Western Refining
GALLUP

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SEP 2011
NMED Hazardous Waste Bureau

September 22, 2011

Mr. Carl Chavez
Oil Conservation Division
Environmental Bureau
1220 S. St. Francis Dr.
Santa Fe, NM 87505

Re: Western Refining Southwest Inc. –Gallup Refinery- GW-32 (Sanitary Treatment Pond No. 1)

Dear Mr. Chavez:

Thank you for your approval of the design and construction plans for the sanitary treatment pond No. 1. Attached is the information you requested in your August 25, 2011 approval letter.

Please contact me at (505) 722-0217 if you have any questions regarding this information.

Sincerely,

Ed Riege
Environmental Manager

C: Mark B. Turri
Don Riley
Frank Keys
Kristen Van Horn NMED-HWB

I-40 Exit 39, Jamestown, New Mexico 87347 • 505 722-3833 • www.wnr.com
Mail: Route 3 Box 7, Gallup, New Mexico 87301

On 25 August 2011 the New Mexico Oil Conservation Division (OCD) approved the design and construction plans for the STP-1 aerated lagoon with four conditions. The following are responses to the conditions from New Mexico OCD:

1) This is to confirm that the pond liner and construction standards shall meet as a minimum the applicable OCD Oil & Gas Regulations (19.36.17 NMAC). Specifically there will be a primary (upper) and secondary (lower) liner with a permeable intermediate geonet liner to direct any leak to a sump for detection and collection. The primary and secondary liners will be of 60 mil HDPE liner material, and will be resistant to petroleum hydrocarbons, salts and acid and alkaline solutions. The liner material will contain sufficient carbon black to ensure resistance to degradation from ultraviolet light. The design shall also provide for a three foot freeboard above the high water level.

2) The attached Figure 1 is a flow schematic showing the locations of flow measurement devices and sampling connections for the overall wastewater treatment facility. Flow measurements and sample connections are provided for the MPPE effluent and Pilot sanitary influent streams to STP-1, as well as at the effluent box as treated effluent flows from STP-1 to the downstream Evaporation Ponds. In addition, other process oriented sampling points are provided to confirm proper operation of the upstream DGF and MPPE treatment units.

3) The design calls for ten Aqua-Jet floating surface aerators of the type currently used in the existing aerated lagoons AL-1 and AL-2, to be installed in the new STP-1. These aerators have demonstrated their reliability and operability over the years. These aerators generate a low profile spray providing little opportunity for wind entrainment to carry the spray outside of the pond area. These aerators have a "diffusion head" as shown in Figure 2 designed to divert the vertical flow from the submerged axial flow pump to the horizontal direction thereby keeping the spray within the confines of the pond.

4) The excavated soils will be mounded and isolated in such a way as to facilitate any future testing requirements.

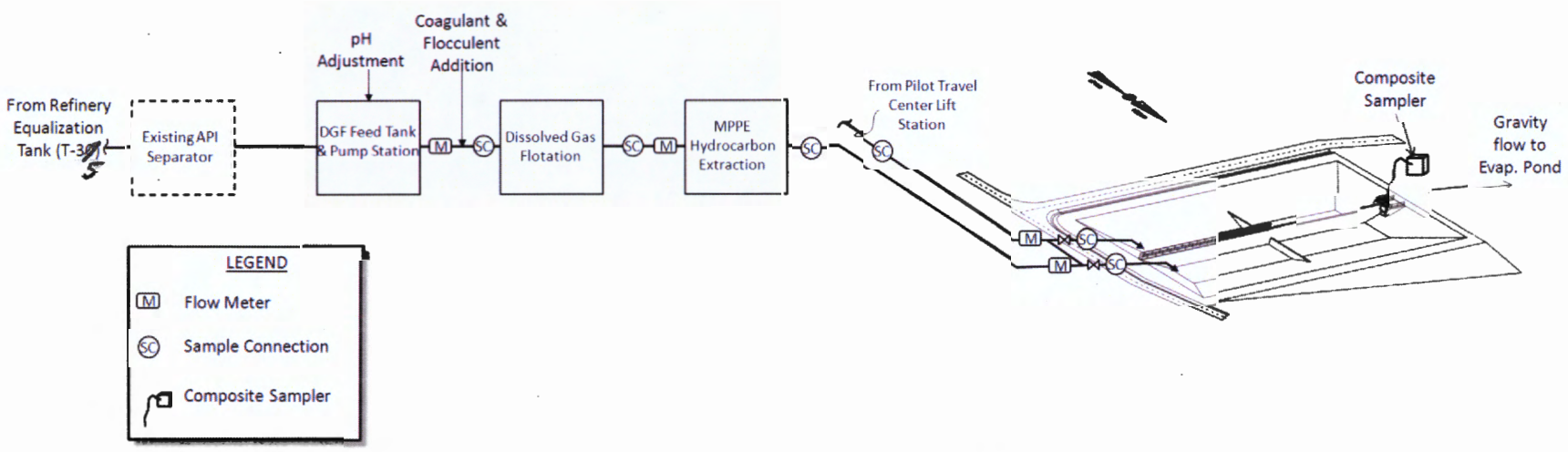

Figure 1: Flow Schematic Showing Locations of Flow Meters and Sampling Connections

