

# **STATEMENT OF WORK**

**Gamma Radiation and Property Surveys of Approximately  
174 Road Allowance Locations  
&  
Development of Detailed Work Plans for Soil Investigation at  
Approximately 137 Road Allowance Locations**

**Port Hope Area Initiative  
Port Hope, Ontario**

Public Works and Government Services Canada  
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## 1. INTRODUCTION

Public Works and Government Services Canada (PWGSC), on behalf of the Port Hope Area Initiative Management Office (PHAI-MO), requires the services of a Consultant to develop Detailed Work Plans (DWPs) for completion, by others, of intrusive soil investigations to determine the presence/absence of Low Level Radioactive Waste (LLRW) at approximately 137 road allowance locations as part of the Small Scale Sites (SSS) component of the Port Hope Area Initiative (PHAI). Work regarding these sites will include completion of Historical File Reviews (HFRs), Property Surveys, Gamma Radiation Surveys and Utility Mapping, to aid in the development of the DWPs. Approximately thirty-seven (37) additional locations in the Municipality of Port Hope (MPH), giving a base total of approximately 174 sites, currently require a reduced scope (Property Surveys and Gamma Surveys) for work planning, documentation and/or due diligence purposes, since elevated gamma radiation and LLRW is not anticipated for these locations.

The approximately 174 sites are generally located within municipal road allowances and/or right-of-ways located throughout MPH and owned by MPH (approximately 4 are privately owned), with approximately one (1) site located in the Municipality of Clarington (MOC), and approximately one (1) site located in MPH but owned by the County of Northumberland.

There are also approximately twenty-nine (29) optional sites (over and above the 174 sites), where ownership has not yet been determined or that are privately owned, that may require completion of a subset, or all, of the above noted services. As ownership is determined and/or access agreements are obtained, the Project Authority *may* authorize the Consultant to include these optional sites into the work program.

## 2. OBJECTIVES

The overall objectives of this SSS project are to document gamma radiation conditions in more recently developed portions of MPH and selected areas in MPH previously left out of historical investigations and to develop DWPs, where required, for the subsequent completion of soil investigations. DWPs will be implemented by others with the objective of identifying the presence/absence of LLRW, and will include analysis for four (4) signature contaminants of potential concern (COPC) (uranium, arsenic, radium 226, thorium 230), included in the Port Hope Area Initiative Cleanup Criteria (PHAI CC). Under this Statement of Work (SOW), the approximately 174 sites are divided into two (2) classifications: “Type A” sites and “Type B” sites. Tasks to be completed under this SOW, will comprise the following:

### 1. “Type A” sites (approximately 37 sites)

- a. Completion of Property Surveys (by Ontario Land Surveyor (OLS)) to ensure field activities are completed on public (municipally owned) property;
- b. Completion of Gamma Radiation Surveys;
- c. Based on results of Gamma Surveys, determine if further investigation is required (possible reclassification to “Type B” contingent on approval from the Project Authority and Canadian Nuclear Laboratories (CNL<sup>1</sup>)).

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<sup>1</sup> As of November 3, 2014 Atomic Energy of Canada Limited (AECL) has been restructured under the name “Canadian Nuclear Laboratories” (CNL). For the purpose of referencing prior to that date, AECL will be

## **2. “Type B” Sites (approximately 137 sites)**

- a. Completion of HFR;
- b. Completion of Property Surveys (by OLS) to ensure field activities are completed on public (municipally owned) property and to ensure precision on drawings with regards to existing utilities;
- c. Completion of Gamma Radiation Surveys;
- d. Obtaining and mapping the location of all public and private utility services at the road allowance Site on a Composite Utility Map;
- e. Developing readable, full-colour Scaled Plan View Site Drawings (SPVSDs) that include, but are not limited to, the incorporation of information from the Property Surveys, Gamma Radiation Surveys and Composite Utility Map and show proposed intrusive soil investigation locations, for the purpose of obtaining MPH approval on proposed work locations; and,
- f. Developing DWPs for intrusive soil investigation based on the results of completed Tasks for Type B sites. DWPs will be implemented by others.

## **3. BACKGROUND**

### **3.1 Overview**

During the years 1932 – 1988 radioactive waste was generated in Port Hope as a result of radium and uranium refining activities conducted by Eldorado Nuclear Ltd. and its predecessors. The majority of the low-level radioactive waste generated from Eldorado is stored at two Waste Management Facilities, one located in Port Hope and the other in Port Granby. These sites were managed by Cameco Corporation from 1988 until recently when Atomic Energy of Canada Limited (AECL<sup>2</sup>) took over the management of these facilities.

Although the majority of the low-level radioactive waste that was generated at the Eldorado operation is stored at the two facilities mentioned above, there are a number of known smaller facilities and locations within Port Hope that also contain LLRW and other associated contaminated soils. Further, there are private residential/commercial properties as well as municipal properties which contain, to varying degrees, low-level radioactive contaminated soil and/or contaminated artefacts from the former Eldorado operation.

In 2001, a legal agreement was signed by the Federal Government, the Township of Hope, the Town of Port Hope<sup>3</sup> and the Municipality of Clarington, and created the PHAI with the mandate to complete the long-term disposal of all historic LLRW within MPH. Under this Initiative, the Port Hope Project is intended to remediate all affected sites within MPH and place the removed materials and soils historically contaminated with radioactive and associated other contaminants into a new engineered Long-Term Waste Management Facility (LTWWMF) in Port Hope.

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identified where applicable. After that date, references will be made to CNL.

<sup>2</sup> See footnote 1.

<sup>3</sup> These two municipalities, each with historic LLRW sites, were amalgamated in 2001 to form the Municipality of Port Hope.

The LTWMF will be constructed as an engineered aboveground mound, designed to contain approximately 1.2 million cubic metres of historic LLRW and contaminated soil. The waste material and soil will come from various sites within the municipality as well as from the existing Welcome Waste Management Facility (WWMF). The Port Hope Project is being managed by the Port Hope Area Initiative Management Office (PHAI MO) and is taking place in MPH, County of Northumberland, Ontario, Canada. The new waste management facility will be located at the site of the existing WWMF as well as on an adjoining piece of land. This site is located on property adjacent to Highway 401, between Baulch Road and Brand Road.

As mentioned above, the historic LLRW material will be removed from various sites within MPH. These sites can be broken down into two categories – “Unknown” sites and “Known” sites. The “Unknown” sites are primarily residential, commercial and municipally owned properties that have been contaminated through the placement of contaminated fill in their yards, contaminated artefacts brought onto the property, stack deposition or spills from waste haulage vehicles. The “Known” sites consist of the road allowance locations along with the WWMF, 13 large scale sites, the abandoned WWMF pipeline and three specific commercial/community properties. Similar to the “unknown” sites, the “Known” sites have been contaminated through the placement of contaminated fill and/or spills from waste haulage vehicles.

These sites are generally referred to as Small Scale Sites (SSS). Properties found to have historic LLRW above the PHAI CC for the signature parameters (uranium, arsenic, radium 226, thorium 230) will be subject to delineation and development of remediation plans to be completed by others.

### **3.2 Small Scale Sites History as Part of the PHAI Project**

The LLRW found on the Small Scale Site properties has resulted principally from:

1. Use of contaminated fill materials as backfill for low-lying areas and around basement walls and under floor slabs;
2. Accidental spillage of material from waste haulage vehicles travelling between the refinery and the various designated waste management sites; and
3. Previously uncontrolled emissions from the former Eldorado radium and uranium refinery stacks.

#### **3.2.1 Previous Radiological Survey Programs**

In 2001, the LLRW Management Office (LLRWMO) contracted Gamma-Bob Inc. (herein referred to as “Gamma-Bob”) to complete a gamma survey of the Port Hope area to identify potential sources of LLRW that may have been deposited during historic waste management practices within the municipal road allowances and/or right-of-ways. The gamma survey included the likely and potential haul routes to the Welcome Waste Management Facility (WWMF) sites and most streets within MPH.

Based on the results of the 2001 Gamma-Bob report, the LLRWMO completed follow-up gamma surveys of areas observed to require further investigation (herein referred to as “Type B” sites). The LLRWMO completed field screening of these locations and compiled the data. No intrusive investigations were completed at this time. The results of the LLRWMO follow-up

survey identified over 100 locations within MPH with potential LLRW and requiring further investigation and are the Type B locations covered by this Statement of Work.

In reviewing the Gamma-Bob gamma survey completed in 2001, the PHAI MO identified two (2) types of properties in MPH where gamma radiation survey data had not been collected by Gamma-Bob. These property types included: laneways throughout MPH that were not included in the Gamma-Bob work program for reasons unknown; and, new residential road developments that were constructed throughout MPH after 2001. These properties are herein referred to as “Type A” sites. The new residential road areas are generally located to the north, east and west of the original MPH borders. Given the recent construction of these areas, no gamma surveys were completed and although the presence of LLRW is not anticipated, Gamma Radiation Surveys are required to document the existing conditions. For those laneways that were not included in the original Gamma-Bob work program, Gamma Radiation Surveys are required to determine existing conditions and if further investigation will be required.

Prior to 2001, radiological surveys primarily done in the mid 1970s, were conducted on approximately 3,200 properties and based upon the results of these radiological surveys approximately 450 “Small Scale Sites” required some form of remedial work to achieve compliance with the 1977 Federal-Provincial Task Force on Radioactivity (FPTFR) Criteria. Due to the limited waste storage capacity at the Chalk River Laboratories Waste Management Area F, the decision was made to focus on the remediation of the residential properties (i.e. large sites such as the harbour and landfill were not addressed at that time). The remedial work that was done at this time was based upon radiological measurements of gamma radiation and indoor radon in air concentrations. The FPTFR Criteria were officially introduced in 1977, and were applied for these remedial work programs.

### **3.2.2 Port Hope Area Initiative Clean-up Criteria**

As more contaminant investigative work was completed in Port Hope, it became apparent that there was a specific chemical signature for the soils contaminated with historic LLRW. This work led to the development of the concept of Contaminants of Potential Concern (COPCs). These soils typically contain a number of contaminants resulting from the historic radium and uranium processing operations, with the most common ones being uranium, arsenic, thorium-230, and radium-226. It was determined that while gamma radiation is an excellent indicator of LLRW contamination, removal of soil to the point where the gamma radiation readings are acceptable may not ensure that all of the contaminants have been sufficiently remediated. Therefore, soil sampling and analysis has become a part of the remediation and verification protocol for the PHAI project. As a result, PHAI CC for inorganics in soil have been developed. PHAI CC establish standards for the accepted concentrations of various parameters in soil and on surfaces.

The four (4) “signature” COPCs for determining if historical LLRW is present are uranium, arsenic, thorium-230, and radium-226. The presence of some or all of the radiological elements above the criteria indicates that historic LLRW is present. However, the presence of arsenic on its own above the criteria is not necessarily an indicator of historic LLRW. Although the PHAI CC identifies “Primary COPCs” and “Secondary COPCs”, soil samples selected for laboratory analysis will be submitted for analysis of only the four (4) signature COPCs listed in the PHAI CC. The delineation of identified LLRW will be completed based on the 4 signature COPCs.

Contaminants such as arsenic and uranium are more mobile and leachable in soils than radium and have tended to migrate beyond the initial placement of contaminated soils. In a practical sense, excavations may often initially be characterized by soil radioactivity levels, but due to the mobility and leachability of uranium and arsenic, the “true” waste boundaries may often be determined by these two parameters.

### **3.2.3 HOPE MAST Database and Property File Library**

A detailed database and library has been developed capturing the majority of the readings and testing that has been done over the past 30 years. This database and library is broken down by property address and provides the various test results and reporting for each given property. The radiological surveys include, in most cases, both interior and exterior gamma radiation measurements, indoor radon measurements and information for properties where remediation of LLRW has been completed. An in depth review of this data was completed in the 1980s to “weed out” anomalies, such as high radiation readings caused by natural sources (e.g. outcropping of granite). A specific file and property numbering system is currently being used. The file structure is LLRWMO-121250-000-XXXX, where the XXXX represents a specific site or property. All deliverables are to utilize this numbering system.

## **4. PROJECT TEAM**

### **4.1 General Organization**

It is the intent of the Project Authority that this project be organized, managed and implemented in a collaborative manner. All the stakeholders (federal, municipal and private) are to work collaboratively at every stage of the project in order to ensure the completion of a successful and meaningful project.

### **4.2 Project Team Organization**

The Project Team refers to the key representatives involved in coordinating and delivering this project:

- **NRCan and CNL**

NRCan sponsors the projects and provides the funding. CNL manages the PHAI Project and is the proponent for the regulatory approvals.

- **PHAI MO**

The PHAI MO management team leads the Port Hope Project. They bring together the combined resources of NRCan, CNL and PWGSC. The PHAI MO will provide technical and quality oversight for the Project. The PHAI MO will have direct communication with third party stakeholders, including MPH.

- **PWGSC**

PWGSC is responsible for the procurement and management of PHAI major contracts. The Consultant will report directly to the Project Authority

- **Consultant**



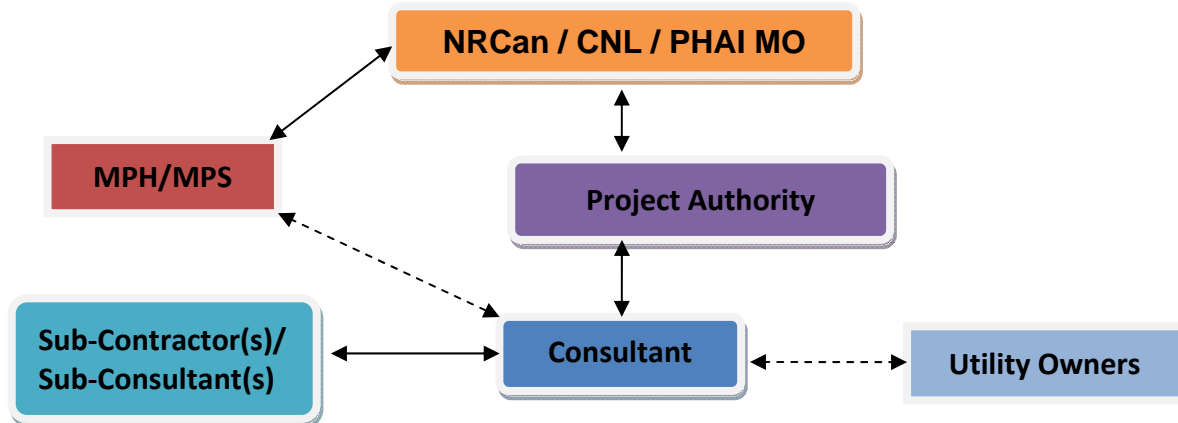
The Consultant must undertake the completion of HFRs, Property Surveys, Gamma Radiation Surveys and Utility Mapping for planning purposes, for approximately 137 Type B sites based on site information provided to them, and to develop DWPs for the completion, by others, of soil investigation to identify and confirm the presence/absence of LLRW. The Consultant must also undertake the completion of Property Surveys and Gamma Radiation Surveys of approximately 37 Type A sites identified in the information provided to them. Additional details on the scope of work for the Consultant are outlined in Section 6 below.

