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NUCLEAR WASTE MANAGEMENT ORGANIZATION
SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

Preliminary Assessment of Potential Suitability – Feasibility Studies

STEP 3

DRAFT FOR DISCUSSION WITH COMMUNITIES INVOLVED IN THE SITE SELECTION PROCESS

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Draft for Discussion With Communities Involved in the Site Selection Process

STEP 3

NOVEMBER 2011

The NWMO is committed to working with communities to implement Adaptive Phased Management. This document outlines a draft approach to working with communities to conduct preliminary assessments as part of Step 3 of the site selection process. This document is designed as a starting point for discussions with communities involved in the site selection process and will be refined to reflect these discussions.

The Next Step in the Site Selection Process

The Government of Canada selected Canada's plan for the long-term management of used nuclear fuel in June 2007. The plan, called Adaptive Phased Management (APM), involves the development of a large national infrastructure project in an informed and willing host community. The project involves the containment and isolation of used nuclear fuel in a deep geological repository in a suitable rock formation, and the development of a Centre of Expertise and transportation plan.

Canada is moving forward with a multi-year process for the selection of an informed and willing community to host the project. Led by the NWMO, the site selection process is designed to ensure that the site that is selected is safe and secure, and meets the highest scientific, professional and ethical standards. The site selection process is laid out in the NWMO's document: *"Moving Forward Together: Process for Selecting a Site for Canada's Deep Geological Repository for Used Nuclear Fuel, May 2010."*

A number of communities have come forward identifying an interest in learning more about the NWMO siting process and about potentially hosting the project through participation in Step 3 of the site selection process. This document is designed to assist these communities, and interested individuals and organizations, to understand what feasibility studies involve and how these studies will be used to assess the suitability of communities and associated sites for Canada's long-term used fuel management facility. The NWMO will be ready to begin feasibility studies in early 2012, subject to the interest and preferences of communities that choose to continue to participate in the process.

What Is the Purpose of a Feasibility Study?

A feasibility study is designed to assess, in a preliminary way, the suitability of a community and associated site(s) to host the project. These studies are an opportunity for both the community and the NWMO to explore four key questions that will be important in assessing the suitability of communities for this project.

Key Question	Approach	Considerations
Safety, security and protection of people and the environment are central to the siting process. ***Is there the potential to find a safe site?***	This question will be explored through further work to examine the suitability of the geology in the area and to identify specific potentially suitable siting areas, using the sites evaluation factors described later in this document (page 8).	The existence of potentially suitable siting areas must be demonstrated through technical studies conducted by consultants who are experts in the field hired by the NWMO. » One or more potentially suitable siting areas must be acceptable to the community, as represented by accountable authorities, as the focus of any future work.
The project will be implemented in a way that will foster the long-term well-being of the community. ***Is there the potential to foster the well-being of the community through the implementation of the project, and what might need to be put in place (e.g. infrastructure, resources, planning initiatives) to ensure this outcome?***	This question will be explored through further work to understand the community's vision for its long-term sustainability and well-being, the current conditions in the community, and opportunities for the community to benefit from the project. Evaluation factors described later in this document (page 9) will be used as the basis for discussion. Any social and economic pressures that will need to be carefully managed will also be identified.	» The potential to foster the well-being of the community must be shown to the satisfaction of the community, as represented by accountable authorities, and the NWMO. » The investment required to ensure this outcome must be reasonable as determined by the NWMO.

At a later step in the process, the community must demonstrate it is informed and willing to host the project. ***Is there the potential for citizens in the community to continue to be interested in exploring this project through subsequent steps in the site selection process?***	This question will be explored together with the accountable authorities in the community through organizing open houses, community meetings and conversations with people in the community.	» The potential for sustained interest among citizens in the community must be shown to the satisfaction of the community, as represented by accountable authorities, and the NWMO.
The project will be implemented in a way that will foster the long-term well-being of the surrounding area. ***Is there the potential to foster the well-being of the surrounding area and to establish the foundation to move forward with the project?***	This question will be explored together with the accountable authorities in the community through one-on-one meetings with accountable authorities, opinion leaders and Aboriginal communities in the area, as well as through workshops.	» The potential for sustained interest in the project in the surrounding area must be shown to the satisfaction of the community, as represented by accountable authorities, and the NWMO.

