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Supplementary Information

Written Submission from Ontario Power Generation Inc.

In the Matter of

Ontario Power Generation Inc.

Proposed Environmental Impact Statement for OPG's Deep Geological Repository (DGR) Project for Low and Intermediate Level Waste

Joint Review Panel

September 16 to October 12, 2013

Renseignements supplémentaires

Mémoire de Ontario Power Generation Inc.

À l'égard de

Ontario Power Generation Inc.

Étude proposée pour l'énoncé des incidences environnementales pour l'Installation de stockage de déchets radioactifs à faible et moyenne activité dans des couches géologiques profondes

Commission d'examen conjoint

Du 16 septembre au 12 octobre 2013

Canada

ATTACHMENT

Attachment to OPG letter, Laurie Swami to Dr. Stella Swanson, "Deep Geologic Repository Project for Low and Intermediate Level Waste – OPG's Responses to Recommendations from Government Agencies"

September 12, 2013

CD#: 00216-CORR-00531-00205

OPG's Responses to Recommendations by Government Agencies

Table of OPG Responses to Federal Agencies Recommendations

No.	Government Agency	PMD	Reference	Recommendation	OPG Response
1.	Ontario Ministry of Tourism, Culture and Sport (MTCS)	13-P1.7	p.10, para 1	MTCS recommends that all archaeological assessment reports be submitted for MTCS' review and acceptance prior to the approval of the EIS.	Completed. OPG has submitted Stage 1 and 2 archaeological assessments. The report has been accepted by the MTCS.
2.	CNSC	13-P1.3	Section 2.5.3, p.42 Addendum B - Recommendation 1	CNSC staff recommend that during site preparation and construction OPG provide CNSC staff with the following technical details of the DGR Project: • design of the overburden excavation and dewatering • design of the ground improvement • design of the shaft excavation • design of the shaft rock support for shaft excavation and operation (i.e., initial and final supports) • design and/or design update of the rock support for the shaft service area • design of the excavation of the lateral development • design update of the emplacement rooms • design of the geotechnical instrumentation monitoring program. *Phase: SP&C; O*	Accepted.
3.	CNSC	13-P1.3	Section 2.6.3, p. 47 Section 2.20.3.2, p. 140 Addendum B -	CNSC staff recommend that OPG's waste characterization program be reviewed and revised as appropriate to conform with international guidance provided by ISO 21238, IAEA 2009 and IAEA 2007 [30-32]. This program needs to be in place before an operating licence is issued and before any waste is placed in the DGR. CNSC staff expects that the waste	Accepted, however OPG will need to have additional discussions with CNSC staff to clarify the expectations respecting the information to be provided in the operating licence.

No.	Government Agency	PMD	Reference	Recommendation	OPG Response
			Recommendation 2 (p.165 & p.170)	characterization program will: • account for the variability in the packages and assure representativeness • implement inter-laboratory verification of radionuclide measurements • provide details on sample coverage and frequency • use alternative analysis methods to obtain a better fit on certain radionuclides (i.e., I-129) • provide a committed schedule for implementation • demonstrate, as a requirement for the operating license, that the postclosure-closure safety predictions remain essentially unchanged *Phase: SP&C*	
4.	CNSC	13-P1.3	Section 2.8.3, p. 57 Addendum B - Recommendation 3	CNSC staff recommend that OPG conduct a proper assessment of the migration of the tritium plume and interaction with the proposed shafts as part of the EA Follow-up Monitoring Program in order to design an adequate groundwater monitoring well network and provide early detection of the potential migration of the tritium plume originating from the WWMF so as to enable OPG to identify and implement necessary mitigation measures if tritium levels are observed to be higher and occur earlier than expected. This recommendation includes: • improving numerical modelling of the tritium plume migration • enhancing monitoring, e.g., adding	Further discussion required. Establishment of the routine quarterly DGR Project Area groundwater monitoring program (10 wells) coupled with the WWMF monitoring program (18 wells), immediately up-gradient of the Project Area, will provide adequate coverage for early detection of changes in groundwater tritium concentrations. At this point additional modelling is not anticipated. If the annual monitoring results provide an indication that tritium levels are higher than expected, mitigative actions would be taken. This could include: i) updated modelling; ii) installation of additional monitoring wells; and/or iii) increased sampling

