

DEEP GEOLOGIC

# REPOSITORY

FOR OPG's LOW & INTERMEDIATE LEVEL WASTE

## **OPG's Deep Geologic Repository Project Communications and Consultation Report: Community Open Houses Summer/Fall 2010**

December 2010

Prepared by: AECOM

NWMO DGR-REP-07723-0002

**Note:**

The Nuclear Waste Management Organization (NWMO) is managing the development of a Deep Geologic Repository for low and intermediate level radioactive waste, at the Bruce nuclear site, on behalf of Ontario Power Generation (OPG).

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**REPOSITORY**  
FOR OPG's LOW & INTERMEDIATE LEVEL WASTE

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Project Communications and  
Consultation Report: Community  
Open Houses Summer/Fall 2010**

December 2010

Prepared by: AECOM

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### Appendices

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- A. Notification Materials
- B. Newspaper Coverage
- C. Open House Hand-outs
- D. Open House Display Materials
- E. Sign-in Sheets and Comment Cards Received



# 1. Introduction

This report documents a series of nine Community Open Houses hosted by the Nuclear Waste Management Organization (NWMO) on behalf of Ontario Power Generation (OPG) in August, September and October 2010. The report was prepared by AECOM and contains materials prepared by NWMO and AECOM, and local media reports.

## Open House Scheduling

Open Houses were held in August to provide an opportunity for seasonal residents and summer visitors, who may not be available to attend fall Open Houses, to obtain information about the DGR Project and to discuss it with NWMO staff. The September/October Open Houses were available to all residents and visitors.

## OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

### WELCOME

Welcome to an Open House for OPG's Deep Geologic Repository Project for Low and Intermediate Level Waste (L&ILW)

**Purpose:**

- Share information about the DGR Project
- Provide a status update on the Regulatory Approvals Process
- Obtain your feedback on the preliminary results of the environmental assessment
- Answer your questions about the Project







NUCLEAR WASTE MANAGEMENT ORGANIZATION



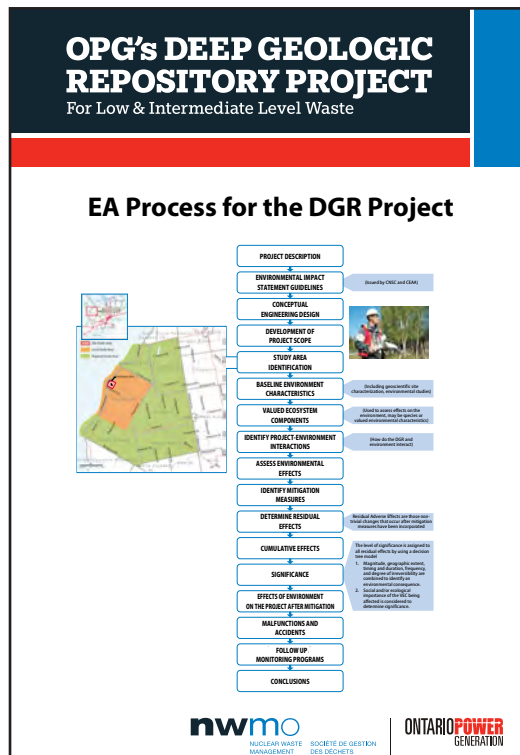
SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

## 2. Community Open House Topics

This is the fourth round of Community Open Houses held to provide interested community members with opportunities to become informed and updated, ask questions, provide input and engage in discussions about the DGR Project. This round, the information presented focussed on the following:

- an overview of the proposed OPG Deep Geologic Repository (DGR) Project for Low and Intermediate Level Waste, and updates since previous Open Houses;
- the preliminary results of the Environmental Assessment (EA) undertaken as an integral part of the planning and approval process;
- an update on the geoscientific characterization work done to date;
- an update on the safety assessment work done to date;
- the preliminary design of the DGR; and
- the community engagement activities related to the project and feedback from that process.

The Open Houses offered a venue for community members to provide comments on the preliminary results of the EA, the open house format and the proposed project.



### 3. Notification

Notification to community members was provided by the following:

- A postcard-format invitation, delivered by Canada Post's Unaddressed Admail to approximately 50,000 households in the communities where the Open Houses were held—Kincardine, Ripley, Walkerton, Port Elgin, Owen Sound, Chesley and Wiarton—and in the surrounding communities (see Appendix A for a list of community distribution).
- A newspaper announcement, published as an advertisement in the Kincardine News, Kincardine Independent, Lucknow Sentinel, Walkerton Herald Times, Owen Sound Sun Times, Port Elgin Shoreline Beacon, and the Wiarton Echo, prior to the Open Houses. Appendix A includes a copy of the advertisement and the placement schedule.
- Addressed letters, sent to those on the Stakeholder list, including local elected officials, City and County municipal staff leaders (including police, fire and emergency services), local and regional non-governmental organizations with a potential interest, local and regional media outlets, and others who have expressed an interest in the DGR Project. Invitations were sent to a number of organizations in the United States as well (see Appendix A for the mailing list).
- Radio spots, purchased for six local radio stations that serve the open house communities. Seven different announcements, specific to each open house, were prepared and aired prior to and on the day of each Open House (Appendix A).
- An advertorial, placed in the September 2010 edition of Marketplace, a local advertising publication (Appendix A). The September issue was issued on September 1, 2010.
- The dates, times and locations of the Open Houses were posted on the DGR page of the NWMO website ([www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)) prior to and during the Open Houses.
- The September 2010 DGR Newsletter, distributed by Canada Post Unaddressed Admail to nearly 35,000 residences, included the dates, times and locations of the Open Houses. The newsletter was distributed the week of September 20th.

**YOU ARE INVITED TO A DGR OPEN HOUSE**

Keeping you informed about OPG's DEEP GEOLOGIC REPOSITORY PROJECT for Low & Intermediate Level Waste

On behalf of Ontario Power Generation (OPG), the Nuclear Waste Management Organization (NWMO) invites you to participate in our Open Houses on the Deep Geologic Repository (DGR) Project for low and intermediate level radioactive waste.

At this fourth round of Open Houses we look forward to providing you with updated information on the DGR Project, including the preliminary results of the environmental assessment, to answering your questions, and hearing your views. Your comments will be addressed in the Environmental Impact

Statement (EIS) submitted under the Canadian Environmental Assessment Act for the project.

The next major DGR Project milestone is the filing of the regulatory submission anticipated in early 2011, which includes the EIS, Preliminary Safety Report and supporting documents.

**nwmo** NUCLEAR WASTE MANAGEMENT ORGANIZATION SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

**ONTARIOPOWER GENERATION**

## 4. Dates and Venues

The Community Open Houses were held at the following locations:

### **Bruce County Museum - Monday August 23**

33 Victoria Street North  
Saugeen Shores, Southampton, ON

### **MacGregor Point Provincial Park**

#### **Tuesday August 24**

R.R. #1  
Port Elgin, ON

### **Port Elgin - Monday September 27**

Colonial Motel  
235 Goderich Street  
Port Elgin, ON

### **Ripley - Tuesday September 28**

Ripley Huron Community Centre  
17 Queen Street  
Ripley, ON

### **Kincardine - Wednesday September 29**

Best Western Governor's Inn  
791 Durham Street  
Kincardine, ON

### **Walkerton - Thursday September 30**

Victoria Jubilee Hall  
111 Jackson Street South  
Walkerton, ON

### **Chesley - Monday October 4**

Chesley Fire Hall  
North end of Chesley,  
Bruce Rd. 10  
Chesley, ON

### **Owen Sound - Tuesday October 5**

Bayshore Community Centre  
1900 3rd Avenue East  
Owen Sound, ON

### **Warton - Wednesday October 6**

County of Bruce  
Public Library Building  
578 Brown Street  
Warton, ON





## 5. Number of Participants

A total of 95 persons registered their names as attendees of the Community Open Houses:

### Summer 2010

Bruce County Museum - 16

MacGregor Point Provincial Park - 11

### Fall 2010

Port Elgin - 13

Ripley - 2

Kincardine - 17

Walkerton - 6

Owen Sound - 15

Chesley - 3

Warton - 12

It is estimated that more than 90% of attendees signed in. Sign-in lists are provided in Appendix E.



## 6. Community Open House Format

The Community Open Houses provided an informal opportunity for community members to learn about the proposed project, to have their questions answered and to provide feedback on the preliminary results of the Environmental Assessment and discuss any other aspects of the DGR Project. Participants viewed display materials, had discussions with NWMO and OPG representatives and enjoyed light refreshments.

The Bruce County Museum summer Open House was open between 2:00 and 8:00 p.m., while the MacGregor Point Open House, which included a formal presentation about the DGR, was open from 5:00 to 9:30 p.m. The fall Open Houses ran from 4:00 p.m. to 8:00 p.m.

Copies of the May 2010 and September 2010 NWMO project newsletters, the 2009 DGR Annual Report, a brochure describing the DGR Project for Low and Intermediate Level Waste as well as copies of the Open House display panels were available for participants to take away (Appendix C).

Participants were encouraged to fill out comment cards.





## Display Panels

Twenty-three 30" x 40" display panels provided the following information:

1. "Welcome" – panel showing a map and conceptual site images
2. "Chronology of the Project" – showing a timeline of project milestones from 2001 to 2011
3. "The Project" – explaining the current design philosophy
4. "Regulatory Process for the DGR" – describing and illustrating the decision and approval process
5. "Project Works and Activities" – describes the site preparation, construction, operations and decommissioning activities
6. "EA Process for the DGR Project" – uses a flow chart to illustrate steps in the EA process
7. "Atmospheric Environment" – describes the effects assessed, mitigation measures and residual effects to the atmospheric environment
8. "Aquatic Environment" – describes the effects assessed, mitigation measures and residual effects on the aquatic environment
9. "Terrestrial Environment" – describes the effects assessed, mitigation measures and residual effects on the terrestrial environment
10. "Hydrology and Surface Water Quality" – describes the effects assessed, mitigation measures and residual effects on hydrology and surface water quality
11. "Geology" – describes the effects assessed, mitigation measures and residual effects on geology
12. "Radiation and Radioactivity" – describes the mitigation measures and residual effects of releases of radiation to air and water
13. "Malfunctions and Accidents" – considers the consequences of potential accidents
14. "Social and Economic Effects" – describes the social and economic effects assessed, mitigation measures and residual effects
15. "Aboriginal Interests" – describes the Aboriginal interests assessed, mitigation measures and residual effects

16. “Human Health” – describes the health effects assessed, mitigation measures and residual effects
17. “Effects of the Environment on the Project” – describes the potential effects and mitigation for natural hazards
18. “Cumulative Effects” – uses a timeline to illustrate the existing and potential future projects that have the potential to overlap effects, and to summarize the potential for effects of these projects
19. “Follow-up Monitoring” – describes proposed monitoring for the site preparation, operations and decommissioning phases
20. “Keeping the Public Informed” – describes the objectives and results of NWMO’s commitment to public engagement opportunities
21. “Keeping the Public Informed” – second board describing results of 2009 Evaluation of Public Involvement Program
22. “Safety Case for the Project” – a description of natural barriers to protect the public, and groundwater
23. “FAQs and NWMO Responses” – a panel listing public comments and OPG responses

See Appendix D for images of each of the display panels.

**OPG's DEEP GEOLOGIC REPOSITORY PROJECT**  
For Low & Intermediate Level Waste

### Keeping the Public Informed

**Objectives**

NWMO, on behalf of OPG, committed to providing:

- a wide range of engagement opportunities to the general public, key stakeholders and Aboriginal Peoples throughout Bruce County
- engagement opportunities to interested parties outside of Bruce County including Michigan
- a timely response to all enquires, comments and questions where appropriate
- clear, concise and accurate information
- a process to document, monitor and evaluate both the public involvement program and community support for the DGR

**Results**

- provided numerous opportunities over the last eight years –before and during the EA process – for the public to become informed and updated, ask questions, provide comment and discuss areas of interest about the DGR Project
- Information available through a variety of means: website, newsletters and publications, advertorials, media days, briefings, public speaking engagements, DGR mobile exhibit and a public enquiry and response program
- Committed to continue communications throughout the regulatory approval process and beyond, pending regulatory approval, to the site preparation and construction phases




## 7. Opportunities for Input

### Comment Cards

Comment cards in the style of large sized postcards were available for Open House for participants to rate their experience at the Open House, and to write comments. Cards could be filled out at the Open House, or mailed in afterwards.

In total, ten comment cards were returned. Of those, three included written comments, and all responded to the questions evaluating the Open House. All comment card feedback is provided in Appendix E.

<p>Comments/Questions? Let us know.</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Name: _____</p> <p>Address: _____</p> <p>_____</p> <p>Phone: _____</p> <p>Email: _____</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">             PLACE STAMP HERE           </div> <p><b>Nuclear Waste Management Organization</b> Media Relations Manager P.O. Box 7000, B21 Tiverton, Ontario NOG 2T0</p>
<p>email: <a href="mailto:dgrinfo@nwmo.ca">dgrinfo@nwmo.ca</a> <a href="mailto:mwilson@nwmo.ca">mwilson@nwmo.ca</a> Phone: 519-368-1639</p>	

<p>Please leave this card with our open house staff, or mail it back to us at your convenience. You can also email us with your comments at <a href="mailto:dgrinfo@nwmo.ca">dgrinfo@nwmo.ca</a> or visit our website for more information at <a href="http://www.opg.com/dgr">www.opg.com/dgr</a>.</p> <p><b>Open House Evaluation</b> Please rank the following statements on a scale of 1 to 5 where "1" is "strongly disagree", "3" is neutral or "no opinion" and "5" is "strongly agree".</p> <table style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>a. The open house panels helped me to understand the deep geological repository (DGR) proposal.</p> <p style="text-align: center;">1 2 3 4 5</p> </td> <td style="width: 50%; vertical-align: top;"> <p>d. Overall, the open house helped me to satisfy the information needs I had.</p> <p style="text-align: center;">1 2 3 4 5</p> </td> </tr> <tr> <td style="vertical-align: top;"> <p>b. The open house location and hours were convenient for me.</p> <p style="text-align: center;">1 2 3 4 5</p> </td> <td style="vertical-align: top;"> <p>e. I will recommend to my friends and family members that they should come to a future DGR open house.</p> <p style="text-align: center;">1 2 3 4 5</p> </td> </tr> <tr> <td style="vertical-align: top;"> <p>c. The open house staff were helpful.</p> <p style="text-align: center;">1 2 3 4 5</p> </td> <td></td> </tr> </table>	<p>a. The open house panels helped me to understand the deep geological repository (DGR) proposal.</p> <p style="text-align: center;">1 2 3 4 5</p>	<p>d. Overall, the open house helped me to satisfy the information needs I had.</p> <p style="text-align: center;">1 2 3 4 5</p>	<p>b. The open house location and hours were convenient for me.</p> <p style="text-align: center;">1 2 3 4 5</p>	<p>e. I will recommend to my friends and family members that they should come to a future DGR open house.</p> <p style="text-align: center;">1 2 3 4 5</p>	<p>c. The open house staff were helpful.</p> <p style="text-align: center;">1 2 3 4 5</p>		
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<p>email: <a href="mailto:dgrinfo@nwmo.ca">dgrinfo@nwmo.ca</a> <a href="mailto:mwilson@nwmo.ca">mwilson@nwmo.ca</a> Phone: 519-368-1639</p>							
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## 8. Key Areas of Discussion

Typically, Open House attendees were already familiar with the proposed DGR Project, having participated in other stakeholder communications events. Many of those who attended the Open Houses expressed support for the project. One of the primary reasons for attending the Open Houses was to obtain an update on the progress of the project and to hear about the preliminary results of the Environmental Assessment. Visitors tended to stay for between 20 and 40 minutes on average. Comments and questions received from prior Open Houses were also presented on a display panel with NWMO/OPG responses (presented in Appendix D).

The discussions at the 2010 Open Houses covered a broad range of subjects. The questions most frequently asked are grouped below into key topic areas:

### Questions relating to waste characteristics and the wastes that will be managed in the DGR

- Will used fuel be stored in the DGR?
- Why are you going to such lengths for what is mainly low level waste?
- The DGR Project is being designed to meet criteria for used fuel; isn't it only a matter of time before used fuel is coming to this DGR?
- How can the public be assured that used fuel will not be emplaced in the DGR?
- Describe the different nuclear streams and how long each remains radioactive.
- What is the difference between low, intermediate and high level waste?
- What are the half lives of these wastes?
- Where does the waste come from?
- Are the effects of incineration being considered?
- Will the DGR receive waste / fuel from other countries?

#### NWMO/OPG response:

The DGR will store low and intermediate level waste (L&ILW) from OPG-owned or operated nuclear generating stations. This waste is currently managed on an interim basis at the Western Waste Management Facility in the Municipality of Kincardine. These ongoing activities, including incineration, are not a part of the scope of the environmental assessment for the DGR Project. Waste from other producers and other countries will not be managed in the DGR.

The Hosting Agreement between the Municipality of Kincardine and OPG relates to the management of OPG's L&ILW in the DGR. The Municipality of Kincardine has passed a resolution indicating that no used fuel will be placed in the DGR. OPG's Environmental Impact Statement and application for a licence are for a DGR for nominally 200,000 m<sup>3</sup> of L&ILW only from OPG-owned or operated reactors.

Low level waste has low levels of radioactivity, consists primarily of paper, plastics, metal, rubber and

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For Low & Intermediate Level Waste

**FAQs and NWMO Responses**

**Q: What assurance is there that "the door isn't open" for high level waste disposal, or that waste will not be imported from other nuclear companies in Canada or other countries?**  
A: High level waste in Canada is currently managed at the site where it is produced. It is the longer term future that is the subject of the Environmental Assessment. The DGR is not a repository for high level waste. OPG's Environmental Impact Statement and application for a licence are for low and intermediate level waste only from OPG-owned or operated reactors.

**Q: What happens to the high level waste?**  
A: High level waste in Canada is currently managed at the site where it is produced. It is the longer term future that is the subject of the Environmental Assessment. The DGR is not a repository for high level waste. OPG's Environmental Impact Statement and application for a licence are for low and intermediate level waste only from OPG-owned or operated reactors.

**Q: What is the risk of an earthquake and what impact would there be on the DGR?**  
A: The DGR is designed to be able to withstand seismic activity. The DGR is designed to be able to withstand seismic activity. The DGR is designed to be able to withstand seismic activity.

**Q: Will the waste be retrievable?**  
A: The DGR is designed to be able to retrieve waste. The DGR is designed to be able to retrieve waste. The DGR is designed to be able to retrieve waste.

**Q: How can it be assured that no contaminants will escape to surface waters?**  
A: The DGR is designed to be able to prevent contaminants from escaping to surface waters. The DGR is designed to be able to prevent contaminants from escaping to surface waters. The DGR is designed to be able to prevent contaminants from escaping to surface waters.

**Q: Is there a potential to contaminate drinking water?**  
A: The DGR is designed to be able to prevent contaminants from escaping to surface waters. The DGR is designed to be able to prevent contaminants from escaping to surface waters. The DGR is designed to be able to prevent contaminants from escaping to surface waters.

**Q: What is the cost of the project and where will the money come from?**  
A: The DGR is designed to be able to prevent contaminants from escaping to surface waters. The DGR is designed to be able to prevent contaminants from escaping to surface waters. The DGR is designed to be able to prevent contaminants from escaping to surface waters.

**Q: Did OPG consider other sites for the DGR?**  
A: The DGR is designed to be able to prevent contaminants from escaping to surface waters. The DGR is designed to be able to prevent contaminants from escaping to surface waters. The DGR is designed to be able to prevent contaminants from escaping to surface waters.

**Q: How do other countries manage their low and intermediate level nuclear waste?**  
A: The DGR is designed to be able to prevent contaminants from escaping to surface waters. The DGR is designed to be able to prevent contaminants from escaping to surface waters. The DGR is designed to be able to prevent contaminants from escaping to surface waters.

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cotton, and includes protective clothing, floor sweepings, mops, and rags. It can be handled without special radiation protection. Typically, low level waste has a half life of less than 30 years, though it may contain small quantities of longer lived radionuclides.

Intermediate level waste includes used reactor core components, and resins and filters. It requires shielding to protect workers during handling. The intermediate level waste includes radionuclides with much longer half lives.

Refurbishment waste consists of low and intermediate level waste generated from the refurbishment of nuclear reactors. It consists of irradiated core components such as pressure tubes, calandria tubes, end fittings and steam generators.

## Questions relating to management of used fuel \_\_\_\_\_

- How is used fuel managed now?
- How will used fuel be managed over the long-term?
- What are you doing with used fuel in the long-term?

### *NWMO/OPG response:*

Used fuel is managed in irradiated fuel bays at the generating station where it is produced for approximately ten years. After that time it can be loaded into a dry storage container and moved to a used fuel dry storage building at the generating station site where it was produced. It will remain in the used fuel dry storage building until such time as a long-term solution is available.

In the future, the used fuel will be moved to a deep geologic repository, which is designed and constructed for that purpose, located in a community which is a volunteer host. The NWMO initiated the Learn More Program in 2010, which makes resources available to communities who are interested in participating in the early steps of the siting process for a repository for used fuel. The DGR for used fuel will be located in a willing and informed host community.

## Questions relating to siting and alternatives \_\_\_\_\_

- Why is the DGR proposed for the Bruce nuclear site instead of sending it up north somewhere away from the public?
- Why locate the DGR in Southern Ontario...would it not be better to locate it in sparsely populated Northern Ontario?
- Is this the best alternative of several options?
- What alternatives were considered, for example, was sending the waste into the sun considered?
- Why is the DGR located close to the lake?
- What other sites were assessed to know this is the best site?
- What other sites were considered?

### *NWMO/OPG response:*

The Municipality of Kincardine approached OPG in 2001 expressing an interest in assessing the feasibility of hosting a long-term facility for low level waste management. Experience in other countries has shown that success in siting a waste disposal facility is greatly improved in situations where the community supports

the proposal. Kincardine was both a willing host and based on the results of the feasibility study, was technically suitable for a DGR. Much of the waste to be emplaced in the DGR is currently stored on site at the WWMF.

An independent assessment study, completed in 2004, considered several different proven technologies for long-term management of low level waste, including deep geologic repository, near surface concrete vault, and enhanced processing. The results of this study indicated that all three technologies could safely manage some or all of the low and intermediate level waste. The DGR is the only technology that could manage all of the low and intermediate level waste. The Municipality of Kincardine preferred the DGR because it is consistent with international best practice and offers a greater margin of safety than the other technologies considered.

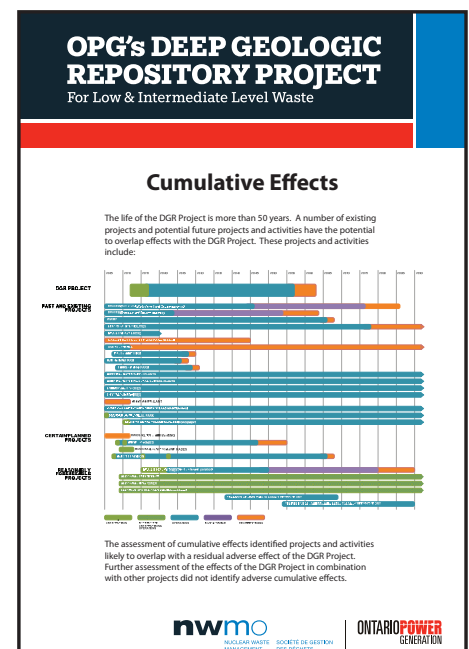
A four-year stepwise geoscientific site characterisation of the geology beneath the Bruce Nuclear Site provides site-specific evidence, gained over four years of investigations, studies and analyses, that supports the existence of passive multiple natural barriers that will safely isolate and protect the waste from the public and environment for thousands of years and beyond.

## Questions relating to human health and environmental effects

- A study in the Durham Region concluded that disease rates in Ajax-Pickering and Clarington did not indicate a pattern to suggest that the Pickering NGSs and Darlington NGS were causing health effects in the population. It was suggested that a similar study in the Bruce Region would be helpful to provide information on health effects.
- What about the effects of the DGR on human health – have any studies been done in this area to see if there are higher levels of cancer here, define the emissions that are stated as a residual effect in the atmospheric environment?
- Where does acrolein come from and how does it affect workers and would it be monitored?
- I am concerned about the use of the term “no residual effects”; you say there are measurable effects so how can be there no residual effects?
- Where is Stream C and where does it drain?
- How much noise will there be during site preparation and construction and will the blasting during construction trip the generating stations at the Bruce nuclear site?
- What is benthic?
- What do you mean by cumulative effects?
- When will the TSDs and EIS be available for review?

### NWMO/OPG response:

Durham Region, in Radiation and Health in Durham Region 2007, assessed possible health effects from the Pickering and Darlington NGSs. It concludes that disease rates in Ajax-Pickering and Clarington did not indicate a pattern to suggest that the Pickering NGSs and Darlington NGS were causing health effects in the population. Each year the results of a Radiological Environmental Monitoring Program are reported to the Canadian Nuclear Safety Commission. This report includes an assessment,





based on conservative assumptions, of the dose a member of the public would receive from the Bruce nuclear site. The dose historically has been orders of magnitude below the allowable dose. The DGR Project is not expected to contribute to a change to this dose.

Acrolein may be formed from the breakdown of certain pollutants found in outdoor air, or from the burning of fuels such as gasoline or oil. No effects on worker health are expected at the concentrations at the DGR Project site. Short-term inhalation exposure can result in upper respiratory tract irritation and congestion.

The term “residual effects” is associated with the predicted effects of the project taking into account implementation of mitigation measures. For example, while there may be increased sediment in surface run-off from the DGR Project, implementation of a stormwater management pond would reduce the sediment prior to discharge, resulting in no “residual effect.”

Stream C, which drains to Baie du Dore, crosses the east corner of the DGR Project site; however, is it well removed from the construction activity.

The term “benthic” refers to the bottom of a body of water.

Cumulative effects are effects which result from activities that overlap in time and space. For example, the Environmental Assessment Act requires that the effects of a proposed project be considered in combination with those of existing and reasonably foreseeable projects — these are cumulative effects.

Noise levels during construction will be similar to those associated with use of heavy equipment. The majority of the blasting will be below ground surface. Blasting will not trip the Bruce reactors.

The EIS and TSDs are expected to be submitted to the Joint Review Panel in the first quarter of 2011. The Panel will issue the documents for public review.

## Questions relating to geoscience

- How do you know the DGR will protect Lake Huron and groundwater?
- How is the DGR going to protect the lake and the groundwater?
- How will the geology protect the surface and groundwater?
- How will the DGR protect the environment when people are no longer around to provide institutional control?
- Would earthquakes affect the DGR, for example, the October 2005 Georgian Bay Magnitude 4.3?
- Recently earth quakes have been less frequent but have been of higher magnitude; since there hasn't been a major earthquake in the area does this mean that the area is due for a major earthquake?
- Will the DGR impact the geothermal properties at 680 metres?

### NWMO/OPG response:

The proposed DGR is about 1 km inland from the lake shore and more than 400 m below the depth of the lowest point of Lake Huron near the site.



The DGR Project will store L&ILW, currently managed safely at surface, underground at a depth of 680 m in a layer of very low permeability limestone. This limestone is overlain by a 200 m thick layer of low permeability shale. These rock formations are very old, laterally extensive and at longer timeframes will provide passive barriers which to contain and isolate the wastes from surface water resources. Once closed, the DGR will contain and isolate the L&ILW in the absence of institutional controls well into the future.



The Bruce nuclear site lies within the tectonically stable interior of the North American continent, an area with very low seismic potential. Historic records indicate that in 180 years there have been no recorded earthquakes of magnitude greater than 5. The overlying and underlying formations will provide passive barriers to isolate the waste in the event of seismic events and glacial episodes. A Seismic Hazard Assessment of the Bruce nuclear site, as part of the geoscientific site characterisation for the DGR, considered the influence of earthquakes ranging from magnitude 5.25 to 7.5 on the site. The assessment concluded that earthquakes will not impact the safe operation or long-term ability of the DGR to safely isolate and contain the L&ILW. The temperature at the repository level is approximately 18°C. The L&ILW gives off little heat. Geothermal properties at the repository level will not be impacted.

## Questions relating to long-term safety

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How much radioactivity will leave the DGR site?

How can the public be assured that this will be safe?

How long can the DGR safely manage waste?

How will the proponent know when it is safe to close the site?

How will monitoring results be used to make the decision to close the facility?

### *NWMO/OPG response:*

An ongoing radiological monitoring program is conducted by Bruce Power in the vicinity of the Bruce nuclear site to assess the effect of all operations at the site including Bruce Power, Ontario Power Generation and Atomic Energy of Canada Limited. The program includes specific sampling conducted within a 20-km radius of the Bruce nuclear site. The results of this monitoring are reported annually to the Canadian Nuclear Safety Commission. Any contribution of the DGR would be included in this monitoring program. Once waste currently in storage at the WWMF is isolated in the DGR, the amount of radioactivity leaving the site will be reduced.

The doses to workers underground from low level waste will be comparable to those currently experienced in the above-ground storage buildings. Similarly, doses to workers handling the intermediate level waste will be about the same as to those handling the waste above ground. OPG will have monitoring programs in place to assure that workers and the public are not exposed to unacceptable doses. The CNSC licensing process requires that the proponent obtain a licence to decommission the DGR and a licence to abandon the facility. It will be the CNSC that will determine whether it is safe to close the DGR. A comparison of monitoring results with predicted effects is typically used to verify performance.



## Questions relating to security

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- What type of security forces are there at the Bruce nuclear site?
- Do they have armed guards?
- How do you protect against terrorism-spies on tours?
- What about terrorist attacks?

### *NWMO/OPG response:*

The DGR is located on the Bruce nuclear site, which is enclosed by a security fence and has security personnel on site. Staff working at the site are subject to security clearance. Programs are in place to ensure site visitors are sponsored by security-cleared staff. Visitors adhere to very strict restrictions, and must be within close proximity of their sponsor at all times.

## Questions relating to DGR engineering and operations

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- How long will the facility be in operation?
- What kind of employment opportunities will be created as a result of the DGR?
- What is the construction technique for the shaft; drill and blast or roadheader?
- Has NWMO considered a wetland treatment system for all or part of the stormwater management pond?
- What about into the future and how much will it cost?
- How much will the DGR cost and who is going to pay for it?

### *NWMO/OPG response:*

Based on current projections, the earliest a construction licence could be granted is late 2012. Construction is expected to take approximately five to seven years with an average of 200 construction jobs each year. Many of the construction jobs would be associated with the excavation. Operations would start in 2017 or 2018 with approximately 40 jobs. Waste is expected to be emplaced in the DGR for approximately 35 to 40 years, based on the current nuclear program.

The current preferred construction method is controlled drill and blast. A wetland treatment system has not been considered in the preliminary design; however, it may be considered in the detailed design phase.

The cost of DGR construction is currently estimated to be about \$1 billion. A more detailed cost estimate will be developed as part of detailed engineering. An existing segregated fund, which has been accumulating funds as part of electricity rates, will be used to pay the cost of the DGR Project.

## Other questions

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- How is radioactive material transportation regulated in Canada?
- Will the Red Cross have any role in responding to any situations at the site?
- Is this project associated with the steam generator project?
- Does New Brunswick have a facility similar to this?
- What communications have been done in Michigan?

- Having a long-term waste site helps the utility, but how does it help the public who live near the site?
- Does this project have anything to do with the steam generators?
- Do you conduct tours?

*NWMO/OPG response:*

The CNSC and Transport Canada regulate the transport of radioactive and other hazardous materials.

The Red Cross would not have a role in responding to situations at the Bruce nuclear site.

The current proposal to transport steam generators is a Bruce Power initiative. The DGR would manage steam generator waste in the form in which it is provided by Bruce Power.

New Brunswick manages its L&ILW in interim surface facilities. It does not have a deep geologic repository or other long-term management facility at this time.

The current interim waste management facility is safe. A long-term waste site, in particular a DGR, provides safer long-term management, even in the absence of institutional controls.

A number of Michigan stakeholders and interested parties are on the DGR designated mailing list, which provides access to current information about the DGR Project. Media briefings were held with several newspapers in Michigan. A team of representatives from NWMO and OPG also provided key stakeholders in Michigan with DGR briefings in the fall of 2009.

Briefings covered NWMO/OPG profiles, background and history of the DGR, Canada's regulatory process, geoscience and communication efforts to date. Stakeholders were able to ask questions, provide comment and discuss areas of interest about the DGR. Participating stakeholder groups included political representatives, Department of Environmental Quality, a representative from Macomb County Board of Commissioners and three environmental groups: National Wildlife Federation, Michigan Environmental Council and Michigan United Conservation Clubs.

The DGR is consistent with international best practice. If approved, it would emplace the waste in a facility where it can be safely managed in the very long term, even in the absence of institutional controls.

## 9. Media Coverage of the Open Houses

Journalists interviewed NWMO and OPG representatives and Open House attendees during the open houses.

Following the community open houses, the following articles, editorials and letters-to-the-editor appeared in local newspapers and radio stations (see Appendix B):

- Bayshore Broadcasting Centre (Owen Sound) - Tuesday, September 28th, 2010: "Open House for DGR," by reporter John Divinski
- Saugeen Times - Friday, October 1st, 2010: "NWMO hosts open houses on preliminary results of EA into Deep Geologic Repository," by Liz Dadson
- Toronto Star - Saturday, October 2nd, 2010: Letters: "Misunderstanding "clean" power; Taking aim at nuclear power"
- Kincardine News - Tuesday, October 5th, 2010: Editorial: "DGR project can learn from Bruce"
- Kincardine News - Tuesday, October 5th, 2010: "Preliminary EA on OPG's Deep Geological Repository released," by Troy Patterson

## 10. Appendices

### Appendix A: Notification Materials

- Letter of Invitation (addressed mail)
- Mailing List for Invitation Letters
- Postcard Invitation (unaddressed aemail)
- Distribution Breakdown for Postcard Invitation
- Newspaper Announcements
- Placement of Newspaper Announcements
- Distribution of Radio Scripts
- Radio Scripts
- Marketplace Announcement

### Appendix B: Newspaper Coverage

### Appendix C: Open House Handouts

- DGR 2009 Annual Report
- Information Booklet: Keeping You Informed
- DGR Newsletter, May and September 2010
- Western Waste Management Facility Booklet

### Appendix D: Open House Display Panels

### Appendix E: Open House Sign-in Sheets and Comment Cards

## Appendix A

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Notification Materials

SALUT.	FIRST NAME	LAST NAME	TITLE	COMPANY	ADDRESS	CITY	POSTAL CODE
Mr.	Brent	Adlam		Centre of Applied Renewable Energy Natural Resources Canada	P.O. Box 29	Brussels	N0G 1H0
Mr.	Eric	Advokaat	Director, Eastern Operations	Major Projects Management Office	155 Queen Street, 02th Floor, F	Ottawa	K1A 0E4
Chief	Ralph	Akiwenzie			R.R.#5	Warton	N0H 2T0
Ms.	A. P.	Crawford	Chief Administrative Officer	Municipality Of Arran-Elderslie	1925 Bruce Road #10	Chesley	N0G 1L0
Ms.	Mary Anne	Alton	Director	Bluewater District School Board	351 First Ave. North	Chesley	N0H 1L0
Ms.	Ruth	Armstrong			R.R. #1	Mar	N0H 1X0
Mr.	Tim	Andersen	Vice President	Southampton Residents Association	P.O. Box 1081	Southampton	N0H 2L0
Mr.	Mike	Andrews	General Manager	Bruce Telecom	Box 80, 3145 Hwy 21 North	Tiverton	N0G 2T0
Ms.	June	Anderson			R.R. #2	Annan	N0H 1B0
Mr.	Thorsten	Arnold	President	Drinking Water Source Protection (DWSP) Port Elgin & District Lions Club	RR3, Concession 3 Box 116	Allenford	N0H1A0 N0H 2C0
Mr.	John	Avis		Intera Engineering Ltd.	1 Raymond Street, Suite 200	Ottawa	K1R 1A2
Mr.	Charlie	Bagnato	Mayor	Municipality Of Brockton	100 Scott Street	Walkerton	N0G 2V0
Mr.	Gary	Brown	President	Saugeen Shores Chamber of Commerce	515 Goderich St, Unit 113	Port Elgin	N0H 2C4
Mr.	Robert	Barker	Project Officer	CNSC	280 Slater Street	Ottawa	K1P5S9
Ms.	Kathy	Barnes		Don't Waste Michigan	RR#1, 556 Ferand	Sherwood	49089
Mr.	Gordon	Barr	President	Inverhuron & District Ratepayers Association	697 Barclay Road	London	N6K 1K4
Mr.	Tony	Barton	Vice Chair	Bruce Peninsula Environment Group	P.O. Box 1072 P.O. Box 1270	Lion's Head	N0H 1W0
Mr.	Keith	Battler	President	Lake Huron Fishing Club	821 Queen Street	Kincardine	N2Z 2Z4
Ms.	Mary Lynn	Becker		Consulate General of Canada	600 Renaissance Center, Ste 1	Detroit	482-43-1798
Mr.	Larry	Belrose			2634 7th Avenue East	Owen Sound	N4K 6V1
Mr.	Tom	Bergen		Ontario Power Generation Michigan Coalition on the Environment and Jewish Life	700 University Avenue, TCH19f	Toronto	M5G 1X6
Ms.	Sara	Bernstein			6735 Telegraph Road, #205	Bloomfield Hills	48301
Mr.	Mike	Berry			126 Sunset Drive, R.R.#1	Port Elgin	N0H 2C5
Mr.	Garry	Biederman		Lake Huron Fishing Club	459 Mill Creed Rd., SS 4	Port Elgin	N0H 2C0
Dr.	David	Biesenthal		Source Protection Committee	2094 Hwy 9, RR3	Walkerton	N0G 2V0
Mr.	Clarke	Birchard			P.O. Box 490	Chesley	N0G 1L0
Ms.	Gertie	Blake		Bruce County Federation of Agriculture		Hanover	N4N 1P9
Mr.	Eugene	Bourgeois	Inverhuron District Ratepayers As	Philosophers Wool Co.		Inverhuron	N0G 2T0
Mr.	Bob	Bregman			Box 573	Teeswater	N0G 2S0
Mr.	G.	Brewer			R.R. #1	Annan	N0h 1B0
Mr.	Doug	Brown		Pine River Watershed Improvement Assn.	46 Bell Drive, Lurgan Beach, R.	Kincardine	N2Z 2X3
Mr.	Larry	Allison	Chief Administrative Officer	Town of Saugeen Shores	600 Tomlinson Dr., P.O. Box 82	Port Elgin	N0H 2C0
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Ms.	Susan	Bujold		Lake Huron Shoreline Tourism Partners	P.O. Box 545	Paisley	N0G 2T0
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Mr.	Rick	Chappelle	District Manager	Ontario Ministry of the Environment		Owen Sound	N4K 0A5
Mr.	Jack	Campbell	President	Huron Fringe Field Naturalists	Box 143, R.R.#1	Kincardine	N2Z 2Y6
Mr.	Chris	Campbell			160 11th Avenue, Apt. 305	Hanover	N4N 2R1

Ms.	Stacy & Becky	Charlton			R.R. #3	Chesley	N0G 1L0
Ms.	Patti	Chmelyk			50 Inglewood Drive	Brampton	L6W 2N2
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Mr.	Doug	Cleverley		Grey Bruce Renewable Energy Cooperative	310 10th Street West	Owen Sound	N4K 2E6
Mr.	Jim	Coffey	General Manager	Saugeen Valley Conservation Authority		Hanover	N4N 3B8
Ms.	Stacey	Cook		Drinking Water Source Protection	774685 Hwy 10	Markdale	N0C 1H0
Mr.	Jim	Cooke			RR #1	Walkerton	N0G 2V0
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Ms.	Kay	Cumbow		Citizens for Alternatives to Chemical Contamination	15184 Dudley Road	Brown City	48416
Mr.	Lou	D'Alessandro			101 17th Street East	Owen Sound	N4K 0A5
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Ms.	Cherie	Duhaime	Secretary	Beachers Organization		Port Elgin	N0H 2C0
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Ms.	Kim	Holley			R.R. #2	Warton	N0H 2T0
Mr.	Paul	Holmes	Inspector	South Bruce OPP	Box 40	Kincardine	N2Z 2Y6
Ms.	Jacquie	Hoorweg	Director	Nuclear Public Affairs	700 University Avenue, 19th Fl	Toronto	M5G 1X6
				Wastes and Decommissioning Division			
Mr.	Don	Howard	Director	Canadian Nuclear Safety Commission	P.O. Box 1046, Station B	Ottawa	K1P 5S9
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Mr.	Richard	Jackson		Intera Engineering	11 Venus Crescent	Heidelberg	NOB 1Y0
Mr.	Dale	Jacobs	Environment Coordinator	Saugeen Ojibway Nation	R.R.#5	Warton	N0H 2T0
Mr.	Wayne	Jamieson	Chief Administrative Officer	Bruce County		Walkerton	N0G 2V0
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Chief	Randall	Kahgee			Hwy 21, R.R.#1	Southampton	N0H 2L0
Mr.	Kevin	Kamps		Nuclear Information and Resource Service	6939 Carroll Ave., Suite 340	Takoma Park	20912-4423
Mr.	J.	Keddy			39 Willow Street	Walkerton	N0G 2V0
Mr.	Michael	Keegan		Coalition for a Nuclear Free Great Lakes	P.O. Box 331	Monroe	48161
Mr.	Bill	Keeley		Washington Group International	6055 Marineview Road	King George	22485
Ms.	Ann	Kennedy			R.R. #1	Sauble Beach	N0H 2G0
Dr.	Fraser	King		Integrity Corrosion Consulting Ltd.	3396 Stephenson Point Rd.	Nanaimo	V9T 1K2
Ms.	Kay	Klassen		CNSC	280 Slater Street	Ottawa	K1P 5S9
Mr.	Ziggy	Kleinau		Citizens for Renewable Energy	P.O. Box 364	Binbrook	L0R 1C0
Mr.	Chris	Kolb		Michigan Environmental Council	119 Pere Marquette Drive, Suite	Lansing	48912
Ms.	Kim	Kramer			340 4th Avenue Southwest	Owen Sound	N4K 6A1
Mr.	Larry	Kraemer	Mayor	Municipality of Kincardine	1475 Concession 5, R.R. #5	Kincardine	N2Z 2X6
Mr.	Mark	Kraemer		Source Protection Committee	216 Trillium Drive	Port Elgin	N0H 2C2
Mr.	Vitold	Kreutzer			773126 Highway 10, R.R. #2	Proton Station	N0C 1L0
			Manager, Waste Management and Decommissioning				
Ms.	Joan	Miller		AECL – Chalk River Laboratories		Chalk River	K0J 1J0

