

US EPA ARCHIVE DOCUMENT



Biosolids Management Plan Implementation

The Encina Wastewater Authority's (EWA's) Biosolids Management Plan (Plan) establishes long-term strategies for the distribution and marketing of EWA's biosolids. In developing the Plan, a detailed analysis of reuse markets was conducted, which included an evaluation of: interest in the product, hauling costs, tipping fees, need for product bagging, associated EWA staff time, and potential revenue. This process identified two tiers of markets. Tier I options (biofuel, contract agriculture, landfill) provide EWA with reliable and flexible outlets for its biosolids in the near term. Tier II options (fertilizer distributors, soil blenders, specialty agriculture, golf courses/turf management, local communities) require more development work, are more seasonal, have a limited capacity for product use, and may offer public outreach benefits.

EWA implemented the Tier I options within the first year of bringing the new heat drying facility online. An agreement is in place with CEMEX for use of EWA's biosolids as a biofuel in their Victorville cement kiln. When the kiln is down for maintenance, the biosolids are hauled to Yuma, Arizona for land application. In addition, EWA has a contract with the Otay Landfill for disposal of its biosolids, should backup arrangements be necessary.

In the last year, EWA has begun developing Tier II biosolids markets. Product trials are underway by golf courses, polo fields, flower fields and fruit orchards. In addition, some product has been bagged for distribution. Feedback so far has been positive, especially with regard to the slow release nature of the fertilizer product. Development of Tier II markets will generate more revenue, thus saving money for EWA's member agencies.

Waste Heat Exchanger Upgrade

EWA recently completed an upgrade to the heat loop waste heat exchangers. Two spiral heat exchangers, installed in 2009 as part of the Phase V expansion project, were not able to adequately waste heat from the cogeneration system. As a result, these units were replaced with two plate and frame heat exchangers. While each exchanger is sized to handle the cogeneration heat wasting requirements, a second unit was installed to provide redundancy for system maintenance. In addition, a larger drain valve was installed that reduces the time needed to drain and service the system from hours to minutes.



During the design and construction of the new heat exchangers, EWA staff came up with a plan to utilize an offline digester for heat wasting to enable the cogeneration system to function. The heat exchanger for the digester was plumbed with reclaimed water as the cooling media and operated in a reverse flow scheme. This creative solution allowed the cogeneration system to operate at full capacity, which saved more than \$1,000,000 in purchased electricity costs.



Phosphorus Recovery Project

In 2009 EWA brought online new biosolids processing facilities (centrifuges and a heat dryer). Since that time, there has been an increase in maintenance efforts associated with the removal of struvite (magnesium ammonium phosphate), which can precipitate in pipelines and reduce flow capacity or even plug the lines.



As a result, an investigation was conducted to identify ways of reducing struvite formation.

After researching options, EWA conducted a pilot scale demonstration of Ostara's Pearl Nutrient Recovery Process in January 2011. The test consisted of: pumping centrifuge centrate (the liquid stream from the solids dewatering process) into a holding tank; dosing it with magnesium chloride; and passing it through a fluidized bed reactor. This process produced phosphorus "pearls",

a fertilizer-grade product that Ostara markets as Crystal Green. The study demonstrated that the system: averaged 73% removal of phosphorus from the centrate; produced a high-quality fertilizer product; and showed positive

results for inhibiting unintentional struvite scale formation.

Based on the results of the study,

EWA awarded a contract to Ostara Technologies to: prepare a preliminary design for installation of the Pearl Process; conduct a financial analysis; and present options for implementation. Should the analysis prove favorable, EWA intends to move forward with full design next year.

EWA's mission statement commits the organization to fiscal responsibility and maximizing the use of alternative and renewable resources. Implementation of the Ostara technology would help meet

these goals through the recovery and sale of a valuable resource. In addition, this process would reduce the amount of phosphorus being discharged through the outfall, thus protecting the ocean environment.



Heat Dryer Operations Forum

EWA recently hosted a heat dryer forum that was attended by staff from: Fallbrook Municipal Water District and Corona Department of Water and Power, which have heat dryers online; and Irvine Ranch Water District, which is

approximately 90% through the design phase. The forum covered a wide range of topics including: maintaining solids handling operations during the construction process, process optimization and flexibility, projected O&M costs, and lessons learned during the first two years of operation. At the end of the session, operations personnel provided a tour of the heat drying building.

Optimizing heat drying operations has been a challenging process. EWA staff is happy to share its experiences with others. If you are interested in being part of future communications regarding this topic, please contact Director of Operations John Jardin at jjardin@encinajpa.com.



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