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				monitoring wells up-gradient of the DGR footprint • proposing a contingency plan should the numerical modelling or monitoring indicate that the tritium plume will reach the shaft before the shaft collars are installed *Phase: SP&C*	frequency of the monitoring well networks.
5.	CNSC	13-P1.3	Section 2.8.3, p. 57 Addendum B - Recommendation 4	CNSC staff recommend that OPG confirm the surface water-groundwater interaction modelling results in the EA Follow-up Monitoring Program and further refine the numerical model as more data become available. *Phase: SP&C*	Accepted.
6.	CNSC	13-P1.3	Section 2.8.3, p. 57 Addendum B - Recommendation 5	CNSC staff recommend that OPG provide verification of assessment results through groundwater and shaft discharge monitoring programs. *Phase: SP&C*	Accepted.
7.	CNSC	13-P1.3	Section 2.8.3, p. 57 Addendum B - Recommendation 6	CNSC staff recommend that OPG include a waste rock monitoring program including mitigation measures to monitor the effects of the waste rock on the environment and confirm the predictions of the EA. *Phase: SP&C*	Accepted. OPG will implement the proposed waste rock monitoring program committed in its response to Information Request EIS-04-160 (DGR Project Consolidated Commitments List: Commitment # IRC-EIS-04.41).
8.	CNSC	13-P1.3	Section 2.9.3, p. 71 Addendum B - Recommen	CNSC staff recommend that OPG collect additional baseline sediment quality data at un-named discharge ditch and MacPherson Bay as part of the EA Follow-up Monitoring Program and include MacPherson Bay water and sediment	Accepted. OPG has submitted sediment data for the un-named ditch and MacPherson Bay to the JRP (CEAA Document #1444) and plans to include sediment monitoring in its follow-up monitoring program.

No.	Government Agency	PMD	Reference	Recommendation	OPG Response
			dation 7	monitoring in the EA Follow-up Monitoring Program during the construction and operation phases of the DGR Project. *Phase: SP&C; O*	
9.	CNSC	13-P1.3	Section 2.9.3, p. 71 Addendum B - Recommendation 8	CNSC staff recommend that OPG provide verification of EA predictions on flow reduction in North Railway Ditch and Stream C through flow monitoring at the North Railway Ditch. *Phase: SP&C*	Accepted. OPG plans to monitor flows in the North Railway Ditch prior to the start of construction and during construction to verify predicted changes to flows to Stream C as part of its follow-up monitoring program.
10	CNSC	13-P1.3	Section 2.9.3, p. 71 Addendum B - Recommendation 9	CNSC staff recommend that OPG provide verification of assessment results for the zone of influence from dewatering during excavation and construction through groundwater and shaft discharge monitoring programs. *Phase: SP&C*	Accepted. OPG has committed that the shallow groundwater network will be monitored during the construction phase. (DGR Project Consolidated Commitments List: Commitment #IRC-EIS-01.06).
11	CNSC	13-P1.3	Section 2.9.3, p. 71 Addendum B - Recommendation 10	CNSC staff recommend that OPG confirm the baseline groundwater, water balance and surface water/groundwater interaction modelling results from groundwater data of the newly installed monitoring wells. *Phase: SP&C*	Accepted. As noted above, OPG has committed that the shallow groundwater network will be monitored during the construction phase.
12	CNSC	13-P1.3	Section 2.9.3, p. 71 Addendum B - Recommendation 11	CNSC staff recommend that OPG confirm that the zone of influence is not predicted to approach wetland features through modelling results as more data become available. *Phase: SP&C*	Not accepted. Instead of modelling, OPG's follow-up monitoring program has provisions to monitor the zone of influence during shaft excavation activities, as well as, on-going monitoring of the North Wetland.
13	CNSC	13-P1.3	Section	CNSC staff recommend that OPG include	Accepted. Refer to response to CNSC

No.	Government Agency	PMD	Reference	Recommendation	OPG Response
			2.9.3, p. 72 Addendum B - Recommendation 12	additional baseline sediment quality data at un-named discharge ditch and MacPherson Bay as part of the EA Follow-up Program (as per CNSC Recommendation #7) and include MacPherson Bay water and sediment quality monitoring during the construction and operations phases of the DGR Project in the ongoing environmental monitoring program. *Phase: SP&C; O*	Recommendation #7 above. Also, OPG's follow-up monitoring program includes surface water quality monitoring in MacPherson Bay.
14	CNSC	13-P1.3	Section 2.9.3, p. 72 Addendum B - Recommendation 13	CNSC staff recommend that OPG confirm the size the Stormwater Management Pond based on an updated PMP before construction begins. *Phase: SP&C*	Not accepted. The Storm Water Management Pond has been designed to meet existing requirements suitable for storm water management ponds, i.e. the pond is designed to retain the 6 hour, 25mm storm event and safely discharge the 100 year storm event based on conservative inputs. The PMP is not a design criteria that is used for storm water management ponds.
15	CNSC	13-P1.3	Section 2.14.3, p. 97 Addendum B - Recommendation 14	CNSC staff recommend that OPG monitor NOx and particulates such as PM10 and PM2.5 as part of the EA Follow-up Monitoring Program to confirm the predictions of the EIS that there are no exceedances during the site preparation and construction phase of the DGR Project. (In CNSC Recommendation #16, CNSC staff also recommend that OPG conduct air monitoring for acrolein to confirm and assess exposure levels.) *Phase: SP&C*	Accepted.
16	CNSC	13-P1.3	Section 2.15.3, p.	CNSC staff recommend that OPG provide CNSC staff with the detailed design of all	Further discussion required. OPG will require additional clarification from

