

OVERVIEW AND UPDATE ON “THE KINCARDINE INITIATIVE”: OPG’S DGR FOR THE STORAGE OF LOW AND INTERMEDIATE LEVEL NUCLEAR WASTE (2000 – 2016)

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Abstract

The Bruce site (Western Waste Management Facility {WWMF}) has been the host storage site for all Low & Intermediate Level Waste (L/ILW) from Ontario Power Generation (OPG) reactors. This paper will summarize key themes and techniques that resulted in the initial proposal called the “Kincardine Initiative” leading to a Memorandum of Understanding (MOU) being signed between the Municipality of Kincardine (MOK) and OPG. Particular attention will be given to various engagement techniques that assisted council members of the MOK to assure them that there was community support. A summary of best international communications practices will be reviewed and discussed briefly. References to other relevant, international nuclear waste disposal sites will be provided. Challenges of simplifying complex scientific, technical and geological concepts and information for general public understanding will be addressed. Highlights of this plan included commitments to openness and transparency in the options review and a commitment to both public consultation and communications. This commitment also included joint trips to Europe and the USA to aid selection of the best technology and alternatives. This led to signature of a unique Community Hosting Agreement. Major themes to be described for use by other jurisdictions included the use of a Community Consultation Centre staffed by both MOK and OPG, use of University of Western Ontario MBA students to research international industry trends and briefings with key stakeholders including First Nations. Finally, the extensive hearings by the Joint Review Panel (JRP) will be reviewed to emphasize how science based Environmental Assessments are the “wave of the future”.

1. Purpose of paper

The main purpose of this paper is to describe how the MOK Council was assured that there was community support for this project.

2. Prior history of nuclear waste management in Canada

A condensed history of Nuclear Waste Management may be found in “Canada Enters the Nuclear Age” [1], Chapter 19 (Waste Management) and also the NWMO Final Study [2]. A quote from Chapter 19 is prescient: “That the waste management facilities at Chalk River have withstood the test of over forty years of operation without even approaching any releases of concern is testimony to the soundness of the judgment exercised by those early scientists” (as of 1997 - date of book publishing) [1].

3. Brief history of Canadian HLW long-term management

The issues and challenges in Canada, of how to address the issue of disposal and storage of High Level Waste (HLW) was summarized in the NWMO Final Study [2]. In section 1.1: “A paper documenting the legacy of the Seaborn Panel in pointing to the imperative to consider the ethical and social domains as well as the technical questions on one of the approaches under NWMO’s review can be found at www.nwmo.ca (background paper # 2-8).

4. Nuclear Fuel Waste Act (NFWA)

Quoting from the Nuclear Waste Management Organization (NWMO) in Section 1.1, Introduction of the Final Study (Choosing a Way Forward) [2]:

“The Government considered and responded to the Seaborn Panel, and in November 2002 brought into force the Nuclear Fuel Waste Act [3] (an Act respecting the long-term management of nuclear fuel waste) (NFWA) (see Appendix 2). As required by that federal legislation, the Nuclear Waste Management Organization (NWMO) was established.

Thus the stage was now set for a new, fresh approach to the ultimate Canadian solution for long-term storage of HLW; however, there was a problem! The **newly approved** Nuclear Fuel Waste Act was silent on what approach to use for the storage of L/ILW!

5. MOK committee system

The NWSC (Nuclear Waste Steering Committee) was a special committee of Council struck in about 2001 to start the process of negotiating with OPG on the MOK’s desire to offer itself as a “willing host community”.

6. Initial approach by MOK to OPG

Initial approaches were made by the MOK to OPG about the possible long-term storage of both LLW & ILW at the Bruce site. More detailed discussions were held and coordinated by the NWSC who reported back to the full council as required.

At the end of those discussions, which were accompanied by intense negotiations between both MOK and OPG, Resolution # 2002-202 was introduced at MOK council, discussed and passed on April 15, 2002. It was in the form of a “Memorandum of Understanding” (MOU)[4].

