PRETREATMENT SYSTEM

Description of Wastewater Process

CWL is currently permitted to discharge to the Montgomery County Western Regional Wastewater Treatment Plant. Additionally, the facility is subject to the Centralized Waste Treatment (CWT) regulations, 40 CFR 437. As permitted through Montgomery County, CWL currently has discharge limits for the plant, and the CWT subcategories, as follows:

- Station 001- Local Limits (combined flow for all discharges);
- Station 601- Metals Treatment (40 CFR 437 Subpart A, 437.ll(a)); and
- Station 602 - Oily and Organic Treatment (40 CFR 437 Subparts D, 437.46(a)).

The Dayton facility is a RCRA Part B permitted treatment, storage and disposal facility (TSDF) specializing in wastewater treatment, oil recycling, non-hazardous solidification, and hazardous waste drum storage/transfer.

The wastewater treatment operation at CWL Dayton is designed to remove oil and grease, suspended solids, BOD, and metals. Wastewater entering this operation originates from two sources:

1) Wastewater generated from off-site and shipped to CWL for treatment;

As a CWT, CWE receives wastewater shipments from various industrial sources on a regional and multi-state basis. The wastewater may contain oils, petroleum impacted waters, organic, acids, alcohols, resins, glycols, and other organics. Wastewaters accepted include non-hazardous and hazardous wastewaters, including combustible and flammable and other wastewater that may have a flashpoint under the Clean Water Act RCRA exemptions listed at 40 CFR 264.l(g)(6); 265.l(c)(lO); 270.l(c)(2)(v); and 26i.4(a)(2).

2) Wastewater generated on-site from the used oil recycling process.

The majority of the freshwater used on sight is used in the centrifuge process.

Wastewaters are initially staged in the tank farm to conduct phase separations through the use of time, heat, and/or chemicals such as(polymer). Water separated from the oil is transferred into OR-1 and OR-2. The capacity of the OR tanks is 72,000 gallons each, and therefore limits each DAF batch to 72,000 gallons as only one OR tank is processed at a time through the DAF system. The oil removed from the wastewater is sent to the used oil treatment system and recovered as on-spec fuel.

Building B includes tanks OR1 and OR2 Equalization tanks described in the prior paragraph, an oil/water separator, a flash tank for pH adjustment, a flock tank where polymers are added, a DAF clarifier used to float and remove Flocculated solids are removed and an effluent holding tank. In addition to, three (3) chemical feed tanks. One tank is for NaOH for pH adjustment, one for ferrous chloride for valence reduction of metals and one for polymer which acts as a flocculent.

The first stage of the DAF system is an oil/water separator. This is used to remove any additional oil not previously separated. The water goes through a series of pH adjustments and flocculation in the flash mixing tank before reaching the DAF. The flotation tank for the DAF consists of a rectangular tank constructed of 304 stainless steel reinforced with 304 stainless steel tubular vertical wall structural. The unit is supported on a stainless steel base consisting of horizontal beams across the width of the unit, and a continuous beam structure down both sides of the unit. The base is constructed to allow for easy cleaning around and under the unit.

Influent wastewater enters the DAF unit though a flanged influent header into the contact chamber. The recycle (wastewater) stream is mixed with the influent through a series of injection ports in the contact chamber and influent header. The contact chamber serves as an internal weir which provides even distribution and mixing of the process flow across the width of the unit. The contact chamber has a separate drain port for the removal of heavy solids which settle in the chamber.

The float removal system has a chain flight top float (skimming) removal system driven by a low speed, gear reduced with motor assembly. The float material is removed in a con-current direction. The design involves moving the float bed on the surface down the length of the unit in the direction of flow, and allows for longer float residence time prior to removal, resulting in dryer float material. The top skimmer system consist of double strands of 304 stainless steel, double pitch roller chain supported by ultra-high-molecular-weight polyethylene (UHMW) shoes on stainless steel guide angles. The chain supports adjustable, reinforced elastomer skimmer blades retained on 304 stainless steel angle plates with stainless steel fasteners. The skimmer blades are spaced approximately every five to eight feet along the cha.in length. The chain system operates on single duty, carbon steel sprockets mounted on stainless steel shafts turning in adjustable bearing supports. The chain tension is maintained by an automatic chain tensioning system. Drive speed is controlled by a VFD which is equipped with a shaft power monitor to protect the equipment in case of a mechanical overload. Adjustable time controls or PLC controls provide for intermittent skimmer operation which allows for flexibility in the removal of float material from the unit. On the effluent end, the skimmer pulls the collected surface material (float) up a

curved beach and into an internal float hopper. The beach is curved to allow for efficient removal of float material by the skimmer blade. The internal float hopper is sized to allow intermediate storage of the material prior to discharge through a flanged nozzle for pumping to storage for dewater and transport off sight.

The settled solids removal system has full-length sloped side walls to channel settled material to the bottom of the tank for removal by an auger system pulling the material towards the influent end of the unit (counter-current). The counter-current design removes settled material quickly from the unit at the opposite end of the treated water discharge. The material is discharged through a flanged nozzle located in the influent end of the unit base. The auger system consists of a six inch diameter 304 stainless steel auger in the trough located in the v-shaped bottom of the unit. The auger extends the full length of the DAF. The system is driven by a gear drive with a chain and sprocket system. Drive speed is controlled by a VFD which is equipped with a shaft power monitor to protect the equipment in case of overload. Adjustable timer controls provide for intermittent auger operation which allows for flexibility in the removal of bottom material from the unit.

