



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

Docket No.: 40-9015  
License No.: SUC-1581

APPLICANT: Michigan Department of Natural Resources

FACILITY: MDNR Tobico Marsh Site  
Kawkawlin, MI

SUBJECT: ENVIRONMENTAL ASSESSMENT FOR THE LICENSING OF MDNR  
TOBICO MARSH SITE

## BACKGROUND

By letters dated September 5, 1997, as supplemented on July 27, 1998, and March 8, 1999, Michigan Department of Natural Resources (MDNR) submitted an application to the U.S. Nuclear Regulatory Commission (NRC) on Source Material License No. SUC-1581 to possess thorium (Th) and uranium (U) at the state-owned portion of the former Hartley and Hartley Landfill (Tobico Marsh site) in Kawkawlin, Michigan. The Th and U currently exist at the MDNR Tobico Marsh site in the form of magnesium-Th slag, contaminated soil, and other material and debris contaminated above background levels. MDNR also requested to possess sealed sources for instrument calibration.

## INTRODUCTION

MDNR submitted a source material license application to possess Th and U at the Tobico Marsh site. The site is located at 2301 Two Mile and Beaver Roads, Kawkawlin Township, Kawkawlin, Bay County, Michigan, northeast of Bay City, Michigan. The Tobico Marsh site covers approximately 3 acres adjacent to the former Hartley and Hartley Landfill that is currently owned by SCA Services, Inc. (SCA). The SCA site is being decommissioned under NRC License No. SUC-1565. In 1962, it was discovered that the entire property, owned by the Hartley and Hartley waste handling company, was being used as a landfill.

In 1972, the State of Michigan acquired in trade a portion of the Hartley and Hartley Landfill. The Hartley and Hartley organization continued to operate the site until 1978 when operations at the landfill ceased.

In 1980, the State of Michigan conducted an aerial radiological survey of the landfill because State authorities were concerned that radioactive material from another facility in Michigan may have been disposed at the landfill. The survey indicated an excess of Thallium-208, a progeny of Thorium-232 (Th-232), over the landfill. In May 1983, the State of Michigan, Division of Radiological Health, informed NRC Region III that radioactive material was found in the MDNR landfill. Contamination was also found on the adjacent property owned by SCA.

The State of Michigan requested input from the NRC on whether the encapsulation measures being taken for the non-radiological hazardous wastes also would provide protection for the radioactive hazard. In response to this request, NRC staff agreed to perform a radiological survey of the Tobico Marsh site.

In July 1984, a radiological survey of the Tobico Marsh site was undertaken. The survey included surface radiation scans, measurements of direct radiation levels, and analyses of

radionuclide concentrations in soil, sediment, and water samples. The results of this survey indicated a 0.15 to 0.20 meter (m) (0.5 to 0.7 feet (ft)) thick layer of Th contaminated slag near the surface. The contaminated slag appeared to be distributed in a 10 to 20-m (33 to 66-ft) wide strip near the center of the property, extending almost the entire north/south length of the site. These radiological surveys were the basis for a hazard evaluation.

NRC and State of Michigan staff concluded, on the basis of the radiological survey, that the Th contamination exceeded the Option 1 level (0.37 Becquerel per gram (Bq/g) (10 picoCurie per gram (pCi/g)) of Thorium-232 + Thorium-228) of the 1981 Branch Technical Position (BTP) entitled, "Disposal or Onsite Storage of Thorium or Uranium Wastes From Past Operations" (46 FR 52061). They also concluded that the mixture of non-radiological hazardous and radioactive waste would make the wastes unacceptable at a chemical or radioactive waste disposal site (other than an authorized mixed waste disposal facility) and agreed to implement a monitoring program and to place a restriction on the deed prohibiting intrusion. NRC agreed that these measures would likely make the encapsulation of the Th contamination acceptable for the short term.

In 1984, encapsulation measures were taken at the Tobico Marsh site to isolate and prevent the migration of the non-radiological hazardous wastes. Encapsulation measures included the installation of a 1.5-m-thick (5-ft) clay cap and 0.9-m-thick (3-ft) bentonite slurry walls.

In 1985 and 1986, an investigation was performed to assess the nature and extent of environmental contamination around the encapsulation area. The investigation indicated that the level of leachate inside the encapsulation was approximately 0.9 m (3 ft) higher than the level of the surrounding area and that volatile organic chemicals were detected in the soils and groundwater outside the encapsulation.

In 1987 and 1988, a feasibility study was performed of the Tobico Marsh site. The study recommended that site access be restricted by fencing, that monuments be installed stating the nature of the contaminants, that the clay cap be repaired where erosion had occurred, that hydraulic isolation be maintained by withdrawal of leachate from inside the encapsulated area, and that the leachate be treated and disposed.

