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STATEMENT OF BASIS
for the
MORGAN RANCHES DAIRY FARM
PERMIT NO. UGW310001

March 2021

## INTRODUCTION

The Division of Water Quality (DWQ) under the authority of the Utah Ground Water Quality Protection Rules[1](Ground Water Rules) issues ground water discharge permits to facilities which have a potential to discharge contaminants to ground water[2]. As defined by the Ground Water Rules, such facilities include pits, ponds, and lagoons.[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 Rule 317-6-6.4.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. DWQ has developed permit conditions consistent with R317-6 and appropriate to the nature of the mined materials, facility operations, maintenance, best available technology[7] (BAT) and the hydrogeologic and climatic conditions of the site, to ensure that the operation would not contaminate ground water.

## BASIS FOR PERMIT ISSUANCE

Under Rule 317-6-6.4A, DWQ may issue a ground water discharge permit if:

1) The applicant demonstrates that the applicable class TDS limits, ground water quality standards protection levels and permit limits established under R317-6-6.4E will be met;
2) The monitoring plan, sampling and reporting requirements are adequate to determine compliance with applicable requirements;
3) The applicant is using best available technology to minimize the discharge of any pollutant; and



1 Utah Admin. Code Rule 317-6
2 https://deq.utah.gov/ProgramsServices/programs/water/groundwater/docs/2008/08Aug/GWQP_PermitInfo.pdf
3 Utah Admin Code Rule 317-6-6.1A
4 Preamble to the Ground Water Quality Protection Regulations of the State of Utah, sec. 2.1, August, 1989
5 Utah Admin. Code Rule 317-6-3
6 Utah Admin. Code Rule 317-6-4
7 Utah Admin. Code Rule 317-6-1(1.3)

4) There is no impairment of present and future beneficial uses of ground water.

BACKGROUND

The Morgan Ranches Dairy Farm operates a dairy with associated manure waste handling facilities. This Statement of Basis covers the second renewal of the ground water discharge permit. The permit was originally issued in 2010 and renewed in 2016.

A. DESCRIPTION OF FACILITY

The Morgan Ranches Dairy operates a manure wastewater lagoon for use in their dairy operation in Piute County approximately 0.5 miles east of Circleville. A former wastewater pond has been taken out of service and is now used to store clean irrigation water. The Dairy consists of barns, parlors and waste facilities to accommodate 3,500 dairy cattle.

Manure from the dairy operations is flushed from the barns using recycled plate cooler water. The liquid fraction is stored in the wastewater lagoon. Both the liquid and solid fraction is applied to fields at the appropriate agronomic rate according to the Comprehensive Nutrient Management Plan. Liquid and some solids are applied on the adjacent land. The rest of the solids are sold as compost.

B. SUBSURFACE CONDITIONS

The Dairy Farm is located in Circle Valley, approximately 0.5 miles east of Circleville in Piute County. In this vicinity, ground water generally moves from the mountainous recharge areas on the west and east in a northerly direction toward the upper end of Circle Valley. The Sevier River runs through the center of Circle Valley and is considered a point of discharge for the basin fill aquifer. The alluvial aquifer beneath the existing grade at the site consists of unconsolidated and semi-consolidated, poorly sorted alluvial materials; primarily clay, sand and gravel, inter-bedded with silt and clay. The alluvial aquifer in the Circle Valley may be several hundred feet thick under the dairy site. Monitoring wells have been completed in the uppermost water table aquifer at the site.

C. GROUND WATER CLASSIFICATION AND PROTECTION LEVELS

Ground water data from wells at the dairy site and other nearby wells indicates that background water quality in the area is Class IA- Pristine Ground Water with TDS less than 500 mg/L. Protection levels have been established for nitrate + nitrite, chloride and TDS and included in Table 1 of the ground water discharge permit.

D. BEST AVAILABLE TREATMENT TECHNOLOGY

At full population the dairy can contain 3,500 animals in total confinement. The

wastewater storage lagoon consists of a flexible membrane liner and is designed to hold approximately 40.2 acre feet, not including 1 foot of freeboard. Wastewater and composted manure are applied to adjacent farmland by irrigation. The solids will be used as an organic fertilizer or sold as compost.

Dry, scraped manure is composted. Solids are deposited on a graded and bermed area for composting. Runoff from the compost area drains into the settling pond.

The design, operational, and contingency requirements detailed above represent Best Available Technology since the implementation of these requirements will be protective of ground water resources in the area surrounding the facility.

E. GROUND WATER MONITORING

The Dairy has installed one up-gradient (background) monitoring well and three down-gradient monitoring wells located along the direction of ground water flow and completed in the uppermost water-bearing zone at the facility. Ground water is sampled and analyzed semi-annually for nitrate + nitrite, ammonia, pH, chloride, bicarbonate, and total dissolved solids for the term of the permit. Background concentrations have been determined using data collected from monitoring wells sampled during the term of the first ground water discharge permit.

Regulatory decisions made as a result of ground water monitoring must take into account the background variability of ground water quality at the dairy site. The Morgan Ranches Dairy Farm 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.