- **Third Party Stakeholders – Municipality of Port Hope (MPH) / Municipal Project Staff (MPS)**

The MPH/MPS will have an active role in assisting the Project Team to complete the work described in this Statement of Work. As property owner, the MPH will be involved in the review of Consultant deliverables documenting work completed on the MPH-owned properties, and will also be the issuing authority for municipal permits required to complete field activities. The Consultant will be required to make changes to draft deliverables based on reviews completed by the Project Authority and MPH.

## 5. LINES OF COMMUNICATION

Below is a flow chart indicating the main lines of communication for this scope of work. For the most part, Consultant communication will be between the Project Authority. However, it is acknowledged that direct communication between MPH/MPS and the Consultant will be required in order to obtain necessary permits and for the coordination of scheduling for field activities.



\*\*NOTE: dashed arrows indicate limited direct communication between noted parties.

## 6. SCOPE OF WORK

In consultation with the Project Authority, the Consultant will be responsible for the supply of all technical services, supervision, labour, equipment and materials required to carry out the tasks and complete the work as described below. The SOW for this contract is related to the

approximately 174 road allowance locations indicated in the Site Location Spreadsheet in Appendix A (Tables 1A and 2A), and overall site location figures (Figures 1A and 2A), with the option of up to an additional twenty-nine (29) sites (14 Type A and 15 Type B), pending determination of property ownership and authorization from the Project Authority.

## **6.1 Overall Approach**

The Consultant must be flexible and responsive to the range of situations that are likely to be encountered at each of the road allowance locations, and also to emergency situations. Sites will generally be completed sequentially based on Group number (Group numbers are as noted in Table 2A), starting with Group 1. This is to meet CNL's priorities with regards to information requirements for future work.

Other PHAI projects may be scheduled concurrently with the field activities comprising this contract. Organization of the work program must allow for efficient completion of field work and deliverables. During the development of the work schedule and when coordinating field activities, the Consultant must consider the Group number and avoid interference with planned events (see Appendix F for the most recent Port Hope events listing) and construction projects. The field investigations are to be undertaken, and deliverables are to be submitted, according to the requirements of this SOW and standard industry practices and guidelines. The Consultant must not proceed with the field program until all Plans and SOPs have been approved and authorization has been given by the Project Authority to proceed.

The Consultant shall begin by reviewing the Site Location Spreadsheet prepared by CNL for the approximately 174 locations (see Tables 1A and 2A in Appendix A).

## **6.2 Historical File Review (HFR)**

The Consultant will review all records or sources of information that are available and provided by CNL for Type B sites. The review must be carried out for each of the identified Type B road allowance sites and will inform the DWP, along with the Gamma Survey.

The Consultant is required to make the best effort possible to compile historical and existing information from available sources as it relates to the identification/localization of known or potential LLRW contamination. The Consultant will document each source of information examined even if the source reveals no information considered pertinent. In the event that a document or source of information is not reviewed, the Consultant must document why. Sources include:

- Site Location Spreadsheet (see Appendix A: Tables 1A and 2A);
- Port Hope Area Initiative Collaboration Portal (PHAI-CP) (further described in Section 6.2.1);
- *Gamma Ray Survey of Roads in the Port Hope Area, LLRWMO-03701-ENA-12012, Final Report, February 2002*, prepared by Gamma-Bob Inc.; and
- Historical files obtained from CNL (refer to summary of documents provided in Appendix B).

After completion of records review, the Consultant will summarize all relevant records as they

relate to known LLRW onsite or the suspected onsite presence of LLRW, that may have made it onto the site, for example, via the mechanisms listed in Section 3.2.

### 6.2.1 Port Hope Area Initiative Collaboration Portal (PHAI-CP)

The Consultant will be provided access to the PHAI-CP after award of the contract. The PHAI-CP is a GIS-based web application being utilized by the PHAI SSS program to assist with data management. Information contained within the portal includes, but is not limited to:

- Road Allowance Locations;
- Interpreted Property limits;
- High resolution aerial imagery of MPH; and,
- Information regarding other PHAI SSS soil investigation work programs being completed by others planned or underway in areas adjacent to or nearby the Road Allowance Locations. This information will be updated in the PHAI-CP on an ongoing basis.

Information contained in the PHAI-CP is to be considered and utilized by the Consultant for the purposes of developing the DWPs. Training on use of the PHAI-CP will be provided by CNL.

## 6.3 Field Work

The field work component comprises three tasks to gather data for the purposes of developing DWPs for intrusive soil investigations & delineation of LLRW. These tasks include:

- **Property Survey by OLS:** Complete marking of, in the field and on drawings, property boundaries\* (\*see Section 6.3.1) and other topographic features in the vicinity of the road allowance Site for both Type A and Type B sites.
- **Gamma Radiation Survey:** Complete Gamma Radiation Surveys to identify and document conditions that exceed background conditions for both Type A and Type B sites.
- **Public & Private Utility Mapping:** Obtain and map utility service locations for the purpose of assisting in the planning of intrusive soil investigations near buried and/or aboveground utility services and infrastructure located at the road allowance Site for Type B sites. **Please note that MPH will not be providing locate services or information supplementary to what has been provided as per Appendix D; Services of private locators will be required, where applicable.**

**In all cases, the Consultant is required to obtain any and all permits required to complete the field requirements of this SOW.**

### 6.3.1 Property Survey

Property Surveys of the Road Allowance limits within the vicinity of the 174 identified road allowance site locations, are to be completed by an Ontario Land Surveyor (OLS) for all Type A

and B sites and will include re-establishing the boundaries of portions of Municipal roads and right-of-ways, marking them out on the ground with the results reflected on Plans of Survey.

The objective of the Property Survey is to field mark and document the limits of the identified road allowance Site to ensure work is completed on the municipally owned lands and not adjacent private property. As such, it will not be necessary to re-establish individual property corners (with the exception of applicable property corners at street intersections and bends), but monumentation and sufficient reference points must be set at each site in order to leave permanent evidence within the road allowance limits on the ground to allow re-establishment of the limits in the future. Any permanent markings/monuments set should not be in a position that they may be confused with private property sideline markers.

For each site or combination of sites (referred to as “parcels”), a Plan of Survey is required and must be prepared in accordance with the Surveys Act, Surveyors Act and the Regulations made under them and in accordance with the standards and guidelines of the Association of Ontario Land Surveyors (AOLS).

Significant topographic features within and in the vicinity of the property limits must be located and shown on the Plan. The features to be located include, but are not limited to, sidewalks, curbs, fences, edge of asphalt, man holes, catch basins, water valves, utility poles, other surface appurtenances of existing subsurface utilities, etc. Elevations are also required.

Although the individual property corners along the road allowance do not need to be re-established (with the exception of applicable property corners at street intersections and bends), the adjoining properties need to be identified and the appropriate Land Registry Office PIN shown on the Plan.

The Survey must be integrated to the 6° UTM NAD83 (CSRS) coordinate system in accordance with the Surveyors Act, Ontario Regulation 216/10. A raw data set is required. The Survey drawings are also to include ortho-rectified air photo bases.

### **6.3.2 Gamma Radiation Surveys**

Gamma Radiation Surveys will be completed by the Consultant for both Type A and Type B sites. For Type A sites, a Gamma Radiation Survey will be completed for due diligence and documentation purposes. However, should results of the Gamma Radiation Survey indicate that additional investigation may be required, the Consultant will provide rationale and obtain authorization from the Project Authority prior to re-classifying the site as a Type B site and completing work as described in the SOW for Type B sites.

For Type B sites, historical information and previous gamma survey results (as applicable) will be compared with current Gamma Radiation Survey results to guide/assist in the planning and development of DWPs for intrusive soil investigations to be completed by others. Details of gamma radiation screening that will be undertaken are described in sections below.

In some cases, weather may affect the quality of gamma measurement. Some limitations that can be anticipated are: 1) no gamma monitoring after a heavy rain until soil returns to approximately “normal conditions”, 2) Gamma monitoring should not be done over >1cm of standing water or >10 cm of snow, 3) Work in cold weather can adversely affect instrumentation (e.g. battery power), but the Consultant can manage this by rotating instruments through warming stations,

keeping spare batteries warm, etc. Where required, snow removal is to be done by the Consultant and in accordance with section 6.6.4.

Where work will be completed on or adjacent to travelled roadways, Road Occupancy Permits (ROPs) and/or Road Closure Permits (RCPs) must be obtained from the appropriate municipality. The majority will be from the MPH (see SOG-100-03 and SOP-100-03); however, site ID208 will require permits from MOC and approximately one (1) location may require MTO permission. For the purposes of obtaining a ROP and/or RCP, refer to section 6.6.1. Obtaining permits requires significant advanced notification (up to 4 weeks or more, depending on the issuing authority/jurisdiction). In accordance with SOG-100-03, an annual list of required ROPs is to be submitted by the Consultant to MPH. This is to be completed within the first 4 weeks following contract award or earlier as required to gain access to the sites.

### **6.3.2.1 Gamma Radiation Surveys**

A standard Gamma Radiation Survey is to be completed with gamma radiation measurements on a 1 metre by 1 metre (m) grid or a 3m x 1m grid, based on site size. The Gamma Radiation Survey will include the following:

- For sites greater than 5,000 m<sup>2</sup> in size -
  - Gamma radiation measurements are to be taken on a 3m x 1m grid;
  - Gamma radiation measurements are to be taken at a height of 0.15 m and at a height of 1 m;
- For sites less than 5,000 m<sup>2</sup> in size -
  - Gamma radiation measurements are to be taken on a 1m x 1m grid;
  - Gamma radiation measurement are to be taken at a height of 0.15 m,
- Gamma Radiation Surveys are to be completed following the Standard Operating Procedures (SOPs) developed by the Consultant and the manufacturer's equipment operating instructions.

The established approximate site areas to be used for the purpose of providing costs for the Gamma Radiation Surveys are summarized in the Site Location Summary Tables provided in Appendix A: Tables 1A & 2A. In summary, the approximately 174 identified road allowance locations range in size, from approximately 1 m<sup>2</sup> up to approximately 17,500 m<sup>2</sup>, with approximately 60 sites up to 100 m<sup>2</sup> in size (with an average site size of approximately 27 m<sup>2</sup>), 47 sites are greater than 100 m<sup>2</sup>, up to 1,000 m<sup>2</sup> (with average site size of approximately 422 m<sup>2</sup>), and, approximately 67 sites are greater than 1,000 m<sup>2</sup> in size and the average site size for these being approximately 4,304 m<sup>2</sup>. The total area requiring investigation is approximately 309,793 m<sup>2</sup>.

### **Gamma Radiation Survey Equipment Requirements**

Gamma Radiation Surveys will be conducted at all of the sites using a CNL-accepted mobile gamma radiation detection system. Appendix C lists instruments most commonly used by the LLRWMO that the Consultant's instruments would need to be compatible with in terms of calibration and measurements. The instruments used must give readings similar to those that would be obtained by the equipment listed in Appendix C, (i.e. if the equipment being used by

CNL measures an object at 15  $\mu\text{R}/\text{h}$ , the device being used by the Consultant must also measure the object at 15  $\mu\text{R}/\text{h}$ ). This is required so that the data collected by the Consultant can easily be compared and interpreted against data previously collected by the LLRWMO for sites in Port Hope. The Gamma Radiation Survey results must be reported as a color coded 2D display on an appropriately scaled aerial photo as well as in a table format. The value of the reading is also to be shown on the photo, with results displayed using a 1 m grid averaging system.

The device used should read and log/record the gamma measurements and GPS location as the technician is moving along the grid lines. All areas of the site are required to be included in the Gamma Radiation Survey, and where site features (such as, ditches, ponds, vegetation, parked vehicles, etc.) interfere with the Gamma Radiation Survey grid, readings will be taken over top of, underneath or as close to the grid location as possible. Data collected will be used to identify areas with elevated gamma readings that may be considered for soil investigations when developing the DWPs. The Consultant should be able to identify elevated readings from natural sources such as granite boulders, etc. Photographs will also be taken to document any area of actual or potential concern to support and assist in the future identification of the work area by others. A draft template for recording gamma readings for use by the Consultant is provided in Appendix E.

### **Gamma Radiation Survey - Background Levels and Notification Thresholds**

Background gamma radiation levels on PHAI Project sites are typically between 4 and 7  $\mu\text{R}/\text{h}$ . Gamma radiation levels greater than 7  $\mu\text{R}/\text{h}$  may indicate the presence of LLRW in that area; however, other factors may also influence the reading/measurement (including but not limited to decorative items like flagstone or brick). The Consultant will review the collected data and use professional judgment to provide interpretation of the results and to develop the DWPs where required. It is anticipated that Type B sites will have areas of elevated gamma radiation levels and require further intrusive assessment to confirm presence/absence of LLRW. The majority of Type A sites are anticipated to have gamma radiation levels within acceptable background ranges; however, there may be some that may have areas of elevated gamma radiation due to the possible presence of LLRW.

During the Gamma Radiation Survey, objects may be encountered (including ornamental lawn decoration, light poles, etc). Typical background gamma radiation levels for objects is also considered to be between 4 and 7  $\mu\text{R}/\text{h}$ . Should elevated gamma radiation readings be identified and attributable to any object, the Consultant must contact the Project Authority by email and telephone by the end of the work day.

The Consultant must also be aware of other situations where immediate action must be taken to notify the Project Authority. Immediate (within 2 days) reporting to the Project Authority is required when the Consultant determines that exterior gamma radiation is present at or above 100  $\mu\text{R}/\text{h}$  at a height of 100 cm.