Mr.	Gregory	Kuzyk		AECL	P.O. Box 711	Pinawa	R0E 1L0
Mr.	Andy	LaBarre			19855 W. Outer Drive, Suite 10	Dearborn	48124
Mr.	Chris	LaForest	Planning Director	Bruce County	578 Brown Street, Box 129	Warton	N0H 2T0
Mr.	Ross	Lamont	Manager Government Relations	Bruce Power		Tiverton	N0G 2T0
Mr.	Michel	Landreville	Project Manager - SPOC DGR O	Ontario Power Generation	700 University Avenue TCH17-I	Toronto	M5G 1X6
Mr.	Brent	Lanktree		Source Protection Committee	588463 Grey Road 19 RR #1	Ravenna	N0H 2E0
Ms.	Carolyn	Laude	Senior Advisor, Aboriginal Consul	Canadian Nuclear Safety Commission	280 Slater Street	Ottawa	K1P 5S9
Ms.	Pat	Lawson			R.R.2	Port Hope	L1A 3V6
Mr.	Bob	Leech		AECOM	300 Town Centre Blvd., Suite 3	Markham	L3R 5Z6
Mr.	Aaron	Legge			RR #2	Chesley	N0G 1L0
Mr.	Mike	Leggett	Committee Chair	Kincardine Economic Development Committee	1475 Concession 5	Kincardine	N2Z 2X6
Mr.	Thomas	Leonard		West Michigan Environmental Action Council	1007 Lake Drive SE	Grand Rapids	49506
Mr.	Glen	Lipinski	Addictions, Wellness Coordinator		20 Division Street	Welland	L3B 3Z6
Mr.	Richard	Little		Quintessa Limited	The Hub, 14 Station Road	Henley-on-Tharn	RG9 1AY
Ms.	Brennain	Lloyd		Northwatch	P.O. Box 282	North Bay	P1B 8H2
Mr.	Ben	Lobb	MP Huron-Bruce		30 Victoria Street	Goderich	N7A 2R6
Mr.	Doug	Lonsdale		Saugeen Field Naturalists		Hanover	N4N 3T1
Ms.	Lynda	Lukasik	Executive Director	Environment Hamilton	8-22 Wilson Street	Hamilton	L8R 1C5
Dr.	Hazel	Lynn	Medical Officer of Health		920 First Avenue West	Owen Sound	N4K 4K5
Mr.	George	Macdonald			37 Victoria St. S.	Southampton	N0H 2L0
Mr.	Norman J.	MacGregor	Chairperson	Integrated Energy Development Corp.		Kincardine	N2Z 2Y7
Mr.	Les	MacKinnon	Member	Source Protection Committee	305507 South Line A, RR #3	Priceville	N0C 1W0
Ms.	Florence	Mackesy			R.R. #1	Paisley	N0G 2N0
Ms.	Sue	MacLeod		Bruce Power Visitor Centre	Box 150 B32	Tiverton	N0G 2T0
Mr.	David	Martin	Energy Coordinator	Greenpeace	33 Cecil Street	Toronto	M5T 1N1
Mr.	Derek	Martin		Department of Civil & Environmental Engineering			
Mr.	Joel	Martin		Resources Engineering Facility	3-071 Markin/CNRL Natural	Edmonton	T6G 2W2
Mr.	Doug	Martz		Tiverton Lions Club		Tiverton	N0G 2T0
Mr.	Ron	Mattmer		Macomb Water Quality Board	1 South Main Street, 9th Floor	Mount Clemens	48043
					2227 4th Avenue West	Owen Sound	N4K 4Y7
					204 High Street		
Mr.	Jason	Indoe	President	Historic Saugeen Metis	P.O. Box 1492	Southampton	N0H 2L0
Mr.	Dave	McCauley	Acting Director, Uranium Radioac	Natural Resources Canada	580 Booth Street, 17th Floor C2	Ottawa	K1A 0E4
Mr.	Steve	McCauley		Place Vincent Massey, Room 1001	351 St. Joseph Blvd.	Hull	K1A 0H3
Mr.	Dougal	McCreath		Laurentian University			
Mr.	Bill	McCulloch		School of Engineering	Ramsey Lake Road	Sudbury	P3E 2C6
Ms.	Rhonda	Cook	Chief Administrative Officer		RR #3	Chesley	N0G 1L0
Mr.	Milt	Mclver	Mayor	Town of South Bruce Peninsula		Warton	N0H 2T0
				Municipality of Northern Bruce Peninsula		Lion's Head	N0H 1W0
Mr.	Jamie	McKinnon	Fire Chief	Municipality of Kincardine			
Ms.	Alice	McLaren		Fire Department - Tiverton Station	1475 Concession 5, RR 5	Kincardine	N2Z 2X6
Ms.	Teresa	McLellan	Ex-officio	Rotary Club of Port Elgin		Port Elgin	N0G 2C0
Mr.	Brant	McNeish	Project Officer, Site Office	Ministry of Environment	3232 White Oak Road	London	N6E 1L8
				Canadian Nuclear Safety Commission	P.O. Box 3000, Bruce A Techni	Tiverton	N0G 2T0

Commu	Historic Saug	Metis	Community Office		204 High Street P.O. Box 1492	Southampton	N0H 2L0
Mr.	John	Miller			Box 791	Warton	N0H 2T0
Mr.	Terry	Miller		Lone Tree Council	4649 David Court	Bay City	48706
Mr.	Murray	Miller			25 Huron Ridge Crescent	Kincardine	N2Z 1K2
Mr.	Larry	Miller	MP Bruce-Grey			Owen Sound	N4K 2J1
Mr.	Merv	Misch			R.R. #1	Dobbinton	N0H 1L0
Ms.	Carol	Mitchell	MPP Huron-Bruce		49 Albert St., P. O. Box 1794	Clinton	N0M1L0
					101 17th Street East, 3rd Floor		
Mr.	Ian	Mitchell	District Engineer	Ontario Ministry of the Environment		Owen Sound	N4K 0A5
Mr.	Duncan	Moffett		Golder Associates	2390 Argentina Road	Mississauga	L5N 5Z7
Mr.	Keith	Mombourquette			Box 322	Southampton	N0H 2L0
Ms.	Rosemarie	Morris			191 Rosemary Lane	Ancaster	L9G 2K6
Mr.	Hugh	Morrison			44 Pottawatomie Drive	Southampton	N0H 2L0
Mr.	Andrew	Müller	President	Society of Energy Workers	425 Bloor Street East, Suite 300	Toronto	M4W 3R4
Mr.	Bill	Murdoch	MPP Bruce-Grey			Owen Sound	N4K 2H8
Mr.	Eamonn	Murphy			P.O. Box 440, 104 Heather Lyn	Tara	N0H 2N0
					160 Elgin Street, 22nd Floor		
Ms.	Debra	Myles	Project Manager	Canadian Environmental Assessment Agency		Ottawa	K1A 0H3
Mr.	Kent	Myles			174 Division Street, P.O. Box 96	Warton	N0H 2T0
Mr.	Les	Nichols		Source Protection Committee	62 Brownlee Street	Teeswater	N0G 2S0
Mr.	Stefano	Normani		University of Waterloo	200 University Avenue West	Waterloo	N2L 3G1
Profess	David	Novog	Physics	McMaster University	1280 Main Street W	Hamilton	L8S 4L8
Mr.	Ken	Ogilvie			203-1750 Bayview Avenue	Toronto	M4G 4H6
Mr.	Ron	Oswald	Mayor	Municipality Of Arran-Elderslie	1925 Bruce Road #10	Chesley	N0G 1L0
Mr.	Peter	Ottensmeyer			27 Chatfield Drive	Don Mills On	M3B 1K6
Mr.	Henry & Adam	Paliga			P.O. Box 661	Chesley	N0G 1L0
Mr.	William	Palmer			TRI-LEA GM, R.R. #5	Paisley	N0G 2N0
Mr.	Chuck	Pautler	VP Communications	Ontario Power Generation	700 University Avenue, 19th Fl	Toronto	M5G 1X6
Ms.	Jackie	Pawlikowski	General Manager	Kincardine & District Chamber of Commerce	721A Queen Street, 3rd Floor, F	Kincardine	N2Z 2Y6
Mr.	Geoff	Peach		Lake Huron Centre for Coastal Conservation		Blyth	N0M 1H0
Mr.	Joe	Pearson			5108 Trent Woods Drive	Trent Woods	28562-5726
Mr.	John	Pedlar		Friends of MacGregor Point Provincial Park	R.R. #1	Port Elgin	N0H 2C5
Mr.	Lloyd	Pepper			P.O. Box 245	Chesley	N0G 1L0
Mr.	Bert	Perkins		Saugeen Rail Trail Association		Port Elgin	N0G 2C0
Mr.	Rick	Pettigrew			954 5th Ave East	Owen Sound	N4K 2S1
Ms.	Sara	Pickard			136 2nd Street	Hanover	N4N 1A2
Mr.	Gerald	Poechman			RR #2	Walkerton	N0G 2V0
Mr.	Tony	Porter		Probus Club of Port Elgin & District		Port Elgin	N0G 2C0
Mr.	Wietse	Posthumus			RR #3	Tara	N0H 2N0
Mr. & M	Peter & Rosem	Preuss			070106 Zion Church Road, R.R	Warton	N0H 2T0
				Chair, Board of Directors			
Ms.	Tracy	Primeau		Women's House Serving Bruce and Grey	P. O. Box 760	Kincardine	N2Z 2Z4
Mr.	Robert	Pringle	Warden	Grey County	595 9th Ave., E.	Owen Sound	N4K 3E3
Ms.	Anna	Przychodski			55 Seaborn Road	Brampton	L6V 2B8
Ms.	Catherine	Quigg			838 Harriet Lane	Barrington	60010
Mr.	Richard	Radford	Chief Administrative Officer	Municipality Of Brockton	100 Scott Street	Walkerton	N0G 2V0

Mr.	Stu	Raqe			R.R. #3	Elmwood	N0G 1S0
Mr.	Ken	Raven		Intera Engineering Ltd.	1 Raymond Street, Suite 200	Ottawa	K1R 1A2
Mr.	Martin	Rawlings		Golder Associates	2390 Argentina Road	Mississauga	L5N 5Z7
Mr.	Howard	Ribey			R.R. #4	Paisley	N0G 2N0
Mr.	Don	Richardson		AECOM Limited	512 Woolwich Street, Suite 2	Guelph	N1H 3X7
Mr.	Mike	Rinker		CNSC	280 Slater Street	Ottawa	K1P 5S9
Ms.	Cathy	Robins	Chief Administrative Officer	Municipality of Northern Bruce Peninsula		Lion's Head	N0H 1W0
Mr.	Robert	Rodgers			RR #1	Mar	N0H 1X0
Gen.	Richard	Rohmer			32 Callary Cr.	Collingwood	L9Y 4Y1
Mr.	Norman	Rubin		Energy Probe	225 Brunswick Avenue	Toronto	M5S 2M6
Ms.	Jean	Ruprechl			P.O. Box 623	Chesley	N0G 1L0
Ms.	Pamela	Rups			2705 Pine Ridge Road	Kalamazoo	49008
Mr.	Peter	Sargent		AECL Whiteshell, Waste Technology Division	Laboratories	Pinawa	R0E 1L0
Mr. & M	Colin & Cindy	Saunders			R.R. #3	Chesley	N0G 1L0
Ms.	Cindy	Schmidt	Manager	Bruce Community Development Corporation	281 Durham St.	Kincardine	N2Z 2Y7
Ms.	Jean	Schoebl			550 Montgomery, Apt. 9, RR3	Lucknow	N0G 2H0
Mr.	James	Scongack	Executive Assistant to President &	Bruce Power	P.O. Box 1540, B10	Tiverton	N0G 2T0
Mr.	Gary	Senior	Manager, Environmental Planning	Saugeen Valley Conservation Authority	R.R. #1	Hanover	N4N 3B8
Mr.	Dave	Shier		Canadian Nuclear Workers Council	244 Eglinton Avenue East	Toronto	M4P 1K2
Prof.	David	Shoesmith	Department of Chemistry	University of Western Ontario	1151 Richmond Street, Chemis	London	N6A 5B7
Mr.	David	Shouldice			R.R. #2	Shallow Lake	N0H 2K0
Ms.	Veronica	Smith			R.R. #5	Cape Croker	N0H 2T0
Mr.	Allan	Smith			RR #2	Tara	N0H 2N0
Mr.	Don	Smith	Project Manager	Drinking Water Source Protection	164 2nd Avenue	Hanover	N4N 3R3
Ms.	Donna	Smith		South-Port Optimist Club		Southampton	N0H 2L0
Mr.	Mike	Smith	Mayor	Town of Saugeen Shores		Port Elgin	N0G 2C0
				Executive Director			
Mr.	Lawrence	Solomon		Energy Probe Research Foundation	225 Brunswick Avenue	Toronto	M5S 2M6
Mr.	Tim	Spencer			R.R. #4	Lion's Head	N0H 1W0
Ms.	Amy	Spray		Michigan United Conservation Clubs	P.O. Box 30235	Lansing	48909
Mr.	Derek	Stack	Executive Director	Great Lakes United	3388 Rue Adam	Montreal	H1W 3Z3
Mr.	Marvin	Stemeroff		AECOM	512 Woolwich Street, Unit 2	Guelph	N1H 3X7
Mr.	Shawn-Patrick	Stensil			250 Dundas Street West, Suite	Toronto	M5T 2Z5
Ms.	Donna	Stine			111 South Capital Avenue, P.O	Lansing	48909
Mr.	Thor	Strong	Chief Radiological Protection and	Dept. of Environmental Quality	PO Box 30241	Lansing	48909
Mr.	Russell	Strong			P.O. Box 782	Chesley	N0G 1L0
Congre	Bart	Stupak			2352 Rayburn House Office Bui	Washington	20515
				University of Waterloo			
Mr.	Edward A.	Sudicky		Department of Earth and Environmental Sciences	200 University Avenue West	Waterloo	N2L 3G1
Ms.	Laurie	Swami	Director, Licensing & Environmen	Ontario Power Generation	1315 Pickering Parkway, 3rd Fl	Pickering	L1V 7G5
Mr.	Albert	Sweetnam		Ontario Power Generation	700 University Avenue, TCH17	Toronto	M5G 1X6
					Constitution Hall		
					525 West Allegan Street		
Mr.	Jim J.	Sygo		Department of Environmental Quality	P.O. Box 30473	Lansing	48909

Mr.	John	Sykes		University of Waterloo Department of Earth and Environmental Sciences	200 University Avenue West	Waterloo	N2L 3G1
Mr.	Peter	Tabuns		NDP Environment Critic MPP Toronto Danforth Compliance Div.	421 Donlands Avenue	Toronto	M4J 3S2
Mr.	C.	Taylor	Director		280 Slater Street	Ottawa	K1P 5S9
Mr.	Don	Terry		Pickering Information Centre	1675 Montgomery Road	Pickering	L1V 2R5
Mr.	Dale	Thompson		Drinking Water Source Protection	9 Hobson's Harbour Drive, RR #	Lion's Head	N0H 1W0
Ms.	Patsy	Thompson		280 Slater Street	P.O. Box 1046, Station B	Ottawa	K1P 5S9
Ms.	Janice	Thomson-Kylie	Chair	Green-Horizons	P.O. Box 1593	Port Elgin	N0H 2C0
Dr.	Mike	Thorne	Mike Thorne & Associates	Abbotsleigh, Kebroyd Mount	Sowery Bridge, Halifax,	West Yorkshire	HX6 3JA
Ms.	Sue	Tipper			1091 7th Avenue	Hanover	N4N 2K4
Mr.	Chris	Tomsett	Park Superintendent	MacGregor Point Provincial Park		Port Elgin	N0H 2C5
Ms.	Sheila	Tooze		Embassy of Canada	501 Pennsylvania Ave., N.W	Washington	20001-2114
Mr.	Brian	Torrie	Director, Environmental Assessment	CNSC	280 Slater Street	Ottawa	K1P 5S9
Ms.	Norah	Toth		Macgregor Point Provincial Park	R.R. #1	Port Elgin	N0H 2C0
Mr.	Mike	Traynor	Chair	Source Protection Committee	324010 Concession 5, RR #1	Annan	N0H 1B0
Ms.	Robert	Trelford	Community Emergency Manager	Municipality of Kincardine	1475 Concession 5, R.R. #5	Kincardine	N2Z 2X6
Mr.	Bill	Twaddle			2771 9th Avenue East	Owen Sound	N4K 3H6
Mr.	Mitch	Twolan	Mayor	Township of Huron-Kinlsos		Kincardine	N2Z 2X3
Ms.	Lorne	Underwood			RR #1	Clifford	N0G 1M0
Mr.	Allan	Vallee	President	Georgian Bay Metis Council	355 Cranston Crescent	Midland	L4R 4K6
Ms.	Emily	Vandermeulen			205-795 5th Avenue East	Owen Sound	N4K 2R7
Mr.	Peter	Victor	Professor		Studies HNES 109, York University 4700 Keele Street	North York	M3J 1P3
Mr.	Michael	Wainscott			402 – 1st Street South	Hanover	N4N 3T8
Mr.	Harland	Wake		Ontario Power Generation	700 University Avenue, TCH17F	Toronto	M5G 1X6
Ms.	Mary Rose	Walden	Administrator	Township of Huron-Kinlsos	P.O. Box 130 21 Queen Street	Ripley	N0G 2R0
Mr.	Hank	Rowlinson	Manager, Community Relations	Metis Nation of Ontario	500 Old St. Patrick Street, Unit	Ottawa	K1N 9G4
Mr.	Larry	Walpole			P.O. Box 402	Chesley	N0G 1L0
Mr.	Ray	Walser	President	Lake Huron Fishing Club	P.O. Box 355	Southampton	N0H 2L0
Mr.	Don	White		Rotary Club of Southampton	230 Tyendinaga Drive	Southampton	N0H 2L0
Mr.	Mac	Williams			763 2nd Avenue West	Owen Sound	N4K 4M2
Mr.	Tomasz	Wlodarczyk		AECOM Limited	300 Town Centre Blvd., Suite 31	Markham	L3R 5Z6
Ms.	Kathryn	Woeller	Distric Planner Midhurst District	Ministry of Natural Resources	2284 Nursery Road	Midhurst	L0L 1X0
Mr.	Werner	Wolf			R.R. #3	Warton	N0H 2T0
Mr. & M	Geoff & Donna	Wright			R.R. #3	Warton	N0H 2T0
Mr.	Ken	Yates			R.R. #2	Owen Sound	N4K 5N4
Mr.	Ernest	Young			RR #3	Tiverton	N0G 2T0
Ms.	Carl	Zettel		South Bruce Municipality	R.R. #1	Mildmay	N0G 2S0
Mr.	Tony	Zettel			R.R. #5	Mildmay	N0G 2J0
Ms.	Barb	Zettler			RR #3	Teeswater	N0G 2S0
Ms.	Joanne	Robbins	General Manager	Sierra Club of Canada Saugeen Shores Chamber of Commerce	412 - 1 Nicholas Street 559 Goderich Street	Ottawa Port Elgin	K1N 7B7 N0H 2C4

Mr. Murray Elston	Vice President, Corporate Affairs	Bruce Power	Tiverton	N0G 2T0
Southampton Rotary Club		Southampton Rotary Club	Southampton	N0H 2L0
Friends of the Earth Canada		Friends of the Earth Canada	260 St. Patrick Street, Suite 300	Ottawa K1N 5K5
		PROBUS Club of Kincardine		
Mr. J. Tully		c/o J. Tully	R.R.# 5	Kincardine K2Z 2X6
Canadian Environmental Law Association		Canadian Environmental Law Association	130 Spadina Avenue	Toronto M5V 2L4
			292 Dupont Street	
			P.O. Box 40017	
International Institute of Concern for Public Health		International Institute of Concern for Public Health	RPO Dupont	Toronto M5R 0A2
Mr. V. John Hill	President	Rotary Club of Kincardine	P. O. Box 113	Kincardine N2Z 2X6
National Council of Women in Canada		National Council of Women in Canada	Box 1590	Niagara-on-the-Lake L0S 1J0
			630 Main Street North	
Mr. Glen Dietrich		County of Wellington OPP		Mount Forest N0G 2L0
Mr. Glenn Sutton			711 Goldie Crescent	Kincardine N2Z 2Z9
Mr. Sandy Donald			264 Kincardine Ave.	Kincardine N2Z 2R1
Mr. Barry Schmidt			1027 Saugeen Street	Kincardine N2Z 1B2
Ms. Laura Haight			458 MacDougall Drive	Kincardine N2Z 3A8
Mr. Randy Roppel			27 Main Street	Tiverton N0G 2T0
			R.R. #1	
Ms. Marsha Leggett			669 Concession 10	Tiverton N0G 2T0
Mr. Jake Linklater		SON Environment Office	R.R. #5	Warton N0H 2T0
Mr. James Wagar		Métis Nation of Ontario	3 Long Drive	Whitby L1N 8E2
Ms. Melanie Paradis		Métis Nation of Ontario	6624 January Drive	Niagara Falls L2J 4J4
Mr. Troy Patterson	Editor	The Kincardine News	719 Queen St.	Kincardine N2Z 1Z9
Mr. Patrick Bales	Editor	The Shoreline Beacon	694 Goderich St., Box 580	Port Elgin N0H 2C0
Mr. Eric Howald	Publisher and Editor	The Kincardine Independent	840 Queen St., Box 1240	Kincardine N2Z 2Z4
Mr. John McPhee	Editor	The Walkerton Herald-Times	Box 190, 110 Durham St. E.	Walkerton N0G 2V0
Mr. Keith Gilbert	Editor	Warton Echo	P.O. Box 220, 570 Bedford St.	Warton N0H 2T0
Ms. Sarah Bender	Editor	Lucknow Sentinel	Box 400, 619 Campbell St.	Lucknow N0G 2H0
Mr. Michael Den Tandt	Editor	The Sun Times	290 9th Street E.	Owen Sound N4K 5P2
Mr. Rob Mise	General Manager	MY FM	756 Queen Street	Kincardine N2Z 2Y2
Mr. John Divinski	Morning Host	98 The Beach	382 Goderich Street	Port Elgin N0H 2C1
Mr. Ken Kilpatrick	News Reporter	Blackburn Radio Inc.	215 Carling Terrace	Wingham N0G 2W0



**Angelo Castellan**  
Vice President  
Environmental Assessment &  
Corporate Support  
Tel 647.259.3018  
Email [acastellan@nwmco.ca](mailto:acastellan@nwmco.ca)

DGR-07723-T10

September 16, 2010

Mr. Ken Kilpatrick  
News Reporter  
Blackburn Radio Inc.  
215 Carling Terrace  
Wingham, ON N0G 2W0

Dear Mr. Kilpatrick:

Subject: Community Consultation for OPG's Deep Geologic Repository Project  
for Low and Intermediate Level Waste

Consistent with the requirements of the Canadian Environmental Assessment Act, Ontario Power Generation (OPG) is pursuing completion and acceptance of an Environmental Impact Statement (EIS) for the proposed Deep Geologic Repository (DGR) Project for Low and Intermediate Level Radioactive Waste at the Bruce nuclear site. The Nuclear Waste Management Organization (NWMO) has been contracted by OPG to undertake the regulatory approvals process for the DGR.

As a part of that environmental assessment process, NWMO and OPG are seeking opportunities to communicate with interested stakeholders on the proposed DGR Project. To further these communication efforts, open houses have been scheduled in communities in the vicinity of the proposed project at the Bruce nuclear site during late September and early October 2010. At these open houses, we look forward to providing preliminary results of the environmental assessment, responding to questions, and hearing the views of stakeholders on the proposed project. This feedback will be considered in the environmental impact statement submitted to the Joint Review Panel (that will preside over the hearings for the EIS and the site preparation/ construction licence application).

Open Houses are being held at the locations listed below and will be open between the hours of 4 p.m. and 8 p.m. each evening.

Elgin  
Monday September 27  
Colonial Motel  
235 Goderich Street  
Port Elgin, ON

Ripley  
Tuesday September 28  
Ripley Huron Community Centre  
17 Queen Street  
Ripley, ON



Kincardine  
Wednesday September 29  
Best Western Governor's Inn  
791 Durham Street  
Kincardine, ON

Walkerton  
Thursday September 30  
Victoria Jubilee Hall  
111 Jackson Street S  
Walkerton, ON

Chesley  
Monday October 4  
Chesley Fire Hall  
North end of Chesley, Bruce Rd. 10

Owen Sound  
Tuesday October 5  
Bayshore Community Centre  
1900 3rd Avenue E  
Owen Sound, ON

Warton  
Wednesday October 6  
County of Bruce Public Library Building  
578 Brown Street  
Warton, ON

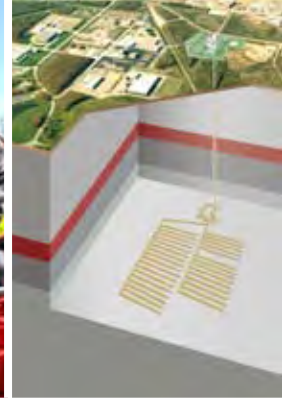
We look forward to seeing you at one or more of the Open Houses. If you would like further information on the proposed DGR Project please refer to our web site at: [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr) or call Marie Wilson at 519-368-1639.

Sincerely,

A handwritten signature in blue ink that reads "A. Castellan". The signature is written in a cursive, flowing style.

Angelo Castellan  
Vice President, Environmental Assessment & Corporate Support

# YOU ARE INVITED TO A DGR OPEN HOUSE



**Keeping you informed about OPG's DEEP GEOLOGIC REPOSITORY PROJECT for Low & Intermediate Level Waste**

On behalf of Ontario Power Generation (OPG), the Nuclear Waste Management Organization (NWMO) invites you to participate in our Open Houses on the Deep Geologic Repository (DGR) Project for low and intermediate level radioactive waste.

At this fourth round of Open Houses we look forward to providing you with updated information on the DGR Project, including the preliminary results of the environmental assessment, to answering your questions, and hearing your views. Your comments will be addressed in the Environmental Impact

Statement (EIS) submitted under the Canadian Environmental Assessment Act for the project.

The next major DGR Project milestone is the filing of the regulatory submission anticipated in early 2011, which includes the EIS, Preliminary Safety Report and supporting documents.

**nwmo**  
NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION

SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES

**ONTARIO POWER**  
GENERATION

**Open Houses will be held at the locations listed below. Open House hours of operation are 4:00 p.m. to 8:00 p.m. We look forward to seeing you there.**

**Port Elgin**

**Monday September 27**

Colonial Motel  
235 Goderich Street  
Port Elgin, ON

**Ripley**

**Tuesday September 28**

Ripley Huron Community Centre  
17 Queen Street  
Ripley, ON

**Kincardine**

**Wednesday September 29**

Best Western Governor's Inn  
791 Durham Street  
Kincardine, ON

**Walkerton**

**Thursday September 30**

Victoria Jubilee Hall  
111 Jackson Street S  
Walkerton, ON

**Chesley**

**Monday October 4**

Chesley Fire Hall  
North end of Chesley, Bruce Rd. 10  
Chesley, ON

**Owen Sound**

**Tuesday October 5**

Bayshore Community Centre  
1900 3rd Avenue E  
Owen Sound, ON

**Warton**

**Wednesday October 6**

County of Bruce Public Library Building  
578 Brown Street  
Warton, ON

**FOR MORE  
INFORMATION**

Please call Marie Wilson at (519) 368-1639, or write to us at the Nuclear Waste Management Organization (NWMO), Box 7000, B21, Tiverton, ON, N0G 2T0 or visit our project website at: [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

**nwmo**

NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION

SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES

**ONTARIO POWER  
GENERATION**

**[www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)**




Printed on 100% recycled stock

2010 DGR Open House Post Card Mailing List

Kincardine P.O.	All Postal Codes	5339
Owen Sound P.O.	All Postal Codes	14029
Chepstow P.O.	N0G 1L0	146
Clifford P.O.	N0G 1M0	941
Elmwood P.O.	N0G 1S0	720
Formosa P.O.	N0G 1W0	255
Holyrood P.O.	N0G 2B0	208
Mildmay P.O.	N0G 2J0	1007
Chesley P.O.	N0G 1L0	1429
Neustadt P.O.	N0G 2M0	403
Paisley P.O.	N0G 2N0	958
Ripley P.O.	N0G 2R0	791
Teeswater P.O.	N0G 2S0	1989
Tiverton P.O.	N0G 2T0	1325
Walkerton P.O.	N0G 2V0	3710
Allenford P.O.	N0H 1A0	499
Annan P.O.	N0H 1B0	393
Bognor P.O.	N0H 1E0	212
Kemble P.O.	N0H 1S0	426
Leith P.O.	N0H 1V0	100
Lions Head P.O.	N0H 1W0	1059
Mar P.O.	N0H 1X0	537
Miller Lake P.O.	N0H 1Z0	267
Port Elgin P.O.	N0H 2C0	4499
Shallow Lake P.O.	N0H 2K0	666
Southampton P.O.	N0H 2L0	2406
Stokes Bay P.O.	N0H 2M0	90
Tara P.O.	N0H 2N0	1427
Tobermory P.O.	N0H 2R0	712
Wiarion P.O.	N0H 2T0	4915
TOTAL		51,458

# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste



**The Nuclear Waste Management Organization**, on behalf of Ontario Power Generation, is hosting open houses to share the preliminary results of the environmental assessment for OPG's proposed Deep Geologic Repository for low and intermediate level nuclear waste. **Please join us between 4 and 8 pm at any of these locations.**

#### **Port Elgin**

**Monday September 27**

Colonial Motel  
235 Goderich Street  
Port Elgin, ON

#### **Ripley**

**Tuesday September 28**

Ripley Huron Community Centre  
17 Queen Street  
Ripley, ON

#### **Kincardine**

**Wednesday September 29**

Best Western Governor's Inn  
791 Durham Street  
Kincardine, ON

#### **Walkerton**

**Thursday September 30**

Victoria Jubilee Hall  
111 Jackson Street South  
Walkerton, ON

#### **Chesley**

**Monday October 4**

Chesley Fire Hall  
North end of Chesley,  
Bruce Rd. 10  
Chesley, ON

#### **Owen Sound**

**Tuesday October 5**

Bayshore Community Centre  
1900 3rd Avenue East  
Owen Sound, ON

#### **Warton**

**Wednesday October 6**

County of Bruce  
Public Library Building  
578 Brown Street  
Warton, ON

**KEEPING YOU INFORMED**

[www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

**nwmo**

NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION

SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES

**ONTARIOPOWER  
GENERATION**

## Print Schedule for 2010 Open House Advertising

PAPER	SPEC	SIZE- Width by Height	INSERTION DATES	Deadline for copy
Kincardine News	B&W	4.9 x 6.2 inches	Sept. 22, Sept. 29	Sept. 17 - 2 pm Sept. 24 - 2 pm
Kincardine Independent	B&W	5 x 7 ¾ inches	Sept. 22, Sept. 29	Sept. 17 – 2 pm Sept. 24 – 2 pm
Lucknow Sentinel	B&W	4.9 x 6.2 inches	Sept. 15, Sept. 22	Sept. 10 – noon Sept. 17 - noon
Shoreline Beacon	B&W	4.9 x 6.2 inches	Sept. 15, Sept. 22	Sept. 10 – 2 pm Sept. 17 – 2 pm
Warton Echo	B&W	4.9 x 6.2 inches	Sept. 29, Oct. 6	Sept. 23 – noon Sept. 30 - noon
Walkerton Herald Times	B&W	5.1 x 6.2	Sept. 22, Sept. 29	Sept. 17 – 3 pm Sept. 24 – 3 pm
Sun Times (Owen Sound)	B&W	5 11/16 x 6 ¾ inches	Sept. 24, Sept. 27, Oct. 4	Sept. 22 – 3 pm Sept. 23 – 3 pm Sept. 30 – 3 pm

### AD:

We are doing a round of open houses (as per the post card) from September 27 to October. We will need the first ads ready for insertion the week of Sept. 15 – note deadline dates. The ads will have exactly the same format as the open house ad we did recently for the open house held at the Bruce County Museum; however the times and locations will be different. The specifications and insertion dates are listed above. I will book the ad space and insert.

Open House Schedule: Print the schedule as per the postcard with the same time, dates and locations; however, as the open houses occur, some will fall off the schedule, necessitating a change in the copy – see below:

Kincardine News – Advertise all of the open houses in Sept. 22 edition; drop Port Elgin open house in Sept. 29 edition.

Kincardine Independent – Advertise all of the open houses in Sept. 22 edition; drop Port Elgin open house in Sept. 29 edition.

Lucknow Sentinel – Advertise all of the open houses in both Sept. 15 and Sept. 22 editions.

Shoreline Beacon – Advertise all of the open houses on in Sept. 15 and Sept. 22 editions.

Wiarnton Echo – Only advertise the Wiarnton and Owen Sound open houses on Sept. 29 and then drop Owen Sound for Oct. 6 edition

- Note the Oct. 6 edition will have to say open house as opposed to open houses

Walkerton Herald Times – Advertise all of the open houses on Sept. 22 and drop Port Elgin and Ripley for the Sept. 29 edition

Sun Times – Advertise all for the Sept. 24 edition, all for the Sept. 27 edition and just Chesley, Owen Sound and Wiarnton for Oct. 4.

Let me know if there are any issues.

Thanks a lot,

M.W.



myFM  
 (a division of My Broadcasting Corporation)  
 Box 961, 321-B Raglan St. S.  
 Renfrew, Ontario  
 K7V 4H4  
 Tel: 613-432-6936

# CIYN-FM Invoice

Invoice ID: 10091035  
 Invoice Date: 9/26/2010  
 Account ID: 4239  
 Order ID: 4239-003  
 Account Rep: Rob Mise

Amount Due: \$1,808.00

Amount Paid: \_\_\_\_\_

NUCLEAR WASTE MANAGEMENT ORGANIZATION  
 BOX 7000, B21  
 TIVERTON, ONTARIO N0G 2T0

G.S.T. # 864297940-RT0001  
 Further Invoice Detail Available Upon Request  
 Terms are net 30 Days

Sponsor: Nuclear Waste Management Organization / Nuclear Waste Manage  
 Nuclear Waste Management Organization- Open Houses

Dates	Qty	Description	Rate	Cost
9/22/2010 - 9/26/2010	50	:30 Spot	[Package]	[Package]
9/26/2010 - 9/26/2010	1	Package	1,600.00	1,600.00
<b>50 Total Items</b>			<b>Total Cost:</b>	<b>1,600.00</b>
			+ 13% HST:	208.00
			<b>Net Total:</b>	<b>1,808.00</b>

Amount Due: **1,808.00**



Box 280 270 Ninth Street East Owen Sound ON N4K 5P5  
Phone: 519-376-2030 Fax: 519-371-4242  
bayshore@bayshorebroadcasting.ca

NUCLEAR WASTE MANAGEMENT (NWMO)  
BOX 7000 B21  
TIVERTON ONTARIO  
NOG 2T0

**STATEMENT**

DATE: 9/30/10

FOR YOUR CONVENIENCE PAY BY  
VISA, MASTERCARD OR ON LINE

ANY QUESTIONS ON YOUR STATEMENT  
PLEASE CONTACT LEEANN BARFOOT  
ACCOUNTS RECEIVABLE @ EXT 210  
OR YOUR MARKETING REP

ACCOUNT NUMBER 66430

AMOUNT DUE	AMOUNT PAID
\$3,135.75	

**TERMS: Net. A finance charge of 2% per month (24% annual rate) will be charged on the unpaid balance of past due accounts.**

INVOICE NUMBER	INVOICE DATE	DESCRIPTION	AMOUNT	BALANCE
134151	8/25/10	Contract #0052554 8/19/10 to 8/23/10 AUGUST 23 OPEN HOUSE Beginning Balance BALANCE OF INVOICE #134151	CIXK-FM \$1,356.00	\$1,356.00
134152	8/25/10	Contract #0052556 8/16/10 to 8/23/10 AUGUST 23RD OPEN HOUS Beginning Balance BALANCE OF INVOICE #134152	CFPS-FM \$1,017.00	\$1,017.00
135992	9/30/10	Contract #0053393 9/24/10 to 9/26/10 NGR OPEN HOUSES 9/26 10 30's @ \$50.00 9/26 HST Tax BALANCE OF INVOICE #135992	CKYC-FM \$500.00 \$65.00	\$565.00
135993	9/30/10	Contract #0053391 9/24/10 to 9/26/10 NGR OPEN HOUSES 9/26 7 30's @ \$25.00 9/26 3 30's No Charge Total Charge: 9/26 HST Tax BALANCE OF INVOICE #135993	CFPS-FM \$175.00 \$0.00 \$175.00 \$22.75	\$197.75

DATE	PREVIOUS BALANCE				
9/30/10	\$2,373.00				Bayshore Broadcasting Corp
CURRENT	30 DAYS	60 DAYS	90+ DAYS	PAY THIS AMOUNT	
\$762.75	\$2,373.00	\$0.00	\$0.00	→	\$3,135.75



bayshore@bayshorebroadcasting.ca

**CKYC-FM**  
**Bayshore Broadcasting Corp**  
 Box 280  
 270 Ninth Street East  
 Owen Sound ON N4K 5P5  
 Phone: 519-376-2030  
 Fax: 519-371-4242  
**HST# R100424316**

NUCLEAR WASTE MANAGEMENT (NWMO)  
 BOX 7000 B21  
 TIVERTON ONTARIO  
 NOG 2T0

**INVOICE** NUMBER: 135992

CKYC-FM Owen Sound ONT	
INVOICE DATE: 9/30/10	
PAGE: 1	TYPE: Complete
ACCOUNT: 66430	
CONTRACT: 53393	
PRODUCT:	
Salesperson:	Rick Zacharewicz
<b>Net. A finance charge of 2% per month Terms: (24% annual rate) will be charged on the unpaid balance of past due accounts.</b>	
<b>PAY THIS AMOUNT:</b>	<b>BY:</b>
\$565.00	10/30/10

Date	Number	CKYC-FM Times			
Fr 9/24/10	4	7:20a	11:39a	2:50p	5:48p
Sa 9/25/10	3	7:18a	9:18a	3:39p	
Su 9/26/10	3	8:05a	1:18p	3:38p	

Contract #0053393 9/24/10 to 9/26/10  
 NGR OPEN HOUSES  
 A: 9/26 10 30's @ \$50.00  
 9/26 HST Tax  
 BALANCE OF INVOICE #135992

\$500.00  
 \$65.00  
 \$565.00

LISTEN IN...BARB JELLY AND DAN MCLEAN ON MIX 106 5 ! SPREAD THE NEWS!

ACCOUNTS RECEIVABLE  
 LEEANN BARFOOT EXT 210



**CFPS-FM Bayshore Broadcasting Corp**  
 Box 280 270 Ninth Street East Owen Sound ON N4K 5P5  
 Phone: 519-376-2030 Fax: 519-371-4242  
 bayshore@bayshorebroadcasting.ca  
**HST# R100424316**

NUCLEAR WASTE MANAGEMENT (NWMO)  
 BOX 7000 B21  
 TIVERTON ONTARIO  
 NOG 2T0

**INVOICE** NUMBER: 135993

CFPS-FM Port Elgin, ON  
 INVOICE DATE: 9/30/10  
 PAGE: 1 TYPE: Complete  
 ACCOUNT: 66430  
 CONTRACT: 53391  
 PRODUCT:

Salesperson: Rick Zacharewicz

**Net. A finance charge of 2% per month  
 Terms: (24% annual rate) will be charged on the  
 unpaid balance of past due accounts.**

<b>PAY THIS AMOUNT:</b>	<b>BY:</b>
\$197.75	10/30/10

Times are preceded by the item designator A-Z.

Date	Number	CFPS-FM Times
Fr 9/24/10	4	A--8:52a A-10:52a A-12:52p A--3:42p
Sa 9/25/10	3	A--7:50a A--3:40p A--5:40p
Su 9/26/10	3	B-12:40p B--3:40p B--5:20p

Contract #0053391 9/24/10 to 9/26/10  
 NGR OPEN HOUSES

A: 9/26 7 30's @ \$25.00	\$175.00
B: 9/26 3 30's No Charge	\$0.00
Total Charge:	\$175.00
9/26 HST Tax	\$22.75
BALANCE OF INVOICE #135993	\$197.75

LISTEN IN...BARB JELLY AND DAN MCLEAN ON MIX 106 5 ! SPREAD THE NEWS!

ACCOUNTS RECEIVABLE  
 LEEANN BARFOOT EXT 210



# INVOICE

NUMBER: 105114

**Blackburn Radio Inc.**  
215 Carling Terrace, Wingham, Ontario N0G 2W0  
Tel. 519-357-1310 Fax 519-357-1897  
GST #R892978552

CKNX AM/FM Wingham, ON  
INVOICE DATE: 9/27/10  
PAGE: 1 TYPE: Complete  
ACCOUNT: 69850  
CONTRACT: Combined  
PRODUCT: Open Houses-Generic  
Salespeople: Gary Ballagh  
Telephone: 519-385-1451

NWMO  
C/O MARIE WILSON  
BOX 7000 B21  
TIVERTON, ONTARIO  
N0G 2T0

TERMS: Net. A finance charge of 1.5% per month  
(18% annual rate) will be charged on the unpaid  
balance of past due accounts

**PAY THIS AMOUNT:** \$2,034.00 **BY:** 10/27/10

Times for 9/22/10-9/26/10

Times are approximate within 10 minutes.

Day/Date	Time	Len	Rate	Product	Comments
We 9/22 A	6:35a	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
We 9/22 A	9:42a	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
We 9/22 A	9:55a	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
We 9/22 A	12:40p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
We 9/22 A	1:52p	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
We 9/22 A	1:55p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
We 9/22 A	2:54p	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
We 9/22 A	3:40p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
We 9/22 A	3:54p	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
We 9/22 A	4:25p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Th 9/23 A	6:24a	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Th 9/23 A	7:14a	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Th 9/23 A	9:54a	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Th 9/23 A	10:22a	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Th 9/23 A	10:53a	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Th 9/23 A	11:21a	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Th 9/23 A	1:28p	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Th 9/23 A	1:55p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Th 9/23 A	2:22p	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Th 9/23 A	4:41p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Fr 9/24 A	6:24a	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Fr 9/24 A	8:27a	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Fr 9/24 A	11:39a	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Fr 9/24 A	11:55a	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Fr 9/24 A	2:21p	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Fr 9/24 A	2:41p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Fr 9/24 A	3:21p	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Fr 9/24 A	3:59p	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Fr 9/24 A	5:42p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Fr 9/24 A	6:25p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Sa 9/25 A	6:04a	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Sa 9/25 A	8:37a	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Sa 9/25 A	9:04a	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Sa 9/25 A	10:52a	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Sa 9/25 A	11:38a	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Sa 9/25 A	12:09p	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Sa 9/25 A	12:39p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Sa 9/25 A	3:34p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Sa 9/25 A	6:01p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Sa 9/25 A	6:17p	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Su 9/26 A	6:04a	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Su 9/26 A	6:04a	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Su 9/26 A	8:05a	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421



**Blackburn Radio Inc.**  
 215 Carling Terrace, Wingham, Ontario N0G 2W0  
 Tel. 519-357-1310 Fax 519-357-1897  
 GST #R892978552

NWMO  
 C/O MARIE WILSON  
 BOX 7000 B21  
 TIVERTON, ONTARIO  
 N0G 2T0

**INVOICE**

NUMBER: 105114

CKNX AM/FM Wingham, ON  
 INVOICE DATE: 9/27/10  
 PAGE: 2 TYPE: Complete  
 ACCOUNT: 69850  
 CONTRACT: Combined  
 PRODUCT: Open Houses-Generic  
 Salespeople: Gary Ballagh  
 Telephone: 519-385-1451

TERMS: Net. A finance charge of 1.5% per month  
 (18% annual rate) will be charged on the unpaid  
 balance of past due accounts

**PAY THIS AMOUNT:** **BY:**  
 \$2,034.00 10/27/10

Day/Date	Time	Len	Rate	Product	Comments
Su 9/26 A	9:35a	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Su 9/26 A	12:04p	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Su 9/26 A	1:03p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Su 9/26 A	1:29p	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
Su 9/26 A	4:17p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Su 9/26 A	5:03p	30	\$36.00	Open Houses-Generic	CKNX-FM Contract 519903
Su 9/26 A	6:27p	30	\$36.00	Open Houses-Generic	CKNX-AM Contract 18421
<p>Contract #0018421 9/22/10 to 9/26/10 Station: CKNX-AM            MEETINGS/UPDATES Est=09-10            A: 9/26 25 30's @ \$36.00 \$900.00            Net Due: \$1,017.00</p>					
<p>Contract #0519903 9/22/10 to 9/26/10 Station: CKNX-FM            MEETINGS/UPDATES Est=09-10            A: 9/26 25 30's @ \$36.00 \$900.00            Net Due: \$1,017.00</p>					
<p>SUMMARY OF INVOICE #105114            Total Charges for invoice #105114: \$1,800.00            BALANCE OF INVOICE #105114: \$2,034.00</p>					

Billed as aired as per the traffic logs

Radio Advertising for 2010 DGR open houses: CFOS – Country 93 and 97.7 The Beach

Radio script for the following dates to be: Sept. 22, 23, 24, 25, 26.

