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STATEMENT OF BASIS

GROUND WATER DISCHARGE PERMIT UGW010012

Mango II-Milford, LLC – Skyline BioEnergy Plant
Milford, Utah

January 2026

Introduction

The Division of Water Quality ("Division"), under the authority of the Utah Ground Water Quality Protection Rules[1] (Ground Water Rules), issues ground water discharge permits to facilities that have the potential to discharge contaminants to ground water[2]. As defined by the Ground Water Rules, such facilities include agricultural operations.[3] The Ground Water Rules are based on an anti-degradation strategy for ground water protection as opposed to non-degradation; therefore, discharge of contaminants to ground water may be allowed provided that current and future beneficial uses of the ground water are not impaired and the other requirements of Utah Administrative Code (Utah Admin. Code) R317-6-6(6.4)(A) are met.[4] Following this strategy, ground water is divided into classes based on its quality[5], and higher-quality ground water is given greater protection[6] due to the greater potential for beneficial uses.

Under Utah Admin. Code R317-6, Mango II-Milford, LLC ("Mango II") ("Permittee") has requested a renewal of its Ground Water Discharge Permit ("Permit") for the Skyline BioEnergy ("SBE") Plant. The Division has developed Permit conditions consistent with Utah Admin. Code R317-6 and appropriate to the nature of the operations, maintenance, best available technology[7] (BAT), and the hydrogeologic and climatic conditions of the site, to ensure that the operation will not contaminate ground water.

Basis for Permit Renewal

This Permit is being renewed in accordance with Utah Admin. Code R317-6-6(6.7). However, a permit may be terminated or a renewal denied if any one of the four items in Utah Admin. Code R317-6-6(6.8) applies:

1) Noncompliance by the Permittee with any condition of the Permit where the Permittee has failed to take appropriate action in a timely manner to remedy the Permit violation;

2) The Permittee's failure in the application or during the Permit approval process to disclose fully all significant relevant facts at any time;

3) A determination that the permitted facility endangers human health or the environment and can only be regulated to acceptable levels by plan modification or termination; or

4) The Permittee requests termination of the Permit.

[1] Utah Admin. Code R317-6
[2] https://lf-public.deq.utah.gov/WebLink/ElectronicFile.aspx?docid=618204%20&eqdocs=DWQ-2006-004002
[3] Utah Admin. Code R317-6-6(6.1)(A)
[4] Preamble to the Ground Water Quality Protection Regulations of the State of Utah, sec. 2.1, August 1989
[5] Utah Admin. Code R317-6-6(3)
[6] Utah Admin. Code R317-6-6(4)
[7] Utah Admin. Code R317-6-6(1.3)

Purpose

Ground Water Discharge Permit No. UGW010012, for the operation of the SBE Plant, is being renewed for a five-year Permit term. The SBE Plant and its associated collection system are located approximately ten miles west of Minersville, Utah, in the SW ¼ of the SE ¼ of Section 4, Township 30 South, Range 11 West, Salt Lake Base & Meridian. The SBE Plant is no longer in operation and is not expected to reopen during the term of this Permit, however the conditions of the Permit still apply.

Mango II currently monitors the SBE Plant and operates or leases swine production facilities at the Skyline Farm Complex in Beaver County southwest of Milford, Utah. Currently, all of the farms connected to the SBE Plant are depopulated so no new manure is flowing to the SBE Plant via the SBE Plant collection system. If the currently depopulated farms sites were to be repopulated, manure from each of the farm sites would be drained into an associated onsite anaerobic lagoon system for treatment and storage. Manure would not flow from a repopulated farm site to the SBE Plant. Each farm site has at least one primary lagoon and a containment basin for evaporation. Primary lagoons and containment basins will be lined with a 40-mil synthetic high-density polyethylene (HDPE) flexible membrane liner (FML). The coefficient of permeability for 40-mil HDPE is 2.7×10^{-13} cm/sec (Haxo and Lahey, 1988).

If Mango II reopens the SBE Plant, hog waste may be collected from all of the finisher farms and conveyed through the Collection System to either the SBE Plant or diverted to a different facility. If the SBE Plant is reopened and Mango II wishes to increase biogas production, supplemental organic feedstock can be added to the digesters subject to the criteria outlined in Permit Part I.D.4. The additional steam required to heat the supplemental feedstock, combined with the associated utilities for steam production, can result in a significant amount of additional wastewater. To address the need for additional evaporative capacity, Mango II constructed an additional containment basin directly east of the plant. Table 1 provides a summary of the Farm and BioEnergy Plant Collection System.

