

UNION MINE WWTP

ARPA FUNDING REQUEST

Project #1 – New Headworks



Headworks of the WWTP is where septic and portable toilet waste haulers off-load their waste. It provides pre-treatment of incoming waste. Photo is the current system and has been in service since 2000.

New System Design: Drum Screen



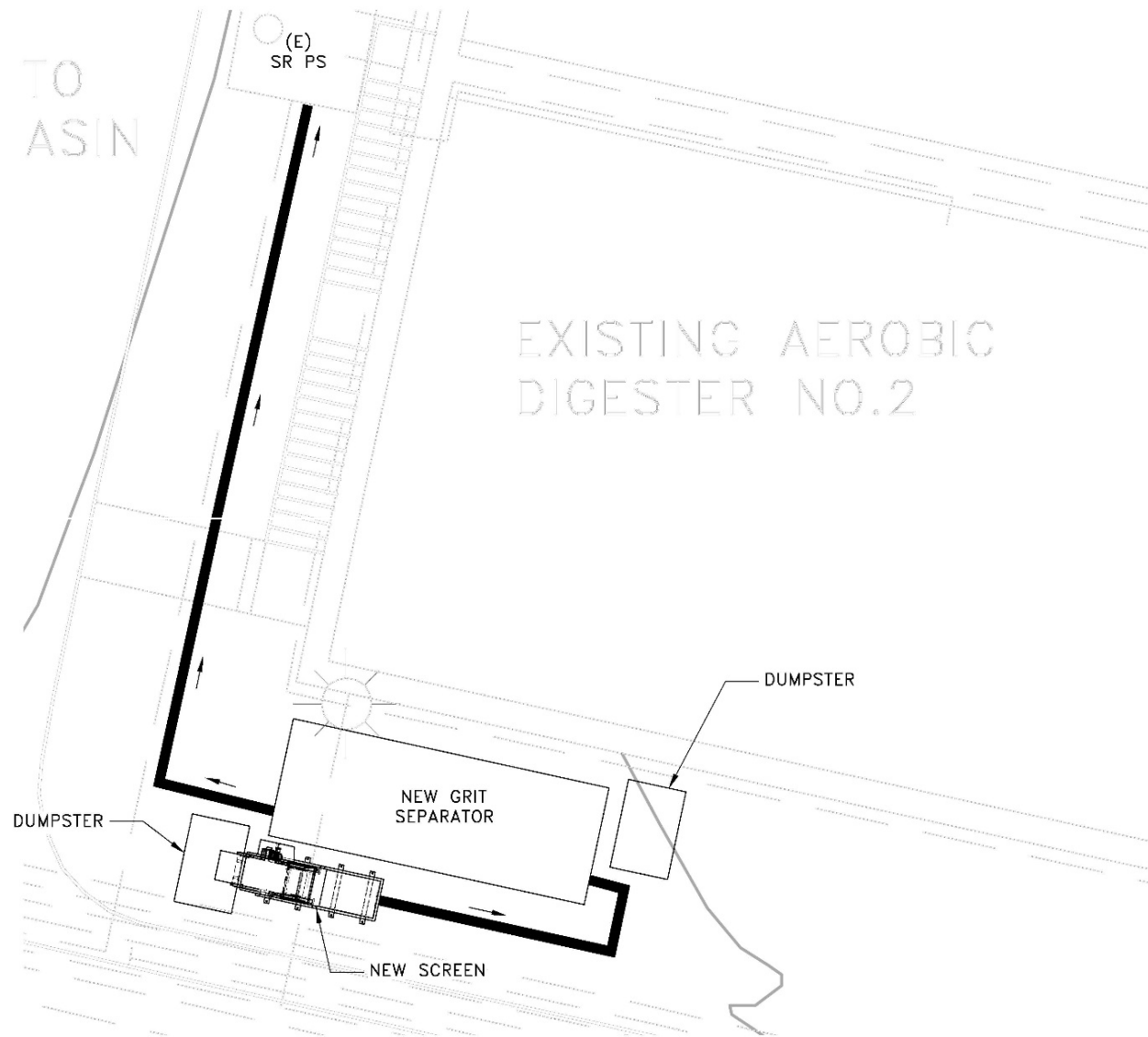
This part of the system is a drum screen that removes floatables/debris out of the incoming flow.

New System Design: Grit Removal



This part of the system is a vortex grit chamber that removes grit before entering aerobic digesters.

New System Design: Location



Possible location. Will tie into existing pump station and old headworks can be used as a backup.

PROBLEM WITH CURRENT SYSTEM

- **Current system does not remove enough material before being pumped to the aerobic digesters.**
- **Because of this, the digesters need to be cleaned every 3-7 years at a cost of approximately \$300,000 per digester.**
- **Additional damage to downstream equipment occurs due to excessive grit.**

WHAT WILL THIS PROJECT ACCOMPLISH

- **Completing this project will reduce the frequency the aerobic digesters need to be cleaned and will reduce damage to downstream equipment.**
- **Provide an additional headworks system so maintenance can be performed on one while the other is in service.**
- **It will keep more grit out of the aerobic digesters which in turn will help oxygen transfer to the solids in the digester and provide better treatment and final facility effluent (treated water).**

Project #2 – New WWTP Centrifuges



Pictures are from one of the existing centrifuges and control panel. New centrifuges will look similar. They are used to separate solids from liquids in the wastewater treatment process.