You're invited. The Nuclear Waste Management Organization, on behalf of Ontario Power Generation, is hosting a series of open houses in seven Bruce communities. This is your opportunity to discuss the preliminary results of the Environmental Assessment for OPG's proposed deep geologic repository for low and intermediate level nuclear waste. For details of where and when, look in your local newspaper or visit the DGR project website at [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

Sept. 27

You're invited. The Nuclear Waste Management Organization, on behalf of Ontario Power Generation, is hosting an open house. This is your opportunity to discuss the preliminary results of the Environmental Assessment for OPG's proposed deep geologic repository for low and intermediate level nuclear waste. Visit NWMO's open house today in Port Elgin at the Colonial Motel from 4PM to 8PM. For more information, please visit [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

Sept. 28

You're invited. The Nuclear Waste Management Organization, on behalf of Ontario Power Generation, is hosting an open house. This is your opportunity to discuss the preliminary results of the Environmental Assessment for OPG's proposed deep geologic repository for low and intermediate level nuclear waste. Visit our open house today in Ripley at the Ripley Huron Community Centre from 4PM to 8PM. For more information, please visit [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

Sept. 29

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Sept. 30

You're invited. The Nuclear Waste Management Organization, on behalf of Ontario Power Generation, is hosting an open house. This is your

opportunity to discuss the preliminary results of the Environmental Assessment for OPG's proposed deep geologic repository for low and intermediate level nuclear waste. Visit our open house today in Walkerton at Victoria Jubilee Hall Inn from 4PM to 8PM. For more information, please visit [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

Oct. 4 - You're invited. The Nuclear Waste Management Organization, on behalf of Ontario Power Generation, is hosting an open house. This is your opportunity to discuss the preliminary results of the Environmental Assessment for OPG's proposed deep geologic repository for low and intermediate level nuclear waste. Visit our open house today in Chesley at the Chesley Fire Hall from 4PM to 8PM. For more information, please visit [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

Oct. 5 - You're invited. The Nuclear Waste Management Organization, on behalf of Ontario Power Generation, is hosting an open house. This is your opportunity to discuss the preliminary results of the Environmental Assessment for OPG's proposed deep geologic repository for low and intermediate level nuclear waste. Visit our open house today in Owen Sound at the Bayshore Community Centre from 4PM to 8PM. For more information, please visit [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

Oct. 6 - You're invited. The Nuclear Waste Management Organization, on behalf of Ontario Power Generation, is hosting an open house. This is your opportunity to discuss the preliminary results of the Environmental Assessment for OPG's proposed deep geologic repository for low and intermediate level nuclear waste. Visit our open house today in Wiarton at the County of Bruce Public Library Building from 4PM to 8PM. For more information, please visit [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

Radio Advertising for 2010 DGR open houses: CKNX – FM102 and AM920

Radio script for the following dates to be: Sept. 22, 23, 24, 25, 26.

You're invited. The Nuclear Waste Management Organization, on behalf of Ontario Power Generation, is hosting a series of open houses in seven Bruce communities. This is your opportunity to discuss the preliminary results of the Environmental Assessment for OPG's proposed deep geologic repository for low and intermediate level nuclear waste. For details of where and when, look in your local newspaper or visit the DGR project website at [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

Sept. 27

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Sept. 28

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Sept. 29

You're invited. The Nuclear Waste Management Organization, on behalf of Ontario Power Generation, is hosting an open house. This is your opportunity to discuss the preliminary results of the Environmental Assessment for OPG's proposed deep geologic repository for low and intermediate level nuclear waste. Visit our open house today in Kincardine at the Best Western Governor's Inn from 4PM to 8PM. For more information, please visit [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

Sept. 30

You're invited. The Nuclear Waste Management Organization, on behalf of Ontario Power Generation, is hosting an open house. This is your



opportunity to discuss the preliminary results of the Environmental Assessment for OPG's proposed deep geologic repository for low and intermediate level nuclear waste. Visit our open house today in Walkerton at Victoria Jubilee Hall Inn from 4PM to 8PM. For more information, please visit [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

Oct. 4 - You're invited. The Nuclear Waste Management Organization, on behalf of Ontario Power Generation, is hosting an open house. This is your opportunity to discuss the preliminary results of the Environmental Assessment for OPG's proposed deep geologic repository for low and intermediate level nuclear waste. Visit our open house today in Chesley at the Chesley Fire Hall from 4PM to 8PM. For more information, please visit [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

Oct. 5 - You're invited. The Nuclear Waste Management Organization, on behalf of Ontario Power Generation, is hosting an open house. This is your opportunity to discuss the preliminary results of the Environmental Assessment for OPG's proposed deep geologic repository for low and intermediate level nuclear waste. Visit our open house today in Owen Sound at the Bayshore Community Centre from 4PM to 8PM. For more information, please visit [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

Oct. 6 - You're invited. The Nuclear Waste Management Organization, on behalf of Ontario Power Generation, is hosting an open house. This is your opportunity to discuss the preliminary results of the Environmental Assessment for OPG's proposed deep geologic repository for low and intermediate level nuclear waste. Visit our open house today in Wiarton at the County of Bruce Public Library Building from 4PM to 8PM. For more information, please visit [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

Radio Advertising for 2010 DGR open houses:

Radio script for the following dates to be broadcast by My FM: Sept. 22, 23, 24, 25, 26.

You're invited. The Nuclear Waste Management Organization, on behalf of Ontario Power Generation, is hosting a series of open houses in seven Bruce communities. This is your opportunity to discuss the preliminary results of the Environmental Assessment for OPG's proposed deep geologic repository for low and intermediate level nuclear waste. For details of where and when, look in your local newspaper or visit the DGR project website at [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

Sept. 27- MY FM

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Sept. 28 - MY FM

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Sept. 29 - MY FM

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Best Western Governor's Inn from 4PM to 8PM. For more information,  
please visit [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr)

# Keeping you connected to the DGR



Marie Wilson

Ontario Power Generation's (OPG) proposed Deep Geologic Repository (DGR) Project for the long-term management of low and intermediate level nuclear waste (L&ILW) at the Bruce nuclear site is the subject of an environmental assessment (EA) process, which began in the fall of 2005 with the submission of the project description. Work programs in support of the EA were undertaken in the areas of geoscience, safety assessment, environmental field work, engineering/design and public consultation. After more than four years of investigations, studies and analysis, preliminary results of the assessment of the effects of the DGR Project on the environment are being

presented to the public for discussion. In summary, the potential residual effects identified include:

- Small increase in air emissions at Bruce nuclear site during all project phases;
- Increase in noise levels during site preparation, construction and decommissioning;
- Loss of some eastern white cedar on DGR project site
- Reduced flow in the north railway ditch;
- Increase in quantity of stormwater flow at the Interconnecting Road on the Bruce nuclear site;
- Loss of some habitat quantity and quality for Redbelly Dace, Creek Chub, burrowing crayfish and Variable Leaf Pondweed;
- Positive socio-economic effects for the local and regional areas because of an increase in employment, income, business

activity, and municipal revenue during all of the phases; and

- Air and noise emissions may result in a temporary loss of enjoyment of property for those in near proximity to the DGR Project during construction and decommissioning.

Further evaluation resulted in these residual adverse effects being considered not significant.

These results were arrived at through application of a thorough, traceable, step-wise assessment process.

NWMO, on behalf of OPG, will be hosting a series of open houses in September/October to provide members of the public with detailed information about these preliminary results as well as the assessment methodology. All are welcome to attend these sessions where friendly staff will be on hand to answer questions and listen to comments.

## DGR OPEN HOUSES

DATE	LOCATION	TIME
September 27	Colonial Motel 235 Goderich Street Port Elgin	4 - 8 pm
September 28	Ripley Huron Community Centre 17 Queen Street Ripley	4 - 8 pm
September 29	Best Western Governor's Inn 791 Durham Street Kincardine	4 - 8 pm
September 30	Victoria Jubilee Hall 111 Jackson Street S Walkerton	4 - 8 pm
October 4	Chesley Fire Hall Bruce Rd. 10 (North end of Chesley)	4 - 8 pm
October 5	Bayshore Community Centre 1900 3rd Avenue E Owen Sound	4 - 8 pm
October 6	County of Bruce Public Library Building 578 Brown Street Wiarton	4 - 8 pm

For more information about the DGR Project, please visit [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr) or call Marie Wilson at 519-368-1639.

## Appendix B

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Newspaper Coverage

The reality is that nuclear shipments of all kinds, large and small, are on the move in different parts of the world every day. Like all things nuclear, these shipments each need relentless prudence, expert supervision, and high security. What they emphatically do not need is hysteria.

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## The Kincardine News

### DGR project can learn from Bruce

Editorial - October 5, 2010

The gative and inaccurate coverage of the Bruce Power Steam Generator Recycling plan from the Canadian Nuclear Safety Commission hearing should a lesson for both the Nuclear Waste Management Organization and Ontario Power Generation to address with the proposed Deep Geologic Repository.

With certain environmentalists, community groups, First Nations and other non-nuclear supporters proceeding with protests without all the facts and their minds made up, it's just the tip of the iceberg as to what our community will face with the DGR once it receives the same attention. Will it be negative, most likely from the attention the Bruce Power project garnered. Can it be avoided? Not likely, but it can be cushioned by using the Bruce Power momentum to inject it into the public domain before the six month Environmental Impact Statement (EIS) comment period begins next year.

If not, these groups will scream that it's a cover up, non-transparent project that's trying to be slipped under the radar, even though our community has been involved in seeing its progress from the start. It's those who don't understand it from out of area that will be screaming nuclear holocaust. The community must stand behind OPG and the NWMO to demonstrate how well educated a community can be about a nuclear project once all the details come to light.

If we thought Bruce Power faced a tough crowd with its project, just wait until the mainstream media twists and distorts the DGR project. Inaccurately calling it a 'nuclear waste dump' will be just the tip of the iceberg.

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## The Kincardine News

### Preliminary EA on OPG's Deep Geologic Repository released

October 5, 2010 - By TROY PATTERSON , KINCARDINE NEWS STAFF

The Nuclear Waste Management Organization (NWMO) is continuing to step up its public consultation for Ontario Power Generation's (OPG) Deep Geologic Repository, with the preliminary results of its Environmental Assessment (EA) made available during open houses last week.

NWMO received questions from visitors at events in Kincardine, Ripley, Port Elgin, Owen Sound, Chesley, Walkerton and Wiarton over the last two weeks in an effort to educate the public on the plan to store low and intermediate-level nuclear waste indefinitely, in 680 metres of sedimentary rock below the Bruce nuclear site.

NWMO's Marie Wilson said they've been walking concerned residents through the "step-wise and traceable" EA proposal, that it's looking upon as promising as the work towards submitting the Environmental Impact Statement (EIS) to the Canadian Nuclear Safety Commission's (CNSC) Joint Review Panel early in 2011.

"The site is looking stable and predictable, with low seismic activity," said Wilson, noting the study of this June's 5.0 magnitude earthquake was monitored over the last four years, along with 180 years of recorded low seismicity.

Four years of geo-science site characterization wrapped up on June 20, with geologists concluding the science supports the case to build the site about 1km from the shores of Lake Huron. The site would be sealed by concrete in low permeability stone, over 400-metres below the lowest part of the lake. In terms of drinking water, the site would use freezing or capping techniques to prevent any condensation at the water levels within the first 100 metres from the surface, said NWMO EA manager Diane Barker.

"We're committed to protecting Lake Huron and the ground water and have heard some very significant questions," said Wilson.

The main issues identified in the EA are surface impacts to habitats, plant and animal life during construction, as well as increased air and noise emissions that could have an impact on neighbouring residents during construction.

The positive included the socioeconomic effects for local and regional areas from the increase in employment, income, business activity and municipal revenue during each phase.

Once the EIS is released to the public, a six month public comment period will begin, with the CNSC public hearing planned for 2012. Pending approvals, Wilson said they anticipate the DGR could be completed by 2018, based on a five-year construction period.

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## TORONTO STAR

### Misunderstanding 'clean' power; Taking aim at nuclear power, Letters, Oct. 2

Toronto Star  
Wed Oct 6 2010  
Page: A18  
Section: Editorial

Taking aim at **nuclear** power,

Letters, Oct. 2

Judging by the responses to the notion that **nuclear** power might be "clean," there is significant misunderstanding of this technology.

Nothing is 100 per cent clean, but some things are called clean if they achieve a result (e.g. electricity supply) at a small fraction of the conventional environmental impact.

Renewable energy, for example, is far from clean, but it's called clean because of the above distinction.

**Nuclear** power deserves the clean title because it has almost no emissions during operation. Even considering the entire life cycle, its CO2 output is on par with that of wind power.

Oct 11 2010

(continued)

# NWMO hosts open houses on preliminary results of EA into Deep Geologic Repository

By Liz Dadson

The Nuclear Waste Management Organization (NWMO) had staff on hand at several open houses in the area, to field questions about the preliminary results of the Environmental Assessment (EA) into Ontario Power Generation's Deep Geologic Repository proposed for the Bruce Nuclear site.

Open houses were held in Port Elgin, Ripley, Kincardine and Walkerton last week to obtain feedback from the public about the project.

Three more open houses are scheduled for this week, all running 4-8 p.m.: tonight (Oct. 4) at the Chesley Fire Hall; tomorrow (Oct. 5) at the Bayshore Community in Owen Sound; and Wednesday (Oct. 6) at the Bruce County Public Library building in Wiarton.

At the open house Wednesday afternoon at the Best Western Governor's Inn in Kincardine, Marie Wilson, NWMO media relations manager, said the preliminary results of the EA indicates there will be increased noise and increased air emissions at Bruce Nuclear during site preparation, construction and decommissioning.

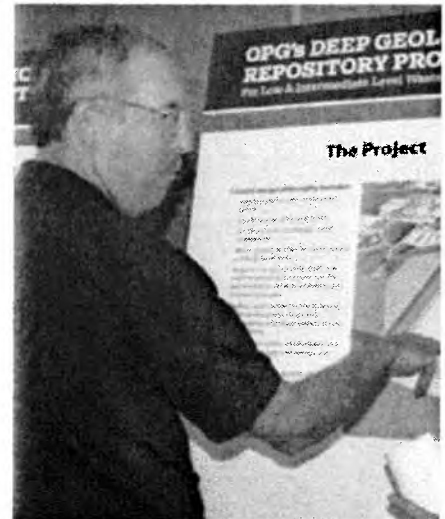
However, none of those potential residual effects is deemed to be significant, she said.

Wilson said a geoscientific site characterization and assessment of safety and environmental effects has been completed and supports the safety case for the project. The rock formations are stable and of low-permeability - ideal for containing the repository for low- and intermediate-level nuclear waste.

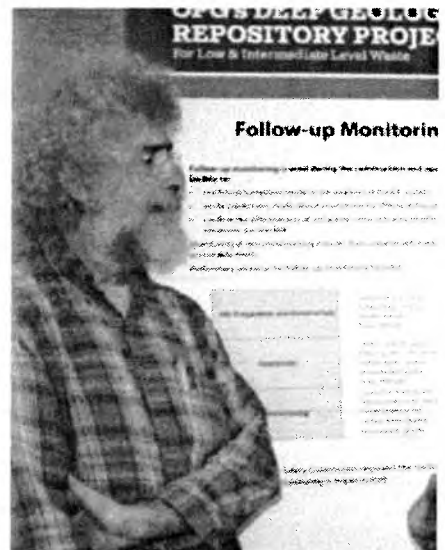
She noted that the repository is isolated from Lake Huron and the groundwater in the area, because of multiple natural barriers.

## Technology

To Comment on this article



Gary Senior (L) of the Saugeen Conservation Authority, asks a question of a NWMO representative at an open house.



Marie Wilson (R) of NWMO answers a question posed by Eugene Bourgeois at an open house.



Once the open houses are complete and public comments gathered, NWMO can proceed with its submission of the Environmental Impact Statement and Preliminary Safety Report in 2011, in support of the licensing process.

These documents will go to a joint review panel and then there will be a six-month public comment period, said Wilson. Public hearings would be scheduled for 2012. If given the green light, construction would take about five years and the repository would be up and running by 2018, she said.

Wilson said the proximity of the project to Lake Huron is often questioned during open house sessions.

"We explain to people that the DGR (Deep Geologic Repository) is isolated from Lake Huron by low-permeability rock formations," she said. "The DGR will be located 400 metres from the deepest point of the lake and about one kilometre inland from the lake. And it will be way below the groundwater level."



A member of the public checks a poster describing the Deep Geologic Repository project.

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## **Open House for DGR**

September 28, 2010 - by John Divinski

The Environmental Assessment for the Deep Geologic Repository (DGR) project for low and intermediate level radioactive waste at the Bruce nuclear site has kicked off a series of open houses.

Marie Wilson -- the OPG media relations manager for the Nuclear Waste Management Organization -- says this is the fourth round of public meetings where updates on the project are provided.

Wilson says it's an opportunity for the public to have its say as well.

In Saugeen Shores on Monday -- Wilson says although the environmental assessment goes on -- they do have preliminary results.

Wilson says there will be a couple of residual effects during the construction, such as noise and dust in the area however, they are not deemed to be significant.

She says they did get a couple of calls from people wondering if the meeting was about Bruce Power's plan to ship de-commissioned steam generators through the area.

She confirms the two issues are separate and distinct.

DGR open houses continue Tuesday night in Ripley, followed by meetings in Kincardine on Wednesday, Walkerton on Thursday.

Chesley will host an open house next Monday, October 4th, followed by a similar meeting in Owen Sound on October 5th and Wiarton, October 6th.

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## **The Daily Observer**

### **Investing in new facilities**

The Pembroke Observer  
Wed Sep 29 2010  
Page: A1  
Section: News  
Byline: STEPHEN UHLER

## Appendix C

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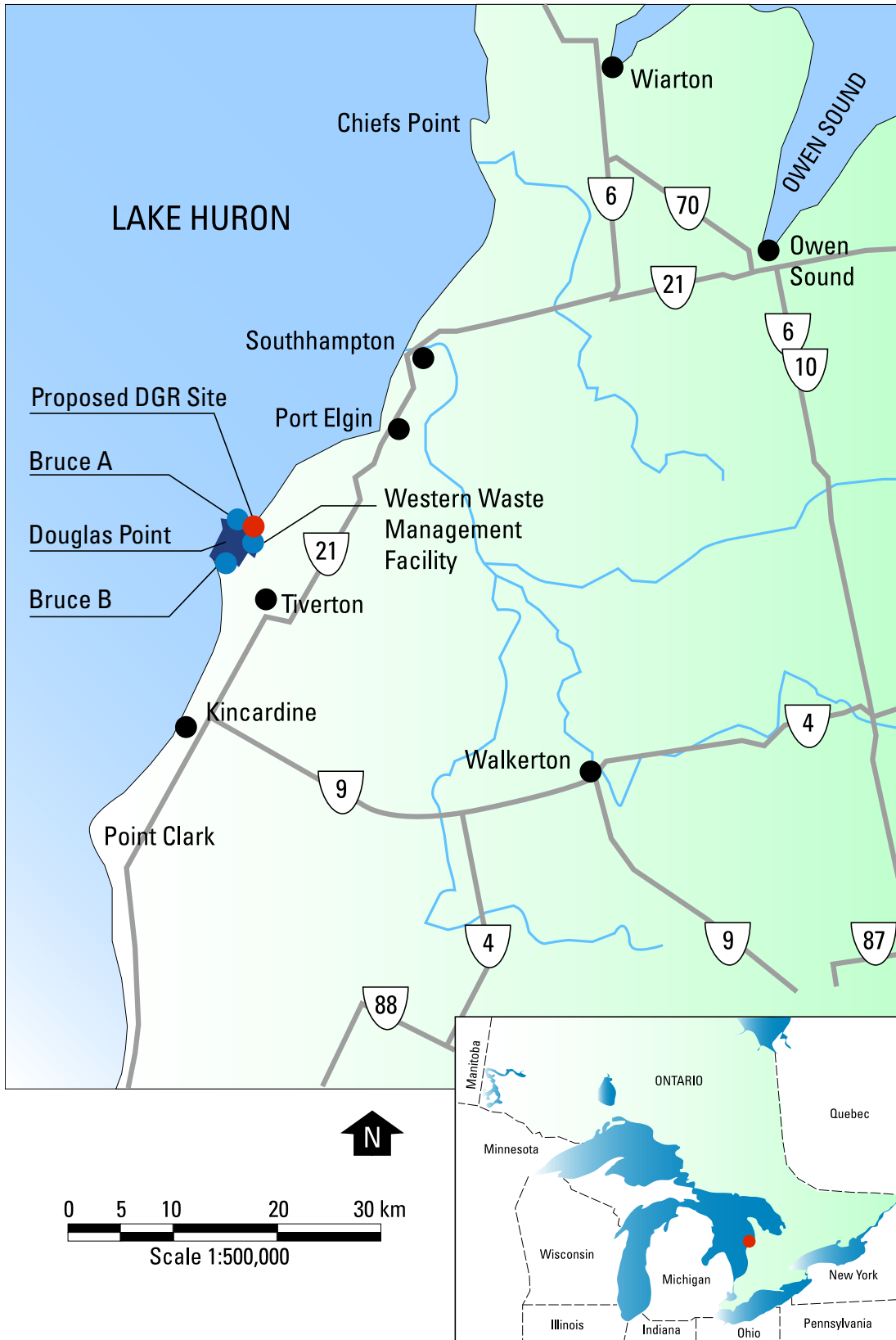
Open House Handouts

# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

2009 Annual Report





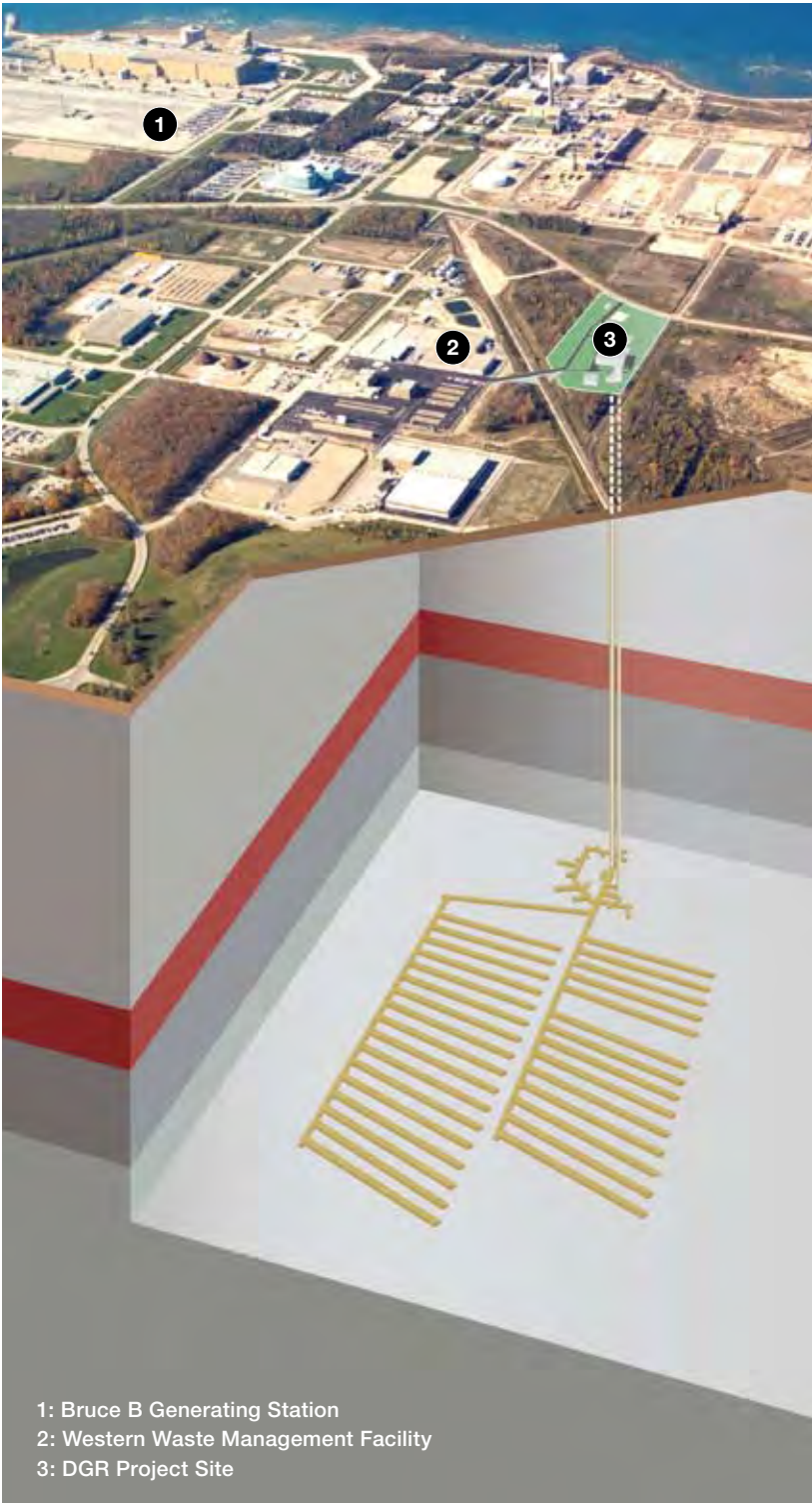
OPG's Deep Geologic Repository Project for Low & Intermediate Level Waste is proposed adjacent to the Western Waste Management Facility in the Municipality of Kincardine

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# KEY FEATURES



DGR surface facilities



Low level waste emplacement room



Intermediate level waste emplacement room

# OPG'S DEEP GEOLOGIC REPOSITORY PROJECT FOR LOW & INTERMEDIATE LEVEL WASTE

**Ontario Power Generation (OPG), with the support of the local Bruce County municipalities, is proposing to construct a Deep Geologic Repository (DGR) for the long-term management of low and intermediate level radioactive waste at the Bruce nuclear site. OPG has contracted the Nuclear Waste Management Organization (NWMO) to manage the DGR project through the regulatory approvals process.**

**The DGR is proposed to be situated** about 680 m (2230 feet) below ground surface in low permeability limestone, beneath a 200 m (660 feet) thick layer of low permeability shale. These sedimentary bedrock formations provide natural barriers that will safely isolate the radioactive waste for many thousands of years and beyond.

The DGR would be located adjacent to OPG's Western Waste Management Facility (WWMF) at the Bruce nuclear site, in the Municipality of Kincardine. The DGR facility would manage about 200,000 cubic metres of low and intermediate level packaged waste. Only low and intermediate level waste from OPG-owned nuclear generating stations in Ontario would be placed in the DGR. Used fuel will not be stored in the DGR.

OPG's Western Waste Management Facility (WWMF) currently manages and provides interim storage for the low and intermediate level waste that is received from OPG's Pickering and Darlington nuclear stations and the Bruce Power stations. Much of the waste that will be placed in the DGR is already at the WWMF.

In 2009, activities conducted in support of the regulatory approvals process for a DGR site preparation and construction licence included: geoscientific site characterization, safety assessment, preliminary facility engineering design, environmental studies, and community engagement. Significant progress was made in all areas, keeping NWMO on target to deliver a licensing submission in early 2011.



## 2009 DGR HIGHLIGHTS

- **Effective January 1, 2009 OPG contracted the NWMO to manage the DGR project through the regulatory approvals process.**
- **On January 26, 2009 the Canadian Nuclear Safety Commission and Canadian Environmental Assessment Agency issued final Guidelines for the Environmental Impact Statement and the final Joint Review Panel Agreement.**
- **On May 11, 2009 the Major Projects Management Office (MPMO) issued a Project Agreement, outlining federal roles and responsibilities during the regulatory review of the DGR project.**
- **Geoscientific site characterization work conducted in 2009 further verified that the site has excellent geology which will provide a high level of safety.**
- **Updated Preclosure and Postclosure safety assessment reports were completed. The results indicate that impacts are low and that the DGR will safely isolate and contain the waste.**
- **Design activities advanced from the conceptual engineering to the preliminary engineering level.**
- **Field studies to update baseline environmental data were completed. This information provides the starting point from which the potential effects of the DGR will be assessed.**
- **Extensive DGR communications continued throughout the Bruce community, with the project continuing to enjoy strong community support.**
- **OPG and NWMO completed a series of engagement activities in Michigan.**
- **A protocol agreement was signed with Saugeen Ojibway Nation.**
- **Discussions continued with the Métis Nation of Ontario and Historic Saugeen Métis for their participation in the regulatory review process.**





# TRANSITION OF THE DGR PROJECT TO THE NWMO

**On January 1, 2009** OPG contracted NWMO to manage development of the DGR. The NWMO is responsible for taking the DGR project through the regulatory approvals process, on behalf of OPG. As part of the agreement, most OPG staff that had been working on the DGR project became NWMO employees.

OPG remains the sole owner of the DGR and the DGR project will continue to proceed as originally planned with all commitments being honoured, including that the DGR will only accommodate low and intermediate level waste from OPG-owned nuclear facilities.

The NWMO is a not-for-profit company established by OPG, Hydro Québec and New Brunswick Power, the nuclear power utilities in Canada, to implement a long-term solution for Canada's used nuclear fuel.

The NWMO's Adaptive Phased Management (APM) plan for the safe management of Canada's used nuclear fuel will involve the construction of a deep geologic repository in an informed and willing host community in a location in Canada yet to be determined. OPG's proposed Deep Geologic Repository (DGR) for low and intermediate level waste is a completely separate project and will remain so. Combining the expertise of key staff in a single organization provides significant benefit from mutual experiences and lessons learned in the application of technology for deep geologic repositories, community consultation, and the collaboration with international partners. The Adaptive Phased Management program will benefit from skills, knowledge and relationships developed in the DGR project.



Aerial view of OPG's Western Waste Management Facility

# REGULATORY APPROVAL PROCESS

In January 2009, following a public review and comment period in 2008, the Canadian Nuclear Safety Commission (CNSC) and the Canadian Environmental Assessment Agency (CEAA) released the final guidelines for the Environmental Impact Statement (EIS) for the DGR project and the final Joint Review Panel (JRP) Agreement. The EIS guidelines identify the information needed to examine the potential environmental effects of the proposed project as well as requirements for a licence to prepare a site and construct the DGR. The JRP Agreement establishes how the panel will function, including procedures for appointing the JRP members, the proposed terms of reference (i.e. responsibilities) for the panel and the process for conducting the reviews. These documents are available on the CEAA website at [www.ceaa-acee.gc.ca](http://www.ceaa-acee.gc.ca)

In May 2009, the Major Project Management Office (MPMO) – a Government of Canada organization whose role is to provide oversight for the federal environmental assessment and regulatory process for major resource projects – issued a Project Agreement. The Project Agreement outlines the process by which the federal departments or agencies will carry out their roles and responsibilities during the federal regulatory review of the proposed DGR project. The DGR MPMO Project Agreement is available at the Major Project Management Office website at [www.mpmo-bggp.gc.ca](http://www.mpmo-bggp.gc.ca)

The DGR Environmental Impact Statement, along with the Preliminary Safety Report, is expected to be submitted to the Joint Review Panel in early 2011. Based on the schedule provided in the DGR MPMO Project Agreement, the full regulatory review and approval process for a site preparation and construction licence is expected to take at least 21 months. The process includes a public review of the documentation and a public hearing where stakeholders will have the opportunity to present their feedback on the project.

After the hearing the Panel makes a recommendation to the Minister of the Environment who takes it to the federal Cabinet for the final decision. The Environmental Impact Statement must be accepted before a site preparation and construction licence can be issued by the CNSC.



Ongoing public consultation



# GEOSCIENTIFIC SITE CHARACTERIZATION PROGRAM

**Geoscientific site characterization** activities entered their final phase in 2009 as part of a step-wise four-year program to assess and confirm the suitability of the site to safely host the DGR. The Geoscience work program is divided into two key areas; site-specific characterization studies that involve a multi-disciplinary deep drilling program at the Bruce site; and a Geosynthesis program that combined with information from the site-specific studies describes the geoscientific basis for understanding the past, present and future geologic evolution of the site as it influences DGR safety.

## Geoscience Activities

During 2009, field activities included the drilling and coring of two deep inclined boreholes (DGR-5 and DGR-6) that were oriented primarily to assess and verify the nature of vertical bedrock structure and its effect on DGR implementation. Consistent with the Phase II Geoscientific Site Characterization Plan, prepared in 2008, geophysical and hydrogeologic testing in these boreholes will be completed by spring 2010. The completion of the two inclined boreholes concludes the planned DGR drilling program, with four deep vertical boreholes having been completed in 2007 and 2008. The information from these six deep boreholes will provide the necessary information to establish the current site conditions and expected future evolution as it influences the DGR's long-term performance and Safety Case.

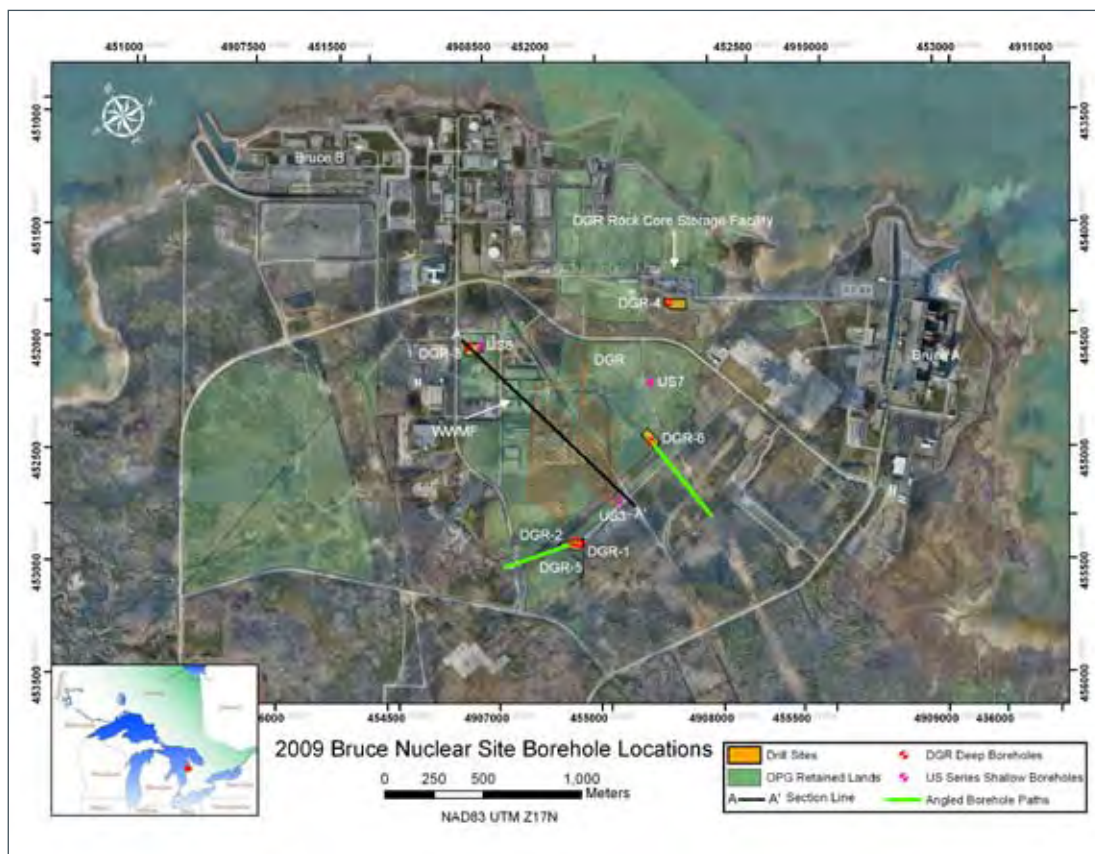
Further field activities in 2009 involved the completion of a groundwater monitoring network within deep vertical boreholes DGR-1, DGR-2, DGR-3 and DGR-4. Within each of these boreholes multi-level casing systems have been installed to depths of 840 m that combined, provide over 130 isolated intervals to observe groundwater conditions. A similar monitoring network (US-series) within the shallow (<200 m depth) bedrock groundwater regime adds an additional 31 measurement



Top left: NWMO engineer Dylan Luhowy examining rock core

Top right: Multi-level monitoring system installation

Bottom: Inclined borehole drilling



points. Routine monitoring of groundwater pressures and quality provides a 3-dimensional understanding of site conditions that supports, among other studies, the ongoing Geosynthesis and Environmental Assessment.

Progress continues toward completion of a final Geosynthesis document scheduled for the fall of 2010. The Geosynthesis will be a peer-reviewed document that provides a description of both the regional and site-specific geologic, hydrogeologic, hydrogeochemical, and geomechanical conditions and how such conditions influence estimates of long-term DGR performance. Particularly important will be the interpretation of future evolution and barrier performance of the bedrock formations hosting and enclosing the DGR site as influenced by perturbations such as repository excavation, glaciations and possible seismicity.

The case for the geoscientific suitability of the Bruce site is organized around several key principles, which are consistent with international experience in repository development. A brief explanation of these principles and some examples of recent work follow.

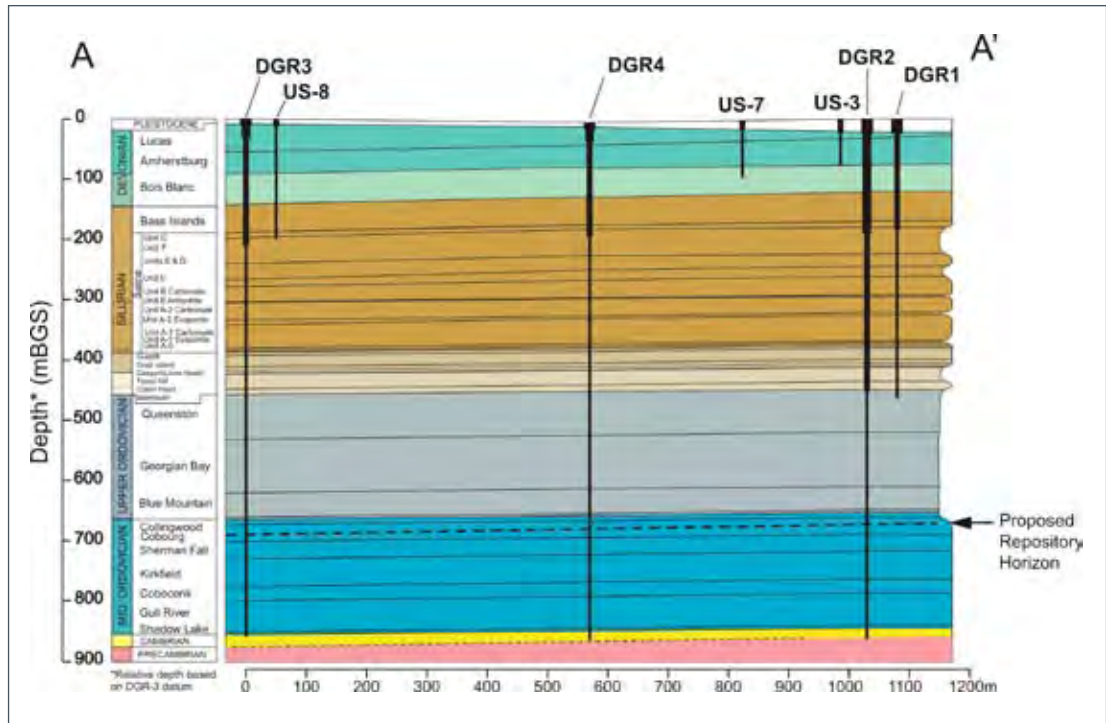
## Geoscience Review Group

**During 2009 the Geoscience Review Group (GRG) continued to provide guidance and oversight on all aspects of the geoscientific investigations and the geosynthesis. The four member GRG comprises internationally renowned scientists and engineers. Together they have between them nearly one hundred years of experience and have worked on nuclear waste programs in Japan, Hungary, Switzerland, Sweden, Finland, Korea, the United States and the United Kingdom.**



**PREDICTABLE GEOLOGY**

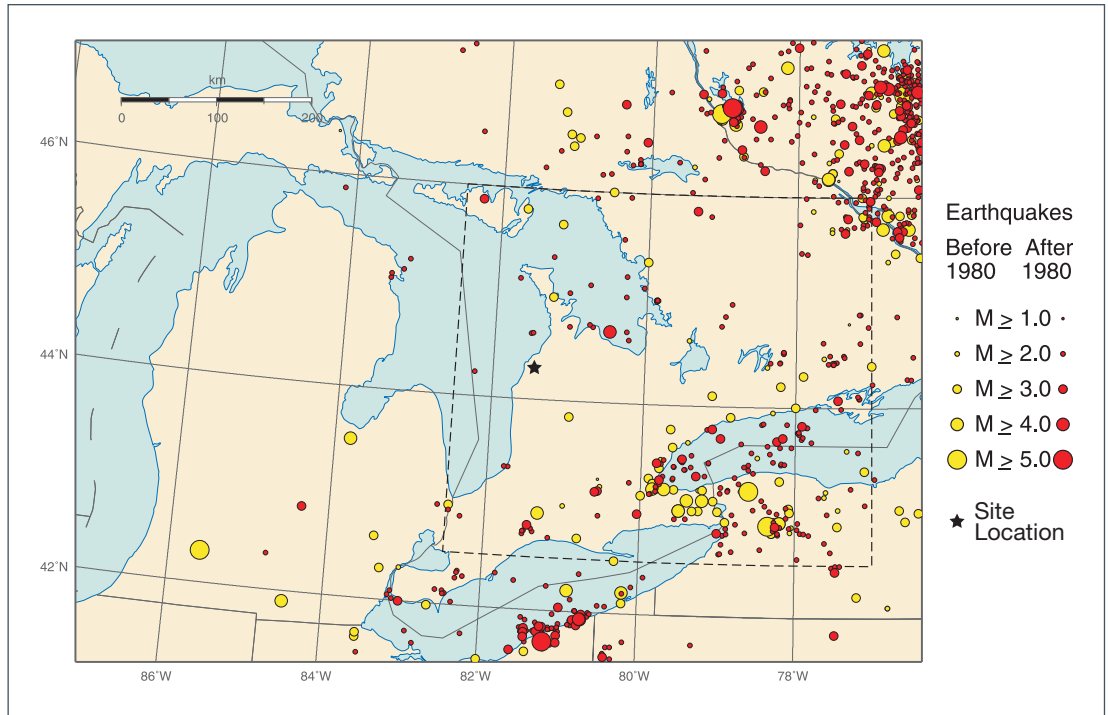
Examination of drill core obtained during the deep drilling program, a 2-dimensional seismic survey and downhole testing, has provided a basis to verify the bedrock stratigraphy beneath the Bruce site. In total 34 individual bedrock formations, Cambrian (543 million years old) to Devonian (350 million years old) in age, exist in the 840 m thick sedimentary sequence underlying the site. This includes 200 m of shale that lie above the Cobourg Formation, a clay rich limestone that will host the proposed DGR. Over distances of kilometres the elevation of bedrock formation contacts and formation thicknesses are predictable to within metres or less. The properties of bedrock formations including rock mass permeabilities, rock matrix porosity, mechanical strength and saline pore fluid composition also reveal consistency at site scale.