7. Due diligence by MOK

Two separate information gathering trips were undertaken by MOK Council and OPG staff. The purpose of these trips was to determine the “best in class” technology available in the world to recommend to MOK Council, for eventual adoption as the selected method for final long-term storage of L/ILW. In 2002, Switzerland (Zwilag in Wurenlingen, and the NAGRA project in Wettingen), France (ANDRA Centre de l’Aube) and Sweden (SKB – SFR Facility in Forsmark) were toured. In 2003, South Carolina (Barnwell) and New Mexico (Carlsbad – WIPP Facility) were toured. Please refer to the Joint Review Panel PowerPoint presentation [5] submitted by the MOK for an overview and summary of both trips.

8. Determination of public support for the project

The NWSC was assigned, on behalf of MOK Council, the task of developing a process that would measure the degree of support from the residents of MOK, and also owners of property who were in MOK during the summer. The first task at hand was to prepare an Independent Assessment Study (IAS) that basically researched three options and presented a thorough analysis of each one with the preferred option.

Quoting from the Executive Summary [6]: “The study examined the costs, impacts and benefits of constructing and operating each of three long-term management concepts at the WWMF, namely: Enhanced Processing and Storage, Surface Concrete Vaults, and Deep Rock Vaults. The study found that all three long-term management options are technically feasible and may be safely constructed and operated at the WWMF.”

Also quoting from Section 7.2.5 (First Nation Consultation) [6]: “Stakeholder contact with Chippewas of Nawash First Nation and the Saugeen First Nation was conducted as part of the consultation plan. A draft communications protocol was developed and provided to the First Nations to facilitate a productive exchange of information between First Nations, Kincardine and OPG.”

Finally, quoting from Section 7.4 (Overview of Communication and Consultation) [6]: “Based on feedback received from the stakeholders briefings, Open Houses and First Nation briefings, the majority of stakeholders are supportive of the IAS and appreciate the consultation efforts to date. There was little opposition to any of the long-term management facility options.”

The NWSC recommended to Council that Deep Rock Vaults be pursued. The MOK Council adopted this recommendation.

9. Community Consultation Centre (CCC) & mobile exhibits & open houses

One of the most important and effective methods of public outreach and engagement was the MOK CCC (see Figure 1). This centre was located in downtown Kincardine. Inside there were many large-sized panels illustrating various stages of the L/ILW project. Of most use were the diagrams with details of the proposed deep geological repository. At all times during the various phases of the proposed project, both one member of the MOK council and one employee from OPG staffed the centre. The author remembers and can attest to the fact that some people changed their opinion from that of non-support to support for the MOK Initiative. A guest reception log book was kept.

10. Community consultation

The MOK owns a telecommunications company. A telephone poll was conducted of MOK residents (summer residents were also included). A polling company was retained to conduct this poll and another company performed a third party audit of the process and results. The results were positive for the poll and MOK Council passed By-law # 2004-157 on October 13, 2004 [7].



Figure 1. Opening of the Community Consultation Centre in Kincardine, ON

11. Engagement techniques

Communications: In the area of effective communications, both the MOK and OPG agreed at the outset for the public engagement process to have open and transparent two way communications.

Technical Factors: It was decided to use companies and consultants who were skilled in public dialog with diverse groups and had a previous track record of technical acumen and outstanding communications skills.

Aboriginal Engagement: Saugeen Ojibway Nation (SON) is the collective name for the Chippewas of Nawash Unceded First Nation and the Chippewas of Saugeen First Nation. Outreach to the local First Nations bands was made by the consultant including MOK and OPG representatives.

Continuing on with the earlier quotation from Section 7.2.5 (First Nation Consultation) of the Independent Assessment Final Report [6]: “The goals of this protocol are:

- Acknowledging that the Saugeen and Nawash Bands have a demonstrated interest in the operations at the Bruce Power site;

- Incorporating issue identification, tracking and management capability in recognition of the reality that issues frequently arise through increased community awareness resulting from the consultation process and the related enhanced profile of the WWMF; and
- Maintaining flexibility to respond to newly identified issues as well as Nawash and Saugeen input throughout the study period.

