

**RESPONSE TO PUBLIC COMMENTS ON PERMIT APPLICATION
FOR THE PROPOSED BEELAND DISPOSAL WELL NO. 1**

**Michigan Department of Environmental Quality
January 28, 2008**

Beeland Group, LLC (Beeland) has applied to the Michigan Department of Environmental Quality (MDEQ) for a permit for the proposed Beeland Disposal Well No. 1, to be located in Star Township, Antrim County. The application was submitted under the requirements of Part 625, Mineral Wells, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA).

Beeland is proposing to drill and utilize the well for disposal of leachate water that is discharging from cement kiln dust piles located at Bay Harbor, Emmet County. The leachate is classified as non-hazardous waste and the characteristics of the leachate meet requirements for consideration for disposal by deep well injection. Beeland has also applied to the U. S. Environmental Protection Agency (USEPA) for an Underground Injection Control permit under the Safe Drinking Water Act.

The Office of Geological Survey (OGS) of the MDEQ, which has primary responsibility for regulating disposal wells, received the application on January 11, 2007, and has conducted a comprehensive and detailed review in coordination with other MDEQ program staff. OGS received comments on the proposed well from the time the application was received. The OGS and USEPA held a joint public hearing at Alba, Michigan, on June 13, 2007 to receive comments on the proposed well. The hearing was held from 7:00 to 9:00 p.m. and was preceded by a public informational meeting from 6:00 to 7:00 p.m. Approximately 34 persons provided verbal comments at the hearing. Written comments were accepted following the hearing until August 1, 2007. A total of 15 written comments were received.

Many commenters expressed several common concerns. The primary common issues revolved around alternative treatment and disposal methods, the location of the proposed well in relation to the source of the contaminated leachate, impacts of truck traffic, and protection of surface water and groundwater. The MDEQ requested additional information of Beeland to clarify and evaluate these issues.

The following public officials provided comments and recommendations:

- Mr. David Howelman, Antrim County Commissioner, District 5
- Mr. Scott Brown, Star Township Treasurer
- Mr. Richard Steel, Star Township Supervisor
- Mr. Christopher Christensen, Charlevoix County Commissioner
- Mr. Pete Garwood, Emmet County Coordinator and Planner
- Ms. Laurie Stanek, Antrim County Commissioner representing District 7
- Mr. Harold Chase from Senator Carl Levin's office

Following is a summary of comments received and MDEQ's responses. Comments or portions of comments that pertain only to the USEPA have been omitted.

COMMENTS AND RESPONSES

1. **Comment:** The MDEQ should require alternative methods of either disposing or treating the leachate or removing the cement kiln dust, which would make the use of deep well injection unnecessary.

Response: The MDEQ is evaluating all of the options for remediating the contamination at Bay Harbor. We have determined that deep well disposal is an effective means to address the contamination. When the OGS issues its permit a condition will be included limiting the authorization to inject to a period of ten (10) years, at which time Beeland or its successors must submit a written request for renewal of the authorization to inject. Deep well injection may remain a part of any long-term solution approved by MDEQ.

2. **Comment:** The Alba area is not appropriate as the location for the proposed well because the waste is actually generated at Bay Harbor in Emmet County.

Response: The MDEQ required Beeland to consider other sites for the well and to provide an explanation of its choice of the Alba site instead of a site at or near Bay Harbor. The MDEQ also conducted its own evaluation of the potential for disposal wells in the region. The Dundee Limestone (the injection zone for the proposed well) is not suitable for injection in the Bay Harbor vicinity because it is too shallow. Using available data, Beeland evaluated deeper formations in the vicinity of Bay Harbor that might be candidates for disposal, and established there is a high risk that a well drilled to those formations would not be capable of accepting fluids at the necessary rates. In contrast, there are a number of wells in the Alba area that are currently being utilized successfully for fluid disposal in the Dundee Limestone.

3. **Comment:** There will be increased risk of accidents and increased impacts on local roads from transporting the leachate by tank truck to the Alba site.