Table 1: Summary of SBE Plant Collection System

	Layout	*Farm Sites*
Phase I	East Skyline Layout	41311 through 41314
	Central Skyline Layout	41306 through 41308 41315 & 41322
Phase II	West Skyline Layout	41316 through 41321
	North Skyline Layout	41301 through 41305

Hydrogeology

The Milford basin lies in southwestern Utah and comprises a 3,004 km^2 area in the Basin and Range physiographic province. The mountain ranges adjacent to the basin are bounded by normal faults and have large coalescing alluvial fans extending into the valley. The principal water-yielding aquifer is a basin-fill aquifer. Sediments that make up the basin-fill aquifer are late Tertiary to Quaternary age and consist of multiple discontinuous layers of silt, sand, and gravel separated by less permeable layers of clay and silt. The basin-fill deposits are at least 270 meters thick in the basin center and thin toward the margins (Van der Hoven, 2001).

Ground Water Quality

Ground Water Class and Protection
Based on ground water quality data from site-specific monitoring wells located upgradient of the SBE Plant,

the ground water quality beneath the SBE Plant is Class 1A, Pristine Ground Water. Protection levels have been established based on data collected from monitoring wells installed upgradient of the anaerobic digesters and containment basin, and from existing monitoring wells at nearby farm sites. Ground Water Protection Levels for plant storage basins are summarized in Appendix A of the Permit.

As required in Permit Part I.E.5.b, a background monitoring program has been completed by Mango II to collect data for calculating well-specific background ground water quality statistics. This includes background ground water concentrations for total dissolved solids, chloride, bicarbonate, nitrate + nitrite as nitrogen, ammonia as nitrogen, and pH, all of which have been defined for the purposes of determining the applicable protection levels and compliance limits. Most wells have more than a 10-year monitoring history. Ground Water Protection Levels are summarized in Appendix B of the Permit.

Class I Protection Levels. In accordance with Utah Admin. Code R317-6-6(4.2), Class I ground water will be protected to the extent feasible from degradation due to facilities that discharge or would probably discharge to ground water. Class I protection levels are established in accordance with the criteria in Utah Admin. Code R317-6-6(4.2)(B).

Compliance Monitoring Program

A ground water monitoring well system has been installed at each of the digester and basin systems for the purposes of establishing the ground water gradient at each farm site and to monitor the ground water quality both upgradient and downgradient in the uppermost water-bearing zone under the lagoons. Ground water is sampled and analyzed semi-annually for the term of the Permit. The following key leakage parameters were selected for compliance monitoring based on their high concentrations in the process water compared to concentrations in shallow ground water:

- Bicarbonate
- Nitrate + nitrite as N
- Chloride
- Total Dissolved Solids

Field parameters collected during each groundwater sampling event include pH, specific conductance, and temperature. This list of ground water monitoring parameters may be updated in the most recently revised and approved version of the Mango II *Sampling and Analysis Plan*.

Regulatory decisions made as a result of ground water monitoring must consider the background variability of ground water quality at the sites. Mango II will not be required to take corrective action if it can be verified that changes in ground water quality are a result of other factors not related to their operations.

Best Available Technology (BAT)

The administration of this Permit is founded on the use of best available treatment technology, in accordance with the requirements of Utah Admin. Code R317-6-6(1.3). Compliance with the requirements for use of best available technology (BAT) is demonstrated by construction, and maintenance and operation of the collection and the digester systems according to the construction Permits issued as part of this Permit.

The containment basin capacity design is based on evaporating approximately 33,000 gallons of liquid input into the basin each day. To minimize basin leakage, a 40-mil high-density polyethylene (HDPE) flexible membrane liner is constructed over an 8-inch compacted subgrade. Compaction of the subgrade is to 90% of standard proctor maximum density (ASTM D698). Construction quality assurance and quality control

testing consisted of compaction testing to obtain proper compaction density. Atterberg limits and sieve analysis tests were performed to assure subgrade and compaction quality. A Construction Permit was issued on March 8, 2006. Authorization to place the containment basin in service was issued on November 2, 2006.

