2024 Annual VIM Supplementary Report

Reporting Period January 1 – December 31, 2024

Operating Licence
FFOL-3631.00/2027

One Eldorado Place
Port Hope, Ontario
L1A 3A1

Submitted to:
The Canadian Nuclear Safety Commission
P.O. Box 1046, Station B
280 Slater Street
Ottawa, Ontario
K1P 5S9

Submitted on: March 31, 2025

Table of Contents

1.0 INTRODUCTION 3
2.0 MANAGEMENT SYSTEMS 4
3.0 OPERATING PERFORMANCE 6
4.0 PROJECT CHANGES AND CHANGE CONTROL 9
5.0 RADIATION PROTECTION 10
6.0 ENVIRONMENTAL PROTECTION 15
7.0 WASTE MANAGEMENT 21
8.0 CONCLUSIONS 22

1.0 INTRODUCTION

Vision in Motion (VIM) is Cameco's plan to clean up and renew the Port Hope Conversion Facility (PHCF). The project builds on work now under way through the Port Hope Area Initiative (PHAI) to address historic low-level waste issues in the Municipality of Port Hope. It provides Cameco with an opportunity to deliver a volume of qualifying waste materials to the Long-Term Waste Management Facility (LTWMF) that was constructed by the PHAI on the site of the licensed Welcome Waste Management Facility.

This report is considered supplementary to the Annual Compliance Monitoring and Operational Performance Report for the PHCF. The intention is to provide further information regarding VIM activities, progress, and monitoring throughout the year.

In accordance with its licence, the PHCF maintains the required programs, plans and procedures in the areas of health and safety, radiation protection, environment, emergency response, fire protection, waste management, and training. The VIM project is subject to the PHCF site programs, plans and procedures. Additional plans and procedures have been created specific to VIM processes as many of the VIM changes were new to the site. These additions are maintained for the duration of the VIM project and are subject to the same review and due diligence as all Cameco programs.

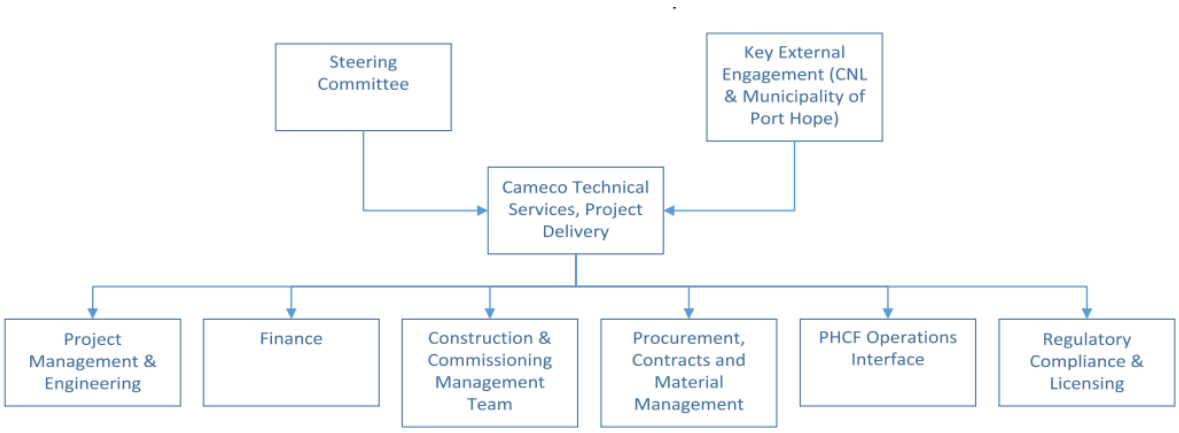
2.0 MANAGEMENT SYSTEMS

Cameco strives for operational excellence throughout all facilities and projects by way of consistent application of management systems. This ensures operations are safe, clean, and reliable.

In 2024, the VIM project continued to operate in a manner that supports safe, clean, and reliable operations and in compliance with applicable acts and regulations.

An organization chart for VIM is shown in Figure 1 below. The VIM project is managed by the Cameco Corporate Technical Services (CTS) division under the Project Delivery group. Guidance and direction for the project is provided to CTS by the VIM steering committee, which is made up of CTS and Fuel Services Divisional (FSD)/PHCF management staff and subject matter experts. Input is also considered from external stakeholders, such as Canadian Nuclear Laboratories (CNL) and the Municipality of Port Hope. The project is planned and implemented under CTS by several speciality teams, such as the construction management team, which is responsible for day-to-day VIM activities.