Response: Impacts of trucking are not directly regulated under Part 625; however, they were considered in evaluating alternatives for managing the leachate. Transportation of the leachate is regulated by the MDEQ under Part 121, Liquid Industrial Wastes, of the NREPA. The leachate is currently being transported longer distances by truck for disposal. The MDEQ concludes that trucking does not pose an unreasonable risk when all alternatives are weighed.

4. **Comment:** Utilization of the proposed well will impact property values.

Response: This issue is outside the scope and legal authority of the MDEQ.

5. **Comment:** The MDEQ has mismanaged the regulation of the Bay Harbor contamination.

Response: There is no evidence to support this serious charge; in any event, this is not relevant to the proposed disposal well.

6. **Comment:** CMS, the Beeland parent company, is allegedly guilty of criminal activity with respect to the Bay Harbor site.

Response: The MDEQ cannot address any alleged criminal actions in the context of this response document. MDEQ staff involved in reviewing this permit application is not aware of CMS or Beeland activities that will adversely impact the permitting decision.

7. **Comment:** The Bay Harbor development was not appropriate in view of the existing kiln dust piles.

Response: The leachate would constitute a problem regardless of whether the Bay Harbor development had occurred; the management of the leachate is a separate issue.

8. **Comment:** A recent study shows that bedrock faulting is common in Antrim County; Beeland failed to reference this study.

Response: While the bedrock in many areas of the state Michigan Basin is extensively faulted and fractured, there is no evidence that faults exist in the vicinity of the proposed well that would allow fluids to move out of the injection zone into other formations or to the surface. As evidence, one need only look to the oilfield brine disposal wells in Antrim County which have been in use for a number of years with no detectable impact on surface or groundwater.

9. **Comment:** There are deficiencies in the Plot Plan attached to the survey.

Response: Any variances noted are minor and not significant to the review and evaluation of the application.

10. **Comment:** There are deficiencies in Beeland's method of analyzing the potential impacts of the well on Underground Sources of Drinking Water.

Response: The methodology and the projected values for the parameters used in Beeland's calculations are based on a competent understanding and experience with such parameters in Michigan, and result in conservative

estimates of the potential effects of the well.

11. **Comment:** Beeland does not provide a map showing wells within a specified distance of the proposed well.

Response: Beeland did provide a suitable map. While the map itself does not show operators and depths of the wells, those details are shown on an accompanying list.

12. **Comment:** Beeland's map and discussion of surface and subsurface aquifers is inadequate.

Response: MDEQ has reviewed the information submitted by Beeland and finds it is adequate for the purposes of the application and meets the requirements of Part 625.

13. **Comment:** Beeland will encounter salt during the drilling of the proposed well.

Response: The proposed well will not encounter salt. Salt does not occur in Michigan above the Dundee Limestone.

14. **Comment:** The injectate has a high concentration of potassium, which may contain significant amounts of radioactive potassium-40.

Response: Potassium is the seventh most abundant element in the earth. About 0.01 percent of potassium atoms are a naturally-occurring radioactive isotope, potassium-40. While the concentration of potassium in the injectate is much higher than in drinking water, that does not mean it is a significant source of radiation, and the injectate is not considered "radioactive waste" by any recognized definition of that term.

15. **Comment:** Beeland does not describe its disposal plan for pit fluids.

Response: The pit fluid associated with drilling of the well will be hauled off site by a licensed industrial waste hauler. The pit fluid would be classified as liquid industrial waste, and would be regulated by the MDEQ under Part 121, Liquid Industrial Wastes, of the NREPA.

16. **Comment:** The MDEQ has a conflict of interest with reference to the granting of any additional permits based on the Covenant Not to Sue (CNTS) entered into by its predecessor, the Department of Natural Resources (MDNR), pertaining to the cement kiln dust leachate at Bay Harbor.

Response: The CNTS does not prohibit the MDEQ from issuing any permits required for the characterization, handling and disposal of the Bay Harbor

leachate.

17. **Comment:** Local citizens are opposed to the well.

Response: The MDEQ must judge the permit application according to whether it meets the requirements of the NREPA. Local opposition is not a basis for a decision unless it is supported with technical or legal evidence.