No.	Government Agency	PMD	Reference	Recommendation	OPG Response
			101 Addendum B - Recommendation 15	above-ground and underground structures including adequate seismic loading and seismic analysis for review. *Phase: SP&C*	CNSC staff respecting the design information to be provided pursuant to the licence, if granted.
17	CNSC	13-P1.3	Section 2.17.3, p. 108 Addendum B - Recommendation 16	CNSC staff recommend that air monitoring for acrolein be done during the site preparation, construction and operations phases of the DGR Project at receptors for local residents (AR1, AR2, AR3) and members of Aboriginal communities (AR5) in order to confirm and assess acrolein exposure levels and incremental inhalation risk. *Phase: SP&C; O*	Only at the peak of site preparation and construction activities would the maximum 24-hour acrolein value be high enough to be detectable. On average, the 24-hour values during site preparation and construction would be less than 10% of the concentration required to provide a reading. OPG requires further discussion with CNSC staff respecting the performance of such monitoring during operations.
18	CNSC	13-P1.3	Section 2.18.3, p. 117 Addendum B - Recommendation 17	CNSC staff recommends that OPG monitor the impact the DGR Project has on the socio-economic environment in terms of access to and availability of rental housing, temporary lodging and tourist accommodation. *Phase: All phases*	OPG will review available information respecting rental housing, lodging, and tourist accommodation during the construction period. During operations, the expectation is that OPG staff will take up permanent housing. Therefore OPG does not intend on continuing to monitor rental housing, temporary lodging, or tourist accommodation following the completion of the construction period.
19	CNSC	13-P1.3	Section 2.19.3, p. 126 Addendum	CNSC staff recommend that OPG implement the mitigation measures and contingency plans identified in section 4.4, table 5.3.3-1 and section 5.5 in the Malfunctions, Accidents and Malevolent	The mitigation measures included in the Malfunctions, Accidents and Malevolent Acts TSD are best practices for the types of construction and operational activities of the DGR. These will be

No.	Government Agency	PMD	Reference	Recommendation	OPG Response
			B - Recommendation 18	Acts TSD to ensure that there are no adverse effects on the environment from malfunctions, accidents and malevolent acts. *Phase: All phases*	implemented through the various health, safety and environmental programs for the DGR Project (refer to IR response LPSC-04-66).
20	CNSC	13-P1.3	Section 2.20.3.2, p. 139 Addendum B - Recommendation 19	CNSC staff recommend that OPG develop and conduct a Research and Development program on the longevity of shaft seals that should be conducted during the site preparation and construction phase of the DGR Project. *Phase: SP&C*	Accepted. Lab tests are currently underway. Work is planned for the SP&C phase to conduct tests under in-situ conditions.
21	CNSC	13-P1.3	Section 2.20.3.2, p. 140 Addendum B - Recommendation 20	CNSC staff recommend that an initial review and revision (if required) of the long-term geomechanical model and the safety assessment be carried out at the end of shaft construction before lateral development commences. *Phase: End of construction* *[NOTE: Additional context provided on p.42 PMD 13-P1.3A, Section 5.1.2.2]*	Accepted.
22	CNSC	13-P1.3	Section 2.22, p. 148 Addendum B - Recommendation 21	In PMD 13-P1.2, CNSC staff recommend that a requirement of the LPSC be that OPG have an EA Follow-up Program prior to commencing applicable licensed activities. It is expected that subsequent licences (e.g., operation) under the NSCA would have a similar condition with respect to EA follow-up. *Phase: All phases*	Accepted.
23	CNSC	13-P1.3A	Section 1.2	CNSC staff recommend that these uncertainties be reduced through a	Accepted. OPG has committed to implementation of a Geoscientific

