

RESPONSIVENESS SUMMARY

The Homestead Groundwater Discharge Draft Permit GW1810039

The draft Groundwater Discharge Permit for The Homestead, owned by The Bayberry Group, Inc, was public noticed on September 24, 2015. Several public comments were received during the public notice period which ended October 23, 2015.

A Groundwater Discharge permit may be contested within 60 days of issuance by filing a petition for Contested Case Hearing with the Michigan Administrative Hearing System within the Department of Licensing and Regulatory Affairs, c/o the Michigan Department of Environmental Quality (DEQ). A petition may be obtained from the Internet at *(The link provided was broken and has been removed.)*

Background Information:

The Homestead Resort's existing wastewater treatment system (WWTS) consists of two aerated lagoons followed by a sand filter and chlorination with discharge via spray irrigation on two easement parcels within the Sleeping Bear Dunes National Lakeshore Park (National Park).

The treatment system has been upgraded over the years. It started out as a lagoon system that discharged to a drainfield. In 1993 it was discovered that the drainfield system was contaminating groundwater with elevated nitrogen levels. The DEQ required the Homestead to upgrade the lagoon and drainfield system to one which would remove nitrogen. The Homestead proposed a spray irrigation system on both parcels, which would utilize nitrogen through nutrient uptake by plants. One easement parcel was a woodlot, which the Homestead proposed to clear-cut.

The National Park Service (NPS) objected to removal of the trees, therefore, irrigation was conducted in the wooded area. At that point in time the parcels were not fenced in and the public had free access to the site.

After a few years it became apparent that spray irrigation of the wastewater to the wooded parcel did not provide adequate treatment of the applied wastewater. The quantity of nitrogen supplied in the wastewater far exceeded the uptake capability of the mature stand of trees within the easement area. In addition, the trees themselves made even distribution of the wastewater a problem due to disruption of the individual spray head patterns (the spray heads were too close to the trees). This resulted in significant over-application of the wastewater in some areas of the parcel. Elevated levels of nitrogen were evident in the downgradient groundwater monitoring wells.

Irrigation in the wooded easement area needed to be upgraded to a crop system that allowed even distribution and a harvest schedule that would also remove the nitrogen source from the soil.

The NPS was still reluctant to have the trees cut down on the easement parcel and therefore suggested trading the parcel for a different location within the park that would be used for a new subsurface disposal area.

The NPS conducted a thorough Environmental Impact Study of the proposed new discharge area. The outcome of the study was that the NPS rejected the option. This was largely due to public opposition to relocating the subsurface discharge site to an area within the view of a historic farm. As a result of this decision, in 2006 the woodlot was cut and a crop planted. In addition, the easement area was fenced and posted with warning signs in accordance with design practices for public wastewater facilities.

This final upgrade to the current WWTS has resulted in better treatment of the wastewater, a fact borne out by groundwater sampling data that shows nitrate levels have been reduced to below drinking water standards. The spray irrigation system with uptake by crops is working.

The existing system meets all current requirements for a WWTS providing secondary treatment. This type of system provides much greater treatment than a conventional septic tank/drainfield system, and therefore, is more protective of the environment and public health.

-Summary of Comments Received on the Draft Groundwater Discharge Permit-

The following is a summary of comments received during the public notice period. In preparing this summary, actual comment language was abbreviated, paraphrased, and/or edited for clarity. Following each comment is a response from DEQ Water Resources Division staff.

A. General Questions:

1. Comment: Why can't they be forced to use their own land for the wastewater treatment system instead of park land?

Response: The Homestead Resort's use of the easement parcels for disposal of treated sanitary sewage is allowed under a December 1, 1972, easement between two private landowners who owned the land at the time. The easement encumbered the property prior to development of the National Park. When the Park was created the easement went with it.

The Easement allows the use of Parcels B and C for sewage disposal. Parcel A is identified as an isolation area. Under the easement, the Homestead Resort and their heirs or successors have full use of the parcels. In addition, spray irrigation on the easement parcels was found to be a legal disposal method by NPS Solicitors.

Issues regarding the easement have received significant attention during past permit application reviews by the DEQ. In particular, as part of the DEQ's review of the 2004 permit, the DEQ sought advice from the Department of Attorney General regarding the easement boundary and required isolation distances under the Part 22, Groundwater Quality Rules. The Department of Attorney General's informal opinion was that the 100-foot isolation distance from property boundaries contained in Rule 2204(2)(c) is properly applied to the property boundary between the NPS and the Homestead, rather than the easement boundary. In addition, the 100 foot isolation distance contained in Rule 2204(2)(c) of the Part 22, Groundwater Quality Rules requires that the point of discharge shall be located not

less than 100 feet inside the property boundary of the property where the discharge occurs, unless a lesser distance is specifically approved by the DEQ in the authorization issued under the rules. Irrespective of whether or not the rule applies to the property boundary or the easement boundary, the DEQ's authorization to allow a discharge within the easement area is consistent with the applicable rule.

