Sunnyvale Water Pollution Control Plant Oxidation Pond Maintenance Proje*ct*

Frequently Asked Questions:

What are oxidation ponds and what do they do?

Sunnyvale has 440 acres of oxidation ponds that are used by the Water Pollution Control Plant (WPCP) for the Secondary Treatment process of the City's wastewater.

Oxidation Ponds

The goal of Secondary Treatment is to remove dissolved and suspended (non-settable solids) from the wastewater as it slowly circulates through the pond system. Microorganisms such as aerobic and anaerobic bacteria consume (biodegrade) the organic nutrients present and cleanse the water of pollutants. Sunnyvale's secondary treatment uses the natural action of the sun and wind to assist in the growth of algae, which provide oxygen to the microorganisms. Algae use nutrients (e.g., nitrogen or phosphorus) dissolved in wastewater during their growth phase and ultimately settle to the bottom of the ponds as sediment. As a result, a collection of the sediment layers (or biosolids) builds up along the bottom of the ponds. The pond sediment layer has now reached a depth where it may affect the efficiency of the wastewater treatment process, so it needs to be removed.

Water in the ponds is detained for about 30-45 days for treatment, and then it is returned to the Tertiary Treatment portion of the WPCP. Tertiary treatment removes algae, ammonia, and bacteria, before the treated, disinfected wastewater is discharged into the Sunnyvale West Channel, where it eventually makes its way to the Guadalupe Slough and South San Francisco Bay. Prior to discharge, the water is tested to ensure that it meets state and federal water quality standards. For more information on the processes of the WPCP, see the Plant Brochure.

What are biosolids?

Biosolids are the nutrient rich natural by-product of wastewater treatment. The material is semi-solid until the excess water is removed. Then it has the appearance of a dark brown or black, moist, soil-like material. Biosolids are a source of nutrients for plant growth, similar to animal manures. However, biosolids can contain high levels of trace elements and/or pathogens that can cause environmental, plant, animal or human health problems if the material is not properly handled or applied. Comprehensive state and federal regulations govern how biosolids are recycled to ensure public safety. Biosolids must meet strict federal standards (limits) for the presence of pathogens, heavy metals, and other contaminants. Trained personnel conduct quality testing of the biosolids to ensure that they meet or exceed regulatory standards before they are reused or recycled.

Currently, the WPCP produces anaerobically digested biosolids as part of the Primary Treatment process for wastewater. Solid materials are removed from wastewater and sent to digesters for approximately 25-30 days where anaerobic bacteria consume the solid material. The result of this digestion process is stable biosolids. These biosolids are pumped to drying beds and after about 5 days, they are transferred to stockpiles on the tarmac area of the treatment area for testing, prior to their shipment off site for beneficial reuse. The WPCP currently produces about 200 tons of biosolids a month using this process.

The oxidation pond maintenance project will produce an additional 500 – 600 tons per month of biosolids, which is why separate, special, handling and treatment processes provided by the contractor will be needed to address the increased quantity of material to be treated.

What can be done with the removed biosolids?

Biosolids reuse/recycling has many beneficial environmental benefits:

- When added to rangeland or farmland they improve the soil's ability to absorb and store moisture, reducing the need to irrigate and providing natural drought resistance.
- Biosolids use on rangeland or farmland lowers fertilizer use and expense, as the biosolids can supplement or replace commercial fertilizers in some cases..
- Biosolids sequester carbon in the soil and reduce greenhouse gas emissions as compared to the production of inorganic fertilizer.
- Biosolids can be used as alternative daily cover or final cover at landfills, reducing the use of clean soil and other valuable materials.

What will happen during the Sunnyvale Oxidation Pond Maintenance Project?

The City's contractor for the project, Synagro, Inc. will be using a floating hydraulic suction dredge on the oxidation ponds to remove accumulated biosolids from the ponds' bottoms. They will be placing about 8,000 feet of HDPE pipe to transfer the dredged biosolids to the Water Pollution Control Plant (WPCP) biosolids drying area. The pumped biosolids will be treated with a centrifuge to remove excess water. Resulting water from the process will be returned to the ponds through a six inch pipeline for further treatment. The centrifuged, dry biosolids will be stockpiled briefly in the existing biosolids treatment area of the WPCP for testing to ensure it complies with regulatory standards, and then the material will transferred to covered trucks. It will be transported to up to seven different rangeland locations where it will be land applied for beneficial reuse. Or, depending on conditions and quantities produced, the material may be transported to a landfill for reuse as alternative daily cover.

How long will the project last?

Once the equipment and transport infrastructure (i.e., pipe from the ponds to the WPCP) are on site and operating in the summer of 2011, it is expected that it will take approximately five years to complete the pond maintenance dredging activity. Normal operating hours for the project are Monday – Friday, 7 AM – 4 PM, year-round. If there is inclement weather for extended periods, some operations on Saturdays may occur.

What will be the site and traffic impacts of the project?

Minimal impacts to the WPCP and access roads are expected. There will be brief closures of the WPCP pond access roads when the movement of equipment or placement of pipe occurs. Signs indicating the closure dates/times will be posted in the affected areas. Once the operation begins, there will be three to four additional truck loads of biosolids leaving the WPCP down Carl Road and Borregas Avenue on a daily basis.

What odor control measures will be in place?

Based on laboratory tests done by the contractor, it is anticipated that the amount of volatile solids present in the pond biosolids will not cause odors beyond what normally occur during the WPCP's anaerobic digester biosolids drying and handling processes. Biosolids transfer activities will be conducted in a sealed pipeline and dewatering liquids will be contained in the centrifuge bowl before their transfer to back to the ponds for additional treatment.

A possible source of odor will be the dried, stockpiled material. The contractor will keep stockpiles to a minimum and if necessary, will tarp the stockpiles during non-operating hours. An enzyme may be used to help control odors, if they occur beyond what is currently experienced at the WPCP.

Where can I find more information about the project?

A copy of the complete project contract for the pond sediment (biosolids) removal project can be found at this location.

To contact the Operations Program Manager, call (408) 730-7260 or e-mail wpcp@ci.sunnyvale.ca.us