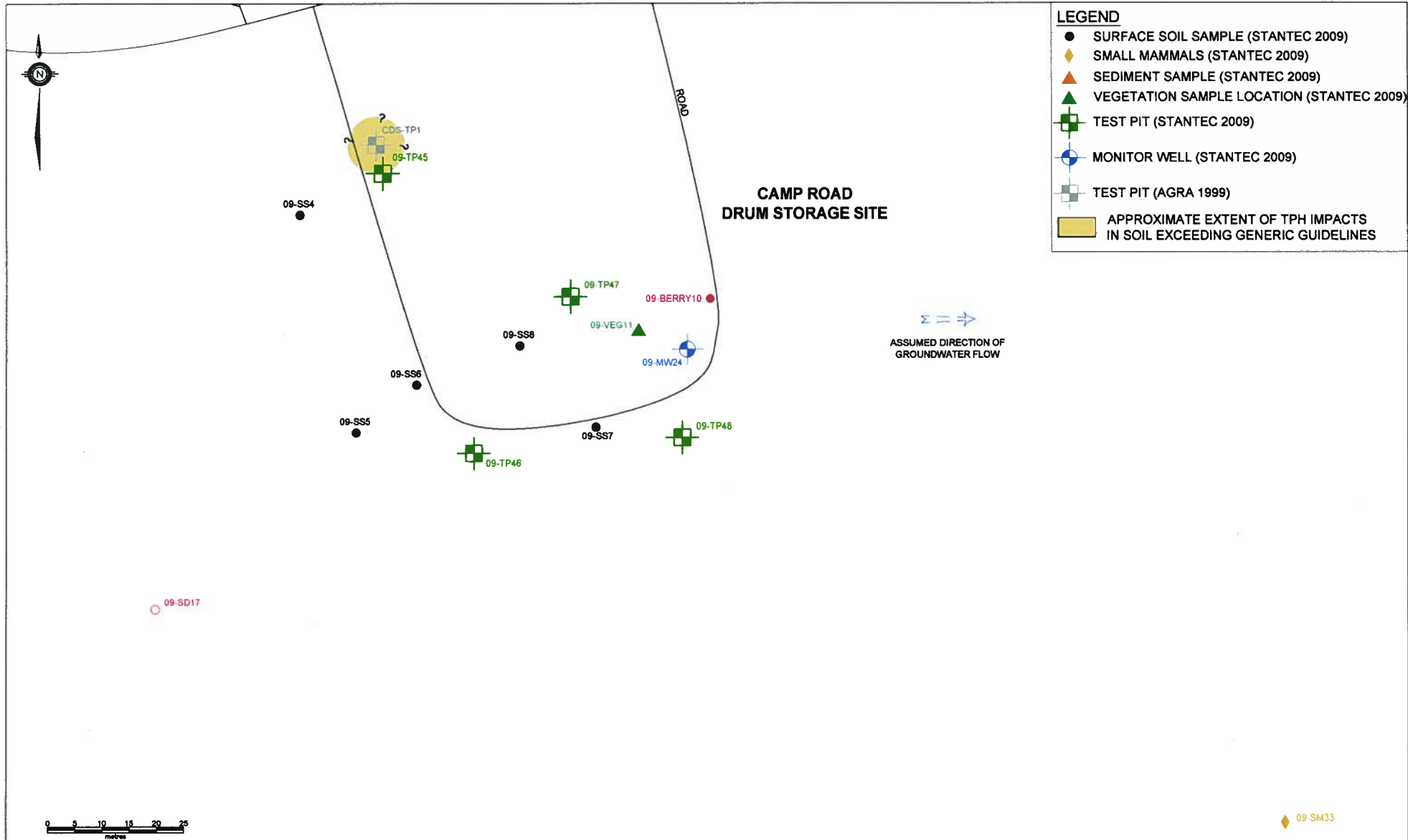
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- ⊠ TEST PIT (STANTEC 2009)
- ⊕ MONITOR WELL (STANTEC 2009)
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PROJECT TITLE:	PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL
DRAWING TITLE:	SITE PLAN - CAMP ROAD DRUM STORAGE SITE

SCALE:	1:800	DATE:	JUNE 17, 2010
DRAWN BY:	N.M.	CHECKED BY:	A.R.
EDITED BY:	-	REV. No.	0
DRAWING No.:	121410105-EE-09A		
CAD FILE:	1044857-EE-07.DWG		





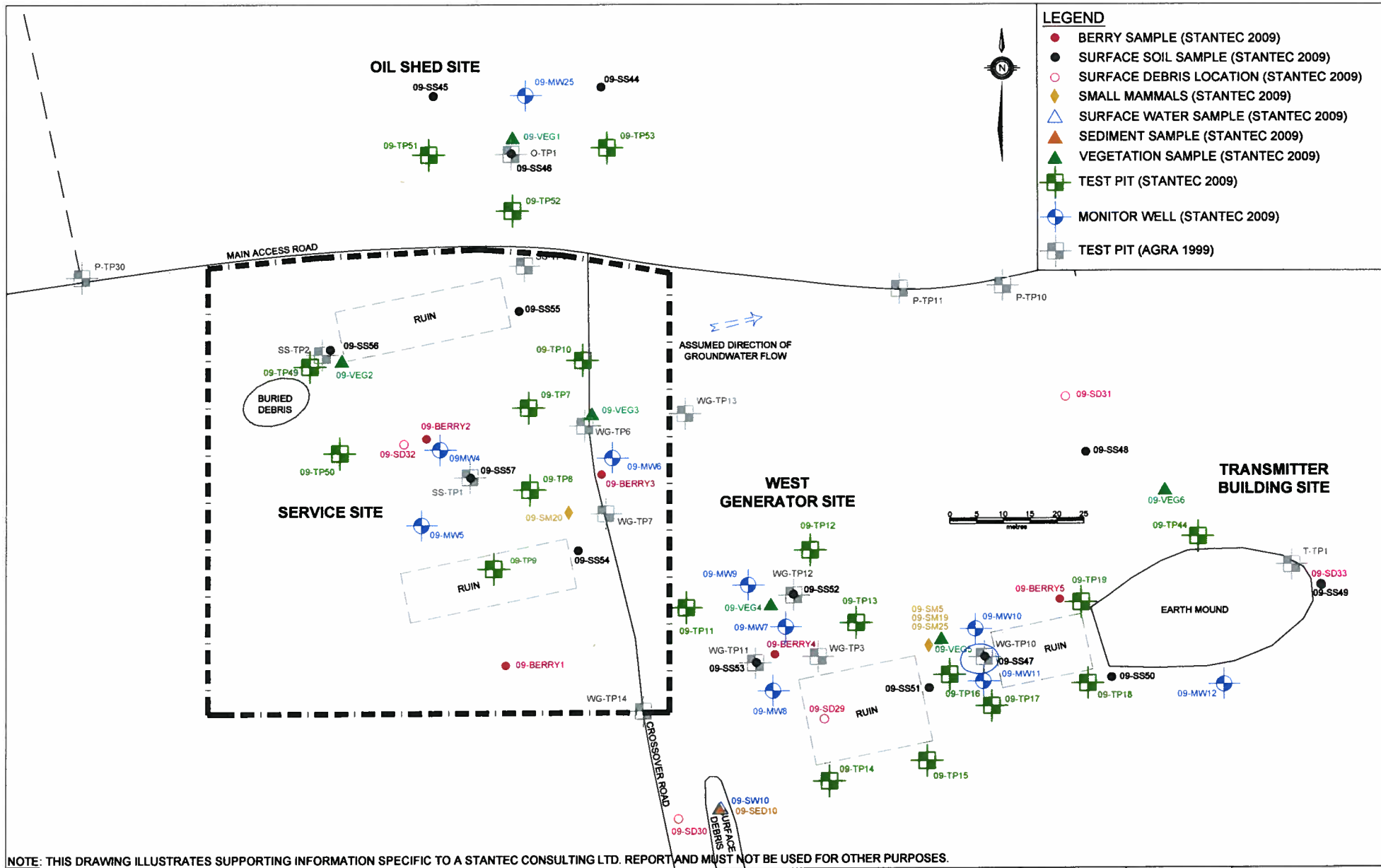
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PROJECT TITLE:	PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL
DRAWING TITLE:	APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - CAMP ROAD DRUM STORAGE SITE

SCALE:	1:800	DATE:	JUNE 18, 2010
DRAWN BY:	N.M.	CHECKED BY:	A.R.
EDITED BY:	-	REV. No.	0
DRAWING No.:	121410105-EE-09B		
CAD FILE:	1044857-EE-10.DWG		




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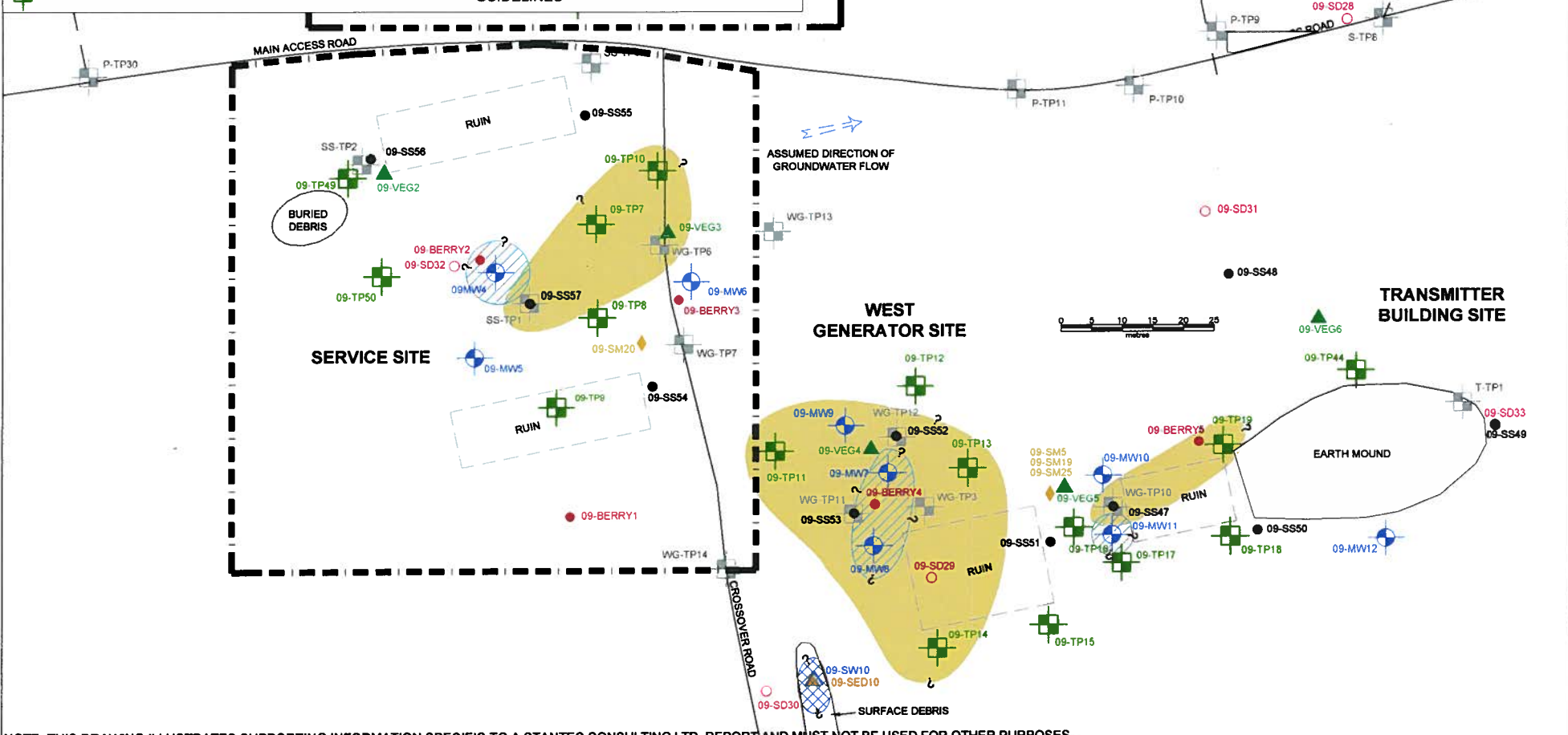
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 - △ SURFACE WATER SAMPLE (STANTEC 2009)
 - ▲ SEDIMENT SAMPLE (STANTEC 2009)
 - ▲ VEGETATION SAMPLE (STANTEC 2009)
 - TEST PIT (STANTEC 2009)
 - ⊕ MONITOR WELL (STANTEC 2009)
 - TEST PIT (AGRA 1999)

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PROJECT TITLE: PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL		DRAWN BY: N.M.	CHECKED BY: A.R.	
DRAWING TITLE: SITE PLAN - SERVICE SITE		EDITED BY: -	REV. No. 0	
		DRAWING No. 121410105-EE-10A		
		CAD FILE: 1044857-EE-07.DWG		

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- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◇ SMALL MAMMALS (STANTEC 2009)
- ✕ FREE PRODUCT SAMPLE (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- ⊕ TEST PIT (STANTEC 2009)
- ⊕ TEST PIT (AGRA 1999)
- ⊕ MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- ▨ APPROXIMATE EXTENT OF TPH IMPACTS IN SEDIMENT EXCEEDING GENERIC GUIDELINES
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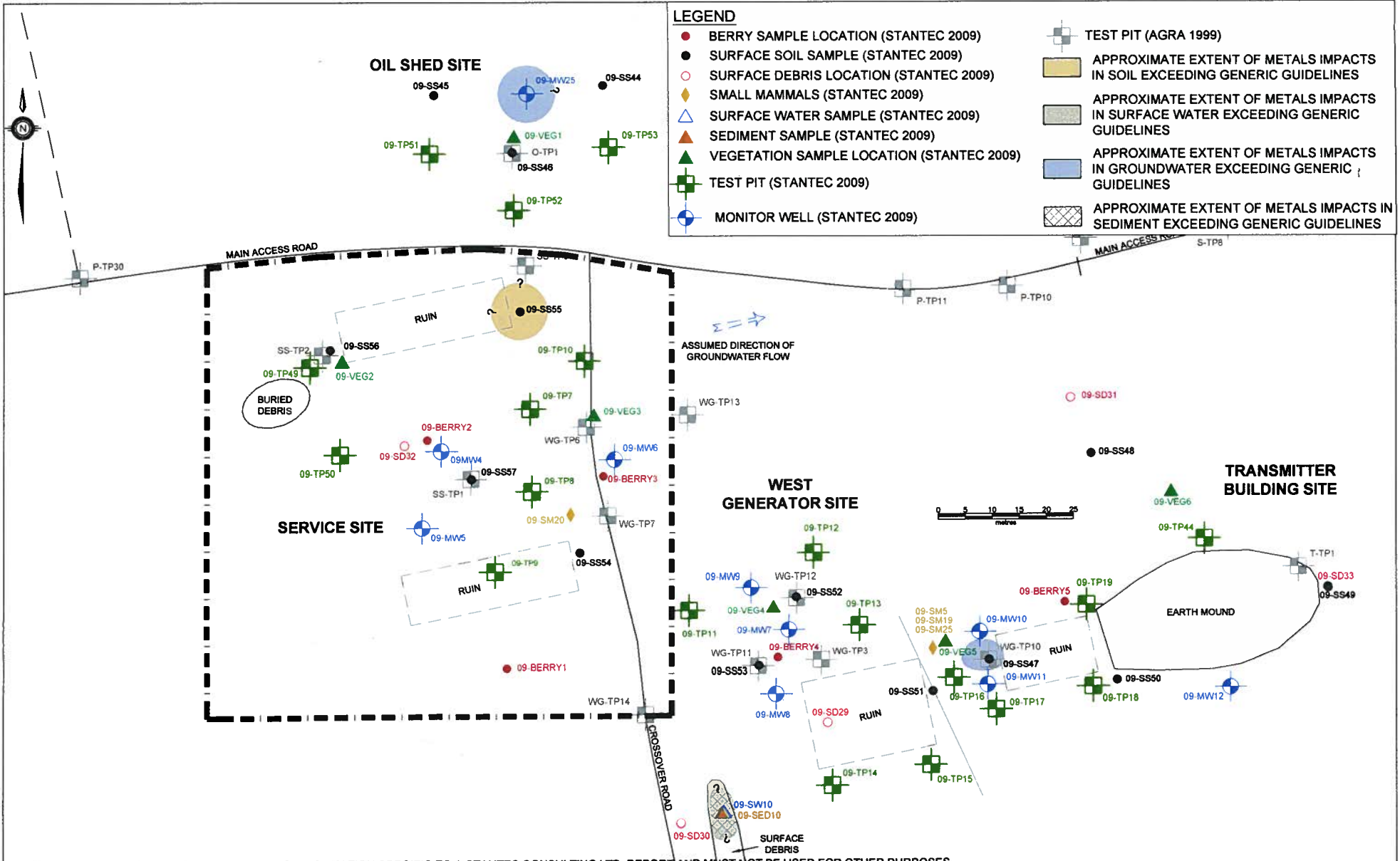