No.	Government Agency	PMD	Reference	Recommendation	OPG Response
				Geoscientific Verification Program to verify safety case assumptions and to support engineering decisions and the DGR Project design.	Verification Program. (DGR Project Consolidated Commitments List: Commitments# EA-075, LIC-112 and IRC-EIS-02.2).
24	Environment Canada (EC)	13-P1.5	Section 3.2, p. 12 Chapter 7 Recommendation 3.1	EC recommends that conclusions about the acid generating potential of the rock be verified as part of a waste rock characterization program which was originally outlined in IR# EIS-04-160 (CEARIS# 759).	Accepted. OPG will implement the waste rock characterization program described in its response to Information Request EIS-04-160.
25	EC	13-P1.5	Section 3.2, p. 13 Chapter 7 Recommendation 3.2	EC recommends that treatment will be required for effluents from the DGR facility in order to meet Section 36(3) of the Fisheries Act, and that OPG revise the SWMP system design accordingly. A precautionary approach should guide the design of the effluent treatment system and the overall SWMP.	The discharge from the Storm Water Management Pond will meet the conditions that will be established in an Environmental Compliance Approval (ECA) from the Ontario Ministry of the Environment. The standards set by the Ontario Ministry ensure protection of the environment.
26	EC	13-P1.5	Section 3.2, p. 14 Chapter 7 Recommendation 3.3	EC recommends that the hydrological modelling be updated at a future point when additional information about leachate geochemistry is available, the various source flow rates can be verified, and an updated design of the SWMP is provided, and that EC be consulted by OPG for advice on precipitation inputs to this modelling.	OPG will monitor effluents in the initial stages of construction to confirm predicted results. Modelling will be updated as necessary based on the results of the monitoring program.
27	EC	13-P1.5	Section 3.2, p. 15 Chapter 7 Recommendation 3.4	EC recommends that a detailed spill response plan for the DGR be developed. The spill response plan should also include an assessment of containment methods, locations and strategies to demonstrate that spill mitigation could be deployed in time to prevent downstream effects.	Accepted. The DGR Project has an established spills response program.

No.	Government Agency	PMD	Reference	Recommendation	OPG Response
28	EC	13-P1.5	Section 3.2, p. 16 Chapter 7 Recommendation 3.5	EC recommends that OPG assess future climate change effects and modify the SWMP pond size accordingly, and that this be incorporated into an adaptive management plan as a component of the Follow-Up Monitoring Program.	As detailed in the response to CNSC's recommendation #13, the Storm Water Management Pond design is based on conservative predicted precipitation. Performance of the Storm Water Management Pond will be monitored. Future climate change impacts can be addressed, should the monitoring results indicate that improvement is necessary. There is sufficient area in the vicinity of the Storm Water Management Pond should it need to be expanded.
29	EC	13-P1.5	Section 3.2, p. 16 Chapter 7 Recommendation 3.6	EC recommends that the final point of control for effluent be where it discharges from the SWMP since dilution from other intersecting ditch networks (i.e. the ditches along Interconnecting Road) would occur further downstream of that point.	The discharge from the Storm Water Management Pond will meet the conditions that will be established in an Environmental Compliance Approval (ECA) from the Ontario Ministry of the Environment. The standards set by the Ontario Ministry ensure protection of the environment.
30	EC	13-P1.5	Section 3.2, p. 17 Chapter 7 Recommendation 3.7	EC recommends that a broad spectrum of parameters (e.g. other metals, phosphate, total petroleum hydrocarbons) be monitored quarterly during the Site Preparation and Construction Phase, and later during the Operations Phase, to ensure that there are no other unanticipated parameters of concern.	The discharge from the Storm Water Management Pond will meet the conditions that will be established in an Environmental Compliance Approval (ECA) from the Ontario Ministry of the Environment. The standards set by the Ontario Ministry ensure protection of the environment.
31	EC	13-P1.5	Section 3.2, p. 18 Chapter 7	EC recommends that any waste rock not be used or disposed outside of the boundaries of the SWMP collection system.	Accepted. All run-off from waste rock on the project site will be collected in the storm water management system.

No.	Government Agency	PMD	Reference	Recommendation	OPG Response
			Recommendation 3.8		
32	EC	13-P1.5	Section 3.2, p. 20 Chapter 7 Recommendation 3.9	EC recommends that full-strength leachate be monitored.	Not accepted. The storm water management system will collect all of the run-off from the waste rock piles as well as other areas on the project site. It will not be practical to monitor the run-off from the waste rock piles. Monitoring locations will be established at several points in the storm water management system to ensure the effluent is meeting the required parameters.
33	EC	13-P1.5	Section 3.2, p. 21 Chapter 7 Recommendation 3.10	EC recommends that a waste rock characterization program be required during shaft and Repository development. Where warranted by the results of the waste rock characterization program and associated shake flask tests, kinetic leach tests may also be required in order to reduce uncertainties regarding waste rock leachate.	Accepted. Refer to Response to EC recommendation #3.1.
34	EC	13-P1.5	Section 3.2, p. 22 Chapter 7 Recommendation 3.11	EC recommends that a Follow-Up and Monitoring Program be developed for effluent discharge quality and downstream effects, in consultation with EC.	The discharge from the Storm Water Management Pond will meet the conditions that will be established in an Environmental Compliance Approval (ECA) from the Ontario Ministry of the Environment. The standards set by the Ontario Ministry ensure protection of the environment.
35	EC	13-P1.5	Section 3.3, p. 23 Chapter 7	EC recommends that OPG provide verification of the overburden stratigraphy at the time when the SWMP system is constructed. If problematic stratigraphy is	Accepted.

