



**MASON COUNTY
COMMUNITY SERVICES**

Building, Planning, Environmental Health, Community Health

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Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

May 18, 2018

This letter is being issued in response to comments received under Mason County SEP2018-00023.

As Co-Lead Agencies, Mason County and the Washington State Department of Ecology (Ecology) issued a Determination of Non-Significance (DNS) on March 23, 2018, after review of the SEPA checklist and supporting documentation for the proposed land modification (grading) and construction of an 18-million-gallon surface impoundment (lagoon) to store treated filtrate. Documentation provided by the applicant included:

Design Engineering Report with the following appendices:

- Appendix A: Bid Set Construction Drawings and Addenda
- Appendix B: Notice of Final Coverage Under the General Permit
- Appendix C: Operations & Maintenance Plan
- Appendix D: Construction Inspection and Construction Quality Assurance Plan
- Appendix E: Closure Plan
- Appendix F: Emergency Action Plan
- Appendix G: SEPA Determination and Checklist
- Appendix H: Final Geotechnical Report
- Appendix I: Dam Safety Analyses
- Appendix J: Hydrogeologic Analysis
- Appendix K: Geosynthetics
- Appendix L: Technical Specifications
- Appendix M: Project Schedule
- Appendix N: Precipitation Data

Following agency review of the documentation, it was determined that a significant environmental impact is unlikely and that conditions (mitigation) of the project-required permits further reduces the environmental risks.

As the nominal lead, Mason County was required to issue the SEPA DNS Notice for a 14-day comment period to the affected agencies and Tribes, and post the Notice on-site. The applicant also provided an "Interested Parties List" that included those previously requesting to receive Notice. This occurred on March 23, 2018. In addition, the County published the Notice in the Shelton-Mason Journal on March 29, 2018, effectively extending the 14-day comment period to April 12, 2018.

Mason County, Ecology and the Applicant were requested by the Mason County Board of County Commissioners (BOCC) to give an informational briefing* to be recorded for public benefit on Mason WebTV. This occurred on April 9, 2018. Following the briefing, the applicant allowed a 10-day extension to the comment period without objection. The comment period ended on April 22, 2018.

In total, over 100 separate comments were received by 90 individuals, Skokomish Indian Tribe, Squaxin Island Tribe and the state Department of Health. There were a range of comments received and we hope the following encompasses a comprehensive response to the relevant concerns, questions and proposed conditions to the project.

Ongoing Compliance. Many commenters objected to the idea that Bio Recycling was expanding the capacity of the material being managed at the North Ranch facility. The facility is currently managing an average of 60,000 gallons of septage per day. The proposed lagoon volume is based on Bio Recycling's current daily average intake, therefore would not likely expand the volume of material managed at the site.

Additionally many commenters expressed concern about the ongoing compliance of the lagoon. In addition to the standards and guidelines of Ecology's Dam Safety Office, Ecology reviews the impoundment design from the perspective of compliance with relevant standards of the regulations for biosolids management (WAC 173-308) and solid waste handling (WAC 173-350).

The basic objectives of the solid waste requirements for Bio Recycling's surface impoundment are the same as those for any other impoundment used for storing or treating liquids associated with non-hazardous waste handling:

- To design, construct, operate, and close the impoundment in a manner that does not pose a threat to human health or the environment.
- To prevent violations of ground and surface water quality standards under the state Water Pollution Control Act.
- To prevent violations at the property boundary of air quality standards under the Washington Clean Air Act.

These objectives are primarily carried out in the requirements for permitting, design, and operation of the impoundment.

The permitting documents must include an engineering report to establish the basis of the design, and must be reviewed and approved by Ecology.

Design requirements for this project include a liner using two layers of a flexible high-density polyethylene sheet material with a leak-detection layer in between. Ecology's programs with regulatory authority over the impoundment must approve the final design and specifications before Bio Recycling begins construction.