2. Comment: We want permit conditions added to help prevent spray drift.

Response: In response to the continued concern of spray drift off the easement parcels onto National Park land, the permit contains a condition under Item 5. b), Schedule of Compliance, which requires the development of a **Spray Drift Management Plan** (SDMP). This document will be part of the Operation and Maintenance Plan and as such will be an enforceable part of the discharge permit. The plan requires new or improved procedures for monitoring and preventing spray drift and is subject to DEQ review and approval.

3. Comment: We want monitoring to be required in the permit.

Response: All groundwater discharge permits for large scale WWTSS permitted under a Rule 2218 authorization require monitoring. The permit requires both effluent and groundwater sampling. It also requires soil sampling on an annual basis.

The permit contains the following monitoring requirements:

- Effluent monitoring is required weekly during discharge.
- Monitoring of Total Inorganic Nitrogen (TIN) levels and daily flow volume is required to calculate land application rates.
- Groundwater monitoring is required on a quarterly or annual basis.
- Under the required SDMP, daily monitoring of the two irrigation fields (for spray drift, time and length of spray irrigation, weather/wind speed, ponding, pooling, erosion, odors, piping and sprinkler heads).

4. Comments: Warning signs should be removed to allow public use of the land. The public is denied access to the area adjacent to the easement parcels and use of land.

Response: All groundwater discharge sites are required to fence-in the discharge area and install warning signs. This is done as a safety precaution for the public and does not prevent public access to the area adjacent to the easement parcels. The signs provide needed notification that a treated wastewater spray irrigation area is nearby. In addition, the NPS chose to place the warning signs outside of the easement. This was done because an isolation distance is not required on the easement boundary. Placement of the signs on the easement parcel fence would also be acceptable.

5. Comment: Spraying partially treated wastewater is harmful to people, plants and animals.

Response: Treated effluent is discharged to the two land application sites. The wastewater meets permit effluent limits. Land application provides treatment (crop and soil uptake) for nitrogen and phosphorus. The additional nutrients in the water provide fertilizer and extra water to plants. The effluent is also disinfected before it is discharged to the land application field, and meets the permit limits for fecal coliform of 130 counts/100 ml monthly

average and 300 counts/100 ml weekly maximum. These limits are more stringent than the standards that are allowable for full body contact at a public beach. This is considered appropriate for potential public contact in this location.

6. Comment: The permit should require funding an “Independent Chemical Testing Program” to determine if drift does reach NPS land.

Response: No independent testing program will be required to determine if drift reaches federal land. Past reviews by both DEQ staff and an NPS wastewater expert found that no chemical testing method exists that would accurately identify spray drift. A review of inspections which were made shows only one incident of overspray detected, and in response, the irrigation system was turned off. (Please see more under C. Compliance & Enforcement Comments.)

A testing method suggested by a member of the public would measure dry nitrogen and is not a measurement of overspray. Ammonia is a volatile compound and cannot be isolated as a separate parameter as a liquid precipitate.

7. Comment: We want a daily or weekly spray irrigation schedule made available to NPS and the public to aid in compliance monitoring, and so the public can avoid the area while spraying. We also want notification of any change in time of spray irrigation (night).

Response: With any spray irrigation system, the operator needs flexibility to irrigate according to weather conditions. This condition would not allow the operator to spray according to weather, which is a basic requirement of good operational practice. The NPS can ask for this information directly from The Homestead. The permit does require the facility to inform the NPS of any planned change in the time of spray application (night time).

The public is able to file a FOIA request for information retained by the DEQ related to the groundwater discharge permit. It is not possible under any FOIA request to obtain real-time changes in the spray irrigation schedule.

8. Comments: With sporadic Lake Michigan winds, it’s not possible to spray irrigate without drift. They need to go to “trickle or drip” irrigation or require full wastewater treatment without land application in order to meet limits prior to discharge. The DEQ should require upfront treatment so spray irrigation is not needed.

Response: The existing wastewater treatment system incorporates spray irrigation as part of the treatment process to provide additional removal of nitrogen and phosphorus. The treatment system is meeting permit limits on a consistent basis.

As with other spray irrigations systems, close monitoring is required, especially in a coastal environment where the wind can change so quickly. The DEQ acknowledges use of easement parcels belonging to the National Park as a unique situation which warrants more vigilance on the part of the facility in terms of operation of the spray irrigation system.

(Please see Section B., Land Application Comments, for a response to requiring a trickle or drip irrigation system.)

9. **Comment:** The DEQ should require an assessment of discharge alternatives to spray irrigation.

Response: Past permit applications did involve consideration of alternate methods of treatment/disposal and discharge locations (please see the Background Information section).

10. **Comment:** Was the WWTS designed and built to have “system redundancy” in case of lagoon malfunction?