18. **Comment:** Leachate will be treated to drinking water standards.

Response: Beeland has not indicated that the leachate will be treated in any way other than to lower pH. The leachate currently is treated only to lower pH before disposal.

19. **Comment:** Oil and gas wells drilled to the Niagara Group outside of the 2-mile area of review may not be adequately plugged.

Response: Oil and gas wells are typically plugged by placing 200-foot cement plugs at designated depths in the borehole, particularly across the Traverse Limestone, which lies above the Dundee Limestone, and at the base of the surface casing, which is set 100 feet into bedrock and at the surface. The plugs are of sufficient length to prevent movement of water to the surface through abandoned wells.

20. **Comment:** There is a pressure difference between the surface injection pressure and the Antrim Shale.

Response: Beeland has requested a maximum surface injection pressure of 150 pounds per square inch. Although there is a pressure difference between the Dundee Limestone and the Antrim Shale, the Bell Shale, lying immediately above the Dundee Limestone and approximately 80 feet thick, will confine the injected water to the Dundee Limestone.

21. **Comment:** The proposed well will preclude future oil and gas development in the vicinity.

Response: Drilling the proposed disposal well will not preclude future oil and gas development. The Dundee Limestone is not an exploration target in Antrim County. If an oil and gas well were to be drilled into or through the Dundee Limestone in the vicinity of the proposed disposal well, the integrity of both the oil and gas well and the disposal well, as well as the containment of the injected fluids, would be protected by the required drilling, casing, sealing, and plugging methods.

22. **Comment:** Using cement to seal the well casing may not provide a good seal; the

well's proposed 2,500-foot depth may not be sufficient to prevent water movement from the injection zone to the surface.

Response: Cementing casing to seal the space between the casing and the well bore has been used by the oil industry and disposal well industry for more than 60 years. Experience shows it to be an effective method. Testing performed annually at other disposal wells in Michigan shows that the cement does not deteriorate over time and forms an effective seal for the life of the well. All the casings in the proposed well will be cemented from bottom to top, except for the shallow conductor casing, which will be driven.

23. **Comment:** Drinking water aquifers and surface water, specifically the Jordan and Manistee rivers, may be impacted by the well; treatment of the leachate only lowers pH and does not remove other dissolved substances.

Response: Groundwater and surface water are protected from contamination from the well bore by the use of two strings of casing. As discussed above the use of cement to seal the casing in wells has been shown to be effective in preventing movement of water from one formation to another. The surface facilities—tanks, pumps, and related equipment—will be constructed with secondary containment. Additionally, the permittee will either install a down-gradient monitor well or provide tertiary containment at the surface facility. The monitor well will be regularly sampled and the results of the analysis supplied to OGS.

24. **Comment:** The leachate should not be classified as non-hazardous.

Response: The leachate with pH below 12.5 is classified as non-hazardous waste in accordance with the definitions in federal and State law. Although the leachate as it is collected at the Bay Harbor site may be a hazardous substance by reason of the pH, once it is treated to lower pH, it is no longer defined as hazardous by law and can be transported and handled as non-hazardous waste. Its generation, transportation, and storage are regulated by the MDEQ under Part 121, Liquid Industrial Wastes, of the NREPA. Part 121 requires waste characterization, manifesting, and record-keeping; and transporters must be registered and permitted under the Hazardous Materials Transportation Act.

25. **Comment:** The permit should prohibit injection of un-neutralized contaminated leachate.

Response: The proposed well will be allowed to accept only non-hazardous waste. Once the leachate has been treated to lower pH, it is classified as non-hazardous. The MDEQ will monitor and review the injection operation, and take any enforcement action as may be necessary, to prevent hazardous waste, which may include untreated leachate, from being injected.

26. **Comment:** The permit should require adequate initial testing and additional regular monitoring and reporting to ensure that fluids meet the acceptable criteria for injection.

Response: The testing schedule in the waste analysis plan provides for at least quarterly analysis and reporting of pH and other parameters.