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<p>CLIENT:</p> <p style="text-align: center;">NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</p>	<p>SCALE: 1:800</p> <p>DATE: JUNE 18, 2010</p>
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<p>DRAWING TITLE:</p> <p style="text-align: center;">APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - SERVICE SITE</p>	<p>EDITED BY: -</p> <p>REV. No. 0</p>
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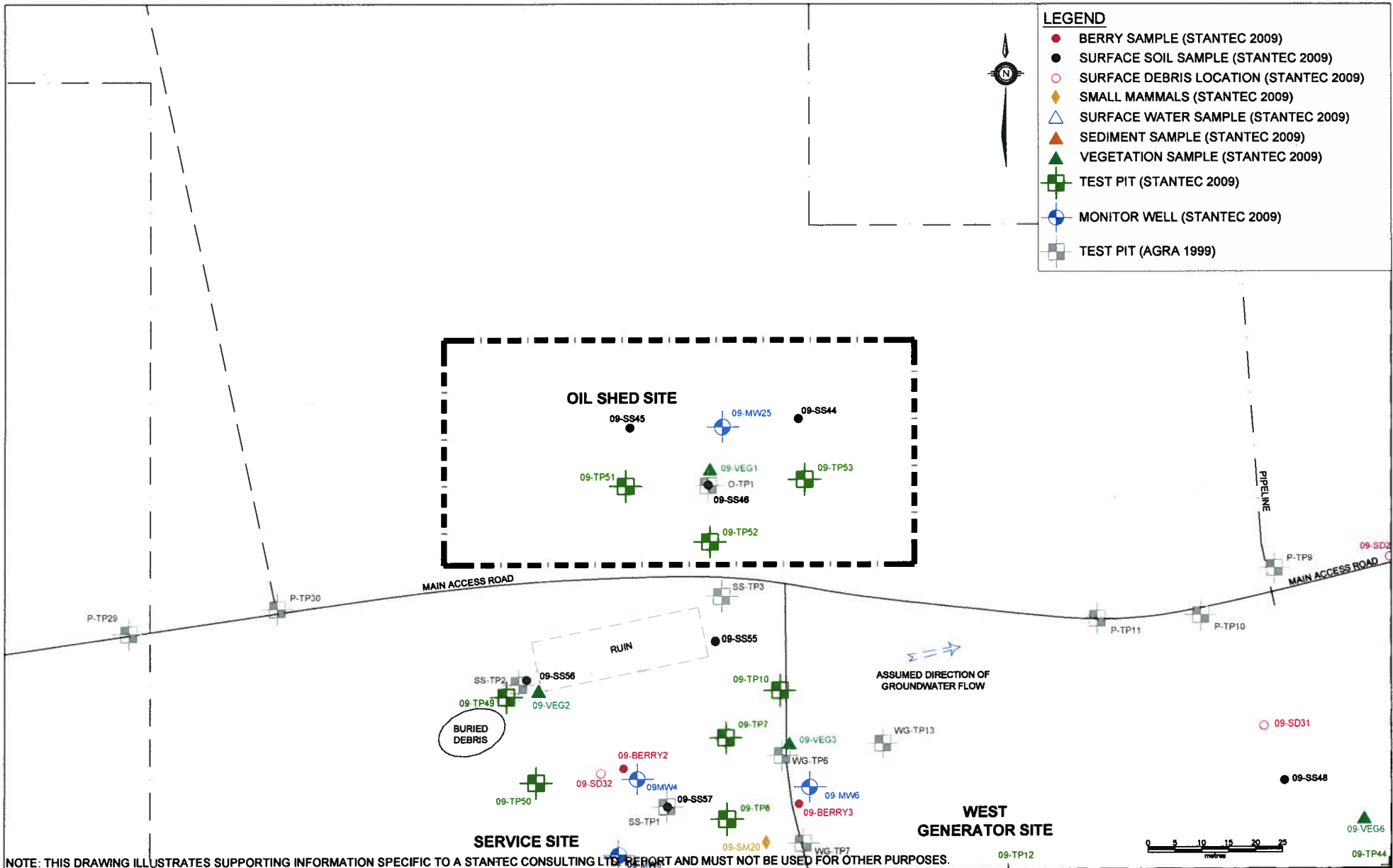
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CLIENT:	NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION
PROJECT TITLE:	PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL
DRAWING TITLE:	APPROXIMATE EXTENT OF METALS IMPACTS EXCEEDING GENERIC GUIDELINES - SERVICE SITE

SCALE:	1:800	DATE:	JUNE 21, 2010
DRAWN BY:	N.M.	CHECKED BY:	A.R.
EDITED BY:	R.L.	REV. No.	0
DRAWING No.:	121410105-EE-10C		
CAD FILE:	1044857-EE-11.DWG		



Stantec



CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION

PROJECT TITLE: PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL

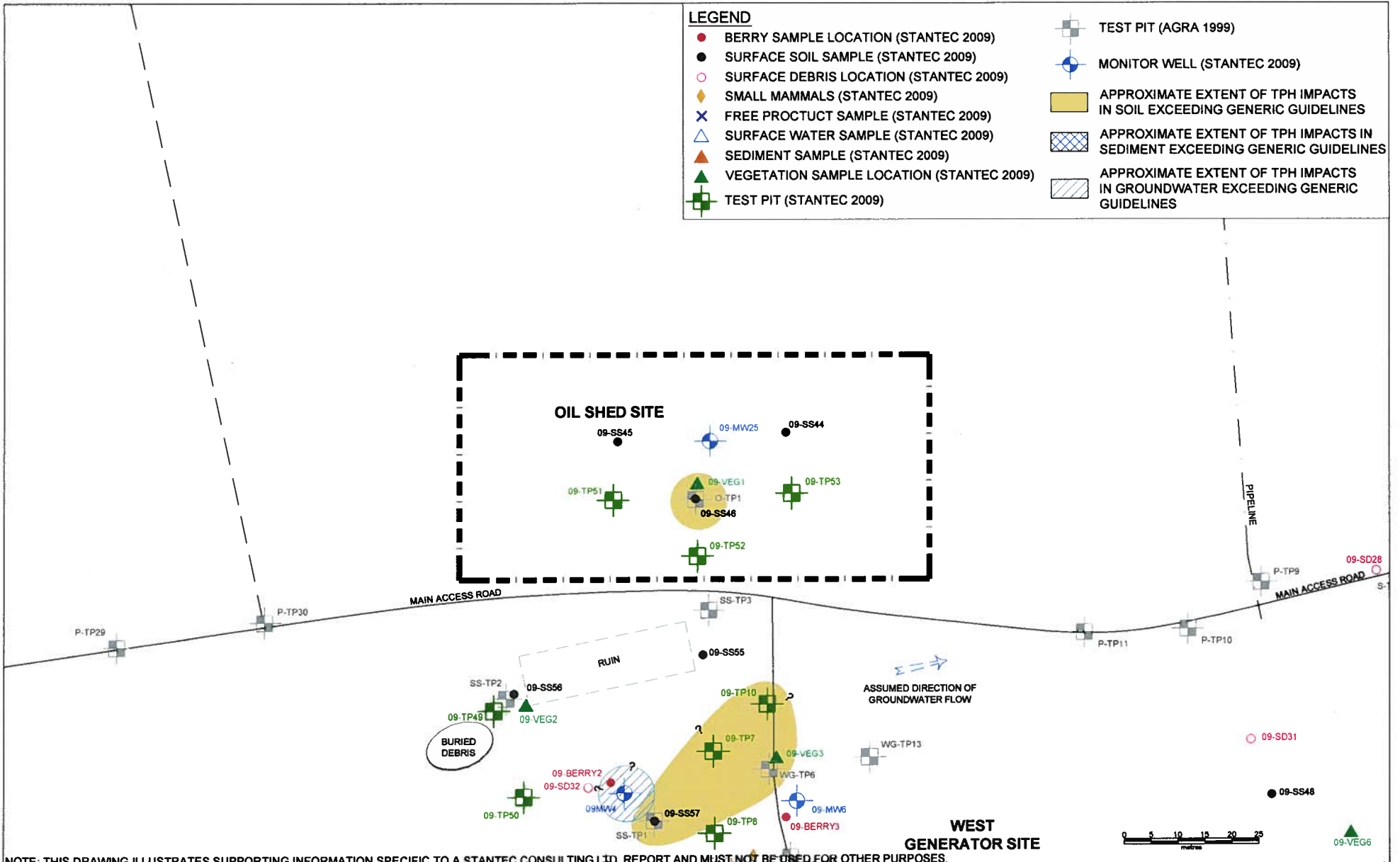
DRAWING TITLE: SITE PLAN - OIL SHED SITE

SCALE: 1:800	DATE: JUNE 17, 2010
DRAWN BY: N.M.	CHECKED BY: A.R.
EDITED BY: R.L.	REV. No. 0
DRAWING No: 121410105-EE-11A	
CAD FILE: 1044857-EE-07.DWG	



LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◇ SMALL MAMMALS (STANTEC 2009)
- ✕ FREE PRODUCT SAMPLE (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF TPH IMPACTS IN SEDIMENT EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF TPH IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES



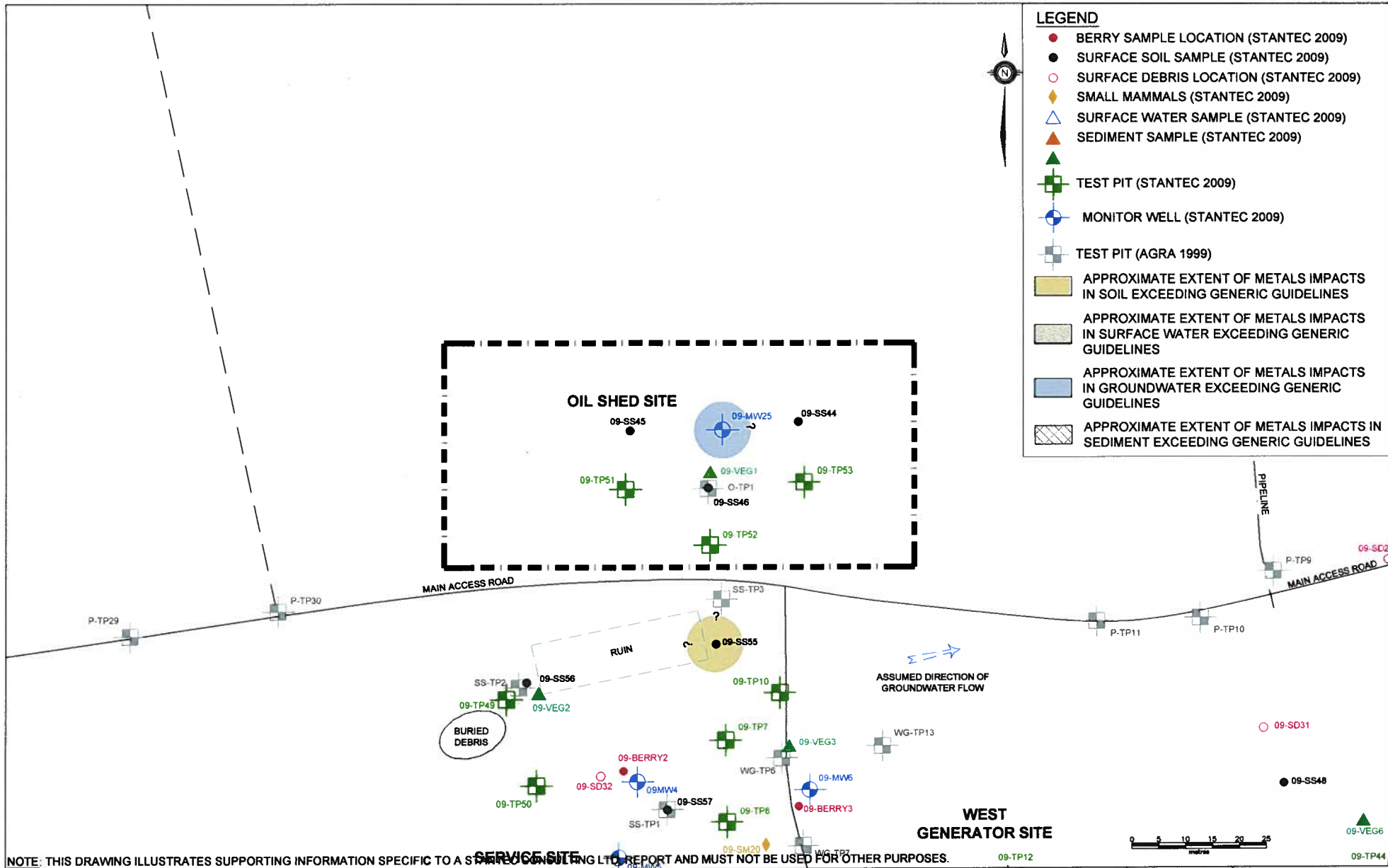
NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT:	NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION
PROJECT TITLE:	PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL
DRAWING TITLE:	APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - OIL SHED SITE

SCALE:	1:800	DATE:	JUNE 18, 2010
DRAWN BY:	N.M.	CHECKED BY:	A.R.
EDITED BY:	R.L.	REV. No.	0
DRAWING No.:	121410105-EE-11B		
CAD FILE:	1044857-EE-10.DWG		



Stantec



CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION

PROJECT TITLE: PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL

DRAWING TITLE: APPROXIMATE EXTENT OF METALS IMPACTS EXCEEDING GENERIC GUIDELINES - OIL SHED SITE

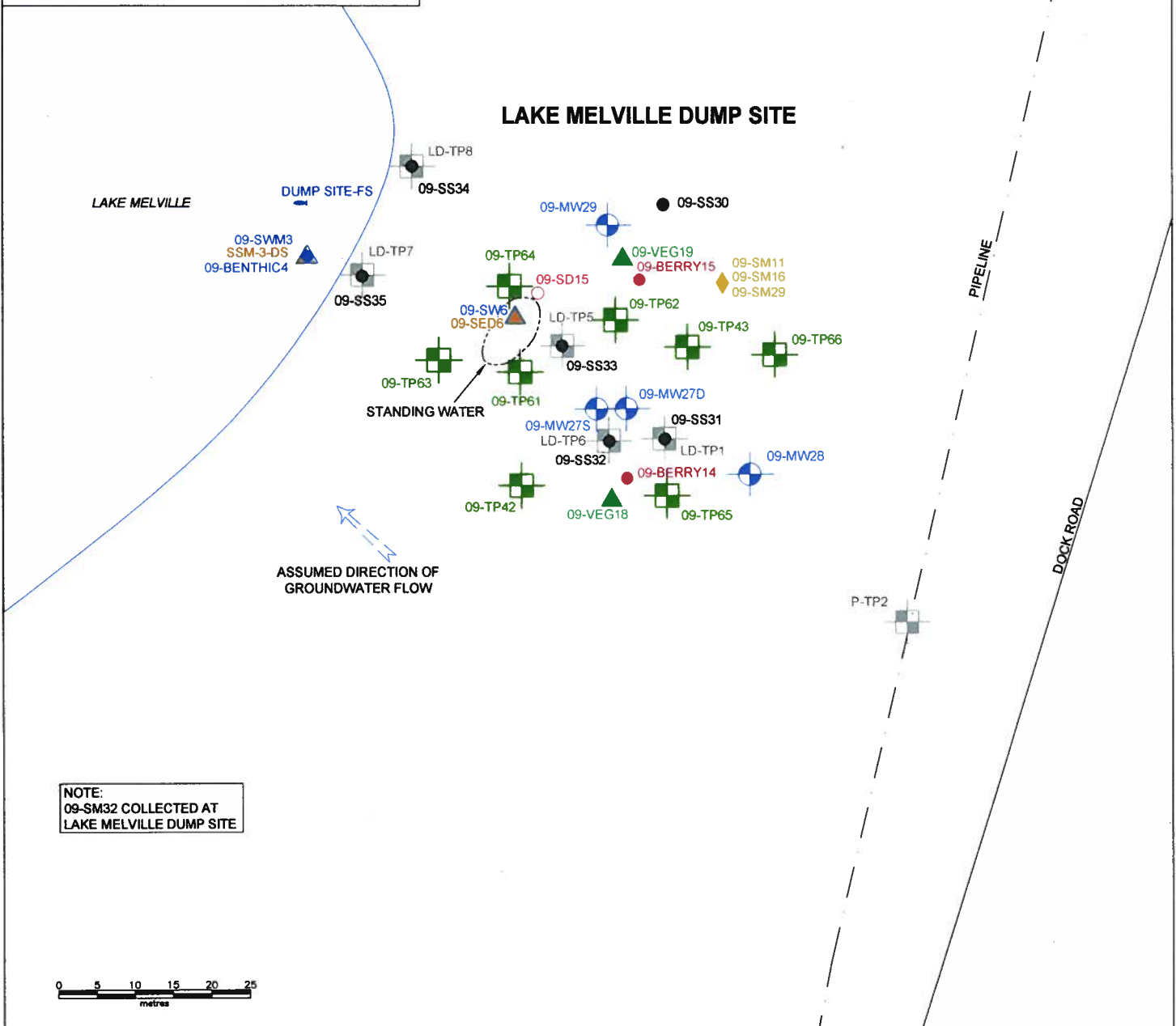
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DRAWN BY:	N.M.	CHECKED BY:	A.R.
EDITED BY:	R.L.	REV. No.:	0
DRAWING No.:	121410105-EE-11C		
CAD FILE:	1044857-EE-11.DWG		