Geologic cross-section showing bedrock formations/stratigraphy beneath the Bruce nuclear site

**SEISMICALLY  
QUIET SITE**

Southwestern Ontario and the Bruce region lie within the tectonically stable interior of the North American continent; a region characterized by low rates of seismicity. The historic seismicity record over 180 years shows most recorded events have magnitudes that do not exceed M5. As part of the DGR project a network of borehole seismographs was established in the summer of 2007 to allow monitoring of micro-seismicity ( $M=1$ ) within a 50 km radius of the Bruce site. Monitoring results through 2009, reported by the Geologic Survey of Canada's Canadian Hazard Information Service, continue to indicate that the Bruce site is located in a seismically quiet region.

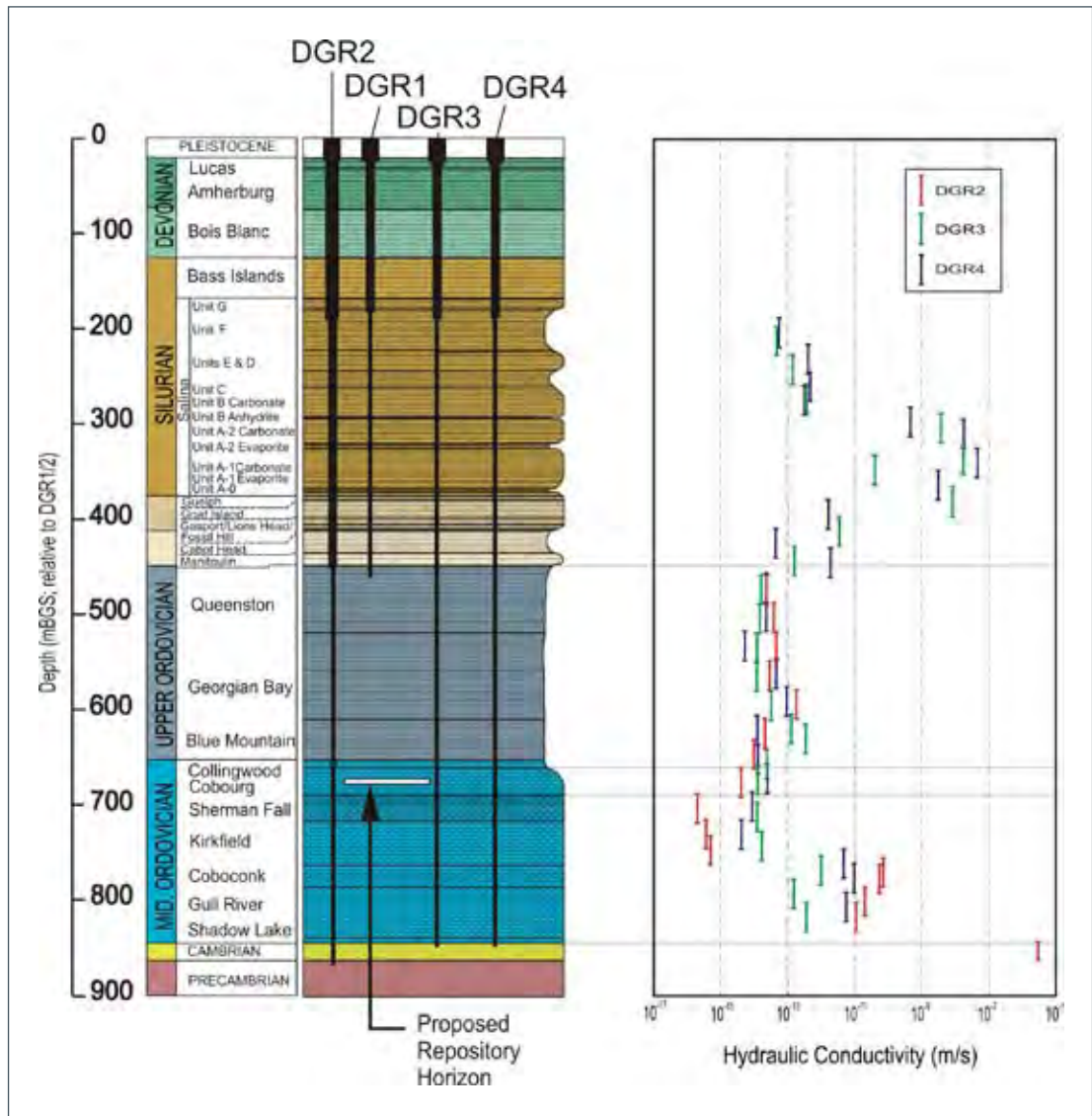


Seismic activity (start of historic records – 2009).



**MULTIPLE  
NATURAL  
BARRIERS**

Evidence from the deep borehole testing program reveals that the proposed DGR will be enclosed by multiple near-horizontally layered low permeability bedrock formations. This evidence includes the results of over 100 hydraulic borehole tests that yielded very low rock mass hydraulic conductivities on the order of  $<10^{-13}$  m/sec in the bedrock formations proposed to host and enclose the DGR. This indicates that fluid would move through the rock at a rate of less than 1mm/yr.



Hydraulic conductivity in deep boreholes at the Bruce nuclear site.

<b>GEOMECHANICALLY STABLE HOST ROCK</b>	An assessment of the geomechanical stability of the DGR openings both during operations and at long-term timeframes indicates that the repository will remain safe. A comprehensive set of analyses using the site-specific data reveals that the openings within the Cobourg Formation will be stable during construction and operation. At longer time frames associated with future glacial episodes and possible seismic events, the overlying and underlying formations will provide passive barriers to contain and isolate the waste.
<b>TRANSPORT IS DIFFUSION DOMINATED</b>	Within the bedrock formations that will host and enclose the repository the groundwater regime appears ancient and has been resilient to external perturbations, such as glaciations, over hundreds of thousands of years. Multi-discipline evidence includes: the predictable nature and lateral extent of the thick and near-horizontally bedded sediments beneath the Bruce site, the very low rock mass permeabilities measured in the sediments, the consistent brine (300 g/L) composition of pore fluids in the low porosity rock and the distribution of environmental tracers vertically in the sedimentary column that reflect a slowly evolving groundwater system. Numerical simulations illustrate that even under cyclic glacial loading the groundwater system remains in a state in which mass transport is diffusion dominant. This is a very, very slow process and is the preferred situation for long-term waste isolation and containment.
<b>SHALLOW GROUNDWATER RESOURCES ARE ISOLATED</b>	In the Regional Study Area the shallow, fresh permeable groundwater system from which potable water resources are obtained is limited to depths of approximately 100 m. Geoscientific data gathered during site investigations, as described above, provide a reasoned basis to confirm that overlying ground and surface water resources are isolated from the proposed repository location, and have been for thousands of years.
<b>NATURAL RESOURCE POTENTIAL IS LOW</b>	Evaluation of published studies, historical records, and the results of the deep drilling program on the Bruce site strongly suggests that viable commercial oil and gas reserves do not exist beneath or adjacent to the Bruce nuclear site. Commercially viable base metal deposits have not been identified in the study area.

# DESIGN OF THE DGR

The design of the DGR facility has continued to evolve, incorporating improvements at each stage. In 2009 many of the changes to the design were made to enhance the overall operational safety of the facility. Recent design work also addressed expert third-party comments on the earlier conceptual design.

The most significant change to the DGR design was the realignment of underground emplacement rooms so that rooms within each of the two panels are now parallel to each other. This new underground layout is better suited to rock conditions that are expected to exist deep underground and as such, this arrangement will enhance the long-term stability of the waste emplacement rooms.

The general layout of the surface facilities has not changed from the layout developed in 2008. The surface features of the DGR include the main shaft, ventilation shaft and waste rock management area. The main shaft area will have a headframe equipped with a hoist to handle a 44-tonne payload, a waste package receiving building, and buildings housing equipment to heat air to be delivered underground for winter operations. The waste package receiving building and shaft offices will be directly connected to the main shaft headframe building. The ventilation shaft area will include a headframe building, hoist house, waste rock chute, and exhaust fan building. A crossing will be constructed to provide a link between the existing WWMF and the DGR.

The procedures for handling waste packages were reviewed in 2009 and it was decided to introduce self-propelled electric rail-carts into the waste handling system. Waste packages will be loaded onto the rail-cart by forklift inside the waste package receiving building and then moved, in a highly controlled manner, into the waste-handling cage. Once underground, the rail-cart loaded with waste packages will be moved from inside the cage to a staging location where the carts will be unloaded by forklift. The forklifts will then transport the packages to the appropriate rooms where they will be stacked in their final position. The majority of waste packages will be moved underground by this procedure.

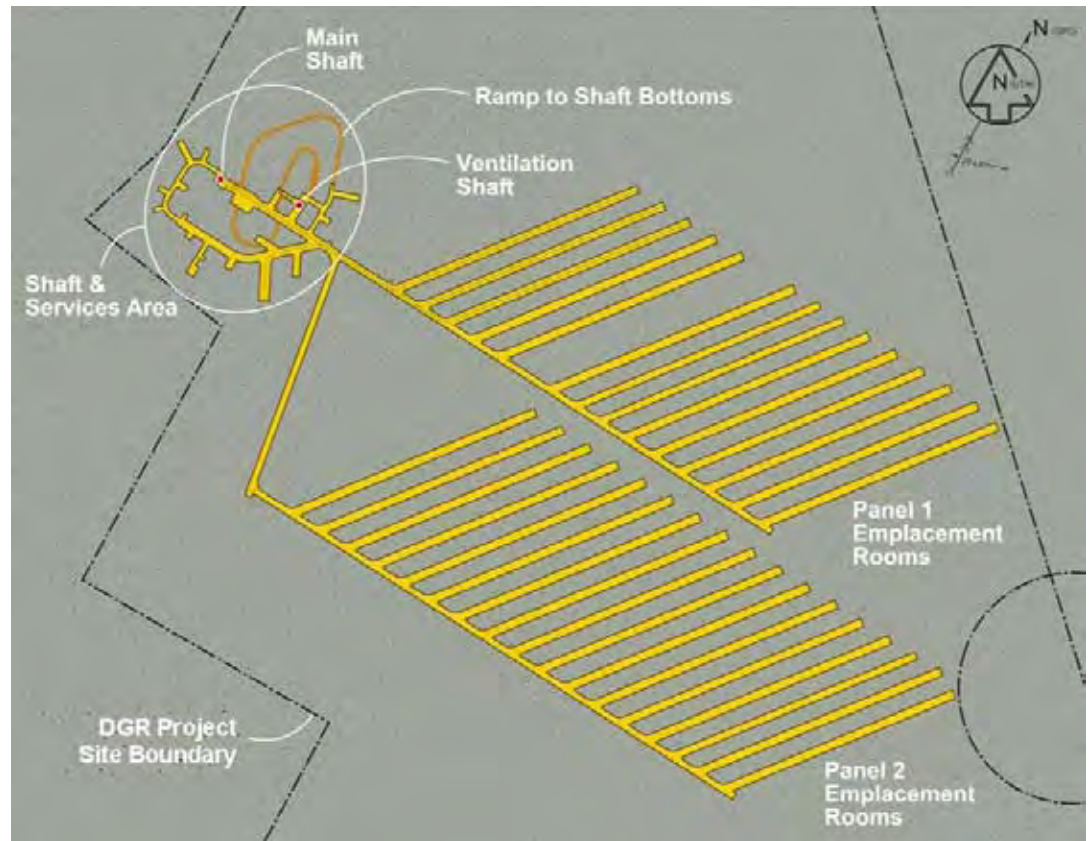
The major exception will be large and heavy waste packages which will remain on their rail-cart until the cart arrives at the emplacement room. These waste packages will be off-loaded by gantry crane from the rail cart and then transferred to a final location inside the room.

The systems associated with the waste handling cage were modified to further enhance the overall safety of waste handling operations in the main shaft. This includes the safety mechanisms for securing the main cage for loading/unloading activities and the cage arresting systems.

It is currently assumed that the DGR will be fully developed during initial construction to avoid mining activities during emplacement of waste operations. It is now assumed that the shafts, access tunnels and emplacement rooms will be excavated by precision drill and blast methods. It is estimated that about 900,000 m<sup>3</sup> of waste rock will be produced during excavation and this rock will be stored at surface to the northeast of the two shafts.

**In 2009, NWMO established the Technical Review Group (TRG) to review and to provide expert advice on DGR design and construction. The TRG is comprised of independent technical experts who collectively have extensive experience in the fields of deep underground mine construction, mine ventilation, mine hoisting, tunneling, geomechanics and radioactive waste material handling.**





Left top: An example of a drill jumbo creating underground openings in rock

Left middle: Construction of Darlington cooling water intake tunnel in Cobourg limestone

Right top: DGR underground layout

Bottom: DGR surface facilities

# SAFETY ASSESSMENT

The DGR is intended to safely isolate and contain the low and intermediate level radioactive waste. Confidence in meeting this objective is summarized in a "Safety Case". The safety case synthesizes and presents the evidence for safety. Safety case elements include geological evidence from the site, design features and quantitative safety analyses.

## Safety Case Elements

The safety case is based on the geologic site and waste characteristics including:

- The repository will be isolated from surface waters by its depth of about 680 m.
- There are multiple layers of low-permeability rock above the repository.
- The rock formations are 450 million years old. They have remained stable through tectonic events and climate changes during this period, including several ice ages within the past one million years. These rocks are expected to remain stable for at least the next few million years.
- The area is seismically quiet. Large magnitude earthquakes are unlikely, and would have little to no impact on the DGR.
- The properties of the deep bedrock limit the rate of contaminant movement through the rock to very slow rates.
- The waste contains primarily shorter-lived radionuclides and the radioactivity decreases with time.
- Almost all of the radioactivity would decay within or near the repository.

The DGR safety assessment: considers both the operating period and after closure, analyzes the facility behaviour under normal conditions and unlikely events or accidents, quantifies potential impacts on the public and workers, and compares the potential impacts with regulatory criteria.

Safety assessment is being carried out as an iterative process, taking account of new information. In 2009, the "Version 1" assessment was completed. Two further major iterations are planned before an operating licence could be authorized by the federal nuclear regulator.

The "Version 1" Safety Assessment follows:

- Federal Environmental Assessment Guidelines for the DGR project
- Canadian nuclear safety regulations, policy and guidance, including:
  - CNSC P-290 – *Managing Radioactive Wastes*
  - CNSC G-320 – *Assessing the Long Term Safety of Radioactive Waste Management*
  - Nuclear Safety and Control Act
- International best-practices.

Although "Version 1" is an interim assessment, the results have been presented to various technical experts for review, including an international peer review team of safety assessment experts from the United Kingdom, France, Switzerland and Belgium. To read the interim reports, go to [www.nwmo.ca/dgrprojectdocuments](http://www.nwmo.ca/dgrprojectdocuments).



NWMO engineers Kelly Sedor and Helen Leung review safety assessment results

## Operational Safety

The preclosure safety assessment covers the start of operations to the closure of the facility. The focus is on radiological safety – handling and storage of low & intermediate level waste packages under normal operations and accident conditions.

The DGR design incorporates a variety of features to ensure it is safe during the operations period. Examples of safety features include the following:

- Waste packages will meet the DGR waste acceptance criteria; for example, no surface contamination.
- The higher level radioactive wastes will be in robust concrete-and-steel packages.
- The DGR will be close to the WWMF, so waste package do not need to be moved off the Bruce site.
- All underground construction will be completed prior to the start of waste emplacement.
- The shaft hoist is based on a proven reliable multi-rope Koepe drum design.

- Combustible materials and ignition sources will be minimized.
- Emergency response system includes fire detection and suppression, two shaft exits, and underground safety refuge stations.

Based on experience from the WWMF operations, small amounts of tritium and carbon-14 are expected to be released as outgassing from the waste packages in the DGR under normal operating conditions, dropping to zero as the DGR is closed.

These emissions will be monitored. The potential doses due to these small releases are estimated to be similar to the low doses from WWMF operations, where much of the waste is currently stored. These results indicate that there are no concerns with respect to exposure to members of the public during normal operations of the DGR.

Accident scenarios were postulated for the DGR facilities, both above and below ground. These accidents were screened for likelihood and credible worst-case scenarios were identified for analysis. The accidents considered included breach of waste package and fire. The preliminary analyses indicate that radioactivity released from above or below ground accidents is low and will not harm members of the public.

## Postclosure

The Postclosure Safety Assessment addresses the safety of the repository after the underground portion has been closed and sealed. It looks far into the future. In the near-term, the site is expected to remain under institutional control. However, the safety assessment assumes that beyond a few hundred years, the site reverts to a green-field use.

The safety assessment, however, is not a prediction of the future. Rather, it assesses a range of likely and unlikely futures or scenarios. Uncertainties in how things may develop in the future are addressed by using a range of scenarios, models and data and also through the use of cautious or worst-case assumptions. The methodology follows Canadian regulatory guidance and international practice.

In postclosure, the main scenarios assessed are the following:

### Normal Evolution Scenario

Considers what is likely to happen within and around the repository in the future

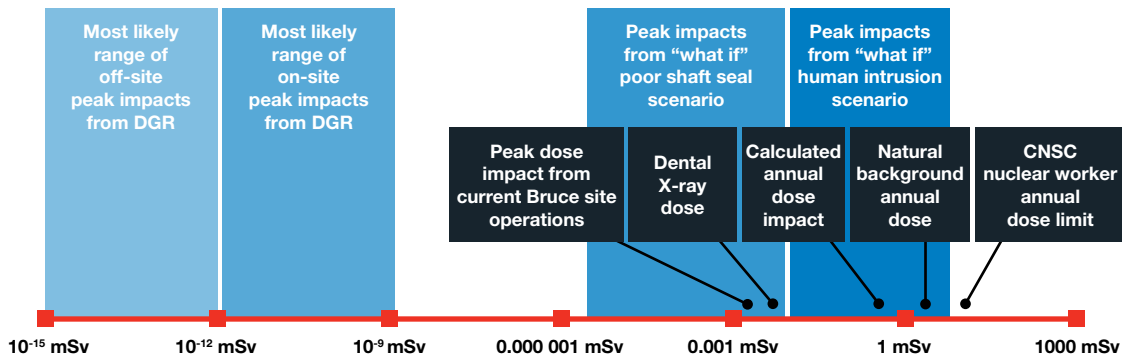
Normal Evolution	<ul style="list-style-type: none"> <li>• Includes eventual glaciation across the site.</li> <li>• Assumes that after the site is released from institutional controls in a few hundred years and beyond people live on the repository site.</li> </ul>
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### Disruptive (“what if”) Scenarios

Unlikely scenarios that test the robustness of the repository.

Human Intrusion	<i>What if</i> someone accidentally drilled a deep borehole into the DGR and brought waste material to surface?
Severe Shaft Seal Failure	<i>What if</i> the main shaft seals failed?
Open Borehole	<i>What if</i> one of the existing deep site characterization boreholes was not sealed, or the seals failed completely?
Extreme Earthquake / Vertical Fault	<i>What if</i> there was a vertical fault close to the repository possibly created in the future by a very large earthquake?





Interim Safety Assessment calculated impacts

The assessment approach uses site, design and waste inventory information to construct a conceptual model of possible release pathways to develop a numerical (or computer) model. The computer model is used to quantify what could happen under various scenarios.

The interim safety assessment results indicate that there would be little to no impact from the repository. This is largely because the rock is very effective in retarding the movement of radionuclides. Key observations which will be considered further in ongoing work include the importance of the sealed shafts as a potential pathway for radionuclides, and the importance of C-14 containing methane gas generated from decomposing waste.

### Waste Inventory

The amount of waste to go into the DGR is based in part on the amount of wastes currently stored at WWMF, as well as projections of future wastes. A significant portion of the wastes are already at the WWMF.

The estimated amount of waste and its total radioactivity was updated in 2009. At 2062, the assumed repository closure date, the total activity is about 17 PBq ( $1.7 \times 10^{16}$  Bq) (taking into account new waste being emplaced as well as decay of already stored wastes).

The total radioactivity will decrease with time due to radioactive decay. During operation, key radionuclides are H-3, C-14, Co-60 and Fe-55. At long times, the residual radioactivity is primarily due to Zr-93.



# COMMUNITY ENGAGEMENT

In 2009, an extensive DGR communications program continued throughout the Bruce community. Communication activities included issuing DGR project newsletters and other publications, a new DGR website, speaking engagements and presentations, Open Houses, briefings to key stakeholders and attendance at public events with the DGR mobile exhibit.

A successful strategy for engaging people in discussion on the DGR project has been to go to events where the public would already be gathering. Events that DGR staff participated in with the DGR mobile exhibit included the Port Elgin, Kincardine and Wiarton Home Shows, Mid Western AgriFair, Kincardine Scottish Games, Chippewas of Nawash PowWow, Port Elgin Pumpkinfest, Clarington Family Safety Day, and summer Farmers' Markets in Kincardine, Port Elgin and Walkerton. Overall the DGR mobile exhibit was at local community events more than 40 days.

This year DGR staff also tried a new outreach activity. NWMO hosted two movie nights in Kincardine and South Bruce Peninsula, in conjunction with community partners. NWMO sponsored the viewing of an outdoor family feature film and played the DGR video on the big screen prior to the main feature. Plans to repeat and grow these "DGR Movie Nights" are scheduled for 2010.

Throughout the year, project staff made more than 45 presentations on the DGR project to local community and service groups, and professional organizations. Many of these presentations provided updates on the DGR project to groups previously addressed, but who are still keenly interested in the progress of the project.

NWMO, in conjunction with OPG, also undertook a series of engagement activities in Michigan in September to provide key politicians, officials and environmental groups with information on the DGR.

Three DGR Project newsletters were published and distributed by mail to more than 35,000 local residences. Distribution was expanded in 2009 to include all of the communities in South Bruce Peninsula and North Bruce Peninsula. The newsletters focused on the transition of the project to NWMO, DGR guidelines, safety assessment, environmental field work, preliminary design of the DGR and the Open Houses.

In 2009 NWMO initiated a DGR Community Partnership Program (CPP) to maintain and build community partnerships in Bruce County and to build NWMO's reputation and profile in its role managing the DGR project. The program supports local community initiatives in the following areas: Environment, Education, Community and Aboriginal Communities.



NWMO engineer Tom Lam discusses the DGR at the Port Elgin Home Show



Ongoing public consultation at DGR open houses and community events

In 2009 over half of the funds were directed to environmental initiatives. The majority of the balance of the funds supported municipal projects and Aboriginal community initiatives.

A third round of Open Houses was held in the local communities of Kincardine, Ripley, Walkerton, Port Elgin, Chesley, Owen Sound and Wiarton during November. Approximately 90 people attended the Open Houses. Many of the attendees were already familiar with the proposed DGR project, having participated in other stakeholder communication events. One of the primary reasons cited for attending the Open House was to obtain an update on the progress of the project and the studies associated with it. The majority of Open House attendees indicated support for the project.

At the Open Houses and throughout the year at community events the key questions and comments received on the project continued to be associated with whether used nuclear fuel or waste from other producers will be stored in the DGR, the proximity of the DGR to Lake Huron, and the potential for contamination of drinking water. The DGR Open Houses and community events provided an opportunity to respond to the questions and comments.

## Aboriginal Engagement

In March a Protocol between Saugeen Ojibway Nation (SON), OPG and NWMO was signed. The protocol provides a process for SON to participate in the DGR regulatory review. Subsequent meetings with SON focused on DGR updates, upcoming project milestones, and exchange of information relevant to the project. These discussions are expected to continue in 2010.

Métis Nation of Ontario (MNO), including representatives of local Métis community councils, visited the Bruce site in November to tour the Western Waste Management Facility and receive a presentation on the DGR. Discussions with MNO are expected to continue in 2010, aimed at reaching agreement and facilitating MNO engagement on the DGR project.

Meetings were also held with the Historic Saugeen Métis to discuss developing a Protocol for their participation in the regulatory review process.

# ENVIRONMENTAL ASSESSMENT PROCESS

The final guidelines for the Environmental Impact Statement (EIS) and Joint Review Panel Agreement were released by the Canadian Nuclear Safety Commission (CNSC) and Canadian Environmental Assessment Agency (CEAA) in January. The EIS guidelines list the information needed to examine the potential environmental effects of the proposed project as well as requirements for a licence to prepare a site and construct the DGR.

## Baseline Environment Studies

Collection and documentation of baseline environmental data to support the EIS continued in 2009. Field work was undertaken to update the information previously compiled on surface water quality, aquatic and terrestrial species populations, social and economic conditions, and public attitude, and to obtain information on light conditions.

Baseline environmental data provides the basis on which potential environmental effects of the proposed project are predicted and which future monitoring results are compared to verify the accuracy of the environmental assessment and determine the effectiveness of mitigation measures in minimizing environmental effects.

## Environmental Assessment Methodology

The assessment of effects includes a detailed description of the project, specifying project works and activities comprising the project. This description, along with the identification of the Valued Ecosystem Components (VECs) is the basis for consideration of the potential effects of the project. The Valued Ecosystem Components were identified in the EIS Guidelines and have also been displayed and discussed with community members at DGR Project Open Houses in 2007, 2008 and 2009.

For each project activity, the potential interactions with the various components of the environment are identified, and those interactions are carried forward for further evaluation. These interactions are then assessed for the potential for there to be a measurable change in the environment. Potential measurable effects are carried forward for further evaluation to determine whether those effects are adverse. If the assessment of effects indicates a potential adverse effect, mitigation measures are proposed to address the identified potential effect. Residual effects, with the mitigation in place, are then determined.



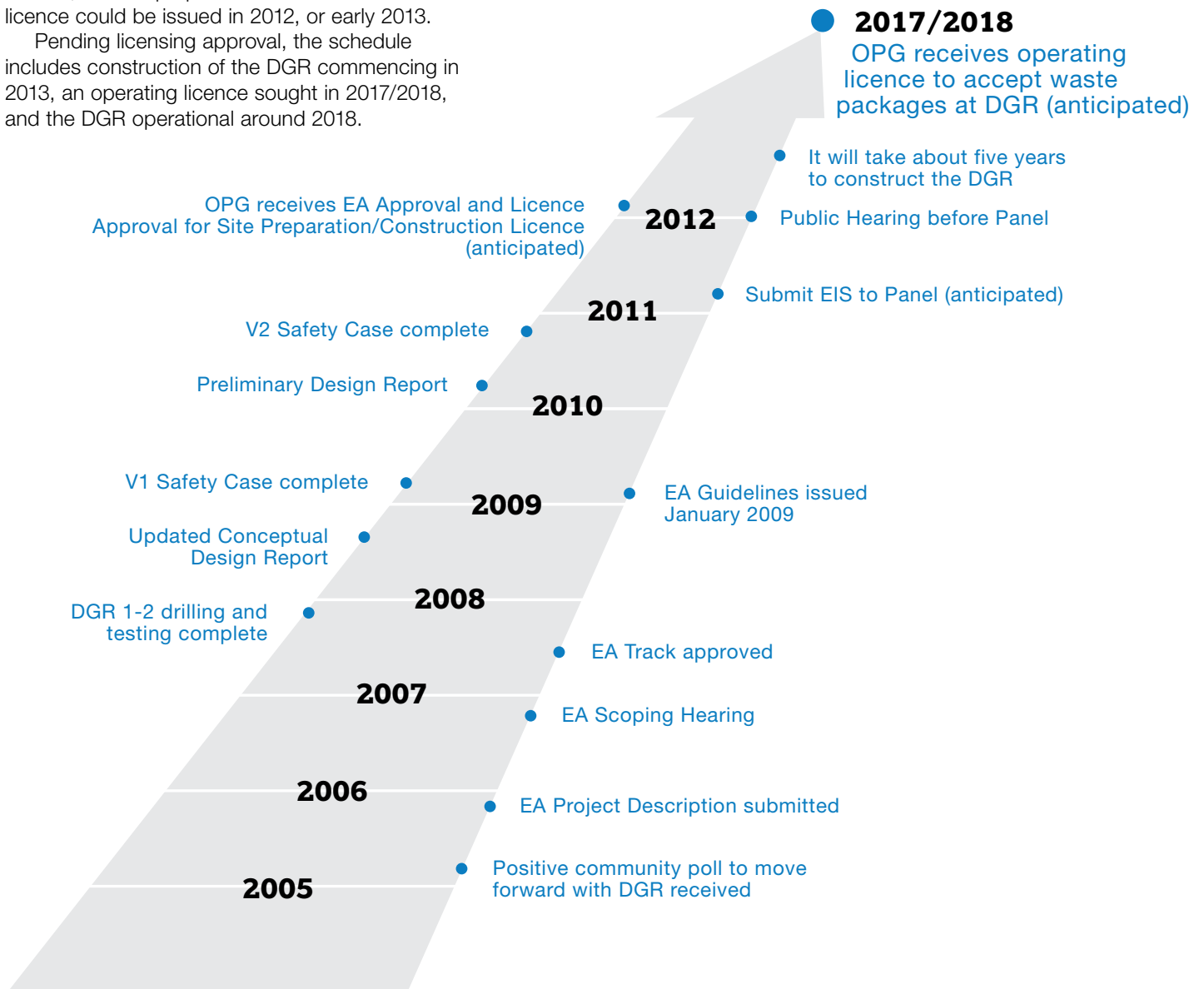


Golder Associates staff conducting baseline field studies

# PROJECT SCHEDULE

The DGR project continues to be on schedule with the geoscientific site characterization work and other technical activities to be completed in mid-2010 and to form the basis for the Preliminary Safety Report, the Environmental Impact Statement and other supporting documents, which are expected to be submitted to the Joint Review Panel in early 2011. The Panel Hearing is expected to take place in 2012. If the review panel accepts the EIS, the site preparation and construction licence could be issued in 2012, or early 2013.

Pending licensing approval, the schedule includes construction of the DGR commencing in 2013, an operating licence sought in 2017/2018, and the DGR operational around 2018.





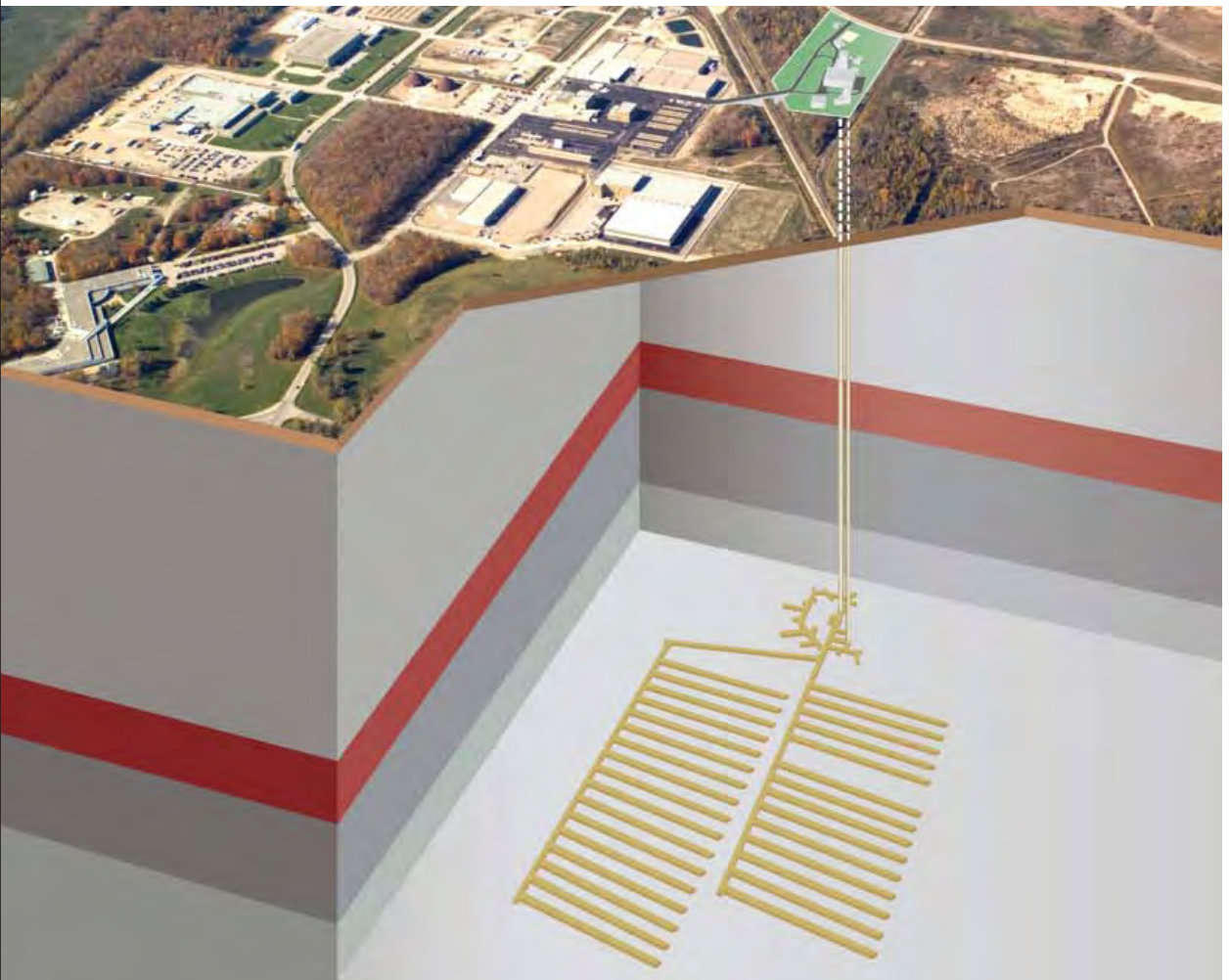




# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

KEEPING YOU INFORMED



**nwmo**

NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION

SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION

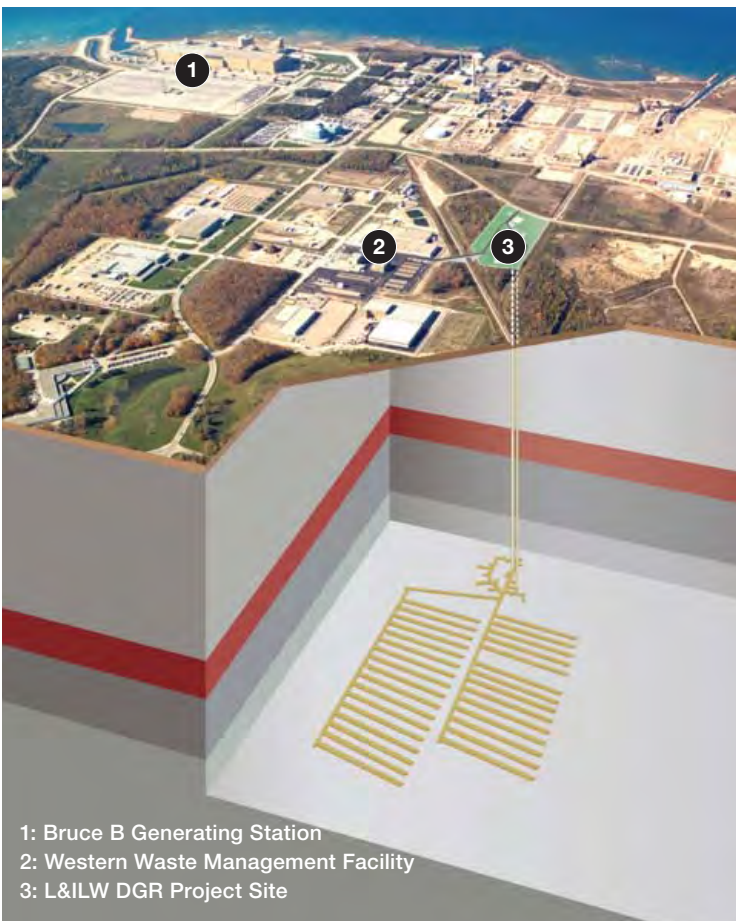


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# ONTARIO POWER GENERATION (OPG)'s DEEP GEOLOGIC REPOSITORY PROJECT FOR LOW AND INTERMEDIATE LEVEL WASTE (L&ILW DGR)

OPG, with the support of the Bruce County municipalities, is proposing to construct and operate a deep geologic repository for the long-term management of low and intermediate level nuclear waste. The L&ILW DGR would be located on lands adjacent to OPG's Western Waste Management Facility (WWMF) located within the Municipality of Kincardine. The Nuclear Waste Management Organization (NWMO) is managing the regulatory approvals process on behalf of OPG. Numerous opportunities will be provided throughout the regulatory process for citizens to become informed, ask questions and provide comment on the L&ILW DGR, which will only be constructed if it is safe to do so and with regulatory approval and public support.



L&ILW DGR surface facilities



Low level waste emplacement room



Intermediate level waste emplacement room

# IMPORTANT FACTS ABOUT OPG, NWMO AND THE L&ILW DGR PROJECT

**OPG** is owned by the people of Ontario, has been generating electricity from nuclear fuel and safely managing the nuclear waste and used nuclear fuel from its operations for more than 40 years. OPG will be the owner, licence holder and operator of the proposed L&ILW DGR.

**NWMO** is an independent, not-for-profit Canadian company, formed by the nuclear utilities, with specialized expertise in the long-term management of nuclear waste. NWMO is under contract to OPG to manage the L&ILW DGR Project through the regulatory approvals process. NWMO is also, in a completely separate role, implementing Adaptive Phased Management (APM) – an approach for the long-term management of Canada's used nuclear fuel. APM will involve the construction of a deep geologic repository in an informed and willing host community in a location in Canada yet to be determined.

## **OPG'S L&ILW DGR AND NWMO'S APM WILL CONTINUE TO BE SEPARATE PROJECTS.**

### **Facts about the L&ILW DGR Project:**

- A long-term management facility for **only low and intermediate nuclear waste** from OPG-owned reactors.
- The Municipality of Kincardine passed a resolution in 2004 to request the L&ILW DGR as its preferred option for the long-term management of low and intermediate level nuclear waste based on an independent assessment study that examined several alternatives.
- An extensive regulatory process is one of several mechanisms to ensure safety of the public and the environment.
- Consistent with OPG's long-standing record of safety excellence.
- Geoscientific Site Characterization is providing site specific information that is verifying the suitability of the Bruce nuclear site to host the L&ILW DGR.
- Construction and operation of the L&ILW DGR is fully funded by OPG.
- L&ILW DGR geoscience, safety assessment and engineering/design work programs benefit from independent peer review and oversight.

# OPG'S WESTERN WASTE MANAGEMENT FACILITY (WWMF)

- OPG's WWMF, located within the Municipality of Kincardine, has safely managed low and intermediate level nuclear waste since 1974 and can continue in this role whether or not the L&ILW DGR proceeds.
- The WWMF manages all of the low and intermediate level nuclear waste from the Bruce, Pickering and Darlington generating stations. It also manages the low and intermediate level nuclear waste resulting from the previous operation of the now shutdown Douglas Point reactors at the Bruce nuclear site.
- The WWMF also manages high level nuclear waste from Bruce Power, while Darlington and Pickering have facilities for managing their own high level nuclear waste.
- The L&ILW DGR will provide safe long-term management for all of the low and intermediate level nuclear waste currently managed at the WWMF including waste from the future operation of OPG-owned reactors.

## Western Waste Management Facility



- |   |  |  |
|---|--|--|
| 1 10 low level storage buildings                  | 5 Intermediate level waste quadricells   | 8 Refurbishment waste storage building   |
| 2 Waste volume reduction building                 | 6 Western used fuel dry storage facility | 9 Low level storage building #11         |
| 3 Transportation package maintenance building     | 7 Steam generator storage building       | 10 Future low level storage building #12 |
| 4 In-ground intermediate level storage containers |  | 11 Proposed site of L&ILW DGR            |

## WHAT IS LOW LEVEL NUCLEAR WASTE?



Low level waste is received at the WWMF

- Low level nuclear waste consists of common industrial items that have become contaminated with low levels of radioactivity during routine clean-up and maintenance at the nuclear generating stations.
- It includes mops, rags, paper towels, temporary floor coverings, floor sweepings, protective clothing and hardware items such as tools.
- It consists of paper, plastics, metal, rubber, cotton and other miscellaneous materials.
- Low level nuclear waste can be safely handled using normal industrial practices and equipment without any special radiation protection.



## WHAT IS INTERMEDIATE LEVEL NUCLEAR WASTE?

- Intermediate level nuclear waste requires shielding to protect workers during handling.
- Intermediate level nuclear waste typically includes ion exchange resins and filters utilized to clean the reactors' water systems.
- Approximately 290 cubic metres of intermediate level nuclear waste is received each year at the WWMF.
- Approximately five per cent of all waste (excluding used fuel) received at the WWMF is intermediate level nuclear waste.



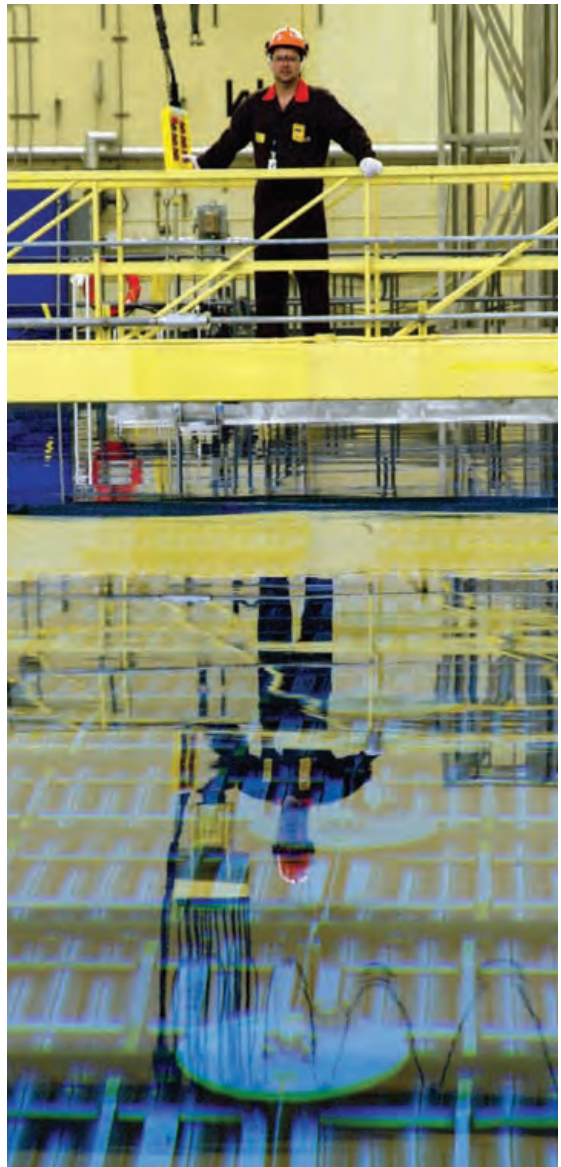
Intermediate level nuclear waste is inserted into an in-ground storage container at the WWMF

## WHAT IS REFURBISHMENT NUCLEAR WASTE?

- Refurbishment waste consists of low and intermediate nuclear waste generated from the refurbishment of nuclear reactors.
- Intermediate refurbishment nuclear waste consists of irradiated core components such as pressure tubes, calandria tubes and end fittings that are safely managed in shielded containers inside a concrete refurbishment waste building.
- Low level refurbishment nuclear waste consists of steam generators that are safely managed in a concrete refurbishment waste building.