No.	Government Agency	PMD	Reference	Recommendation	OPG Response
			Recommendation 3.12	encountered, OPG must assess its potential effect on water levels in the marsh and evaluate and implement mitigation options.	
36	EC	13-P1.5	Section 3.3, p. 25 Chapter 7 Recommendation 3.13	EC recommends that OPG conduct a revised flood hazard assessment based on the final detailed engineering design of the overall DGR Site and infrastructure, including the SWMP system. Considering the DGR Project will operate for at least 40 years, the revised flood hazard assessment should incorporate the potential effect of climate change upon the size of the PMP event. A rigorous sensitivity analysis should also be performed. The shaft collar heights should be increased to an appropriate elevation based on this revised flood hazard assessment.	Accepted. OPG has committed to revise the flood hazard assessment. (DGR Project Consolidated Commitments List: Commitment# IRC-EIS-04.32).
37	EC	13-P1.5	Section 3.3, p. 25 Chapter 7 Recommendation 3.14	In addition to Recommendation #3.12, EC recommends that the following elements be included in a FUMP designed to verify that the Project will not reduce water levels within the marsh (Wetland 4): 1) Monthly monitoring of water levels in the marsh (Wetland 4) should commence prior to the Site Preparation and Construction Phase in order to establish a baseline. This program can be discontinued three years after construction of the SWMP system has been completed if there is no evidence of a water level reduction attributable to the Project (this may require a hydrological analysis of precipitation inputs to confirm that any reductions are attributable to variations in precipitation).	1) Accepted. (DGR Project Consolidated Commitments List: Commitment# EA-192). 2) Not accepted. Groundwater inflow rates would be very difficult to isolate from process water. Groundwater levels will be monitored as part of the environmental monitoring program.

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				2) Groundwater inflow rates into the shafts and Repository should be reported during the Site Preparation and Construction Phase, and Operations Phase to verify the assumptions that support the effects conclusions.	
38	EC	13-P1.5	Section 3.3, p. 26 Chapter 7 Recommendation 3.15	EC recommends that an appropriate frequency of flow monitoring in the North Railway Ditch be developed in consultation with EC.	OPG's EA Follow-up Monitoring Program includes monitoring of flow in the North Railway Ditch.
39	EC	13-P1.5	Section 4.1, p. 31 Chapter 7 Recommendation 4.1	EC recommends that a Follow-Up and Monitoring Program for air emissions be designed in consultation with EC and other relevant regulatory departments/agencies.	OPG will meet the conditions that will be established in an Environmental Compliance Approval (ECA) from the Ontario Ministry of the Environment. The standards set by the Ontario Ministry ensure protection of the environment.
40	EC	13-P1.5	Section 4.1, p. 31 Chapter 7 Recommendation 4.2	EC recommends that OPG finalize and submit their best management practices for air emissions for review by EC and other relevant regulatory agencies prior to commencing work for the Site Preparation and Construction Phase.	OPG will meet the conditions that will be established in an Environmental Compliance Approval (ECA) from the Ontario Ministry of the Environment. The standards set by the Ontario Ministry ensure protection of the environment.
41	EC	13-P1.5	Section 4.2, p. 34 Chapter 7 Recommendation 4.3	EC recommends that radon be included in the ventilation exhaust monitoring to verify the low levels of radon that have been predicted.	Accepted. OPG has committed to monitoring for radon (DGR Project Consolidated Commitments List: commitments# EA-241 and LIC-048).
42	EC	13-P1.5	Section 4.3,	EC recommends that OPG review the	Not accepted. The meteorological