27. **Comment:** The permit should require additional financial resources to close, plug, or abandon the injection well.

Response: The \$40,000 bond posted by Beeland meets the requirements set by Part 625. Bonding amounts correspond to the cost to plug and abandon the well and restore the site, but the bond may be utilized to cover any costs to the MDEQ for bringing the well and associated facilities into compliance with Part 625, rules, permit conditions, or orders.

28. **Comment:** The citizens have the burden of proving the disposal well should not be located in Antrim County and demonstrating alternatives to the proposed well.

Response: The MDEQ has done a thorough evaluation of the location and other factors relating to the proposed well. We provided the opportunity for public comment to receive any additional relevant information on the proposed well. If members of the public opposed to the well can support their opposition with sound technical arguments, the MDEQ certainly takes those arguments into consideration.

29. **Comment:** The well raises the environmental justice issue.

Response: MDEQ is implementing the environmental law and regulations in a fair and non-discriminatory manner, and is providing a meaningful opportunity for involvement of citizens. The MDEQ does not have legal authority to deny a permit on the basis of any disparity in incomes between the site of the source of contamination in this case (Bay Harbor) as compared to the proposed site of disposal (the Alba area). The MDEQ received the USEPA report of investigation on the issue, which finds that there is no basis for environmental justice concerns under federal criteria. In any event, the MDEQ finds there are sound technical reasons for the choice of the disposal site (see response to comment 2).

30. **Comment:** A public hearing should have been held before the permit application was filed.

Response: Part 625 does not have provisions for a public hearing before a permit application is filed. This is generally the case with all of the environmental permitting programs administered by the MDEQ. Without a permit application

there is no tangible proposal on which to comment.

31. **Comment:** The economics of the disposal well are questionable.

Response: The MDEQ cannot deny a permit on the basis of economics alone. However, the MDEQ has considered economics in a general way in reviewing the analysis of alternatives for the management of the leachate.

32. **Comment:** An operations and maintenance plan for the facility is necessary.

Response: Operations and maintenance are addressed under Part 625 through standards and reporting criteria.

33. **Comment:** Communication should be maintained between MDEQ and the public.

Response: The MDEQ is committed to maintaining open communication with all of its stakeholders. The June 13 hearing and pre-hearing meeting were held for the purpose of both informing the public and taking comment. MDEQ staff is available in Lansing and Gaylord to answer any questions in the future. Also, the

results of any inspections and testing are public documents, available to anyone requesting them.

34. **Comment:** Flow line inspections cannot be properly conducted if the lines are buried.

Response: Under Part 625, flow lines (i.e., piping that connects the well to storage tanks or other surface equipment) must be monitored by regular inspections, installation of monitoring systems, pressure testing, or other approved method.

35. **Comment:** It is difficult for lay persons to provide technical comments.

Response: The MDEQ appreciates the fact that providing substantive technical comment is difficult for persons with limited experience in the area under consideration. However, some issues may not involve highly technical matters, and members of the public typically have a wide range of expertise on a variety of issues.

36. **Comment:** The use of a well numbering system implies that more than one well will be drilled.

Response: The practice of designating wells with a name and number has been handed down from the earliest days of the industry and does not imply that more wells will be drilled.

37. **Comment:** Deep wells should not be used for disposal of wastes.

Response: The use of deep disposal wells is a proven method of liquid waste disposal, and is often the safest and most effective means to manage dilute, large-volume wastes such as the Bay Harbor leachate. The use of disposal wells began in Michigan in the mid-1930's. MDEQ staff regularly inspects disposal wells and Part 625 rules mandate regular testing to insure that the wells are in the appropriate mechanical condition to prevent injected waste from moving into fresh water zones or other underground formations.

38. **Comment:** Does this activity fall under the jurisdiction of the National Environmental Protection Act (NEPA)? Has the permittee prepared an environmental assessment?

Response: The MDEQ does not enforce NEPA. However, Part 625 requires an Environmental Impact Assessment, and Beeland filed one with its application.

39. **Comment:** Have the direction of groundwater and the direction of surface water flow at the site been determined? What watershed is the well in?

