

7 SUMMARY AND CONCLUSIONS

7.1 EFFECTS OF ONSHORE AND OFFSHORE DEVELOPMENT

The Energy Policy Act of 2005 banned the issuance of Federal or State permits or leases on new oil and gas slant, directional, or offshore drilling in or under the Great Lakes. This study was conducted to identify potential environmental effects that could be uncured if such drilling were allowed in the US portion of the Great Lakes Basin. Currently, onshore oil and gas drilling and production, accessing oil and gas systems beneath the states but not beneath the Great Lake, occurs in all but two of the eight Basin states, as well as in the Canadian Province of Ontario (onshore and offshore drilling in Lake Erie). Any new onshore development of oil and gas systems beneath the Great Lakes would likely be conducted in a manner similar to what currently occurs in the Basin for other oil and gas systems, and may be expected to utilize existing infrastructure for the transport and refinement of the oil and gas extracted from beneath the Great Lakes. The primary environmental effects of accessing oil and gas systems beneath and adjacent to the Great Lakes would be associated with the following:

- The potential disturbance of ecological and/or cultural resources during exploration and the construction of the well site and its associated infrastructure;
- Exposure of biota, sensitive habitats, and areas important for tourism and recreation to accidental spills or releases; and, to a lesser extent,
- The visual and noise intrusion of oil and gas developments on areas that support recreation and tourism.

The greatest concerns are for accidental releases that may affect wetlands, unique habitats, fish, and aquatic birds. Spills may also affect recreational activities, cause consumption bans for fish and game, and affect land and water use. Impacts to these resources would also involve the loss of use while the spill is being addressed. With the exception of very large spills, impacts to land and water use for most spills may be expected to be localized and minor. However, depending on the location of a spill and the proximity of a water intake structure, short-term but significant impacts on public drinking water supplies may occur. These are the same spill-related concerns that exist for current oil and gas production activities in the Basin.

Offshore development may result in more environmental impacts and effects than onshore development because offshore wells would require both offshore and onshore infrastructure to collect and process the oil or natural gas. Thus, offshore development would involve a greater level of disturbance of both terrestrial and aquatic resources during construction. In addition, offshore spills (in open water) would be more difficult to contain and may affect a broader area (and thus more resources) than an onshore spill.

7.2 FACTORS THAT COULD LESSEN THE LIKELIHOOD AND MAGNITUDE OF POTENTIAL ENVIRONMENTAL EFFECTS

A number of factors may act to reduce or prevent some of the potential environmental effects identified for oil and gas development. For example, directional drilling (with multiple wells per drill site) would allow for a reduction in land disturbance and thus in the number of locations where habitat disturbance or an accidental spill may occur. While directional drilling sites are typically larger than any one single well site, the total combined area required for multiple well sites is larger than that required for a single directional drilling site accessing a similar number of oil or gas reservoirs. The use of directional drilling from onshore locations would eliminate the need for lake-bottom wells and offshore pipelines, thus eliminating the potential for accidental spills in offshore, open water areas.

The implementation of good engineering practices may also be expected to minimize or avoid many of the environmental effects identified for the construction phase of oil or gas development.

Existing regulations would greatly affect the siting of any wells targeting oil and gas deposits beneath the lakes, requiring avoidance of endangered species, recreational areas, drinking water supplies, wetlands, unique habitats, and other valued resources. Furthermore, existing state and Federal programs and requirements addressing spill prevention, reporting, and response would reduce the extent and magnitude of potential spills and associated environmental impacts and promote rapid containment and cleanup.

Finally, as directional drilling technology advances, it may be possible to access more oil and gas deposits than is currently possible from fewer well locations that are farther from sensitive areas. This would minimize the potential for locating wells and associated facilities in sensitive areas, and it would also limit the occurrence of accidental spills and releases to fewer locations, thereby potentially exposing fewer natural resources to spills.

7.3 UNCERTAINTIES AND DATA GAPS

The quantitative evaluation of environmental effects of onshore or offshore drilling in the Great Lakes can only be conducted at a site-specific level. This informational report provides a qualitative evaluation of the types of environmental effects that might occur within the Great Lakes Basin if the oil and gas systems beneath the lakes were explored and developed. Uncertainties associated with this qualitative evaluation are largely related to the limited information regarding the following:

- The actual abundance and distribution of oil and gas reserves beneath the US portion of the Great Lakes;
- The location of natural and cultural resources (especially underwater sites) in areas where oil and gas development may occur;

- The incidence and size of spills from current oil and gas wells and pipelines in each of the eight Great Lakes states;
- The response time of spill responders;
- The effectiveness of past spill cleanup operations, including recovery of ecological resources;
- Future advances in spill containment and cleanup procedures and methods; and
- Advances in directional drilling capabilities and technology.

The first of these uncertainties deals with the actual abundance and distribution of oil and gas reserves beneath the Great Lakes, as this will determine where oil and gas development may actually occur and which resources could be affected by the development of the reserves. The next uncertainty deals with the likelihood that well sites (and their associated infrastructure) will overlap with important ecological, cultural, and socioeconomic resources. Adverse environmental effects on these resources may be reduced as their locations are better defined and well and pipeline locations are better selected to avoid such resources to the extent possible or practicable.

The next four of these uncertainties deal with the likelihood of an accidental release occurring, how quickly the release would be contained, and how effective any cleanup would be. It can be safely assumed that as the incidence of spills decreases and the response time of responders decreases, the magnitude of any spill-related adverse effects should also decrease. The incidence of spills may decrease as drilling, pumping, storage, and transport technologies improve and as enhanced spill prevention programs and requirements are developed.

Finally, the last uncertainty deals with technological advances that would permit directional drilling to greater depths and distances from the wellhead, and in the number of wells or laterals that could originate from a single wellhead location. As technological advances are made, it may be possible to access oil and gas deposits beneath the lakes from much farther onshore locations, at locations farther removed from sensitive or valued onshore resources, and from fewer locations, thus reducing the extent and likelihood of disturbing valued resources.

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