Work will be conducted in **two phases** with the opportunity for stock-taking by both the community and the NWMO at the end of each phase.

Some communities with relatively low potential to be suitable for the project may be screened out of the process at the end of the first phase of work.

By the end of the second phase of work, one or two of the communities may be selected for the next step of the site selection process: detailed studies over a five-year period (Step 4). The communities selected for Step 4 detailed evaluations will be those that hold the most potential for successful implementation of the project based on the work to explore the four key questions described above.

How Do Communities Request a Feasibility Study?

In order for a community to be eligible for feasibility studies, the community must have successfully undergone an initial screening by the NWMO (as part of Step 2 in the site selection process). Communities meeting the initial screening criteria and that have decided they wish to proceed to Step 3 and feasibility studies must formally notify the NWMO providing a copy of council resolution. Communities that engage in feasibility studies are not obliged to participate in subsequent steps of the site selection process.

Feasibility studies are designed to be implemented through a partnership involving the interested community and the NWMO. In order to proceed to feasibility studies, and to continue in the process once initiated, accountable authorities must show:

- A continued interest in learning more about the project;
- A willingness to engage community members in the learning process;
- A willingness to work with surrounding communities and Aboriginal peoples to learn about and explore the project; and
- A willingness to participate with integrity, transparency and accountability throughout all activities associated with participation in the process.

Sample Resolution

BE IT RESOLVED THAT ***(name of community)*** does hereby express interest and desire to continue to learn more about Adaptive Phased Management, and to proceed to the initial phase of the Feasibility Study step of the site selection process, known as Step 3, including preliminary discussions with the NWMO.

How Is a Feasibility Study Undertaken?

Feasibility studies will involve a range of activities, some of which will be completed by expert consultants. The work to assess the potential for safety is an example of work that expert consultants hired by the NWMO would lead. Other activities are designed to be completed in partnership with the community; for instance, exploring the potential for the project to be implemented in a way that contributes to the long-term well-being of the community is an example. Throughout, the NWMO will help community leaders engage residents of the community in the work as well as reach out to accountable authorities and others in the surrounding area and region. A strong partnership between the NWMO and the community will be required.

Work will be conducted in two phases with the opportunity for stock-taking by both the community and the NWMO at the end of each phase.

Activities – Phase One

Activities in the first phase of the feasibility study:

- Are expected to take a year or more to complete
- Will focus on desktop studies and engagement of the community
- Begin formal engagement with surrounding communities
- Build on earlier work completed as part of the site selection process.

Key Phase One activities include the following, many of which will be completed in parallel.

1 **Agreement is made between the NWMO and the accountable authorities in the community on how the work will proceed.**	Feasibility studies will require the NWMO and the community to work in close partnership to foster learning about the project and to ensure questions and concerns are addressed throughout. The NWMO and accountable authorities in the community will come to agreement on how the first phase of work will proceed. This will include identifying: the work activities that will take place; how the NWMO and community will work together to involve citizens, surrounding communities and Aboriginal peoples; and the support (funding and resources) that will be provided to the community to participate as a partner in this work. In order to ensure fairness and consistency, a single template will be used for this agreement with all communities. Engagement of the community and its citizens, led by accountable authorities and supported by the NWMO, will be an important activity throughout all stages of work.
2 **Scientific and technical studies are conducted to further explore the potential suitability of the geology in the area and to identify potentially suitable smaller siting areas. This involves desktop studies by the NWMO.**	NWMO staff, supported by contractors, will conduct a detailed desktop technical and scientific review of available information to further refine the findings from the initial screening which identified large areas that are potentially suitable for safely hosting a deep geological repository. Through the application of additional site evaluation factors (described on page 8), smaller potentially suitable siting areas will be identified. This work will include detailed review and interpretation of the geoscientific characteristics of the candidate area complemented by specific studies such as lineaments analysis (faults and fractures), reinterpretation of existing geophysical surveys and non-intrusive field observations and verifications (without field