1. Motors are totally enclosed, fan cooled, and rated for severe duty. Motors are available in standard or high efficiency and vibration tested for optimum performance in the most stringent applications. Standard features include heavy-duty bearings and seals, class F insulation or better and a minimum 1.15 service factor.

2. Labyrinth Seal Guard prevents upward migration of water from contacting the lower end bell of the motor and working into motor bearing.

3. The Diffusion Head of an aerator must be able to support the weight of the motor, evenly distribute static and dynamic loads, and change the direction of the high velocity discharge flow, optimizing discharge pressure and spray pattern. The Aqua-Jet® aerator cast diffusion head is designed to withstand the constant stress created by the upflow spray of the aerator. Its strong flanged connection to the volute ensures that minimum stress is placed on the connections and that no vibration or fatigue results.

4. One-Piece Shaft of 17-4 PH (precipitation hardened) stainless steel eliminates the use of couplings which require constant lubrication with water or wastewater. The one-piece design eliminates the vibration and constant maintenance problems inherent in coupled-shaft designs, providing much greater strength than 304 or 316 stainless steel.

5. Anti-Deflection Insert provides support for the shaft should debris be ingested into the unit. Under normal operating conditions, the shaft runs free of support by the insert. The insert is in an optimum location allowing some flexing, yet protecting loads on bearings.

6. The Volute of an aerator must be able to withstand constant duty in corrosive, abrasive and high velocity propeller-induced flow. The volute of the Aqua-Jet® aerator is constructed of heavy wall stainless steel to resist this assault. The heavy construction will provide a long, trouble-free life.

7. Float is filled with a closed cell polyurethane foam that adds to the structural stability of the Aqua Jet® and prevents sinking if excessive damage to the float exterior should occur. Float exteriors are of 14 gauge stainless steel; with fiberglass available as an option on most sizes.

8. Propeller is a two blade design cast of 316 stainless steel. It features an 180o sweepback design for non -clog operation and greater operating efficiency.

9. Intake Cone provides a smooth transition of flow with minimum head loss. Anti-vortex crosses are included as standard on all sizes of 20 HP and larger.

10. Fluid Deflector contains the thrust washer and protects the anti-deflection insert from the upward liquid flow.

11. Draft Tube/Anti-erosion Assembly (optional). Draft tubes are volute extensions used to extend the intake of the aerator to a greater depth. Anti-erosion assemblies consist of a stainless steel plate attached to the bottom of the intake cone, via the anti-vortex cross. The assembly causes water to be drawn from the sides of the cone rather than from directly below it.

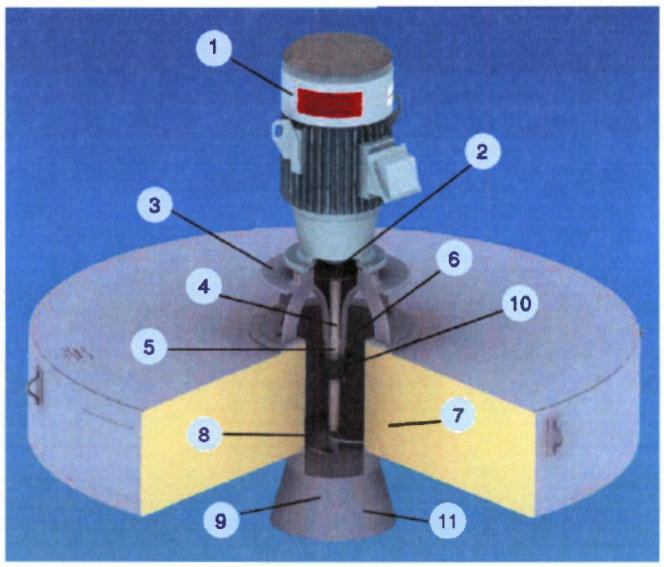

Figure 2: Diagram of Aero-Jet AquaAerobics Floating Surface Aerator