### **Gamma Radiation Survey – Data**

The horizontal position of the Gamma Radiation Survey measurement points are to be confirmed using Global Positioning System (GPS) technology and must be related to the Road Allowance

limits and the same coordinate system noted in section 6.3.1, above. Verification through common points should be illustrated. GPS coordinates will be in accordance with the following:

- The name and model of GPS equipment used is to be noted as part of the file metadata;
- Once daily, the position of at least one known point must be recorded as part of the file metadata;
- Horizontal position must be referenced to UTM Zone 17 of the 1983 North American Datum – Canadian Spatial Reference System realization (NAD83 – CSRS), 2002 epoch; GPS unit must be positioned over the physical centre of the object +/- 10 cm;
- Horizontal position must be measured to an accuracy of +/- 50 cm;
- Horizontal position data will be in the form of Latitude and Longitude and decimal degrees (e.g. 45.123456 76.123456);
- Latitude and Longitude coordinates require six (6) decimal places.

Optionally, if the Consultant has the capabilities, they may want to tie into a system being used by the Ganaraska Region Conservation Authority (GRCA) which can provide an accuracy of 2 cm and is less susceptible to tree cover due to it working off of a cellular tower system. The Consultant would need to have a GPS system compatible with Real Time Kinematic (RTK) GPS Rover (by Ashtech) that can receive a RTCM 3.0 signal, a CMR Plus signal or an ATOM signal.

### **6.3.3 Public and Private Utility Mapping**

Utility Mapping is required for Type B sites to assist in the planning of intrusive soil investigations near buried and/or aboveground utility services and infrastructure. Additional effort will be required to establish/document the location of municipally-owned utilities as municipal records may be incomplete and may not be representative of current conditions.

The objective of obtaining public and private utility locations is to utilise subsurface utility engineering (SUE) and mapping to allow for design and planning of required intrusive subsurface soil investigation programs that will be protective of the utility services present in the proposed work areas, and to identify potential conflicts with preferred intrusive investigation locations. By obtaining the location of, and mapping, utilities present in the proposed work areas it is anticipated that the Consultant will be able to design the intrusive soil sampling work program and identify any precautionary measures and/or techniques for completing the work program in the desired locations for incorporation into DWPs (refer to Section 6.5 for details). This will allow MPH to review proposed preferred initial intrusive investigation locations and the “zone” within which alternate borehole locations could be chosen (based on site conditions, for example) as well as eventual delineation borehole locations (as applicable), prior to finalization of DWPs. In particular, it will provide MPH with a reasonable level of assurance that the proposed work program can be advanced without interference to subsurface utilities.

As described in section 2.0, two types of sites are included in this SOW – Type A and Type B, with Type B sites being those where previous work has indicated that intrusive soil sampling is likely required to confirm presence/absence of LLRW. The Consultant is to assume that subsurface soil investigations (and thus DWPs) will be required for all identified Type B sites.

In order to meet the above stated objectives, the Consultant will ensure that the proposed initial intrusive investigation locations, along with potential areas where additional delineation activities may be completed, are protective of buried utilities and identify potential conflicts so that appropriate mitigation can be incorporated to advance the work program at the preferred location. It is expected that, at minimum, the level of detail required for the utility locate for design and planning purposes will be similar to a Utility Quality Level C/Level D as defined in the document “*Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data CI/ASCE 38-02*” prepared by the American Society of Civil Engineers (ASCE, 2003).

A summary of possible relevant drawings along with examples of types and quality of municipal records is provided in Appendix D. With respect to utility locates for municipal water, sewer and hydro (traffic lights/street lights) MPH has provided all existing drawings to PWGSC. However, the drawings provided may be incomplete and/or may not accurately represent current conditions. Furthermore, it is possible that proposed future sampling locations are in the vicinity of existing municipal and non-municipal utilities. Therefore, it is expected that the Consultant will require the use of subsurface geophysical and/or subsurface tracing equipment (similar to ASCE Utility Quality Level B) to obtain the buried municipal water, sewer, and hydro (street light/traffic lights) line location information. It is also anticipated that where the proposed soil sampling zone is identified in proximity to identified utility services, the Consultant will also complete a Utility Quality Level B locate for non-municipally owned utilities. It is estimated that 80% of the sites will need Quality Level B on at least a portion of the site, based on the proximity of proposed drilling locations to existing utilities. Pending justification from the Consultant, the Project Authority may authorize/instruct the Consultant to complete Quality Level B on a given site or on a given portion of the site.

Information obtained for location of utility services in the proposed work areas will contain sufficient detail to provide a Composite Utility Map as defined by the Canadian Standards Association (CSA) document “*Mapping of underground utility infrastructure, S250-11*” (CSA, 2011). The location of the utilities must be related to the property boundaries and use the same coordinate system noted in section 6.3.1, as information contained in the Composite Utility Map will be incorporated by the Consultant into the SPVSDs (refer to section 6.5.1 for details), which are to be submitted for review and approval. It should also be noted that the Composite Utility Map completed by the Consultant may be provided to other utility owners for information purposes.

The Consultant is to refer to section 6.6.1 regarding site access and permitting that may be required to complete the above work.

#### **6.3.4 Field Documentation**

The Consultant is responsible for all field documentation generated during the Property Survey, Gamma Radiation Survey and Utility Mapping. Field records must thoroughly document all activities conducted on each site. All original field documentation is to be retained in the project files and ultimately transferred to the individual property files. Project file numbering will be provided by the Project Authority.



The Consultant must maintain daily logs to document information and the events of the day including:

- Project area name and number;
- Municipal street address (if applicable);
- Site Location number;
- Record of tailgate (safety) meetings;
- Names of personnel and subcontractors on the job site and time spent on the site;
- Weather conditions (temperature, wind, precipitation) and any interruptions to work arising from inclement weather or other reasons;
- Field operations and personnel assigned to these activities;
- Log of the supervisor's activities and observations;
- Issues encountered and related corrective actions; and
- Records of communications, discussions of job-related activities with the PHAI, regulators, subcontractors, project manager, property owners or tenants, the media, and/or members of the community.

Field team leaders are required to provide written notes for each day they are present on site.

For the purposes of collecting and managing field data, information from the Gamma Radiation Survey will also be transferred to a MS Excel spreadsheet template prepared by CNL and uploaded to the PHAI-CP (refer to section 6.8 for more details).

The Consultant is responsible for maintaining digital photographs and logs for the purpose of documenting pre- field work and post- field work conditions. Photos are also required for inclusion in the DWPs to assist in the re-identification of the identified work area by others. Photographs documenting pre- and post- field work conditions will be taken from the same vantage point prior to and at the completion of field activities.

#### **6.4 Optional Work Sites**

As mentioned in Section 1.0 of this Statement of Work, there are approximately twenty-nine (29) additional sites (14 Type A and 15 Type B) located throughout MPH that require at minimum, the completion of Gamma Radiation Surveys; however, ownership has not been clearly identified and/or access to the sites is not currently available. CNL is currently working with MPH to determine ownership of these sites and it is possible that as ownership is determined and access agreements obtained, the Project Authority may authorize the Consultant to include these sites into the work program.

These optional sites are generally laneways or unoccupied right-of-ways and are generally located in residential areas of MPH. The optional sites that are considered Type A were not previously included in the 2001 Gamma-Bob gamma radiation survey. Should the Consultant receive authorization to proceed, the Type A optional sites will require the following (as described in detail in preceding sections of this SOW):

- a. Property Surveys;
- b. Gamma Radiation Surveys;

- c. Based on results of Gamma Radiation Surveys, determine if further investigation is required.

Following the completion of Gamma Radiation Surveys, should data above acceptable background levels be identified, the Consultant will provide rationale and obtain authorization from the Project Authority to re-classify the site as a Type B site and complete work as described in the Statement of Work for Type B sites (refer to section 6.1).

Information on Optional Sites, including site areas and limited information pertaining to LLRWMO and MPH reports, drawings, etc. is provided in Tables 3A and 4A and Appendix B and D.

### **6.5 Development of Detailed Work Plans (DWPs) for Soil Investigation and Delineation**

The Consultant must develop DWPs that will be implemented by others. The DWPs will be developed for the purposes of confirming the presence/absence of LLRW and if present, delineating the vertical and lateral extents of LLRW in soils at each of the approximately 137 Type B locations. The DWPs will be developed based on the Consultant's review of available historical information and HFR, information contained in the PHAI-CP, new Gamma and Property Survey data, Utility Mapping and SPVSDs for each of the approximately 137 locations, and guidance provided. A DWP will be developed for each batch of completed SPVSDs, identifying proposed locations for subsequent soil investigation. The elements of the DWP are further described below and in section 6.9 (Deliverables).

The Consultant will not include any information in SPVSDs or DWPs that may be considered private information under Canada's Privacy Act and Personal Information Protection and Electronic Documents Act. The following list highlights information that cannot be included in the above noted documents (to expedite the MPH review process). The list is not inclusive of all items in the legislation. Items include:

- Personal names or signatures
- Any cell or personal phone numbers
- Any email addresses, personal or business
- Copies of emails
- Any information that would connect a personal name with a personal address, email, or phone number
- Photographs of any individuals that would allow identification of the individual (i.e. face)
- Vehicle license plate numbers
- Financial Information
- Correspondence sent to a government institution by the individual that is implicitly or explicitly of a private or confidential nature, and replies to such correspondence that would reveal the contents of the original correspondence
- Views or opinions of another individual about the individual.

Where the communication of any information of a personal nature is required to be communicated, it should be done under separate cover. For example, the authors of SPVSDs and

DWPs may include their names on the cover letter but not on the documents. Financial information and estimates for future work should also be included under separate cover.

### **6.5.1 Scaled Plan View Site Drawings (SPVSDs)**

- Full-colour, readable SPVSDs must be created for each of the Type B Road Allowance Sites. Depending on site proximity, more than one site can be included on a single SPVSD (Combo SPVSD) as long as all details are easily legible on 11” x17” printouts (this applies to all drawings completed under this SOW).
- SPVSDs are to be to scale and in plan view and must show information from the Property Survey, Gamma Survey and Composite Utility Map (including the property limits, gamma readings, the location of topographic features and existing public and private underground utilities), and proposed initial intrusive soil investigation locations and target depths based on the HFR and Gamma Radiation Survey for sites that require intrusive work;
  - Include preferred initial intrusive soil investigation locations and the “zone” within which alternate or future boreholes (as applicable) could be completed (as described in section 6.1)
    - The zone for alternate boreholes will allow for “second choice” sampling locations should site conditions prevent completion of sampling at the preferred location(s), for example where subsurface refusal is encountered and a soil sampling location must be changed (or shifted) in order to reach the required sampling depth
  - Include areas where future soil investigation may be required for delineation purposes should initial sampling identify soil impacts
  - Legend will indicate approximate maximum depths of soil investigation at each of the proposed initial intrusive soil investigation locations
- SPVSDs must be integrated to the 6° UTM NAD83 (CSRS) Coordinate system in accordance with the Surveyors Act, Ontario Regulation 216/10;
- SPVSDs must include acknowledgement of the source of the information;
- SPVSDs are to be assembled into batches containing approximately 5 to 10 individual sites from a particular Group, generally assembled according to proximity or another common thread (if applicable) which will then form part of a DWP (see Section 6.5.2, below);
- Batches of SPVSDs will be submitted to the Project Authority for review along with the associated DWP; Draft DWPs will be submitted sequentially according to Group number. Review and comment by MPH (and MOC for site ID208) will be for the purposes of obtaining additional information from MPH/MOC for the protection of identified buried municipally owned services in the work site and approval of proposed soil investigation locations; information from MPH will be incorporated into the final SPVSDs;

- Where comments received indicate a profile drawing is to be completed for a site or sites, the Consultant is to identify the requirement on the applicable final SPVSDs; profile drawings and subsequent revised DWPs, where required, will be completed by others.
- Comments received by the Consultant are to be incorporated into the development of the final SPVSDs and DWPs;
- A sample SPVSD, void of personal information (See Section 6.5) shall be submitted within 25 days of contract award.

### **6.5.2 Detailed Work Plan (DWP)**

The Consultant must develop a DWP for the completion of intrusive soil investigations at each batch of sites for which SPVSDs were completed (5-10 sites per batch). In developing the DWPs, the Consultant will consider standard industry practices and incorporate where applicable. This includes guidance provided in the following:

- *CCME Subsurface Assessment Handbook for Contaminated Sites, 1994;*
- *CCME Guidance Manual on Sampling, Analysis and Data Management for Contaminated Sites Dec. 1993;* and,
- *MOE Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario, Dec. 1996.*

The DWPs will provide written methodology, guidance and rationale for the completion, where required, of proposed intrusive investigations. The DWPs will consider and incorporate the information collected from the HFR, the guidance provided under this SOW, information regarding other SSS work provided in the PHAI-CP, the completed Gamma Radiation Survey data and, for final drafts, comments received from the Project Authority and MPH/MOC following review of draft SPVSDs and draft DWPs. Applicable SPVSDs will be appended to each DWP.

The DWP will include, but is not limited to, the following:

- Summary of HFR(s) and Gamma Radiation Survey(s), and identification of the area(s) of suspected LLRW to be investigated by the proposed soil investigation program;
- Description of recommended methods to be used to complete the soil investigation and soil sampling;
- Identification of depth of investigation at each of the proposed sampling locations;
- Description of recommended sampling plan and field screening methodologies to be implemented for assisting in selection of soil samples for laboratory analysis, and the data quality objectives to be met by proposed sampling.
- Identification and summary of road occupancy required to complete the proposed soil investigations; for example, will work be completed in a travelled portion of the road or will work be completed on a boulevard adjacent to the road;

- Precautions to be taken if soil investigation is to be completed adjacent to or in proximity to identified buried or above ground utilities;
  - Includes but is not limited to: specific utility off-sets for completing work near buried utilities, special instructions for how to complete intrusive field activities in proximity to buried/aboveground utilities; site-specific and/or utility owner restrictions for completing work;
- Identification of any site specific issues that may impact completion of borehole drilling (for example – fire hydrants/emergency routes); and,
- Applicable SPVSDs (to be appended to each DWP).
- Where comments on an associated SPVSD indicate that a profile drawing is required, the final DWP is to note this requirement as a subsequent task to precede subsurface investigation at the applicable site (profile drawings will be completed by others).