In March 1990, MDNR was added to NRC's Site Management Decommissioning Plan (SDMP) list because of the quantity of Th-contaminated materials, the potential for mixed waste, and the fact that MDNR did not have a license. The purpose of the SDMP is to ensure safe and timely decommissioning of sites that have contamination exceeding the existing NRC criteria for unrestricted use.

In 1991, design of the Leachate Collection and Treatment System (LCTS) and preliminary design of the pretreatment system was completed. In 1993 and 1994, three LCTSs, treatment building, and the force main were installed. However, the LCTS has not been used because filterable quantities of low-level radioactive waste were detected in the leachate, and the LCTS does not have a filter to remove the radioactive waste before final disposal.

## PROPOSED ACTION

The primary purpose for issuing Source Material License No. SUC-1581, is to authorize the possession of source material Th and U and of seal sources on the MDNR Tobico Marsh site, and to control the material to ensure the protection of the public health and safety and the environment. The license covers all source material Th and U present in concentrations

exceeding natural background. This license also authorized possession of sealed sources at the site for instrument calibration. The sealed sources allows proper calibration of instruments for the radiation types to be encountered at the site.

MDNR proposes to sample Th and U material during site characterization activities. The proposed site characterization is intended to characterize the concentration, lateral extent, and volume of radiologically contaminated material at the Tobico Marsh site. The decommissioning alternatives for this site will depend on the information obtained from the site characterization.

MDNR will provide proposal(s) for the disposition of any Th and U material found at the site in a Decommissioning Plan (DP). The DP will describe remediation alternatives and the proposed procedures for site remediation, final survey, and license termination.

### THE NEED FOR PROPOSED ACTION

Th and U exist on the Tobico Marsh site in concentrations that pose a long-term risk to the public and the environment. Before encapsulation measures were taken in 1984, Th-232 and Th-228 have been identified in concentrations up to 20.8 Bq/g (561 pCi/g) and 9.5 Bq/g (527 pCi/g), respectively. U-238 concentrations were elevated in samples with elevated Th levels. These activity levels would result in doses substantially in excess of the unrestricted release requirements in 10 CFR Part 20.

MDNR applied for a specific license to possess, use, or transfer Th and U during site characterization activities. The issuance of License No. SUC-1581 will ensure that the radioactive material at the Tobico Marsh site will be possessed, used, or transferred in accordance with NRC regulations, and ensure that MDNR will have a structured regulatory program in place to protect public health and safety.

### ALTERNATIVES TO PROPOSED ACTION

NRC staff considered no action as an alternative to the proposed action. The no-action alternative would result in no specific license and would not ensure MDNR will have a structured regulatory program in place to protect public health and safety.

### ENVIRONMENTAL IMPACTS OF PROPOSED ACTION

The activities that NRC staff proposes to authorize through the issuance of License No. SUC-1581 are expected to have an insignificant impact on the environment. In fact, the activities are anticipated to improve control of the Th and U-contaminated material. The control of the Th and U-contaminated material under license will reduce the potential for the release of radiological contamination to the environment.

During the proposed site characterization, the primary potential radiological impact on the environment would be the release of radioactive material during excavation and handling of contaminated materials. No waste water that is contaminated with radionuclides above the 10 CFR Part 20, Appendix B limits, will be allowed to be discharged from the site.

The proposed activities at this site are for the purpose of controlling and characterizing the radiologically contaminated material. Because MDNR has committed to comply with NRC requirements, has adequate radiation protection procedures and capabilities, and will implement an acceptable as low as is reasonably achievable (ALARA) program, the proposed

actions are not anticipated to result in a dose to workers or the public in excess of 10 CFR Part 20 limits. Past experiences with site characterization activities at sites similar to the MDNR Tobico Marsh site indicate that public and worker exposure will be far below the limits found in 10 CFR Part 20.

The proposed action will result in the irreversible use of energy resources during excavation and handling of contaminated material. There are no reasonable alternatives to these resource uses and there are no unresolved conflicts concerning alternative uses of available resources.

#### AGENCIES AND INDIVIDUALS CONSULTED

This environmental assessment (EA) was prepared entirely by NRC staff. The staff from the State of Michigan reviewed a draft of this EA. No other sources were used beyond those referenced in this EA.

#### CONCLUSIONS

Any radiologically contaminated effluents produced from the proposed intrusive characterization operations will be limited in accordance with NRC requirements in 10 CFR Part 20 or contained onsite or treated to reduce contamination to acceptable levels before release. In addition, site characterization is not expected to result in any measurable radiation doses to members of the public. Occupational doses are expected to be low and well within the limits of 10 CFR Part 20. Therefore, the environmental impacts from the proposed action are expected to be insignificant.

#### FINDING OF NO SIGNIFICANT IMPACT

NRC has prepared this EA related to the proposed license application by MDNR for the Tobico Marsh site. On the basis of the EA, NRC has concluded that this licensing action would not significantly effect the quality of the human environment and has determined not to prepare an environmental impact statement for the proposed action.