# WHAT IS HIGH LEVEL NUCLEAR WASTE?

- High level nuclear waste consists of fuel bundles that have been used in the reactors to produce electricity.
- Fuel bundles spend a minimum of 10 years in large, pool-like structures filled with water, called fuel bays, before they are placed in robust dry storage containers made of steel and concrete that provide shielding.
- **Used Fuel will not be placed in the L&ILW DGR.** It is stored on an interim basis at the site where it is generated.
- The NWMO has the responsibility for implementing Adaptive Phased Management – a long-term management approach that is intended to, with collaboration, continuous learning and adaptability, lead to the construction of a geologic repository for all of Canada's used fuel.
- NWMO will seek an informed and willing community, in a location in Canada yet to be determined, to host a centralized deep geologic repository for all of Canada's used nuclear fuel.



NWMO's repository for Canada's used fuel is a separate project from OPG's L&ILW DGR



FOR MORE INFORMATION ABOUT THE NWMO AND ADAPTIVE PHASED MANAGEMENT, PLEASE VISIT [www.nwmo.ca](http://www.nwmo.ca)



# TRANSPORTATION OF NUCLEAR WASTE

- Low and intermediate level nuclear waste has been transported from the Pickering and Darlington generating stations to the WWMF for over 40 years.
- Transportation of nuclear waste is regulated by the Canadian Nuclear Safety Commission (CNSC).
- No release of nuclear materials has ever occurred during transportation of the waste.
- OPG has an emergency response plan in place with highly trained responders.
- Training about the transportation of nuclear materials is provided to First Responders all along the transportation routes.
- Used fuel is NOT transported for interim storage but remains at the generating site where it was produced; Pickering, Darlington and Bruce generating stations have their own wet and dry storage facilities for used fuel.



## A COMMUNITY PARTNERSHIP

In 2002, the Municipality of Kincardine and OPG signed a **Memorandum of Understanding (MOU)**. The MOU set out terms to assess the feasibility of the long-term management of low and intermediate level nuclear waste at the WWMF located within the Bruce nuclear site.

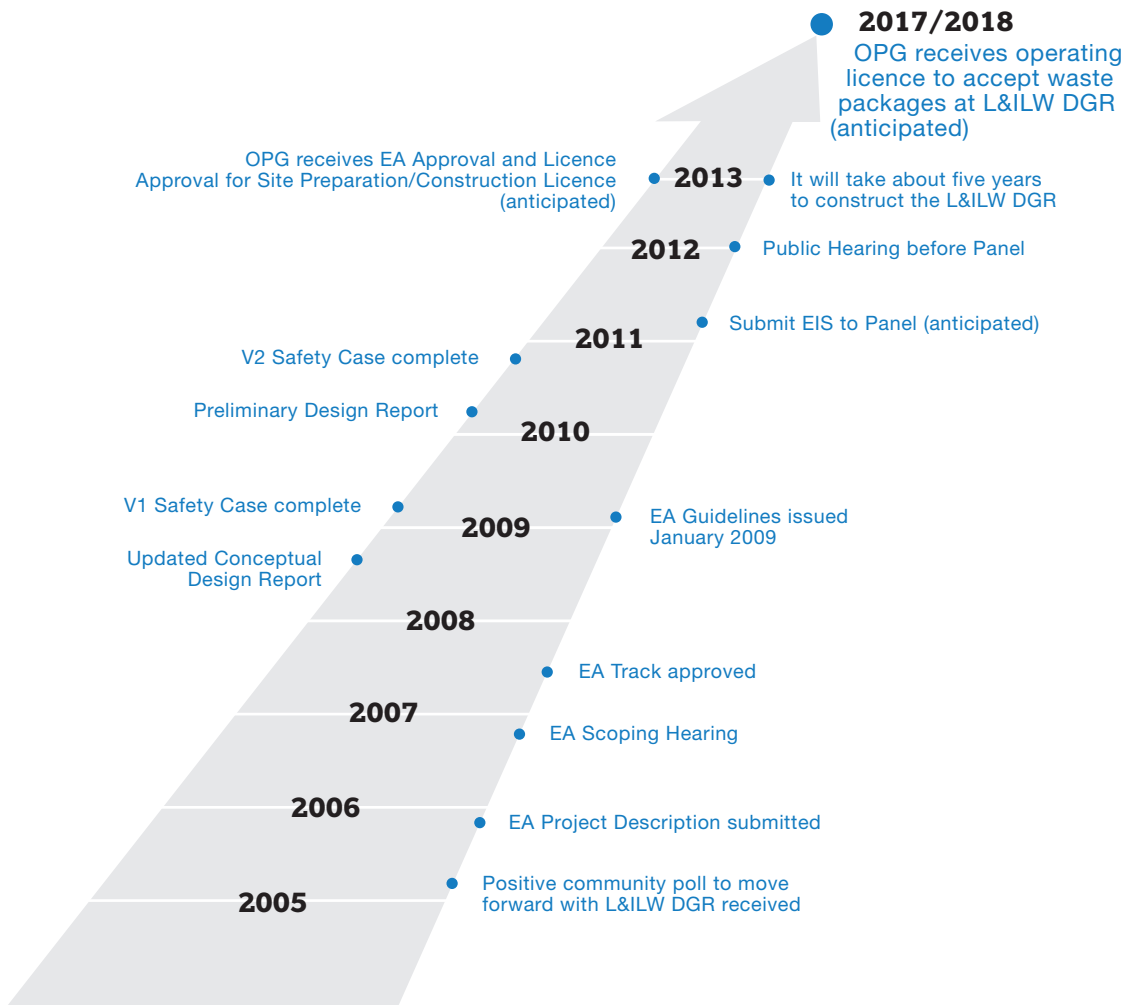
- Under the MOU, Golder Associates conducted an Independent Assessment Study, which looked at the feasibility of various long-term management options for low and intermediate level nuclear waste at the Bruce nuclear site. It also included a preliminary safety assessment, and took into account information from a study based on existing geological, groundwater and geotechnical information related to the Bruce nuclear site.
- Three options were deemed to be technically feasible, safe and without significant social, economic or environmental impacts: enhanced storage and processing, above-ground concrete vaults and deep geologic repository.
- The Independent Assessment Study compared the options and included consultation with the local community and stakeholders.
- In 2004, Council for the Municipality of Kincardine requested the L&ILW DGR over all of the other options, by council resolution, because of its greater safety margin.
- In 2005, an independent polling of both permanent and seasonal residents was conducted in the Municipality of Kincardine, which showed a majority of residents supported moving forward with the L&ILW DGR.

# HOSTING AGREEMENT

## Key features

- With the support of the community, OPG will obtain regulatory approvals to construct the L&ILW DGR.
- Kincardine, Saugeen Shores, Huron-Kinloss, Arran-Elderslie and Brockton to receive \$35 million (2004 dollars, inflation protected) paid over 30 years subject to achieving key milestones:
  - Environmental Assessment Guidelines
  - Environmental Assessment Approval
  - Construction Licence
  - Operating Licence
- The Municipalities will choose how to use the funds for the benefit of their communities.
- No used nuclear fuel will be placed in the L&ILW DGR.
- Property Value Protection Plan.

# PROJECT SCHEDULE AND REGULATORY PROCESS



FOR MORE INFORMATION ABOUT THE L&ILW DGR REGULATORY APPROVAL PROCESS VISIT [www.nuclearsafety.gc.ca](http://www.nuclearsafety.gc.ca) OR [www.ceaa-acee.gc.ca](http://www.ceaa-acee.gc.ca)

# L&ILW DGR ENVIRONMENTAL ASSESSMENT (EA) AND LICENCING PROCESS

<b>2005</b>	Regulatory process to obtain a licence to construct a L&ILW DGR began with the submission of the L&ILW DGR Project Description to the Canadian Nuclear Safety Commission (CNSC) who review and approve all nuclear licencing applications. Public engagement program in support of EIS began.
<b>2006</b>	Geoscientific site characterization to verify site conditions began.
<b>2007</b>	L&ILW DGR project was referred to a Joint Review Panel under the <i>Canadian Environmental Assessment Act</i> in June by the federal Environment Minister. The Joint Review Panel process will establish a panel of three to consider both the Environmental Impact Statement (EIS) and the applications for site preparation/construction licence(s).
<b>2008</b>	Participant funding awarded to six parties to assist with participation in the public review of draft guidelines for EIS and Joint Review Panel Agreement. Environment Minister and CNSC jointly issued draft EIS guidelines and draft Joint Review Panel Agreement in April for public review.
<b>2009</b>	Final guidelines and Joint Review Panel Agreement issued in January.
<b>2010</b>	Work completed to verify the Bruce nuclear site as a suitable location for the L&ILW DGR and to analyze any potential effects on the environment from the L&ILW DGR.
<b>2011</b>	Results from geoscience, engineering and design, safety assessment, environmental field work and communications will be reflected in the EIS to be submitted to the Joint Review Panel along with the Preliminary Safety Report (PSR).  EIS and PSR will be available for public review.
<b>2012</b>	The Joint Review Panel will convene a public hearing to hear comments about the EIS from individuals and groups. The panel will make a recommendation to the Minister of Environment on the suitability of the EIS. The Environment Minister takes panel recommendation/report to Cabinet for the final decision.
<b>2012+</b>	If the EIS is accepted, and following licencing approval by the panel, construction will take about five years. OPG would then seek regulatory approval for an operating licence. The L&ILW DGR is anticipated to be operational in 2018.

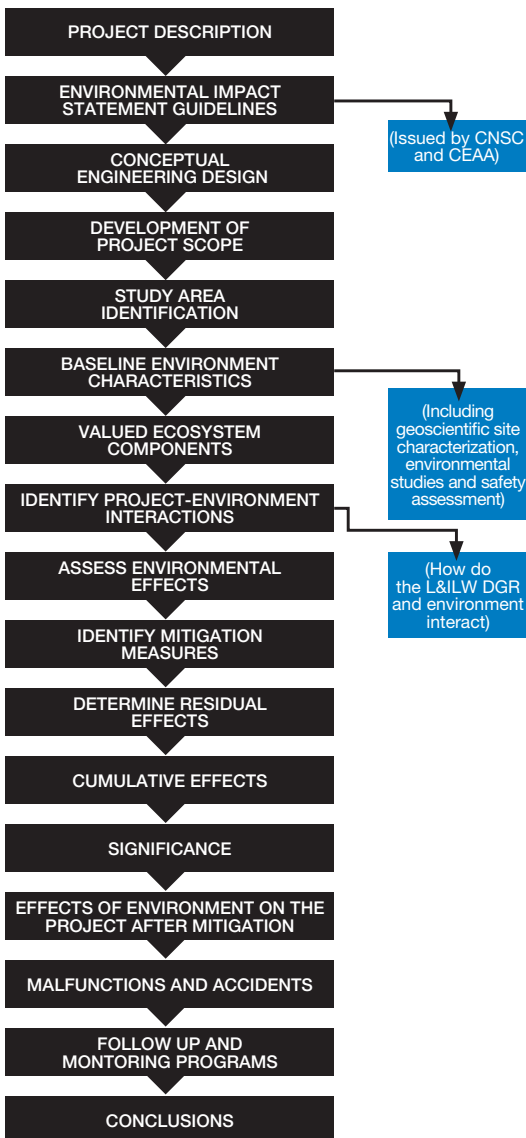
## EA METHODOLOGY

Guidelines for the EA, issued by the CNSC and the Canadian Environmental Assessment Agency (CEAA), prescribes exactly what information is required to be contained within the EIS, which will be reviewed by the public and a Joint Review Panel.

The assessment of effects includes a detailed description of the project, specifying project works and activities comprising the project. This description, along with the identification of the Valued Ecosystem Components (VECs), is the basis for consideration of the potential effects of the project. The VECs were identified in the EIS Guidelines and have also been displayed and discussed with community members at L&ILW DGR Project Open Houses in 2007, 2008 and 2009.

For each project activity, the potential interactions with the various components of the environment are identified, and those interactions are carried forward for further evaluation. These interactions are then assessed for the potential for there to be a measurable change in the environment. Potential measurable effects are carried forward for further evaluation to determine whether those effects are adverse. If the assessment of effects indicates a potential adverse effect, mitigation measures are proposed to address the identified potential effect. Residual effects, with the mitigation in place, are then determined.

The following flow chart explains the steps taken in the development of the Environmental Assessment for the L&ILW DGR.



Field studies provided baseline data and were undertaken as part of the EA process for the L&ILW DGR. Studies included: light assessment, water quality sampling, sediment sampling, stream geomorphic studies (physical features of earth's surface), stream aquatic habitat study, amphibian study and surveys of burrowing crayfish, vegetation, basking turtles, breeding birds, meadow voles and the deer population. Public attitude research was also completed as part of the investigations.

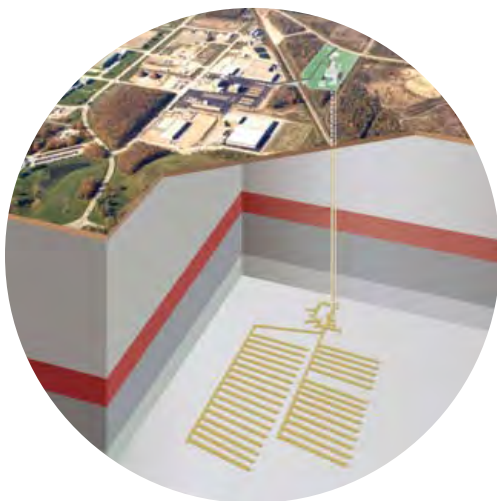
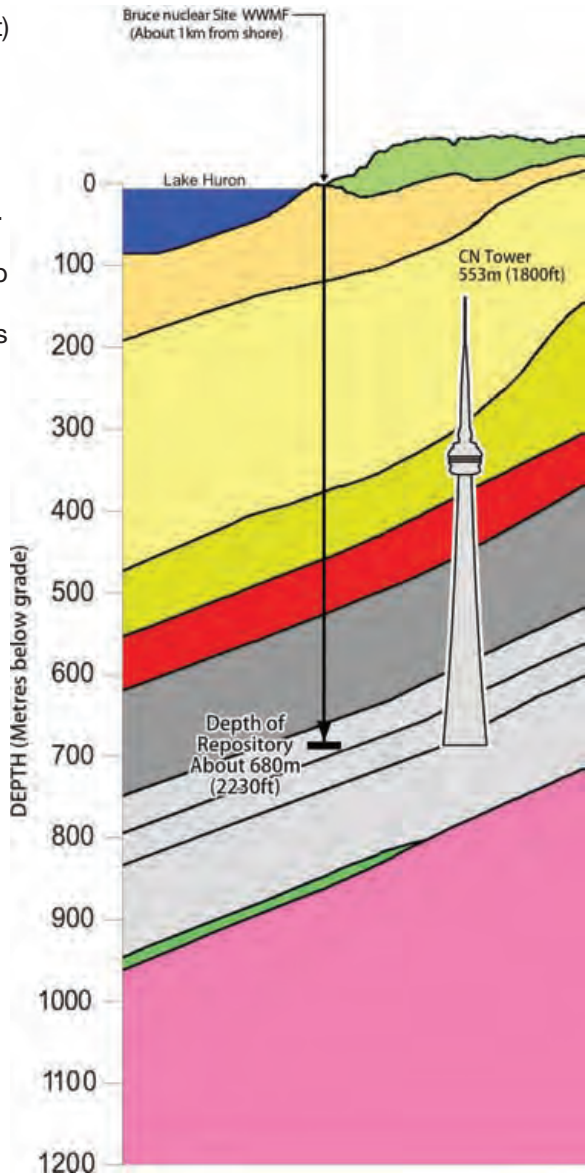




# OPG'S L&ILW DGR : DEEPER THAN THE CN TOWER IS TALL

## Key features

- Constructed about 680 metres (2,230 feet) deep within low permeability limestone in the Cobourg Formation – deeper than the CN Tower is tall.
- Designed to isolate and contain about 200,000 cubic metres of packaged waste.
- A 200-metre-thick (660 feet) protective cap of low permeability shale directly above and low permeability limestone formations at the repository horizon provide multiple natural barriers for the safe management of the waste for many tens of thousands of years and beyond.
- At closure, shafts will be sealed with clay-based and concrete materials.



# L&ILW DGR PRELIMINARY ENGINEERING DESIGN ELEMENTS

- Rock excavation will use controlled drill and blast technology.
- Main shaft (6.5-metre finished diameter) will provide personnel access and waste handling to the L&ILW DGR. The ventilation shaft (5-metre finished diameter) will provide exhaust ventilation and a secondary exit for emergency purposes.
- Surface facilities include a Main Shaft Headframe with an adjoining building for waste package receiving and staging, Ventilation Shaft Headframe and Ventilation Shaft Hoist House.
- The main shaft hoist with a capacity of 44-tonnes will move waste packages between the surface and repository levels. A separate hoist will move personnel.
- Low and intermediate level nuclear waste will be managed in separate emplacement rooms excavated in low permeability limestone.
- Underground facilities include a lunchroom, washroom, office, equipment storage area and refuge stations.
- Once filled, a group of emplacement rooms will be closed by a thick wall in adjacent access tunnel.
- The wastes are without value so there is no intent to retrieve them; however, the wastes remain retrievable. As emplacement rooms are filled and isolated, retrieval will still be possible though more difficult.

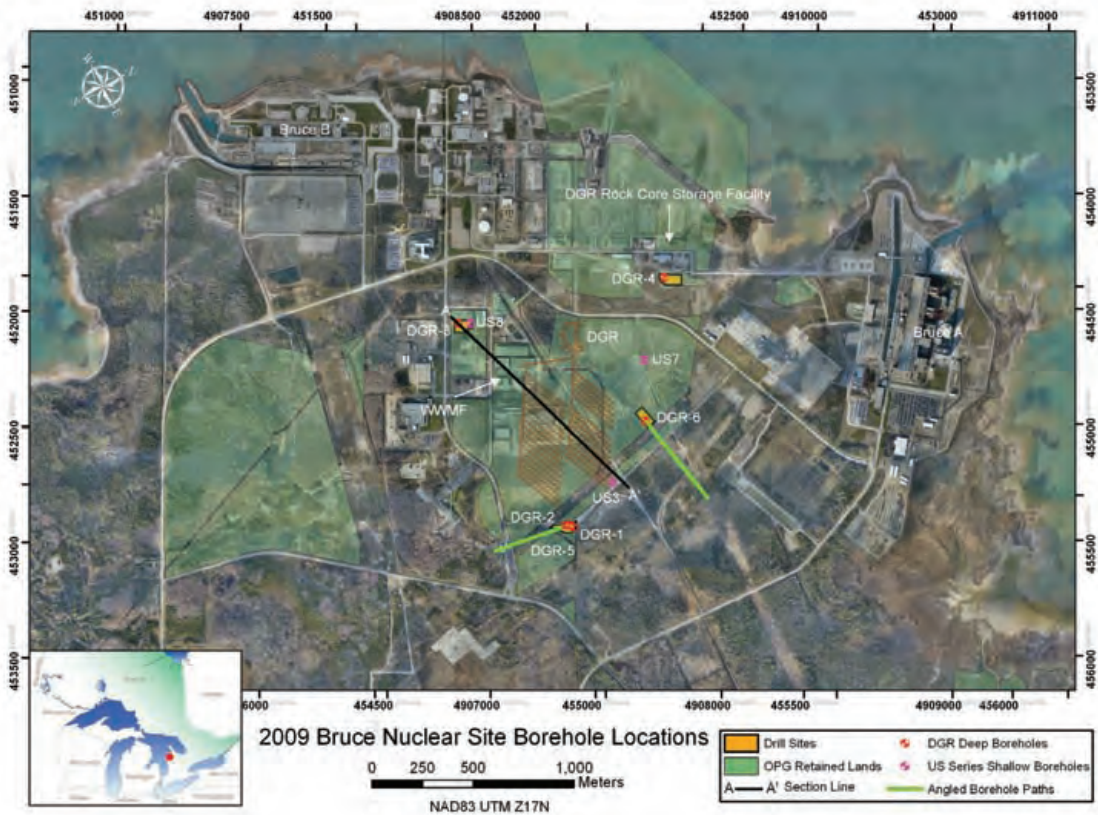


An example of a drill jumbo creating underground openings in rock

# L&ILW DGR PHASES: SITE PREPARATION, CONSTRUCTION, OPERATIONS, DECOMMISSIONING

Project Factor	Estimated Time	Estimated Work Force	Scope of Phase	Key Phase Activities
Site Preparation Phase	6 months	80 positions	Site preparation begins after receipt of licence and would include clearing about 20 hectares of the L&ILW DGR site and preparing construction laydown areas	<ul style="list-style-type: none"> <li>- removal of brush and trees and excavation of topsoil for on-site storage</li> <li>- grading of sites including roads, laydown areas, stormwater management area, ditches</li> <li>- paving of roads</li> <li>- set-up of construction trailers and temporary services</li> <li>- install and operate fuel depot for construction equipment</li> </ul>
Construction Phase	5 years	200 positions	Will include the construction of the surface facilities as well as excavation and construction of access ways to the repository (i.e. shafts) and underground infrastructure	<ul style="list-style-type: none"> <li>- construction of permanent buildings including two headframe buildings</li> <li>- receipt and set-up of shaft sinking equipment</li> <li>- construction of crossing between WWMF and L&amp;ILW DGR site</li> <li>- construction of main and vent shafts, and access tunnels and emplacement rooms</li> <li>- placement of excavated rock in on-site storage area</li> </ul>
Operations Phase	35–40 years	30 positions	Operations include the receipt of waste packages from the WWMF at the staging area in the L&ILW DGR Waste Package Receiving Building and transfer to the shaft for emplacement in the repository	<ul style="list-style-type: none"> <li>- receipt of disposal-ready waste packages</li> <li>- receipt of waste packages at base of the main shaft</li> <li>- offloading from elevator cage by forklift and transfer of waste packages to emplacement rooms</li> <li>- rail cart transfer of large packages to emplacement rooms</li> <li>- installation of shielding walls on full emplacement rooms</li> <li>- rock bolting and rock wall scaling as required</li> <li>- transfer, operation and maintenance of hoists</li> <li>- maintenance of services such as communications, ventilation and fire protection systems</li> <li>- period of monitoring to ensure facility is performing as expected</li> </ul>
Decommissioning Phase	5 years	75 positions	Decommissioning, if approved following an EA, will include the removal of the surface facilities and installation of seals in each of the shafts	<ul style="list-style-type: none"> <li>- concrete monolith will be installed at the base of the shafts</li> <li>- surface structures will be removed</li> <li>- shafts will be sealed</li> </ul>

# INTERIM SITE CHARACTERIZATION RESULTS



Geoscientific investigations, in support of the existing regional and historical information about the proposed site for the L&ILW DGR, have shown that the geology is:

- predictable
- geomechanically stable
- seismically quiet
- characterized by natural barriers which can isolate and contain the waste
- with low natural resource potential

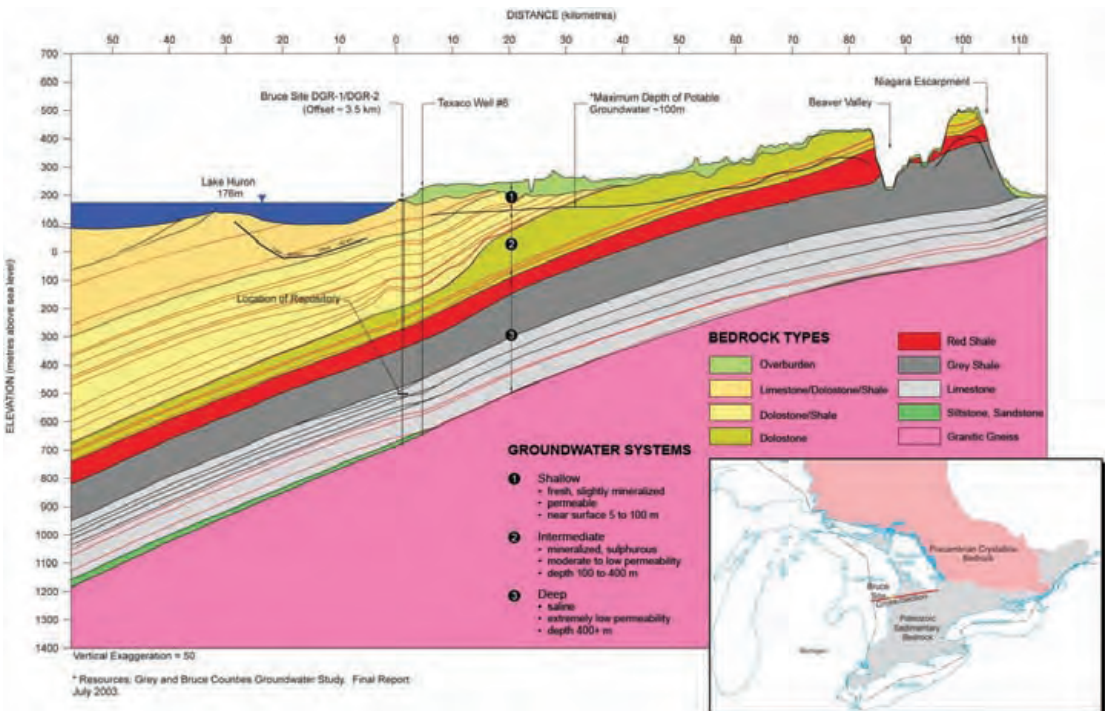
Six boreholes are positioned outside of the L&ILW DGR footprint to maintain the integrity of the proposed L&ILW DGR site



# GEOSCIENCE ATTRIBUTES

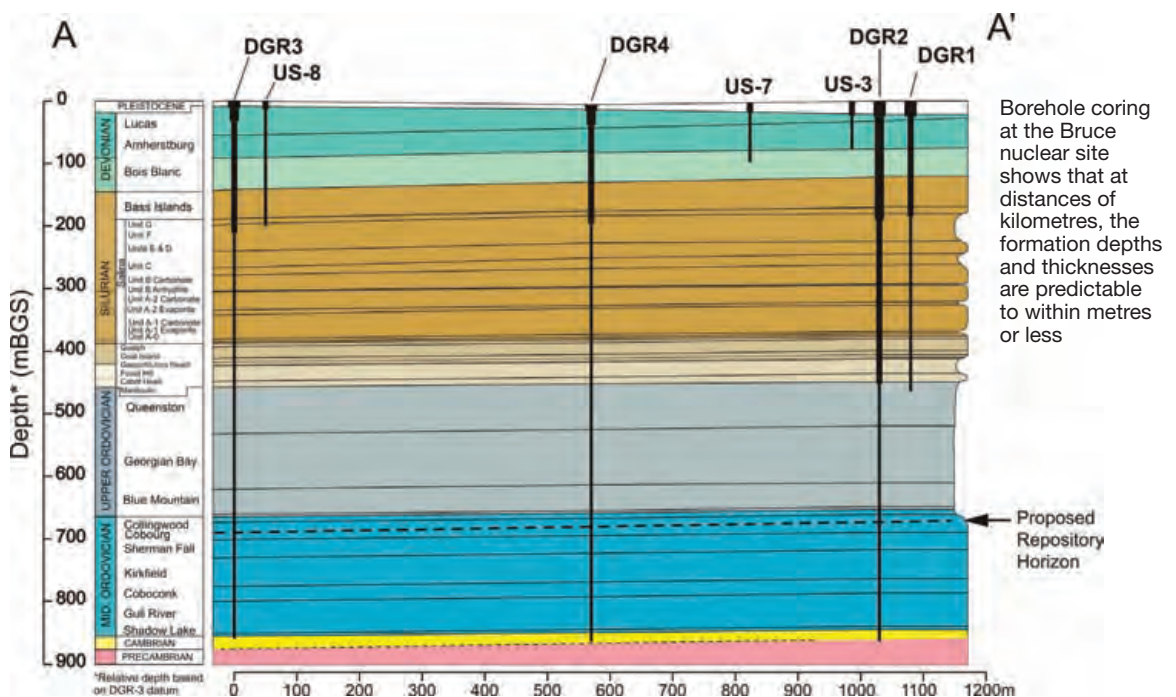
## MULTIPLE NATURAL BARRIERS TO PROTECT GROUNDWATER AND SURFACE WATER

- The L&ILW DGR will be sited about 1 kilometre inland from Lake Huron.
- Potable groundwater occurring in the upper 100 metres is isolated from the L&ILW DGR.
- The L&ILW DGR is surrounded and overlain by multiple layers of low permeability sedimentary rock, which will provide multiple natural barriers to isolate and contain the waste.
- The only water at the repository depth is ancient and has been trapped within the rock for millions of years. This has been confirmed by a series of scientific tests including analyzing its salt content, which is many times that of seawater.
- Lake Huron is well isolated from the L&ILW DGR by over 400 metres (1320 feet) of low permeability rock layers.



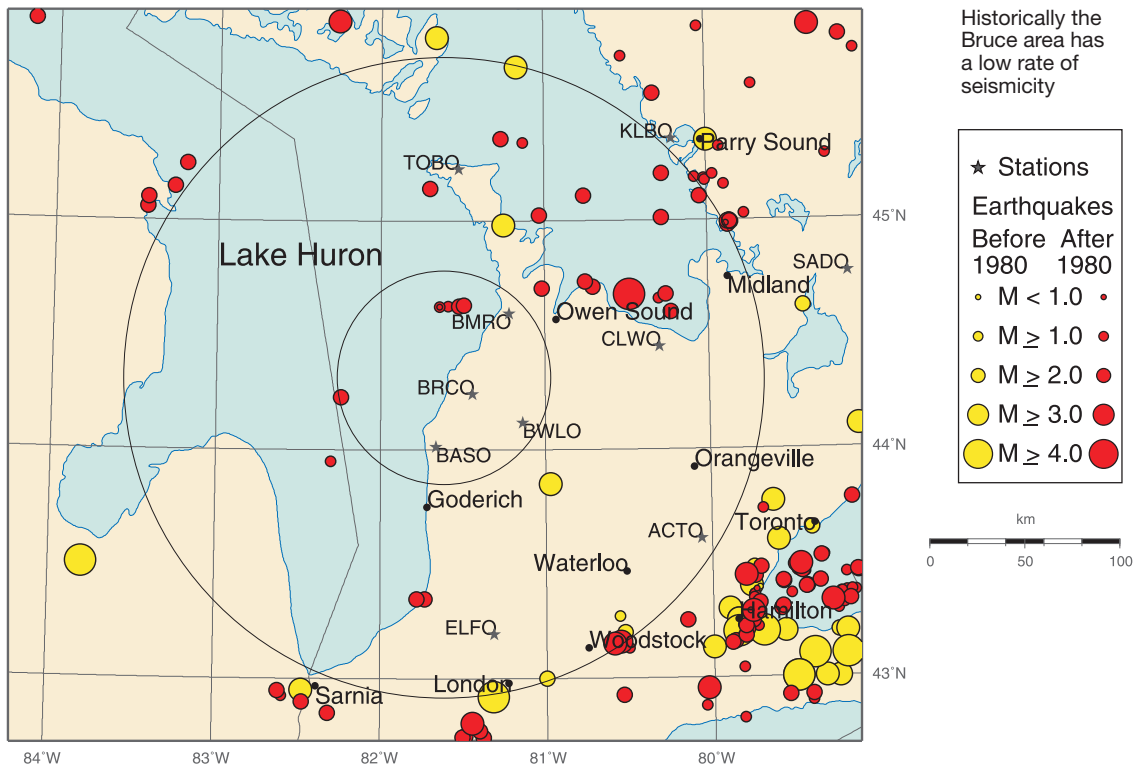
## PREDICTABILITY

Examination of drill core obtained during the deep drilling program, a two-dimensional seismic survey and downhole testing, has provided a basis to verify the bedrock stratigraphy beneath the Bruce nuclear site. In total 34 individual bedrock formations, Cambrian (543 million years old) to Devonian (350 million years old) in age, exist in the 840-metre-thick sedimentary sequence underlying the site. This includes 200 metres of shale that lie above the Cobourg Formation, a clay-rich limestone that will host the proposed L&ILW DGR. Formation contacts and formation thicknesses are predictable over distances of kilometres to within metres or less. The properties of bedrock formations, including rock mass permeabilities, rock matrix porosity, mechanical strength and saline pore fluid composition, also reveal consistency at site scale.





## SEISMICALLY QUIET



Southwestern Ontario and the Bruce region lie within the tectonically stable interior of the North American continent, which is a region characterized by low rates of seismicity. The historic seismicity record over 180 years shows most recorded events have magnitudes that do not exceed M5. As part of the L&ILW DGR project, a network of borehole seismographs was established in the summer of 2007 to allow monitoring of micro-seismicity (M=1) within a 50-kilometre radius of the Bruce nuclear site. Monitoring results through 2009, reported by the Geologic Survey of Canada's Canadian Hazard Information Service, continue to confirm that the Bruce nuclear site is located in a seismically quiet region.

## **TRANSPORT IS DIFFUSION DOMINATED**

Within the bedrock formations that will host and enclose the repository, the groundwater regime appears ancient and has been resilient to external perturbations, such as glaciations, over hundreds of thousands of years. Multi-discipline evidence includes: the predictable nature and lateral extent of the thick and near-horizontally bedded sediments beneath the Bruce nuclear site, the very low rock mass permeabilities measured in the sediments, the consistent brine (300 g/L) composition of pore fluids in the low porosity rock and the distribution of environmental tracers vertically in the sedimentary column that reflect a slowly evolving groundwater system. Numerical simulations illustrate that even under cyclic glacial loading the groundwater system remains in a state in which mass transport is diffusion dominant. This is a very, very slow process and is the preferred situation for long-term waste isolation and containment.

## **NATURAL RESOURCE POTENTIAL IS LOW**

Evaluation of published studies, historical records and the results of the deep drilling program on the Bruce nuclear site strongly suggests that viable commercial oil and gas reserves do not exist beneath or adjacent to the Bruce nuclear site. Commercially viable base metal deposits have not been identified in the study area.

## GEOMECHANICALLY STABLE HOST ROCK

An assessment of the geomechanical stability of the L&ILW DGR openings both during operations and at long-term timeframes indicates that the repository will remain safe. A comprehensive set of analyses using the site-specific data reveals that the openings within the Cobourg Formation will be stable during construction and operation. At longer time frames associated with future glacial episodes and possible seismic events, the overlying and underlying formations will provide passive barriers to contain and isolate the waste.



Construction of the cooling water intake tunnel at Darlington in the Cobourg Formation provided evidence that the formation can sustain a stable, dry opening

# GEOSCIENTIFIC SITE CHARACTERIZATION

## PHASE ONE

A four-year, stepwise series of scientific investigations began in 2006 to verify the ability of the geology at the Bruce nuclear site to safely isolate and contain low and intermediate level nuclear waste. Phase One included the following test programs:

- 2D seismic reflection survey to image the sedimentary bedrock layers.
- Three low-level seismographs installed at three locations within a 50-kilometre radius of the Bruce nuclear site to monitor low level seismic activity.
- Drilling and coring of vertical boreholes DGR-1 to 463 metres and DGR-2 to 863 metres to provide rock core samples for laboratory tests to measure physical and chemical rock properties.
- Downhole geophysical logging of boreholes with various instruments to determine the different layers (formations), rock density and porosity.
- Hydraulic borehole testing to measure bedrock formation permeabilities.
- Installation of multi-level groundwater monitoring equipment to allow long-term monitoring of deep groundwater conditions.

## PHASE TWO

- Phase Two of the Geoscientific Site Characterization began in April 2008 with the drilling, coring and instrumentation of two additional vertical boreholes, DGR-3 and DGR-4, at separate sites to triangulate about the proposed L&ILW DGR site.
- DGR-3 and DGR-4 were drilled to about 860 metres in 2008.
- The drilling and coring of two additional steeply inclined deep boreholes, DGR-5 and DGR-6, were completed early in 2010, with further testing underway in 2010.
- Results from the boreholes provided evidence as to the nature and predictability of the stratigraphic, geochemical and hydrogeologic properties of horizontally-layered limestone and shale rock formations.



**Above:** Inclined drilling verifies the nature of vertical bedrock structure and its effect on L&ILW DGR implementation



**Right:** Data from the drilling program supports the original understanding of the geologic attributes beneath the Bruce nuclear site



## BOREHOLE DRILLING, TESTING AND MONITORING



About 1,200 core samples from six deep boreholes have been sent to labs in Canada and internationally to undergo a variety of tests including geomechanical strength, density, geochemical analysis and porosity

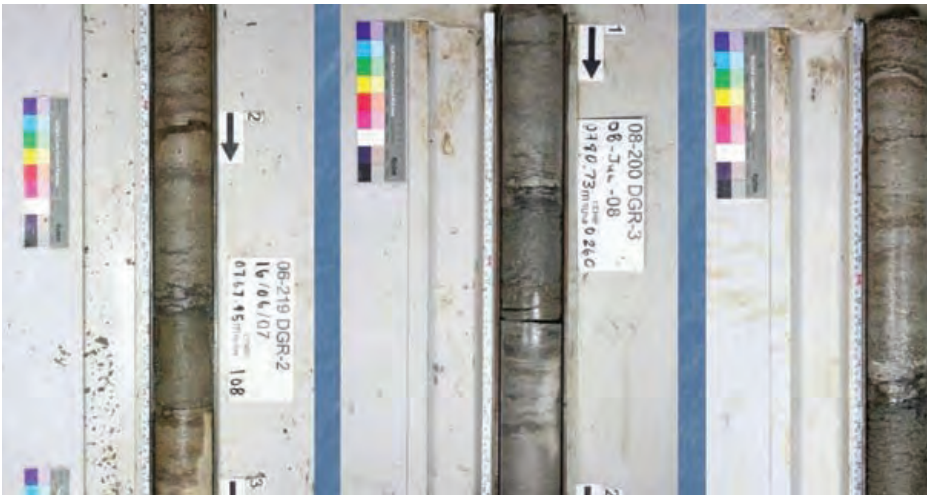


**Far left:** Hydraulic testing utilizes specialized equipment to measure the very low permeabilities of the rock layers

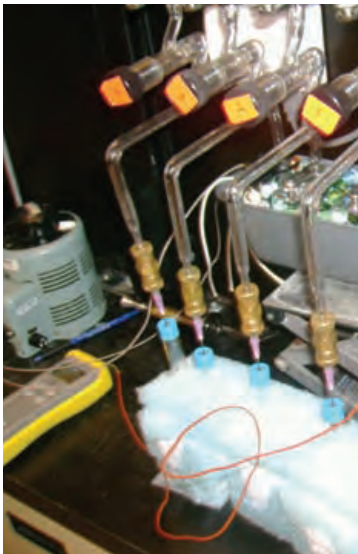


**Left:** The installation of multi-level groundwater monitoring systems provides baseline data on existing groundwater systems





The layer of Bentonite found in core samples from three different boreholes speaks to the consistency of the geologic layers



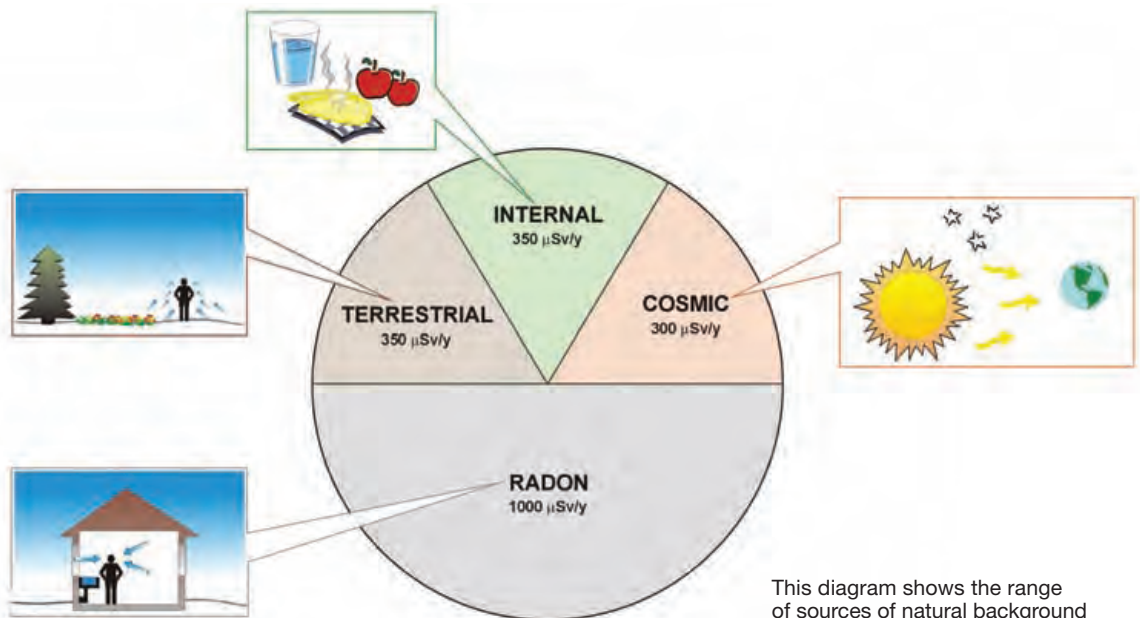
**Far left:** Samples of tiny bits of moisture called pore water, taken from 680 metres, reveal a salinity content that is about nine times that of seawater, which is reflective of the water's long residence time in the rock formations



**Left:** Geologists meet to review formation depths in L&LW DGR boreholes

# RADIATION SAFETY BACKGROUND

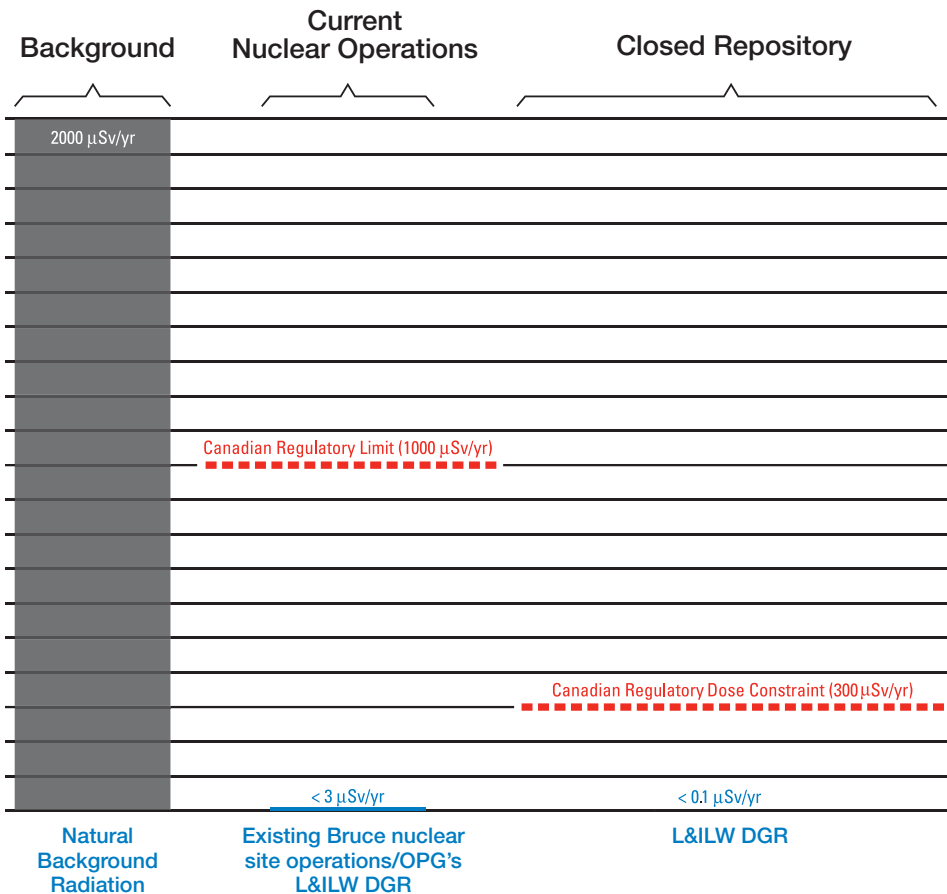
- A sievert is the unit of measure that describes the amount of ionizing radiation received by people. Dose is often expressed in millionths of a Sievert, or microSievert ( $\mu\text{Sv}$ ).
- Natural background radiation averages about 2,000 microSieverts per year. This represents the amount of radiation dose that the average person in Canada receives each year from all natural sources.
- Examples of radiation doses from common sources include: standard dental x-rays at 2 – 20 microSieverts, transcontinental flight from Toronto to London at 50 microSieverts, and a chest x-rays at 60 – 140 microSieverts depending on the type of x-ray.
- The dose rate to the public from all of the Bruce nuclear site activities, if they lived at the site boundary, would be less than 3 microSieverts per year. Dose rate to the public, living at the site boundary, from the WWMF is less than 0.1 microSieverts per year.