At the effluent end, a vertical baffle directs the clarified effluent up into a header box and through an adjustable weir system. The weirs are adjustable to determine the optimum liquids level in the unit, and are designed to provide minimum fluctuation of the tank liquid level with the variation of influent flow. Clarified effluent overflowing the weirs collects in an internal trough, and is discharged through a flanged nozzle.

The recirculation system is designed to saturate, under pressure, a clarified effluent stream with air to create a dissolved air solution or whitewater. When the whitewater stream is introduced into the contact chamber of the DAF unit, fine, microbubbles are released to make contact with flocculated contaminants which rise to the surface within the flotation tank for removal. Clarified wastewater from the effluent discharge is recycled through the unit by a pump designed to operate at pressures in excess of 85 psi. Air is supplied into the recycle stream via an educator loop from the discharge of the pump to the pump intake, drawing in ambient air, and forcing it into solution with the recycle stream under pressure from the pump. Air flow into the pump is regulated by a variable area, air rotameter with a needle valve. All recirculation piping is Schedule 80 PVC. The recycle stream is routed through an air dissolving pipe

{ADP) which provides additional hydraulic retention time under pressure. This allows for the separation and removal of large, undissolved air bubbles. Discharge pressure from the recycle pump and the ADP is controlled by a series of whitewater injection points into the contact chamber and influent header through stainless steel ball valves. A mid-tank injection system provides the option of adding whitewater into the flotation cell just downstream of the contact chamber.

The effluent from the DAF is transferred to the existing TW-1 tank located in Building B. Effluent from the TW-1 tank can either be released directly to the discharge flume, or will be pumped to the Bio Feed Tank located adjacent to the bio plant.

The sludge from the OAF system is placed into the existing T-1 or T-2 tanks located in Building B. The sludge is processed in the Building B plate-and-frame press. Historical records reflect approximately 100 twenty cubic yard roll-off containers of non-hazardous dewatered sludge are generated per year at the current production volumes. the number of roll-off. containers generated depend on the volume, dissolved and suspended solids treated. This sludge material will continue to be transported to a non-hazardous waste landfill for disposal.

Where the maximum design capacity of the DAF is 400 gpm. The actual flow rate depends on the condition of the waste water feed. The DAF system is connected to a closed vent system (CVS) which routes all vapors emitted during processing to a regenerative thermal oxidizer (RTO) with a 95% minimum destruction efficiency.

Proper spill containment is provided by the construction of Building B which was laid in a continuous pour physically joining the pad to the walls. All floor drains in Building B go to catch sumps which are able to be pumped back into the treatment processes so no spill can leave the confines of the Building. The capacity of the Building B containment is sufficient to hold the contents from both of the largest storage tanks {72,000 gallons each) located in the building. Building G operation included 4 g-cone tanks, each with a treatment capacity of approximately 15,000 gallons. The G1 G2 G3 tanks serve as treatment and settling tanks, and are used in conjunction with a chemical feed system. The primarily used as a batch operation for streams that do not meet the criteria for the DAF system in Building B. These waters require specialty treatment. "Specialty" treatment is determined through either the profiling process or bench studies of specific loads. The streams are considered to need additional chemical treatment or generate a significant amount of solids. Sludge generated by the batch treatment is sent to be dewatered in the plate and frame press located in Building G. Where Metals subcategory waste waters are rarely received and treated at the plant Building G is equipped with the ability to segregate and treat these types waters. These waters are discharged separately from the oily and organics wastewaters through sampling location 602.

The G-4 tank is used to consolidate the solids generated during the treatment in tanks G-1, G-2 and G-3 until the solids can be pressed in the plate- and-frame press. The Building G press is a high pressure press which reduces the water content of the solids collected in the twenty cubic yard roll-off boxes, as compared to the low pressure press in Building B.

B. The water collected from the press is collected in the press effluent tank, and returned to the wastewater treatment operations within Building B to ensure the removal of oil and grease. Treated effluent from the g-cones is pumped to the TW (Feed Tank) located adjacent to the bio plant.

In addiction piping is installed so that wastewater from Tanks OR-1 and OR-2 in Building B can be pumped to Building G for treatment. The Building G operations can serve as an emergency replacement for the Building B equipment at a reduced throughput flow.

The biological system consists of 1 feed equalization tank with a capacity of 200,000 gallons where water generated from pre-described pre-treatment systems is collected. In coming Waste waters received devoid of metals, fats, oils, and greases, but with BOD, may also be received directly into the feed equalization tank of the bio plant treatment. These would be pumped directly into the TW Tank without any prior treatment and comingled with the effluent from wastewater treatment operations in Buildings B and G wastewaters entering the TW tank prior to being feed to the bio plant. The bio system also includes two biological reactors operated as (SPR) squinting batch reactors. One reactor is 55' in diameter x 24' high with a capacity of 425,000-gallons. The second and smaller reaction is 38' diameter x 16' high and has a capacity of 135,000-gallons.

After a calculation of the proper amount of feed based on organic loading of the waste water collected in the feed equalization tank the proper volume is pumped from the equalization feed tank to each of the reactors. Each reactor is aerated by blowers located in a blower building adjacent to the reactors. Each reactor is populated with activated sludge for the consumption of the organics contained in the feed water. After a predetermined period of aeration the organics are consumed by the bio-mass population. At that point the air to each reactor is shut off allowing the settling of the biomass. After settling is complete a Value is opened to allow for the decanting of the clear liquid from the top of each reactor. This water passes through the district flume for metering and sampling.

The biological system is tied into the closed vent system and all emissions captured and pass through the thermal oxidizer RTO for a minimum distraction of 95%.