Operating requirements for the impoundment include:

- Maintaining freeboard of eighteen inches or more in the impoundment.
- Inspecting of the impoundment and associated piping and pumps at least weekly.
- Emptying, cleaning and inspecting the primary liner at least annually.
- Maintaining daily records of the amounts of filtrate added or removed from the impoundment.

- Reporting to Ecology at least annually on the operation and maintenance of the impoundment.

As part of the permitting process, Bio Recycling must also provide several other detailed plans, which must each be reviewed and approved by Ecology. Those plans include:

- A plan for the operation of the impoundment, describing how Bio Recycling will satisfy the operating and reporting requirement for the impoundment
- A plan for a construction quality assurance program, outlining the testing activities for the materials used in the construction of the impoundment, and the testing to verify that the impoundment is properly constructed in accordance with the design.
- A plan describing how the impoundment will eventually be closed, and how the liquids contained in it will be removed.

During construction of the impoundment, liners must be carefully installed and tested for leaks by the installer. Ecology staff will have a regular presence on-site during construction, monitoring progress of the project and observing compliance with the construction quality assurance program. Before Ecology allows the impoundment to be put into service, Bio Recycling's quality assurance representative for the project must certify that the construction was completed in accordance with the approved engineering report, plans, and specifications.

Seismic failure. Many of the comments expressed concern over seismic slosh or even complete failure of the lagoon due to a seismic event. For evaluation of stability under seismic loading, the western half of Washington state is characterized by three seismic source zones capable of generating crustal events up to Magnitude 7 to 7.2 (with return intervals of 2500 to 5000 yrs.), deep intraplate events up to 7.5 (250 to 400 yrs.), and great interface events up to Magnitude 9 on a mean frequency of some 550 years. The seismic loading conditions considered when evaluating stability of the lagoon under seismic conditions are based on the current understanding of the seismic hazard. A more detailed response can be found in *Enclosure A*.

Toxic waste and cleanup. Several commenters questioned what cleanup measures would be required in the event of a catastrophic failure of the lagoon. Under Washington's dangerous waste regulations, the filtrate approved for storage in the lagoon is not classified as dangerous waste. Therefore, the facility is not required to develop a cleanup plan, although Bio Recycling would still be legally responsible for damages caused by such a failure.

Risk to drinking water. Some commenters expressed concerns about potential impacts to drinking water drawn from the surface waters of Cranberry Lake or Lake Limerick. Neither lake is a drinking water source for the local community. Drinking water is drawn from six wells located east of Cranberry Lake. Because of the low concentration of the "filtrate" material stored in the lagoon, even if all of it ended up in Cranberry Lake, it would not contaminate these drinking water sources. The proposed lagoon would contain about 6 percent of Cranberry Lake's volume. It is possible that the Lake Limerick Water System will need to coordinate with Bio Recycling and the Department of Health to mitigate potential negative impacts, possibly by updating their Small Water System Management Plan or otherwise.

Reducing land application to six (6) months. Some commenters expressed concern about concentrating land application to a certain part of the year and whether the crop could adequately accept the additional nutrients. Bio Recycling grows grass for hay and grazing. In the spring as air

and soil temperatures warm, the grass begins to grow rapidly. This rapid growth is when the grass can use the most nutrients. Historically, Bio Recycling has estimated the nutrient need of the crops grown on their site for a given year and applied on the fields throughout the year. This has meant that application had not occurred during the time of year when grass is most able to use the nutrients. According to Oregon State University, "applying a majority of the needed nutrients in the spring in one or two applications will fuel rapid growth in spring and summer."

Additionally, Bio Recycling must determine application rates based on criteria Ecology laid out in the Biosolids Management Matrix, included as part of the final coverage conditions issued in the October 2017 in a final coverage letter. These application rates must be provided to Ecology in advance of application for Ecology review. Ecology will verify the estimated agronomic need by using information from university guidance, which indicates how much nitrogen is needed by a crop based on how the site is farmed.