Figure 1 – VIM Organizational Chart



The annual PHCF site management review meeting was held March 5, 2025, to review the suitability, adequacy, and effectiveness of the management system in 2024. This review meeting covered the VIM project, and sufficient information was provided and reviewed to demonstrate the effectiveness of the system for this project.

In 2024, VIM created six new documents (3 job aids and 3 work forms). The job aids related to water handling, processing wooden pallets and receiving and loading IP2 containers. The forms related to a water handling and basic lift checklists, and a DRD log sheet. Three documents were made obsolete, including documents related to WBGT heat stress, logistic progress reports and waste material pickup requests. 19 documents were reviewed in 2024, including edits to the following: Silt Fence Maintenance, Outbound Logistics, Protection of the Environment and Preparation of Shipments to LTWMF, DRD operation, Building exterior gamma surveys and Circle checks.

The Supplementary Environmental Monitoring Plan for VIM and Other Clean-Up Program Projects was implemented to monitor environmental impacts for these VIM activities, primarily during demolition/excavation.

VIM is often involved in audits in conjunction with the PHCF site. In 2024, Canadian Nuclear Safety Commission (CNSC) staff conducted Emergency Response, Fire Protection, Fitness for Service, Safety Analysis, Training and General inspections at the PHCF that included VIM activities in the scope.

Two layered audits were completed in 2024 by Cameco leadership as part of the Field Leadership Program.

There were no significant issues identified during audits and inspections in 2024 related to VIM. Audits will not be discussed elsewhere in this report. Details and findings related to the audit program are submitted under separate cover due to the confidential nature of the information.

VIM personnel at the PHCF follow the standard PHCF training program, including site orientations and computer-based training requirements in addition to CTS required training. In 2024, VIM staff completed 497 prescribed training programs. CTS conducted 88 VIM specific orientations.

3.0 OPERATING PERFORMANCE

The VIM project is a significant undertaking at the PHCF with the key objective of transferring Cameco decommissioning waste to the LTWMF in Port Hope operated by the PHAI. The materials being transferred include building demolition debris (such as structural steel, concrete and asbestos transite), equipment, contaminated soils, and stored wastes. The project is also implementing building and infrastructure modifications needed to support the remediation effort.

The following on-site remediation and construction activities also took place in 2024:

- The project exported 444 dump trucks of CNL LTWMF eligible wastes, 970 super sacks, 8 roll-off bins, 2,106 drums, and 43 vac trucks were transferred to the LTWMF from the PHCF and the Dorset Street warehouse.
- Building 14/15 was completely disassemble including the concrete floor slab foundations.
- Drum dumping equipment was installed in Building 5.
- A temporary cylinder lay down area was constructed north of the former Building 27 footprint to facilitate the execution of VIM Area 5 (north of warehouse) in-situ stabilization proof of concept trial.
- VIM area 5 proof of concept trial trenching was completed, including installation of monitoring wells.
- Building 2 redundant equipment removal continued.

Safety, health, and environment (SHE) matters for VIM are managed by the CTS safety, health, environment, and quality (SHEQ) group with support from Occupational Health and Safety (OH&S), Radiation Protection and Environmental programs, personnel and activities at the PHCF.

Field level safety is conducted at the PHCF by VIM team members to ensure compliance to Cameco's policies and procedures by means of the CTS Field Leadership Program that includes four levels of safety involvement: Safety Chats, Job Task Observations (JTO), Risk Control Observations (RCO) and Layered Audits. Results of the CTS Field Leadership Program are outlined below in Table 1. These results are reviewed annually by the SHEQ group, and findings from RCOs and Layered Audits can result in action workflows to improve job task safety performance.

Table 2 below outlines the safety statistics for VIM in 2024.

Table 1

2024 Field Leadership Activity	
Activity	**Number Completed**
Safety Chats	1,281
Job Task Observations	216
Risk Control Observations	41
Layered Audits	2

Table 2

2024 Safety Statistics	
Safety Parameter	**Number in 2024**
Hours Worked	112,681
First Aid Injuries	3
Medical Treatment Injuries	0
Restricted Work	1
Lost Time Injuries	1
Total Recordable Injury Rate	1.77

All reported incidents are registered in CIRS for tracking and management.

