	EXAMPLE OF SITE RESURVEY WORK PLAN			
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File Review Consultant Firm:			
Prepared By:		Date Prepared:	
Reviewed By:		Date of Review:	

INTERIOR RADON GAS SURVEY

☐ No Site Building Present (Radon gas survey is not required).


☒ Site Building Present

Standard Radon Gas Survey to be completed. Survey to follow the following guidelines:

- One monitor to be placed in living area on main floor.
- One monitor to be placed in basement, if basement present.
- Measurements to be completed during both the summer and winter months (the Resurvey Contractor is to confirm with AECL/PWGSC if summer or winter radon measurements have already been obtained).
- Measurement to be completed using devices as specified by AECL/PWGSC following standard operating procedures (SOPs) and manufacturer's equipment operating instructions.

Areas of concern to be investigated with respect to the radon gas survey at this site are:

None

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EXTERIOR GAMMA RADIATION SURVEY

Standard Exterior Gamma Radiation Survey to be completed at site, as marked below:

- ☒ Property less than 5000 m²: Gamma measurements on a 1 m by 1 m grid
- ☐ Property greater than 5000 m²: Gamma measurements on a 3 m by 3 m grid
- ☐ Combination of the above conditions (e.g., home on a lot greater than 5000 m²). In this case, the first 5,000 m² around the home that is clearly used as the residential part of the property will be assessed as a property less than 5,000 m² in size, while the remainder of the property will be assessed as a property greater than 5,000 m² in size.

Survey to follow the following guidelines:

- Gamma measurements to be taken at a height of 15 cm and at a height of 1 m
- Survey to be completed following SOPs and manufacturer's equipment operating instructions

Areas of concern to be investigated with respect to the exterior gamma radiation survey at this site are:

None

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EXTERIOR OBJECT AND SURFACE CONTAMINATION SURVEY

Standard Exterior Surface Contamination Survey to be completed at site. Survey includes all exterior surfaces identified as a recognizable artifact from the Eldorado factory or which are identified during the Exterior Gamma Radiation Survey. Exterior objects may include structural members, radium containing paints or tools/items removed from the plant, etc.

Survey to be completed following SOPs and manufacturer's equipment operating instructions.

Areas of concern to be investigated with respect to the exterior object and surface contamination survey at this site are:

None

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INTERIOR GAMMA RADIATION SURVEY

☐ No Site Building Present (interior gamma radiation survey is not required)

☒ Site Building Present

Standard Interior Gamma Radiation Survey to be completed at site, as marked below.

☒ Type A properties (based upon interior impact preliminary site type classification) - Interior rooms are to be assessed on a 5-point system (4 corners plus 1 centre).

☐ Type C and E properties – Interior rooms are to be assessed on a 1 m grid system.


☐ Type C1 and E1 properties - Interior rooms are to be assessed on a 1 m grid system. Particular attention is to be paid to those areas where previous remedial activities were completed (as detailed below).

Survey to follow the following guidelines:

- Attics and crawlspaces to be assessed if indication of contamination leads to those areas.
- Survey is to be completed at a height of 1 m.
- Survey to be completed following SOPs and manufacturer's equipment operating instructions.

Areas of concern to be investigated with respect to the interior gamma radiation survey at this site are:

_____ None _____

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INTERIOR OBJECT AND SURFACE CONTAMINATION SURVEY

☐ No Site Building Present (interior object and surface contamination survey is not required).


☒ Site Building Present

Standard Interior Surface Contamination Survey to be completed at site. Survey includes all interior surfaces identified as a recognizable artifact from the Eldorado factory or which are identified during the Interior Gamma Radiation Survey. Interior objects may include structural members, radium containing paints or tools/items removed from the plant, etc.

Survey to be completed following SOPs and manufacturer's equipment operating instructions.