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			p. 36 Chapter 7 Recommendation 4.4	meteorological observation program at the Bruce Nuclear Station, to ensure adherence to appropriate siting and maintenance standards and guidelines, such as: 1) Environment Canada's Guidelines for Co-operative Climatological Autostations 2) World Meteorological Organization Guide to Meteorological Instruments and Methods of Observation (WMO-No. 8, 2012) http://library.wmo.int/opac/index.php?lvl=notice_display&id=12407 3) Campbell Scientific's Weather Station Siting and Installation Tools (1997) http://www.campbellsci.com/documents/technical-papers/siting.pdf (basic siting and installation).	observation station at the Bruce nuclear site is operated and maintained by Bruce Power.
43	EC	13-P1.5	Section 4.3, p. 36 Chapter 7 Recommendation 4.5	EC recommends that the thermometers at the Bruce Nuclear site be situated inside a WMO standard screen, which should be mounted at a height consistent with the WMO and EC guidelines (1.25 m to 2 m).	Not accepted. The thermometers are operated and maintained by Bruce Power.
44	EC	13-P1.5	Section 5.2, p. 39 Chapter 7 Recommendation 5.1	EC recommends that it be consulted by OPG during the development of the detailed re-vegetation plan.	Revegetation plans will be developed in association with an application to the CNSC for a decommissioning licence.
45	EC	13-P1.5	Section 5.2, p. 40 Chapter 7 Recommen	EC recommends that the proponent avoid engaging in potentially destructive or disruptive activities to migratory birds. In order to achieve that, the proponent is advised to develop and implement a	Accepted. OPG has committed to mitigation measures in accordance with the Migratory Birds Convention Act. (DGR Project Consolidated Commitments List: Commitments# EA-

No.	Government Agency	PMD	Reference	Recommendation	OPG Response
			dation 5.2	management plan that effectively avoids or minimizes the risk of detrimental effects to migratory birds, their nests and eggs.	269 and IRC-EIS-01.14).
46	EC	13-P1.5	Section 5.3, p. 42 Chapter 7 Recommendation 5.3	EC recommends that the infilling of “Wetland 3” should be delayed until the latter years of the site preparation and construction phase, if possible.	If site preparation occurs during spring or fall the site, described as “Wetland 3” will be assessed prior to infilling and amphibian/reptile species moved in consultation with Ontario Ministry of Natural Resources and Environment Canada, as appropriate. It will not be possible to delay in-filling of “Wetland 3” past site-preparation.
47	EC	13-P1.5	Section 5.3, p. 42 Chapter 7 Recommendation 5.4	EC recommends that the proponent implement appropriate mitigation measures to maintain water levels in the western ‘finger” of the marsh (Wetland 4) during and after the re-routing of the drainage ditch to ensure that habitat for Snapping Turtle is not affected.	“Wetland 4” (the northeast marsh) water level is controlled by a natural weir, and the western "finger" is only present when water levels are above the natural weirs. OPG will not impact water levels in Wetland 4, and mitigation measures are not required.
48	EC	13-P1.5	Section 5.4, p. 45 Chapter 7 Recommendation 5.5	EC recommends that, as a precaution, during the year prior to and during the years of site preparation and construction, and prior to finally infilling “Wetland 3” in early to mid-May, a qualified biologist (experienced in turtle surveys) conduct a minimum of three turtle surveys of “Wetland 3” on sunny days, beginning as soon as the ice cover has melted off (typically from the middle to the end of April). The first two surveys should occur shortly after ice-off and the third should occur no later than mid-June. Snapping Turtles and non-SAR turtles (e.g., Painted Turtle) located in “Wetland 3” are to be	If site preparation is planned to begin in the fall, a qualified biologist will be engaged to conduct a minimum of three turtle surveys in "Wetland 3" in the preceding spring. If site preparation is planned to begin in spring, turtle surveys will be conducted in advance of the start of site preparation activities. Any turtles found will be relocated to "Wetland 4" (northeast marsh).

No.	Government Agency	PMD	Reference	Recommendation	OPG Response
				relocated to Wetland 4.	
49 50	EC	13-P1.5	Section 5.4, p. 46 Chapter 7 Recommendation 5.6	EC recommends that efforts be made to trap and relocate Snapping Turtles to Wetland 4 if they are found in "Wetland 3” prior to its infilling. EC further recommends that a detailed relocation/handling plan be prepared by the proponent and be reviewed by EC and OMNR to ensure that the proponent is dealing with Snapping Turtles in an acceptable manner. The following are some items that should be included in such a plan: 1) The setting of the traps and the relocation of the Snapping Turtles must be conducted by qualified biologists. 2) The turtle traps are to be set using appropriate protocols (including details described above) regarding timing and leaving a portion of the trap well above water level (taking into consideration flooding due to storm events) to allow breathing room for the species. 3) The locations where the Snapping Turtles will be released must be clearly identified. 4) The timing of turtle capture/relocation activities must be specified	Accepted.
51	EC	13-P1.5	Section 5.4, p. 47 Chapter 7 Recommen	EC recommends that the proponent seek input and advice from OMNR to ensure site preparation and construction activities do not disrupt hibernation and gestation sites of Eastern Ribbonsnake and Eastern	Accepted.