LEGEND

- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- FISH LOCATION (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- MONITOR WELL (STANTEC 2009)
- TEST PIT (AGRA 1999)
- BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)

LAKE MELVILLE DUMP SITE



NOTE:
09-SM32 COLLECTED AT
LAKE MELVILLE DUMP SITE



NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

<p>CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</p>	<p>SCALE: 1:800</p> <p>DRAWN BY: N.M.</p> <p>EDITED BY: R.L.</p> <p>DRAWING No: 121410105-EE-12A</p> <p>CAD FILE: 1044857-EE-07.DWG</p>	<p>DATE: JUNE 17, 2010</p> <p>CHECKED BY: A.R.</p> <p>REV. No: 0</p>
<p>PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</p>		
<p>DRAWING TITLE: SITE PLAN - LAKE MELVILLE DUMP SITE</p>		



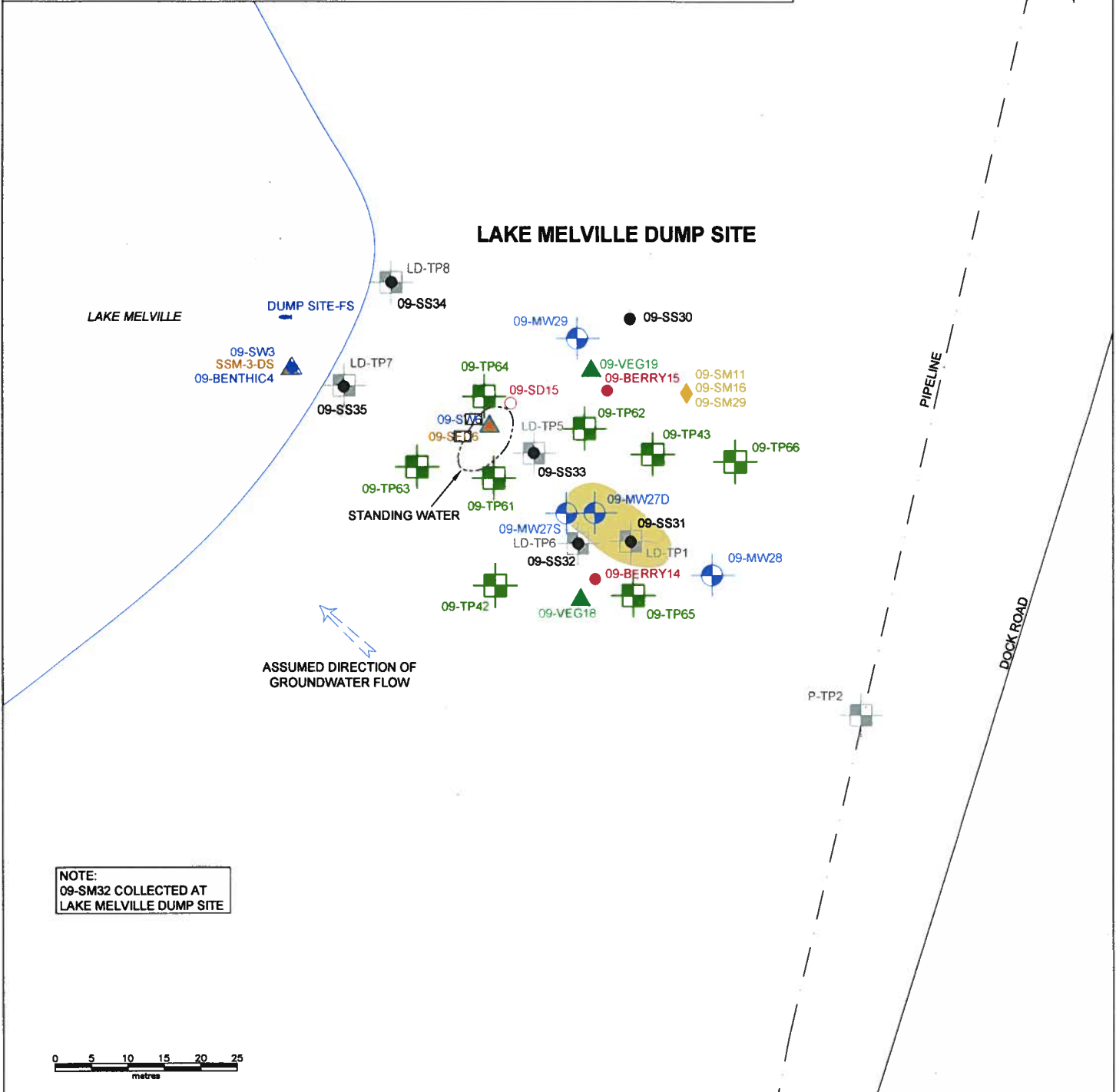
Stantec

LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- FISH LOCATION (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)
- ⊕ TEST PIT (STANTEC 2009)
- ⊖ TEST PIT (AGRA 1999)
- ⊕ MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES



LAKE MELVILLE DUMP SITE



NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

<p>CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;">SCALE: 1:800</td> <td style="width: 50%; padding: 2px;">DATE: JUNE 18, 2010</td> </tr> <tr> <td style="padding: 2px;">DRAWN BY: N.M.</td> <td style="padding: 2px;">CHECKED BY: A.R.</td> </tr> <tr> <td style="padding: 2px;">EDITED BY: R.L.</td> <td style="padding: 2px;">REV. No.: 0</td> </tr> </table>	SCALE: 1:800	DATE: JUNE 18, 2010	DRAWN BY: N.M.	CHECKED BY: A.R.	EDITED BY: R.L.	REV. No.: 0
SCALE: 1:800	DATE: JUNE 18, 2010						
DRAWN BY: N.M.	CHECKED BY: A.R.						
EDITED BY: R.L.	REV. No.: 0						
<p>PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</p>	<p>DRAWING No.: 121410105-EE-12B</p>						
<p>DRAWING TITLE: APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - LAKE MELVILLE DUMP SITE</p>	<p>CAD FILE: 1044857-EE-10.DWG</p>						

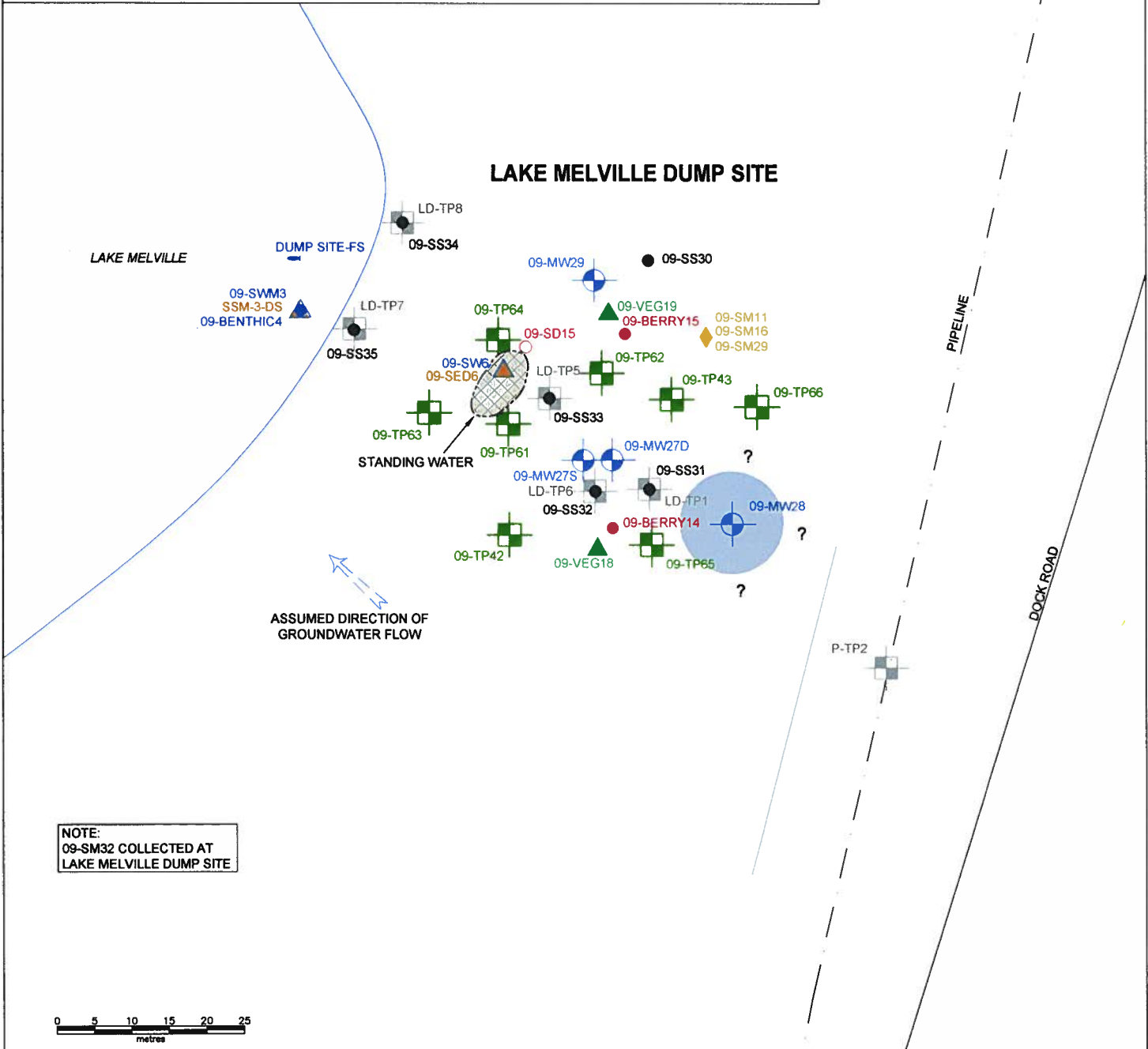


Stantec

LEGEND

- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- FISH LOCATION (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- ⊕ MONITOR WELL (STANTEC 2009)
- BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)
- APPROXIMATE EXTENT OF METALS IMPACTS IN SURFACE WATER EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF METALS IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF METALS IMPACTS IN SEDIMENT EXCEEDING GENERIC GUIDELINES


LAKE MELVILLE DUMP SITE



NOTE:
09-SM32 COLLECTED AT
LAKE MELVILLE DUMP SITE



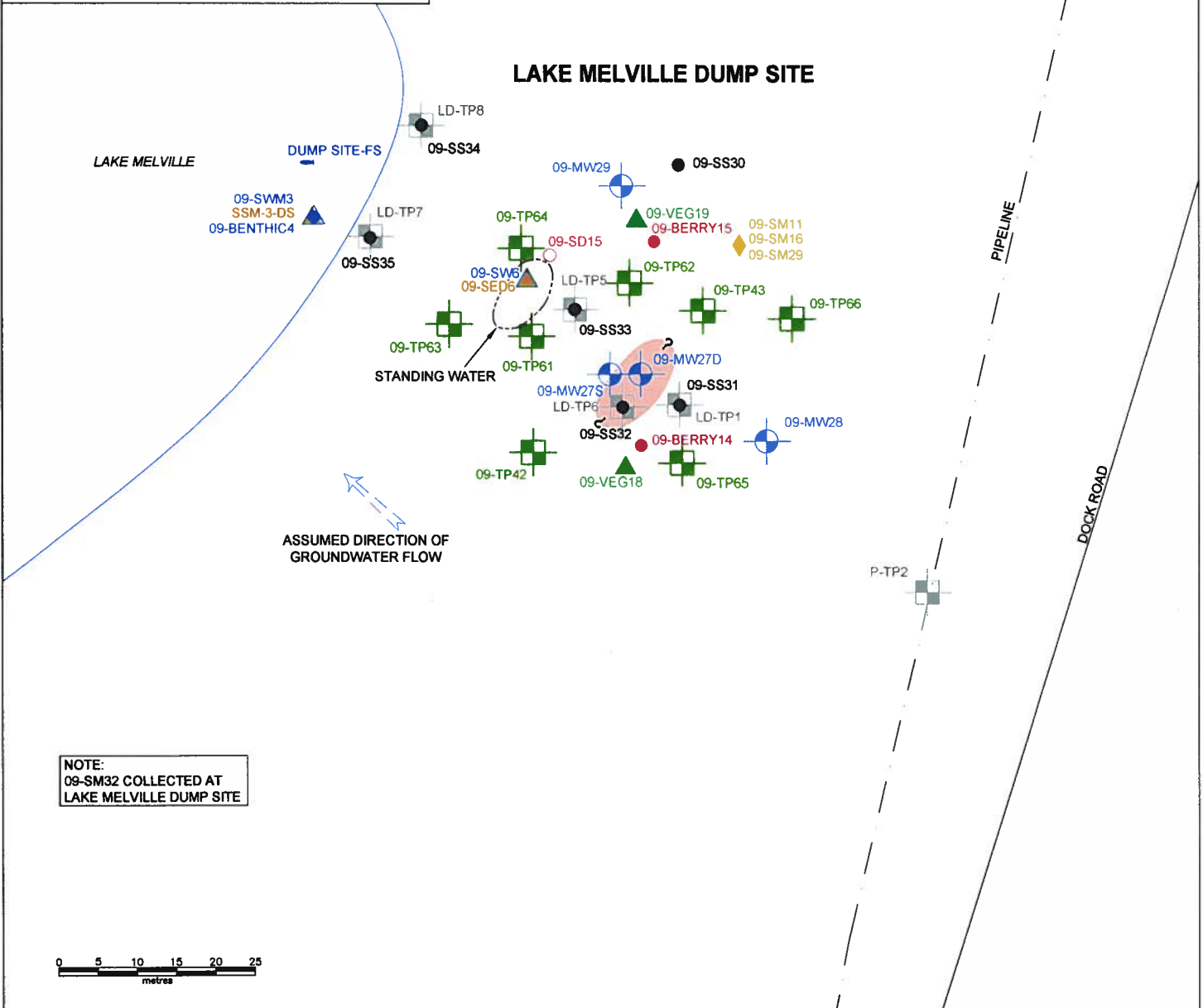
NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

