STATEMENT OF BASIS

Holt Dairy, L.L.C.
Ground Water Discharge Permit No. UGW210010
February 2010

A. DESCRIPTION OF FACILITY

Holt Dairy is constructing a 5,415-cow dairy facility approximately 1.5 miles west of Newcastle, Utah in Iron County. The facility is located in the southwest quarter of Section 18, Township 36 South, Range 15 West, SLBM. Planned facility construction includes:

- Six Freestall Barns and Exercise Corrals, Flush Lanes, and connecting Cross Alleys;
- One Corral for dry cows;
- One Sick Pen;
- One 80 cow Carousel Parlor with Milking Equipment;
- One Hospital Parlor with Milking Equipment;
- One Calving Barn;
- Two Sand Lanes;
- One Biolink Flush Water System;
- One Reception Pit and Duplex Pump System;
- Composting and Mixing Areas;
- A site graded complete water and drainage system for all of the above items; and
- Two Anaerobic Lagoons with 60-mil HDPE Liner Systems.

Construction will be done according to the conditions of a construction permit issued by the Division of Water Quality on September 16, 2009.

The milking parlor will utilize an estimated 100,000 gallons of water daily. The water will be used to pre-cool milk, cooling of milking equipment, for cow cleaning and for cleaning of equipment and facilities. The water will be collected from the barn and will be sent to a solids separator where the solids will be separated and the liquids will be installed in the lagoon.

Water used for cooling will be recycled by collecting the warmed water in storage until it is used for cleaning of the parlor and cows. Water used for cleaning contains milk residues and manure as well as a small quantity of detergents and small amounts of disinfectants including iodine.

Wastewater that is collected from the milking parlor will be piped to the solid separator. This equipment includes a series of gravity solid separating cells and a bio-link mechanical separator system. The separation facilities will separate 70% of the solids from the liquid stream.
The freestalls will be bedded with sand or composted manure and they will be cleaned by
flushing three times a day. The water from the freestall flush will be run over a concrete
sand alley to remove as much of the sand as possible, and the remaining effluent will be
run through the separator. Solids will be composted at the site to be land applied at the
appropriate time. The flush lanes will be flushed with water taken from approximately 6
feet below the surface of the process tank of the biolink separation system that has been
used during the current days’ wastewater production, for odor reduction by using cleaner
and aerobic water for flushing.

The exercise lot and closeup lot will be lined with compacted native soil and graded such
that the runoff from the lots will be collected and directed to the biolink separator via the
drainage system. The manure and bedding deposited in the exercise pens, closeup lot and
calving barn will be piled and hauled to the composting area as needed.

All the wastewater and runoff water containing manure will flow through the gravity and
mechanical separators. The mechanical separator is equipped with a bypass and overflow
collection which is directed to the gravity separator and then to Lagoon #1. Runoff from
other areas around the buildings will be diverted directly to Lagoon #2.

The liquids will be stored in two anaerobic lagoons, lined with 60-mil HDPE over a
compacted soil base. Lagoon #1 will be 412 feet by 218 feet with an area of
approximately 2 acres and volume of approximately 16 acre feet. During normal
operation all the effluent is directed from the biolink to Lagoon #1, to allow for settling
and eventual removal of solids. Lagoon #2 will be used for evaporation and storage of
wastewater prior to land application. It will be 412 feet by 1002 feet with an area of
approximately 9.4 acres and volume of approximately 95 acre feet. A transfer pipe at the
normal high water level will carry water from Lagoon #1 to Lagoon #2. During normal
operation, only overflow from Lagoon #1 and runoff from the site and composting area
flows directly to Lagoon #2. In an abnormal event such as a large storm or power outage,
effluent will be directed directly to Lagoon #2 from the reception pit. Operating depth of
the lagoons will be 10 feet and maximum depth will be 12 feet, with 2 feet of freeboard
remaining. The lagoons are sized based on 100,000 gallons per day of milking parlor
process water, storage for the winter season when the effluent cannot be land-applied,
and runoff from the 100-year, 24-hour storm event. During the growing season the
liquids will be mixed with clean water and applied to crops. A portion of the solids will
be composted and some of the compost may be exported to neighboring farms.
Composted and non-composted solids will be land applied to crop land owned by Holt
Dairy with manure spreading equipment.