The protocol was submitted in June, 2003 to the two First Nation bands and initial briefings were held with both First Nations. A meeting with the Joint Council for both bands is scheduled for early 2004.”

In particular, the author took part in one of these Aboriginal consultations. A staff engineer from the consultant, who was of Aboriginal descent, made the initial presentation. His presentation was made in a manner that was appropriate for the Council to understand by using an Aboriginal perspective. After this presentation, the Band Councillors asked questions of both the MOK and OPG representatives.

12. UWO Business School - strategic planning services for MOK

From the Introduction [8]: “A team of four students from the Richard Ivey School of Business were commissioned to consult in a study regarding negotiations on a Radioactive Waste disposal facility. In the original mandate for the report, Kincardine requested a financial analysis, which they can use in negotiations with Ontario Power Generation”. Later it goes on to state: “It is important to note that the content of this report largely focuses on the business opportunity and value-creating mechanisms.” This report was used by both the NWSC and council to assist in its negotiation strategies. Various financial models were analyzed and also the issue of “stigma” was addressed. It was found to be a very useful document for guidance.

13. Canadian Association of Nuclear Host Communities (CANHC)

The CANHC [9] was an association of nuclear host communities across Canada that joined together to compare experiences with the various aspects of the nuclear fuel cycle in Canada. It had an annual meeting each year in Ottawa at the same time as the CNA Winter Symposium. It also made presentations on behalf of its members at regulatory hearings as needed.

Another organization that is somewhat similar to CANHC is the Energy Communities Alliance (ECA) [10].

14. Canadian Nuclear Safety Commission (CNSC) regulatory interface

“The Canadian Nuclear Safety Commission (CNSC) regulates the use of nuclear energy and materials to protect health, safety, security and the environment and to respect Canada’s international commitments on the peaceful use of nuclear energy. Created in 1946 as the Atomic Energy Control Board, the agency changed its name in 2002 with the enactment of the Nuclear Safety and Control Act (NSCA)” [11]. The CNSC is the Canadian regulator for all aspects of the nuclear fuel cycle, but other municipal, county, provincial and federal levels of government have their roles as well.

The CNSC has a Factsheet entitled “Regulating Canada’s Geological Repositories” [12].

15. The Environmental Assessment process

The Environmental Assessment (EA) process was started by following the required activities under the Canadian Environmental Assessment Act 2012 (CEAA) [13].

16. OPG's Deep Geologic Repository Environmental Impact Statement summary

In March of 2011, OPG's Deep Geologic Repository Project for Low & Intermediate Waste Environmental Impact Statement Summary [14] was issued.

Detailed findings of the EA completed for the DGR are presented in the Environmental Impact Statement (EIS) and Technical Support Documents (these documents can be assessed at www.ceaa-acee.ca).

17. The Joint Review Panel

The Joint Review Panel (JRP) was established to examine this project on January 24, 2012 as per the Executive Summary [15]: "The Panel's mandate was to: assess the proposed project in accordance with the requirements of the Canadian Environmental Assessment Act, 2012; consider the OPG application for a License to Prepare Site and Construct under the Nuclear Safety and Control Act; and to obtain information about potential adverse effects that the project may have on potential or established Aboriginal rights, title or Treaty rights."

The JRP issued its final report on May 06, 2015 [15]. The "Overall Conclusion" in the JRP's Executive Summary was: "The Panel concludes that the project is not likely to cause significant adverse environmental effects, taking into account the implementation of the mitigation measures committed by the Panel".

18. International co-operation in nuclear waste storage

As a volunteer member of the Township of Huron-Kinloss Nuclear Waste Community Advisory Committee, the author attended the 40th Annual Waste Management Conference 2014 hosted by the WM Symposia [16]. That symposium was very beneficial in providing the most up to date information on all aspects of nuclear waste and is "the premier international conference for the management of radioactive materials and related topics". The author's trip report [17] summarized the current status of world experience with DGR's and also community engagement processes used elsewhere.