In 2024, VIM recorded one medical reportable event, including the following: muscle strains to back. Worker from this event returned to the project on restricted work duties. VIM recorded one environmental reportable regarding contaminated water entering a catch basin via a vac truck leak. All events that require reporting are completed through PHCF's technical services personnel and are investigated with corrective actions identified and tracked to completion in accordance with Cameco's non-conformance and corrective action process. Cameco is confident that through a robust management system, the VIM project will continue to operate in a safe, clean, and reliable manner.

Table 3 below summarizes the environmental monitoring exceedances in 2024 related to VIM. These environmental VIM monitoring exceedances were investigated, and corrective actions implemented in accordance with with Cameco's non-conformance and corrective action process. Specific exceedance details were provided in the 2024 quarterly reports.

Table 3

VIM 2024 Environmental Air and Noise Monitoring Exceedances						
Date	**Monitoring Parameter**	**Averaging Period**	**Location**	**Results (µg TSP/m^3)**	**Criteria (µg TSP/m^3)**	**Level**
10-Apr-2024	DustTrak	1hr	East of B14	306	300	Action
13-Jun-2024	DustTrak	1hr	Area 4	310	300	Action
2-Jul-2024	DustTrak	1hr	Area 4	217	200	Admin
16-Jul-2024	DustTrak	1hr	Area 4	227	200	Admin
17-Oct-2024	DustTrak	1hr	Area 5	448	300	Action
18-Oct-2024	DustTrak	1hr	Area 5	380	300	Action
20-Nov-2024	DustTrak	1hr	Area 5	248	200	Admin
2-Dec-2024	DustTrak	1hr	Area 5	236	200	Admin
3-Dec-2024	DustTrak	1hr	Area 5	240	200	Admin

Note: TSP = Total Suspended Particulate

Cameco and CNL continued to coordinate regularly regarding waste acceptance and harbour work, including coordinating ongoing and future activities that may be shared at the harbour area. CNL completed a substantial portion of soil removal at the Centre Pier, on Cameco's behalf, according to technical protocols agreed to in 2023.

Coordination with the MPH continued, particularly on planning for future stormwater infrastructure at Eldorado Place. MPH received bids on tender for equipment procurement. It is planned that equipment will be procured in 2025 for installation in 2026.

One notification regarding a potential change in approach for VIM Area 5 soil stabilization (i.e. Area 5 Proof of Concept) was submitted to CNSC by email on July 8, 2024. On November 12th, 2025, CNSC was provided an email update regarding the scope package for building 72 (new warehouse) foundation work, including targeted shallow U-500 excavation. CNSC was notified on December 23, 2024, regarding updates to the Supplementary Environmental Monitoring Plan for VIM and Other CUP projects.

At the end of 2024, the VIM project had achieved some 70% of approved scope, (i.e. by way of Application for Financial Expenditure (AFE) and 59% of the overall scope, which includes a proof-of-concept trial for the subsurface remediation necessary west of the harbour turning basin.

4.0 PROJECT CHANGES AND CHANGE CONTROL

There were no modifications made in 2024 that negatively affected safety analysis in relation to the VIM project.

The safety-significant systems at the PHCF have been identified and a preventive maintenance program is in place to ensure that the equipment associated with these systems is properly maintained. The VIM project is evaluated on a continual basis to ensure the site safety case remains intact.

Within the 2024 period, the parking lot storm sewer improvements with the MPH was further deferred due to MPH funding and procurement timelines. Procurement is expected to be completed in 2025 and construction in 2026.

5.0 RADIATION PROTECTION

The VIM project follows the approved Radiation Safety Program in place at the PHCF. The program meets the requirements of the *Nuclear and Safety Control Act* and the *Radiation Protection Regulations* to ensure exposures are kept as low as reasonably achievable (ALARA). The same targets and limits noted in the PHCF program apply to the VIM project.