<p>CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</p>		<p>SCALE: 1:800</p>	<p>DATE: JUNE 21, 2010</p>	 <p>Stantec</p>
<p>PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</p>		<p>DRAWN BY: N.M.</p>	<p>CHECKED BY: A.R.</p>	
<p>DRAWING TITLE: APPROXIMATE EXTENT OF METALS IMPACTS EXCEEDING GENERIC GUIDELINES - LAKE MELVILLE DUMP SITE</p>		<p>EDITED BY: R.L.</p>	<p>REV. No: 0</p>	
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LEGEND

- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- ▬ FISH LOCATION (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)
- APPROXIMATE EXTENT OF PAHs IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES


LAKE MELVILLE DUMP SITE



NOTE:
09-SM32 COLLECTED AT
LAKE MELVILLE DUMP SITE



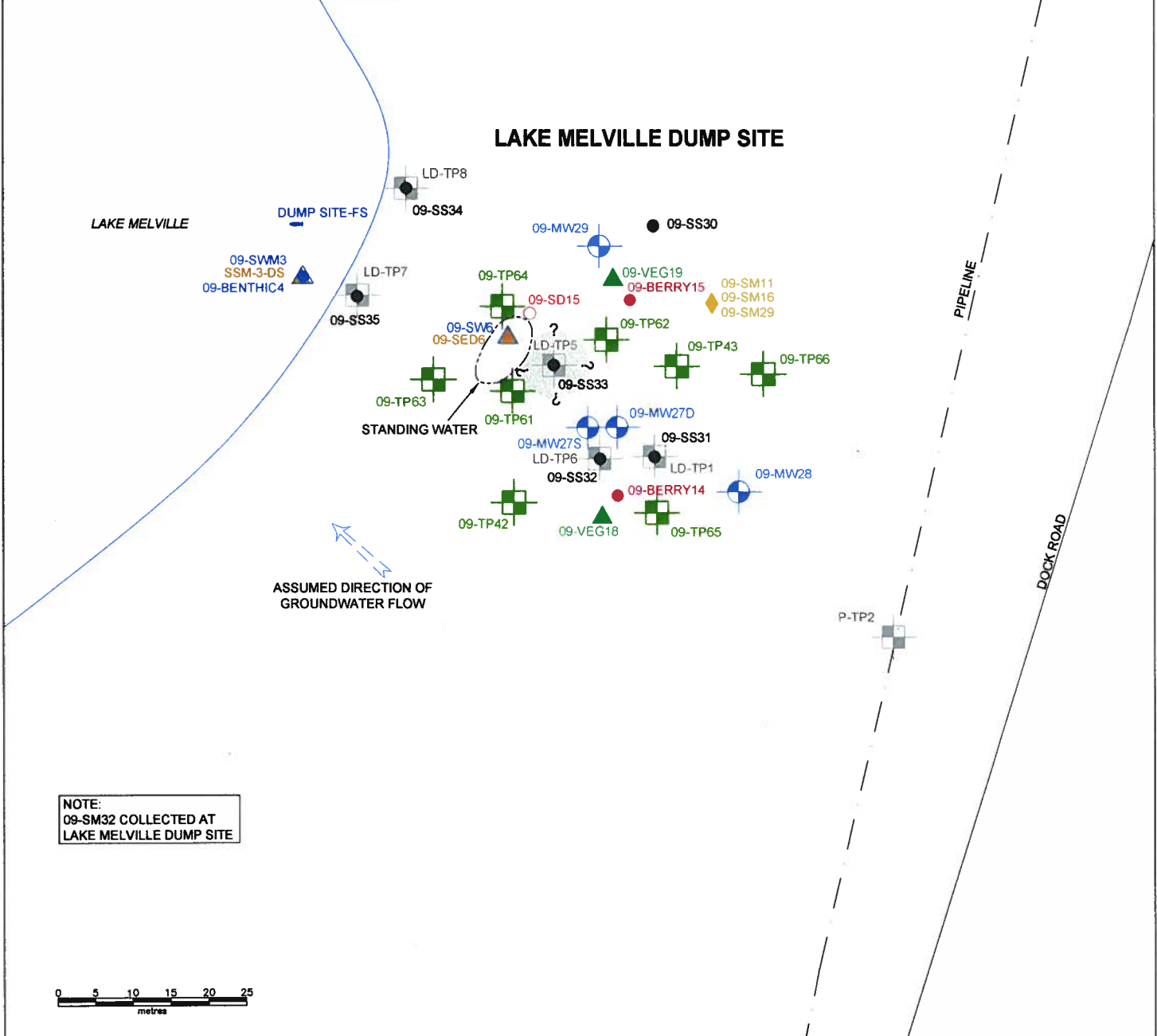
NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION		SCALE: 1:800	DATE: JUNE 21, 2010
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL		DRAWN BY: N.M.	CHECKED BY: A.R.
DRAWING TITLE: APPROXIMATE EXTENT OF PAHs IMPACTS EXCEEDING GENERIC GUIDELINES - LAKE MELVILLE DUMP SITE		EDITED BY: R.L.	REV. No: 0
		DRAWING No: 121410105-EE-12D	 Stantec
		CAD FILE: 1044857-EE-12.DWG	

LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- FISH LOCATION (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- ⊕ MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF PCBs IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES

LAKE MELVILLE DUMP SITE



NOTE:
09-SM32 COLLECTED AT
LAKE MELVILLE DUMP SITE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	
DRAWING TITLE: APPROXIMATE EXTENT OF PCBs IMPACTS EXCEEDING GENERIC GUIDELINES - LAKE MELVILLE DUMP SITE	

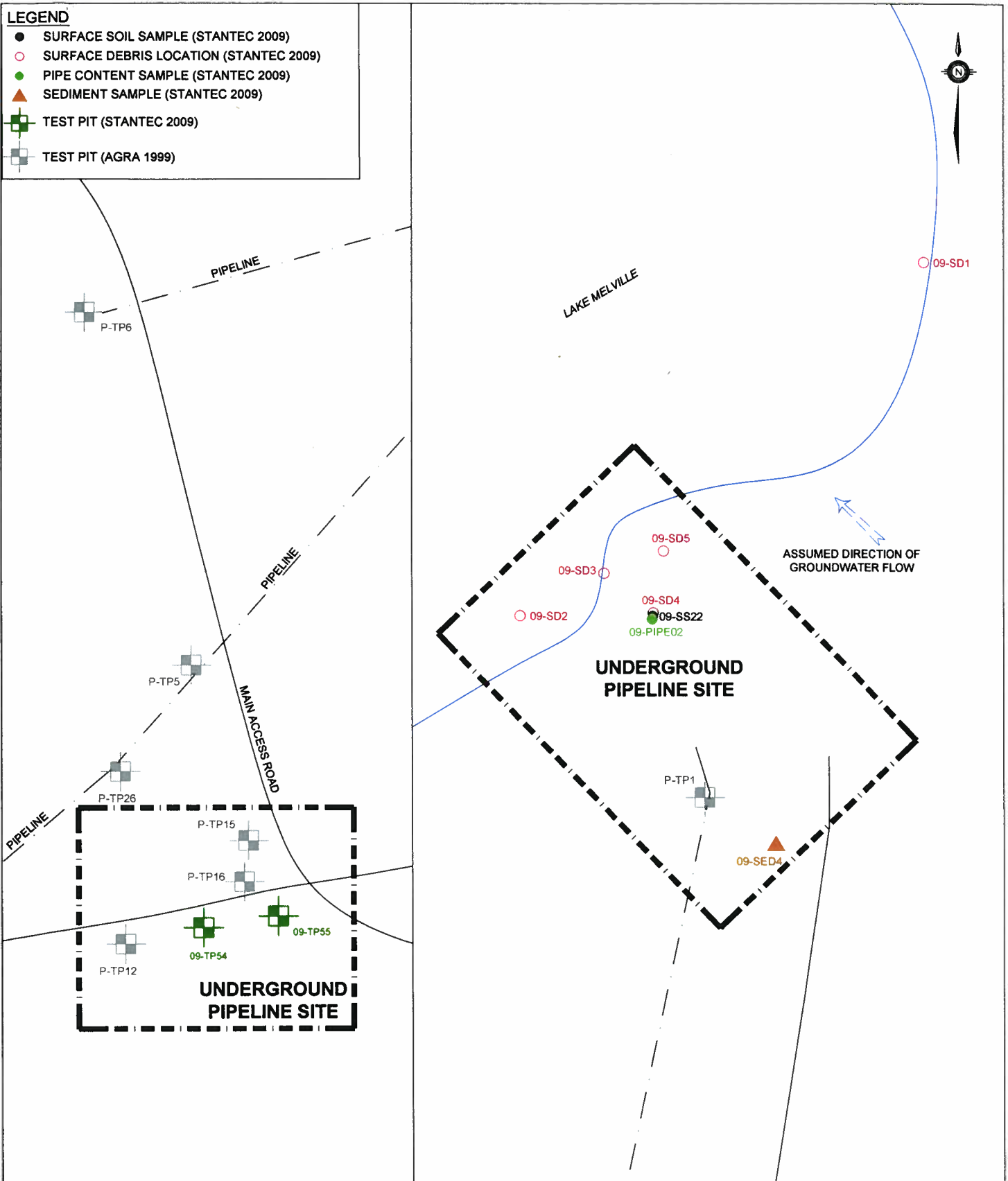
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CAD FILE: 1044857-EE-14.DWG	





Stantec

LEGEND

- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- PIPE CONTENT SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)

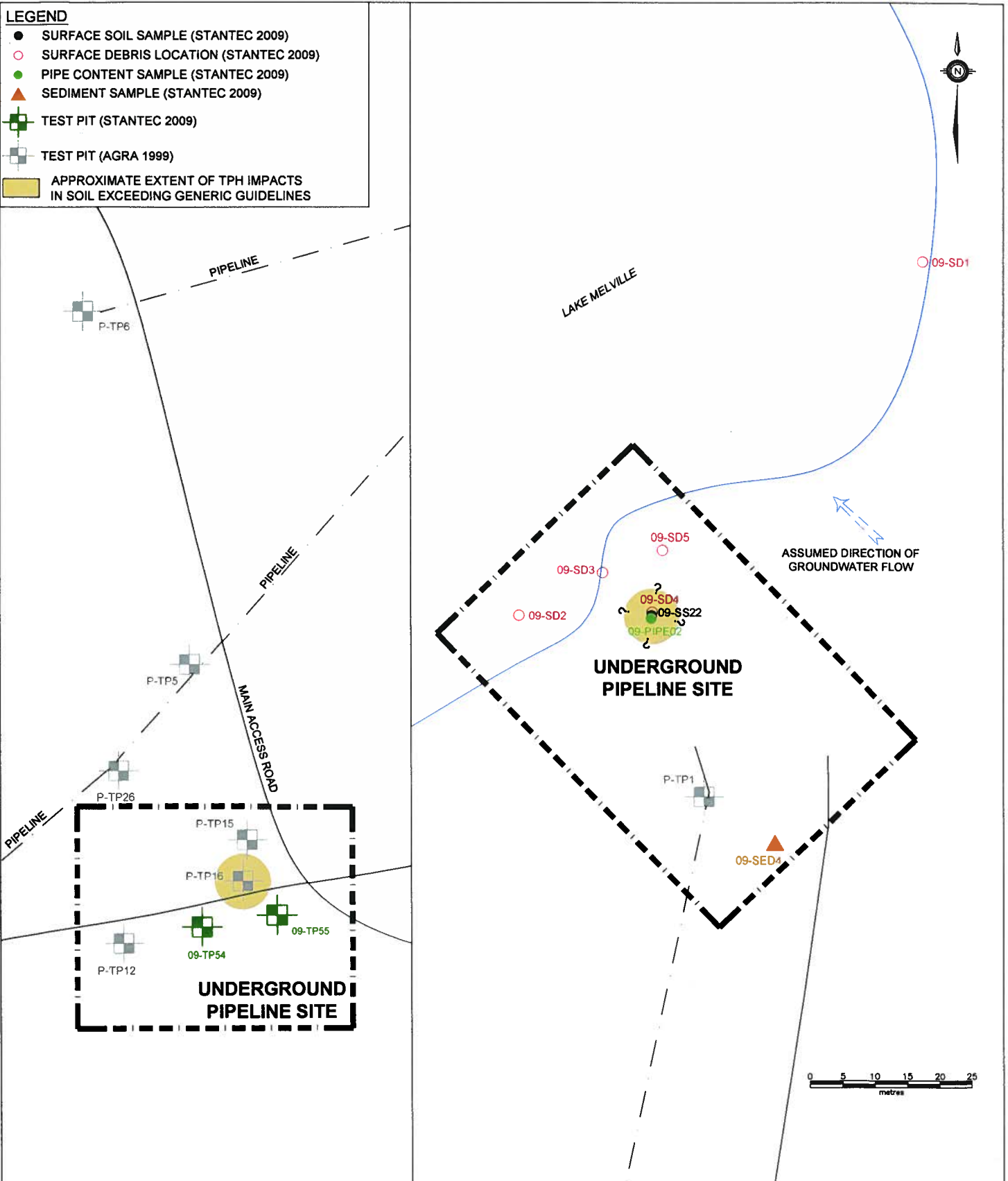


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CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:800	DATE: JUNE 17, 2010	
	DRAWN BY: N.M.	CHECKED BY: A.R.	
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	EDITED BY: -	REV. No. 0	
	DRAWING No: 121410105-EE-13A		
DRAWING TITLE: SITE PLAN - UNDERGROUND PIPELINE SYSTEM	CAD FILE: 1044857-EE-07.DWG		Stantec 17JUN10 1:00PM

LEGEND

- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- PIPE CONTENT SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES

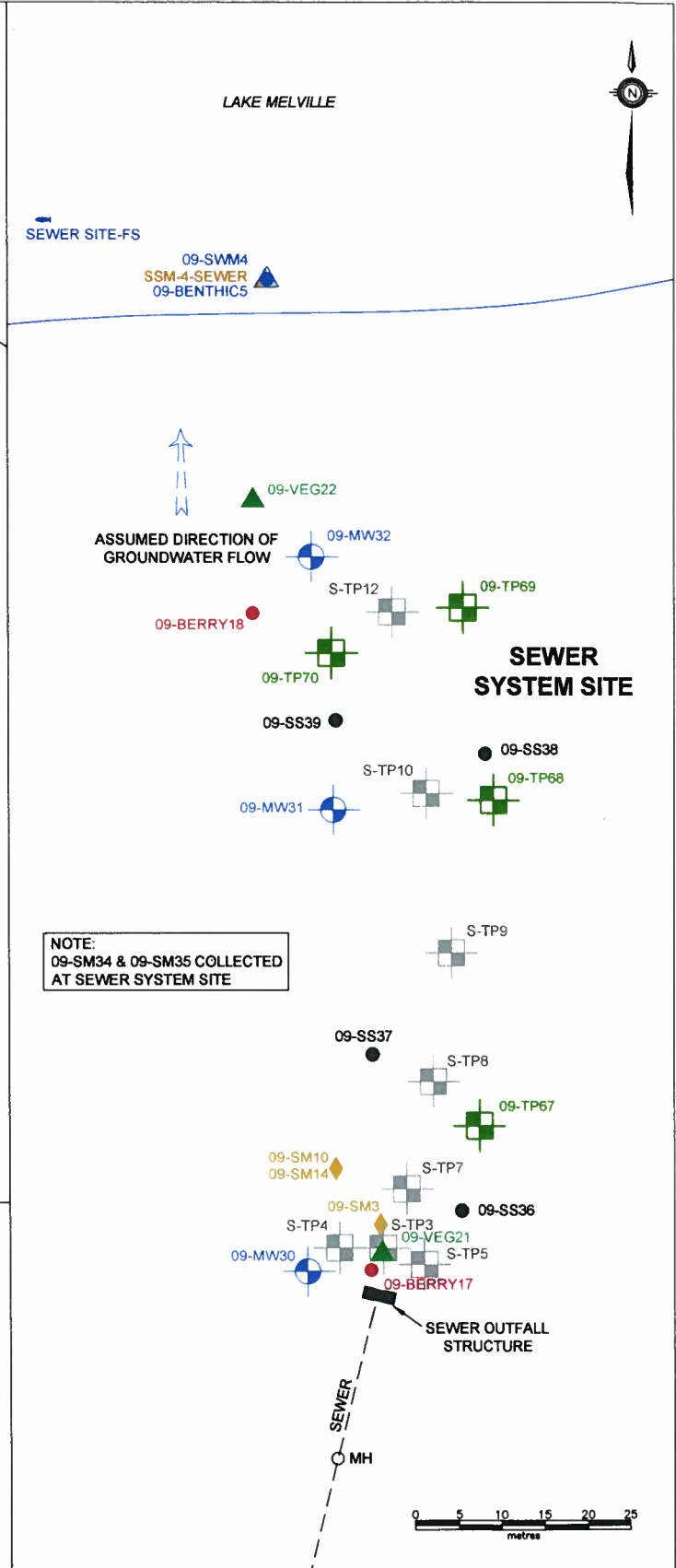
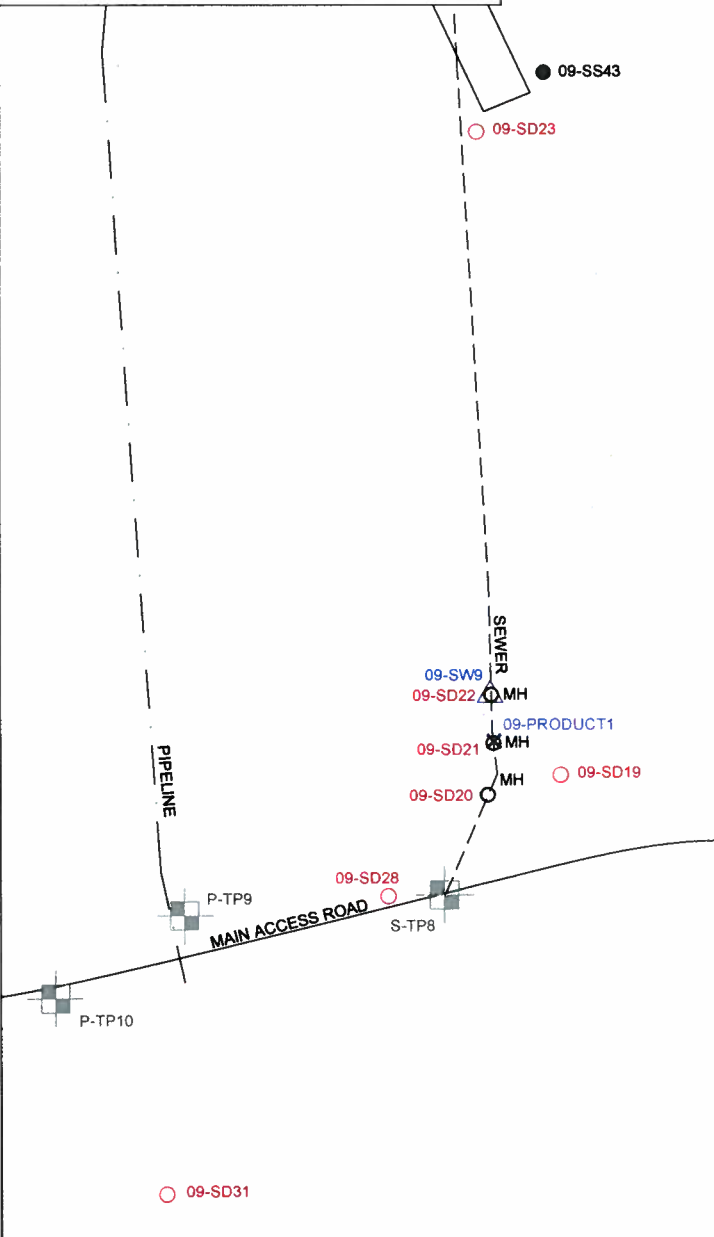


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CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION		SCALE: 1:800	DATE: JUNE 18, 2010	 Stantec
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL		DRAWN BY: N.M.	CHECKED BY: A.R.	
DRAWING TITLE: APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - UNDERGROUND PIPELINE SYSTEM		EDITED BY: -	REV. No. 0	
		DRAWING No: 121410105-EE-13B	CAD FILE: 1044857-EE-10.DWG	

LEGEND

- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- FISH LOCATION (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ✕ FREE PRODUCT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- ⊕ TEST PIT (STANTEC 2009)
- ⊙ MONITOR WELL (STANTEC 2009)
- ⊠ TEST PIT (AGRA 1999)
- BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)

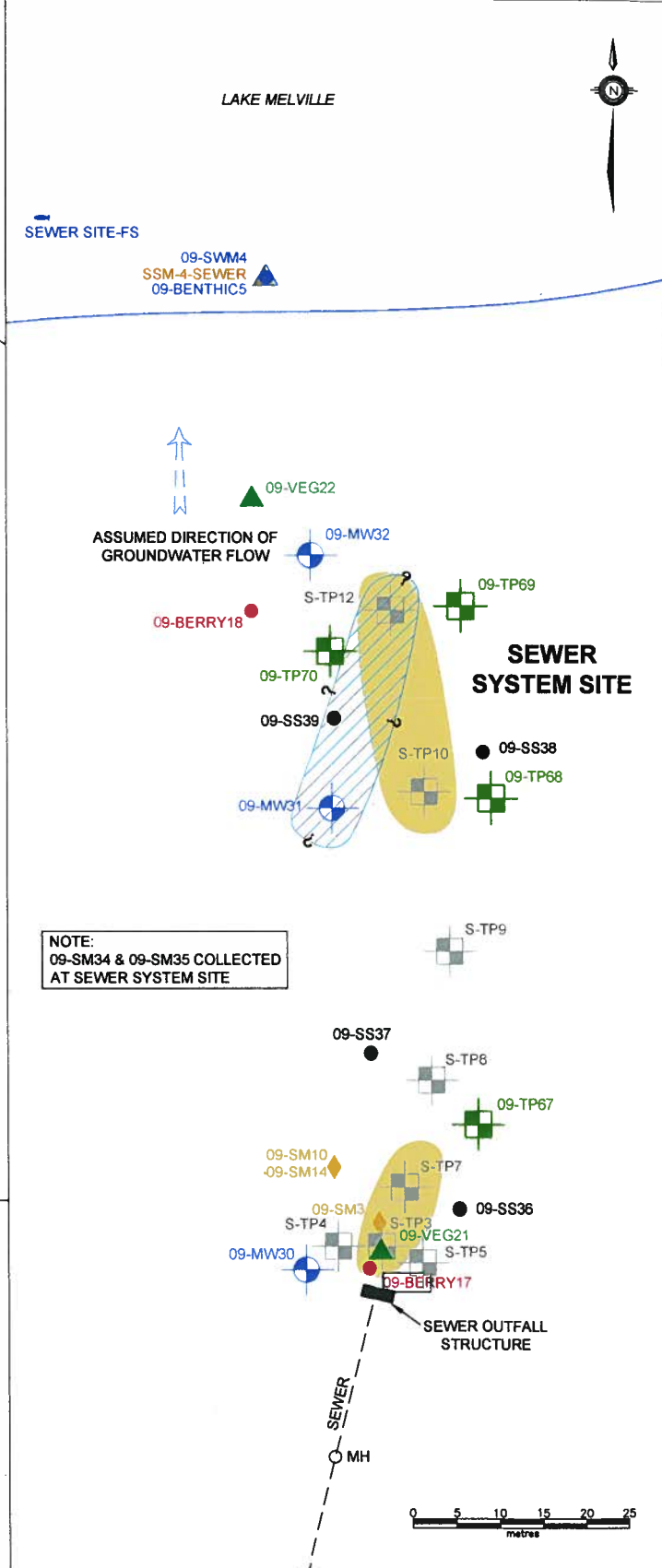
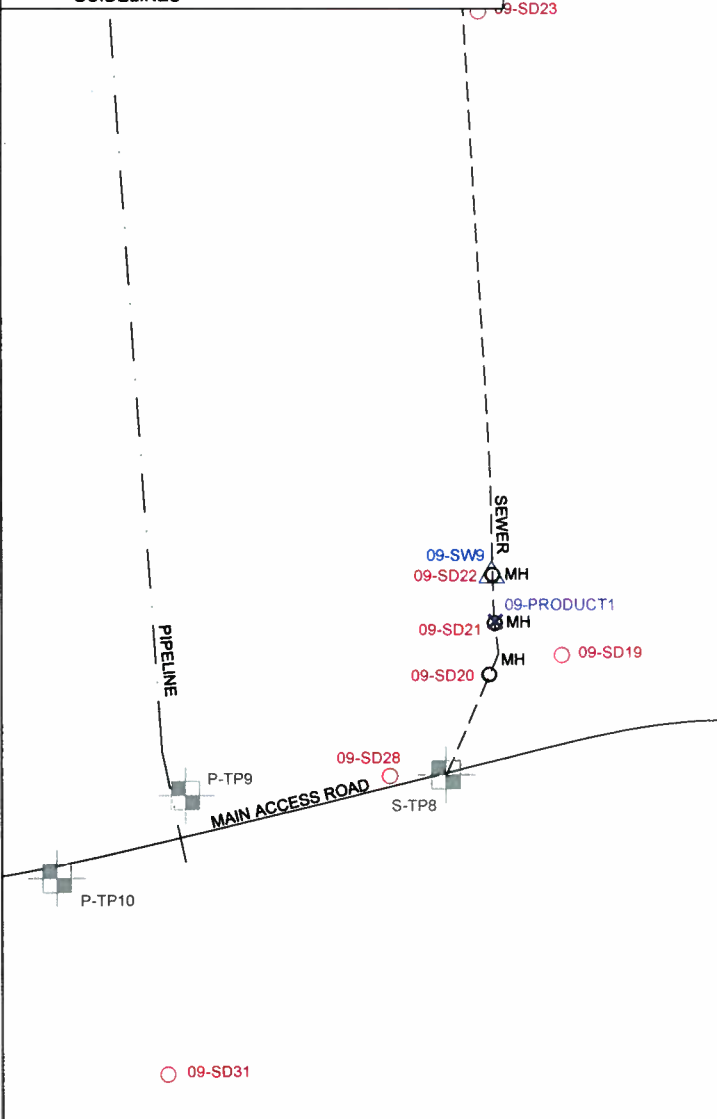


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<p>CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</p> <p>PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</p> <p>DRAWING TITLE: SITE PLAN - SEWER SYSTEM</p>	<p>SCALE: 1:800</p> <p>DATE: JUNE 17, 2010</p> <p>DRAWN BY: N.M.</p> <p>CHECKED BY: A.R.</p> <p>EDITED BY: R.L.</p> <p>REV. No. 0</p> <p>DRAWING No. 121410105-EE-14A</p> <p>CAD FILE: 1044857-EE-07.DWG</p>	<p>Stantec</p>
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LEGEND

- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- FISH LOCATION (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- × FREE PRODUCT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- MONITOR WELL (STANTEC 2009)
- TEST PIT (AGRA 1999)
- BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF TPH IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES



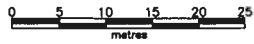
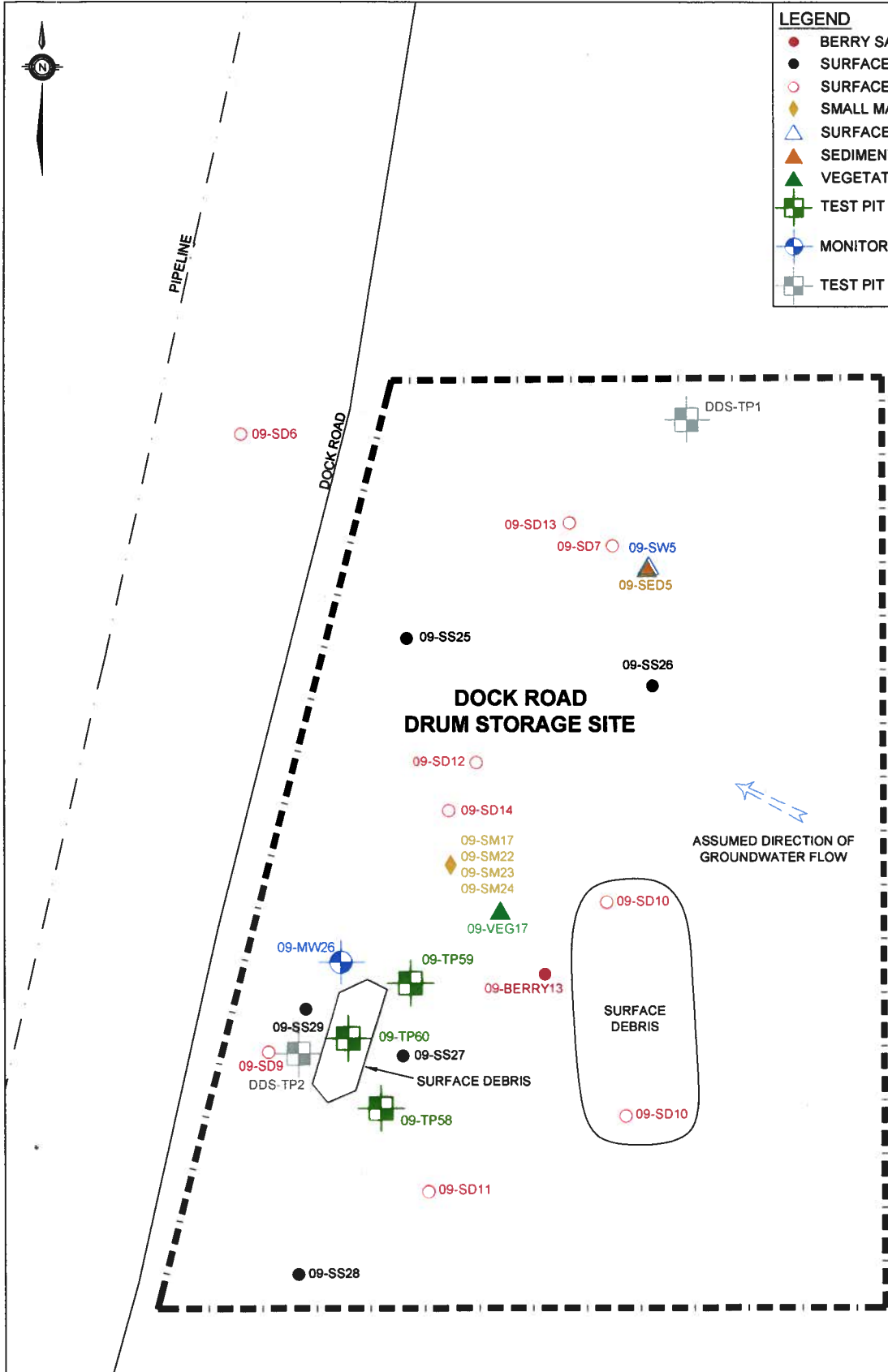
NOTE:
09-SM34 & 09-SM35 COLLECTED
AT SEWER SYSTEM SITE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

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<p>DRAWING TITLE: APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - SEWER SYSTEM</p>		<p>EDITED BY: R.L.</p>	<p>REV. No. 0</p>	
		<p>DRAWING No: 121410105-EE-14B</p>	<p>CAD FILE: 1044857-EE-10.DWG</p>	

LEGEND

- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- MONITOR WELL (STANTEC 2009)
- TEST PIT (AGRA 1999)