19. The future prognosis for LLW/ILW/HLW storage in DGRs

What is the future prognosis for LLW/ILW/HLW nuclear waste disposal, storage and recycling (both short & long term)? The author has included HLW in this section of the report because all three forms of nuclear waste disposal are intimately linked together. Any development for one type of nuclear waste is a possible solution for the other two. It is important to understand the transition in Canada from previous recommendations to use granite from the Canadian Shield (for HLW) to more recent recommendations to use sedimentary rock as an alternative. The major research effort (s) that lead to that transition may be found in two NWMO position papers [18] [19].

To provide an additional level of review for this project the MOK Council had Hardy Stevenson and Associates Limited (HSAL) review, in April 2012, both of the following documents:

- Socio-economic Environmental Support Documents, dated March 31, 2011, prepared by AECOM Canada Ltd. (NWMO-DGR-TR-2011-08); and
- DGR EA Follow-up Monitoring Program March 2011, prepared by the NWMO (NWMO-DGR-TR-2011-10).

By November, 2012, after a thorough review of the OPG, AECOM and NWMO documents, HSAL found only six issues that needed to be addressed. All of these issues were resolved by the fall of 2012. HSAL's conclusions in the Final Peer Report [20] were:

- The studies were well done
- Overall, the Socio-Economic Environment TSD and Follow-up Monitoring Programs were well done and HSAL supported the conclusions
- HSAL reached the same conclusions as AECON/NWMO, that the socio-economic effects will not be significant [5].

HSAL presented their findings to the MOK Council. After the council discussed this report, it was accepted by Resolution #11/07/2012-08 (DGR Peer Review) passed on November 07, 2012 [21].

20. Lessons learned

Communications- At the WM Symposia 2014, the author was impressed with all papers presented in Session # 26. However; one paper captured the essence of how we, as people working in the nuclear fuel cycle, can improve our methods of engaging and reaching out. This includes the general public, including those involved in setting energy and environmental policies etc., at all levels of government and industry [22]. Also, Session # 3 [23] captured local community involvement in both Finland and Sweden. It was very pleasing to see that these two municipalities followed much the same process, as did the MOK; however, there were slight variations due to different rules, regulations, taxation, laws and culture. Session # 24 also covered many aspects of engaging citizens based on lessons learned for around the world, including Canada. Note that a paper was presented by NWMO staff in Session # 26 about the engagement of citizens [24].

Simplification of Nuclear Technology Terms - With respect to nuclear waste disposal, this subject has a separate set of specific terms. Such terms as "permeability", "hydraulic gradient", "high sorption capacity", "repository", "bentonite clay", "immobilization", "gas generation", "radionuclide migration", and "buffer" etc. need restating from technical terms into "layman's language". This is always an ongoing issue and the industry needs to keep efforts continuing for improvements in this area, such as simplified technical reference words and terms. Please refer to Paper # 14124 from the WM Symposia 2014 that describes a Mini Encyclopedia of Nuclear Energy [25] as an example of this suggestion. It is the author's opinion that we must improve our communications in this area as nuclear waste disposal/storage is a destiny issue. This means an issue that could affect our industry if it is not addressed in a timely manner, and result in a loss of influence and ability to advance our future growth.

Concept of Repository Resaturation - One of the main concepts that is challenging to explain about a DGR (to the public at times) is the use of computer simulation for purposes of modelling radioactive isotope transport through rock. This is assumed to start when a DGR is instantaneously resaturated (worst case) after the DGR is sealed off, and then transport occurs after corrosion has taken place and the canister is breached. A book that the author has found most useful for this aspect of DGR radiochemistry is “The Chemistry of Nuclear Fuel Waste Disposal” [26]. It is a concise summary of all the major issues related to nuclear waste disposal and storage.