Groups of DWPs (grouped by Group number) will be delivered in draft to the Project Authority for review by the Project Authority and MPH. As each DWP is to be developed for one batch of SPVSDs (5 to 10 sites per batch of SPVSDs), it is anticipated that a total of approximately 20 to 30 DWPs will be developed; however, the actual number of DWPs to be developed will be determined by the Consultant based on the Consultant's assembly of SPVSDs into batches. Comments received by the Consultant are to be incorporated into the final DWPs; Final DWPs are to be approved by the Project Authority.

A sample/template DWP, void of personal information (See Section 6.5) shall be submitted within 25 days of contract award (with reference to sample/template SPVSD and submitted concurrently).

## **6.6 Other Pre/Post-Fieldwork Requirements**

### **6.6.1 Access Agreements – Municipal Properties**

Given the approximately 174 locations are spread throughout the Municipality, MPH has stipulated in advance the following restrictions:

- Consultant is to complete the work in “localized” sections and should incorporate completion of sites by quadrant. The expectation of completion of work by quadrants is to minimize disruption to the community as a whole. Refer to Figure 1A for overall approximate locations of work for determination of “localized” work areas by the Consultant. This will also facilitate review of draft DWPs by batch/Group.

MPH may stipulate restrictions for access to the work areas due to community functions/festivals and the Consultant is to develop the schedule accordingly. A list of major community functions is included in Appendix F; however, it should be noted that this list is not final and is subject to change. Additional events may be added and the Consultant is to accommodate these events into the proposed schedule.

### **6.6.2 Road Occupancy Permits (ROPs) & Temporary Road Closure Permits (RCPs)**

MPH has developed Standard Operating Guidance and Procedures (SOP/SOGs) for use on PHAI projects. It is anticipated that at a minimum, the following SOP/SOGs will apply for the purposes of obtaining ROPs and/or Temporary RCPs (at no charge) from MPH:

- SOG 100-03 - Permit Requirements
- SOP 100-03 - Temporary Road Closure

For those locations that are in or adjacent to travelled roadways, ROPs from the appropriate municipality will be required. In MPH, where work is to be completed in a laneway, requirements for ROPs will be at the discretion of MPH and are to be confirmed by the Consultant. It is anticipated that much of the proposed work will be in a portion of the road right of way or laneway, and only require a ROP. However, some work may involve the complete closure of a road or laneway, or be in the centre of a roadway or intersection and will require a RCP from MPH, in accordance with SOP100-03 (Temporary Road Closure). Currently, MPH Unplanned Temporary RCPs require minimum 2 weeks for review. The Consultant is to take this into account when scheduling field activities. For the site located in MOC, full road closures are not an option.

For the purposes of obtaining a ROP and/or RCP from MPH, the Consultant will refer to the applicable SOG/SOP and provide the following minimum requirements:

- Completed Municipal Application Form - Municipality of Port Hope – Public Works User Fee Application Form, By-Law 16/2006 (Schedule C 74/2002), available on MPH's website ([www.porthope.ca](http://www.porthope.ca));
- Work Plan that includes but is not limited to:
  - Identification and description of major work elements to be completed under the ROP;
  - Breakdown and description of major tasks involved in each major work element;
- Traffic Management/Traffic Protection Plans applicable to each site location (refer to section 6.9.2 for details);
  - Traffic Management/Traffic Protection Plans to be completed in accordance with Ontario Ministry of Transportation's Traffic Manual, Book 7 (as applicable);
- Communication Plan detailing procedure for addressing concerns of the public should consultant be approached while on-site, along with overall communication procedures (refer to section 6.9.4);
- Work schedule including dates and times for when and where work will be completed;
- Waste Management Plan detailing handling and disposal of any materials generated during the locating activities (e.g. waste water or other wastes removed during the sewer locates); it should be noted that disposal at the Municipal Sewage Treatment Plant and discharge/disposal to the Municipal sewer system (e.g. catch basins) are not an option. Waste is to be disposed of in accordance with applicable federal/provincial/municipal regulations; and,

The above noted minimum requirements will also apply to obtaining ROPs from Municipality of Clarington (MOC), along with completion of the MOC ROP application form, which must be completed in person at the MOC offices.

The Consultant is to use professional judgment in determining the most efficient manner to complete the project and number of permits needed. Although individual site permits may be needed in all cases, it is anticipated that permits will be obtained for a collection of sites where work can be completed in a certain period of time that allows for flexibility within the schedule to accommodate the conditions and restrictions stipulated by MPH/MOC.

In accordance with the Communication Plan (see section 6.9.4), CNL will notify property owners near to and adjacent to areas where work is being completed via notices delivered by mail. The Consultant is to take necessary measures to minimize disruption to third party property owners and ensure that all work and associated equipment remain within the boundaries of the designated work site.

When completing work to obtain locations of municipal services, MPH is to be notified, in case MPH staff or a designated representative need to be present during this work. As a result, completion of locating municipally owned utilities must be coordinated with MPH or their designated representative. It should also be noted that access for completion of utility locates will be limited to the designated work area and/or public property. Private property access will not be available.

### **6.6.3 Access Agreements–Private Properties**

The majority of the sites are publicly owned or under the jurisdiction of MPH. However, approximately 4 Type B sites, 2 Optional Type B sites and all Optional Type A sites are known to be or expected to be privately owned. Access agreements for sites with private ownership will be coordinated and obtained by CNL. Contact information for properties where access agreements are in place will be provided to the Consultant following award of contract and prior to start of field activities. In accordance with the Consultant’s Communication Plan (refer to section 6.9.4), the Consultant will be responsible for contacting private owners to schedule field activities.

### **6.6.4 Site Restoration**

The work is not expected to damage the sites/properties in any way. It should be noted that all locations are to be returned to their original condition immediately after completion of the survey work (i.e. lawn repair, etc.). Photographs will also be taken to document any area of actual or potential concern for the purposes of assisting in localization of the identified work area by others.

Any potential health hazards and safety concerns will be identified while documenting site conditions as it will assist in the preparation of Job Hazard Assessments prior to beginning the survey field work. Such hazards could include steep slopes, animals on site, enclosed areas, confined spaces, heavy traffic etc. A general Job Hazard Assessment can be completed for the project; however, if a condition comes up where the general one is not sufficient, a site-specific

one will be required. See Section 6.9.1 for requirements related the Consultant's Health and Safety Plan.

All photographs will be time/date stamped and referenced to the specific site. Photographs are also to be included in the DWPs, as it will be beneficial to future delineation work to be completed by others. This will have the added benefit of identifying any site deficiencies, before and after the field work has been completed (see earlier text re: "before" and "after" photos), such that potential issues or discrepancies with the property owner (i.e. MPH) can be avoided/resolved.

### **6.6.5 Work Conditions**

Field work should not start before 7:00 am or sunrise (whichever is later) and should stop by 7:00 pm or dusk (whichever is earlier). Work may extend beyond 7:00 pm and continue until sunset, provided it does not generate noise. Under no condition may work continue past 11:00 pm. Work may also be performed on weekends between the stated hours provided it does not generate noise; the Consultant is to advise MPH in advance if they plan to complete any weekend work. Work on travelled portions of roads which is consistent with normal traffic (i.e. driving on the road at normal speed (performing inspection or Gamma Radiation Survey involving no unusual or frequent stopping) is permitted at any hour.

Some road allowance locations are in unlandscaped/undeveloped right-of-ways and/or have unmaintained shoulders/boulevards. This includes, but is not limited to, approximately two (2) Type A sites identified on the Site Location Spreadsheet (Appendix A: Table 1A) as sites 321 and 351; and approximately twenty-one (21) Type B sites identified on the Site Location Spreadsheet (Appendix A: Table 2A) as sites (Ward 1) 47, 72, 73, 74, 75, , 93, 120, 122, 124, 150, 150a, 167, 195a, 211; and (Ward 2) 183e, 197, 201a, 201b, 201c, 210a and 210d. The Consultant is responsible for obtaining permits from MPH and arranging for grass cutting and any other landscaping services (such as trimming of trees and/or hedges, etc) required for completing planned field work activities at each location.

Federal and provincial environmental legislation (e.g. Species at Risk Act (SARA), Endangered Species Act (ESA), and Migratory Birds Convention Act) apply on properties included in the Road Allowance Contract 1, part of "Small-Scale Sites". The Contractor is required to comply with this legislation. CNL will have a third party consultant Biologist/Ecologist available to help the Contractor in this regard. CNL will provide these services of a third party Biologist/Ecologist to work with the Contractor in investigating sites according to the work. The Biologist/Ecologist will obtain any required permits and address long term management plans based on findings of the site inspections if required.

It is anticipated that completing routine tasks associated with this SOW on their own will not likely impact Species At Risk (SAR) and their habitat, provided that basic precautions are taken, such as being aware and considerate of any wildlife/vegetation encountered in the area where access is required. It is when non-routine work such as site clearing/grass cutting (or potential physical movement of wildlife based on not having an alternative option) is to be completed, that further investigation is required.

The Contractor shall not perform grass or brush cutting or any activities that may alter potential habitat during prescribed breeding and migratory periods, except as described below. The Contractor may proceed during these periods only if an inspection by the CNL Biologist/



Ecologist to confirm the absence of species at risk, endangered species or migratory birds is undertaken. CNL will provide the service with 2-4 weeks' notice. Furthermore, a few additional sites may be added based on the CNL Biologist/Ecologist recommendations where there is potential for routine operations to cause harm or harassment of protected species or cause negative impacts to their habitat. CNL will be responsible for implementation of mitigation measures other than rescheduling or halting the work, if required.

If it is determined that SAR, ESA or migratory birds are present and the work needs to be rescheduled, halted or other mitigation is required, the Contractor will not receive any additional compensation as this should be addressed in the scheduling. This also applies in the event where wildlife is encountered and/or when the Contractor is unsure if a SAR has been encountered. Tree cutting or pruning shall not be permitted unless it is confirmed that no SAR such as Butternut trees will be affected. In addition, the municipal tree cutting bylaw is in effect.

If the Contractor proceeds in grass cutting, mowing, pruning, brush/tree removal without consulting the Biologist/Ecologist, the Contractor will be doing so at their own risk and may be in violation of federal/provincial legislation.

Some road allowance locations are adjacent to or in proximity of CN/CP railway lines. The Consultant will be responsible for contacting CN/CP, in accordance with the Communication Plan (see section 6.10.4), to ensure that appropriate Health & Safety measures are implemented and that applicable CN/CP permits are obtained where applicable.

During winter field work (as applicable), the Consultant will be required to coordinate completion of site activities with MPH snow removal routes/schedules. The Consultant will be responsible for removal of snow from work areas located on the boulevard/non-travelled portion of the road allowance and/or if Consultant activities prevent MPH from completing snow removal on the roads and/or sidewalks. Should space allow, removed snow can be placed adjacent to work area within the non-travelled portion of the municipal road allowance (i.e. boulevard) provided that access to private properties and public walkways are not obstructed. If space is limited and/or volume of snow is significant, the Consultant is to arrange for off-site disposal of removed snow at an appropriate location. Dumping of removed snow will not be permitted at municipal facilities.

## **6.7 Technical Requirements**

Listed below are some of the key technical requirements that must be met:

1. Detection limits for each measurement device must meet the minimum requirement to ensure measured values (including error range) are below background for:
  - a. Gamma radiation – equipment should have minimum detection limit of  $3\mu\text{R/h} \pm 1\mu\text{R/h}$ ;
2. Geo-referenced outdoor electronic data gathering techniques for gamma radiation measurements are to be used. Measurements to be taken and presented in units of  $\mu\text{R/h}$  to be consistent with previous work completed by the LLRWMO.
3. Determination for sensitivities to naturally occurring radionuclides, including potassium-40, uranium series and thorium series radionuclides, for gamma radiation detection

instruments must be completed on the LLRWMO calibration pads thus employing the uranium standard currently being used by CNL's LLRWMO. Consultant's equipment must give comparable readings to equipment currently in use by the LLRWMO. A list of the common pieces of equipment being used by CNL is given in Appendix C as are the protocols required for coordinating the determination of detector sensitivities for the Consultant's radiological equipment with the LLRWMO in Port Hope, Ontario.

## **6.8 Data Management**

The electronic data collected throughout the program (gamma readings, data etc.) will be managed in the PHAI CP by CNL and in MS Excel spreadsheets. The data collected is to be sent to the Project Authority or uploaded by the Consultant into Oproma (or other file share system selected by the Project Authority). MS Excel spreadsheet templates for Gamma-Radiation Survey data (one for data at 1.0 m above surface and one for data taken at 0.15 m above surface) will be provided to the Consultant. The sending of data to the Project Authority or uploading to Oproma (or other file share system selected by the Project Authority) is to be done sequentially on a periodic basis based generally on the assigned Group number. Information to be included in the spreadsheet along with a guidance document for completing the spreadsheets are provided for reference purposes as Appendix E.

In reviewing and uploading gamma data, the Consultant must also identify and summarize those Road Allowance locations where data indicates a potential for off-site impacts onto adjacent private property. Formatted data will be submitted to the Project Authority sequentially as site Groups are completed.