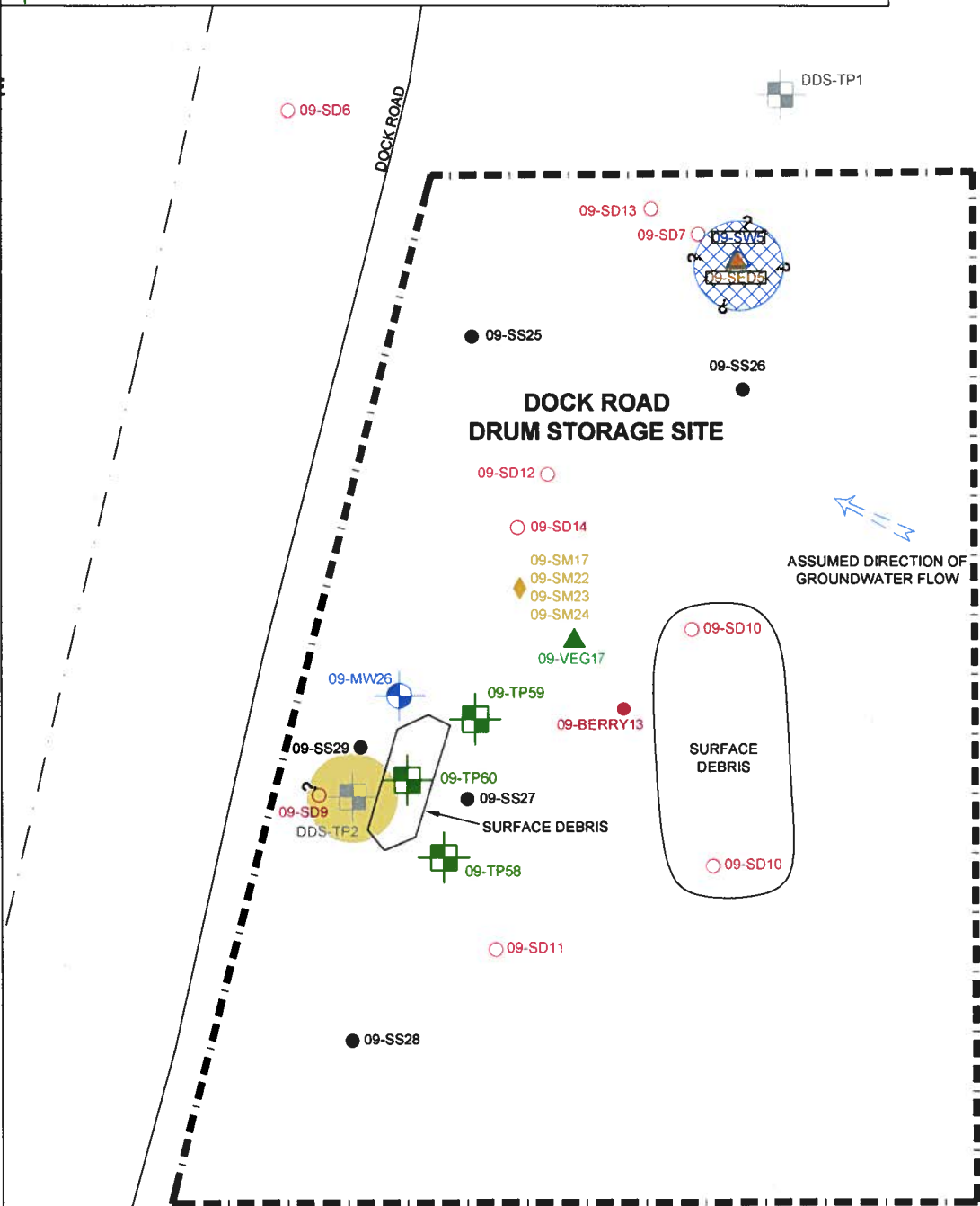


NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:800	DATE: JUNE 17, 2010	
	DRAWN BY: N.M.	CHECKED BY: A.R.	
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	EDITED BY: -	REV. No. 0	
	DRAWING No: 121410105-EE-15A		
DRAWING TITLE: SITE PLAN - DOCK ROAD DRUM STORAGE SITE	CAD FILE: 1044857-EE-07.DWG		

LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- ⊕ TEST PIT (STANTEC 2009)
- ⊕ TEST PIT (AGRA 1999)
- ⊕ MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- ▨ APPROXIMATE EXTENT OF TPH IMPACTS IN SEDIMENT EXCEEDING GENERIC GUIDELINES

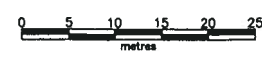
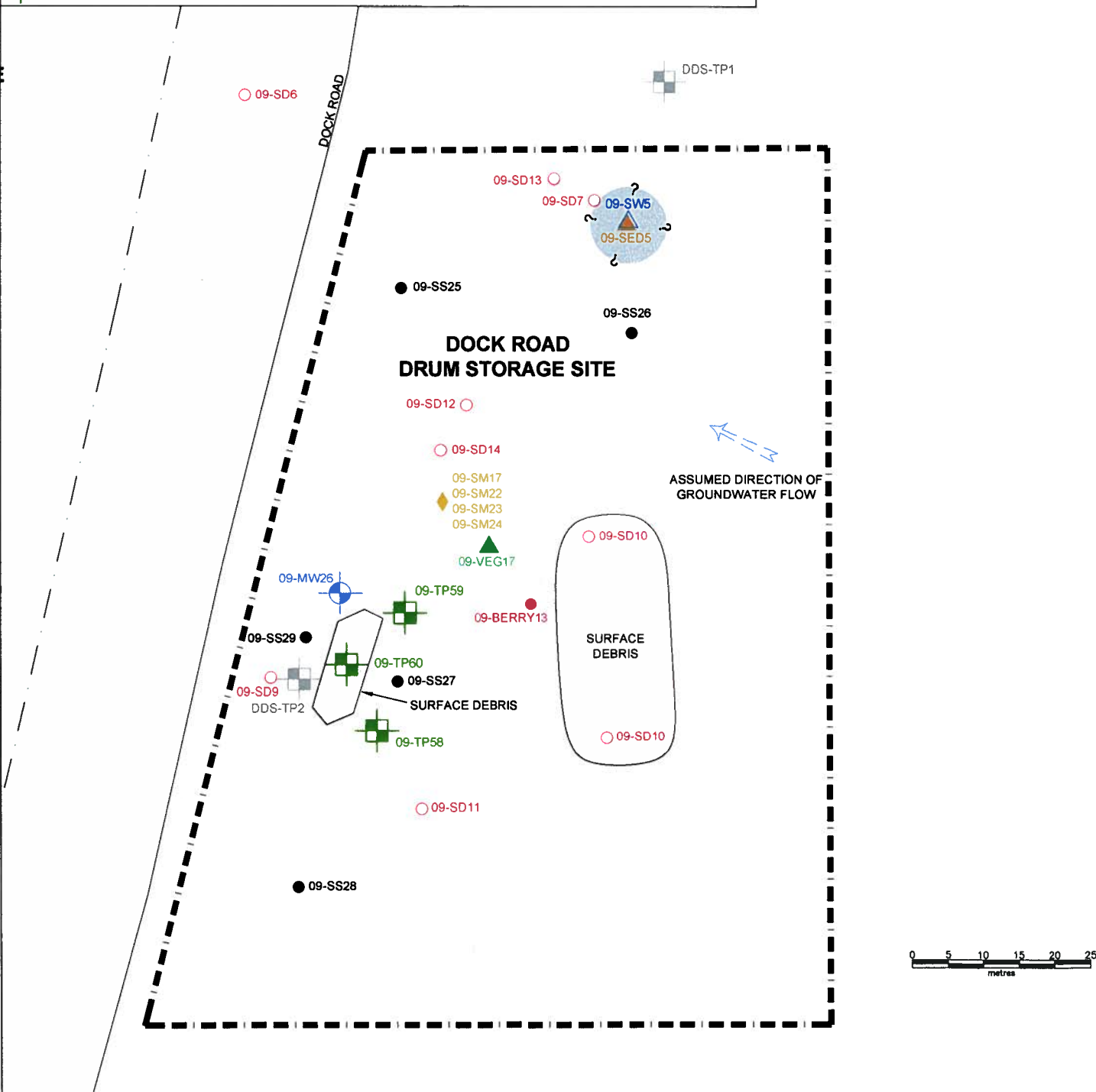


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CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:800	DATE: JUNE 18, 2010	
	DRAWN BY: N.M.	CHECKED BY: A.R.	
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	EDITED BY: -	REV. No: 0	
	DRAWING No: 121410105-EE-15B		
DRAWING TITLE: APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - DOCK ROAD DRUM STORAGE SITE	CAD FILE: 1044857-EE-10.DWG		Stantec <small>18JUN10 1:00PM</small>

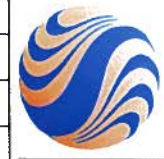
LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF TOLUENE IMPACTS IN SURFACE WATER EXCEEDING GENERIC GUIDELINES

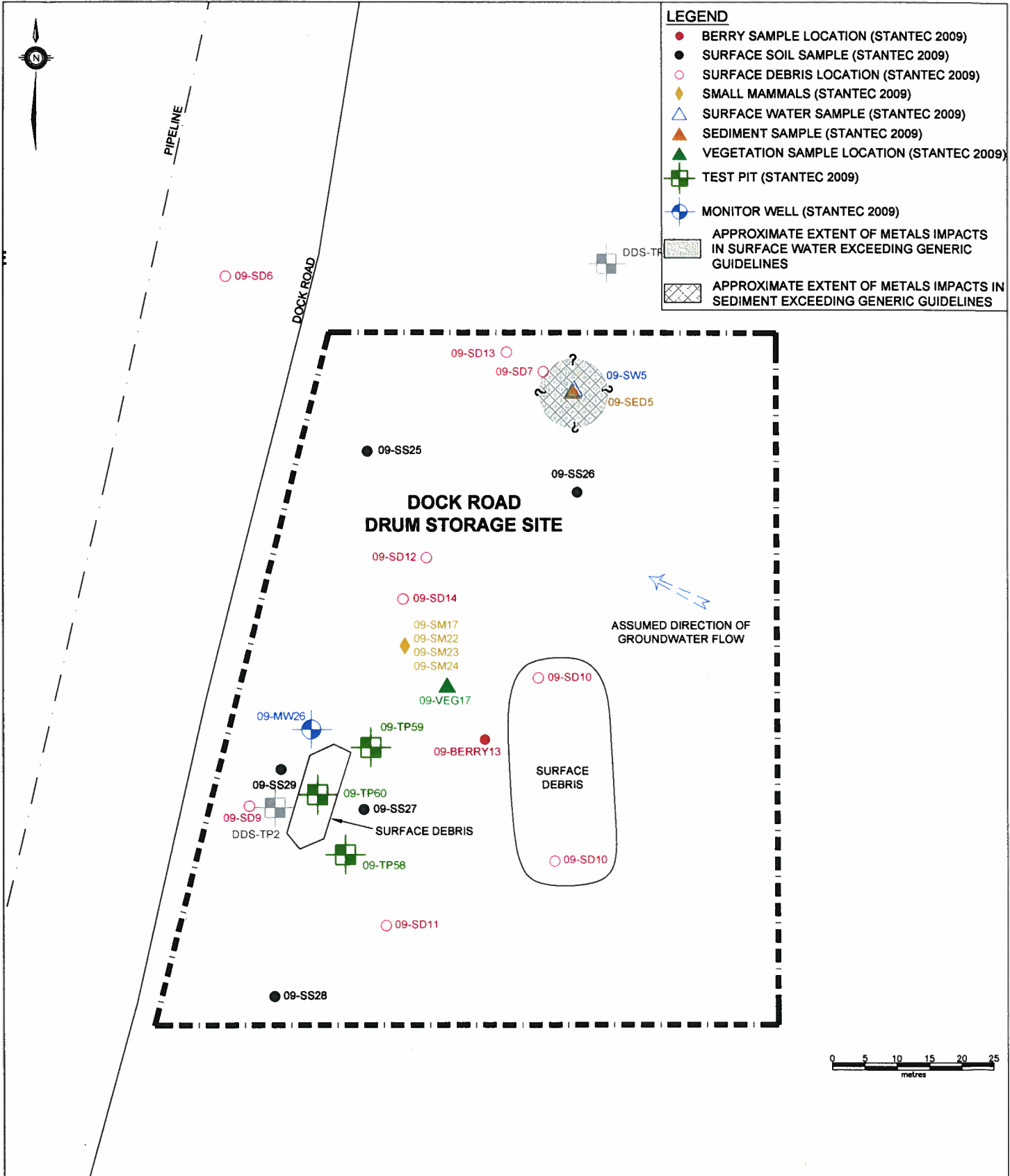


NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.



CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION		SCALE: 1:800	DATE: JUNE 18, 2010
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL		DRAWN BY: N.M.	CHECKED BY: A.R.
DRAWING TITLE: APPROXIMATE EXTENT OF TOLUENE IMPACTS EXCEEDING GENERIC GUIDELINES - DOCK ROAD DRUM STORAGE SITE		EDITED BY: -	REV. No. 0
		DRAWING No: 121410105-EE-15C	
		CAD FILE: 1044857-EE-15.DWG	



Stantec



NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

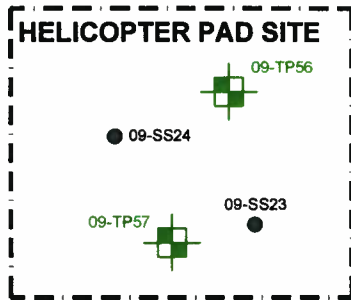
CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:800	DATE: JUNE 21, 2010	
	DRAWN BY: N.M.	CHECKED BY: A.R.	
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	EDITED BY: -	REV. No. 0	
	DRAWING No: 121410105-EE-15D		
DRAWING TITLE: APPROXIMATE EXTENT OF METALS IMPACTS EXCEEDING GENERIC GUIDELINES - DOCK ROAD DRUM STORAGE SITE	CAD FILE: 1044857-EE-11.DWG		

LEGEND

- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- PIPE CONTENT SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- △ SURFACE WATER SAMPLE (STANTEC 2009)



← ← ←
 ASSUMED DIRECTION OF
 GROUNDWATER FLOW



P-TP1

09-SED4

PIPELINE

DOCK ROAD

○ 09-SD6

○ 09-SD13

○ 09-SD7 ○ 09-SW5

▲ 09-SED5

● 09-SS25

● 09-SS26

**DOCK ROAD
 DRUM STORAGE SITE**

○ 09-SD12

○ 09-SD14

● 09-SM17

● 09-SM22

● 09-SM23

● 09-SM24



▲ 09-VEG17

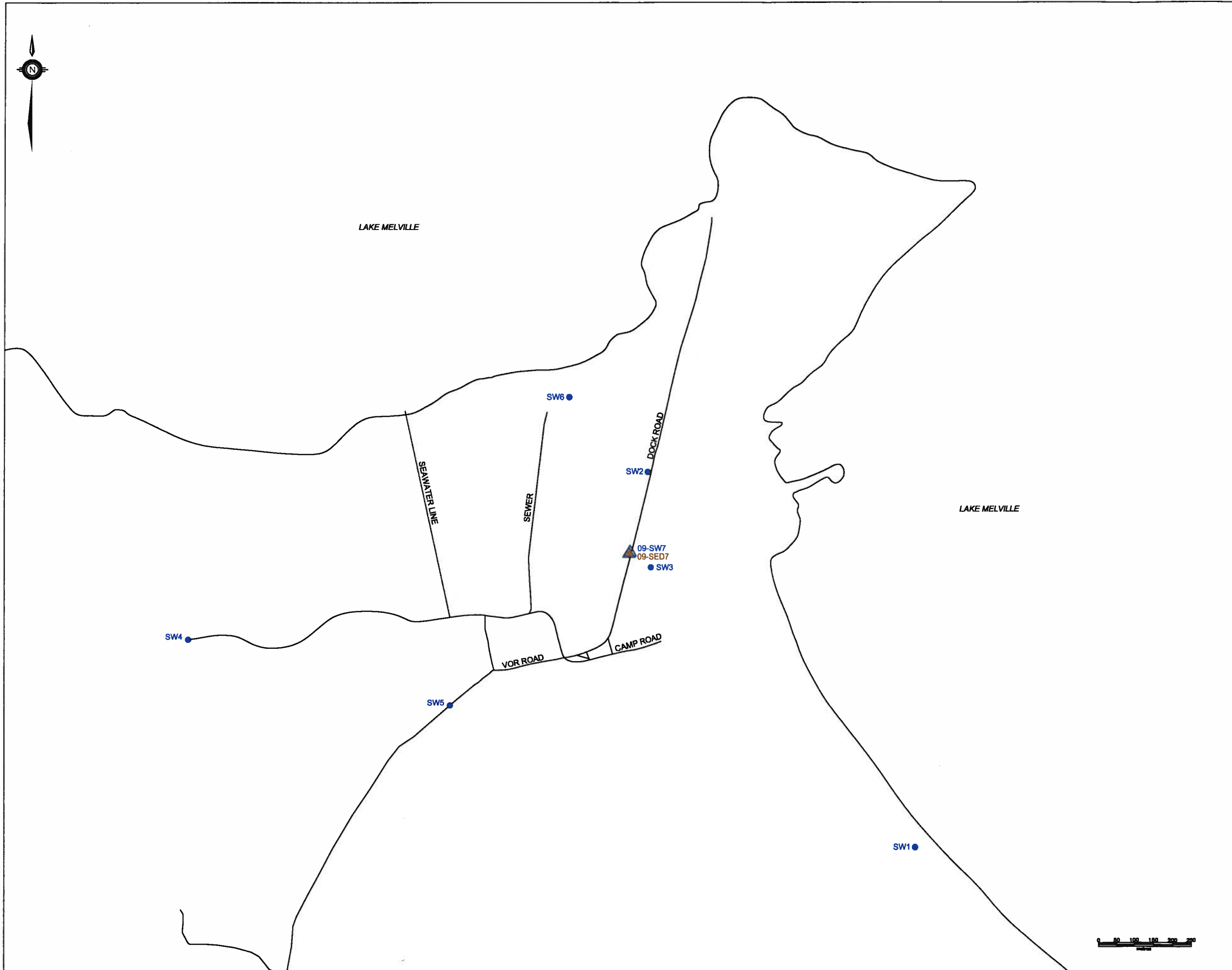
○ 09-SD10

● 09-MW26

■ 09-TP59

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:800	DATE: JUNE 17, 2010	
	DRAWN BY: N.M.	CHECKED BY: A.R.	
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	EDITED BY: -	REV. No. 0	
	DRAWING No: 121410105-EE-16A	CAD FILE: 1044857-EE-07.DWG	
DRAWING TITLE: SITE PLAN - HELICOPTER PAD SITE			



LEGEND

- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- SURFACE WATER SAMPLE (AGRA 1999)

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT:

NEWFOUNDLAND AND LABRADOR
DEPARTMENT OF ENVIRONMENT
AND CONSERVATION

PROJECT TITLE:

PHASE III ESA, HUMAN HEALTH AND
ECOLOGICAL RISK ASSESSMENTS,
REMEDIAL ACTION PLAN FOR THE
FORMER U.S. MILITARY FACILITY OF
NORTHWEST POINT, NL

DRAWING TITLE:

SITE PLAN - STREAMS

Stantec Consulting Ltd.