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		testing such as drilling of boreholes). The study will also consider constraints that may be used to refine the siting areas (e.g. protected areas, large water bodies, Aboriginal burial grounds, location of infrastructure, etc.). In addition to scientific and technical studies to further explore the suitability of geology in the area, the NWMO will conduct studies to examine engineering, transportation, and environment and safety considerations.
3	**The potential effects of the project on the long-term well-being of the community are further explored through desktop studies and engagement of community residents. The NWMO and accountable authorities work together to complete this work.**	NWMO staff, supported by contractors who are experts in the field, will work with accountable authorities in the community to assemble information about the environmental, social, economic and cultural conditions of the community, as well as objectives, issues and concerns. This information will help provide a foundation for discussion with the community to explore the potential effects of the project on the community. This information will also assist in initial identification of plans that may need to be put in place to implement the project in a way that fosters the well-being of the community.
4	**Accountable authorities in the surrounding area, including Aboriginal communities, are engaged to identify questions and concerns which will need to be addressed. The NWMO and accountable authorities work together in this engagement.**	NWMO staff and accountable authorities in the community, supported by contractors who are experts in the field, will engage accountable authorities in surrounding communities to learn about the project, to explore opportunities and issues associated with the project, and understand and begin to address questions and concerns at the broader regional level. The NWMO and the community will seek to engage accountable authorities and others within the surrounding area in individual briefings and meetings, and later workshops or group discussions.
5	**The NWMO and the community take stock of work to date and findings about the potential suitability of the community.**	Information collected during the activities outlined above will be summarized for each community in order to assist in stock-taking. Some communities with relatively low potential to be suitable for the project may be screened out of the process at this point.

Activities – Phase Two

Activities in the second phase of the feasibility study:

- Are expected to take a year or more to complete
- Will focus on field studies in the community
- Expand regional engagement with launch of a regional study
- Build on work completed during Phase One of the feasibility study.

Key Phase Two activities include the following, many of which will be completed in parallel:

1 **The NWMO and the community confirm the plan for field studies and more formal community and regional engagement.**	Before entering the second phase of feasibility studies, the NWMO and accountable authorities in the community will come to agreement on: the plan for field studies; the plan for the broadening of engagement both within the community and in the region; how third-party review will be conducted; and the support (funding and resources) that will be provided to the community to participate as a partner in this work.
2 **Conduct limited field studies to further assess potential suitability of identified siting areas.**	For a subset of communities, NWMO staff, supported by contractors who are experts in the field, will conduct limited field investigations to refine the location and further assess potential suitability of identified siting areas. These field investigations may involve airborne geophysical surveys, field mapping, as well as drilling of a limited number of boreholes.
3 **Conduct further study of the potential effects of the project on the long-term well-being of the community through the collection of primary source Community Well-Being information.**	NWMO staff, supported by contractors who are experts in the field, will work with accountable authorities in the community to assemble additional information that may be needed about the environmental, social, economic and cultural conditions of the community, objectives, issues and concerns, and to further explore the potential effects of the project on the long-term well-being of the community. Depending on the availability of existing information about these communities and siting areas, original or primary source data may be collected; for instance, through a community survey of residents, interviews with local organizations, and/or market studies. These studies would be conducted by NWMO staff, supported by contractors who are experts in the field, working together with the community.
4 **Engage citizens in the community to help refine the list of potentially suitable siting areas and explore any questions related to securing rights to the land.**	NWMO staff, supported by contractors who are experts in the field, will work with accountable authorities in the community to engage its citizens in review of the potentially suitable siting areas that have been identified and in discussion about which, if any, of these should be the focus of further study. Work will also include identifying and exploring any questions related to securing rights to the land.

5 **Further engage surrounding area and region, including Aboriginal communities, to explore and assess potential effects on the well-being of the broader region as well as potential interest in the project through conducting a Regional Study.**	NWMO staff, supported by contractors who are experts in the field, will work with accountable authorities in the community to expand outreach to regional authorities and Aboriginal peoples, and convene a Regional Advisory Group to help assess the project's benefits as well as effects to be managed as part of a formal regional study. Resources (funding and expertise) will be provided to potentially affected surrounding communities and Aboriginal peoples to support their participation.
6 **Third-party review of potential suitability of geology in the siting area(s) to ensure safety and potential to foster community well-being.**	A review group will be formed in collaboration with the communities participating in feasibility studies to review findings related to two key questions: Is there the potential to find a safe site, and what is the future work required to confirm this safety?; Is there the potential to foster the well-being of the community, and what might need to be put in place to ensure this outcome?
7 **Take stock of potential suitability of the community and siting area.**	Information collected during the activities outlined above will be summarized for each community in order to assist in stock-taking. The NWMO and community will discuss the findings from this work and the conclusions that are made to ensure they reflect the findings from the feasibility studies, the results of engagement activities, and the perspectives of the community.
8 **Identify which communities and associated sites are eligible to proceed to Step 4 for Detailed Evaluations and document findings.**	The NWMO will review the findings from the feasibility studies in individual communities in order to identify which one or two communities/siting areas hold the greatest potential to be suitable for hosting the project and should be the focus of investigation in subsequent steps of the process if the community is willing. The results of this review will be shared with the communities involved in the process before being published on the NWMO website in order to ensure that questions and concerns have first been addressed. The decision-making process, together with the findings from feasibility studies, will be documented in reports provided to the communities and made available on the NWMO website.