The radiation program includes the following aspects:

- External dosimetry – personal monitoring
- Internal dosimetry – urine analysis and lung counting program
- Workplace air sampling program
- Respirator program
- Radiation and contamination surveys

VIM personnel take care of certain aspects of radiation protection monitoring specific to the VIM project. Monitoring completed by VIM Radiation & Environment Technicians (Radtechs) includes the following:

- Air sampling using portable RADeCO samplers
- Air sampling using iCams (Continuous air sampling for uranium)
- Worker personal air sampling
- Point of entry/exit monitoring
- Gamma surveys
- Routine room monitoring
- Pre-scanning vehicles and equipment
- Monitoring of supersacs and drums before shipment
- Monitoring of shipments leaving site
- Heat Stress monitoring
- Radon testing
- Direct Reading Dosimeters
- Calibration and source checks of radiation monitoring equipment

External and Internal Dosimetry

Table 4 summarizes the external and internal dosimetry results for VIM workers in 2024. There were no CNSC licensed limits or action level exceedances with respect to radiation protection related to VIM in 2024.

Table 4

2024 VIM External and Internal Dosimetry Results				
	Number of Individuals	Average (mSv)	Minimum (mSv)	Maximum (mSv)
Whole Body Dose	38	0.06	0.00	1.10
Skin Exposure	38	0.15	0.00	3.05
Eye Dose	38	0.10	0.00	2.05
Urine Analysis Dose	36	0.01	0.00	0.14
Lung Dose	36	0.41	0.00	1.64
Total Effective Dose	38	0.46	0.00	2.88

Maximum dose was received by a CUP employee in relation to work at the Dorset Street location.

Contamination Control

PHCF is divided into three zones for contamination control purposes. Zone 1 areas are clean areas where no radioactive sources are present other than monitoring equipment. VIM currently does not monitor any Zone 1 areas. In Zone 2 areas, no visible contamination should exist, but when detected it is promptly isolated, monitored, cleaned, and monitored again to ensure all contamination has been removed. If any items are unable to be cleaned, then they are disposed of. Zone 3 areas are production areas where radioactive products and contaminated objects are expected. VIM monitors Zone 2 lunchrooms on a weekly basis and Zone 2 office areas on a quarterly basis. Additional monitoring is completed on an as needed basis when contamination is suspected, or it is requested.

There were 23 samples above the internal administrative level in 2024 in Zone 2 areas. These exceedances included 15 lunch bags. 7 chairs and 1 floor location. All areas were isolated, cleaned and re-monitored to ensure all contamination was removed.

Table 5

Summary of VIM Internal Administration Levels and Events in 2024				
Area	**Levels (Bq/cm^2)**		**Contamination Events**	
	Alpha	**Beta/Gamma**	**Number of Samples above Levels**	**Number of Samples Taken**
Zone 1	0.4	0.4	0	0
Zone 2	0.4	3.7	23	14,665

Air Sampling

Portable air sampling equipment (RADeCOs) and continuous air sampling equipment (iCams) are used in active work areas to monitor the derived air concentration (DAC) of uranium. In 2024, samplers were used in Buildings 64, 65 (Dorset Street), 2 and 14 to support VIM construction activity. Results are compiled and monitored by VIM personnel.

Table 6 below shows the average annual DAC results for each work area in 2024.

Table 6

Airborne Activity Concentration														
Year	Annual Average DAC and Number of Samples >DAC													
	Building 27		Building 64		Building 65		Building 5C		Building 5B		Building 14		Building 2	
	Avg.[2]	>DAC[1]	Avg.[2]	>DAC[1]	Avg.[2]	>DAC[1]	Avg.[2]	>DAC[1]	Avg.[2]	>DAC[1]	Avg.[2]	>DAC[1]	Avg.[2]	>DAC[1]
2020	0.22	0	0.05	0	0.01	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2021	0.12	0	0.02	0	0.02	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2022	0.17	17	0.04	0	0.01	0	0.03	0	N/A	N/A	N/A	N/A	N/A	N/A
2023	0.04	0	0.03	0	0.02	0	N/A	N/A	0.03	0	0.18	3	N/A	N/A
2024	N/A	N/A	0.06	0	0.02	0	N/A	N/A	N/A	N/A	0.02	0	0.09	22
[1]Number of samples greater than 1 DAC [2] Avg. = Average DAC in µg Uranium/m^3														

Gamma Surveys

Gamma surveys are completed on a monthly basis in areas where inventory changes are frequent and could impact gamma radiation levels in lunchroom/break rooms. In 2024, surveys were completed in Building 24A, rental lunchroom trailers south of Building 27 and east of Building 22 (when in use) and at Dorset St. Table 7 below summarizes VIM gamma survey results for 2024.