Stantec

SCALE:	1:10,000	DATE:	JUNE 18, 2010
DRAWN BY:	N.M.	CHECKED BY:	A.R.
EDITED BY:	-	REV. No.	0
DRAWING No.:	121410105-EE-17A		
CAD FILE:	1044857-EE-20.DWG		

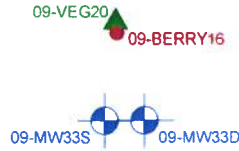


LEGEND

- BERRY SAMPLE (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- ⊕ MONITOR WELL (STANTEC 2009)
- ⊠ TEST PIT (AGRA 1999)
- BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)



ASSUMED DIRECTION OF
GROUNDWATER FLOW



09-BENTHIC3










INNU HEALING GROUND

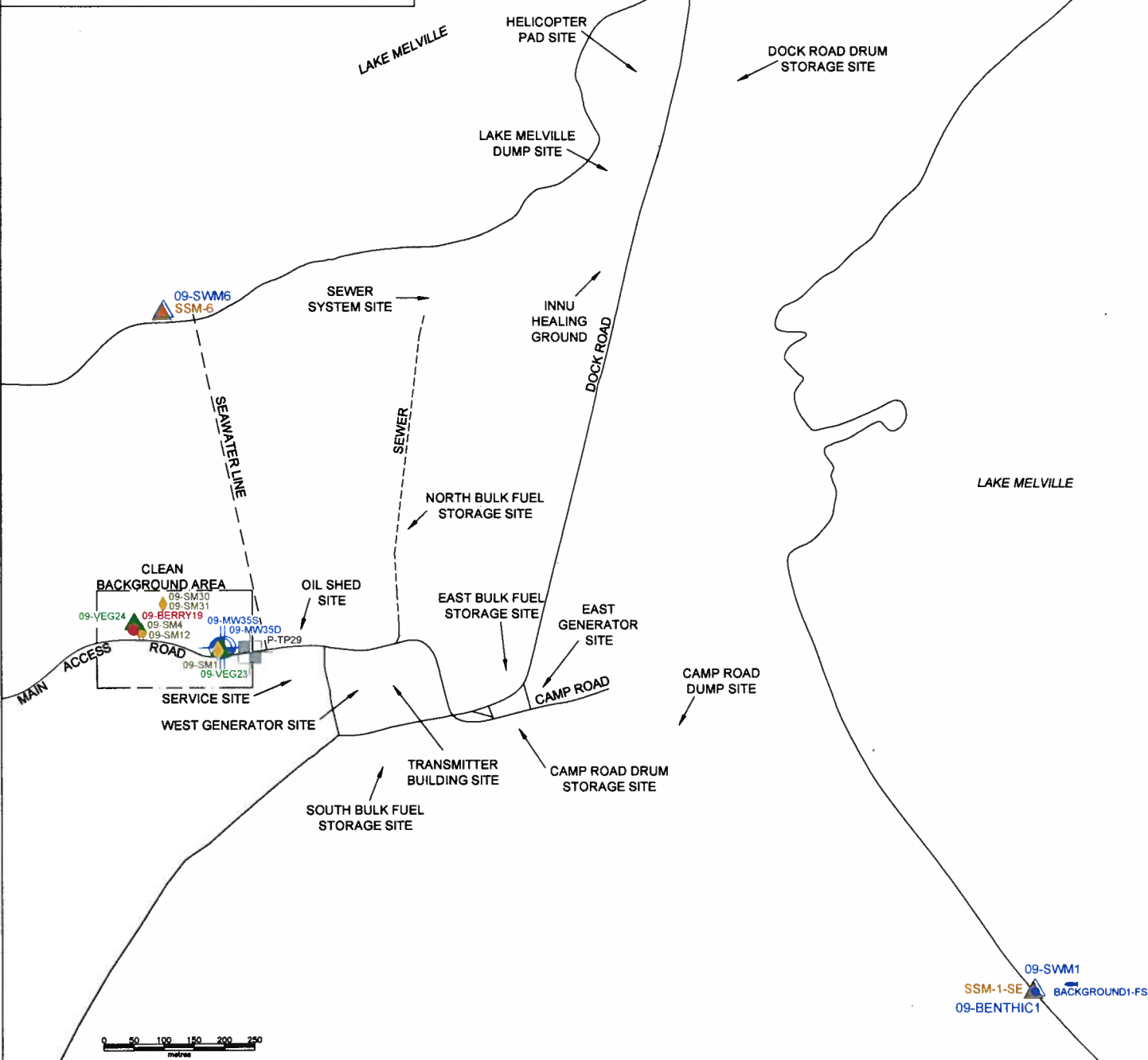


NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION		SCALE: 1:800	DATE: JUNE 17, 2010	
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL		DRAWN BY: N.M.	CHECKED BY: A.R.	
DRAWING TITLE: SITE PLAN - INNU HEALING GROUND		EDITED BY: -	REV. No. 0	
		DRAWING No.: 121410105-EE-18A	CAD FILE: 1044857-EE-07.DWG	

LEGEND

-  SURFACE WATER SAMPLE (STANTEC 2009)
-  SEDIMENT SAMPLE (STANTEC 2009)
-  BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)
-  BERRY SAMPLE (STANTEC 2009)
-  SMALL MAMMALS (STANTEC 2009)
-  VEGETATION SAMPLE (STANTEC 2009)
-  FISH LOCATION (STANTEC 2009)
-  MONITOR WELL (STANTEC 2009)
-  TEST PIT (AGRA 1999)



NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

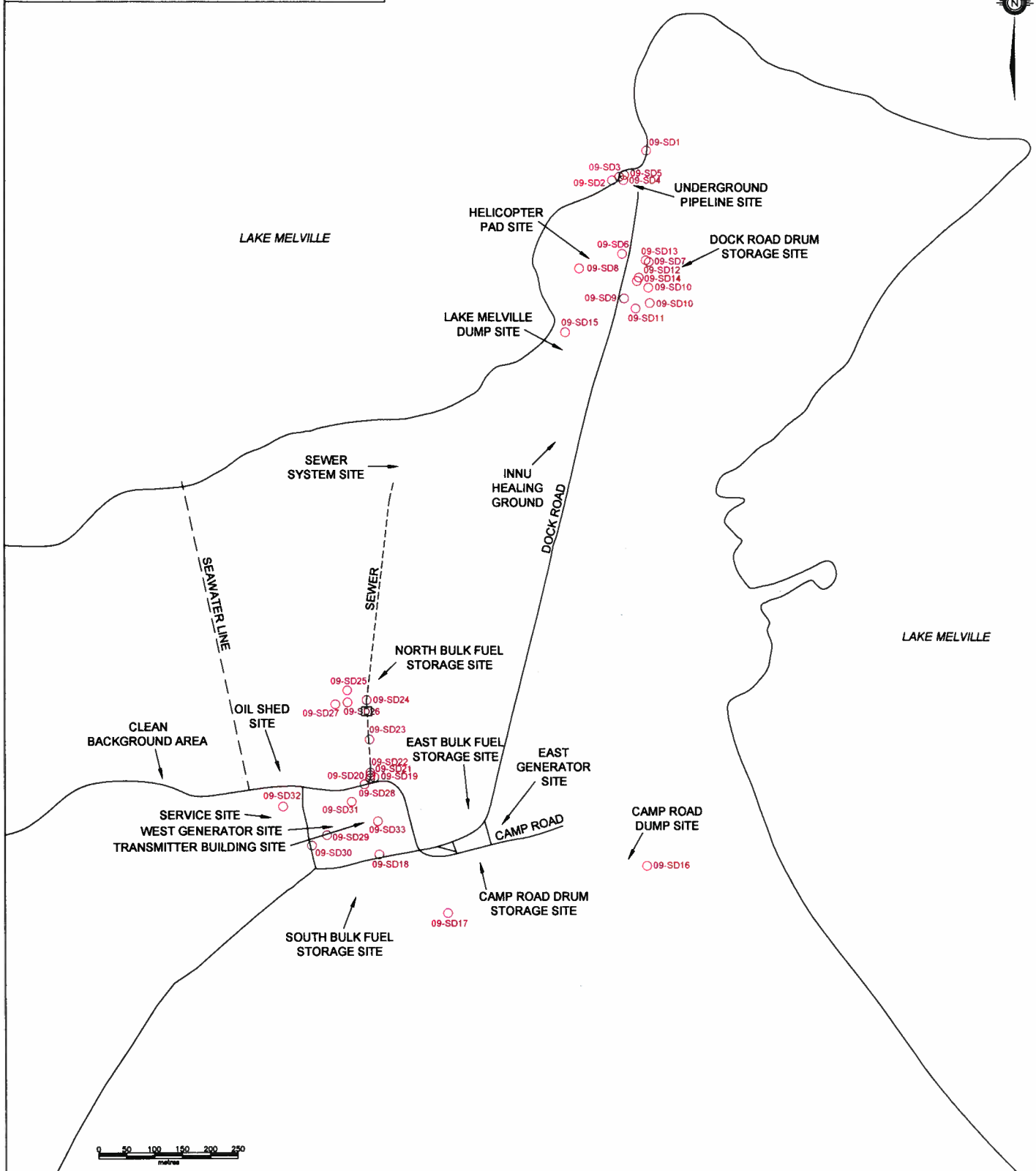
CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:10,000 DATE: JUNE 18, 2010
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	DRAWN BY: N.M. CHECKED BY: A.R.
DRAWING TITLE: SITE PLAN - CLEAN BACKGROUND AREA	EDITED BY: - REV. No. 0
DRAWING No. 121410105-EE-19A	
CAD FILE: 1044857-EE-19.DWG	



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LEGEND

○ SURFACE DEBRIS LOCATION (STANTEC 2009)



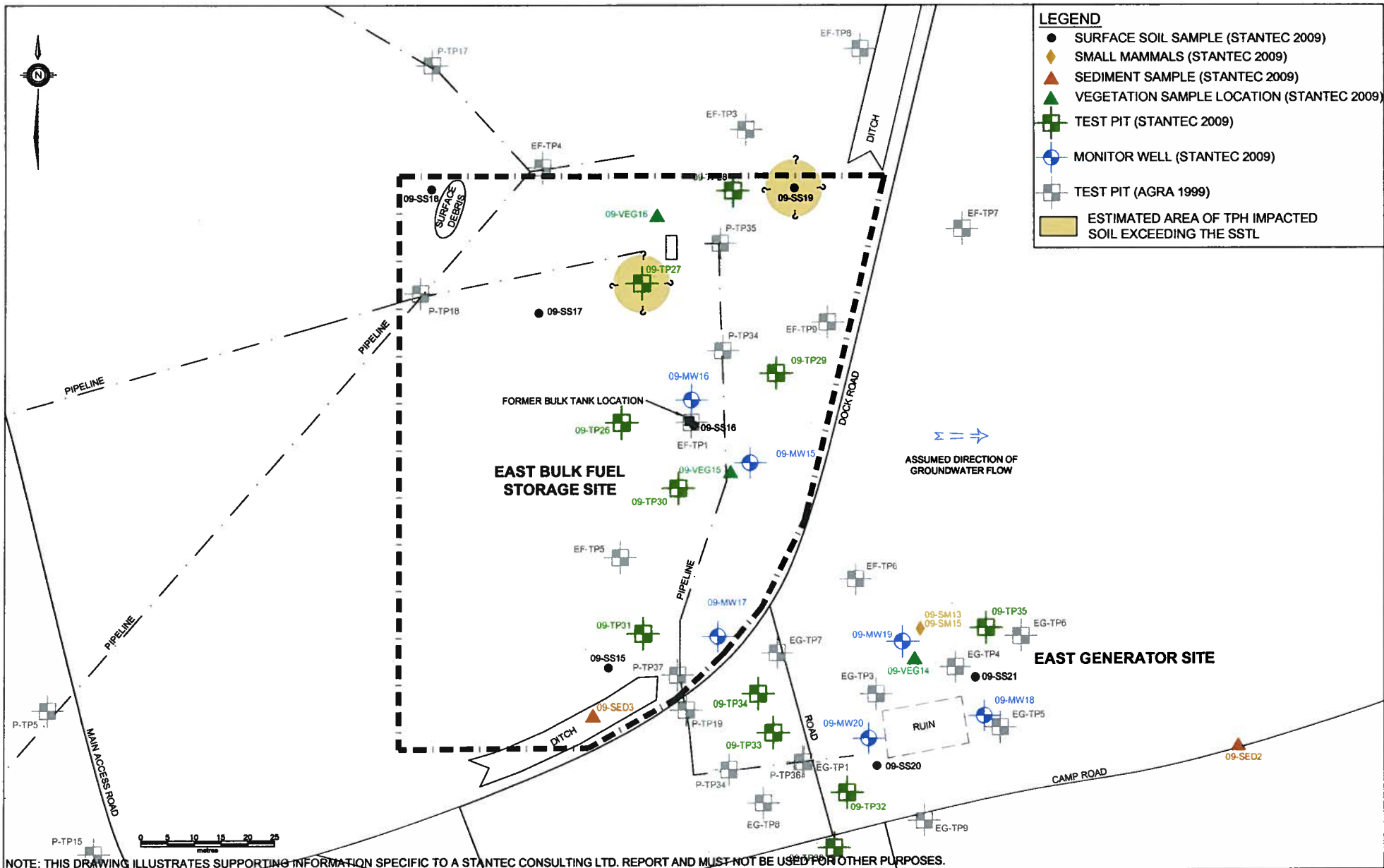
NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT:	NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION
PROJECT TITLE:	PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL
DRAWING TITLE:	LOCATION OF SURFACE DEBRIS

SCALE:	1:10,000	DATE:	JUNE 15, 2010
DRAWN BY:	N.M.	CHECKED BY:	A.R.
EDITED BY:	-	REV. No.	0
DRAWING No:	121410105-EE-20A		
CAD FILE:	1044857-EE-18.DWG		



Stantec



CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION

PROJECT TITLE: PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL

DRAWING TITLE: ESTIMATED AREA WITH TPH CONCENTRATIONS EXCEEDING THE SSTL - EAST BULK FUEL STORAGE SITE

SCALE:	1:800	DATE:	JULY 6, 2010
DRAWN BY:	N.M.	CHECKED BY:	A.R.
EDITED BY:	-	REV. No.	0
DRAWING No.:	121410105-EE-25A		
CAD FILE:	1044857-EE-21.DWG		