What Questions Will Scientific and Technical Studies Address?

Any site that is selected to host the project must be able to safely contain and isolate used nuclear fuel for a very long period of time. The preferred site will be in a rock formation with desirable characteristics (geological, hydrogeological, chemical and mechanical) that support containment and repository performance to meet or exceed the regulatory expectations of the Canadian Nuclear Safety Commission, the guidance of the International Atomic Energy Agency and experience in other countries with nuclear waste management programs.

Scientific and technical evaluation factors, as outlined in *Moving Forward Together: Process for Selecting a Site for Canada's Deep Geological Repository for Used Nuclear Fuel*, will be used to address the following questions related to safety:

- Are the characteristics of the rock at the site appropriate to ensuring the long-term containment and isolation of used nuclear fuel from humans, the environment and surface disturbances caused by human activities and natural events?
- Is the rock formation at the site geologically stable and likely to remain stable over the very long term in a manner that will ensure the repository will not be substantially affected by geological and climate change processes such as earthquakes and glacial cycles?
- Are conditions at the site suitable for the safe construction, operation and closure of the repository?
- Is human intrusion at the site unlikely; for instance, through future exploration or mining?
- Can the geologic conditions at the site be practically studied and described on dimensions that are important for demonstrating long-term safety?
- Can a transportation route be identified or developed for the safe and secure transportation of used nuclear fuel to the site from the locations at which it is stored?

These factors will be assessed in increasingly greater detail through the sequence of Phase One desktop study, Phase Two field studies, and eventual detailed site characterization in a later step in the site selection process (Step 4).

In order for a community and associated siting area(s) to be considered for subsequent steps in the site selection process:

- The feasibility study findings must show identified siting areas have the potential to satisfy the safety functions identified above. If feasibility studies suggest that the siting area(s) identified is unlikely to be safe, the NWMO will end its study of that siting area.

What Questions Will Community Well-Being Studies Address?

Beyond ensuring safety, the NWMO's commitment to any host community and region is that its long-term well-being or quality of life will be fostered through participation in this project. Studies will be conducted to explore whether there is the potential for the project to contribute to the well-being of the community and region.

Community well-being evaluation factors, as outlined in *Moving Forward Together: Process for Selecting a Site for Canada's Deep Geological Repository for Used Nuclear Fuel*, will be used to address questions such as the following:

- What is the community's capacity to host the project (e.g. decision-making processes, infrastructure, labour), or to develop the capacity to host the project with the assistance of the NWMO?
- How does the project align with the objectives and/or vision the community has for itself (its values; its sensitivities and concerns), and how is the community expected to benefit from the project both in the near term and over the long term?
- Can the well-being of the community be enhanced if selected to host the project?
- Are there likely to be social and economic pressures that will need to be managed? Can these pressures be successfully managed?

As the NWMO and communities begin to look at the potential effects of the project on the broader region in a preliminary way, evaluation factors will be used to help address the following questions:

- Can the project help foster the well-being of surrounding communities and region? Is the project able to promote the local and regional economy and employment in a manner that is sensitive to the needs and preferences of surrounding communities and region?
- Can the project help foster the well-being of surrounding Aboriginal communities? Is the project able to promote the local and regional economy and employment in a manner that is sensitive to the needs and preferences of these communities?
- Can the project be implemented in a way to avoid or minimize negative effects associated with the transportation of used nuclear fuel from existing storage facilities to the community/siting area?
- Is there potential to establish a foundation to move forward with the project in this broader area?
- Can the questions and concerns of communities on the transportation route as a large group with a shared interest be addressed?