Because of the low concentration of the "filtrate" material produced by Bio Recycling, they must also ensure that they are not applying more water than the crop needs. This is determined using the Washington Irrigation Guide.

Leakage. A response to the concern over leakage/seepage from the liner failing can be found in *Enclosure B*.

Smell/odor. Due to the low concentration of the material proposed to be stored in the lagoon, Ecology does not anticipate odor from the site to significantly increase because of the presence and operation of the proposed storage lagoon. However, Bio Recycling has also included the use of surface aerators in the lagoon, which will provide added protection against odors. Olympic Regional Clean Air Agency has indicated that as the project is currently proposed, a permit is not required. However, if odor does become an issue, the Agency may require Bio Recycling to register as a source, which would initiate an investigation into what additional odor control measures could be used to address the problem.

Birds. Control of birds is a required element of the surface lagoon's operations plan. Bio Recycling proposes a range of bird control methods including visual, auditory, and physical deterrence such as netting and water sprayers.

***Briefing:** The SEPA Determination and the Land Modification Permit application are administrative actions. The BOCC does not have decision making authority for Mason County administrative actions.

Thank you for your cooperation.



Peter Y. Lyon
Southwest Regional Section Manager
Waste 2 Resources Program
Department of Ecology



David Windom
Director
Mason County Community Services

Enclosures

By U.S. Mail

Enclosure A

DEPARTMENT OF ECOLOGY Dam Safety Office

Overview of Dam Projects May 10, 2018

The following information gives an overview of Dam Safety's oversight of new dam projects such as the North Ranch Surface Impoundment (lagoon).

Our over-arching goal is to protect public safety from a dam failure, which includes protecting economic and environmental resources as well as human life. To accomplish our goal, we follow this process:

- Review engineering of the design for the dam and appurtenant (attached) structures to ensure compliance with Dam Safety guidance.
- Observe construction to verify compliance with the approved engineering design.
- Verify that the dam owner knows how to safely operate and maintain their dam, and can respond to any unexpected incidents.
- Provide on-going periodic inspections of dams in the High and Significant hazard class categories to ensure continued compliance with Dam Safety requirements.

To comply with Dam Safety requirements, Bio Recycling's engineer submitted the following items for the North Ranch project for Dam Safety's engineering review:

- Dam failure analysis to identify who and what resources could be at risk from a potential dam failure. In this case, the primary impacts would be to Cranberry Lake. The North Ranch lagoon will gradually fill during the winter months, so the largest volume in the lagoon would occur only during the last couple weeks of March. At most, the volume in the North Ranch lagoon would represent about 6% of the volume of Cranberry Lake. The geotechnical and hydrologic design of the dam are intended to prevent a sudden release of the lagoon's contents. If such a release were to occur, this would be the limit of the impacts to Cranberry Lake.
- Hydrologic analysis to verify adequate spillway capacity pass the dam safety inflow design flood with adequate freeboard on the dam. In this case, the North Ranch lagoon and spillway is designed to accommodate a 30,000 year storm event, and can accommodate the Probable Maximum Precipitation (PMP) without overtopping the dam. PMP is the largest storm event that Dam Safety would require any dam to accommodate. By comparison, the Lake Limerick spillway is designed to accommodate only a 3,000 year storm event.
- Geotechnical analyses to verify both the static and seismic stability of the embankment. The stability of newly proposed dams under both static and seismic loading conditions is evaluated during the Dam Safety permit review process to ensure the dam meets minimum, currently accepted engineering standards outlined in [Part IV of the Dam Safety Guidelines](#).

From a static point of view, the stability of the dam and foundation is evaluated under all operating conditions, including full or partial drawdown. The stability of the dam is

Enclosure A

DEPARTMENT OF ECOLOGY Dam Safety Office

Overview of Dam Projects May 10, 2018

assessed in terms of minimum factors of safety (FoS). A FoS represents the factor required to increase the loading in order to bring a potential sliding mass into equilibrium. Typically a minimum FoS of 1.5 is considered for static conditions. In other words, the dam would be designed to withstand loads up to 50% greater than normal.