Response: The groundwater flow direction has not been determined. The contaminated leachate would be injected into a deep zone that is not connected with the fresh water aquifers or surface water. Unless tertiary containment is used at the site, a hydrogeological study will be required that will entail determination of the groundwater flow direction (see response to comment 32). Surface drainage at the site is generally toward the Jordan River.

40. **Comment:** Will monitoring wells be placed to determine if and when pollution occurs? Will adjacent landowners be provided them with copies of those monitoring results?

Response: Part 625 requires that secondary containment areas (at the wellhead and surface equipment) have either a down-gradient monitor well or tertiary containment with a monitoring tube. The permittee must measure the water level and collect samples (if any in the case of tertiary containment) on an annual basis, and report the results to the MDEQ. The results of will be public records, available to anyone requesting them.

41. **Comment:** Will neighboring landowners be compensated for any surface damages that might result as a spill on the site? Have you bonded CMS to ensure that that happens?

Response: The permittee is responsible under Part 625, as well as under Part 201, Environmental Remediation, of the NREPA, for cleaning up and remediation

any spills; however, the issue of compensation for surface damages resulting from a spill is a matter between the permittee and anyone claiming such damages and is outside the jurisdiction of the MDEQ. The conformance bond required by the MDEQ is to ensure compliance with Part 625 (including cleanup of spills) and is not intended to compensate private parties for damages.

42. **Comment:** Has it been determined whether or not this activity will be bringing new water into this watershed?

Response: The leachate originates outside of the local watershed where the proposed well is to be located. However, as noted above, the leachate would be injected into a deep zone that is not connected with the fresh water aquifers or surface water.

43. **Comment:** A proposal for waste disposal should be reviewed and permitted by the Surface and Groundwater Division [*sic*], not by the Office of Geological Survey Division as a mineral permit.

Response: Deep disposal wells are regulated under Part 625, Mineral Wells, of the NREPA. Part 625 covers brine wells, mineral test wells, storage wells, and wells for the disposal of liquid wastes (except for oil and gas field wastes, which are regulated under Part 615, Supervisor of Wells, of the NREPA). All of these wells have certain common characteristics in terms of well design, operation, and protection of surface and subsurface resources. Responsibility for regulation of these wells has been delegated to the OGS. With respect to spill prevention and remediation, OGS coordinates with other MDEQ programs to assure consistency.

44. **Comment:** Supervisor of Wells Act, MCL 324.61501 et seq. is not applicable in this case.

Response: The MDEQ is not regulating the proposed well under Part 615, Supervisor of Wells, of the NREPA, but rather under Part 625 of the NREPA.

45. **Comment:** The well would be likely to pollute, impair, or destroy natural resources, and feasible and prudent alternatives exist; therefore, the issuance of the permit and operation of the well would violate the Michigan Environmental Protection Act (MEPA).

Response: Part 625 sets standards to prevent pollution, impairment, or destruction of natural resources, and the MDEQ required Beeland to submit an analysis of feasible and prudent alternatives, which was found to be satisfactory.

46. **Comment:** The proposed activity may result in nuisance suits brought on by 24-hour truck traffic and depreciated land values as well as contaminated

groundwater.

Response: The MDEQ is responsible for reducing risks of environmental damage, such as from groundwater contamination, and assuring containment and remediation if such damage occurs. The issue of nuisance suits is a matter between the well owner and any affected parties, and is outside the authority of the MDEQ.

47. **Comment:** The corrosive leachate will affect surface equipment at the well site.

Response: Under Part 625, a number of measures are required to address the possible effects of corrosion. The well casing and wellhead must be tested regularly to evaluate potential leakage, piping must be inspected or pressure tested, and other surface equipment must have secondary containment and monitoring. The MDEQ inspects the well and equipment and reviews reports by the well operator. If a well or equipment is affected by injectate or other factors to the extent that well use is impaired or the environment is threatened, the well and facility will be taken out of service until repairs can be made or the equipment replaced.

48. **Comment:** The qualifications of the personnel who devised and approved the proposed well design are not known.

