Notes from Hornsby Bend Tour on August 23, 2016 (revised)

Heather-Nicole Hoffman, Organics Committee Chair

The facility receives activated sludge from the City's waste water treatment plants. The sludge is screened to remove debris then a petroleum-based polymer (BASF product) is added to thicken the sludge. This thickening and screening removes water to get the sludge from 1.5% up to 6% biosolids. The separated water is filtered and treated onsite using a pond system then dispersed onsite for irrigation. All water, both from the processing and stormwater is captured and reused onsite, with no discharges to the adjoining river. The thickeners are in the process of being replaced with centrifuges. This will lessen the amount of water that goes to the Ponds, and reduce some of the odors produced.

The 6% slurry is treated in anaerobic digesters to reduce volume and pathogens for a minimum of 15 days required; however, they are averaging more like 40 days. One reason for the 40 days is to capture additional methane. The digesters are maintained at ~95 degrees. Currently, they are utilizing six of the eight digesters after they recently found some efficiency in processing. Methane from the digesters is captured and scrubbed and powers 100% of the operations with excess methane flared off. They are generating 750,000-1,000,000 cubic feet of methane but only using 500,000 sf. ~~300,000 sf~~ (Question. Why generate more than needed/Are there ways to store it or feed it into the grid instead?). Methane generation is a byproduct of Anaerobic Digestion. We hold the material in our digesters longer so we can get better treatment and be able to handle process upsets or large loading events with ease. We are looking at ways to utilize the additional methane being produced. We are looking at the possibility of increasing power production with the addition of another generator. We are now at the beginning stages of this discussion. We do not have a natural gas source on site, so whatever we do we will have to be self-sustaining.

Next step is adding a different polymer and then sending it through a belt press which brings it up to 18% biosolids making it a soil-like texture/consistency which can then be moved via front-loaders, etc.

For the 20,000 dry tons produced annually, approximately 12,000 tons are classified as Class B biosolids currently being land-applied with approximately 2,500 tons going to 500 acres of hay fields at Hornsby Bend and the other 9,500 tons going off site. These applications are permitted through TCEQ, require nutrient management plans and Annual testing for nutrient loads. Due to pretreatment requirements, the metal loads have been so low for so long that metal testing is not required. The current permit allows an application rate of 6.27 tons of Class B biosolids per acre per year at Hornsby Bend. The onsite applications have been ongoing since the 1990s with no violations/excess nutrient loads. The onsite fields are currently in production of coastal bermuda and Johnson grass being harvested as often as every four to six weeks under optimum conditions. Minimum of 4 cuts per year. The grass are harvested and sold by a contractor. City of Austin is liable for the off-site land applications of the Class B biosolids and oversees testing and other requirements.

Aside: Future issues to address with the wastewater system will be phosphorus and Sulfate ~~sulfur~~ loads. They recently completed a pilot for phosphorus removal, but were unsuccessful due to low concentrations in the wastewater.

Composting is an economical option in this part of the country due to climate.

Class A compost has met the time and temperature requirements as well as pathogen and nutrient testing requirements. Dillo Dirt is a Class A compost; however, it is differentiated by screening down to 3/8" and curing for an additional three to six months. All materials leaving the Hornby Bend facility are tested for pathogens and nutrients. Class A is the better quality product. (Question – What are typical pathogen levels of straight Class A versus Dillo Dirt?) Pathogen levels have the same requirements, which are less than 1000 fecal colonies per unit of measure. Results average between 100-300 colonies. These two products are visually different not only in the size of materials but more importantly in the amount of plastic. (Question – What is the cost to screen for plastics only? to 3/8"?) The approximate costs to screen material down to 3/8 size is $2.00 per cubic yard. This will get out the larger wood chips and most of the plastic. We also have a plastics separator that removes some plastics from the material that was screened out.

Hornsby Bend is currently receiving ~120,000 cubic yards of brush from all city operations including bulk brush, weekly yard trimmings and various departments. Austin Energy line trimmings are currently contracted out and sold as mulch (opportunity for getting that material). After removing the weekly yard trimmings, it is expected to only receive ~30,000 cubic yards.

~90% if the 120,000 cubic yards of brush is currently being used to process the 8,000 tons of biosolids to create Dillo Dirt. Based on these numbers, they would only have carbon to process 2,000 tons of biosolids for Dillo Dirt. (Need to explore more carbon sources.) There is a significant amount of carbon available from the materials that are screened out and reused in the process.

The majority of the plastic contamination appears to be from the brush, not from the biosolid stream.

The Hornsby Bend facility - concrete pads, water runoff control, etc. - has the capacity to compost all biosolids to Class A compost.

Synagro is currently operating at the Hornsby Bend facility processing to a Class A compost but don't do as much screening or curing and it is used for agricultural applications. If the contract goes through, Synagro would take over all reuse operations using the COA facilities but not their equipment. Also, they would have to procure their own carbon sources/bulking agent, above what ARR will be bringing to Hornsby Bend.

Approximately 2,000 yards/year of Dillo Dirt is donated annually to other departments and local organizations.

There were seven COA employees working directly with Dillo Dirt, four of these people have retired, changed positions, etc. The current employees will be moved within the Department.

Synagro currently employees two full-time and one supervisor at Hornsby Bend.

Dillo Dirt is a trademarked product. (Could be licensed if we want to keep it going even if not produced by the City?)

The Item #26 contract was for produced, unscreened Class A compost currently stockpiled, as well as an option for additional product. (Again the question of cost to screen – my understanding is that the winning bid would put the product as is with lots of small plastic debris directly on fields) In the RFP it is the responsibility of the awarded contractor to manage the materials as they need.