## **6.9 Deliverables**

The Consultant will be responsible to deliver the following:

1. A cost loaded project schedule outlining the project tasks, milestones and timeframes to complete the work. Schedule should be provided in Primavera P6 (highly preferred) and as a PDF. Microsoft Project would be the second choice in project software;
2. Prior to conducting field activities (documents to be approved by Project Authority):
  - 2.1 Health and Safety Plan
  - 2.2 Traffic Management/Traffic Control Plan
  - 2.3 Quality Assurance / Quality Control Plan;
  - 2.4 Communication Plan;
  - 2.5 Training Plan;
  - 2.6 Environmental Management and Protection Plan
  - 2.7 Emergency Plan;
  - 2.8 Security Plan;
  - 2.9 Standard Operating Procedures (SOPs);
3. For Type A Sites, Plans of Survey (Section 6.3.1) are to be submitted as PDF files (electronically signed by OLS); Gamma Radiation Surveys (Section 6.3.2) are to be submitted as legible, full-colour, PDF files that show the aerial view of the Site(s) and surrounding area, the surveyed property boundaries, as well as the gamma readings. The Property Survey and Gamma Radiation Survey must also be submitted as overlapping, distinct layers on AutoCAD files on a Site-by-Site or combination of sites basis (same

- principle as Combo SPVSD, Section 6.5.1). Survey drawings to also include ortho-rectified air photo bases;
4. For Type B sites, Plans of Survey (Section 6.3.1) are to be submitted as PDF files (electronically signed by OLS); Gamma Radiation Surveys (Section 6.3.2) are to be submitted as legible, full-colour, PDF files that show the aerial view of the Site(s) and surrounding area, the surveyed property boundaries, as well as the gamma readings. SPVSDs will be submitted per site or as Combo SPVSDs (for all approximately 137 sites) as full-colour, clear, legible PDF files and hard copies, assembled in batches of 5-10 individual sites. Survey drawings are to also include ortho-rectified air photo bases. The Property Survey, Gamma Radiation Survey, Composite Utility Map and proposed borehole locations (i.e. the components of the SPVSDs) must also be submitted as overlapping, distinct layers on AutoCAD files on a Site-by-Site or Combo SPVSD basis;
  5. DWPs for each batch of Type B SPVSDs. DWPs are to be submitted in Groups, according to Group Number, sequentially as they are completed, i.e. not all at once;
  6. A detailed stand-alone report for Type A sites (See Section 6.9.10);
  7. A Project summary report for Type A and B sites to be completed at the end of the project including a section on lessons learned and recommendations for completion of proposed subsurface investigations and future work (see Section 6.9.11);
  8. A Class A cost estimate, level of effort and estimated time required to complete the soil investigation work proposed in the DWPs. Estimate to be provided under separate cover as hard copy, PDF, MS Word and associated MS Excel files;
  9. Entry of data results from the Gamma Radiation Surveys into and MS Excel Spreadsheet (refer to section 6.8) and subsequently sending it to PWGSC or uploading it to Oproma (or other file share system selected by the Project Authority);
  10. All data collected throughout the project is to be delivered sequentially (as Groups are completed) in an electronic database or MS Excel by sending it to PWGSC or uploading it to Oproma (or other file share system selected by the Project Authority);
  11. Draft DWPs and Project Summary Reports will be issued as PDFs fully bookmarked and include all tables, figures and appendices. Each DWP must be a single separate PDF. Text for the same reports will also be provided in MS Word, and tables in MS Excel format. The proposed borehole locations are also to be submitted on MS Excel spreadsheets, complete with latitudes and longitudes;
  12. Two (2) full colour (including appendices/attachments) hard copies of all final reports including DWPs are to be individually bound and provided for MPH and CNL files. Final reports will also be issued electronically as fully bookmarked PDFs and the text provided in MS Word format and associated attachments in native file format (e.g. AutoCAD, jpeg, MS Excel).
  13. Status updates to the Project Authority on a bi-weekly and monthly basis showing the actual progress vs. the planned progress of the project, as originally agreed to at the onset of the project. The updates must indicate the status of the work as it applies to each site. Bi-weekly status updates will briefly outline the work completed the previous week and the work planned for the upcoming week. Monthly Status to include all key tasks, such as Gamma Radiation Survey, Property Survey, utility locates, etc. and should include date completed or planned start date. Bi-weekly updates should also provide a forecast or “look ahead” for proposed upcoming field work (based on upcoming 2 weeks and 1 month); and

14. Agenda and meeting minutes for all meetings.

The draft DWPs and SPVSDs will be provided to the Project Authority and MPH for review. All comments will be communicated to the Consultant through the Project Authority.

A sample/template SPVSD and a sample/template DWP are to be developed by the Consultant and issued to PWGSC within 25 working days of award of contract. The documents are to include no personal information. The Project Authority and MPH will review within approximately 15-45 working days and provide comments to the Consultant. The Consultant must finalize the SPVSD and DWP templates within 5 working days of receiving comments. These standardized templates will be the basis for all SPVSDs and DWPs.

A standardized gamma data collection template has been developed by CNL and is provided in Appendix E.

The Consultant is to also incorporate provisions of any permits obtained into the applicable plans described below. The Consultant is to provide the Project Authority access to sites, including for the purpose of oversight inspections relevant to adherence to the Plans outlined below.

### **6.9.1 Health and Safety Plan**

One of the key responsibilities of the Consultant is to ensure the health and safety of all project and field personnel (including subcontractors and suppliers) associated with the project and to protect the public and environment from harm while the field work is underway. The Consultant must provide assurance to the Project Authority that all reasonable and necessary efforts are being made to meet Health and Safety requirements. The Consultant shall abide by all applicable Municipal, Provincial and Federal Acts and Regulations governing the work. The Consultant must provide a Health and Safety Plan which demonstrates compliance with the requirements specified in the PHAI Plan listed below, to ensure that worker/public health and safety are properly managed.

- *Occupational Health and Safety Plan (OHSP) (Document #4500-510400-PLA-001)*

The plan is to be prepared by the Consultant and approved prior to the commencement of the field work. Acceptance of this plan by the Project Authority, however, does not remove any responsibility or liability from the Consultant.

For field work, the Consultant must ensure that the Health and Safety representative and the Site Supervisor are clearly identified by distinguishable clothing and identification tags.

Health and safety practices are to be monitored closely. A CNL Health and Safety representative may attend the start up meeting, the weekly on site Health and Safety meetings as well as periodic attendance at daily on site tail gate meetings.

Where applicable, the Consultant must also ensure that signs at the job site are clearly visible, professionally designed and installed, and meet all CNL and appropriate Federal and Provincial regulatory agency requirements. CNL will conduct regular oversight visits to check compliance with the Consultant's submitted Health and Safety Plan.

### **6.9.2 Traffic Management/Traffic Control Plan**

The Consultant must submit as part of the ROP application a traffic protection/traffic control plan for work being completed adjacent to or on travelled portions of roadways. The traffic protection/traffic control plan must be developed and implemented in accordance with applicable acts, regulations and by-laws, including but not limited to:

- Ministry of Transportation Ontario (MTO) – Ontario Traffic Manual, Book 7: Temporary Conditions; and,
- Ontario Regulation 213/91 – Construction Project.

The Traffic Management Plan will also include detail impacts and mitigation measures required to accommodate vehicular and pedestrian traffic, municipal services (e.g. buses, emergency service vehicles, garbage and recycling collection, postal service) and any other road-related services (e.g. school buses).

The Traffic Management/Traffic Control Plan must also include, but is not limited to, the following (as applicable):

- Planned road closure and detour plans for the proposed work sites;
- Anticipated duration of the road closure;
- Relevant information on signage, signalization/stop signs, etc., in accordance with MTO Book 7; and
- Details on how detour traffic will be routed to same-order or higher order roadways.

### **6.9.3 Quality Assurance/Quality Control Plan**

The Consultant must submit to the Project Authority a signed, approved copy of their quality manual, or a detailed description of the company processes to control the activities and resources related to the performance of this contract. The Consultant's representative, authorized to resolve quality matters, must be identified in the Plan.

The Consultant must identify and adhere to acceptable quality assurance and quality control (QA/QC) procedures throughout the project.

The Consultant must allow the Project Authority unrestricted access to applicable places of work, facilities, and records for the purpose of quality surveillance or audit functions at any time during the contract. The Consultant must provide reports of regular inspections, safety meetings and non-conformances to the Project Authority.

The following are required of the Consultant:

1. Attendance at a pre-start of work meeting to review quality assurance matters.
2. Establishment of qualification criteria for their employees, and processes defined to ensure that the required personnel competence is achieved and maintained.
3. Documentation to define the process to control the handling and storage of materials, replacement items, and equipment to prevent their abuse, misuse, damage, deterioration, or loss.
4. Documentation to define the processes for control of non-conformances, corrective action and preventive action.

5. Documented processes for the identification and retention of records essential to provide documented evidence that items, activities and services meet specified safety, technical, legal, and quality requirements. The process must define how such records are identified, completed, authenticated. The records must be legible, retrievable, and traceable to the items and activities to which they refer.
6. Verification and proof of laboratory certification where laboratory work is being carried out under the control of the Consultant.
7. Documentation showing the processes used to ensure that:
  - documents are approved prior to issue, reviewed and updated as necessary, and re-approved;
  - changes made to documents are identified; and,
  - relevant versions of applicable documents are available at points of use.
8. Documentation of calibration and maintenance records of all equipment being used by the Consultant or subconsultants/subcontractors in accordance to the operating manual for that piece of equipment.
9. Processes governing changes to documentation are to include the same level of approval as the original documents prior to implementation and permit. The Consultant shall identify any amendments and revisions to documents or software.

#### **6.9.4 Communications Plan**

##### **By CNL**

A communications plan will be implemented by CNL to ensure the successful completion of the project. The plan will be designed to assist all stakeholders of the PHAI, both internal and external, and to ensure that the general public is “on board” with the work being done. This plan will be developed by CNL.

The plan will include developing written information for distribution and posting on the PHAI website to keep people abreast of the progress as it is being completed. It will include drafting information letters, day-to-day interactions with the public, the Municipality and other parties as necessary. Where work will be taking place on or adjacent to privately owned properties, CNL will provide information to property owners in advance. CNL will also deliver coaching to Consultant staff with respect to dealing with residents openly, transparently and honestly. This training will include a project overview and key messages so that communications to all stakeholders and members of the public are consistent. CNL will provide Contractor Cards to the project team that can be distributed to members of the public who have project-related questions. The cards refer members of the public to the PHAI MO Communications Team for additional information.

##### **By Consultant**

The Consultant will attend communications training provided by CNL, prior to the start of field activities. Further, this training will be incorporated into a project-specific Communications Plan for submittal and approval by the Project Authority. The project-specific Communications Plan includes the procedures and materials that will be used by the Consultant. Along with materials provided by CNL, the Consultant is to provide sandwich board-style signs to notify the public

entering the general vicinity of the work area and also just outside of the designated work area. The Consultant's logo and that of the PHAI should be included on the signs, as well as the text as shown in the example below:

*“The PHAI MO is conducting testing in your neighbourhood. Call 905-885-0291 if you have any questions”*

The Consultant must notify the Project Authority immediately and MPH as required in the case of an accident, incident or near miss (refer to section 6.9.7 for additional information).

For work to be completed on private properties, the Consultant will be responsible to set up appointments, arrange schedules and follow up as required for the work to be completed at these properties. CNL will assist if a problem arises with a property owner. The Consultant will be provided with all necessary contact information for each property owner and tenant.

### **6.9.5 Training Plan**

The consultant must submit a Training Plan which meets the requirements specified below for review and acceptance by the Project Authority prior to start of work.

The Consultant must have a documented training program which ensures:

- New employees, and those who are transferred to new work areas receive job specific training so that they will be qualified to perform their assigned duties in a safe and competent manner;
- Employees' mandatory training is completed and up-to-date;
- Personnel qualifications are reviewed on a regular basis to ensure that employees are maintaining their proficiency;
- Employees have been trained and/or licensed to use specialized equipment and proof of training provided (as required)

Consultant must have received adequate orientation on relevant:

- Quality Management Program;
- Compliance program requirements;
- Environmental management program requirements;
- Traffic Control and Traffic Protection requirements;
- License requirements;
- Communication protocols; and,
- Use of the PHAI-CP.

Consultant must provide:

- Reports of regular inspections, safety meetings and non-conformances to the Project Authority;
- Access to the various work sites for the Project Authority to conduct oversight of the Consultants' training program.

The Consultant must conduct and ensure that workers complete awareness sessions that include:

- Hazards Awareness, to provide an overview of environmental obligations with respect to the Port Hope Project;
- Public Relations/Local Sensitivity Awareness, to provide guidelines to workers regarding interaction with members of the public;
- Nuclear Compliance Program Requirements, to provide information about the applicable nuclear compliance programs and the responsibilities of individuals participating in the PHAI projects; and,
- Traffic Protection and Traffic Control Awareness, to provide information and understanding of the hazards associated with road work and the appropriate precautions and protective measures to be implemented.

An online Project Awareness course administered by the PHAI MO which gives workers a general understanding of the aims and objectives of the PHAI, its timelines, the roles of the main participants, the methods for completing the work and the challenges, constraints and sensitivities involved, is also available to the Consultant; the course is approximately 30 minutes in length.

#### **6.9.6 Environmental Management and Protection Plan**

The Consultant must submit an Environmental Management and Protection Plan which includes the requirements specified below to the Project Authority for review and acceptance prior to start of work.

- Consultant is required to conduct operations and activities at the Port Hope site(s) that comply with the environmental legislation and associated requirements of general application in force in the province of Ontario and MPH;
- Consultant is also required to abide by the project specific requirement imposed by CNL. This includes (as per the PHAI Protocol for Noise Control, 4500-509241-REQ-002), but is not limited to:
  1. All construction equipment shall comply with the emission standards outlined in NPC-115 of the Ontario Model Municipal Noise Control By-law.
  2. All vehicles using public roads must be verified to be in compliance with applicable Transport Canada Regulations (Schedule V.1 Section 5), Noise Emissions (Standard 1106 and/or NPC-118).
  3. Residents adjacent to the work site shall be notified of times and durations of activities that will result in sustained noise levels above 60 dBA (or 6 dBA above background).
  4. Construction activities shall be in accordance with Municipal Noise By-laws.
  5. Trucks and other heavy equipment must avoid tailgate banging at activity sites and banging tailgates shall be secured or eliminated.
  6. Use of compression release engine brakes on, or in the vicinity of, the site will be prohibited.



- Consultant is to provide the Project Authority access for oversight and inspections;
- As per Section 6.65, Consultant is to incorporate approach to protection of potential/known sensitive sites and/or species;
- Consultant is required to demonstrate that project-specific environmental protection training is completed prior to the start of work;
- Consultant must report environmental events/incidents promptly to the Project Authority; and
- Consultant must only communicate event information through the Project Authority.

### **6.9.7 Emergency Plan**

The Consultant must submit an Emergency Plan for review and acceptance by the Project Authority prior to start of work. The Emergency Plan must document emergency procedures, identifying and addressing potential emergency scenarios specific to their workplace, work site or operational activity. This includes an up-to-date emergency contact list (including lines of communication for contacting the Project Authority/MPH/MOC, as required) and map to nearest hospital/medical facility. These procedures will be updated yearly or as required.

The Consultant must have emergency equipment (first aid kits, eye wash kits, spill kits, fire extinguishers, etc.) that are maintained and available, where required. Personnel must be advised of the location of all emergency equipment.

When potentially hazardous materials or processes are used or brought into the workplace, personnel must be advised. Material Safety Data Sheets (MSDS) must be made available and personnel are to know the location of the MSDS sheets.

The Project Authority will be notified of any safety events. Reportable medical accidents, first aid or lost-time injuries and copies of related documentation will be provided to the Project Authority. The Project Authority must have access to the various work sites managed by the Consultant to conduct oversight of the Consultant's emergency programs.