Table 7

Summary of VIM Gamma Readings by Area (µSv/h)					
Building Number	**Quarter**	**Location**	**Average**	**Minimum**	**Maximum**
24A	1	Contractor Lunchroom	0.09	0	0.25
24A Storage Area		Storage Area	1.16	0.04	9.39
B27 Rental Lunchroom Trailer		Building 27, south side	0.13	0	0.31
B22 Rental Lunchroom Trailer		B22, east side	0.42	0.08	1.05
24A	2	Contractor Lunchroom	0.09	0	0.41
24A Storage Area		Storage Area	5.13	0.03	51.8
B27 Rental Lunchroom Trailer		Building 27, south side	0.13	0	0.38
B22 Rental Lunchroom Trailer		B22, east side	0.74	0.06	2.47
B64		Dorset St	3.31	0.06	31.5
B65		Dorset St	1.3	0.09	6.10
24A	3	Contractor Lunchroom	0.12	0.02	0.31
24A Storage Area		Storage Area	9.85	0.16	57.6
B27 Rental Lunchroom Trailer		Building 27, south side	0.09	0	0.2
B22 Rental Lunchroom Trailer		B22, east side	0.47	0.04	2.3
B64		Dorset St	3.26	0.01	14.8
B65		Dorset St	1.16	0.06	3.32
24A	4	Contractor Lunchroom	0.14	0	0.4
24A Storage Area		Storage Area	6.72	0.26	54.9
B27 Rental Lunchroom Trailer		Building 27, south side	0.11	0.02	0.23
B22 Rental Lunchroom Trailer		B22, east side	0.35	0	0.84
B64		Dorset St	4.21	0.02	44.8
B65		Dorset St	1.39	0.08	6.31

Vehicle Monitoring

All vehicles leaving a Cameco property are monitored based on their contents and their transportation paperwork. All shipments to the LTWMF are monitored by Radtechs using a combination of swipes and direct monitoring analysis. Shipments do not leave the property unless they meet shipping requirements.

Once vehicles/containers are finished transporting radioactive waste for VIM, they are cleaned and monitored for radiation using a combination of swipes and direct monitoring on multiple surfaces. Vehicles and/or containers that meet the free release criteria are allowed to be removed from site.

Radon Monitoring

Radon testing was not required to be completed in 2024 for the VIM Project.

6.0 ENVIRONMENTAL PROTECTION

There are both federal and provincial regulatory authorities that have legislative jurisdiction over environmental protection at the PHCF, including VIM. The environmental monitoring program is comprised of the following components:

- water and air emissions
- gamma levels
- groundwater
- soil and vegetation

The PHCF program and associated plans/procedures are applicable to the VIM project and ensure that applicable provincial and federal requirements are met. Additionally, the *Supplementary Environmental Monitoring Plan for Vision in Motion and Other Clean-Up Program* Projects was created to supplement the PHCF programs. Pursuant to this plan, the key characteristics of the VIM activities that can have a significant environmental impact are identified, monitored and measured. The applicable environmental programs have been demonstrated to be effective.

VIM personnel take care of certain aspects of environmental monitoring specific to the VIM project. Monitoring completed by VIM Radtechs includes the following:

- Noise Monitoring
- Hi-Vol Air Sampling
- Dust Trak Monitoring

Noise Monitoring

Noise monitoring is regularly conducted at three residential locations during VIM construction activities on the PHCF site (N1, N2 and N3 locations). Figure 2 shows the current noise monitoring locations. The two residential noise monitoring locations (N5 and N6) surrounding the Dorset Street property are only surveyed during active construction activities. Location N4 was not surveyed in 2024. Table 8 below summarizes the limits related to residential noise surveys while Table 9 shows the 2024 noise monitoring average and maximum for N1, N2, N3, N5 and N6.

There were no action level exceedances for noise in 2024.