B. SUBSURFACE CONDITIONS

The facilities are located in Escalante Valley approximately two miles west of the point
where Pinto Creek emerges from the mountain front. Sites where surface streams flow
across coarse-grained deposits along mountain fronts are often important sources of
recharge for aquifers in the alluvial valley deposits. Information obtained after drilling
and installing three ground water monitoring wells revealed that materials under the site
are predominantly silt and clay, with some minor lenses of sand and gravel.
While drilling the borings for the monitoring wells, uppermost ground water was encountered at approximately 250 feet below ground surface. After the wells were installed, static water levels in the wells were measured at 175 to 185 feet below ground surface. This suggests that the uppermost aquifer is under confined conditions and may be protected from contaminants introduced near the ground surface by nearly 300 feet of mostly fine-grained sediments and an upward (artesian) hydraulic gradient. Upgradient monitoring well MW-1 had a ground water temperature of 100 degrees F at 300 feet below ground surface, which suggests a geothermal source.

Historically, ground water levels in Escalante Valley have been falling due to overpumping. Ground water withdrawals and overpumping in the Beryl Junction area has resulted in land subsidence and earth fissures that were documented by the Utah Geological Survey. Additionally, overpumping may affect water levels in monitoring wells, vertical hydraulic gradients, and ground water flow directions during the lifetime of this facility.

C. BACKGROUND WATER QUALITY AND GROUND WATER CLASS

Based on laboratory analytical results of samples collected from the three monitoring wells installed at the dairy site, the uppermost ground water is classified as Class II Drinking Water Quality with total dissolved solids ranging from 1,000 to 1,100 mg/l.

D. BEST AVAILABLE TREATMENT TECHNOLOGY

The wastewater storage lagoons are lined with 60-mil HDPE flexible membrane liners over a one-foot subbase of compacted soil.

All facilities with sustained hydrostatic conditions, including reception pits and the milking parlor, are constructed with concrete and have water stops in all joints.

All open lots have a minimum of 12 inches of native soil compacted to 95%, and this soil has a clay content greater than 18%.

Land application of solids and liquids will be done under a Comprehensive Nutrient Management Plan developed by a certified nutrient management planner.

E. GROUND WATER MONITORING AND DEMONSTRATION OF COMPLIANCE

Ground water conditions at the site were unknown when the permit application was filed. Under the assumption that site conditions would be similar to most valley and bench locations in the state, Holt Dairy was required to drill one upgradient and two downgradient monitoring wells located along the presumed direction of ground water flow. When the wells were drilled it was discovered that the upper 300 feet of the subsurface was predominantly silt and clay, and the uppermost ground water was encountered beneath these layers under confined conditions or artesian pressure.
Under these conditions, contaminants introduced near the ground surface at the dairy site are not likely to affect the uppermost ground water. Because of these site conditions, sampling and analysis of ground water from the monitoring wells may not be useful to evaluate compliance with permit conditions. In order to better understand site conditions and variability of ground water quality in the ground water flow system, at least eight samples from each monitoring well shall be collected over a one-year period, and ground water elevations will be measured. Upon completion of this accelerated background monitoring program, background water quality will be established and protection levels will be derived from the data. The compliance monitoring plan will be re-evaluated to determine if further ground water sampling will be useful to detect contamination from the dairy facilities. There is a possibility that ground water static levels in the confined aquifer may drop over the lifetime of this facility, changing the current upward hydraulic gradient and making downward contaminant migration more likely. For this reason, ground water elevations will be measured semi-annually in all monitoring wells, even if ground water sampling is not required in the future. If ground water elevations as measured in the wells drops to near the elevation where water was first encountered during drilling (approximately 250 feet below ground surface), water quality monitoring of the wells will be resumed.

Compliance with permit conditions will be demonstrated by ground water quality sampling and monitoring static water levels in the confined aquifer as described above, construction of containment facilities appropriate for the site conditions, and following the approved Comprehensive Nutrient Management Plan.