No.	Government Agency	PMD	Reference	Recommendation	OPG Response
			dation 5.7	Milksnake and, in particular, if an individual of these species, snake eggs (Eastern Milksnake) or hibernacula are found.	
52	EC	13-P1.5	Section 5.4, p. 47 Chapter 7 Recommendation 5.8	EC recommends that mitigation (i.e., appropriately designed, located and installed exclusion fencing) be in place to prevent turtles and snakes from entering the DGR site prior to and during site preparation and construction. More specifically, EC recommends that exclusion fencing be in place along the southern edge of the DGR site (north of the adjacent abandoned rail bed, from the southeast corner of the DGR Site to a point 50 m east of the Waste Package Haul Road Rail Bed Crossing) and the full length of the eastern edge of the DGR site (as far north as Interconnecting Road) to prevent turtles from entering the DGR Site, and in particular, "Wetland 3", prior to and during site preparation and construction.	OPG will install exclusion fencing at the recommended perimeter locations of the DGR site. As mentioned above, "Wetland 3" will be infilled during site preparation; no exclusion fencing will be provided or needed for it.
53	EC	13-P1.5	Chapter 6, p.49 Chapter 7 Recommendation 6.1	EC recommends that the need for a non-radiological ERA be re-evaluated based on effluent and downstream sediment monitoring data (see Section 3.2 for EC recommendations regarding the FUMP for effluent).	The discharge from the Storm Water Management Pond will meet the conditions that will be established in an Environmental Compliance Approval (ECA) from the Ontario Ministry of the Environment. The standards set by the Ontario Ministry ensure protection of the environment.
54	EC	13-P1.5	Chapter 6, p. 51 Chapter 7 Recommen	EC recommends that Radiological contaminants (i.e. tritium and gross beta) in precipitation be included in the initial scope of the FUMP.	Not accepted. The existing Bruce nuclear site Radiological Environmental Monitoring Program includes monthly wet and dry fallout at 10 locations on and around the Bruce nuclear site. Any radiological emissions from the DGR

No.	Government Agency	PMD	Reference	Recommendation	OPG Response
			dation 6.2		will be captured in the existing monitoring program.
55	Ont. Ministry of Natural Resources (MNR)	13-P1.6	Section 1, p. 3-4	The drill cores acquired by these wells provided samples for study, testing and analysis by the research team at NWMO and their contractors and are presently stored temporarily at the Bruce Nuclear site near the proposed DGR. Provincial Standards under the Oil, Gas and Salt Resources Act presently require that the core be delivered to the Oil, Gas and Salt Resources Library in London when the Deep Geological Repository commences operations (anticipated in 2019). The Library does not have sufficient capacity to house all the drill cores, as the volume of the cores is unprecedented in Ontario (there is approximately 5 km of cores). It is MNR's opinion that it is in the public interest to preserve, for future use, the geologic data that the drill cores represent. Because the Library will not have sufficient capacity, we would like to request that OPG, the Canadian Nuclear Safety Commission, and the Joint Review Panel consider an alternative long-term storage option, possibly on the OPG site.	Accepted. OPG will have further discussion with MNR on this subject. A 2012 agreement exists with the Ontario Ministry of Natural Resources to maintain the DGR-series borehole core (DGR1 to DGR-8) at the Bruce nuclear site Core Storage Facility up to 2019.
56	Saugeen Valley Conservation Authority (SVCA)	13-P1.8	p. 4, Item 1	The SVCA is assuming that as the DGR project proceeds further through the approval process, the engineering design, including final grades and stormwater drainage, will be further refined. The SVCA recommends that at the detailed design stage for the DGR site potential surface flooding should continue to be addressed,	Accepted. See EC Recommendation #3.13.

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				such that flooding will not enter any of the critical features. The Authority expects that this issue can be addressed by OPG establishing appropriate finished ground elevations and stormwater infrastructure, as recommended in the Maximum Flood Hazard Assessment report.	
57	SVCA	13-P1.8	p. 4, Item 2	As OPG is a Crown corporation it is exempt from SVCA's Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 169/06, as amended). The Environmental Impact Statement (page 12-9) states that it has been the past practice of OPG to proceed through the permitting process. Further, the EIS mentions the construction of the crossing of the South Railway Ditch may require permission from the SVCA. If OPG is agreeable, the SVCA recommends that the DGR project proceed through the Authority's permitting process for any works at or near the South Railway Ditch.	Accepted. This is a common practice for OPG as recently demonstrated in the construction of used fuel dry storage buildings 3 and 4.
58	SVCA	13-P1.8	p. 4, Item 3	The Authority recommends that it participate in the future review of the stormwater management plan as the site design progresses. For the DGR project there is no automatic mechanism available that requires the SVCA to be a review and approval agency for the stormwater plan. The SVCA is requesting that the panel include such a requirement in its report recommendations.	Accepted.