### **6.9.8 Security Plan**

Prior to start of work, the Consultant must submit a Security Plan. The Security Plan must include the following:

- Promptly notifying the Project Authority of any situation in which security may be compromised (If personnel are in immediate danger, emergency services should be called by dialing 911)
- Implementing practices specific to their workplace or operational activity with due regard for the protection of equipment, assets and fellow employees. These practices must be documented
- Provide site access control (as and when required)
- Provide protection of assets including the physical security of employees, consultants, visitors and infrastructures
- Accessing private property sites only after receiving written permission from the owners.

The Consultant must be responsible for notifying local agencies of security events.

### **6.9.9 Standard Operating Procedures (SOPs)**

SOPs are required to be submitted by the Consultant for alpha/beta/gamma radiation measurement, obtaining and mapping location of public and private utilities, Property Survey and other operations as required. SOPs are to meet industry standards, equipment manufacturer's operating procedures, and where applicable the Province of Ontario guidelines and procedures (e.g. MOE, MTO, etc) and applicable municipal by-laws (e.g. MPH and/or MOC). The Project Authority will review and provide comments on SOPs. All proposed equipment and procedures must be accepted by the Project Authority.

### **6.9.10 Detailed Report for Type A Sites**

The report should be prepared as a 'stand-alone' document and should not require the reader to refer to historical report(s) for additional information. All findings, including nil findings, shall be clearly presented in the report.

The report will include (but is not limited to):

- Executive summary
- Introduction
- Background
- Methodology (including QA/QC) – QA/QC testing not in compliance will be identified and corrective actions taken and documented
- Results
- Conclusions
- Recommendations
- Lessons Learned
- References

The report will include, but is not limited to, the following details:

- A location map.
- Figures, as per Sections 6.3 and 6.9 of this SOW.
- Data collection/field logs.
- Reference to the PHAI-CC/project specific standards must also be provided in the Consultant's report.
- Photographs should be provided in the appendices that show the relevant features of the site and any identified potential areas of concern. All photos used in the report must also be provided electronically in a separate folder called "Photographs". All images must be in .jpg format. All file names must correspond to what the photo was called in the report and reference the site ID. For example, if the photo was referred to as "Photo 2" then the file must also be called "Photo 2".
- Field notes.

- Appendices will include copies of the QA/QC testing performed and copies of the equipment calibration certificates.

The report shall be signed by a Qualified Person (QP<sub>ESA</sub>) or QP<sub>RA</sub> under Ontario Regulation 153/04, as amended.

The Consultant shall use the metric system for measurements, calculations, drawings, etc.

#### **6.9.11 Project Summary Report and Databases for Type A and B Sites**

A report that summarizes all of the work conducted for the project will be developed and the database of information compiled throughout the program will be provided to the Project Authority at the completion of the work. The database of information will be completed using an MS Excel spreadsheet template created by CNL and provided to the Consultant by the Project Authority (and may also be uploaded into the PHAI CP). The final project summary report should include, but is not limited to:

- Executive summary
- Introduction
- Background
- Objectives
- Methodologies & QA/QC
- Summary of Work Completed
- Summary of Results
- Lessons Learned
- Recommendations for implementation of proposed intrusive soil investigation phase of the project
- Field notes and other appendices
- References

The report is to be signed by the QP. The appendix should include a copy of QA/QC testing performed, identification of tests not in compliance, corrective actions taken, etc. and copies of the equipment calibration certificates.

The project summary report should be submitted both electronically and as hard copy as detailed above for the site reports. Templates developed by CNL for use by the Consultant are provided in Appendix G.

#### **6.9.12 Project Status Updates/Meeting Minutes**

The bi-weekly report must be submitted by the end of each Monday to reflect the progress of the previous week and include completed tracking spreadsheet provided by CNL (see Appendix G), along with schedule forecast for upcoming 2 weeks and 1 month. The monthly report must be submitted within five business days of the end of the previous month. The monthly budget

breakdown must align with the project schedule and must include Monthly Cost Expenditure. The Consultant must develop a template for providing bi-weekly written updates and submit to the Project Authority for review and approval. The Project Authority will provide templates for monthly status update including budget breakdown and project progress (see Appendix H).

The monthly status updates should include items such as schedule progress, milestone/ activities completed, difficulties or schedule gaps and their mitigation plans, percent work completed compared to planned work completed, budget update, budget spent compared to planned budget, accidents and incidents, etc. Updates of schedule in Primavera P6 are also to be included. Primavera P6 is highly preferred. Microsoft Project would be the second choice in project software.

The Consultant must prepare the minutes for the kick-off meeting and agenda and minutes for regularly scheduled progress meetings and submit it to the Project Authority. Meetings will be attended in person, in Port Hope, by the Consultant Project Manager and Field Manager. For the purpose of the pricing, the Consultant should assume that 10 progress meetings will be held in Port Hope.

The Consultant should also factor in that meetings outside of pre-scheduled progress meetings may be required. For the purposes of pricing, the Consultant should assume that there will be 5 of these meetings to be held in Port Hope (for a total of 15 meetings to be held in Port Hope).

#### **6.10 Consultant Dress Code**

The Consultant and associated field crews will be required to wear appropriate identification as approved by the Project Authority. Appropriate clothing must be worn to ensure safe completion of activities. The clothing must be neat, tidy and professional. This project is very much a community based project and as such personal attire must reflect the professional image of this project. Project staff and field crews will be expected to wear common clothing/uniforms, with the company logo, to reflect this image. Tyvek coveralls would create a negative perception and should not be worn unless special circumstances warrant them and approval is given by the Project Authority. Disposable clothing is not to be worn unless special circumstances dictate the need and it is agreed to by the Project Authority. Matching hardhats and safety vest/jackets are also required. The Consultant is responsible for providing uniforms.

#### **6.11 Roles and Responsibilities**

##### **Consultant Responsibilities**

1. The Consultant must ensure that only qualified personnel are performing the work
2. The Consultant must interface with the Project Authority to achieve this scope of work.
3. The Consultant must schedule regular progress reviews in person in Port Hope and provide bi-weekly progress reports by email. These updates must provide the means for discussing technical issues and required approvals, gathering information, providing updates on progress and planning of upcoming activities. The Consultant must prepare the agenda and meeting minutes and revise as required based on the Project Authority comments.

4. When the Consultant initiates formal verbal communication, minutes of the conversation must be prepared and submitted by the Consultant for Project Authority review and acceptance.
5. The Consultant is to incorporate into the schedule a review period of fifteen (15) to forty-five (45) working days for the Project Authority and MPH to review submitted documentation. Scheduling should allow for completion of subsequent deliverables while awaiting comments on drawings, DWPs and drafts. No personal information is to be included in the submitted documentation; this will expedite the redaction process. Time required for redaction of submitted documentation for sensitive information must be scheduled for in advance. The Consultant is to also allow time to incorporate or resolve the Project Authority and MPH's comments.
6. The Consultant must incorporate or resolve all Project Authority and MPH comments into the documentation prior to Project Authority acceptance.
7. The Consultant must review Project Authority and MPH's review comments and revise or respond to the comments within a period of ten (10) working days.

The following table outlines the generalized personnel categories (and the generalized roles of each category) that the Contractor must provide on an "as and when requested" basis.

#	Personnel Category	Generalized Role
1	Project Director	Coordinating programs of work, strategic direction, project risk, liaising with client, communications with regulators and stakeholders, human resources, senior review, quality assurance and control, dispute resolution, senior technical advice
2	Project Manager	Integration, scope, schedule, budget, change control, quality, human resources, communications, project risk, project related procurement, environmental protection, health and safety plans
3	Senior Environmental Consultant	Planning and designing environmental sampling and analysis work plans, developing standard operating procedures, regulatory compliance oversight, senior review, senior technical advice, technical lead, directing complex site assessment work, making recommendations, preparing reports, evaluating multiple lines of evidence
4	Junior Environmental Consultant	Supports Senior Environmental Consultant in day-to-day activities
5	Surveyor	Completion of legal surveys, coordination and approval of associated fieldwork, drawings and related deliverables
6	Utility Locator (including Confined Space Entry, where applicable)	Completion of all field utility locating work, including confined space entry, where applicable.
7	Health and Safety Specialist	Coordination and review of all matters of health and safety
8	Quality Assurance Specialist	Coordination and review of all matters of quality control and quality assurance
9	Database Specialist	Coordination and review of all database related activities
10	Field Team Coordinator	Coordination and review of all field team activities
11	Field Technologist/Technician	Completion of field activities, data entry, preparation of reports

12	Geographical Information System (GIS) Specialist	Coordination and review of all GIS/GPS related activities
13	CAD Technician/ Technologist	Completion of drafting/drawings
14	Administrative Support	Supports other members of the team and completes administrative tasks

**Project Authority Responsibilities**

1. On request, the Project Authority will provide the Consultant with reference documents identified in Section 9.0 of this document;
2. The Project Authority will be responsible to review and approve changes, if required.
3. Any changes to the scope of work, budget, and schedule must be approved by the Project Authority, prior to being undertaken;
4. The Project Authority and MPH will review formal deliverable submissions, within a period of approximately fifteen (15) to forty-five (45) working days, providing that there is a minimum five (5) working days notice time of the documents arrival. The Project Authority will submit all comments on the draft deliverable to the Consultant for revision to produce a second/final draft. Additional iterations of the review, comment and revision cycle may be required until the Project Authority accepts the final draft of deliverables, at which point a final deliverable can be completed;
5. The Project Authority will accept final deliverables once comments are resolved or incorporated to the Project Authority's satisfaction; and
6. The Project Authority will be conducting oversight to confirm compliance with accepted Plans and SOPs.
7. The Project Authority will not be providing the Consultant with any properties that can be used as the project office. There are, however, many locations in Port Hope that can be rented by the Consultant for the project office.

A summary of the major tasks, deliverables and responsibilities are shown in Table 3.

**Table 3: Summary of Major Tasks/Deliverables and Responsibilities**

Major Tasks/Deliverables	Responsible	
	Project Authority	Consultant
Scope Approval, Budget and Timeline	X	
Municipal and Regulatory Approvals	X	X
Project Oversight	X	
Technical Scope of Work	X	
Approval of SSS Consultant's Plans	X	
Project Management	X	
Contract Management and Documentation	X	
SOPs		X
Quality Assurance Plan		X
Communications Plan	X	X
Project Schedule		X
Meeting Agendas and Minutes		X

Detailed Site Investigation Plans		X
Health & Safety Plan		X
Training Plan		X
Environmental Management & Protection Plan		X
Emergency Plan		X
Security Plan		X
Field Work		X
Data Management		X
Routine Updates to Project Team		X
Cost Estimates for Completion of Work Proposed in Detailed Work Plans (DWPs)		X
DWPs & Drawings		X
Final Project Summary Reports with Lessons Learned (For both Type A and Type B sites)		X

## 6.12 Codes and Standards

The Consultant will be responsible to ensure that all work carried out to fulfill the requirements of this Statement of Work document are done in accordance with all applicable codes, standards and regulations (e.g. Ontario Ministry of Labour regulations, Ontario Ministry of the Environment regulations, Municipal By-Laws, Canada Labour Code, Professional Engineering Practice and Guidelines and Code of Ethics, Generally Accepted Accounting Principles).

## 7. SCHEDULE

The estimated period to complete this work is 55 weeks from the award of contract. When scheduling work described in this SOW, the Consultant must take into consideration and accommodate municipal works (road construction, planned road closures, emergency repairs) and annual community events planned and approved by MPH (see Appendix G, referenced in section 6.0). As such, the Consultant will be required to maintain flexibility in scheduling work around such events to minimize disruption to the community. The Consultant must maintain the project schedule that is agreed upon with the Project Authority at the project initiation.

The project schedule will adhere to the following milestone completion dates for this project:

Kick off meeting	1 week after award of contract
Review of reference documents and submission of all plans and SOPS included in Section 6.9 (items 1 to 10) as well as a project schedule	4 weeks after award of contract
Submission of sample/template SPVSD and DWP	4 weeks after award of contract
Review and approval of all plans/SOPs and schedule by Project Authority	6 weeks after award of contract
Submittal of Road Occupancy Permit (ROP) Applications	5 weeks after award of contract
Review and approval of SPVSD and DWP templates	9 weeks after award of contract
Start Field Activities	9 weeks after award of contract
Submittal of draft DWPs and associated SPVSDs for first Group of sites	14 weeks after award of contract. Subsequent Group SPVSDs/

	DWPs to be submitted in 6 week intervals following submittal of SPVSDs/DWPs for first Group.
Completion of all Field Work	29 weeks after award of contract
Completion of all draft DWPs and SPVSDs and draft report for Type A sites	44 weeks after award of contract
Completion of Draft Project Summary Report, including Lessons Learned, and soil investigation Cost Estimates	48 weeks after award of contract
Project Authority and MPH complete reviews of all draft DWPs and SPVSDs and draft report for Type A sites	50 weeks after award of contract
Project Authority complete review of Draft Project Summary Report and Cost Estimates	54 weeks after award of contract
Completion of final DWPs and SPVSDs and final report for Type A sites	53 weeks after award of contract
Completion of Final Project Summary Report, including Lessons Learned, and Proposed soil investigation Cost Estimates	57 weeks after award of contract
Final project wrap up meeting	59 weeks after award of contract

## 8. DOCUMENTATION

1. All documents must be prepared and reviewed by an Ontario Land Surveyor, P.Eng., and/or Qualified Person under Ontario Regulation 153/04, as applicable, for accuracy and adequacy prior to submission to the Project Authority. The reports must be approved/signed by a QP, but the Consultant must have appropriate staff to ensure that the radiological aspects are correct such that the QP is comfortable signing off;
2. All documents must be given a unique CNL document number and revision number. These numbers can follow the Consultant's numbering system, as long as the numbers are unique to CNL only. Note, however, that an existing CNL site and property file numbering system is currently in use and Consultant is required to apply the appropriate file and or property number to all reports generated;
3. With regards to private property owners, no personal information is to be included (as per the guidelines in Section 6.5). Likewise, to facilitate the review process, no personal information (as per Section 6.5) is to be included in the SPVSDs and DWPs. All other documents and associated appendices must include the date of preparation and must include names of the persons who prepared, reviewed and approved the document (as well as any required signatures for Plans of Survey, Gamma Surveys, Utility Maps, etc.);
4. All documents must be complete, valid, legible, retrievable and traceable;
5. All documents must be produced using Microsoft Office;
6. All final documents must be submitted as two (2) paper copies, one (1) electronic editable MS Word copy and one (1) electronic Adobe PDF copy, with appropriate bookmarks and cross-references;



7. All final documents must be sent with a signed transmittal sheet stating what documents are being sent, the number of copies and the action being requested;
8. All review comments will be consolidated by the Project Authority and returned to the Consultant with a marked up copy if applicable;
9. The Consultant must return the comments indicating the planned incorporation or resolution of the Project Authority comments prior to finalizing the document.