21. A challenge for the future –ethics in energy?

As an industry we must keep up **high safety standards**. We must always be fact-based in our approaches and respectful of all points of view. This, for the author, brings up the subject of ethics in energy. When the author met the first Chair of the NWMO at an Impact Advisory in about 2002, the concept of ethics in nuclear waste was first mentioned by the Chair. As a member of the CNS, the author started to receive issues of “Ethics and Energy” [27] in 1980. This series of newsletters ended in 1986. This may be another challenge for our industry to resume in the near future. The author met Tom Isaacs (former Lead Advisor to United States Blue Ribbon Committee on America’s Nuclear Future) recently during his talk with the Twp. of Huron-Kinloss CAC [28]. Quoting from this article, he said “But, as you know, the big issues are often non-technical, they are issues of public acceptance, political issues”. Also, he stated “You need to build a core and earn a core of trust with people”. This also brings up the concept of social license and that is a whole separate but related topic. The author believes that the MOK has received a social license based on the positive poll response and subsequent ongoing updates and communications.

22. Summary and status of the JRP

22.1 Summary

This paper has attempted to summarize a historical overview of the MOK initiative for the OPG L/ILW DGR from 2000 to 2016. The JRP has been completed. The “Kincardine Initiative” being executed by OPG is a very large project. A new book issued this year [29], contains relevant information on how to create a transformational culture.

22.2 Status of the JRP

22.1.1 Request from Minister of Environment and Climate Change.

On February 18, 2016 [30], the Minister of Environment and Climate Change issued a letter to OPG to conduct three further studies into OPG’s low and intermediate level waste (L&ILW) DGR before making a decision on the environmental assessment, and reply back by no later than April 18, 2016.

22.1.2 Reply from OPG

On April 15, 2016, OPG issued a Press Release [31] that stated: “Ontario Power Generation (OPG) has informed the federal government that it will complete further studies on its proposed deep geologic repository (DGR) by Dec. 31, 2016”.

23. Regulatory update 2016

The CNSC issued four documents in 2016 that are germane to this paper:

- On February 12, 2016, the CNSC issued **REGDOC-3.2.2, Aboriginal Engagement** [32]. This document “sets out requirements and guidance for licensees whose proposed projects may raise the Crown’s duty to consult”. The author enrolled in and took a six lesson on-line course [33] “Exploring Ontario First Nation Cultures”. A broader understanding of Aboriginal history and culture was obtained.
- On March 14 to 16, 2016, the CNSC hosted a “**Multinational Workshop on the Regulation of Deep Geological Repositories**” in Ottawa, Canada [34].
- On April 14, 2016, the CNSC [35] issued a “**new timeline** detailing the CNSC’s extensive independent research on deep geological repositories (DGRs) in Canada –from the first study conducted in 1978 to present.
- On June 14, 2016, the CNSC [36] issued a “**fact sheet on protecting the Great Lakes from radionuclides**”. The fact sheet goes on to state “CNSC licensees are responsible for controlling and monitoring levels of radionuclides around their facilities, including within the Great Lakes.”

The Chalk River Laboratories (CRL) submitted an Environmental Assessment for their Near Surface Disposal Facility Project (NSDF), which was assigned CEAR reference number 80122 on May, 05, 2016. Quoting from their project description, section 3.1.1 Project Context [37]: “Canadian Nuclear Laboratories has an immediate requirement for a new facility at its CRL property for the disposal of large quantities of LLW generated from past, present and future activities at CRL and at its other business locations.”

24. Great Lakes issues

The author recently attended the “Is the Coast Clear?” Conference on May 27, 2016 in Port Elgin [38]. The author heard three presentations in concurrent sessions on the Great Lakes Protection Act [39], Extreme Lake Levels Adaption and Plastics Pollution.

It has been questioned about a DGR being located adjacent to large bodies of water. A DGR is very similar in design and operation to a mine. There are several examples of DGR’s located near (or under) large bodies of water. One toured in 2002 by MOK (including the author) & OPG was Forsmark, Sweden, beside and under the Baltic Sea [5]. Several mines are located directly underneath large bodies of water. Locally, in Goderich, Ontario, we have a salt mine that goes under Lake Huron (that the author toured in approximately 2005).