Construction Permits require that lagoon systems and the SBE Plant be properly maintained in a manner to prevent excessive odors. The operation and maintenance of these facilities may require more effort than is outlined in the Natural Resources Conservation Service (NRCS) standards for maintenance of anaerobic lagoons found in the NRCS's *Agricultural Waste Management Field Handbook*. Additional guidance for the proper maintenance of anaerobic lagoons is available from the Utah State University Extension Service, the American National Standards Institute/American Society of Agricultural Engineers (ANSI/ASAE) Engineering Practice EP403.3 (July 1999) entitled *Design of Anaerobic Lagoons for Animal Waste Management,* and ANSI/ASAE Standard EP379.5 (April 2012) entitled *Management of Manure Odors*. If the guidance in these references is not followed, Mango II will provide credible documentation supporting any deviation from the guidance contained in the above references.

Potential Impacts to Ground Water

Leakage from liners can cause degradation of the ground water at the Permitted sites. Potential impacts to ground water can be minimized by employing best available technology and discharge minimization technology for the lagoons. BAT performance monitoring, treatment technology, and compliance monitoring wells are used to ensure that the facility is operated in accordance with design specifications and will also ensure that early indications of facility problems will be detected.

Major Permit Changes

1. The SBE Plant is currently idled and is not operating. The Permit is being maintained for possible future Plant use and/or business opportunities. Ground water compliance monitoring requirements for the digesters and wastewater evaporation basins are still in effect.

   The requirement for collection and analysis of ground water samples for ammonia nitrogen for routine samples has been discontinued. Collection and analysis of ammonia in ground water samples will continue for probable non-compliance, non-compliance sampling, and lagoon samples. Routine sampling for ammonia in ground water has been demonstrated to be of limited use. While ammonia is quite high in lagoon wastewater, it does not appear in ground water at leakage sites. Ammonia is transformed into the unsaturated and vadose zone prior to entering ground water. In warm, well-drained soil, ammonium transforms rapidly to nitrate (NO_3^-) which leaches easily, since the nitrate is a negatively charged ion (anion) and is not attracted to soil clay. Several thousand ammonia analyses of ground water have been collected, and ammonia is detected in less than 1% of the samples, even at known non-compliant sites. Sample splits collected by the Division confirm this fact. Chloride and Nitrate + nitrite in groundwater are better indicators of lagoon wastewater contamination than ammonia at this site.

2. Major ion sampling was included in previous Permit cycles to better characterize the concentrations of sulfate, sodium, potassium, magnesium, and calcium at the SBE Plant. This additional sampling requirement has been removed from the current Permit, as sufficient background data has now been collected.

3. The Permittee is now required to calculate and report the hydraulic gradient and direction of ground water flow for each farm system that has a confirmed out-of-compliance upgradient monitoring well covered under this Permit. Hydraulic gradients and flow directions will be provided in each

semi-annual monitoring report as necessary.

Compliance Schedule

1. Mango II has submitted a plan to assess the groundwater monitoring well network to address the large number of non-sampled monitoring wells identified in the *2025 First Half Ground Water Monitoring Report* submitted by Mango II. The following monitoring wells covered under this Permit were not sampled due to insufficient water: MUBB, MDBB, MDBB2, SBMU, and SBMD.

   Mango II is currently evaluating these monitoring wells and will redrill or redevelop them as necessary to restore functionality to the ground water monitoring well network for this Permit. Any replacement or redevelopment work will comply with the groundwater monitoring well-related criteria specified in Permit Part I.E.1 of the Permit.

2. Currently, the SBE Plant and its associated collection system are not in operation and are not expected to be reopened during the term of this Permit. If the Permittee wishes to reopen the SBE Plant for operation, the Permittee will submit an updated version of the *Mango II Collection System and SBE Plant Operation and Maintenance Manual* for Division review 30 days prior to reopening of the SBE Plant and collection system.

Permit Appendix Documents

Applicable Mango II appendix documents for this Permit include:

APPENDIX A	Farm and Monitoring Well Protection Level Summary
APPENDIX B	Monitoring Well Locations
APPENDIX C	Sampling and Analysis Plan
APPENDIX D	Spill Prevention and Response Manual
APPENDIX E	Sludge Disposal and Farm Closure Plan
APPENDIX F	Nutrient Management Plan for Land Application
APPENDIX G	Operating and Maintenance Manual for Primary Anaerobic Treatment Lagoon and Containment Basin Waste Systems

References:

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