Response: The MDEQ independently reviews the design, construction, and operation of disposal wells, to assure that they meet established standards regardless of who does the design work for the permit applicant.

49. **Comment:** There are concerns about the failure rates of disposal wells.

Response: There has never been a case in Michigan where a comparable well is known to have endangered drinking water supplies due to a subsurface failure. Such wells have been in use in Michigan since the 1930's. Disposal wells are designed, monitored, and tested so that in the event of a failure, injected waste is confined to the well bore and the evidence of failure is readily apparent. There have been some instances of spills or releases from surface equipment associated with oil and gas brine disposal wells that have impacted groundwater; however, under current requirements such spills or releases are usually detected quickly and remediated.

50. **Comment:** The well may be used by other parties.

Response: Beeland has not expressed intent to use the well for commercial disposal or to allow other parties to use the well. In any event, Beeland will remain responsible for the well, and only defined and approved fluids will be allowed to be disposed of in the well.

51. **Comment:** Wells in Petoskey and Johannesburg have been shut down.

Response: The MDEQ has no knowledge of disposal wells in Petoskey or Johannesburg being taken out of service for any reason, nor of any other wells in those areas (such as drinking water wells) being shut down because of impacts from disposal well operations.

52. **Comment:** The public hearing notification process was inadequate.

Response: The MDEQ provided a notice of the public hearing in the Traverse City Record Eagle 30 days prior to the hearing date, and also posted notice in the DEQ Calendar. Additionally, notice was published in the Gaylord Herald in February, 2007, that Beeland proposed construction of a disposal well. Finally, as required by Part 625 rule, the Star Township Board was noticed by letter of January 9, 2007, of the proposed well.

53. **Comment:** There is a toxic plume only about seven miles from here.

Response: The speaker may have been referring to the Tar Lake site in Mancelona Township. The contamination resulted from surface disposal of industrial waste products and is not relevant to the matter of issuing a permit to Beeland under Part 625 of NREPA.

54. **Comment:** This type of disposal well can result in releases, as has been demonstrated by the Hoskins Manufacturing Company injection well in Mio and the EDS injection well in Romulus.

Response: The water contamination at the Hoskins facility in Mio is not related to the disposal well. The disposal wells at Romulus, formerly owned by Environmental Disposal Systems, are currently not in use and have not been in use since October, 2006. During routine site inspections for regularly scheduled testing, the MDEQ discovered small-volume leaks from above-ground piping connections at both wells and suspended operation of the wells until the cause of the leaks could be discovered and adequate repair measures completed. The leaks caused some localized soil contamination (which was remediated) but did not result in groundwater contamination.

55. **Comment:** The application does not identify all pipelines within 600 feet and all wells within 300 feet.

Response: The EIA indicates there are no pipelines within 600 feet of the proposed well. MDEQ is not aware of wells of any kind within 300 feet of the proposed well.

56. **Comment:** The applicant has not shown that it holds the mineral rights for disposal; injectate may migrate across property lines, causing a trespass.

Response: Part 625 does not require an applicant for a disposal well permit to own mineral rights. The issue of injectate moving across property boundaries is a matter of private property rights and is outside the jurisdiction of the MDEQ.

57. **Comment:** The proposed permit violates other provisions of the Natural Resources and Environmental Protection Act that regulate storm water runoff and management, safe drinking water, discharges to groundwater, and wastewater disposal. The proposed permit violates CERCLA.

Response: The proposed permit does not contradict or contravene other provisions of the NREPA or any federal law, nor does it preclude the need for the applicant to adhere to any other necessary federal, state, or local laws, ordinances, or regulations, including obtaining any necessary permits.

58. **Comment:** There is no Pollution Prevention Plan, Facility Specification Plan, or Spill Response Plan.

Response: Part 625 does not require a "Pollution Prevention Plan" per se, although pollution prevention is covered under several requirements of the Part 625 rules. Beeland has not submitted a surface facility plan. Under Part 625, such a plan is required, but it may be submitted at a later date. The facility plan would be required to include a spill response plan.