25. Effect of climate change & Ice Ages

These two factors will now be reviewed as they pertain to the Great Lakes basin:

Climate Change - it appears that a greater number of hurricanes & tornadoes are being experienced due to climate change. With respect to tornadoes and other natural disasters, it would be safer to have any DGR located below the surface of the earth, than risk the potential damage to above ground storage facilities.

Ice Ages - our most recent ice age was about 10,000 years ago. Current estimates of the next ice age indicate that it will be in less than 20,000 years [26pg 16]. This time frame of 20,000 years is at the early stage of the design life for a DGR. Prudence would suggest that a DGR located below the surface of the earth would be safer from the effects of a new ice age.

26. Recent OPG update

On June 15, 2016 OPG appeared as a delegation before MOK Council. Please refer to the OPG PowerPoint presentation [40] for the details of their update, especially: # 1: Study of Alternate Locations; #2: Cumulative Effects Update; and #3: Mitigations Update.

27. Summary & conclusion

We all will have to wait for OPGs' formal reply to the Minister of Climate Change and Environment and then for the Minister's decision. In the author's opinion, the Joint Review Panel Environmental Assessment Report **has been based on science** and thus should meet the "bar" as set by the federal government's recent election policy statement about environmental assessment decisions being "**science-based**".

28. References

- [1] Canada Enters the Nuclear Age – A Technical History of Atomic Energy of Canada Limited, *McGill-Queen's Press*. ISBN 0-7735-1601-8, 1997.
- [2] Choosing a Way Forward – The Future Management of Canada's Used Nuclear Fuel, *NWMO Final Study*. November, 2005.
- [3] Nuclear Fuel Waste Act S.C. 2002, c23: An Act Respecting the long-term management of nuclear fuel waste (Assented to 13th June 2003).
- [4] [Resolution # 2002-202](#)– Authorize the Mayor and CAO to Enter into a Memorandum of Understanding with Ontario Power, April 15, 2002.
- [5] [Joint Review Panel Presentation Powerpoint, MOK. August 23, 2013.](#)
- [6] Final Report on "Independent Assessment Of Long-term Management Options For Low And Intermediate Level Wastes At OPG's Western Waste Management Facility", Golder Associates Ltd, Rev. 3 February 2004.
- [7] [Bylaw No. 2004-157](#): Being A By-law To Authorize The Signing Of An Agreement With Ontario Power Generation Inc. For The Management Of Low And Intermediate Level Nuclear Waste Within The Municipality Of Kincardine, October 13, 2004.
- [8] Analysis and Recommendations regarding Intermediate Level Waste/ Low Level Waste Management Facilities. – *A report prepared by the Ivey Client Field Project Team 54*: March 10, 2004 for the Municipality of Kincardine.