Response: The Homestead system does provide the engineering redundancy required by state engineering standards under the Part 41, Sewerage Systems, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

These standards require lagoons to have a minimum detention time that will biologically treat the wastewater and multiple lagoons. In this case, the lagoons have to be sized large enough to hold all the winter flows. The valves, pumps and so forth present in the system are also redundant according to the standards

B. Land Application Comments:

1. **Comment:** Extending the irrigation season (if temperatures are acceptable) is vague and unenforceable and can lead to overloading. The DEQ needs to require minimum temperature/conditions under which extended application is permissible.

Response: The comment appears to be in reference to a request from the Facility dated September 3, 2015, for modifications to conditions contained in the “pre-public notice” version of the draft permit. The specific request from the Homestead stated: “We request that the irrigation period be modified to April 15 – November 15. The Homestead has observed many seasons when the growing season begins prior to May 1 and would like the ability to discharge early if the temperatures are acceptable.” The DEQ’s decision to grant the longer discharge season is based on the entire context of the request coupled with recognition of the variability of the beginning and ending of a given year’s growing season in Michigan.

The Facility relies on an actively growing crop within its discharge areas to provide the treatment necessary to meet groundwater quality standards when the concentrations of TIN and Total Phosphorus in the applied wastewater are above specific concentrations established in the discharge authorization.

The draft permit and the approved Discharge Management Plan (DMP) for the facility limits the volume and application rate of wastewater to the irrigated areas based on the concentration of TIN in the wastewater. The higher the concentration, the lower the volume and application rate of wastewater and vice versa. The highest concentration of TIN is typically observed in the early part of the discharge season. As such, the application rates to the irrigated areas during this period are at their lowest. Thus, the concern expressed regarding overloading of the land treatment system is addressed by the limits and discharge protocol established in the permit and approved DMP.

2. **Comment:** Because spray drift will always occur, the DEQ should make the Homestead Resort go to a “trickle or drip” irrigation system.

Response: Trickle or drip irrigation systems and similar technologies would present significant challenges with regard to providing suitable distribution of the wastewater to the crop and the potential for damage during harvest events. Such technologies are typically used to target the application of water (or wastewater) to a relatively small area with a limited number of plants within that area. As such, the use of this type of technology to apply wastewater to a forage crop is not a practical approach.

C. Compliance and Enforcement Related Comments:

1. **Comment:** Spray drift problems have existed for years and are not being dealt with. The problem needs to be corrected

Response: The DEQ continues to monitor the facility for compliance with their groundwater discharge permit conditions for effluent, land application, and groundwater.

During the last five years, overspray was not observed when the system was inspected by DEQ staff, even when the DEQ requested that the irrigation units be turned on for observation when conditions were not ideal. The irrigation units are designed for water to fall short of the easement boundary by a minimum of five (5) feet. Individual spray units or rows of sprayers can be turned off to increase the distance between the spray and boundary if needed. However, the full easement area is needed to provide nutrient uptake for adequate wastewater treatment; therefore, it is not possible to reduce the wetted area 100 percent of the time. Groundwater data shows that the treatment system is effective in removing the required nutrients to provide environmental protection.

Because DEQ staff is located several hours from the irrigation area it is incumbent on the permittee to observe the irrigation area for possible overspray. The Homestead conducts inspections of the parcels every two hours while the irrigation system is operating, and is required to make adjustments in operation if winds carry spray beyond the easement boundary.

The NPS conducted their own, unannounced inspections of the land application parcels for three years from May of 2013 through the 2015 irrigation season. They conducted 50 inspections during that time frame (at each parcel). Inspections were done on rainy days, or high wind days in order to observe whether or not spray drift was occurring.

On many of those days the irrigation pumps were not running. However, there were 22 reports that indicated the irrigation system was on. Of those 22 reports, there was only one day where overspray was detected. This was documented on May 15, 2013, and as their inspection report states, the operator of the WWTS was at the field checking the wind direction and making adjustments. Irrigation had been turned off by the time the NPS arrived. The inspection was conducted in response to a complaint about overspray.

Turning off the spray is an acceptable response to observing overspray and when the facility observed it, the system was turned off (in compliance with the permit).

Discussions with the NPS regarding these inspections revealed they did not plan to pursue any legal action against the Homestead Resort based upon one documented incident of spray drift.

2. **Comment: There is video and information on the website: Homesteadsewage.org that documents spray drift occurring. Why can't this be used for enforcement action?**

Response: Any video allegedly showing spray drift, but not taken by the DEQ or NPS, could be used to supplement an enforcement action. While that is true, the DEQ has reviewed all pertinent evidence, including its own inspections as well as those conducted by the NPS, and did not find a pattern of violations sufficient to warrant escalated enforcement actions. In addition, the DEQ has continued to work with the permittee to address spray drift issues and the new permit includes additional conditions to further minimize or eliminate spray drift.