## 9. REFERENCE DOCUMENTS

The Consultant should review and familiarize their team on the requirements of the following specific reference documentation listed below. The reference documents will be available for review, posted as an attachment on GETS ([buyandsell.gc.ca](http://buyandsell.gc.ca)) during the proposal preparation period.

1. *Port Hope Area Initiative Project – Phase II Clean-up Criteria Summary Table, Port Hope Project, Revision 3, 4501-01611-TD-001, February 2, 2015;*
2. *Port Hope Waste Management Project – Waste Nuclear Substance License, WNSL-WI-2310.00/2022, CNCS, November 2012;*
3. *Occupational Health and Safety Plan (OHSP), Port Hope Area Initiative, Document 4500-510400-PLA-001, Revision 1, January 2012;*
4. *Protocol for Noise Control, Port Hope Area Initiative, Document 4500-509241-REQ-002, Revision D1 (June 2012);*
5. *Gamma Ray Survey of Roads in the Port Hope Area, LLRWMO-03701-ENA-12012, Final Report, February 2002, Prepared by Gamma-Bob Inc.*

In addition to the above documents, the following reference materials are relevant to the Scope of Work and are available to the Consultant as a source of background information:

1. On the PHAI official website ([www.phai.ca](http://www.phai.ca))
  - a) Executive Summary from *Screening Report – The Port Hope Long-Term Low-Level Radioactive Waste Management Project*, (2006 December).
  - b) Executive Summary from *Environmental Assessment Study Report (EASR) for Port Hope – Executive Summary*.
  - c) *Agreement for the Cleanup and Long-Term Safe Management of Low-Level Radioactive Waste Situate in the Municipality of Port Hope, the Township of Hope and the Municipality of Clarington, signed by the municipalities in 2000 December and the Minister of Natural Resources Canada in 2001 March.*
2. On MPH Website ([www.porthope.ca](http://www.porthope.ca))
  - a) *Standard Operating Guidelines and Procedures For Use on PHAI Projects, July 15, 2014*

**APPENDIX A  
TABLES AND FIGURES**

**Figure 2A: Map of Ward 1 and Part of Ward 2 in the Municipality of Port Hope**

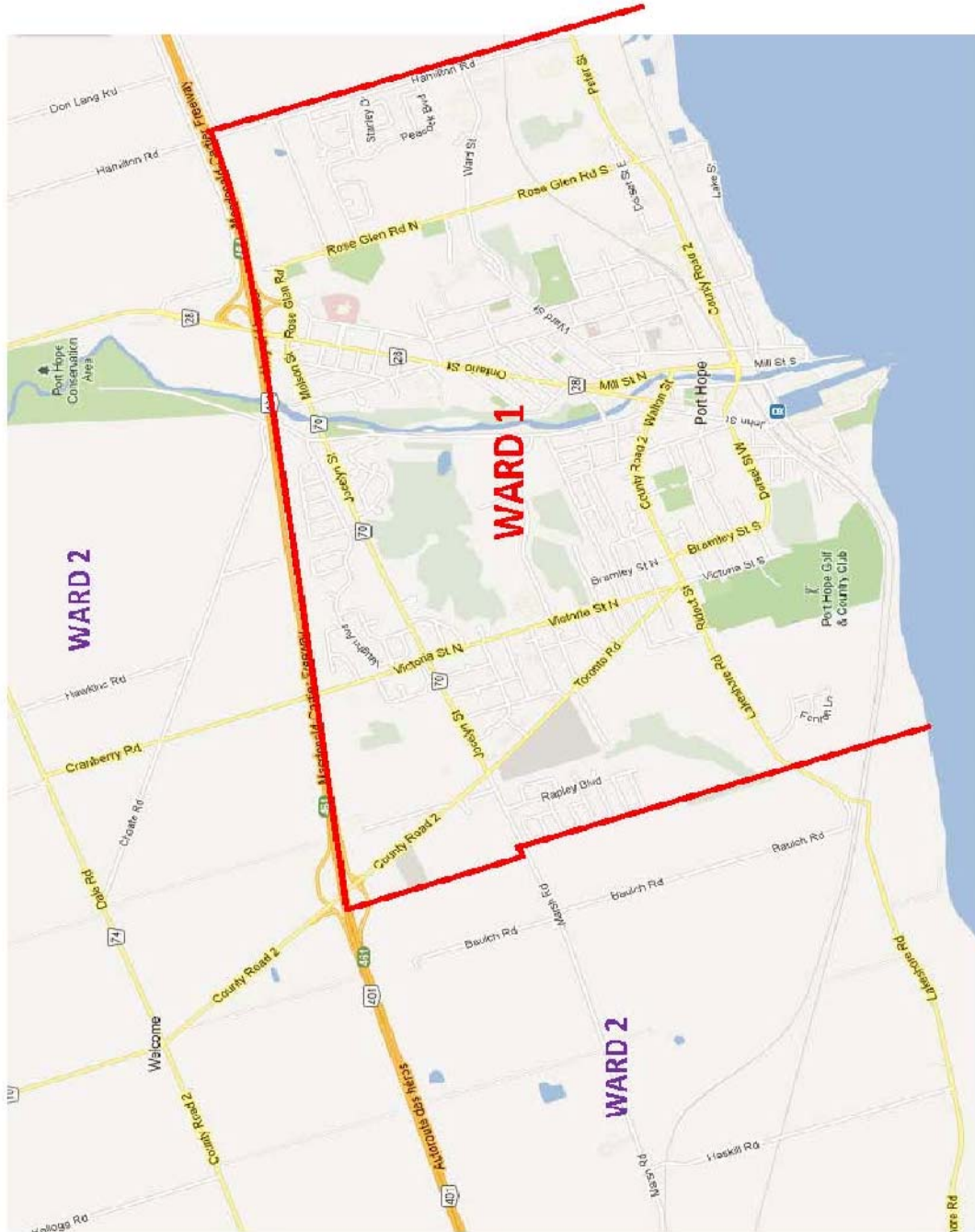


Figure 2A: Map showing approximate locations of proposed work

**Figure 3A: Water Distribution System Watermain Material (AECOM, 2012 for MPH)**

Pertinent information (titles, legends, landmarks, disclaimers, etc.) in the site plans has been translated for information purposes only and does not represent an official translation of these 3<sup>rd</sup> party documents, which themselves have been provided by the Municipality of Port Hope (MPH) to PHAI (subject to a separate agreement) on an “as-is” basis with no representation or warranty (whether express or implied) as to their fitness for use, accuracy or completeness.

**Figure 4A: Existing Infrastructure and Zoning Map: Sanitary System (AECOM, 2012 for MPH)**

Pertinent information (titles, legends, landmarks, disclaimers, etc.) in the site plans has been translated for information purposes only and does not represent an official translation of these 3<sup>rd</sup> party documents, which themselves have been provided by the Municipality of Port Hope (MPH) to PHAI (subject to a separate agreement) on an “as-is” basis with no representation or warranty (whether express or implied) as to their fitness for use, accuracy or completeness.

**APPENDIX B**  
**SUMMARY TABLE OF HISTORICAL FILE INFORMATION**  
**FROM LLRWMO**

**APPENDIX C**  
**LIST OF EQUIPMENT & PROTOCOLS**  
**USED BY LLRWMO AND PHAI MO**





## List of Equipment:

### Ludlum Model 19 p/n 48-1615

- Low level (microR) gamma survey meter. The Ludlum 19 is an exposure rate, energy dependent, non-discriminating meter.
- Detector uses a 1" x 1" sodium iodide(Nal(TI)) scintillator.
- Analog front display that indicates two scale ranges 0-25 and 0-50 in microR/h.
- Switch operated range selections 0-25 uR/h, 0-50 uR/h, 0-250 uR/h, 0-500 uR/h, 0-5000 uR/h.
- Require the Ludlum Model 19 with the following:
  - Adjustment to 5000 scale potentiometer/resistor to accommodate CNL calibration. Reason: During point source(105.9 uCi radium needle) calibration 5000 scale reads off scale at 80% of full reading and 500 scale reads off scale at 80% of full reading. (See final paragraph below)
  - Change meter driver response from 22 sec. to 10 sec.
  - Equip with Ludlum Audio Divider p/n 5363-604.

### Ludlum Model 3 p/n 48-1605

- Portable radiation survey meter. Instrument can be used with any Ludlum Geiger-Muller probe and many scintillation detectors.
- Analog display that indicates one scale 0-5000 in counts/minute(cpm).
- Switch operated range selections x 0.1, x1,x10,x100.
- Model 3 meter with an MHV connector.
- Instrument with meter dial 202-002 (0-5000K in counts/minute).

### Ludlum Model 44-9 p/n 1-1539 (Geiger-Muller (Pancake) Detector)

- Detects Alpha, Beta and Gamma radiation.
- Pancake type halogen quenched Geiger-Muller detector with thin mica window. (GM tube can be easily removed and replaced if broken. Uses Ludlum Model 44-9 Geiger-Muller tubes p/n 01-5008).
- Energy dependent.
- MHV connector.
- Replacement screens p/n 21-9586 for Ludlum Model 44-9 detector.

### CABLES

- RG58 shielded coaxial cable with strain relief.
- MHV connectors (both ends).

Eberline Instruments: Portable Survey Meters/detectors for down-hole gamma logging. Note the following combinations cannot be used in water.

1. ASP-2e in combination with a SP8 Gamma Scintillator. Instrument and detector use MHV connector. The ASP-2e will work in combination with Geiger Mueller, gas proportional or scintillation probes. The SP8 is a scintillation probe. At minimum a 6m cable is required.

2. E-600 multi-purpose meter with a SP8 Gamma Scintillator. At minimum a 6m cable is required.

Ludlum Instruments: Portable Survey Meters/detectors for down-hole gamma logging **in water**.

1. Ludlum 2241-2 Digital Scaler Ratemeter with 2 channels set for reading in uR/h in combination with Ludlum 44-2-14 Gamma Scintillator. At a minimum a 6m cable is required.

Eberline Instruments: Portable Survey Meters for Alpha and Beta and Alpha/Beta Surveys and frisking.

1. ASP-2e or E-600 in combination with HP-380 A alpha scintillator, 100cm<sup>2</sup>
2. ASP-2e or E-600 in combination with HP-380 B beta scintillator, 100cm<sup>2</sup>
3. ASP-2e or E-600 in combination with HP-380 AB alpha/beta scintillator, 100cm<sup>2</sup>

ASP2e and E600 instruments can be used in combination with Ludlum alpha detector 43-90 and Ludlum beta detector 44-116.

Innov – X Canada XRF Equipment

Hand-held XRF – Delta Standard – Ta/Au anode with soil exploration option.

Bench-top XRF X-5000 Xpress Analyzer – Ta Anode with soil exploration option.

### **Protocols**

The Consultant must engage the LLRWMO in Port Hope, Ontario to determine the exposure rate sensitivities in cps/uR/h for energy dependent non-discriminating scintillation detectors. It is expected that the consultant possess the necessary capability and the appropriate check sources representing the energies observed by the PHAI project (e.g. U-238, Th-230, Ra-226) to perform standard response checks and detector efficiencies for Geiger-Mueller detectors. The equipment used by the Consultant must be certified calibrated by the supplier prior to determination of detector sensitivities by the LLRWMO. The determination of detector sensitivities by the LLRWMO is not considered to be a formal instrument calibration.

The detector sensitivities are determined based on the as-received condition of the instruments. No attempt will be made to adjust operating high voltages of the rate meters or any other operating parameters or to repair broken instruments, as to do so would void the supplier calibration of the instrument. Formal calibration of the instruments remains the responsibility of the consultant.

The LLRWMO requires that a chain of custody accompany each request along with a copy of the calibration certificate for each instrument/detector. In addition, each instrument should have fully charged batteries and appropriate working cabling. Each instrument/detector should have a legible serial number fixed to each of the rate meter and the detector. All instruments should be

packaged in appropriate shipping containers so as to prevent damage during transport. The LLRWMO requests that more than 2 weeks advanced notice be given by the Consultant (or as much lead time as possible) prior to receipt of the instruments; however, barring unforeseen situations 2 weeks' notice should be sufficient. Once sensitivities have been completed and confirmed, a summary email will be sent to the consultant (copied to PHAI MO Project Manager) including suggested time of pick up.

To determine the exposure rate sensitivity for a detector requires the collection of counts data using the calibration pads at the LLRWMO Quonset building in Port Hope, ON, input of the data to a calculation spreadsheet and confirmation of the calculated exposure rate sensitivity using a response check secondary point source in the LLRWMO laboratory. Preparatory to this work, on receipt of the instrument a function check of the instrument must be completed and the operating voltage checked. Once the detector sensitivity is determined and confirmed the appropriate labelling is affixed to the detector. The final step is the preparation of the email report to the consultant.

Turnaround time will be dependent on the number of detectors required at any one time by the Consultant. Based on a requirement that does not exceed 15 instruments/detectors, a two week turnaround to determine sensitivities can be expected.

**APPENDIX D**  
**TABLE OF POSSIBLE RELEVANT MUNICIPAL ENGINEERED**  
**DRAWINGS FOR TYPE B SITES & SAMPLE DRAWINGS**

**APPENDIX E**  
**DRAFT TEMPLATE FOR RECORDING GAMMA RADIATION SURVEY**  
**RESULTS**

**APPENDIX F**  
**PORT HOPE EVENTS LISTING**

There is a variety of event activity that occurs within the Municipality throughout the year. Below is a list of annual events broken out by month. This list does not include non-annual events, such as Relays, Processional awareness walks, Open Houses, Events at various Municipal and non-municipal facilities.

Additional event details will be circulated through the Special Events Review Committee as event requests are received. Other event info can be found on the online event calendar located at [www.visitporthope.ca](http://www.visitporthope.ca).

Please note that these events will be confirmed each year and notification of final details (date, time, closures, route maps, etc.) will be sent out. These dates are all approximate and may be subject to change.