In order for a community and associated siting area(s) to be considered for subsequent steps in the site selection process:

- The feasibility study findings must show there is the potential for a net positive benefit to both the community and to the surrounding area.

  The total resources required to support the implementation of the project at the site and the well-being of the community and surrounding area will also be considered and must be assessed by the NWMO to be economically feasible.

What Is the Focus of the Regional Study?

A formal regional study will be initiated as one of the Phase Two feasibility study activities. The regional study will help provide information to the NWMO, the potential host community and those in the surrounding area that can be used to assess if there are regional issues that contribute to understanding the suitability of siting the project in the potential host community. The study will provide information that can be used to determine the effects, both positive and negative, and their implications. The study will consider how the project might contribute to the well-being of the region and what effects management measures would be needed in order for the project to proceed.

The regional study will be conducted together with accountable authorities and opinion leaders in the area. This engagement will begin with outreach to individuals and organizations within the region through individual briefings and meetings, and may later include workshops, and the identification and development of regional networks. Engagement in the broader region that would be affected by the project will be expanded during the formal regional study, to the formation of a Regional Advisory Group to help guide this study, in addition to broad-based engagement and outreach activities. The NWMO will work with the community to involve Aboriginal peoples in the area in a manner that is respectful of their Traditional Knowledge and practices. Resources (funding and expertise) will be provided to communities and Aboriginal peoples in the surrounding area to support their participation.

What Is the Role of Traditional Knowledge in the Assessment?

Traditional Knowledge will play an important role in the assessment. Aboriginal peoples have a special relationship with the natural environment and have unique stewardship responsibilities that are part of this relationship. The knowledge that comes from this relationship with the land brings special understanding to the broad range of factors that should be considered, and the processes that should be used, in assessing benefits and effects to be managed. It also includes knowledge about developing and maintaining effective and meaningful relationships between generations and within and between communities.

The NWMO will look to Aboriginal communities in the area surrounding interested communities to work together in applying Traditional Knowledge to the site selection process. Work designed to help plan for the respectful inclusion of Traditional Knowledge in the planning and assessment of the suitability of a site will be important. The NWMO will seek to discuss with and provide support to affected Aboriginal communities for research and exploration of the interweaving of Aboriginal Traditional Knowledge with the assessment process.

Resources to Support Participation

Communities requesting feasibility studies are eligible to receive resources (funding and expertise) from the NWMO for capacity building and engagement to enable the community to learn about the project, reflect on its interest, encourage local discussion and debate, and engage with the NWMO throughout feasibility studies.

Program Components for Potential Host Communities Involved in Feasibility Studies – 2012 Program

Component	Description	Funding
Administrative expenses associated with Learning More	Funding to community for administrative expenses associated with coordinating community activities to Learn More. Upon request, resources will be made available to communities for expenses incurred over a 12-month period through participating in Phase 1 of feasibility studies. This may include costs associated with a community working group, advertising (e.g., events and newsletters), and professional fees or part-time staff resource support. This may include funding to community to cover expenses of municipal staff associated with communications among staff and Council, payroll, accounts payable, tracking receipts, phone, fax, email, etc. related to the NWMO process and travel expenses for meetings with surrounding communities or region. An accounting must be kept of activities and money spent, suitable for third-party audit.	Up to $75,000
Community planning	Funding to community to develop and/or augment an existing long-term vision for community sustainability, integrated community sustainability plan and/or strategic plan in order to support their further consideration of the project.	Up to $40,000
Independent advice	Funding to community for third-party review, hiring a consultant, studies and provision of expert advice to the community	Up to $40,000
Other activities	Funding to cover costs associated with other activities will be considered upon request and then made available to all communities participating in Step 3 of the site selection process.	

A similar program will be developed to support communities participating in Phase 2 of feasibility studies. During feasibility studies, limited funding will also be available to responsible authorities in the area surrounding each of these communities to participate in feasibility studies. This includes potentially affected surrounding communities and Aboriginal communities.

Learn More About Feasibility Studies

To learn more about the site selection process, see *Moving Forward Together: Process for Selecting a Site for Canada's Deep Geological Repository for Used Nuclear Fuel*. For more information about feasibility studies, please contact:

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