- [9] Canadian Association of Nuclear Host Communities: see web site at www.canhc.ca
- [10] Energy Communities Alliance: see web site at www.energyca.org
- [11] Nuclear Safety and Control Act(enacted May 31, 2000).
- [12] CNSC Factsheet “Regulating Canada’s Geological Repositories” February 2011.
- [13] Canadian Environmental Assessment Act, 2012 S. C. 2012, s.52 (Current to March 16, 2016).
- [14] OPG’s Deep Geologic Repository Project for Low & Intermediate Waste (Environmental Impact Statement Summary), March, 2011.
- [15] Joint Review Panel - Environmental Assessment Report - Deep Geological Repository for Low and Intermediate Level Radioactive Waste Project, *CEAA Reference No. 17520*: May 06, 2015.
- [16] Waste Management Symposia (wmsym.org).
- [17] Letter to Township of Huron-Kinloss Nuclear Waste CAC & Council – Trip Report: Waste Management Symposia 2014 by Glenn R. Sutton, Apr. 01, 2014. (www.huronkinloss.com).
- [18] NWMO Website, Technical Methods: *Paper No. 6.12*: Long-Term Used Nuclear Fuel Waste Management of Used Nuclear Fuel, July, 2004.
- [19] NWMO Website, Technical Methods: *Paper No. 6.13*: Conceptual Designs for Used Nuclear Fuel Management – in Sedimentary Rock, July, 2004.
- [20] Final Report – Peer Review of a (1) Technical Support Document and (2) Follow up Monitoring Program submitted by Ontario Power Generation in support of the Construction of a Deep Geological Repository for Nuclear Waste – Submitted to the Municipality of Kincardine. Prepared By Hardy Stevenson and Associates Limited – October 24, 2012.
- [21] Resolution #11/07/2012-08 (DGR Peer Review) passed on November 07, 2012
- [22] WM Symposia 2014 – Session # 26, Paper # 14357: A New Mindset in Terms of How the Nuclear Industry Engages the General Public, Laurel Boucher - The Laurel Co., <http://www.the-laurel-company.com>
- [23] WM Symposia 2014 – Session # 3: Finland/Sweden Featured Nations: National Programs & Local Views.Paper – Local Community Involvement - *The Finnish Example* – Mayor Vesa Jalonen- Eurajoki; and Local Community Involvement - The Swedish Example – Mayor Jacob Spangenberg (Mayor of Osthhammer).
- [24] WM Symposia 2014 – Session # 26, *Paper # 14602*: Site Selection for Canada’s National Repository for Used Nuclear Fuel – Jo-ann Facella – NWMO.
- [25] WM Symposia 2014 – Session # 26, *Paper # 14124*: Mini Encyclopedia of Nuclear Energy – an Important Tool for Public Information – Igor Jenic – Jozef Stefan Institute Slovenia.
- [26] The Chemistry of Nuclear Fuel Waste Disposal, Donald R. Wiles – *Polytechnic International Press*. ISBN 2-553-01025-7. 2002.
- [27] Ethics & Energy Newsletter Volume 1 Number 1. August 1980. Editor D. Hardy & Managing Editor M. Stevenson. Second edition December, 1980 (No date for the first edition).
- [28] “Nuclear waste expert says that trust, transparency necessary for successful used fuel repository project”. Kincardine News, March 31, 2016.

- [29] The Art And Science Of Transformation, Harold M. Schroeder – *CreatSpaceIndependent Publishing Platform*, North Charleston, SC Library of Congress Control No. 2016905143. 2016.
- [30] Letter to Ms. Laurie Swami (OPG) from the Federal Minister of Environment & Climate Change (requiring further information and/or studies). February 18, 2016.
- [31] Press Release: OPG Commits to Completing Further DGR Studies by Year-End, April 15, 2016.
- [32] E-mail: “CNSC publishes regulatory document on Aboriginal Engagement”, February 12, 2016.
- [33] www.goodlearninganywhere.com (Exploring Ontario First Nation Cultures course: *Sioux Hudson Literacy Council*), March 08 to 31, 2016.
- [34] E-mail: “CNSC hosts Multinational Workshop on the Regulation of Deep Geological Repositories “, March 14 to 16, 2016.
- [35] E-mail: “New CNSC timeline: The science behind safe nuclear waste disposal: decades of research”, April 14, 2016.
- [36] E-mail: “CNSC factsheet on protecting the Great Lakes from radionuclides”, June 14, 2016.
- [37] Project Description: Near Surface Disposal Facility At Chalk River Laboratories, 232-50922-ENA-001 Rev 0.
- [38] www.lakehuron.on.ca – The Lake Huron Center for Coastal Conservation. Goderich, Ontario.
- [39] Great Lakes Protection Act, 2015 S.O. 2015, CHAPTER 24.
- [40] OPG’s Low and Intermediate Level Waste Deep Geological Repository (DGR) – Update to Municipal Councils June 2016 [OPG's Low and Intermediate Level Waste Deep Geological Repository \(DGR\) - Update to Municipal Councils June 2016](#)

Note: supporting documents are available at www.kincardine.net/DGR and www.opg.com