Table 8

Noise Limits		
Receptor Type	**Action Level**	**Limit Level**
	LA_{eq} (15_{min}) (dBA)	**LA_{eq} (15_{min}) (dBA)**
Residential	65 or Baseline + 5 (whichever is higher)	75 or Baseline + 5 (whichever is higher)

Table 9

Noise Monitoring Results LA_{eq} (15_{min}) (dBA)												
Year	**N1**		**N2**		**N3**		**N4**		**N5**		**N6**	
	Avg	**Max**	**Avg**	**Max**	**Avg**	**Max**	**Avg**	**Max**	**Avg**	**Max**	**Avg**	**Max**
2020	52	65	51	65	55	65	N/A	N/A	N/A	N/A	N/A	N/A
2021	52	64	52	64	56	65	N/A	N/A	54	59	50	64
2022	53	64	54	65	56	65	58	65	56	64	53	64.
2023	52	63	53	63	56	63	N/A	N/A	N/A	N/A	N/A	N/A
2024	52	64	55	65	55	64	N/A	N/A	54	64	52	62

Figure 2 – Noise Monitoring Locations

Hi-Vol Air Sampling

The high volume (hi-vol) air sampling program monitors the concentration of dust and uranium suspended in the air near the facility. VIM has three hi-vol air samplers surrounding the PHCF (DE-1, DE-2 and DE-3a). Samples are collected daily during VIM activities, and results are recorded and tracked.

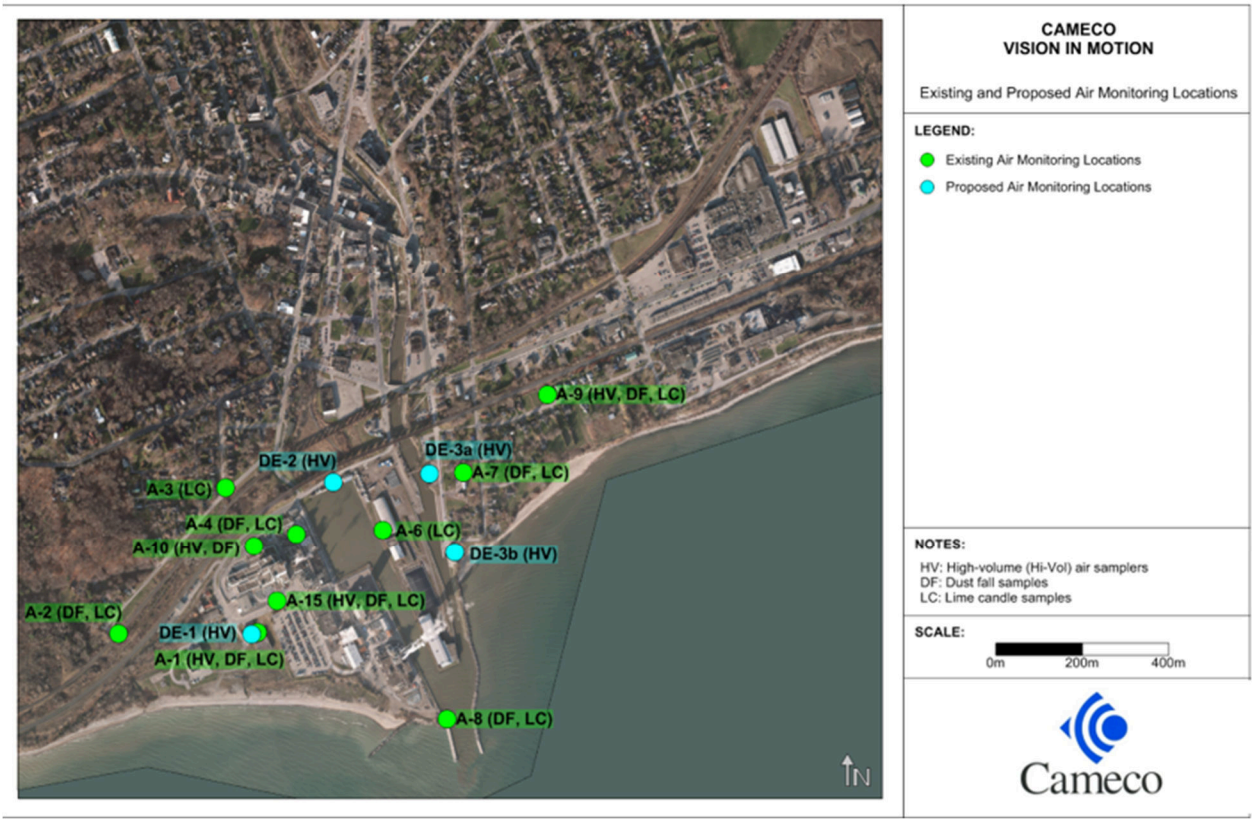
Approximately 40 cubic feet per minute of air is passed through and is collected on a filter over a 24-hour period. The regulatory criteria for uranium content in ambient air varies by period and particulate size. Cameco uses TSP (total suspended particulates) hi-vols at the PHCF and for VIM purposes. For particulate concentration, the administrative level is 100 µgTSP/m^3 and the MECP regulatory limit is 120 µgTSP/m^3.

