

## INFORMATION SHEET

ORDER NO. R5-2014-XXXX  
AQUA CLEAR FARMS FACILITY  
CONSTRUCTION, OPERATION, CLOSURE,  
POST-CLOSURE MAINTENANCE, AND CORRECTIVE ACTION  
SOLANO COUNTY

Aqua Clear Farms, Inc. (facility owner and operator) and Hatch Investments Limited Partnership (landowner), hereafter referred to jointly as “Discharger”, own and operate the Aqua Clear Farms facility (facility). The Aqua Clear Farms Facility is a drilling mud waste disposal facility located at the intersection of Highway 113 and Flannery Road near Highway 12 south of Dixon and west of Rio Vista in Solano County. The site has been used for disposal of drilling mud primarily from drilling of natural gas wells since 1970. Drilling mud is currently discharged to double-lined Class II surface impoundments that are regulated under Title 27.

The facility was initially operated by J&J Disposal from 1970 to 1973 under Resolution 70-157 that provided waste discharge requirements (WDRs) for disposal of drilling mud directly to the ground surface. At that time, the property was owned by a Mr. Flannery. The site was purchased by the Discharger in 1973, and WDRs 74-500 were issued requiring drilling mud and rainfall to be retained onsite by dikes. The Discharger constructed Basins 1 through 5 to contain the drilling mud and contact rainfall onsite. Basin 1 was an “auxiliary pond” that was not used for waste disposal and was removed in 2012. Following the issuance of WDRs 81-028, Basins 6 through 10 were constructed with 12-inch clay liners in 1982-83 prior to the 1984 regulations requiring liner systems then contained in Chapter 15 of Title 23 (now in Title 27 as of 1997). In 1992 and 1993, WDRs 92-013 and 93-013 were issued requiring retrofitting of some basins with liners meeting the requirements of Chapter 15 and closure of others as landfills. An approved 30 to 54-inch replaceable clay liner was installed in Basin 8 in 1993. Following the issuance of WDRs R5-2002-0120, Basins 2 through 5 were closed as landfills and Class II double liner systems consisting of synthetic and clay components were installed in Basins 9 and 10.

Current operations at the facility generally consist of discharge of wet drilling mud from tanker trucks directly into double-lined Class II surface impoundments. The drilling mud solids settle to the bottom of the impoundment, and the water or “top water” rests on top of the mud. During the dry season, the top water evaporates or is transferred to another lined Class II basin and the underlying wet mud is mechanically processed with low ground pressure equipment to dry it. Once the mud reaches 50% moisture content or less, it is either moved to another lined Class II basin to make room for more incoming wet drilling mud, or it is compacted in place. Basins with dried mud compacted in place or that accept dried mud from other basins will be closed as landfills once filled with mud to final grade with 4H:1V side slopes above the top of the impoundment berms.

Current onsite facilities include four closed basins (Basins 2-5), two active double-lined basins (Basins 9 and 10), one formerly active clay-only lined basin that is being clean closed

(Basin 8), two inactive basins (Basins 6 and 7), a truck washout area, an office trailer, various groundwater monitoring and extraction wells, and an industrial water supply well. Soil for the soil layers in basin liners and covers is currently excavated from where future Basins 11 through 13 will be located and was previously excavated from a soil borrow area west of the site entrance.

Shallow groundwater at the site has been impacted with salt constituents from historical drilling mud disposal practices, particularly when wet drilling mud was discharged directly to the ground surface in the early 1970s, to unlined Basins 2 through 5 later in the 1970s, and to Basins 7 through 10 with 12-inch clay liners in the 1980s as was allowed by the WDRs and the regulations at the time. High salinity was discovered in shallow groundwater in the early 1980s after installation of monitoring wells 2 through 6. Elevated constituents include TDS, chloride, sulfate, sodium, and other inorganics. Additional wells were installed in 1983 through 1985 including monitoring wells 7 through 10, and additional clustered wells at varying depths. Several investigations have been conducted at the site since the 1990s that have included additional monitoring wells, extraction wells, borings, test pits, and waste characterization. Most of these monitoring wells were replaced during 2013.

In 1992 and 1993, the Central Valley Water Board issued WDRs requiring corrective action for groundwater impacts and for Basin 8 to be lined in accordance with regulations that are now contained in Title 27. Cease and desist orders were issued in 1995 and 1998 requiring specific basins to have liquid removed, be closed, and/or be cleaned out. Requirements to close Basins 2 through 5 were also placed in the previous WDRs R5-2002-0120. Basin 8 was lined in 1993 and used for drilling mud discharge and processing until the replaceable clay liner showed breakthrough to the leachate detection system pan lysimeter in the liner in 2013. Drilling mud was removed from Basins 7, 9, and 10 as required, and Basins 9 and 10 have since been retrofitted with double liners. Between 2003 and 2011, Basins 2 through 5 were closed with the final cover approved in WDRs R5-2002-0120.

An Evaluation Monitoring Program report was submitted in 1998, and a Corrective Action Program (CAP) was submitted in 1999. The CAP was approved in WDRs R5-2002-0120 and previously consisted of groundwater extraction from wells 3, 3B, HA-1A, and P-5 formerly located at the downgradient northeast corner of the facility. The wells produced very little water due to the construction of the wells and the limited nature of the higher permeability layers of perched groundwater in which they were screened. During 2013, in accordance with an approved work plan, the Discharger replaced the two inch diameter extraction wells with larger four inch diameter wells and installed upgraded pumps to improve flow rates. The current CAP now consists of groundwater extraction from the new four inch wells that include 3R, 10R, and HA1R. Groundwater extraction rates with the new wells are higher than the old wells, but are still relatively low (0.01 to 0.03 gallons per minute per well) due to the limited nature of the zones in which the perched groundwater resides. Extracted groundwater is routed to the active double-lined Class II surface impoundments.

The major items being addressed in this revision of the WDRs include:

1. Providing information about improvements to the waste management units and corrective action program since 2002,
2. Providing an updated water balance and freeboard requirements for the impoundments,
3. Providing information and requirements for how the surface impoundments will be managed during filling with dried drilling mud and be closed as landfills,
4. Providing management of runoff from impoundments that are filled with dried drilling mud,
5. Upgrading the truck washout area,
6. Updating the MRP to list the new monitoring wells at the site, and
7. Updating the financial assurances requirements.
8. Requiring improvements to the corrective action program for groundwater impacts.

Surface drainage from approximately 90% of the facility area drains to a culvert under Highway 113 near the northeast corner of the site that flows to "Big Ditch", a tributary to Lindsay and Cache Sloughs which flow into the Sacramento River within the Sacramento-San Joaquin Delta. Other areas of the site drain to a soil borrow area that is located to the west of the site entrance.

WLB