LEGEND

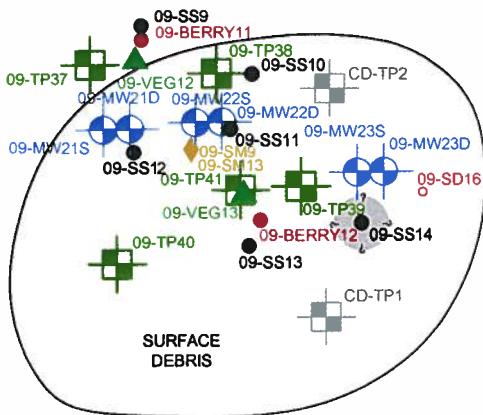
- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- FISH LOCATION (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- MONITOR WELL (STANTEC 2009)
- ESTIMATED AREA OF METALS IMPACTED SOIL, METALS AND OTHER DEBRIS REQUIRING REMEDIATION



CAMP ROAD-FS
 09-SWM2
 SSM-2-CR
 09-BENTHIC2

LAKE MELVILLE



CAMP ROAD DUMP SITE



ASSUMED DIRECTION OF GROUNDWATER FLOW



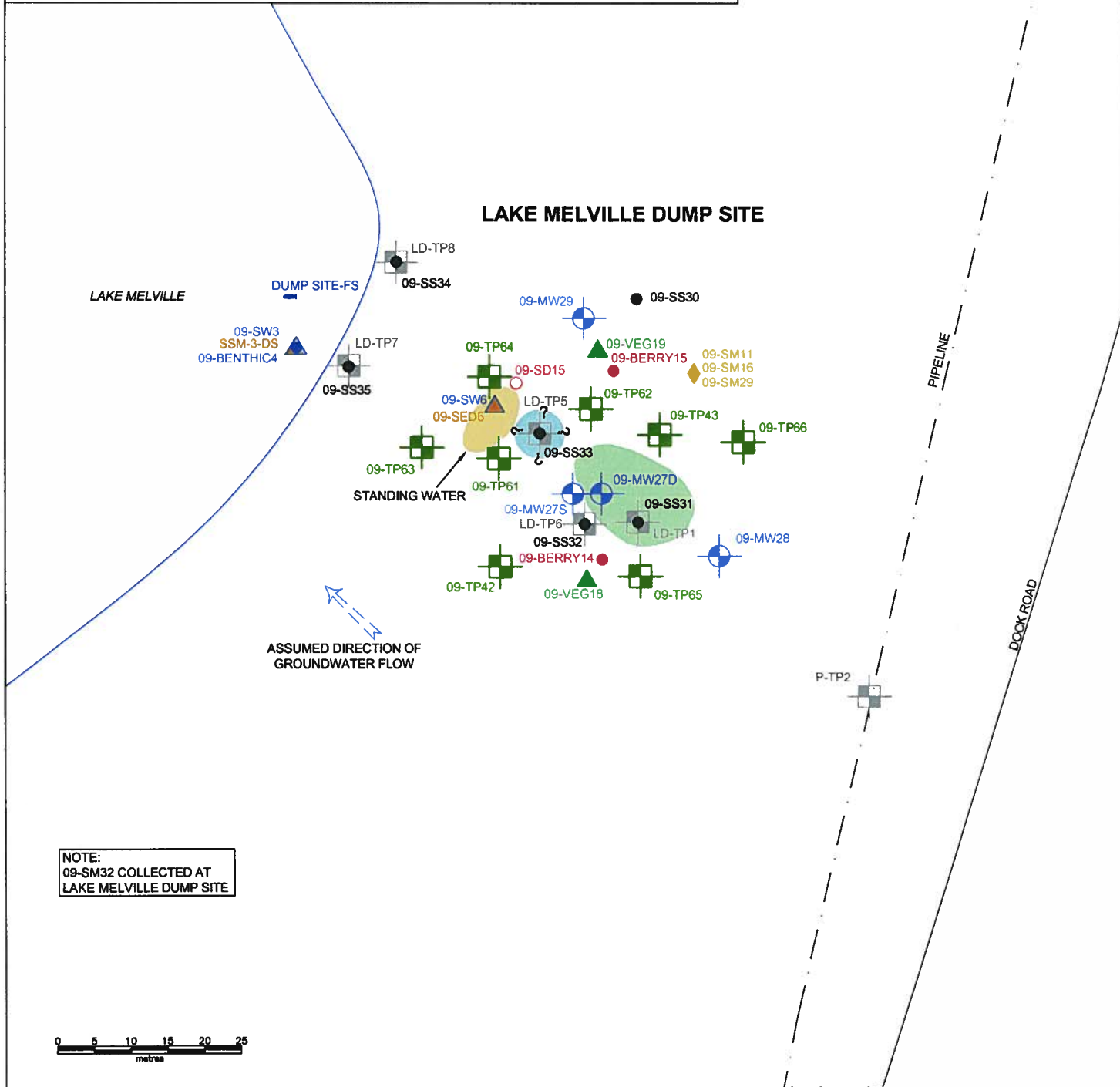
NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:1500	DATE: JULY 6, 2010	
	DRAWN BY: N.M.	CHECKED BY: AR	
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	EDITED BY: -	REV. No. 0	
	DRAWING No.: 121410105-EE-25B		
DRAWING TITLE: ESTIMATED AREA OF METALS IMPACTED SOIL, METALS AND OTHER DEBRIS REQUIRING REMEDIATION - CAMP ROAD DUMP SITE	CAD FILE: 1044857-EE-21.DWG		

LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- FISH LOCATION (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- MONITOR WELL (STANTEC 2009)
- ESTIMATED AREA OF PCB IMPACTED SOIL EXCEEDING THE SSTL
- ESTIMATED AREA OF PAH IMPACTED SOIL REQUIRING REMEDIATION
- ESTIMATED AREA OF TPH IMPACTED SEDIMENT REQUIRING REMEDIATION

LAKE MELVILLE DUMP SITE



NOTE:
09-SM32 COLLECTED AT
LAKE MELVILLE DUMP SITE



NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT:	NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION
PROJECT TITLE:	PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL
DRAWING TITLE:	ESTIMATED AREA WITH TPH, PCBs AND PAHs CONCENTRATIONS EXCEEDING THE SSTLs - LAKE MELVILLE DUMP SITE

SCALE:	1:800	DATE:	JULY 6, 2010
DRAWN BY:	N.M.	CHECKED BY:	AR
EDITED BY:	R.L.	REV. No.	0
DRAWING No:	121410105-EE-25C		
CAD FILE:	1044857-EE-21.DWG		






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APPENDIX B

Supporting Documents

Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD1</u></p> <p>Coordinates (NAD27) Easting: 694776 Northing: 5932363</p> <p>Description: 1 m³ concrete block, steel cable</p> <p>Location: Lake Melville shoreline, north of Underground Pipeline Site</p>	
<p><u>09-SD2</u></p> <p>Coordinates (NAD27) Easting: 694715 Northing: 5932308</p> <p>Description: 1.5 m³ concrete anchor block</p> <p>Location: Lake Melville shoreline, Underground Pipeline Site</p>	
<p><u>09-SD3</u></p> <p>Coordinates (NAD27) Easting: 694728 Northing: 5932315</p> <p>Description: 6 m long 200 mm diameter steel pipe, valve</p> <p>Location: Lake Melville shoreline, Underground Pipeline Site</p>	



Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD4</u></p> <p>Coordinates (NAD27) Easting: 694736 Northing: 5932309</p> <p>Description: 4 m of pipe protruding from ground</p> <p>Location: Underground Pipeline Site (09-Pipe2)</p>	
<p><u>09-SD5</u></p> <p>Coordinates (NAD27) Easting: 694737 Northing: 5932318</p> <p>Description: 10 m of steel cable</p> <p>Location: Lake Melville shoreline, Underground Pipeline Site</p>	<p>No photo taken</p>
<p><u>09-SD6</u></p> <p>Coordinates (NAD27) Easting: 694736 Northing: 5932176</p> <p>Description: 1 empty 200 L steel drum</p> <p>Location: Between Dock Road and Pipeline, east of Helicopter Pad Site</p>	




Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD7</u></p> <p>Coordinates (NAD27) Easting: 694784 Northing: 5932162</p> <p>Description: 2 empty 200 L steel drums</p> <p>Location: Dock Road Drum Storage Site</p>	
<p><u>09-SD8</u></p> <p>Coordinates (NAD27) Easting: 694659 Northing: 5932148</p> <p>Description: Remnants of an old trailer, aluminum, wood debris</p> <p>Location: West of Helicopter Pad Site</p>	



Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD9</u></p> <p>Coordinates (NAD27) Easting: 694741 Northing: 5932095</p> <p>Description: 5 m long 50 mm diameter galvanized steel pipe</p> <p>Location: Dock Road Drum Storage Site</p>	
<p><u>09-SD10</u></p> <p>Coordinates (NAD27) Easting: 694787 to 694784 Northing: 5932088 to 5932116</p> <p>Description: 100 m x 30 m scattered surface and partially buried debris (plate steel, pipe, steel cable, drums, etc.)</p> <p>Location: Dock Road Drum Storage Site</p>	


Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD10 (continued)</u></p>	
<p><u>09-SD11</u></p> <p>Coordinates (NAD27) Easting: 694762 Northing: 5932078</p> <p>Description: 20 m steel cable, 5 m long 50 mm diameter galvanized steel pipe</p> <p>Location: Dock Road Drum Storage Site</p>	
<p><u>09-SD12</u></p> <p>Coordinates (NAD27) Easting: 694767 Northing: 5932134</p> <p>Description: Partially buried rear end of car</p> <p>Location: Dock Road Drum Storage Site</p>	


Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD13</u></p> <p>Coordinates (NAD27) Easting: 694778 Northing: 5932165</p> <p>Description: 1 m² piece of steel</p> <p>Location: Dock Road Drum Storage Site</p>	
<p><u>09-SD14</u></p> <p>Coordinates (NAD27) Easting: 694763 Northing: 5932127</p> <p>Description: 2 m x 3 m tail gate</p> <p>Location: Dock Road Drum Storage Site</p>	



Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD15</u></p> <p>Coordinates (NAD27) Easting: 694636 Northing: 5932032</p> <p>Description: 5 200 L drums, small amounts of surface and partially buried debris (metal, batteries, etc.)</p> <p>Location: Lake Melville Dump Site</p>	



Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p>09-SD16</p> <p>Coordinates (NAD27) Easting: 694799 Northing: 5931074</p> <p>Description: Partially buried and surface metal debris (drums, pipe, cans)</p> <p>Location: Camp Road Dump Site</p>	




Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD17</u></p> <p>Coordinates (NAD27) Easting: 694443 Northing: 5930981</p> <p>Description: 7 m long 200 mm diameter open steel pipe, 0.9 m of a 200 mm diameter open steel pipe protruding from ground</p> <p>Location: Between South Bulk Fuel Storage Site and Camp Road Drum Storage Site</p>	
<p><u>09-SD18</u></p> <p>Coordinates (NAD27) Easting: 694317 Northing: 5931085</p> <p>Description: 0.4 m of 75 mm diameter steel pipe protruding from ground</p> <p>Location: North of VOR road, north of South Bulk Fuel Storage Site</p>	




Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD19</u></p> <p>Coordinates (NAD27) Easting: 694306 Northing: 5931223</p> <p>Description: 20 m of steel cable</p> <p>Location: North of Main Access Road, along sewer line</p>	 <p>The top photograph shows a wooded area with many bare, thin trees and a ground covered in fallen brown leaves and some debris. A piece of light-colored material, possibly a cable, is visible on the ground. The bottom photograph is a closer view of the same area, showing more detail of the branches and the ground cover.</p>
<p><u>09-SD20</u></p> <p>Coordinates (NAD27) Easting: 694297 Northing: 5931229</p> <p>Description: Sewer manhole, 20 m of steel cable</p> <p>Location: North of Main Access Road, along sewer line</p>	 <p>The photograph shows a circular, dark metal sewer manhole cover with a textured, diamond-patterned surface. It is set in a concrete base. The surrounding area is covered with fallen brown leaves and some bare branches.</p>




Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD21</u></p> <p>Coordinates (NAD27) Easting: 694295 Northing: 5931235</p> <p>Description: Sewer manhole</p> <p>Location: North of Main Access Road, along sewer line</p>	
<p><u>09-SD22</u></p> <p>Coordinates (NAD27) Easting: 694294 Northing: 5931245</p> <p>Description: Sewer manhole</p> <p>Location: North of Main Access Road, along sewer line</p>	
<p><u>09-SD23</u></p> <p>Coordinates (NAD27) Easting: 694296 Northing: 5931291</p> <p>Description: Domestic debris, old skidoo, outboard motor, tire</p> <p>Location: North Bulk Fuel Storage Site, near the former tower rubble location</p>	


Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD24</u></p> <p>Coordinates (NAD27) Easting: 694284 Northing: 5931368</p> <p>Description: Manhole cover</p> <p>Location: North Bulk Fuel Storage Site</p>	
<p><u>09-SD25</u></p> <p>Coordinates (NAD27) Easting: 694254 Northing: 5931379</p> <p>Description: 12 m long 200 mm diameter steel pipe, valve</p> <p>Location: North Bulk Fuel Storage Site</p>	
<p><u>09-SD26</u></p> <p>Coordinates (NAD27) Easting: 694255 Northing: 5931357</p> <p>Description: 0.3 m of 50 mm diameter steel pipe protruding from ground, valve</p> <p>Location: North Bulk Fuel Storage Site</p>	


Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD27</u></p> <p>Coordinates (NAD27) Easting: 694233 Northing: 5931353</p> <p>Description: 2 empty 200 L steel drums</p> <p>Location: North Bulk Fuel Storage Site</p>	
<p><u>09-SD28</u></p> <p>Coordinates (NAD27) Easting: 694288 Northing: 5931210</p> <p>Description: Steel drum, partially buried concrete debris</p> <p>Location: Sewer Site, north of Main Access Road</p>	
<p><u>09-SD29</u></p> <p>Coordinates (NAD27) Not recorded</p> <p>Description: 10 m² of partially buried pipe, metal and concrete debris</p> <p>Location: West Generator Site</p>	



Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD29 (continued)</u></p>	 <p>The table contains three stacked photographs in the right-hand column. The top photograph shows a dense thicket of bare, brown branches with some dried leaves. A dark, rectangular object is partially visible behind the branches. The middle photograph shows a concrete slab on the ground with a long, rusted metal pipe lying across it. The background is filled with dark, leafless brush. The bottom photograph shows a concrete slab on the ground with a large, rectangular concrete block and a rusted metal pipe lying on it. The background is filled with dark, leafless brush.</p>


Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p data-bbox="186 877 289 909"><u>09-SD30</u></p> <p data-bbox="186 934 430 966">Coordinates (NAD27)</p> <p data-bbox="186 961 373 993">Easting: 694195</p> <p data-bbox="186 989 397 1020">Northing: 5931098</p> <p data-bbox="186 1045 560 1182">Description: 100 m stretch of partially buried metal and concrete (50 mm, 200 mm and 300 mm diameter pipes, metal sheeting, drums, valves, cable, etc.)</p> <p data-bbox="186 1207 527 1239">Location: West Generator Site</p>	

Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD31</u></p> <p>Coordinates (NAD27) Easting: 694266 Northing: 5931178</p> <p>Description: 6 m long 200 mm diameter steel pipe (partially buried), 1 m³ of concrete debris</p> <p>Location: North of Transmitter Building site</p>	
<p><u>09-SD32</u></p> <p>Coordinates (NAD27) Easting: 694142 Northing: 5931167</p> <p>Description: 10 m long 50 mm diameter steel pipe, 10 m long 25 mm conduit (partially buried)</p> <p>Location: Service Site</p>	

Log of Surface Debris and Physical Hazards (2009)

Location ID / Description	Photo(s)
<p><u>09-SD32 (continued)</u></p>	
<p><u>09-SD33</u></p> <p>Coordinates (NAD27) Easting: 694314 Northing: 5931144</p> <p>Description: Tower Debris</p> <p>Location: Transmitter Building</p>	<p>No photo taken</p>