## January

**New Year's Day:** Annual Levee at Town Hall

**Last week in January/first week in February:** Meal Deals  
Dining Promotion at various local restaurants

## February

**February to March:** Thomey Farm Maple Syrup Days

See a modern sugar bush operation compared to the old fashion way, free tractor and wagon rides, free samples. 10am – 4pm at Thomey Farm, 6259 Dale Rd, Port Hope, 905-885-9844, [mapledog@sympatico.ca](mailto:mapledog@sympatico.ca)

**First Weekend in February:** Ganaraska Railway Modellers Annual Model Train Show.

Working model train displays, vendors and exhibits, Port Hope Recreation Centre, 62 McCaul Street. Saturday 10am- 4:30pm, Sunday 10am – 3pm, 905-800-0410

**Third Weekend in February:** Girlfriends Getaway Weekend

Promotional weekend throughout Port Hope. Lots of activity downtown, expect lots of tourists

## March

**February – March:** Thomey Farm Maple Syrup Days,

See a modern sugar bush operation compared to the old fashion way, free tractor and wagon rides, free samples. 10am – 4pm at Thomey Farm, 6259 Dale Rd, Port Hope, 905-885-9844, [mapledog@sympatico.ca](mailto:mapledog@sympatico.ca)

## April

**First Weekend in April (April 4, 2015):** Float your Fanny Down the Ganny      **Road Closures, See Map**

Annual river race down the Ganaraska River. Canoes and Kayaks launch from Canton Bridge. Crazy Crafts launch from Sylvan Glen. Finish Line Barrett Street Bridge area. Fannyville (event grounds) along Cavan Street Park. See attached river map and road closure map. Set up Begins Friday, Race takes place, first Saturday in April. [www.floatyourfanny.ca](http://www.floatyourfanny.ca)

**4<sup>th</sup> Thursday of April:** Civic Awards Ceremony

Awards night hosted at the Capitol Theatre Port Hope to recognize community volunteers and outstanding achievements. [www.porthopecivicawards.ca](http://www.porthopecivicawards.ca)

## May

### **May – October:** Canadian Firefighters Museum Open for the season

Canadian Firefighters' Museum showcases a fine collection of equipment and trucks through the ages open 7 days a week, 9 am - 4 pm until Thanksgiving, 95 Mill Street South. 905-885-8985  
[www.firemuseumcanada.com](http://www.firemuseumcanada.com)

### **May – October:** Port Hope Farmers' Market Open for the season

Every Saturday from 8am until noon behind the Town Hall, also Wednesday afternoons, 1pm – 5pm, Bargain Store parking lot, Mill Street. Watch for special event days. 905-342-3824  
[www.porthopecivicawards.ca](http://www.porthopecivicawards.ca)

### **First Saturday in May:** Battle of Atlantic

### **Road Closures, See Map**

Parade and Cenotaph Service. Parade Start location 17 Mill Street. Remembrance Service held at Cenotaph in Memorial Park. Please see attached map.

### **Second Saturday in May:** Port Hope Archives Spring Open House

Public welcome to tour the archives collections, enjoy free refreshments, 12-4pm, 905 885 1673

### **Third Weekend in May (May 23, 2015):** Ganaraska 250 **See Map**

Vintage motorcycle event and road rally. Held at the Town Park Recreation Centre (road rally takes place on a route throughout Northumberland). Event including set up runs from Friday through until Sunday. Please see attached info. [www.ganaraska250.ca](http://www.ganaraska250.ca)

### **Last Thursday in May:** Heart & Stroke Big Bike

### **Road Closures, See Map**

Heart & Stroke Big Bike holds 30 people – parked alongside Town Hall. Travels route multiple times throughout the day. Please see attached route map.

## June

### **May – October:** Canadian Firefighters Museum Open for the season

Canadian Firefighters' Museum showcases a fine collection of equipment and trucks through the ages open 7 days a week, 9 am - 4 pm until Thanksgiving, 95 Mill Street South. 905-885-8985  
[www.firemuseumcanada.com](http://www.firemuseumcanada.com)

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[www.porthopecivicawards.ca](http://www.porthopecivicawards.ca)

### **June – August:** Port Hope Festival Theatre Opens for the Season

Performances at the Capitol Theatre. 8 shows a week, [www.capitoltheatre.com](http://www.capitoltheatre.com)

### **First Weekend in June:** Doors Open



Northumberland welcomes the public with guided and self-guided tours through variety of venues. Port Hope Venues to be announced.

## July

**May – October:** Canadian Firefighters Museum Open for the season

Canadian Firefighters' Museum showcases a fine collection of equipment and trucks through the ages open 7 days a week, 9 am - 4 pm until Thanksgiving, 95 Mill Street South. 905-885-8985  
[www.firemuseumcanada.com](http://www.firemuseumcanada.com)

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Every Saturday from 8am until noon behind the Town Hall, also Wednesday afternoons, 1pm – 5pm, Bargain Store parking lot, Mill Street. Watch for special event days. 905-342-3824  
[www.porthopefarmersmarket.ca](http://www.porthopefarmersmarket.ca)

**July 1:** Canada Day

**Road Closures, See Map**

Movie in Memorial Park Jun 30. Parade through downtown July 1 @ 11am, celebrations in Memorial Park including beer tent and live entertainment until 10pm, Fireworks at East beach @ 10pm. Set up in Memorial Park takes place June 29, final clean up takes place July 2. Please see Road Closure maps attached

**June – August:** Port Hope Festival Theatre Opens for the Season

Performances at the Capitol Theatre. 8 shows a week, [www.capitoltheatre.com](http://www.capitoltheatre.com)

**Every Thursday in July & August 7:00pm:** Concert Bandshell Series

Summer concert series in Memorial Park. Every Thursday night in July and August. Showtime 7:00pm. Set up 5:00pm

**Second Weekend in July:** HBIA Sidewalk Sale

Annual summer sidewalk Sale throughout downtown. [www.porthopehbia.com](http://www.porthopehbia.com)

**Second Saturday in July:** Family Safety Day

Annual yard sale and safety day in Memorial Park. Port Hope Fire Services set up displays and have trucks parked alongside park to hosting fire awareness/prevention activities throughout the day

**Second Saturday in July:** Family Fishing Day

A license free family fishing event held at the Port Hope Marina Fish Cleaning Station from 8:00am until 3:00pm (hosted during Ontario's Family Fishing Week). The registration tent will be located just north of Port Hope's Marina (127 Mill Street S) near the Fish cleaning station along the Ganaraska River – participants will fish the harbour.

**Summer:** Outdoor Movie Series

Located in Memorial Park (held three times throughout the summer on a Wednesday evening, showtime is dusk)

## August

**May – October:** Canadian Firefighters Museum Open for the season

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Canadian Firefighters' Museum showcases a fine collection of equipment and trucks through the ages open 7 days a week, 9 am - 4 pm until Thanksgiving, 95 Mill Street South. 905-885-8985  
[www.firemuseumcanada.com](http://www.firemuseumcanada.com)

**May – October:** Port Hope Farmers' Market Open for the season

Every Saturday from 8am until noon behind the Town Hall, also Wednesday afternoons, 1pm – 5pm, Bargain Store parking lot, Mill Street. Watch for special event days. 905-342-3824  
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**Summer:** Outdoor Movie Series

Located in Memorial Park (held three times throughout the summer on a Wednesday evening, showtime is dusk)

**Every Thursday in July & August 7:00pm:** Concert Bandshell Series

Summer concert series in Memorial Park. Every Thursday night in July and August. Showtime 7:00pm. Set up 5:00pm

**Second Weekend in August (Aug 8, 2015):** Farmers Market Arts Festival **Parking Lot Closure, See Map**

Event held on Town Hall Parking Lot & Lawn. Additional event activities in Memorial Park. Road closure Please see attached map.

**Second Weekend in August (Aug 8, 2015):** Walton Street Waterslide **Road Closures, See Map**

Critical Mass hosting a 300ft slip n' slide (in conjunction with the Arts Festival) downtown Port Hope. Road Closures. Please see attached map.

**Second Sunday in August:** Decoration Day Parade

Royal Canadian Legion Annual Decoration Day Parade from 113 Toronto Road, Port Hope Area Initiative Office, to the Union Cemetery at 1:30 p.m. and return at 2:30 p.m. Port Hope Police Services and Port Hope Works staff on site to ensure a safe crossing

**Third Weekend in August:** Trike Fest

Memorial Park

## September

**May – October:** Canadian Firefighters Museum Open for the season

Canadian Firefighters' Museum showcases a fine collection of equipment and trucks through the ages open 7 days a week, 9 am - 4 pm until Thanksgiving, 95 Mill Street South. 905-885-8985  
[www.firemuseumcanada.com](http://www.firemuseumcanada.com)

**May – October:** Port Hope Farmers' Market Open for the season

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Every Saturday from 8am until noon behind the Town Hall, also Wednesday afternoons, 1pm – 5pm, Bargain Store parking lot, Mill Street. Watch for special event days. 905-342-3824  
[www.porthopefarmersmarket.ca](http://www.porthopefarmersmarket.ca)

**Second weekend in September: Northumberland Hills Studio Tour**

Open houses at various artist studios throughout Northumberland County  
<http://www.northumberlandstudiotour.com/>

**Second Weekend in September (11, 12 & 13, 2015): All Canadian Jazz Festival Rd Closure, See Map**

Full program of events in Memorial Park Fri-Sun. Parade through downtown Saturday morning. Set up in Memorial Park begins Wednesday and final clean up in finished by Monday. Please see Road Closure maps attached. [www.allcanadianjazz.ca](http://www.allcanadianjazz.ca)

**Second weekend in September: Psychic & Holistic Expo**

Town Park Recreation Centre (62 McCaul Street)

**Third Sunday in September: Terry Fox Run See Map**

Run participants meet behind Town Hall on lawn. Two route options; 1k or 10km. Please see attached route map. [www.terryfox.org](http://www.terryfox.org)

**Third weekend in September (18, 19 & 20, 2015): Fall Fair**

Fair hosted at Town Park Recreation Centre and all surrounding park lands. Set up begins Tuesday before and final clean up wrapped up by Tuesday after.  
[www.porthopefair.com](http://www.porthopefair.com)

## October

**May – October: Canadian Firefighters Museum Open for the season**

Canadian Firefighters' Museum showcases a fine collection of equipment and trucks through the ages open 7 days a week, 9 am - 4 pm until Thanksgiving, 95 Mill Street South. 905-885-8985  
[www.firemuseumcanada.com](http://www.firemuseumcanada.com)

**May – October: Port Hope Farmers' Market Open for the season**

Every Saturday from 8am until noon behind the Town Hall, also Wednesday afternoons, 1pm – 5pm, Bargain Store parking lot, Mill Street. Watch for special event days. 905-342-3824  
[www.porthopefarmersmarket.ca](http://www.porthopefarmersmarket.ca)

**First Saturday & Sunday in October (Oct 3 & 4, 2015): ACO House Tour**

Open houses at various Port Hope homes – houses change every year. 1500 tickets sold.  
[www.acoporthope.ca](http://www.acoporthope.ca)

## November

**November 11: Remembrance Day**

**Road Closures, See Map**

Parade through downtown from Lent Lane to Memorial Park. Remembrance ceremony in Memorial Park. Please see attached route map. Additional service taking place at Canton

Cenotaph at 2:00pm

**Last Friday in November - December: Capitol Christmas**

Hundreds of lights and tress on display at the Theatre. Runs until Christmas

**Last Friday in November (November 27, 2015): Candlelight Walk      **Road Closures, See Map****

Procession through downtown from Our Lady of Mercy Church (155 Walton St) to Memorial Park. Lighting ceremony in Park. Road Closure Map attached (light display in Memorial park remains up until first week in January)

**Last Saturday in November (November 28, 2015): Santa Claus Parade **Road Closures, See Map****

Parade through downtown. Parade staging: Bramley & Ridout. Parade disperses: Out front Town Hall (Queen Street). Parade starts 1:00pm. [www.porthopesantaclausparade.ca](http://www.porthopesantaclausparade.ca) Road Closure map attached

## **December**

**APPENDIX G  
TEMPLATE FOR PROJECT TRACKING SPREADSHEET  
FOR INCLUSION IN BI-WEEKLY UPDATES**

**APPENDIX H**  
**TEMPLATE FOR BI-WEEKLY PROJECT STATUS UPDATE**  
**REPORTING**

**PROJECT STATUS REPORT**  
**Port Hope Road Allowance Survey**  
**Month Ending: Month / Year**

**Project Status Summary**  
00%

**Percent Complete:**

Scope	Schedule	Costs	Risks	Quality
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NOTE: This section provides quick executive overview of the status of the project. It is intended for high level management so there is no need to provide too much detail on the project. The bar above can provide a colour coded status of the project. **Yellow** means cautionary and **Red** is a warning symbol for where the project needs tighter control. A colour of **Yellow** or **Red** should be accompanied with a paragraph explaining its status.

**Work Planned for Last Month** NOTE: Copy the "Worked Planned for Next Week" section from last week's status report

**Work Completed Last Week** NOTE: Quick highlight of work performed, provide any milestones and deliverables you met.

1. Kick-off meeting and minutes – conducted with draft minutes circulated, receiving comments before finalizing minutes
2. QA/QC Plan – draft plan comments received and revisions made, awaiting internal review and approval of final, expect to submit this to you on Tuesday
3. HASP – Plan has been drafted, needs to be reviewed and approved by myself, expect to submit this to you on Tuesday
4. Scheduler training occurred today; Joe Smith sat in on the training
5. Scheduling calls are planned to commence on Tuesday of next week
6. Uniforms (shirts & hats) have been ordered

**Work Planned for Next Week** NOTE: Quick overview of next weeks plans, provide any milestones and deliverables you wish to achieve

**Open Issues** NOTE: Show status of issues as well

**Open Risks**

**Deliverables and Milestones**

Milestone	Planned	Forecast	Actual	Status
Deliverable	Planned	Forecast	Actual	Status


**Open Change Requests** NOTE: Use this section to track all changes

Change Request Name	Change Request Number	Request Date	Current Status

**Key Performance Indicators** NOTE: can be in format below or in paragraph form

**Schedule** – Project is **Ahead/Behind** Schedule

Schedule Variance: \$0000.00

Schedule Performance Index: x.xx

**Cost** – Project is **Over/Under** Budget

Cost Variance: \$000.00

Cost Performance Index: x.xx