This diagram shows the range of sources of natural background radiation in Ontario. People are also exposed to radiation from human activities such as medical examinations and power generation

# PRELIMINARY SAFETY ASSESSMENT

- The safety assessment of the L&ILW DGR is being completed by a team led by Quintessa Limited, a consulting firm based in the United Kingdom, which specializes in safety assessment of nuclear waste management facilities.
- This chart shows the dose rate estimates for the L&ILW DGR. Maximum estimated doses to humans are well below the international standards and natural background levels.



# EVALUATING L&ILW DGR SAFETY

## Safety Case Elements

The safety case is based on the geologic site and waste characteristics including:

- The repository will be isolated from surface waters by its depth of about 680 metres.
- There are multiple layers of low permeability rock above the repository.
- The rock formations are 450 million years old. They have remained stable through tectonic events and climate changes during this period, including several ice ages within the past one million years. These rocks are expected to remain stable for at least the next few million years.
- The area is seismically quiet. Large magnitude earthquakes are unlikely and would have little to no impact on the L&ILW DGR.
- The properties of the deep bedrock limit the rate of contaminant movement through the rock to very slow rates.
- Most of the waste volume contains primarily shorter-lived radionuclides, and the radioactivity decreases with time.
- Almost all the radioactivity would decay within or near the repository.

## The safety assessment for the L&ILW DGR:

- Analyzes the facility behavior under normal and accident conditions.
- Quantifies potential impacts on the public and workers.
- Compares the potential impacts with regulatory criteria.



NWMO engineers review a report on L&ILW DGR safety

# INTERIM SAFETY ASSESSMENT RESULTS

## OPERATIONAL (PRECLOSURE)

Preclosure covers the start of operations to the closure of the facility with the focus on radiological safety during the handling and storage of low and intermediate level waste packages under normal operations and accident conditions.

### Preliminary Results:

- Based on experience from the WWMF operations, small amounts of tritium and carbon-14 are expected to be released from the L&ILW DGR under normal operating conditions, dropping to zero as the L&ILW DGR is decommissioned.
- Public impact is negligible – similar to WWMF (emissions are less than 0.1 per cent of the regulatory limit).
- Accident scenarios including breach of waste package and fire were considered and the preliminary analyses indicate that any radioactivity released from above or below ground accidents is low and will not impact members of the public.

### Examples of Safety Features:

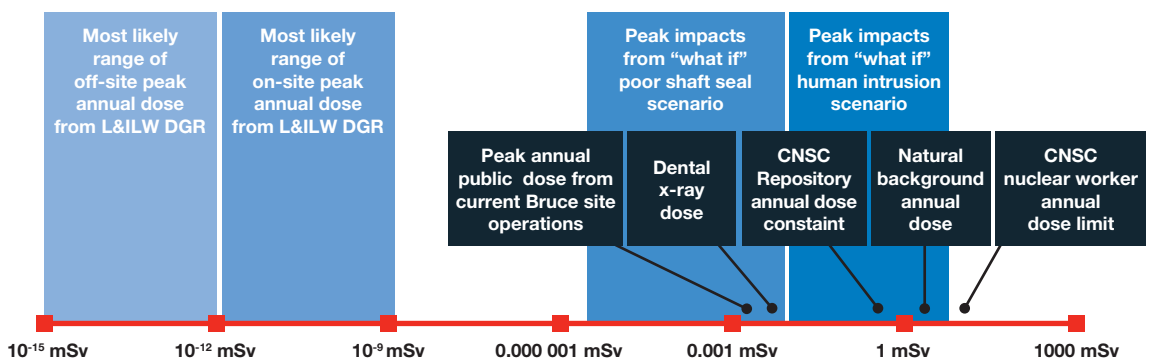
- Waste packages will meet the L&ILW DGR waste acceptance criteria; for example, no surface contamination.
- The intermediate level nuclear wastes will be in robust, concrete-and-steel packages.
- The L&ILW DGR will be close to the WWMF, so waste packages do not need to be moved off the Bruce nuclear site.
- All underground construction will be completed prior to the start of waste emplacement.
- The shaft hoist is based on a proven reliable multi-rope Koepe drum design.
- Combustible materials and ignition sources will be minimized.
- Emergency response system includes fire detection and suppression, two shaft exits and underground safety refuge stations.

## LONG-TERM (POSTCLOSURE)

The Postclosure Safety Assessment addresses the safety of the repository after the underground facilities have been closed and sealed. It assesses a range of likely and unlikely future outcomes and scenarios through the use of site specific data and computer modelling to quantify specific outcomes under various scenarios.

### Preliminary Results:

- Preliminary safety assessment results indicate there would be little or no impact from the repository in any of these scenarios – low to extremely low dose rates well below regulatory limits.



Interim Safety Assessment calculated impacts where mSv = milliSievert, one thousandth of a Sievert



# INTERNATIONAL EXPERIENCE WITH REPOSITORIES

## L&ILW DGR IS CONSISTENT WITH INTERNATIONAL BEST PRACTICES

The L&ILW DGR Project has benefited from first-hand visits to long-term management facilities including those in countries such as Sweden, Finland and the United States. Information learned about surface facilities, repository access, hoisting, lay-out and material handling is being utilized in the design of the L&ILW DGR. Such international collaboration is extremely beneficial in terms of experience, the exchange and analysis of reports and visits with key personnel.

### L&ILW DGR technology is used internationally:

- The Forsmark facility in Sweden opened in 1988 and is located at the Forsmark nuclear power station site. The Swedish underground repository was excavated to a depth of 60 metres in crystalline rock below the bottom of the Baltic Sea.
- The Olkiluoto (VLJ) facility in Finland began operation in 1992 and was excavated to a depth of 70 to 100 metres underground in crystalline rock. It is located near the Olkiluoto nuclear power station.
- The Waste Isolation Pilot Plant (WIPP) located in New Mexico, United States is excavated to a depth of 600 metres in a bedded salt formation and has been operating safely since 1999.



**Left:** Sweden's Forsmark Repository

**Right:** Waste Isolation Pilot Plant in New Mexico

# KEEPING YOU INFORMED

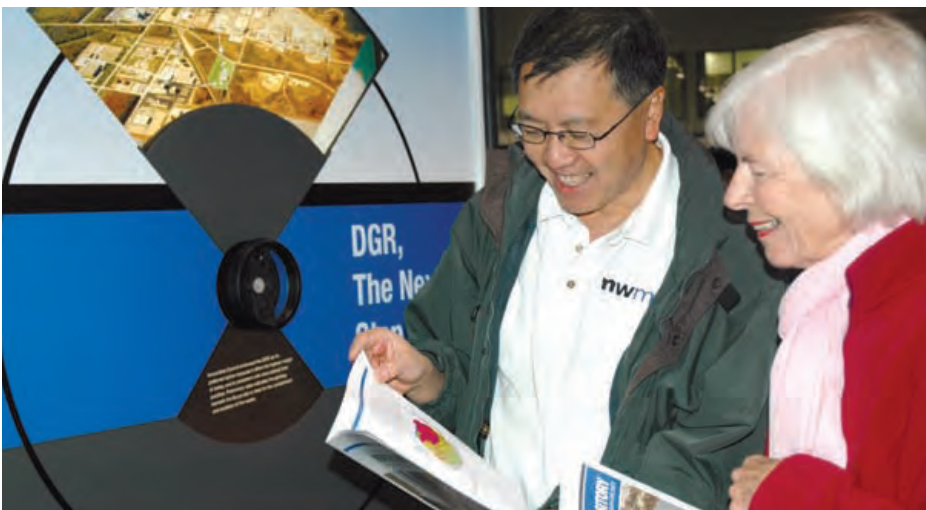
Consultation with the public has continued throughout the six to eight year regulatory process at an intense level through newsletters and publications, open houses, website, speaking engagements, attendance at public events with mobile exhibit, briefings with key stakeholders including municipal, provincial and federal politicians, and media.

## Consultation with Aboriginal Peoples

- A Protocol agreement, signed by Saugeen Ojibway Nations (SON), OPG and NWMO in 2009, provides a framework for SON's participation in the regulatory approval process for the L&ILW DGR project.
- Discussions with the Historic Saugeen Métis and the Métis Nation of Ontario are underway for the proposed L&ILW DGR project to facilitate their participation in the regulatory approval process.



**Above:** Members of the Historic Saugeen Métis learn more about the proposed L&ILW DGR as they examine core samples taken as part of the geoscientific site characterization



**Left:** The regulatory process provides many opportunities for public engagement and comment

For more information please visit [\*\*www.nwmo.ca/dgr\*\*](http://www.nwmo.ca/dgr)

# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

Keeping You Informed

May  
2010

## UNDERSTANDING THE DIFFERENCES BETWEEN OPG'S L&ILW DGR PROJECT AND NWMO'S APM PROJECT

### NWMO is under contract to OPG to seek regulatory approval for the L&ILW DGR

Ontario Power Generation (OPG) and the Nuclear Waste Management Organization (NWMO) are two different companies with complimentary roles in the development of the proposed Deep Geologic Repository (DGR) Project for the long-term management of low and intermediate level nuclear waste (L&ILW) at the Bruce nuclear site.

OPG is proposing, with the support of the Bruce municipalities, to construct the L&ILW DGR. OPG will be the owner, licence holder and operator of the L&ILW DGR. OPG is also financing the project from segregated funds controlled under the Ontario Nuclear Funds Agreement (ONFA) for the long-term management of nuclear waste.

NWMO is an independent, not-for-profit Canadian company established by the nuclear utilities, under the Nuclear Fuel Waste Act in 2002, with specialized expertise in the long-term management of nuclear waste. NWMO, in a completely different and separate role, is also responsible for implementing a long-term management approach for all of Canada's used

*(continued on page 4)*



NWMO's Kevin Orr poses in front of the L&ILW DGR mobile exhibit, which was recently on display at five local home shows within the Bruce area. NWMO delivers the L&ILW DGR engagement program on behalf of OPG.



# PARTNERSHIP WITH HISTORIC SAUGEEN MÉTIS FOR GREATER UNDERSTANDING OF L&ILW DGR

## NWMO provides support for storefront office



Information about OPG's L&ILW DGR is available at the storefront office

**The Nuclear Waste Management Organization (NWMO)** recently provided the Historic Saugeen Métis (HSM) with some additional office equipment and furnishings for their storefront office at 204 High Street in Southampton.

Patsy L. McArthur, HSM Secretary-Treasurer, who has spent years researching the HSM, said the meeting place, which opened in February 2009, is helping to heighten the profile of the HSM both within the local community and with visitors, while ensuring them a place to conduct their business.

"People come in and want to know about us, our history... they are fascinated by our story," she said.

NWMO's contribution to the storefront is a reflection of the company's commitment to developing long-term relationships with Aboriginal groups as well as ensuring local groups are able to participate in the regulatory process for Ontario Power Generation (OPG)'s proposed Deep Geologic Repository (DGR) for low and intermediate level nuclear waste (L&ILW).

Patsy noted that HSM citizens, as part of their right to be consulted with respect to development that could impact their traditional way of life, are currently commenting on several projects. The storefront office provides them with a much needed resource for conducting this business, which for years was done in members' dining rooms.

They can also use the facility as an information centre from which to disperse knowledge about their heritage and legacy, as well as knowledge about the projects they are reviewing.

For instance, one can find information about OPG's proposed L&ILW DGR on the book shelves. An Open House about the proposed long-term management facility was also held in the storefront office in March to encourage citizens from the HSM to become informed about the L&ILW DGR. A new flat screen, wall-mounted TV can be utilized for presentations and videos including the new L&ILW DGR video.

Patsy said the HSM's relationship with NWMO and other groups is based on respect and co-operation.

"They have shown such respect for our need to be involved in these projects from our perspective as stewards of the land," she said. "We really appreciate these partnerships."

Anyone who would like to learn more about the HSM is invited to visit the office in Southampton, which is open Monday – Friday from 9 a.m. – 4 p.m.



Patsy McArthur (left) and Tammy Schummelketel, secretary-treasurer and office coordinator respectively for the Historic Saugeen Métis, encourage members of the community and visitors to stop by the storefront office in Southampton.

# NWMO AWARD OF MERIT RECOGNIZES HIGH SCHOOL PROGRAM FOR YOUNG WOMEN

## Program emphasizes self esteem, goal-setting, planning a positive future

**Amy Snobelen and Kathie Hackney**, two Kincardine District Secondary School (KDSS) teachers, are this year's recipients of the Nuclear Waste Management Organization (NWMO) Award of Merit. The award – one of eleven community achievement awards presented annually by the Kincardine and District Chamber of Commerce – recognizes a business, group or individual who makes an outstanding contribution to the community. The teachers were nominated for the NWMO Award of Merit by the Kincardine Economic Development Committee in recognition of a new program at KDSS, which is already yielding positive results.

Recognizing the need to provide alternative resources for teenage girls who were experiencing limited success in high school because of poor attendance and low academic achievement, Amy and Kathie developed, secured funding and implemented a new initiative designed specifically for these young women who weren't responding to mainstream programming.

Students spend two periods a day in a special classroom setting where the emphasis is on positive reinforcement by encouraging and developing self esteem, teamwork and goal setting. If the girls are behind in their courses, they are in an environment where they can get caught up without feeling stigmatized by being in a classroom with younger students. Special speakers from various vocations are brought



Congratulations to: Front, KDSS teachers Amy Snobelen (left) and Kathie Hackney (right) with students (back left) Katie Creighton, Kate-Lyn Fry, Vicky Marsh and Lisa Graham.

in as a means to inspire the girls to set realistic career goals. Although the program is only in its infancy, the attendance rate of the first 16 students has improved and according to Snobelen, "sixty per cent of the participants are on track to graduate."

Several of the students said the program provided them with the incentive to attend class because they enjoyed the support they received from their classmates and the overall sense of belonging. One girl noted that she had thought about leaving school, but being in the program gave her the confidence to seek a CO-OP position in a local restaurant, and now she is on track for

graduation, and thinking about various career options. Of the four girls who were interviewed for this story, all had positive experiences with the program and said they fully expect to graduate from high school.

As for Snobelen and Hackney, they are very appreciative of the award, and wanted to express their thanks to the Kincardine and District Chamber of Commerce, NWMO and the various community partners who helped them through donations and funding to get the program started; however as Snobelen said, "it's nice to get the recognition, but Kathie and I feel we are just doing our jobs."



## OPG's L&ILW DGR

(continued from page 1)

nuclear fuel called Adaptive Phased Management (APM). This will involve the construction of a deep geologic repository in an informed and willing host community in a location in Canada yet to be determined.

The NWMO, as contractor and technical expert to OPG, is managing the Environmental Assessment process under the Canadian Environmental Assessment Act for the L&ILW DGR and is also assisting OPG in the seeking of licensing from the Canadian Nuclear Safety Commission (CNSC).

It must be stressed that OPG's L&ILW DGR Project and NWMO's APM Project for used fuel will continue to be separate and distinct projects; NWMO's role as OPG's contractor for the L&ILW DGR Project is completely separate from NWMO's role with the APM Project.



AMEC engineer Peter Nimmrichter measures the elevation change across a culvert at the Bruce nuclear site as part of the mapping of the site drainage network. The information will be used in the safety assessment currently being compiled by NWMO on behalf of OPG.

## GEOSCIENCE STUDIES ALMOST COMPLETE

**The gathering of data** from a four-year, stepwise geoscientific site characterization program for Ontario Power Generation (OPG)'s proposed Deep Geologic Repository (DGR) for low and intermediate level nuclear waste (L&ILW), initiated in the fall of 2006, is drawing to a close with the hydraulic testing of inclined borehole DGR-6.

The hydraulic testing of DGR-6 (one of six boreholes drilled beneath the site) is expected to be completed by the end of June 2010. This milestone will signal the completion of the geoscience field work, as set out under the Geoscientific Site Characterization Plan, for the L&ILW DGR at the Bruce nuclear site.

The initial results from the current work at DGR-6 are consistent with the hydraulic testing results of four deep vertical

boreholes and DGR-5 (inclined borehole). Consistent findings indicate the low-permeability limestone bedrock found at the repository horizon coupled with the 200-metre-thick cap of low-permeability shale bedrock directly above, will provide multiple natural barriers for the safe management of low and intermediate nuclear waste for many tens of thousands of years and beyond.

The Nuclear Waste Management Organization (NWMO), on behalf of OPG, continues to move forward with all of its work programs in the areas of geoscience, safety assessment, engineering and preliminary design, environmental field work and community engagement. These work programs, along with their results, will be documented in an Environmental Impact Statement (EIS), which is expected to be submitted to the Joint Review Panel early in 2011, and distributed for public comment prior to the anticipated public hearing in 2012.

## L&ILW DGR TECHNICAL REPORTS AVAILABLE IN EIGHT LOCAL LIBRARIES

**A wealth of technical documentation** in support of the environmental assessment and licensing process for Ontario Power Generation's (OPG) proposed Deep Geologic Repository (DGR) Project for the long-term management of low and intermediate level nuclear waste (L&ILW) is available on the NWMO website at [www.nwmo.ca/dgr](http://www.nwmo.ca/dgr). However, we would also like to remind you that hard copies of technical reports including early feasibility studies, the project description and technical documents for work programs in the areas of geoscience, safety assessment and engineering/design – 20 documents in all – can be viewed at libraries located in: Southampton, Port Elgin, Kincardine, Ripley, Walkerton, Chesley, Wiarton and Tobermory. Additional documents will be made available in these libraries as they become available.

# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

September  
2010

Keeping You Informed

## PRELIMINARY RESULTS OF EA ARE AVAILABLE FOR PUBLIC DISCUSSION

### NWMO to host open houses to discuss environmental assessment

Ontario Power Generation (OPG)'s proposed Deep Geologic Repository (DGR) Project for the long-term management of low and intermediate level nuclear waste (L&ILW) at the Bruce nuclear site is the subject of an environmental assessment (EA) process, which began late in 2005 with the submission of the project description. After more than four years of investigations, studies and analyses, preliminary results of the assessment of the effects of the DGR Project on the environment are being presented to the public for discussion.

In summary, the potential residual effects identified include:

- Small increase in air emissions at Bruce nuclear site during all DGR project phases;
- Increase in noise levels during site preparation, construction and decommissioning;
- Loss of some Eastern White Cedar trees on DGR project site;
- Reduced flow in the north railway ditch;
- Increase in quantity of stormwater flow at the Interconnecting Road on the Bruce nuclear site;

*(continued on page 4)*



## DGR EXHIBIT MAKES THE ROUND OF SUMMER EVENTS

Summer engagement activities for the DGR mobile exhibit included the Kincardine Scottish Festival where this future heavy events participant checked his form with a piece of limestone core taken from beneath the Bruce nuclear site.

# FOUR-YEAR INVESTIGATION OF GEOLOGY BENEATH THE BRUCE NUCLEAR SITE FOR DGR SUCCESSFULLY COMPLETED

*The field studies for the geoscientific site characterisation of Ontario Power Generation (OPG)'s proposed Deep Geologic Repository (DGR) Project for low and intermediate level waste (L&ILW) were completed at the end of June. Mark Jensen, Director of Low and Intermediate Level Waste Repository Geoscience for NWMO, discusses the results of the four-year program designed to verify the suitability of the geology beneath the Bruce nuclear site to safely isolate and contain low and intermediate level nuclear waste.*



Mark Jensen (right) and co-worker Andy Parmenter at work on the DGR Project.

**Q:** Why is geology so important to the safety case for OPG's proposed DGR for L&ILW?

**A:** The geologic conditions beneath the Bruce nuclear site must be able to provide a stable and secure environment to prevent impacts on surface and groundwater resources. The geologic column of sedimentary rock beneath the site is approximately 840 metres thick and comprises 34 near horizontally-layered bedrock formations. As envisioned, the repository would be constructed within the clay-rich Ordovician age (450 million-year-old) limestone Cobourg Formation at a depth of approximately 680 metres. A 200-metre-thick layer of low permeability shale provides a protective cap directly above the DGR horizon, which is enclosed with low permeability limestone layers. Together, the low permeability limestone and shale layers provide multiple natural barriers to safely isolate and contain the L&ILW. In fact, the permeability of the bedrock layers is so low that contaminants would move very slowly in the subsurface – a situation that appears to have existed for geologic periods of time despite past glacial and geologic events. The geotechnical properties of the Cobourg Formation are favorable for excavation and it must be noted that the DGR will be located in an area of low seismic activity (see story on page four). Combined, the attributes of the geology beneath the Bruce nuclear site contribute to the understanding and assurance of long-term DGR safety.

**Q:** From a geologic point of view, why was the Bruce nuclear site chosen for further investigation as a site for the DGR?

**A:** The decision to conduct further investigations of the Bruce nuclear site as a future host for the DGR was made on the basis of existing historical and regional information about the Bruce area and Southwestern Ontario as well as the consensus of a body of Canadian and international geoscientists.

An initial Geotechnical Feasibility Study was conducted in the fall of 2002 by Golder Associates, which provided evidence from past exploratory oil and gas drilling in the Bruce region and elsewhere in the province. This study supported an understanding of the suitability of the Ordovician age (450 million-year-old) bedrock formations beneath the Bruce nuclear site to isolate and contain L&ILW.

A second review was conducted by the University of Bern, Switzerland in 2004 that looked more broadly at the sedimentary rock formations in Southwestern Ontario. The studies utilized an approach to document and prioritize a list of geoscience/characteristics called FEPCAT (Features, Events, Processes Catalogue) based on decades of international geoscience research in the area of nuclear waste management. It identified the geology of southern Ontario as promising for nuclear waste management purposes.

The geologic setting at the Bruce nuclear site consistently demonstrated favourable attributes necessary for the



long-term management of nuclear waste. The information available before site-specific investigations began, allowed for the development of a conceptual model of the site's geology, which served as a basis to develop and implement the site characterisation program.

**Q: What was done to ensure and verify that the geology beneath the Bruce nuclear site will safely isolate and contain L&ILW for tens of thousands of years and beyond?**

**A:** The Geoscience program was conducted as a four-year, stepwise program that was designed, under the guidance of the International Geoscience Review Group (four geoscientists with extensive experience in international nuclear waste management programs who provided peer review and oversight), to answer specific questions, or tenets, regarding the suitability of the Bruce nuclear site to host the proposed DGR. Questions were posed about the stability and predictability of the sediments beneath the site, the ability of the bedrock formations to protect water resources and prevent environmental impacts, the potential for the occurrence of natural resources that might lead to future exploration, seismic activity and the ability of the geology to allow for the safe excavation of openings in the bedrock to implement the DGR.

The Geoscientific Site Characterisation Plan addressed these and other issues. This program described coordinated activities such as deep drilling, borehole and laboratory testing and borehole instrumentation, which were designed to test the conceptual understanding of the geology underlying the Bruce nuclear site.

The work program conducted to date has seen the successful completion of six deep boreholes that intersected more than 4.7 km of sedimentary rock and obtained more than 3.8 km of rock core from beneath the site. The field and laboratory testing was conducted under a quality assurance program and has involved a variety of Canadian and International groups selected because of specialized skills.

**Q: After almost four years of geoscientific investigations at the Bruce nuclear site, what can you tell us about the geology as it relates to the safety case for the DGR?**

**A:** Site characterisation activities at the Bruce nuclear site began in fall 2006. The field work for the geoscientific site characterisation was completed by the end of June 2010. The results from the laboratory and field testing are favorable and provide strong evidence that the DGR concept can be safely implemented. The sedimentary sequence beneath the Bruce nuclear site is 840 metres thick and is comprised of 34 bedrock formations that range in age from 543 million years (Cambrian) to 385 million years (Devonian). The depth, thickness and orientation of these bedrock layers show remarkable consistency across the site – with formation contacts predictable to within metres or less at distances of more than a kilometre. At the repository horizon the bedrock formations have extremely low permeabilities and the pore fluids are extremely

saline – many times more saline than seawater – indicative of an ancient groundwater system, which isn't mixing with the drinking water found in the upper 100 metres. The mechanical strength of the rock, particularly within the limestone Cobourg Formation in which the proposed DGR would be excavated, exceeds that understood from regional investigations at the onset of site investigations. The installation of seismography and monitoring of micro-seismicity is proving consistent with the region's assigned low seismic hazard rating.

The site-specific data set, perhaps the best gathered in Canada in such low permeability rocks, is providing strong evidence that the bedrock formations proposed to host and enclose the repository are stable and have remained so for geologic periods of time. Perhaps most important now is that we have the necessary site information to confirm the ability of the sedimentary bedrock formations to isolate and contain the L&ILW nuclear waste for time periods of 100,000 years and beyond. This information strongly supports the DGR safety case in terms of the existence of multiple natural barriers, a stable groundwater system over periods of geologic time and a resilient deep groundwater regime in which contaminant transport would occur at extremely slow rates preventing impact to surface or groundwater resources.

**Q: How has the DGR benefited from international expertise and best practices?**

**A:** The investigation of sedimentary rocks, such as those at Bruce nuclear site, for long-term radioactive waste management purposes has been on-going internationally for more than a decade. The experience gained and lessons learned from this have been of significant benefit to the DGR Project. For example, with respect to characterisation studies we've been able to apply tried and tested techniques from many international programs, including:

- specialized hydraulic borehole testing methods for low permeability sediments developed by Sandia National Laboratories during the licensing of the Waste Isolation Pilot Plant in New Mexico;
- laboratory techniques to characterize the chemistry of pore fluids within the rock core samples obtained during drilling developed at the University of Bern, Switzerland, for the French and Swiss programs in the Callovo-Oxfordian and Opalinus shale formations; and
- techniques to estimate the diffusive properties of limestone and shale developed at the Paul Scherrer Institute in Switzerland.

The DGR Project has also benefitted from collaborative international research in areas such contaminant mobility, sub-surface excavation and rock mass response, and glacial ice-sheet erosion rates to mention a few examples. While Canadian geoscientists have played a principal role in the Bruce nuclear site investigations, the ability to access international expertise and experience has made important contributions to the success of the DGR site characterisation and Geosynthesis work programs.

## EA conducted in a thorough, traceable, stepwise manner

(continued from page 1)

- Loss of some habitat quantity and quality for Redbelly Dace, Creek Chub, Burrowing Crayfish and Variable Leaf Pondweed;
- Air and noise emissions may result in a temporary loss of enjoyment of property for those in near proximity to the DGR Project during construction and decommissioning; and
- Positive socio-economic effects for the local and regional areas because of an increase in employment, income, business activity, and municipal revenue during all of the phases.

Residual effects, after further evaluation, were not considered significant.

These results were arrived at through the application of a thorough, traceable, step-wise assessment process. Potential interactions between the DGR Project and the environment were assessed and screened for measurable change on the environment and adverse effects on the Valued Ecosystem Component (VEC)s – components of the environment which are valued or sensitive and have the potential to be affected by the DGR Project. VECs are identified by scientists, the regulator, the proponent and the public. Where necessary, mitigation measures were proposed to reduce or eliminate an adverse effect

and the effect was then reassessed with mitigation in place. For example, in the case of the increase in dust and vehicle emission levels at the Bruce nuclear site, proposed mitigation will include the implementation of dust control measures and quality maintenance practices to ensure transportation and vehicle equipment are in good condition. Residual adverse effects (those that would remain after reasonable mitigation measures were put in place) were assessed relative to a number of criteria including length of effect, geographic extent of effect and reversibility of effect to determine whether or not the residual effect was significant.

Monitoring programs are proposed to verify the predictions made in the assessment and to confirm whether mitigation measures were effective. For example, ambient monitoring of air quality will take place during construction of the DGR and air quality monitoring for the DGR's ventilation system will take place during operations to ensure there aren't any adverse effects from the DGR Project on air.

Possible effects on the environment as a result of the DGR Project were looked at in conjunction with other projects to see if there were any potential cumulative effects; no cumulative effects were identified.

Detailed information about the Preliminary Results for the DGR Project will be available at the series of fall open houses listed below:

DATE	LOCATION	TIME
September 27, 2010	Colonial Motel, 235 Goderich Street, Port Elgin	4:00 – 8:00 pm
September 28, 2010	Ripley Huron Community Centre, 17 Queen Street, Ripley	4:00 – 8:00 pm
September 29, 2010	Best Western Governor's Inn, 791 Durham Street, Kincardine	4:00 – 8:00 pm
September 30, 2010	Victoria Jubilee Hall, 111 Jackson Street S, Walkerton	4:00 – 8:00 pm
October 4, 2010	Chesley Fire Hall, Bruce Rd. 10, (North end of Chesley)	4:00 – 8:00 pm
October 5, 2010	Bayshore Community Centre, 1900 3rd Avenue E, Owen Sound	4:00 – 8:00 pm
October 6, 2010	County of Bruce, Public Library Building, 578 Brown Street, Wiarton	4:00 – 8:00 pm

## EARTHQUAKES WILL NOT IMPACT LONG-TERM SAFETY OF DGR

One of the most frequently asked questions about Ontario Power Generation (OPG)'s proposed Deep Geologic Repository (DGR) Project for the long-term management of low and intermediate level nuclear waste (L&ILW) is "What about earthquakes?" A 5.0 Magnitude earthquake on June 23, which originated about 56 kilometres north of Ottawa added even more interest to the discussion. Given the recent profile of seismicity in the media, here are some key facts:

- Southwestern Ontario and, in particular, the Bruce region are located within an area characterized by low levels of seismicity;
- Historic seismicity records show that in over 180 years of observation there have been no recorded earthquakes in the Bruce region with a magnitude greater than five;
- The network of three seismographs established in 2007 within a 50-kilometre radius of the Bruce nuclear site to monitor low-level seismicity continues to confirm the site is located in a seismically quiet region;
- A Seismic Hazard Assessment of the Bruce nuclear site, as part of the site characterisation for the DGR, considered the influence of earthquakes on the site ranging from 5.25 – 7.5 Magnitude. The assessment concluded that earthquakes will not impact the safe operation or long-term ability of the DGR to safely isolate and contain the L&ILW.

# Western Waste



# Management Facility



## Our commitment to safe, responsible management

The electricity generated by nuclear power emits virtually no greenhouse-gas causing emissions. The by-product of electricity generated from nuclear power is nuclear waste, which is managed in a contained and controlled manner.

Every employee of OPG's Nuclear Waste Management Division recognizes and accepts the responsibility for the management of our waste in an environmentally, socially and financially-responsible manner. We are dedicated, uncompromising and absolute in our commitment to the safety of fellow employees, the public, the communities where we operate, and the environment.

## Our commitment to safety and the environment

OPG has been safely storing nuclear waste from the Bruce, Pickering and Darlington generating stations for more than 40 years and we are proud of our operating record and the progress we have made towards long-term solutions for the future.

Western Waste Management Facility (WWMF) employees are well trained and regard safety for employees, the public and the environment as their top priority. They have accomplished significant milestones in these areas, such as achieving long-standing records of no "Lost Time Accidents" and excellent environmental performance. Safe work planning, safe work practices and attention to detail, along with a safety-conscious work attitude, has led to this excellent safety performance.

The WWMF has an Environmental Management System (EMS) that establishes strategies, objectives and targets for the facility to improve environmental performance. The EMS is based on the International ISO 14001 Standard, which provides a tool for ensuring and demon-

- OPG has been safely managing radioactive waste for more than 40 years
- The WWMF manages and provides interim storage of low and intermediate level waste from OPG's Pickering and Darlington nuclear stations and the Bruce Power stations
- The WWMF's Used Fuel Dry Storage Facility stores used fuel from the Bruce site only.

strating a high standard of environmental responsibility. The WWMF was initially certified to the ISO environmental standard in 1999 and has successfully re-certified every year since.

Through employing highly qualified employees, careful planning, development of technology and equipment and the use of sound operating procedures, OPG has ensured that radioactive waste is managed safely and poses no significant risk to employees, the public or the environment.



# Regulatory authority

The nuclear industry is one of the most strictly regulated in Canada. The overall regulation of nuclear reactor operation and nuclear waste management in Canada is the responsibility of the Canadian Nuclear Safety Commission (CNSC). Every aspect of the management of low and intermediate level waste and used nuclear fuel is regulated by the CNSC.

## What is nuclear waste?

During the operation of nuclear generating stations, waste is produced much like any other industry. Some of this waste becomes radioactive and must be handled using special procedures. OPG categorizes the radioactive waste into low, intermediate and used fuel.

### Low level waste

Low level waste consists of minimally radioactive materials that have become contaminated during routine cleanup and maintenance such as mop heads, cloths, paper towels, floor sweepings and protective clothing. These items make up about 95 percent of the total non-fuel waste volume.



**Low level waste at the WWMF is handled by trained personnel to process for volume reduction or to store as is.**

Low level waste from the Bruce, Pickering and Darlington nuclear generating stations is received at the Waste Volume Reduction Building at the WWMF where it may be processed through either incineration or compaction to reduce its volume or to be stored as is. Following processing, the low level waste is placed into above-ground concrete warehouse-like structures called Low Level Storage Buildings. About 3000 m<sup>3</sup> of low level waste is stored annually (just over the volume of an Olympic swimming pool). Storage for refurbishment waste (fuel channel waste and steam generators) from the Bruce reactors is also provided at the WWMF. The WWMF has about 70,000 m<sup>3</sup> (25 Olympic swimming pools) of low level waste in storage as of 2010.

### Intermediate level waste

Intermediate level waste consists primarily of used reactor core components and resins and filters used to keep reactor water systems clean. Intermediate level waste is more radioactive than low level waste and requires shielding to protect workers during handling.

Intermediate level waste, because of its radiological and physical properties, is not processed for volume reduction. It is stored mainly in steel lined concrete containers that have been set into the ground. About 290 m<sup>3</sup> of intermediate level waste is stored annually and in total about 9000 m<sup>3</sup> (three and a half Olympic swimming pools) is in storage as of 2010. Intermediate level waste makes up about five percent of the total volume of non-fuel waste produced from the nuclear generating stations.

Low and intermediate level waste stored at the WWMF is continually monitored to ensure the integrity of the storage containers and can be retrieved at some future date for transfer to a long-term storage facility. The WWMF will continue to add storage structures as required (subject to applicable regulatory approvals). OPG is currently in the planning stages of a Deep Geologic Repository for the long-term storage of low and intermediate level waste at the Bruce site.



**Ontario Power Generation employees carefully lower intermediate level waste into an in-ground storage container.**

# Used nuclear fuel

Used nuclear fuel, sometimes called high level waste because it is much more radioactive, is stored at the nuclear station site where it was generated. It is stored in the station's spent fuel bay, within the station, for at least 10 years. After that time it can be transferred to above-ground storage containers.

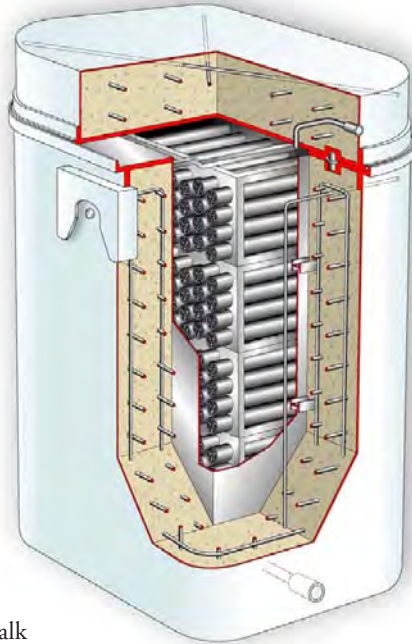
At the Western Waste Management Facility location, only used fuel from the Bruce Power stations is stored at the interim used fuel dry storage facility. The facility consists of a processing building and storage buildings. This facility went into operation in 2002 and is designed to provide storage space for about 2000 Dry Storage Containers (DSC). The overall Western Used Fuel Dry Storage Facility (WUFDSE) design includes four DSC storage buildings, each having the capacity to store about 500 containers. Two buildings have been commissioned (2002 & 2007) and construction of future storage buildings will be staged as additional space is required, with a new storage building built about every four to seven years.

Dry storage is a proven technology in use around the world. In Canada, dry storage is used by Hydro Quebec at Gentilly, New Brunswick Power at Point Lepreau and Atomic Energy of Canada at Chalk River and Douglas Point (located at the Bruce site). In addition to the facility at WWMF, OPG also operates dry storage facilities at the Pickering and Darlington nuclear sites.

## Dry storage process

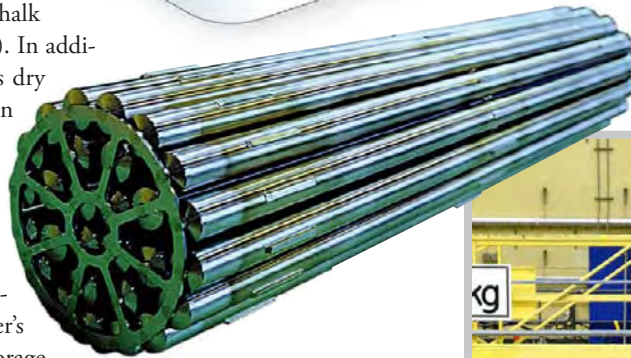
The process of loading a dry storage container with used nuclear fuel begins first by submerging a 63-tonne container into one of Bruce Power's water-filled used fuel storage bays. Once in the storage bay, four modules each containing 96 used fuel bundles are loaded into the container under water. The used fuel bundles have been stored in the water-filled bay for at least 10 years, during which time they have cooled and become less radioactive.

The container, now holding 384 used fuel bundles, is removed from the bay and drained, decontaminated and vacuum dried. A transfer clamp secures the lid to the container which is moved to the dry storage facility with a large transport vehicle. Once received, the lid is welded to the container's base. After the inside of the container has been vacuum dried, it is filled with helium gas. The drain port is then seal-welded. The helium gas

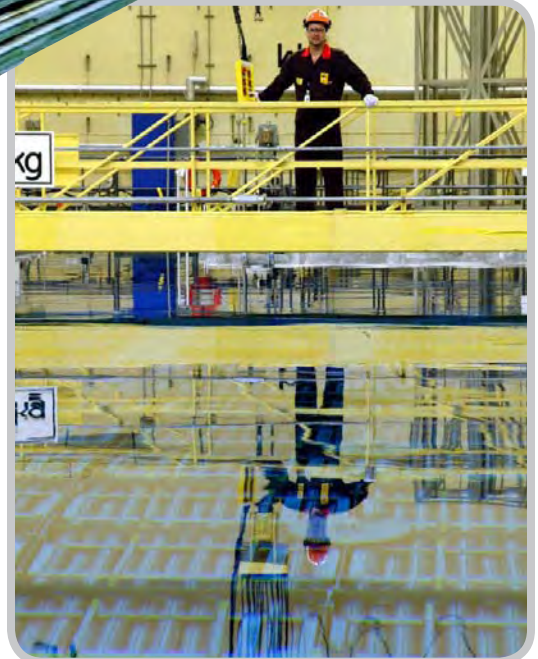


Each dry storage container (DSC) is made of reinforced high-density concrete approximately 510 mm (20 inches) thick and is lined inside and outside with 12.7 mm (half inch) thick steel plate. This thickness of concrete provides an effective barrier against radiation.