Areas of concern to be investigated with respect to the interior object and surface contamination survey at this site are:

_____ None _____

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EXTERIOR DRILLING PROGRAM

Drilling and soil analysis, based on Interior Radon Gas Assessment, to be completed at site as marked below

Radon gas preliminary site type classification:

- ☐ No Site Building Present (Radon soil assessment not required).
- ☒ Type A – No boreholes required around building perimeter.
- ☐ Type B1 - One borehole per 10 m² through area(s) of previous remediation near perimeter of building, and 1 borehole per side, just outside of the perimeter of the area where the previous remediation was conducted to ensure sufficient horizontal and vertical extents were remediated previously. Three soil samples will be submitted from each borehole for laboratory analysis of the signature parameters. One of these samples will be from the surface, one sample from the depth that waste was found at, and one sample from 15 cm below the fill/native interface.
- ☐ Type C – One borehole per side of building. Three soil samples from each borehole will be submitted for laboratory analysis of the signature parameters. One of these samples will be from the surface, one sample from the location of the waste and one sample from 15 cm below the fill/native interface.
- If no waste is identified in the soil boring and there is a minimum of 15 cm of fill material identified, the second sample will be taken in the middle of the fill material. If only native material is encountered, two samples will be submitted for laboratory analysis of the signature parameters: one sample from the surface, and one sample from 30 cm below the top soil/native interface.
- ☐ Type D - One bore hole per 5 linear metres around perimeter of building. Three soil samples from each borehole will be submitted for laboratory analysis of the signature parameters. One of these samples will be from the surface, one sample from the location of the waste and one sample from 15 cm below the fill/native interface.

If no waste is identified in the soil boring and there is a minimum of 15 cm of fill material identified, the second sample will be taken in the middle of the fill material. If only native material is encountered, two samples will be submitted for laboratory analysis of the signature parameters: one sample from the surface, and one sample from 30 cm below the top soil/native interface.

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- Note: 1) Soil samples shall be collected and submitted for laboratory analysis, as a minimum, from the surface of the property, at the location of the highest down-hole logging measurement, and at a depth greater than where the down-hole logging measurement indicates background measurements, as directed in the above sections.
- 2) When sampling, the depth indicated represents the top of the sample to be collected (i.e. for a sample with an indicated depth or 30 cm, the sample would consist of soil from a depth of 30 - 45 cm).

All boreholes to be extended to a minimum depth of 2.0 metres below ground surface. All boreholes to be extended at least 0.5 metres past the fill/native interface.

Number of boreholes to be advanced at property based on the interior radon impact assessment: __N/A__

Soil samples are to be collected in 15 cm increments along the length of the borehole.


Expected depth of contamination: __ N/A __

Number of samples per borehole (if different than standard number of samples above): __ N/A ____

Four Signature COPCs (uranium, arsenic, thorium-230 and radium-226) to be analyzed.

Total number of samples to be collected at site N/A

See attached borehole location drawing.

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Drilling and soil analysis based on Exterior Impact Assessment to be completed at site, as marked below

Exterior Impact preliminary site type classification and boreholes required:

☒ Type A – Min: 2 boreholes per property, Max: 10 boreholes/ha. Two soil samples from each borehole will be submitted for laboratory analysis of the signature parameters. One of these samples will be from the surface, and if there is a minimum of 15 cm of fill material identified, the second sample will be taken in the middle of the fill material. If no fill material is identified, the second sample will be taken at 30 cm below the top soil/native interface.

☐ Type B – Min: 2 boreholes per property, Max: 10 boreholes per ha. Three soil samples from each borehole will be submitted for laboratory analysis of the signature parameters. One of these samples will be from the surface, one sample from the location of the LLRW and one sample from 15 cm below the fill/native interface.


If no waste is identified in the soil boring and there is a minimum of 15 cm of fill material identified, the second sample will be taken in the middle of the fill material. If only native material is encountered, two samples will be submitted for laboratory analysis of the signature parameters: one sample from the surface, and one sample from 30 cm below the top soil/native interface.

☐ Type C – Min: 6 boreholes per property, Max: 20 boreholes per ha. Three soil samples from each borehole will be submitted for laboratory analysis of the signature parameters. One of these samples will be from the surface, one sample from the location of the LLRW and one sample from 15 cm below the fill/native interface.