PROBLEM WITH CURRENT SYSTEM

- The centrifuges were installed in 2000 and 2005. They have endured severe wear from processing solids through them daily and now require extensive regular maintenance. One major part recently purchased cost \$50,000.
- The control panels are out-of-date and parts are not readily available. Both control panels need to be updated with current electronics and new programs created for operation.
- If solids cannot be processed out of the aerobic digesters the facility needs to close to customers. This in turn will significantly increase the cost for county residences to have their septic tanks pumped due to haulers having to dispose of the waste out-of-county.

WHAT WILL THIS PROJECT ACCOMPLISH

- Provide new solid processing equipment that will have new controls panels with current electronics.
- It has been report that new solid processing equipment does not use as much chemicals to produce the same results (one tote of chemical cost about \$3,500.00 and last about 45-days).

Project #3 – Back Up Generator



PROBLEM WITH CURRENT SYSTEM

- **Currently the Union Mine WWTP facility does not have any back up power systems.**
- **During times of power outage, the facility needs to close to customers.**
- **When the aerobic digesters are not supplied with air, the aerobic bacteria quickly use all the remaining dissolved oxygen in the digester and begin to die off causing anaerobic conditions and digester upset. These bacteria break down the solids in the digester and it takes several weeks of receiving new inflow to rebuild the population.**
- **The landfill gas flare cannot operate without power. Excessive shut downs need to be reported to the local air district and to CARB. Daily fines are not typical but are possible.**

WHAT WILL THIS PROJECT ACCOMPLISH

- **Provide backup power for the wastewater treatment facility and the landfill gas flare.**
- **Provide a continuous source of air for the aerobic digesters.**
- **Provide a reliable source for disposal of septic tank and portable toilet waste for the west slope of El Dorado County.**

Project #4 – WWTP Metals Removal System



Example of a metals removal skid. Actual design may vary.

PROBLEM WITH CURRENT SYSTEM

- **Currently the Union Mine WWTP facility does not have a metals removal system.**
- **Zinc is a limiting factor for discharging facility treated wastewater to El Dorado Irrigation District. District permit limit is 0.145 mg/L.**
- **Typical septic tank waste contains approximately 4-20 mg/L of zinc.**
- **Other factors may limit the use of the on-site sprayfields for treated wastewater discharge and if discharge to El Dorado Irrigation District is not possible because facility treated wastewater does not meet District requirements the facility may need to shut down to customers.**

WHAT WILL THIS PROJECT ACCOMPLISH

- **The facility's treated wastewater will continuously have a low metals content.**
- **Provide a regular source through El Dorado Irrigation District to discharge treated wastewater.**
- **Help ensure reduced facility closures.**

Project #5 – WWTP Aerobic Digester



Current digester with excessive solids build up.



Current digester mostly cleaned. Flat floor.

PROBLEM WITH CURRENT SYSTEM

- **Current digesters are not designed for easy clean out. The Department needs to contract with a specialty company that performs this kind of work.**
- **Cost to clean one digester is approximately \$300,000 and once the on-site landfill is closed, the cleaned out solids will need to be transported off-site at a current cost of approximately \$150,000.**
- **Aeration header system is at the bottom of the current digesters making them hard to clean and all aeration diffusers need to be replaced during each cleaning at a cost of approximately \$15,000-20,000.**

WHAT WILL THIS PROJECT ACCOMPLISH

- **Provide a receiving digester that solids will be processed to the centrifuges.**
- **The floor of the new aerobic digester will have a slope design so solids can be washed down by facility staff.**
- **The aeration header will run along a catwalk in the middle of the digester. This will allow repair of aeration diffusers and removal before cleaning.**
- **The liquid returned from the centrifuges will go back to one of the flat bottom floor digesters for additional treatment.**
- **Will help reduce the need of an outside contractor for cleaning.**
- **Add capacity to the wastewater treatment facility.**

Project #6 – WWTP Effluent Storage Tank



Current 2-million gallon effluent (treated water) storage tank.

PROBLEM WITH CURRENT SYSTEM

- **Currently there are two 2-million gallon effluent storage tanks. One tank is used to isolate batched discharges to El Dorado Irrigation District. This leaves one operational storage tank for extended periods. During winters with heavy precipitation, this strains the system.**
- **The facility permit originally allowed only 10,500 gallons per day monthly influent average. With addition of the Industrial Wastewater Discharge Permit with EID the influent limit was raised to 16,000 gallons per day monthly average and in 2011 the facility started to see multiple months with influent gallons exceeding 10,500 gallons per day.**
- **In order to meet permit compliance and have the class II surface impoundment emptied and cleaned by November 01 of every year the Department was able to get the influent limit increased to 20,000 gallons per day monthly average and is near facility design.**
- **As influent numbers continue to increase we will need additional storage.**

WHAT WILL THIS PROJECT ACCOMPLISH

- **An additional 2-million gallon storage tank with aeration system for additional treatment.**
- **Ability to request higher influent limits from the State Water Board as population increases.**

Project #7 – Site Stormwater Sedimentation Basins



West sedimentation basin.



North sedimentation basin.

PROBLEM WITH CURRENT SYSTEM

- Excessive sediment and silt has accumulated over the years from landfill operation and vegetative growth in the basins.
- Although cattail plants help trap sediment and silt, help break down organic material, and absorb phosphorus, nitrogen and other elements, over time they add to reduced capacity and odor. Currently the basins are overgrown with cattail plants and algae.
- Pond riser pipes are deteriorated and need to be replaced before failure.

WHAT WILL THIS PROJECT ACCOMPLISH

- New riser/discharge piping for years of reliable service.
- Return the basins back to design capacity by cleaning out sediment and vegetation.