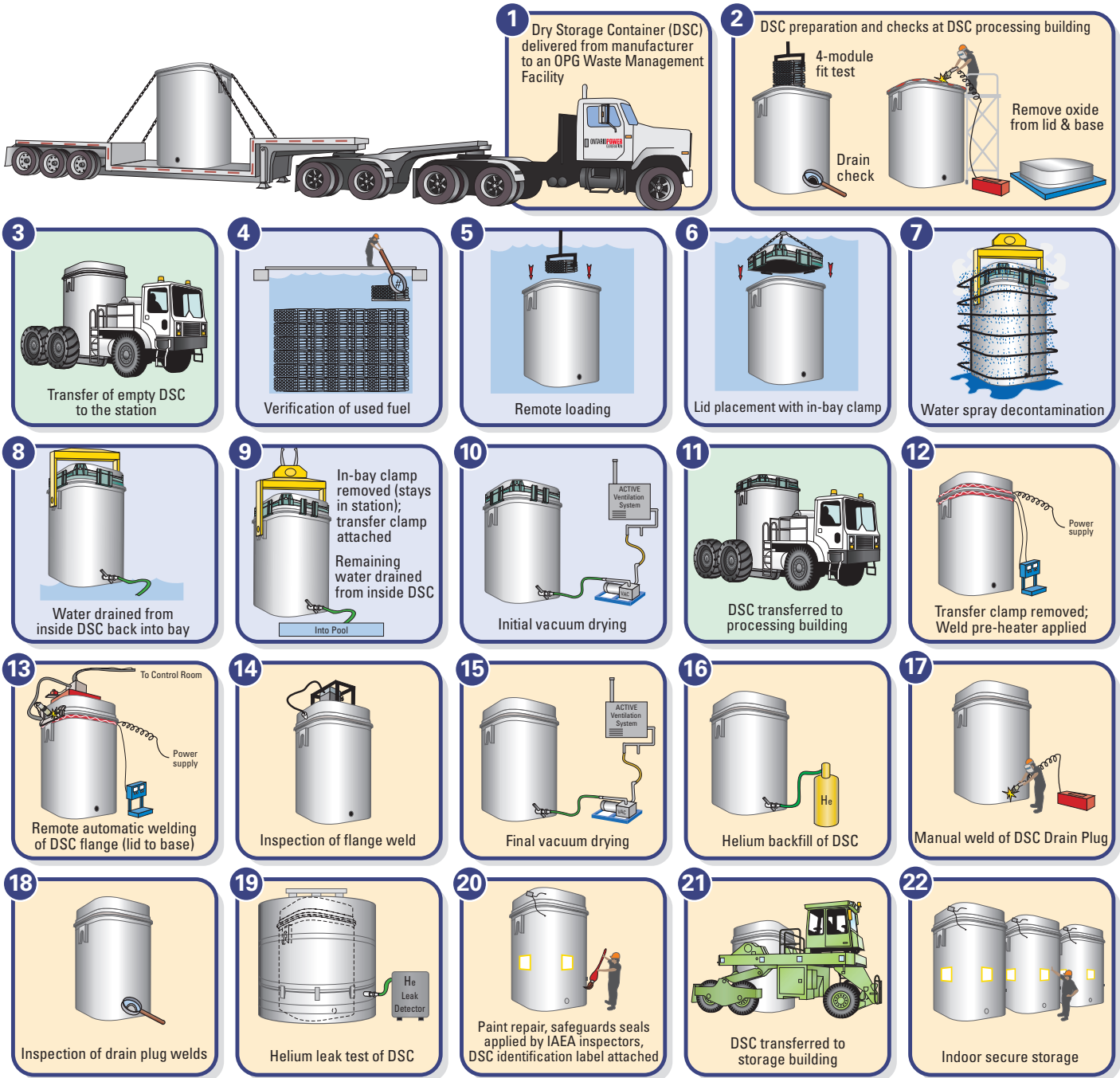
provides a means of leak detection for the sealed container and creates an inert atmosphere for the storage of used fuel. Before being placed into storage, the container undergoes rigorous testing to ensure that it is absolutely leak tight, and lastly, safeguard seals are applied by an inspector from the International Atomic Energy Agency (IAEA).



Used nuclear fuel bundles are cooled in the station's spent fuel bay for a period of at least 10 years before being transferred to dry storage.



# The used fuel dry storage process



- Operations at the Waste Management Facility (WMF)
- Operations at the Nuclear Generating Station (NGS) used fuel storage bay area
- Transfer operations between NGS and WMF



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# Radioactive material transportation

## A record of safety

OPG has an exceptional safety record in the transportation of radioactive materials by road. In almost 40 years, there has never been a release of radioactive materials during transportation. Our drivers are some of the best trained in their field. OPG ensures that they have high-level defensive driving training.

In a typical year OPG makes about 750 radioactive material shipments, covering about 500,000 kilometres. Shipments (roughly 23 percent) involve the transportation of low and intermediate level waste to the WWMF. A smaller number (roughly 13 percent) involve transporting tritiated heavy water from Bruce and Pickering to the Darlington Tritium Removal Facility for processing and remaining shipments involve the transportation of empty packages to and from different nuclear stations.

All of these shipments are logged into an OPG computerized database. This program logs information about the type of material being transported, point of origin, destination, etc.

### Built for safety

Many different types of packaging are used to transport radioactive materials. All of the transport packages are built to requirements specified by the Canadian Nuclear Safety Commission. For example, the intermediate level waste transportation packages used for shipping spent resins and tritiated heavy water are built to Type B standards. According to federal regulations all Type B packages must be able to withstand a nine-metre drop onto an unyielding surface; a one-metre drop onto a steel pin; 30 minutes in an 800 degree celsius fire; and eight hours immersed in 15



**OPG's radioactive material transportation program is further supported by:**

- **Regular audits and safety assessments of transportation practices**
- **An ongoing training program**
- **Routine package inspection and maintenance, and**
- **A transportation emergency response plan that is audited both internally and externally by authorities like Transport Canada.**

metres of water. Only after field testing and/or computer analysis has demonstrated the packages can survive these tests will a licence to use the packaging be issued by the Canadian Nuclear Safety Commission.

Radioactive materials transportation is also regulated by Transport Canada's Transportation of Dangerous Goods Regulation. These regulations specify the documentation and administrative requirements in order to transport radioactive material on public roadways. The documentation must include specification of the contents on the shipping document, the labeling and placarding requirements, driver training requirements and an approved transportation emergency response plan.

## Commitment to the future

OPG has an obligation to plan for the eventual decommissioning of our nuclear facilities including the Bruce Power leased reactors, and the long-term management of our nuclear wastes. OPG makes annual contributions to special funds dedicated solely for this purpose.

Our partnership with the Municipality of Kincardine to develop a Deep Geologic Repository for low and intermediate level waste on the Bruce site was endorsed by the community in 2005 and is now entering the rigorous environmental assessment stage, led by the Nuclear Waste Management Organization.

OPG has made a significant contribution to the Nuclear Waste Management Organization, which has recommended Adaptive Phased Management to the Federal government for the long-term management of used nuclear fuel in Canada, and endorsed in 2007.

### Communicating our program

Although we are proud of our contributions to these initiatives, there is nothing we value more than our relationship with the people of Ontario. The safe storage of nuclear waste is done in a very transparent manner and OPG provides information in a variety of methods on nuclear waste management to the public.

For more information on our activities visit [www.opg.com](http://www.opg.com) or call 519-361-6414 ext. 2764.

# OPG's Deep Geologic Repository Project

## for low and intermediate level waste

### A long-term storage solution

Ontario Power Generation (OPG) has contracted the Nuclear Waste Management Organization (NWMO) to seek regulatory approval for construction of a proposed Deep Geologic Repository (DGR). This DGR, for the long-term management of low and intermediate level radioactive waste will be constructed on lands adjacent to OPG's Western Waste Management Facility (WWMF) on the Bruce nuclear site in the Municipality of Kincardine.

For over 40 years the WWMF has safely stored low and intermediate level waste from the Bruce, Pickering and Darlington nuclear sites on an interim basis. In 2002 the Municipality of Kincardine approached OPG to jointly review options for a long-term storage facility for low and intermediate level radioactive waste at the Bruce site.

An Independent Assessment Study identified three options deemed to be technically feasible and capable of safely storing the waste: the Deep Geologic Repository (DGR), Enhanced Processing, Treatment and Long-Term Storage and Covered Above-Ground Concrete Vault. In 2004 the Municipality of Kincardine by resolution endorsed moving forward with the DGR because of its higher safety margins.

The proposed DGR would manage about 160,000 cubic metres of low and intermediate level waste in underground emplacement rooms (200,000 cubic metres emplaced volume).

Only low and intermediate waste from OPG's Bruce, Pickering and Darlington generating stations will be accepted for storage in the DGR. Used fuel will not be stored in the DGR.

### Committed to safety

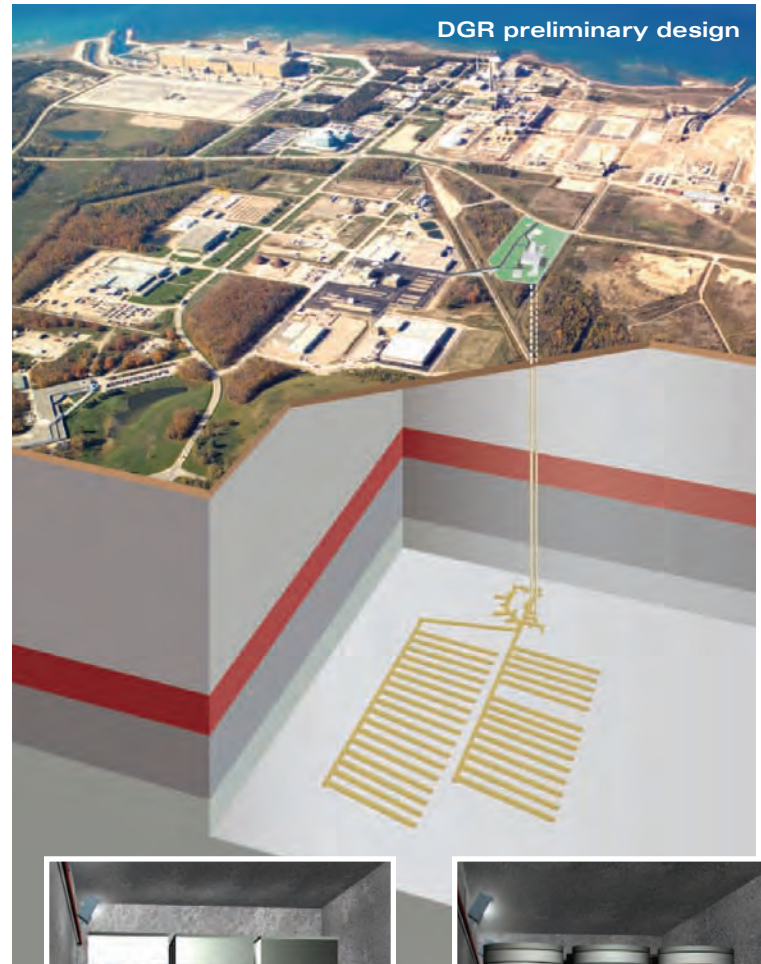
The stability and predictability of the rock formations, along with their isolating capabilities, make an ideal setting where the waste can be safely stored while the radioactivity decays.

The proposed DGR location, 680 metres (2,230 feet) underneath the Bruce site, will be constructed in low permeability limestone capped by 200 metres of low permeability shale. These rock formations, thought to be in excess of 450 million years, have remained intact and without major faults or fractures through many geologic events.

In addition, the DGR is extremely isolated from all sources of groundwater, and the pore water at the level of the repository has a salt content more than eight times that of sea water indicating that it has been trapped at this level in excess of one million years. The salt content is also an indication that the pore water isn't mixing with the groundwater above.

### Verifying the site

A detailed four-year Geoscientific Site Characterization Program (GSCP) began in 2006 to verify the suitability of the DGR site. This



Low level waste room



Intermediate level waste room

scientific investigation, along with the information gained from environmental field studies, safety assessment and engineering/design, will assist in obtaining the necessary construction and operating licences from the Canadian Nuclear Safety Commission.

Formal environmental assessment and licensing processes began in 2005 and are expected to take six to eight years, with a public hearing to take place around 2012. Throughout this time period, there will be many opportunities for Kincardine and surrounding communities to learn more and to express their views on the proposed DGR.

## Appendix D

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Open House Display Panels



# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

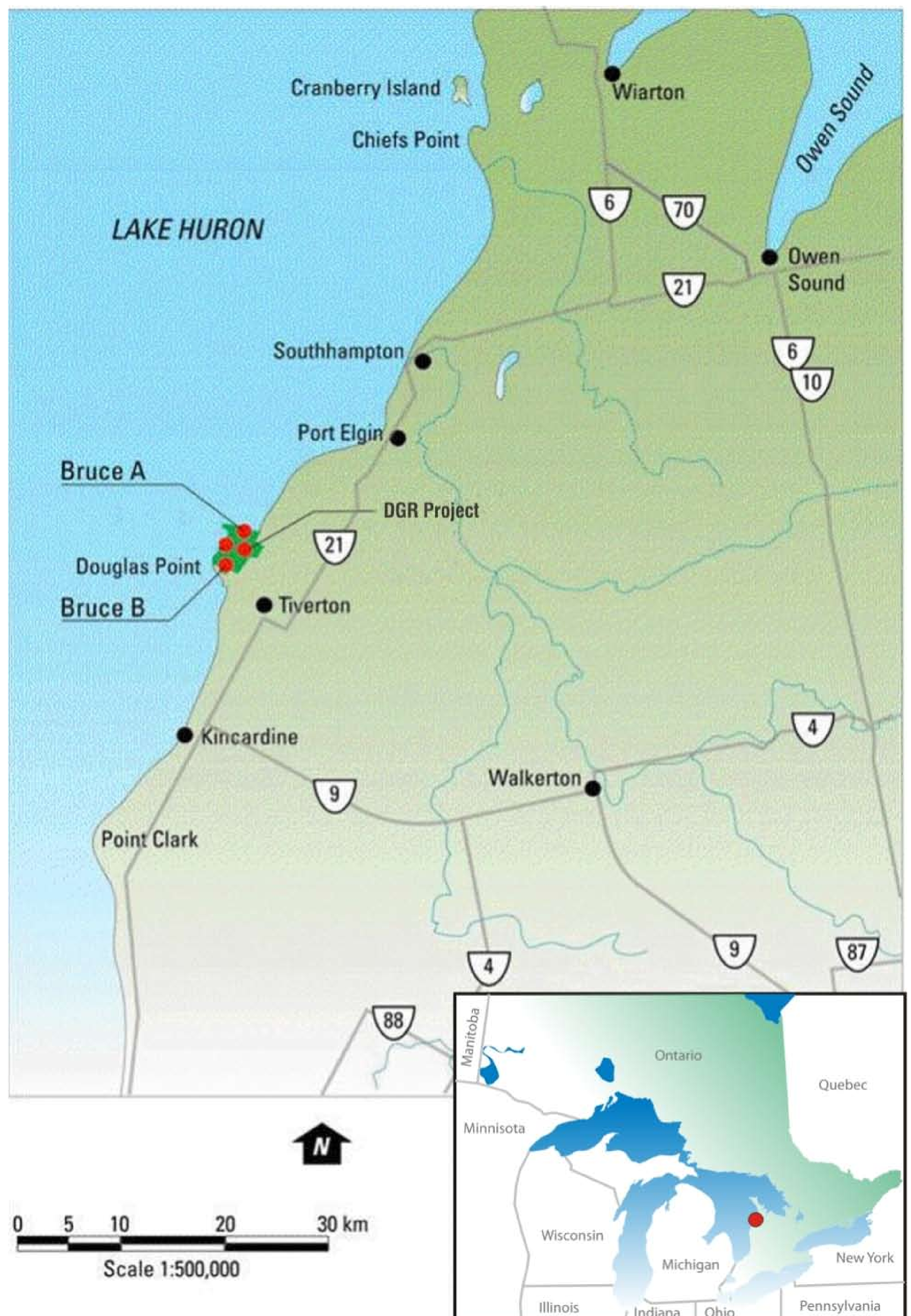
For Low & Intermediate Level Waste

## WELCOME

Welcome to an Open House for OPG's Deep Geologic Repository Project for Low and Intermediate Level Waste (L&ILW)

### Purpose:

- Share information about the DGR Project
- Provide a status update on the Regulatory Approvals Process
- Obtain your feedback on the preliminary results of the environmental assessment
- Answer your questions about the Project



nwmo

NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION

SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES

ONTARIO POWER  
GENERATION



# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## Chronology of the Project

- 2001** Kincardine proposes a joint study to assess the feasibility of long-term management of L&ILW at the Bruce nuclear site
- 2002** Kincardine and OPG sign Memorandum of Understanding
- 2003** Engagement with the Community and Aboriginal Peoples begins
- 2004** Independent Assessment Study concludes it is safe and technically feasible to develop long-term management of L&ILW at the Bruce nuclear site; Kincardine requests Deep Geologic Repository  
Kincardine and OPG sign Hosting Agreement
- 2005** Community Poll concludes majority of respondents support the Proposal for long-term management of L&ILW  
OPG submits a Project Description for the DGR Project; initiates the regulatory approvals process
- 2006** CNSC releases draft guidelines for the DGR Project and holds public hearing on the guidelines  
Geoscientific site characterization begins at the Bruce nuclear site
- 2007** Minister of Environment refers Project to a Joint Review Panel
- 2008** Draft guidelines for Environmental Impact Statement issued for public review
- 2009** Final guidelines issued
- 2010** Completion of the geoscientific site characterization and assessment of safety and environmental effects
- 2011** Planned submission of the Environmental Impact Statement and Preliminary Safety Report in support of the licensing process



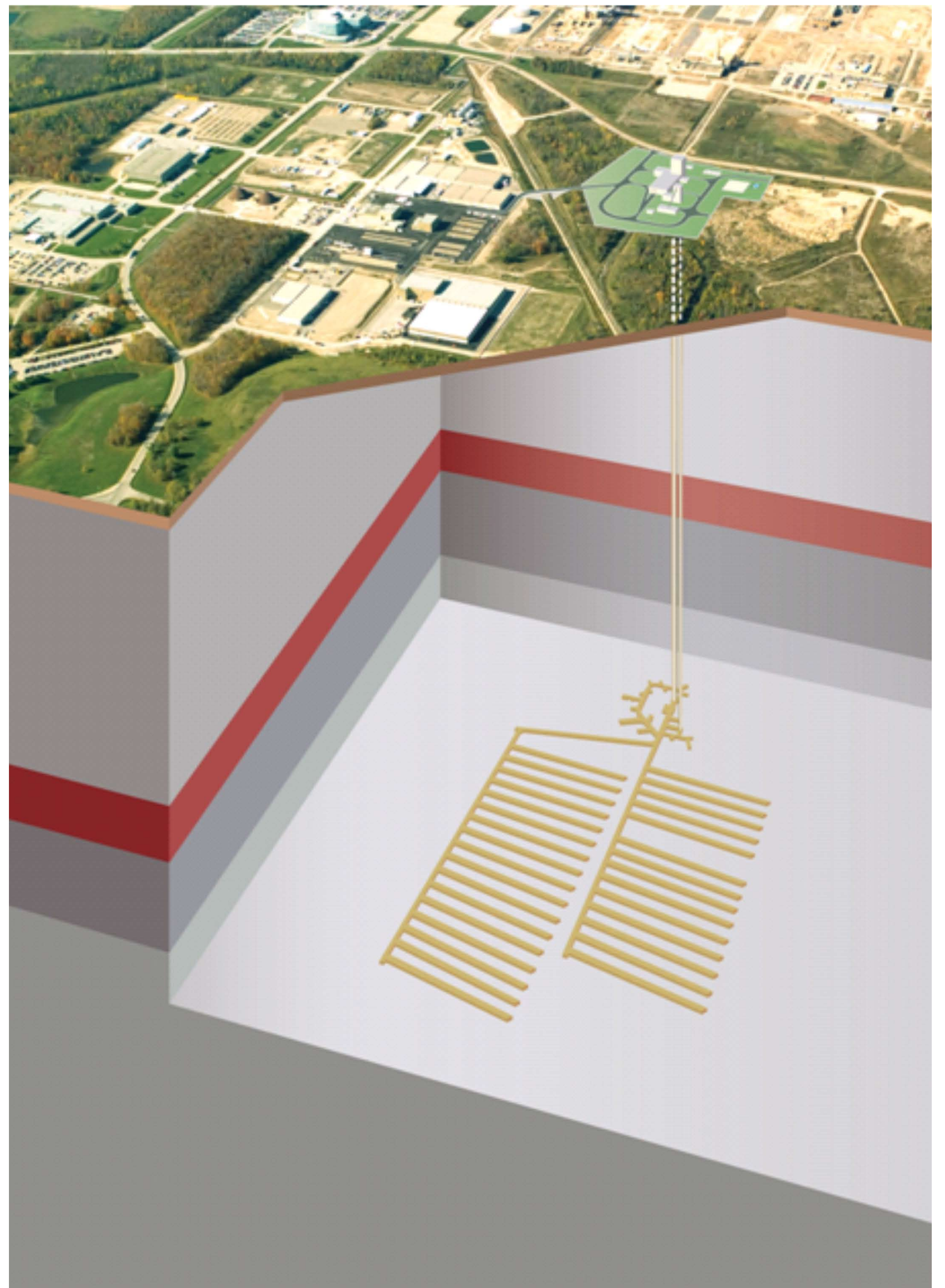
# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## The Project

### Current design philosophy includes:

- Approximate five-year construction period
- On-site storage of excavated rock
- On-site pond for stormwater runoff management
- Above-ground facilities for waste receipt and hoist headframes
- Access to the repository by shaft; one shaft for personnel and waste transfer, and another for exhaust ventilation and emergency escape
- Underground facilities for waste receipt, waste emplacement, equipment maintenance, and refuge stations in case of emergency
- Emplacement rooms constructed in rock with shotcrete walls and ceilings, and concrete floors
- Emplacement rooms dedicated to either low or intermediate level waste
- Closure walls to isolate waste-filled rooms
- Capacity to operate for a minimum of 35 to 40 years
- Sealing of shafts at end of DGR life, following regulatory approval



**nwmo**

NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION

SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES

**ONTARIO POWER**  
GENERATION



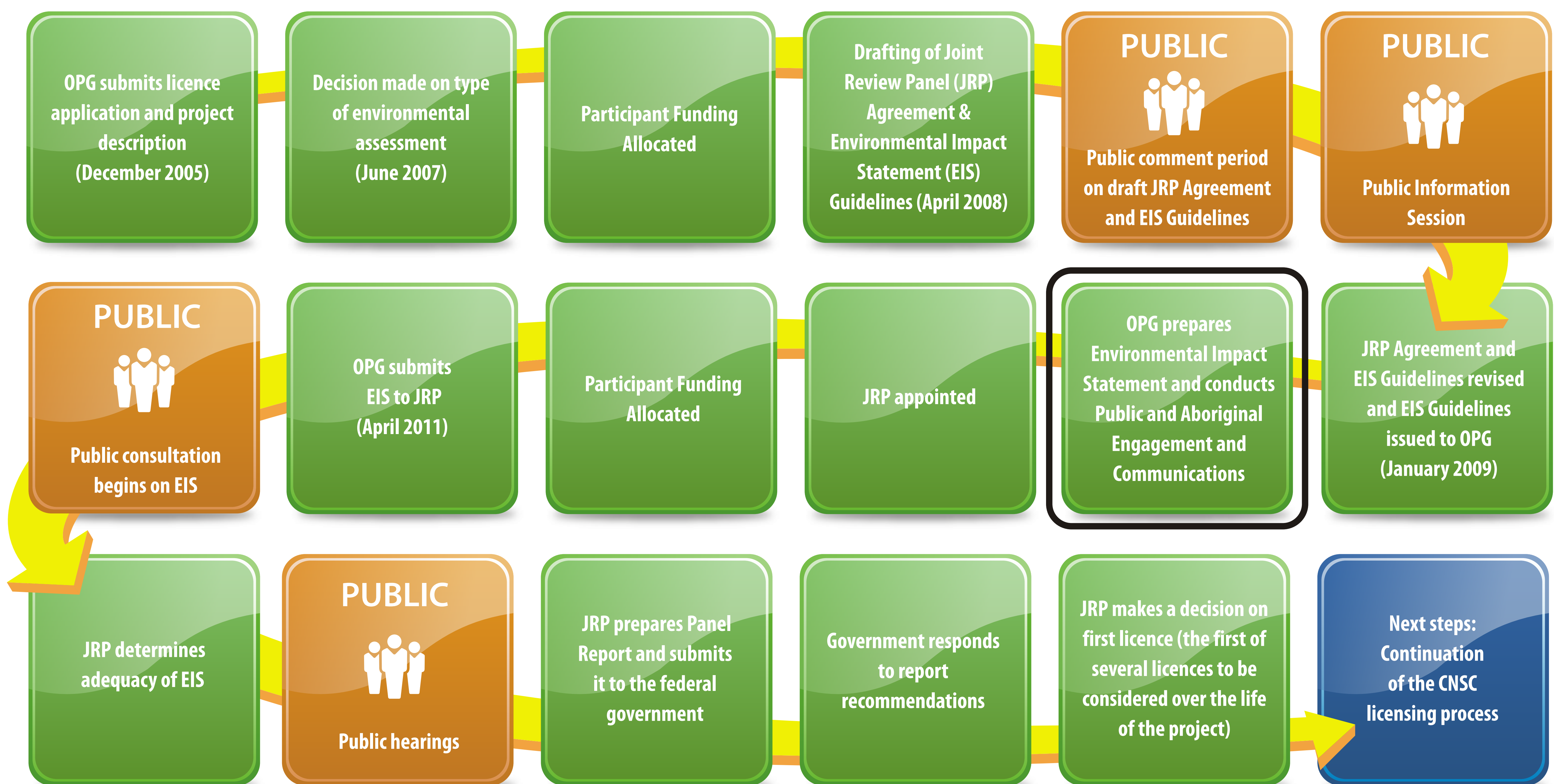
# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## Regulatory Process for DGR

### FEDERAL JOINT ENVIRONMENTAL ASSESSMENT PROCESS

#### OPG DEEP GEOLOGIC REPOSITORY



Adapted from Canadian Environmental Assessment Agency (CEAA) and Canadian Nuclear Safety Commission (CNSC).

Current Status

**nwmo**

NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION

SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES

**ONTARIO POWER**  
GENERATION



# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

## For Low & Intermediate Level Waste

## Project Works & Activities

### Site Preparation

Activities include:

- removal of brush and trees
- grading of site including development of roads, laydown areas, stormwater retention pond, ditches
- set-up of construction trailers and temporary facilities
- installation of fuel depot for construction equipment

Duration: 6 months

Employment: 80 positions

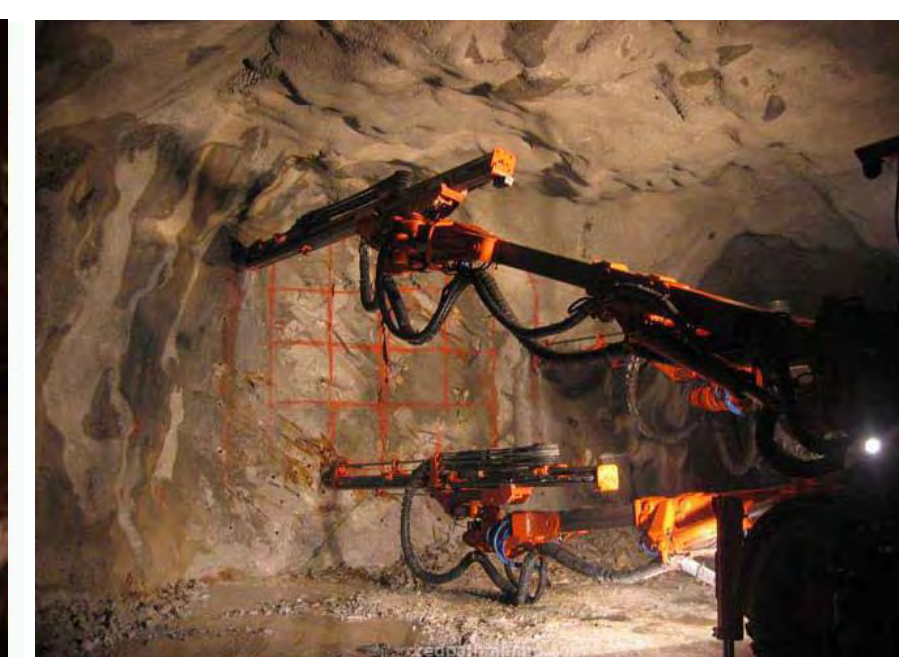
Front End Loader



Typical shaft sinking equipment



Excavation by drill and blast



### Construction

Activities include:

- construction of permanent buildings including two headframe buildings
- set-up of shaft sinking equipment and sinking of main and vent shafts
- development of access tunnels and emplacement rooms
- placement of excavated rock in waste rock management area
- commissioning of DGR facility

Duration: 5 years

Employment: Up to 200 positions each year

### Operations

Activities include:

- receipt of disposal-ready waste packages
- movement of waste packages from surface to below ground
- placement of waste packages in emplacement rooms
- installation of room end walls on full emplacement rooms
- installation of closure walls in tunnels
- maintenance of various systems including hoists, ventilation, fire protection systems, waste handling equipment, and underground rock support
- monitoring to ensure the facility is performing as expected

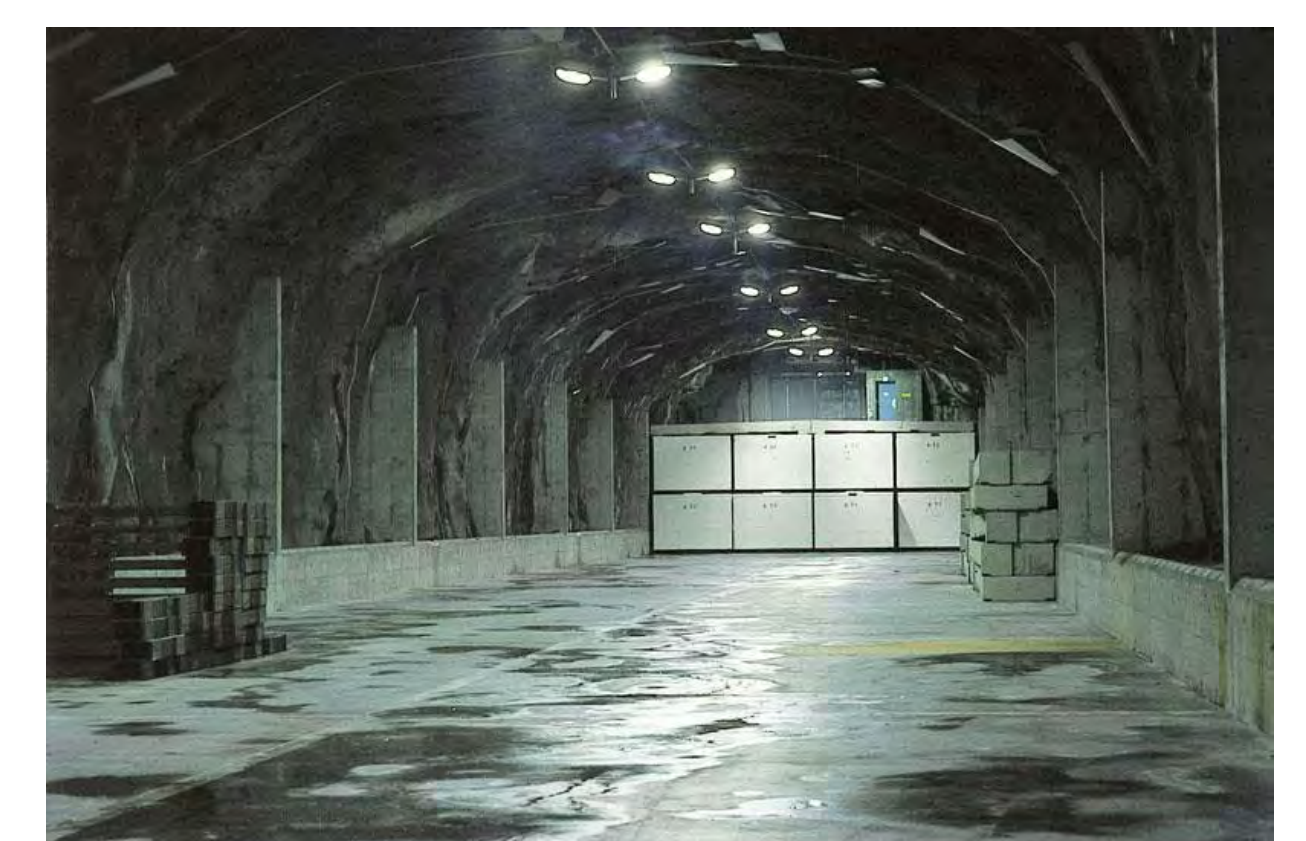
Duration: 35 to 40 years

Employment: 30 positions each year

Waste Isolation Pilot Plant in New Mexico



Sweden's SFR



### Decommissioning

Activities include:

- installation of concrete monolith at base of shafts
- sealing the shafts
- removal of surface buildings
- recycling of materials and disposal of waste

Duration: 5 years

Employment: 75 positions each year

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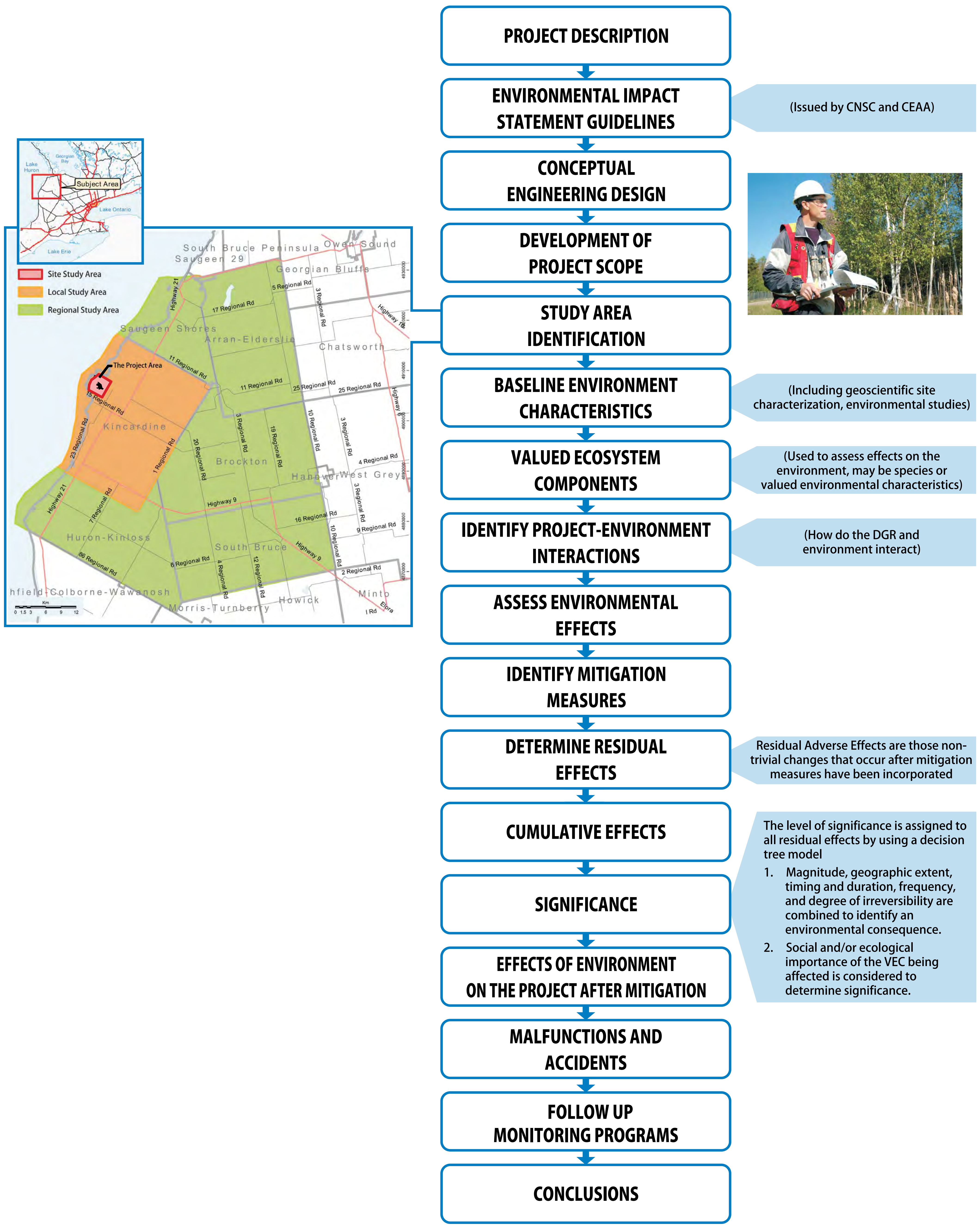
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# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## EA Process for the DGR Project





# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## Atmospheric Environment

### Valued Ecosystem Components

- Air Quality
- Noise Levels

### Environmental Effects Assessed

- Increase in air emissions at Bruce nuclear site fenceline during all phases of the DGR Project
- Increase in noise emissions

### Mitigation Measures

- Maintain transportation and ventilation equipment in good condition
- Implement dust control such as watering, equipment washing
- Pave heavily travelled roads

### Residual Effects

- Increase in some air quality indicators at Bruce nuclear site fenceline during all phases of the DGR Project
- Increase in noise levels during site preparation, construction and decommissioning

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# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## Aquatic Environment

### Valued Ecosystem Components

- Redbelly dace
- Creek chub
- Lake whitefish
- Smallmouth bass
- Brook trout
- benthic invertebrates
- Variable leaf pondweed
- Burrowing crayfish
- Spottail shiner

### Environmental Effects Assessed

- Loss of habitat quantity and quality for Redbelly Dace, Creek Chub, Variable Leaf Pondweed, Burrowing Crayfish (VECs in the Railway Ditch)
- Loss of habitat for burrowing crayfish in the Project Area

### Mitigation Measures

- Project set back from marsh areas
- Avoid discharge of runoff to the Railway Ditch and Stream C
- Discharges meet applicable regulatory criteria
- Measures to protect fish habitat in the South Railway Ditch during construction

### Residual Effects

- Loss of habitat for VECs in the Railway Ditch



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## Terrestrial Environment

### Valued Ecosystem Components

- Eastern white cedar
- Heal all
- Common cattail
- Meadow vole
- Muskrat
- White-tailed deer
- Red-eyed vireo
- Yellow warbler
- Wild turkey
- Mallard
- Bald eagle
- Midland painted turtle
- Leopard frog

### Environmental Effects Assessed

- Removal of vegetation from the Project Site
- Displacement or disruption of wildlife species using the area as habitat
- Mortality of wildlife due to vehicle strikes

### Mitigation Measures

- Seek opportunities to retain trees
- Consider future opportunities for rehabilitation, perhaps following decommissioning

### Residual Effects

- Removal of vegetation from the Project Site (eastern white cedar)





# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## Hydrology and Surface Water Quality

### Valued Ecosystem Components

- Surface Water Quantity and Flow
- Surface Water Quality

### Environmental Effects Assessed

- Changes in surface water quantity and flow in adjacent ditches and streams
- Changes in contaminant loading to surface water

### Mitigation Measures

- Routing of all site drainage through stormwater management pond

### Residual Effects

- Reduction in quantity of flow in North Railway Ditch
- Increase in quantity of flow in ditch at Interconnecting Road



Rail Ditch Adjacent to DGR Project

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# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## Geology

### Valued Ecosystem Components

- Soil Quality
- Overburden Groundwater Flow
- Overburden Groundwater Quality
- Shallow Bedrock Groundwater Flow
- Shallow Bedrock Groundwater Quality
- Intermediate Bedrock Groundwater Flow
- Intermediate Bedrock Groundwater Quality
- Deep Bedrock Groundwater Flow
- Deep Bedrock Groundwater Quality

### Environmental Effects Assessed

- Changes in soil quality
- Dewatering during construction
- Long-term movement of groundwater

### Mitigation Measures

- Repository constructed in competent sedimentary bedrock, isolated from surface
- Grouting during construction of shafts to reduce need for dewatering
- Shaft liners
- Seals

### Residual Effects

- No residual adverse effects



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# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## Radiation and Radioactivity

### Valued Ecosystem Components

- Human
- Benthic Invertebrates
- Aquatic Vegetation
- Aquatic Birds
- Aquatic Mammals
- Terrestrial Birds
- Terrestrial Vegetation
- Terrestrial Mammals
- Pelagic Fish
- Benthic Fish
- Amphibians and Reptiles

### Environmental Effects Assessed

- Releases of radiation to air and water

### Mitigation Measures

- Shielding
- Ventilation
- Remote operation of equipment
- Sump and stormwater collection and management
- Emission control
- Zoning to prevent spread of contamination in the DGR
- Fencing and security
- Operating procedures and training to ensure that doses to workers and public are ALARA
- Closure walls

### Residual Effects

- No residual adverse effects

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# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## Malfunctions and Accidents

**Considers Consequences of Potential Accidents during site preparation, construction and operation of the DGR; both above and below ground.**

Radiological Accidents

- Inadvertent event that could release radioactive materials, i.e., fire in the waste package receiving building or underground, drop of a package

Conventional (non-radiological) Accidents

- Inadvertent release of hazardous material to the natural environment, i.e., spill of fuel, or event that may cause harm to a worker, i.e., vehicle accident

Malevolent Acts

- Intentional attempts to cause damage

Results:

- Radiological doses do not exceed established dose limits

**Malfunctions and Accidents were also postulated for the Post-decommissioning period, including**

- Inadvertant drilling into the site
- Failure of the shaft seal
- Open borehole
- Extreme earthquake

Results:

- Radiological doses to humans do not exceed established dose limits for accidents except for drilling into the repository, which has been modelled very conservatively and is very unlikely



# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## Social and Economic Effects

### Valued Ecosystem Components

- Population and Demographics
- Employment
- Business Activities
- Tourism
- Residential Property Values
- Municipal Finance and Administration
- Housing
- Municipal Infrastructure and Services
- Inverhuron Park

### Environmental Effects Assessed

- Changes in economic activity, including employment opportunities, housing, increased educational opportunities
- Changes in traffic on roads near site
- Changes in enjoyment of use of property during construction and decommissioning due to noise

### Mitigation Measures

- Keep Municipal representatives informed of staffing levels at the site

### Residual Effects

- Increased economic activity, including employment opportunities, housing
- Localized loss of enjoyment of use of property during construction and decommissioning due to noise





# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## Aboriginal Interests

### Valued Ecosystem Components

- Aboriginal Communities
- Aboriginal Heritage Resources
- Traditional Use of Lands and Resources

### Environmental Effects Assessed

- Potential benefit from worker, payroll and purchasing activity
- Potential disruption of archaeological sites or artifacts

### Mitigation Measures

- Culturally sensitive areas are not located on the Project Site and development on culturally sensitive areas will be avoided for the DGR Project
- Continued dialogue with Aboriginal communities

### Residual Effects

- Potential benefits from worker, payroll and purchasing for Aboriginal communities



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# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## Human Health

### Valued Ecosystem Components

- Physical Environment Determinants
- Socio-Economic Environment Determinants
- Cultural Determinants
- Emotional Determinants
- Overall Health for Local Residents
- Overall Health for Members of Aboriginal Community
- Overall Health for Seasonal Users

### Environmental Effects Assessed

- Changes in air quality
- Changes in noise levels
- Changes in human exposure to radiation

### Mitigation Measures

- Emission controls
- Maintain transportation and ventilation equipment in good condition
- Operating procedures and training to ensure doses to workers and public are As Low as Reasonably Achievable

### Residual Effects

- Potential exposure to acrolein in air during site preparation and construction phase



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# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## Effects of the Environment on the Project

The DGR Project, over its lifetime may be subject to natural environmental hazards. The potential effects of these natural hazards are assessed.