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59	Natural Resources Canada (NRCan)	13-P1.10	Section 2.2.3, p. 10 Section 3, p. 21	NRCan recommends that the proponent be required to continue to collect baseline data on shallow groundwater flows prior to and during construction in order to refine the groundwater model.	Accepted. A shallow groundwater monitoring program was implemented at the DGR Project site in Fall 2012. This is a routine groundwater monitoring program conducted on a quarterly basis with results being reviewed and reported annually. It will be used to establish baseline groundwater conditions. If a DGR site preparation and construction license is granted the DGR project Area groundwater monitoring program would be continued through this phase of DGR development.
60	NRCan	13-P1.10	Section 2.2.3, p. 10 Section 3, p. 21	NRCan recommends that the proponent be required to confirm that grouting will be required to stem groundwater inflows from the upper 20 m of the Bass Islands Formation, and to develop mitigation measures accordingly, as appropriate. *[NOTE: The above recommendation is also on page 21 (Sec.3) with a slightly different wording: "NRCan recommends that the proponent be required to confirm that grouting will be required to stem groundwater inflows from the upper 20 m of the Bass Islands Formation, and based on the result develop mitigation measures (grout) to stem groundwater inflows."]*	Accepted. OPG has committed to confirm the grouting and to develop mitigation measures accordingly (DGR Project Consolidated Commitments List: Commitment# IRC-EIS-01.03).
61	NRCan	13-P1.10	Section 2.3.3, p. 13 Section 3,	Extra conservatism on the mean shaking levels should be considered during detailed design because of the low maximum magnitudes adopted and because of the	Further discussion required. The current seismic design of the DGR surface buildings and structures conforms to NBCC 2010 (IR#LPSC-01-

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			p. 21	kernel smoothing approach in the PHSA.	03). For underground structures, such as shafts, emplacement rooms and other tunnels, seismic loading from a 1/2500 p.a. event as in the NBCC (2010) was considered (LPSC-01-05a). Also, conservative loading developed from a beyond-design basis 1/100,000 p.a. seismic event was also used to examine selected critical shaft sections to ensure the serviceability of structure.
62	NRCan	13-P1.10	Section 2.3.3, p. 13 Section 3, p. 21	Detailed design considerations should consider mitigation strategies or plans for conditions of "beyond-design" ground motions.	Accepted. The current design considers beyond design basis ground motions and has included mitigation strategies accordingly.
63	NRCan	13-P1.10	Section 2.5.3, p. 17 Section 3, p. 21	NRCan recommends that the panel consider what additional mitigation measures or institutional controls might be put in place to ensure restricted access to the DGR site for the long-term.	OPG will be recommending, as part of the application for a decommissioning licence, appropriate mitigation measures and institutional controls to minimize the likelihood of inadvertent intrusion into the repository.
64	NRCan	13-P1.10	Section 2.7.3, p. 20 Section 3, p. 21	NRCan recommends that the proponent be required to continue to refine the results of the geochemical characterization program prior to and during the development phase of the DGR. This could include conducting additional shake flask tests, kinetic tests and field cell tests on the excavated material.	Accepted. OPG will implement the waste rock characterization program described in its response to Information Request EIS-04-160.
65	Department of Fisheries and Oceans	13-P1.11	p. 5	The North Railway ditch is dry most of the year and does not contain fish. The South railway ditch contains warmwater baitfish that are resilient to environmental alterations.	Accepted. OPG has committed to implement the described mitigation measures when installing the culverts. (DGR Project Consolidated Commitments List: Commitments# EA-

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				A culvert crossing of these ditches is proposed in order to create access to the construction site from its south side. Impacts to the local fish community from this work can be avoided and mitigated by implementing measures proposed by the proponent during construction of these crossings. These measures include embedding culverts below the bed of the ditch, isolating and dewatering the culvert site during construction, doing construction when in-water work timing restrictions are not in place (construction should occur during July 1 to September 30th), re-vegetating the banks upon completion of construction, and having sediment and erosion control measures in place during construction. By undertaking the installation of these culvert crossings in this manner, impacts to fish and fish habitat are not anticipated. DFO recommends that the above mitigation measures be implemented during the construction of these culvert crossings.	118, EA-119 and EA-120).