Figure 3 shows site and VIM air monitoring locations. All VIM hi-vol samples that have a particulate concentration greater than the administrative level, or the MECP regulatory limit are sent to an external lab for further analysis. No VIM HiVol exceedances occurred in 2024. Table 10 shows the average and maximum particulate in hi-vol results for 2024. Locations are subject to change as the VIM project progresses and continual evaluation of environmental needs occurs.

Table 10

Annual Particulate Concentration at VIM Hi-Vol Stations (µg TSP/m³)				
Year	**Result**	**DE-1 (Waterworks)**	**DE-2 (Yacht Club)**	**DE-3A (Fish Cleaning)**
2020	Average	23	20	18
	Maximum	582	115	59
2021	Average	18	19	22
	Maximum	68	45	62
2022	Average	19	29	22
	Maximum	53	214	65
2023	Average	25	33	32
	Maximum	385	198	158
2024	Average	19	26	24
	Maximum	74	79	71

Figure 3 – DustTrak Locations



DustTrak Monitoring

DustTrak units are placed downwind of on-site construction activities and are used to indicate when dust levels become elevated. DustTrak units are set to alarm when administrative (one hour average equal to or greater than 0.2 mg/m^3) or action (one hour average equal to or greater than 0.3 mg/m^3) levels are reached.

Results for DustTrak units are monitored in real time and allow the VIM team to assess exceedances immediately and provide solutions immediately.

In 2024, Dust Trak monitoring was conducted at Area 4, Area 5, B14, B2, Dorset St and B72 pad. There were 9 DustTrak exceedances in 2024. DustTrak exceedances were reviewed and attributed to tamper use on roadway, granular stone delivery, granular stone spreading and trenching activity.

Table 11

VIM 2024 DustTrak Exceedances						
Date	**Monitoring Parameter**	**Averaging Period**	**Location**	**Results (µg TSP/m³)**	**Criteria (µg TSP/m³)**	**Level**
10-Apr-2024	DustTrak	1hr	East of B14	306	300	Action
13-Jun-2024	DustTrak	1hr	Area 4	310	300	Action
2-Jul-2024	DustTrak	1hr	Area 4	217	200	Admin
16 Jul 2024	DustTrak	1 hr	Area 4	227	200	Admin
17-Oct-2024	DustTrak	1hr	Area 5	448	300	Action
18-Oct-2024	DustTrak	1hr	Area 5	380	300	Action
20-Nov-2024	DustTrak	1hr	Area 5	248	200	Admin
2-Dec-2024	DustTrak	1hr	Area 5	236	200	Admin
3-Dec-2024	DustTrak	1hr	Area 5	240	200	Admin

7.0 WASTE MANAGEMENT

This section covers activities under the VIM project to move accumulated waste and bulk materials to the LTWMF and other appropriately permitted facilities. The VIM project is a significant undertaking at PHCF with the key objective of transferring Cameco decommissioning waste to the LTWMF in Port Hope. The materials being transferred include building demolitions debris, equipment, contaminated soils, and historic stored wastes.

Waste acceptance and safeguards requirements are managed by Fuel Service's Divisional staff.

Waste shipments to the LTWMF for 2024 are summarized in Table 12 below.

Table 12

Summary of Waste Shipments in 2024	
Type of Package	**Number of Items**
Drums to LTWMF	2,106
Bags to LWTMF	970
Dump Trucks	444
Roll-off bins	8
Vac Trucks	43

8.0 CONCLUSIONS

Cameco is committed to the safe, clean, and reliable operations of all our facilities and continually strives to improve safety performance and processes to ensure the safety of both its employees and the people in neighbouring communities.

In 2024, there were no CNSC regulatory limits exceeded as part of the VIM project activities. As well, as a result of the effective programs, plans and procedures in place, the project was able to maintain individual radiation exposures well below all regulatory dose limits.

Cameco's relationship with our neighboring communities remains strong and we are committed to maintaining these strong relationships.