### **Hazards:**

- Flooding: lake and surface
- Severe Weather: thunderstorms, lightning, tornadoes, ice storms
- Seismicity
- Climate Change

### **Mitigation:**

- Top of shaft collar located above estimated Probable Maximum Flood levels
- Project location about 1 km from lake eliminates potential for wave runup
- Surface structures designed to meet requirements of latest National Building Code

### **Likely Residual Adverse Effects of the Natural Environment on the Project:**

- None

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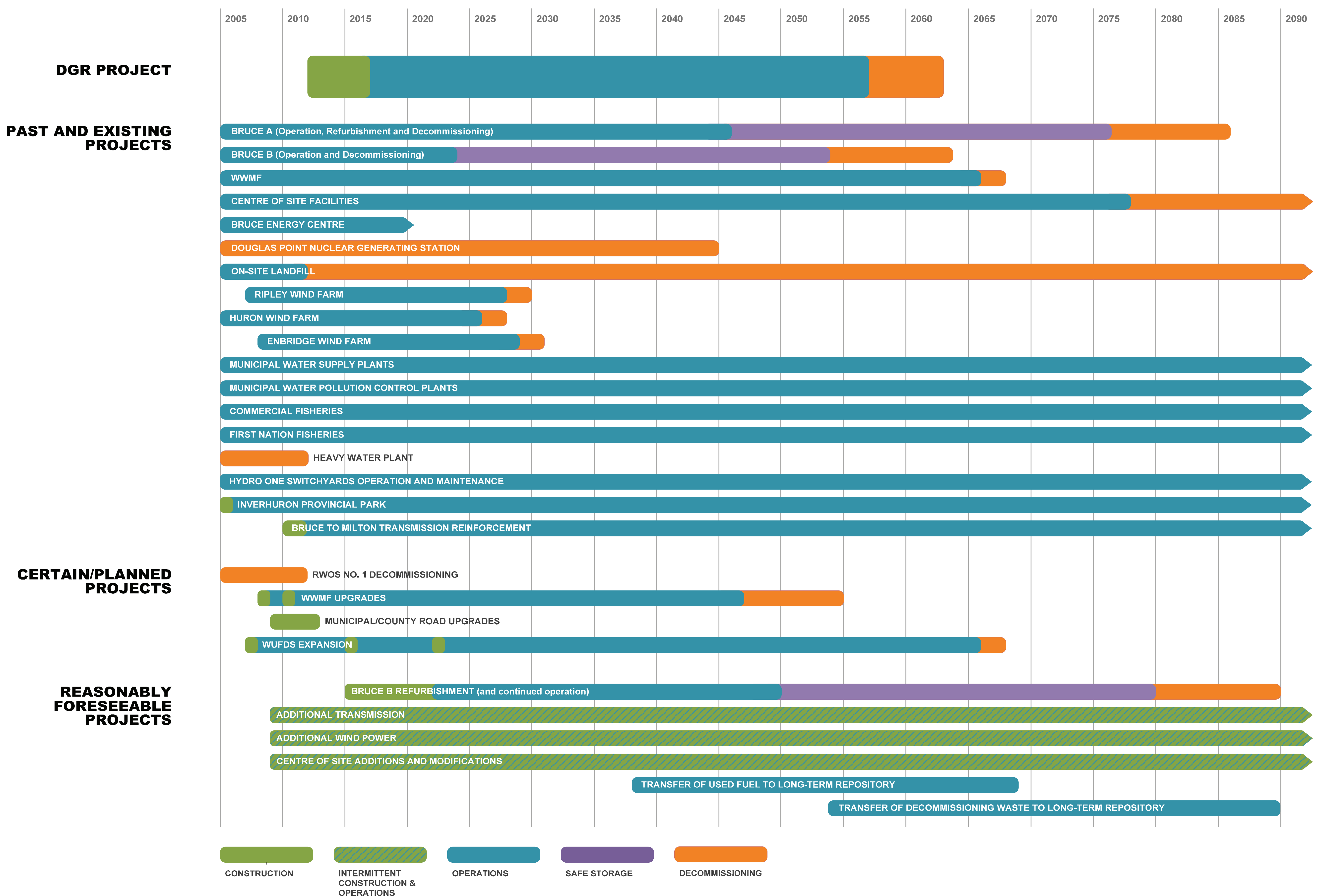
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# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

## For Low & Intermediate Level Waste

## Cumulative Effects

The life of the DGR Project is more than 50 years. A number of existing projects and potential future projects and activities have the potential to overlap effects with the DGR Project. These projects and activities include:



The assessment of cumulative effects identified projects and activities likely to overlap with a residual adverse effect of the DGR Project. Further assessment of the effects of the DGR Project in combination with other projects did not identify adverse cumulative effects.



# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

## Follow-up Monitoring

**Follow-up monitoring is used during the construction and operation of the facility to:**

- confirm assumptions made in the analyses of the EA studies
- verify predictions made about environmental effects of the project are accurate
- confirm the effectiveness of mitigation measures and whether new mitigation measures are needed

Monitoring at decommissioning ensures that contaminant levels on site are within acceptable levels.

Preliminary proposal for follow-up monitoring includes:

<b>Site Preparation and Construction</b>	Conventional Air Quality Surface Water Quality Aquatic Habitat Public Attitude
<b>Operations</b>	Conventional Air Quality Radionuclides in Air and Water Surface Water Quality Groundwater Quality Public Attitude
<b>Decommissioning</b>	Conventional Air Quality Radionuclides in Air and Water Contaminants in Soil Surface Water Quality Groundwater Quality

The Canadian Nuclear Safety Commission regulates the nuclear industry and will ensure the follow-up monitoring is implemented.

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# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

## For Low & Intermediate Level Waste

## Keeping the Public Informed



### Objectives

NWMO, on behalf of OPG, committed to providing:

- a wide range of engagement opportunities to the general public, key stakeholders and Aboriginal Peoples throughout Bruce County
- engagement opportunities to interested parties outside of Bruce County including Michigan
- a timely response to all enquires, comments and questions where appropriate
- clear, concise and accurate information
- a process to document, monitor and evaluate both the public involvement program and community support for the DGR

### Results

- provided numerous opportunities over the last eight years –before and during the EA process – for the public to become informed and updated, ask questions, provide comment and discuss areas of interest about the DGR Project
- Information available through a variety of means: website, newsletters and publications, advertorials, media days, briefings, public speaking engagements, DGR mobile exhibit and a public enquiry and response program
- Committed to continue communications throughout the regulatory approval process and beyond, pending regulatory approval, to the site preparation and construction phases

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# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

## For Low & Intermediate Level Waste

## Keeping the Public Informed

### 2009 Evaluation of Public Involvement Program

2009 Public Attitude Research:

- 800 residents polled by telephone
- DGR isn't listed as a top-of-mind issue by respondents – health care and economic issues dominate the Bruce agenda
- Majority of respondents have a high confidence level in the safety of the DGR
- Majority of respondents don't anticipate any change in attitudes or behavior because of the presence of the DGR with respect to the following:

Level of Satisfaction	% Respondent Anticipate No Change	
	Local Study Area	Regional Study Area
Level of commitment to living in their community	92%	86%
Level of satisfaction with living in the community	82%	77%
Feelings of personal health or sense of safety	79%	75%
Use and enjoyment of private property	96%	91%
Nature activities along shoreline	87%	80%
Use of beaches or boating	85%	76%

### Community Leaders' Survey Results:

- DGR isn't listed as a top-of-mind issue – economic diversification and health care head a list of the top 11 issues
- Leaders are very familiar or somewhat familiar with the DGR project (96 per cent)
- Leaders rate support for DGR Project at 9 out of 10 on average
- 95 per cent of leaders believe NWMO, on behalf of OPG, is doing either an excellent or good job of addressing DGR questions and comments

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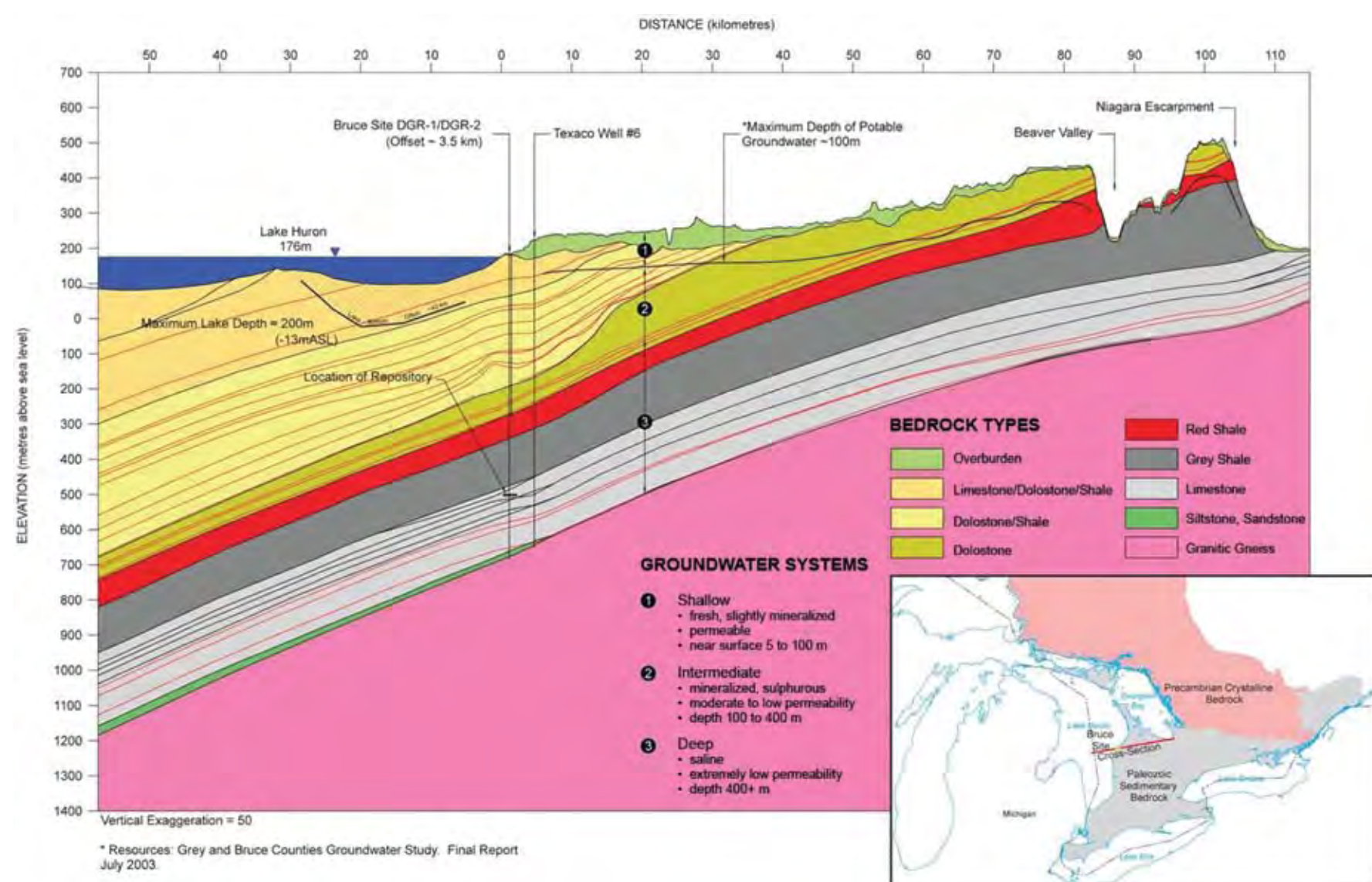
# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

## For Low & Intermediate Level Waste

## Safety Case for the Project

### The DGR is isolated from surface and groundwater aquifers

- The repository is about 1 km from the lake and about 680 m below surface
- Lake Huron is separated from the DGR by more than 400 m of extremely low permeability rock units that are laterally continuous for 100s of kilometres
- Potable groundwater resources in the vicinity of the Bruce nuclear site are obtained from shallow wells extending to maximum depths of approximately 100 m. Potable groundwater resources do not exist at depths of 180 m below ground surface at the Bruce nuclear site
- There is no physical or geochemical evidence to demonstrate that fluids from the deep groundwater have mixed with the overlying shallow groundwater systems
- Full resaturation of the repository with groundwater will be very slow and is not expected to occur for more than 1 million years due to the low permeability of the host rock. Delay in resaturation limits the releases from the wastes to groundwater in the repository and allows time for radioactivity to decay

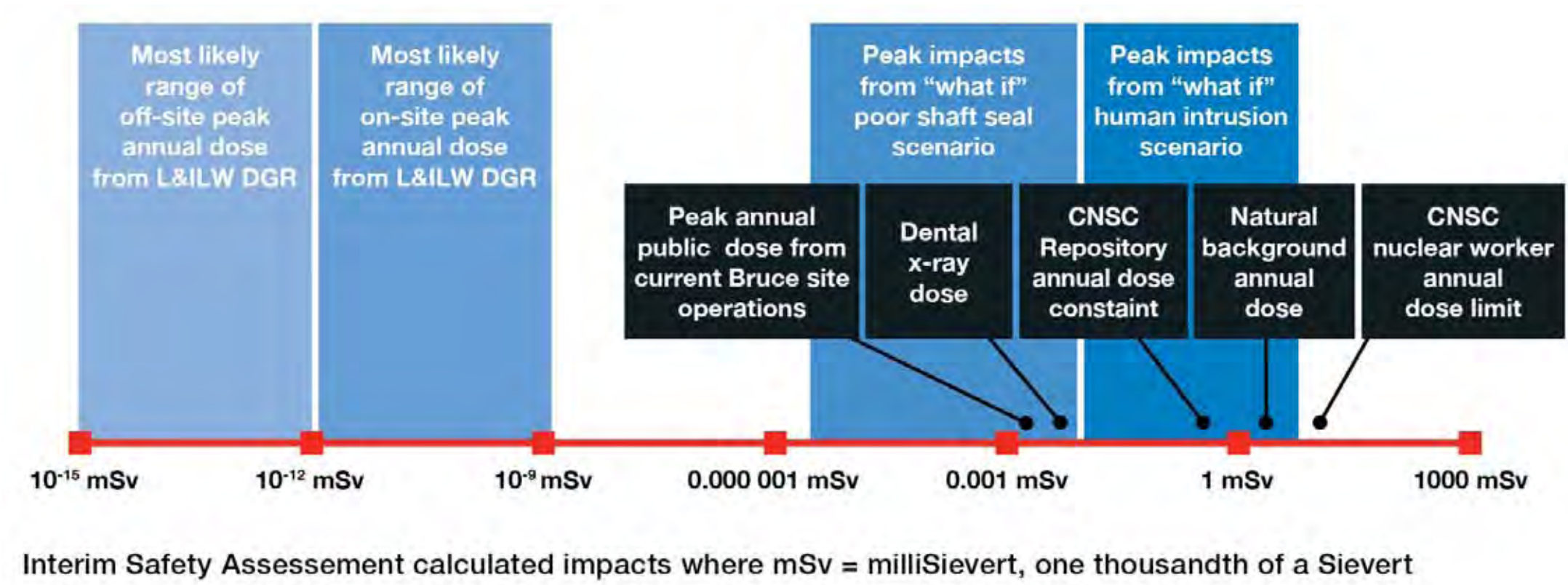


### Multiple Natural and Engineered Barriers Provide Containment

- The DGR repository horizon is under- and overlain by multiple low permeability bedrock formations. There is over 200 m of low permeability shale directly overlying the host Cobourg Formation
- Observed vertical hydraulic head gradients strongly suggest that permeable transmissive vertical or subvertical faulting does not exist in the deep or intermediate groundwater regimes within or in proximity to the DGR footprint
- The waste packages for intermediate level waste (ILW) provide long-term engineered barriers. Most long-lived radioactivity is fixed in Zircaloy (pressure tubes). Zircaloy is corrosion resistant and will degrade very slowly over a million year timescale.
- Once the repository is filled, the shafts will be sealed with engineered low-permeability materials

### No effect on people under normal evolution scenario

- The future potential impacts of the repository were assessed using a range of scenarios including a (likely) normal evolution scenario and various (unlikely) disruptive scenarios
- The calculated peak annual doses for the normal evolution scenario are much smaller than the 0.3 mSv criterion and the natural background radiation dose (2 mSv). The normal evolution base case is nine orders of magnitude ( $10^9$ ) below the 0.3 mSv/year criterion.



- For most of the disruptive scenarios, the peak dose impact of the repository is much less than natural background dose levels. In the case of inadvertent human intrusion into the repository, bringing waste to the surface and not handling it appropriately, the dose impacts could locally be comparable to natural background dose levels

### Radioactivity will decline over time

- Wastes are dominated by relatively short-lived radionuclides. Approximately 80 per cent of the waste emplaced in the DGR is low level waste, which has a half life shorter than 30 years
- The total amount of radioactivity remaining in the repository after about 10,000 years is less than that of the naturally occurring radioactivity in the shale rock layer above the repository at the Bruce nuclear site

### Host Rock is structurally sound

- The geomechanical properties of the rock, coupled with the engineering design and layout, will ensure that the excavated openings and operating environment remain safe during construction and operation.
- Analyses of long-term geomechanical stability with respect to perturbations by glacial loading/unloading, seismicity, and rock strength degradation indicate that long-term DGR containment and isolation will not be affected.

### Seismically Quiet

- Southwestern Ontario and the Bruce region lie within the tectonically stable interior of the North American continent, a region characterized by low rates of seismicity. The historic seismicity record shows that there have been no seismic events exceeding magnitude 5 in the Bruce region in 180 years.

### Future inadvertent human intrusion into the DGR is unlikely

- Water at the depth of the repository is not potable and the bedrock formation cannot yield groundwater.
- Historical and site-specific evidence suggests that natural resource potential with respect to the occurrence of oil and gas, shale gas, salt and base metals is very low.

### Operational safety features of the facility

- Waste packages delivered to the DGR must meet acceptance criteria, for example, packages must be in good condition, meet mass and dimensional limits and have no surface contamination on the outside of the packages
- Use of robust, concrete-and-steel packages for intermediate level waste
- Location of the DGR close to the WWMF so waste packages are not moved off the Bruce nuclear site



# OPG's DEEP GEOLOGIC REPOSITORY PROJECT

## For Low & Intermediate Level Waste

## FAQs and NWMO Responses

### Q: What assurance is there that “the door isn't open” for high level waste disposal, or that waste will not be imported from other nuclear companies in Canada or other countries?

A: The Hosting Agreement between the Municipality of Kincardine and OPG is for the management of waste from OPG-owned or operated reactors. OPG's Environmental Impact Statement and application for licence are for low and intermediate level waste only from OPG-owned or operated reactors.

### Q: What happens to the high level waste?

A: High level waste in Canada is currently managed at the site where it is produced. In the longer term, the NWMO has initiated a siting process which over the next two years invites communities who are interested in hosting a repository for used fuel to participate in the process.

### Q: What is the risk of an earthquake and what impact would there be on the DGR?

A: The Bruce nuclear site is located in an area of Canada associated with low seismic hazard. Analysis has shown that earthquakes and glaciers over the last million years have not disturbed the host rock at repository depth, and should not do so in future.

### Q: Will the waste be retrievable?

A: The DGR wastes have no value and there is no intent to retrieve them however, the wastes will be retrievable.

### Q: How can it be assured that no contaminants will escape to surface waters?

A: The proposed DGR is about 1 km from the lake and more than 400 m below the depth of the lowest point of Lake Huron near the site. The DGR facility will take waste currently managed safely at surface and place it underground at a depth of 680 m. The DGR would be constructed in a layer of very low permeability limestone. The host limestone formation is overlain by a 200-m thick layer of low permeability shale which isolates the repository from surface water resources.

### Q: Is there a potential to contaminate drinking water?

A: Drinking water quality will not be adversely affected by the DGR. The waste will be placed in very low permeability limestone, overlain by about 200 m of very low permeability shale. The characteristics of these rocks, including their age, stability and their position well below potable water found near the surface and well below the level of the bottom of Lake Huron will virtually eliminate the potential migration of radionuclides to drinking water. Any migration that does take place will be over a period of hundreds of thousands of years and the radionuclide concentrations will be orders of magnitude below regulatory limits.

### Q: What is the cost of the project and where will the money come from?

A: The cost of the DGR is currently estimated to be about \$1 billion. An existing segregated fund has been accumulating funds as part of electricity rates and will be used to pay the cost of the DGR Project.

### Q: Are there potential health risks associated with nuclear sites in general, including possible links to increased levels of leukemia?

A: OPG is not aware of any increased incidence of cancers in the proximity of its nuclear sites. Most recently Durham Region, as reported in Radiation and Health in Durham Region 2007, assessed possible health effects from the Pickering and Darlington NGSs. It concluded that disease rates in Ajax-Pickering and Clarington did not indicate a pattern to suggest that the Pickering NGSs and Darlington NGS were causing health effects in the population.



Headframe at Waste Isolation Plant, New Mexico



The SFR in Sweden manages L & ILW in bedrock caverns 60 metres below the Baltic Sea.

### Q: Have the potential effects of terrorist activities been evaluated?

A: Yes. The documentation provided for the regulatory approvals process will include an assessment of potential malfunctions and accident scenarios, as a result of unintentional and intentional acts and accidental or abnormal events that could impact the public and the environment throughout the DGR's lifetime and after its closure. A few examples of abnormal events being evaluated include fire or container breach, unintentional intrusion into the repository, and failure of the shaft seal.

### Q: Why is the DGR located in proximity to Lake Huron?

A: The low and intermediate level waste has been safely managed at surface in a facility located immediately adjacent to the DGR site for more than 40 years. The DGR is located approximately 1 km from the shore of Lake Huron and more than 400 metres below the deepest near-site point of Lake Huron. The DGR is separated from Lake Huron by a low permeability layer of shale, which isolates the waste.

### Q: How will Great Lakes water quality be protected?

A: Great Lakes water quality will not be adversely affected by the DGR. The low and intermediate level waste is being placed in low permeability limestone, overlain by about 200 metres of low permeability shale. Contaminants would have to travel 100s of metres through extremely low permeability rock, movement which is controlled by diffusion, or move up the sealed shaft through a series of concrete, clay and asphalt barriers.

Any migration that does take place would be over a period of hundreds of thousands of years and the radionuclide concentrations will be orders of magnitude below the current regulatory limits.

### Q: Did OPG consider other sites for the DGR?

A: Experience in other countries has shown that success in siting a waste disposal facility is greatly improved in situations where the host community supports the proposal. The Municipality of Kincardine approached OPG asking to jointly assess the feasibility of hosting a long-term low and intermediate level waste management facility. Once the results of these feasibility studies indicated that the Bruce nuclear site could be a safe and technically feasible site, the Kincardine Municipal Council volunteered to host a DGR for low and intermediate level waste. Results of a telephone poll concluded that a majority of residents support the DGR. No other sites volunteered to participate in the feasibility studies or to host the DGR.

### Q: How do other countries manage their low and intermediate level nuclear waste?

A: All countries with firm plans use a combination of surface, shallow or deep burial for managing low and intermediate level waste.

United States stores transuranic waste in a deep repository in New Mexico at a depth of 655 m in a bedded salt formation.

Sweden manages its low and intermediate level waste in an underground repository approximately 60 metres under the Baltic Sea, in crystalline rock near a nuclear power station.

Finland manages low and intermediate level waste in underground repositories located near their nuclear generating station and excavated in crystalline rock 110 metres below ground surface.

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## Appendix E

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Sign-in Sheets and Comment Cards



DATE: August 23, 2010

LOCATION: Bruce County Museum

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
A Stretch	RR#1 Walkerton	5193641655	Thought-provoking
T. Babb	471 Ridge St. Port Elgin, ON	519-389-3473	very thorough
Jordan MacKinnon	317 Falconer St. Port Elgin, ON	519-386-6580	
WALLY Whison	600 TUMMINS DR AE	519 832 2008	
Judith Buxton	RR7 Markdale ON	519 986 2839	
Bev Smith	Pemberton B.C.	604 209-7377	
Peter Stank	RR7 Markdale Ont	519-986-2839	

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DATE: August 23, 2010

LOCATION: Bruce County Museum

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
Stirling Stewart	Stirling, stewart@ 9plus.com	519 829 5149	
Mark Duran	Coderick Ont		NICE PRESENTATION.
Roxy Bergman	Lucknow, ON.	519-528-2338	
Gladys Veronica Jones	Hepworth, Ont.	519-935-2042	
Terri Willert	1280 West Rd. Lions Head	519 477 1905.	
Chris Gulinski	91 Victoria St S Southampton	519-797-2748	
Bob Shields MAH Shields	316 Peel St Southampton	519-797-3599	

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DATE: August 24, 2010

LOCATION: MacGregor Point Provincial Park

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
Sue Dawe	MISSISSAUGA,		
Jan MacGregor Vickie Wellman	ANN ARBOR, MI		
Matt Cunliffe	Kincardine.	396-1280.	
Linda & Peter Pauer	Sutton	722-6205	
Martin & Antonia Speelman	Strathroy	519-245-0692	
Steve, Lukas Miller	Pushuda ON	519 622 9244	
Jordan Wassink	New <del>De</del> Dundee	519-696-3977	

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DATE: September 27, 2010

LOCATION: Port Elgin, Colonial Motel

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
G. Paul.	793 Eastwood Dr. Port Elgin, ON.	519-832-2241	
R. Paul.	793 Eastwood Dr. Port Elgin	519-832-2241	
A. Cameron	663 Pine Grove Dr Port Elgin	832-2302	
Leo van Kessel	684 DRUMMOND Drive Port Elgin	832-5536	
Koussief Shalaby	404-66 Falby Court 905 Ajax, ON. L1S3L2	688-2646	
Jean E. Gude	P.O. Box 545 Port Elgin Nott 200.		
B. Beaman	103 Eagle Rd Toburn, ON.	519 596 2916	

**nwmo**

NUCLEAR WASTE MANAGEMENT ORGANIZATION SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION

DATE: September 27, 2010

LOCATION: Port Elgin, Colonial Motel

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
George Howard King	AEE 225 W. PARKVIEW DR. MISSISSAUGA, ONT. L5K 1K2	(905) 823 9860 x 34679.	
Jeremy Luyt Catherine MacKinnon	741 MILL ST	519-389-4278	
Scott Vallieres	1001 Wellington St.	519 385-2235.	
Jway Ashbee	RR #5 Passley Ont	832-3553	
John Mann	RR #5 PASSLEY ONT.	832-3553	

**nwmo**

NUCLEAR WASTE MANAGEMENT ORGANIZATION  
SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION

DATE: September 28, 2010

LOCATION: Ripley, Community Centre

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
M Carlene Auld	15 A Ripley PO BOX 177	519 440 2028	
John Auld	757 Ripley ST Ripley	"	Very good, well documented, answered with touch questions



DATE: September 29, 2010

LOCATION: Kincardine, Governor's Inn

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
Gary Senior	Saugeen Conservation g.senior@suca.on.ca	519-364-1255 x39	
S. JAYABARATHAN	743 McPherson Cr KINCARDINE	519 396 4968	
S. Tward	wtward@yaho.com	519-396-3659	
Eugene Bourgeois	RR 2 Toronto	519 368 5354	
Jim Robison	21 PENETANGORE ROW 5 KINCARDINE	519 396 8056	
Maïté Palmer	394 South St Kincardine	396 #6264	
Peter Tucker	petertucker@ brucetelecom.com	396-7985	

**nwmo**

NUCLEAR WASTE MANAGEMENT ORGANIZATION SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION

DATE: September 29, 2010

LOCATION: Kincardine, Governor's Inn

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
✓ TRIAP	689 South St KINCARDINE	519 396-7765	LET'S START DIGGING
ALFRED COX	RR5 PAISLEY	519 389 5234	
MELLYONS	193 Queen St KINCARDINE N222S9	519-396-8040	??
Mattia Had	RR#5 Kincardine	5193968099	
BOB PERCIVAL	552 HUNTER SE	519-396-2466	
Jaehie Clements	7, Huron Bridge CNS.	519-396-3655	
ELLEN LOWRY	RR#1 Ripley	519-395-5657	

**nwmo**

NUCLEAR WASTE MANAGEMENT ORGANIZATION SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION

DATE: September 29, 2010

LOCATION: Kincardine, Governor's Inn

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
Eike Hack	RR5 Kincardine	519 396 8099	
Peter Grant	RR1 Gordonich	519 396- 4023	
GLENN R. SUTTON	711 Goldie Crescent Kincardine, ON. N2Z 2T4	519-396-3829	

**nwmo**

NUCLEAR WASTE MANAGEMENT ORGANIZATION SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION



DATE: September 30, 2010

LOCATION: Walkerton, Victoria Jubilee Hall

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
Debbie Davidson	RR #4 Walkerton	519-366-2379	
Ted Cheam	Walkerton	519-881-3244	
Ruth Bach	Walkerton	519-881-0690	
D. GREEN.	CHEPSTOW.	519.366.9923	
BRIAN SCHMIET	WALKERTON	519-881-2112	
Hilde Johnson	RR#3 Elmwood		
Dale Jacob	RR#4 Winton	519-534-5017	

**nwmo**

NUCLEAR WASTE MANAGEMENT ORGANIZATION SOCIÉTÉ DE GESTION DES DECHETS NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION

DATE: September 30, 2010

LOCATION: Walkerton, Victoria Jubilee Hall

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
DENISE + COLIN DUNKLEY	RR#1 NOUSTADT ONT NOG 2M0	749-5025	
Jean Culliton	Box 69 Teeswater	392-6790	
CHARLES REID	17 ORIOLE CIR. Box 41 WALKERTON	881-1573	
2x Tim Weasel	23 Oak St Walkerton On	507-4653	

**nwmo**

NUCLEAR WASTE MANAGEMENT ORGANIZATION SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION

DATE: October 4, 2010

LOCATION: Chesley, Fire Hall

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
Earl Mints	FROM ARLISLEY		MR MINTO INDICATED HE THOUGHT IT WAS A GOOD OPEN HOUSE.
Jean Reprecht	Chesley		
Ron Oswald	Chesley	363-3559.	



DATE: October 5, 2010

LOCATION: Owen Sound, Bayshore Community Centre

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
FRANK CULPEPER	2022 - 7 AVE. E.	519 372-0179	Helpful attendants.
John Rowland	241 10 St. Hanover ON	519 364-5441	
Jim & Jill Blair	112 Kingston Beach RR#2, Annapolis jimblair@hucantel.on.ca	519-372-2010	
STEWART SHOULDICE	184 PARK ST RR7 OWEN SOUND	519 371 7346	
DAVID STERNER	82 Berhill Dr London	519 686-5887	
JOHN KEELER	170 5TH AVE. E. OWEN SOUND	519-376-7219	
DONNA FAWLOWSAC	1315 PICKERING PKwy PICKERING, ON	905-8374500 x 5201	

**nwmo**

NUCLEAR WASTE MANAGEMENT ORGANIZATION SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION

DATE: October 5, 2010

LOCATION: Owen Sound, Bayshore Community Centre

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
PAT OAKES	PATRICIA.OAKES@ OPG.COM	905-328- 6001	Excellent information!
Loreen Cumming	Cummingdl@sympat.cog.ca	519-372-9849.	
Mary Beth van Grijt	202 Park St RR#7 Owen Sound ON K6V5		
CRAIG LAUTZ	RR#2 ARUSS INT. NOB 1B0-		
Randy Coverdale	36 Keating Dr. Elora NOB 1S0		
D. Cheek	RR#5 Rockwood		
Sunday Egal	sunday.egal@je.com		

**nwmo**

NUCLEAR WASTE MANAGEMENT ORGANIZATION SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION

DATE: October 6, 2010

LOCATION: Warton, Public Library Building

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
Richard Lip	RICHARD.LIP@BMTS.COM	422-2944	
JIM MCKANE	JAMCKANE@gmail.com	534 0988	Well done. I have NO concerns at all!
LYNOA STEINACKER	lynckjay@bmts.com	534-2092	
Bassy Foulds	RR1 Lion's Head	519 793-4357	very informative
ROSMARY PREUSS	RR2 WIARTON		
CLIFF BILYEA	RR#3 WIARTON	519 534-4802	
Gladys + Veronica Jones	Box 15 Hepworth, Ont.		

**nwmo**

NUCLEAR WASTE MANAGEMENT ORGANIZATION SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION



DATE: October 6, 2010

LOCATION: Warton, Public Library Building

DGR OPEN HOUSE ATTENDEES

NAME	ADDRESS (POST AND/OR EMAIL)	PHONE	COMMENTS
Allan Grunder	5 Wynford Ave., OTTAWA ON K2G 3Z2	613-829-4038	Excellent presentation Almost all questions which I had were answered by panels
MARY JANE MONAHAN	WIARTON ONTARIO		
LINDA THGAN	WIARTON ONT.	537.9486	MOST KNOWLEDGEABLE!
Robert Soder	165 SHEPARD LAKE RR3 HEPWORTH	935-3376	well done

**nwmo**

NUCLEAR WASTE MANAGEMENT ORGANIZATION  
SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION

Please leave this card with our open house staff, or mail it back to us at your convenience. You can also email us with your comments at [dgrinfo@nwmo.ca](mailto:dgrinfo@nwmo.ca) or visit our website for more information at [www.opg.com/dgr](http://www.opg.com/dgr).

**Open House Evaluation**

Please rank the following statements on a scale of 1 to 5 where "1" is "strongly disagree", "3" is neutral or "no opinion" and "5" is "strongly agree".



a. The open house panels helped me to understand the deep geological repository (DGR) proposal.

1 2 **3** 4 5

b. The open house location and hours were convenient for me.

~~1~~ 2 3 4 5 *afes*

c. The open house staff were helpful.

**1** 2 3 4 5 *afes*

d. Overall, the open house helped me to satisfy the information needs I had.

1 2 3 4 5 *quite*

e. I will recommend to my friends and family members that they should come to a future DGR open house.

1 2 3 4 5 *afes*

email: [dgrinfo@nwmo.ca](mailto:dgrinfo@nwmo.ca) [mwilson@nwmo.ca](mailto:mwilson@nwmo.ca)

Phone: 519-368-1639

Comments/Questions?  
Let us know.

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Name: \_\_\_\_\_

Address: \_\_\_\_\_

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Phone: \_\_\_\_\_

Email: \_\_\_\_\_

PLACE  
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HERE

Nuclear Waste Management Organization  
Media Relations Manager  
P.O. Box 7000, B21  
Tiverton, Ontario  
N0G 2T0

email: [dgrinfo@nwmo.ca](mailto:dgrinfo@nwmo.ca) [mwilson@nwmo.ca](mailto:mwilson@nwmo.ca) Phone: 519-368-1639

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1 2 3 4 **5**

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1 2 3 4 **5**

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1 2 3 4 **5**

- d. Overall, the open house helped me to satisfy the information needs I had.

1 2 3 4 **5**

- e. I will recommend to my friends and family members that they should come to a future DGR open house.

1 2 3 4 **5**

email: [dgrinfo@nwmco.ca](mailto:dgrinfo@nwmco.ca) [mwilson@nwmco.ca](mailto:mwilson@nwmco.ca)

Phone: 519-368-1639

**nwmco**

NUCLEAIRE WHITE SOCIÉTÉ DE GESTION  
MANAGEMENT DES DÉCHETS  
ORGANIZATION DES DÉCHETS  
NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION



Comments/Questions?

Let us know.

In favour of the DGR project  
No question that it is needed  
to meet the needs of the  
increasing utilities in Ontario

Name:

George How

Address:

1073 Lambton Drive  
Stouffville, ON, L6J 7P3

Phone:

Email:

Howg@aec.ca

PLACE  
STAMP  
HERE

Nuclear Waste Management Organization

Media Relations Manager

P.O. Box 7000, B21

Tiverton, Ontario

N0G 2T0

Please leave this card with our open house staff, or mail it back to us at your convenience. You can also email us with your comments at [dgrinfo@nwmco.ca](mailto:dgrinfo@nwmco.ca) or visit our website for more information at [www.opg.com/dgr](http://www.opg.com/dgr).

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1 2 3 4 **5**

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1 2 3 4 **5**

email: [dgrinfo@nwmco.ca](mailto:dgrinfo@nwmco.ca) [mwilson@nwmco.ca](mailto:mwilson@nwmco.ca)  
Phone: 519-368-1639



**nwmco**

NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION

SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION

Comments/Questions?  
Let us know.

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Name: \_\_\_\_\_

Address: \_\_\_\_\_

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Phone: \_\_\_\_\_

Email: \_\_\_\_\_



**Nuclear Waste Management Organization**  
**Media Relations Manager**  
P.O. Box 7000, B21  
Tiverton, Ontario  
N0G 2T0

email: [dgrinfo@nwm.ca](mailto:dgrinfo@nwm.ca) [mwilson@nwm.ca](mailto:mwilson@nwm.ca) Phone: 519-368-1639



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1 2 **3** 4 5

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Phone: 519-368-1639

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NUCLEAR WASTE SOCIÉTÉ DE GESTION  
MANAGEMENT DES DÉCHETS  
ORGANIZATION NUCLEAIRE

ONTARIOPOWER  
GENERATION

Comments/Questions?  
Let us know.

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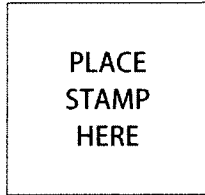
Name: \_\_\_\_\_

Address: \_\_\_\_\_

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Phone: \_\_\_\_\_

Email: \_\_\_\_\_



**Nuclear Waste Management Organization**  
**Media Relations Manager**  
**P.O. Box 7000, B21**  
**Tiverton, Ontario**  
**N0G 2T0**

email: [dgrinfo@nwm.ca](mailto:dgrinfo@nwm.ca) [mwilson@nwm.ca](mailto:mwilson@nwm.ca) Phone: 519-368-1639

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1 2 3 4 **5**

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1 2 3 **4** 5

- e. I will recommend to my friends and family members that they should come to a future DGR open house.

1 2 3 4 **5**

email: [dgrinfo@nwmco.ca](mailto:dgrinfo@nwmco.ca) [mwilson@nwmco.ca](mailto:mwilson@nwmco.ca)  
Phone: 519-368-1639

**nwmco**

NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION



Comments/Questions?  
Let us know.

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Name: \_\_\_\_\_

Address: \_\_\_\_\_

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Phone: \_\_\_\_\_

Email: \_\_\_\_\_



Nuclear Waste Management Organization  
Media Relations Manager  
P.O. Box 7000, B21  
Tiverton, Ontario  
N0G 2T0

email: [dgrinfo@nwm.ca](mailto:dgrinfo@nwm.ca) [mwilson@nwm.ca](mailto:mwilson@nwm.ca) Phone: 519-368-1639

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① 2 3 4 5

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Phone: 519-368-1639

nwm.ca

NUCLEAR WASTE  
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ORGANIZATION

SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES

ONTARIOPOWER  
GENERATION

Comments/Questions?

Let us know.

I WOULD LOVE TO  
WORK WITH PROTECT  
I HAVE 40 YEARS  
WORKING IN THE GENERATION  
THERMAL AND NUCLEAR  
I AM PRESENTLY TRAINING  
WORKER ON THE RESTART

Name: SIM TRIPP

Address: 689 SCOTT ST

Phone: 514 396-7765

Email: JTRIPP@BITS.COT?

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Nuclear Waste Management Organization  
Media Relations Manager  
P.O. Box 7000, B21  
Tiverton, Ontario  
N0G 2T0



Please leave this card with our open house staff, or mail it back to us at your convenience. You can also email us with your comments at [dgrinfo@nwm.ca](mailto:dgrinfo@nwm.ca) or visit our website for more information at [www.opg.com/dgr](http://www.opg.com/dgr).

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**nwm**

NUCLEAR WASTE MANAGEMENT ORGANIZATION SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION

Comments/Questions?  
Let us know.

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BRUCE COUNTY

MUSEUM

AUG 23, 2010

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Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Nuclear Waste Management Organization  
Media Relations Manager  
P.O. Box 7000, B21  
Tiverton, Ontario  
N0G 2T0

email: [dgrinfo@nwmo.ca](mailto:dgrinfo@nwmo.ca) [mwilson@nwmo.ca](mailto:mwilson@nwmo.ca) Phone: 519-368-1639

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Phone: 519-368-1639



Comments/Questions?

Let us know.

Recorded by Kevin Orr

MR Brunner's questions/comments include:

' WHY IS THE ABR LOCATED CLOSE TO THE LAKE?'

' CONCERNED THAT THE ABR WILL STORE USED FUEL'

' WHY LOCATE THE ABR IN SOUTHERN ONTARIO? WOULDN'T IT

BE BETTER TO LOCATE IT IN SPARSELY POPULATED  
NORTHERN ONTARIO.

Name: A Hua Grunder

Address: 5 Wynford Ave.

Ottawa ON

Phone: 613-829-4038

Email: \_\_\_\_\_

PLACE  
STAMP  
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Nuclear Waste Management Organization

Media Relations Manager

P.O. Box 7000, B21

Tiverton, Ontario

N0G 2T0

WILKINSON

Please leave this card with our open house staff, or mail it back to us at your convenience. You can also email us with your comments at [dgrinfo@nwmco.ca](mailto:dgrinfo@nwmco.ca) or visit our website for more information at [www.opg.com/dgr](http://www.opg.com/dgr).

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1 2 3 **4** 5

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**nwmco**

NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION  
SOCIÉTÉ DE GESTION  
DES DÉCHETS  
NUCLÉAIRES

**ONTARIOPOWER**  
GENERATION

Comments/Questions?  
Let us know.

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Name: \_\_\_\_\_

Address: \_\_\_\_\_

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Phone: \_\_\_\_\_

Email: \_\_\_\_\_

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Nuclear Waste Management Organization  
Media Relations Manager  
P.O. Box 7000, B21  
Tiverton, Ontario  
N0G 2T0

email: [dgrinfo@nwmo.ca](mailto:dgrinfo@nwmo.ca) [mwilson@nwmo.ca](mailto:mwilson@nwmo.ca) Phone: 519-368-1639



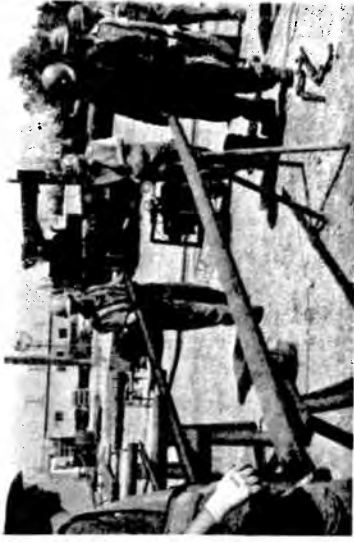
Please leave this card with our open house staff, or mail it back to us at your convenience. You can also email us with your comments at [dgrinfo@nwmw.ca](mailto:dgrinfo@nwmw.ca) or visit our website for more information at [www.opg.com/dgr](http://www.opg.com/dgr).

### Open House Evaluation

Please rank the following statements on a scale of 1 to 5 where "1" is "strongly disagree", "3" is neutral or "no opinion" and "5" is "strongly agree".

- a. The open house panels helped me to understand the deep geological repository (DGR) proposal. 1 2 3 4 5  
 1  2  3  4  5
- b. The open house location and hours were convenient for me. 1 2 3 4 5  
 1  2  3  4  5
- c. The open house staff were helpful. 1 2 3 4 5  
 1  2  3  4  5
- d. Overall, the open house helped me to satisfy the information needs I had. 1 2 3 4 5  
 1  2  3  4  5
- e. I will recommend to my friends and family members that they should come to a future DGR open house. 1 2 3 4 5  
 1  2  3  4  5

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**nwmw**

NUCLEAR WASTE  
MANAGEMENT  
ORGANIZATION

SOCIETY OF GEOTECHNICAL  
ENGINEERS  
OF CANADA

**ONTARIO POWER  
GENERATION**

Comments/Questions?  
Let us know.

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