As background for evaluation of stability under seismic loading, the western half of Washington state is characterized by three seismic source zones capable of generating crustal events up to Magnitude (Mw) 7 to 7.2 (with return intervals of 2500 to 5000 yrs.), deep intraplate events up to 7.5 (250 to 400 yrs.) and great interface events up to Mw 9 on a mean frequency of some 550 years. The seismic loading conditions considered when evaluating stability under seismic conditions are based on the current understanding of the seismic hazard briefly described before. A FoS of 1-1.3 is typically used, considering that under seismic loading minor deformations are acceptable, provided the dam remains functional and the resulting damage is easily repairable.

- Engineering plans (drawings) and specifications for the new dam. When we are satisfied that the dam design complies with Dam Safety requirements, the plans and specifications will be approved by Dam Safety, and the owner and their contractor will build the dam in accordance with the approved plans and specifications.
- Construction Inspection Plan to describe how the owner and engineer will verify that the dam is built according to the approved plans and specifications.
- Draft Operation and Maintenance Manual to describe how the facility will be operated and maintained after construction is completed, including maintenance and inspection of the embankment and appurtenant structures.
- Draft Emergency Action Plan (EAP) to describe how the owner would respond to any unusual incidents that may arise at the dam. The EAP will include protocols and procedures to notify Cranberry Lake residents, Lake Limerick Community Club, and Department of Health Office of Drinking Water in the event of an incident at the North Ranch surface impoundment (lagoon).

All dams that we regulate in Washington are classified as low, significant or high hazard. There are two classes of significant hazard dams. Hazard class 2D is assigned when up to 6 people are at risk. Hazard class 2E is assigned for environmental risk only. The North Ranch lagoon was assigned as Hazard Class 2E, *Significant* downstream hazard potential because of the water quality and no people being at risk downstream. The lagoon will be included in Dam Safety's periodic inspection program.

MEMORANDUM

DATE: April 23, 2018
TO: Kell Rowen, Mason County
Kelsey Dunne, Department of Ecology
SUBJECT: Response to SEPA Public Comments on Liner
CC: Brian Hickey, General Manager, Bio Recycling
PROJECT NUMBER: 216-7573-001
PROJECT NAME: Bio Recycling Corporation
North Ranch Surface Impoundment

Below is our response to comment one of "The Liner" comments submitted by the Lower Hood Canal Watershed Coalition on April 12, 2018.

Comment:

Determine expected life of the Liner. Has there been testing of liner material with substances of pH 11.5 for an extended period of use?

Response:

The proposed liner system consists of two, 60 mil HDPE geomembrane liners. The top liner, known as the primary liner, is designed to completely contain the stored material. It is called "exposed" because it is exposed to the environment, such as the effects of sunlight, wind, and the stored material.

The bottom liner, known as the secondary liner, is buried beneath the primary liner, and serves as a fully-redundant backup to the primary liner in the event the primary liner experiences a leak. The secondary liner, located under the primary liner, is called "unexposed."

Exposed HDPE geomembranes have a predicted lifetime of greater than 36 years. The primary liner for this project is included in this category. Unexposed HDPE geomembranes have a predicted lifetime of between 166 and 446 years. The secondary liner is included in this category [1].

Both the proposed primary and secondary liners for this project are made of high density polyethylene, or HDPE, which has been used to line landfills and industrial and domestic wastewater ponds for over 30 years. HDPE is the industry standard for providing excellent chemical resistivity under long-term exposure to high pH.

References:

[1] Koerner, R.M., G.Y. Hsuan, and G.R. Koerner. 2011. GRI White Paper #6 "Geomembrane Lifetime Prediction: Unexposed and Exposed Conditions." Geosynthetic Institute. Pp 12-25.