If no waste is identified in the soil boring and there is a minimum of 15 cm of fill material identified, the second sample will be taken in the middle of the fill material. If only native material is encountered, two samples will be submitted for laboratory analysis of the signature parameters: one sample from the surface, and one sample from 30 cm below the top soil/native interface.

☐ Type C1 - **Previously remediated area:** 1 borehole per 10 m² of previously remediated area and 1 borehole per side along perimeter of the area of previous remediation. Three soil samples will be submitted from each borehole for laboratory analysis of the signature parameters. One of these samples will be from the surface, one sample from the location of the LLRW and one sample from 15 cm below the fill/native interface.

Remainder of property: Min: 6 boreholes per property, Max: 20 boreholes/ha. Three soil samples from each borehole will be submitted for laboratory analysis of the signature parameters.

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One of these samples will be from the surface, one sample from the location of the LLRW and one sample from 15 cm below the fill/native interface.

If no waste is identified in the soil boring and there is a minimum of 15 cm of fill material identified, the second sample will be taken in the middle of the fill material. If only native material is encountered, two samples will be submitted for laboratory analysis of the signature parameters: one sample from the surface, and one sample from 30 cm below the top soil/native interface.

- ☐ Type D – Min: 10 boreholes per property, Max: 20 boreholes/ha. Three soil samples from each borehole will be submitted for laboratory analysis of the signature parameters. One of these samples will be from the surface, one sample from the location of the LLRW and one sample from 15 cm below the fill/native interface.


If no waste is identified in the soil boring and there is a minimum of 15 cm of fill material identified, the second sample will be taken in the middle of the fill material. If only native material is encountered, two samples will be submitted for laboratory analysis of the signature parameters: one sample from the surface, and one sample from 30 cm below the top soil/native interface.

- ☐ Type D1 - **Previously remediated area:** 1 borehole per 10 m² of previously remediated area and 1 borehole per side along perimeter of the area of previous remediation. Three soil samples will be submitted from each borehole for laboratory analysis of the signature parameters. One of these samples will be from the surface, one sample from the location of the LLRW and one sample from 15 cm below the fill/native interface.

Remainder of property: Min. 10 boreholes per property, Max: 20 boreholes/ha. Three soil samples from each borehole will be submitted for laboratory analysis of the signature parameters. One of these samples will be from the surface, one sample from the location of the LLRW and one sample from 15 cm below the fill/native interface.

If no waste is identified in the soil boring and there is a minimum of 15 cm of fill material identified, the second sample will be taken in the middle of the fill material. If only native material is encountered, two samples will be submitted for laboratory analysis of the signature parameters: one sample from the surface, and one sample from 30 cm below the top soil/native interface.

- Note: 1) Soil samples shall be collected and submitted for laboratory analysis, as a minimum, from the surface of the property, at the location of the highest down-hole logging measurement, and at a depth greater than where the down-hole logging measurement indicates background measurements, as directed in the above sections.

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- 2) When sampling, the depth indicated represents the top of the sample to be collected (i.e. for a sample with an indicated depth of 30 cm, the sample would consist of soil from a depth of 30 - 45 cm).

All boreholes to be extended to a minimum depth of 2.0 metres below ground surface. All boreholes to be extended at least 0.5 metres past the fill/native interface.

Number of boreholes to be advanced at property for the purpose of exterior impact assessment: 2

Soil samples are to be collected in 15 cm increments along the length of the borehole.

Expected depth of contamination: No indication of contamination.

Number of samples per borehole (if different than standard number of samples above): N/A


Four Signature COPCs (uranium, arsenic, thorium-230 and radium-226) to be analyzed.

Total number of samples to be collected at site: 4

See attached borehole location drawing.

Survey to follow the following guidelines:

- XRF measurement interval
 - Type A or B properties: 30 cm increments
 - Type C, D properties: 15 cm increments
- Down hole logging measurement interval: 15 cm
- Core logging measurement interval: 15 cm

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Rationale for the Resurvey Work Plan, including any extra boreholes included in the Resurvey Work Plan:

Type A exterior classification: minimum 2 boreholes required. Minimal front yard, therefore one borehole to be put down in side yard and one in back yard.

Areas of concern to be investigated with respect to the exterior impact assessment at this site are:

None
