Austin Water

Council Q&A Responses
Item #35 on 3/8/2018 Agenda

1. **When did Austin Water Utility notice increased levels of ammonia and sulfates at the Walnut Creek Wastewater Treatment Plant?**

   Response: Increased ammonia-nitrogen loadings are a reality in the wastewater industry due to high efficiency appliances and other water conservation measures reducing the amount of water going in the sewage system and thus increasing the concentration of ammonia. Starting, however, in the Spring 2011 staff began noticing ammonia loadings that went beyond these levels. Around the same time sulfate levels began to increase as well.

   In 2012, Austin Water commissioned Dr. Desmond Lawler of the University of Texas Cockrell School of Engineering as a consultant to do a study of ammonia-nitrogen loadings into the Austin Water collection system. Dr. Lawler determined that Samsung could be the main source of the ammonia-nitrogen increases. Building on Dr. Lawler's report, Austin Water staff began working to identify the sources of these increases. Ultimately Austin Water staff produced a report which determined that the increased ammonia-nitrogen and sulfates were coming from Samsung. The Austin Water study found that almost 72% of all the significant industrial loadings coming into the Walnut Creek Wastewater Treatment Plant were from Samsung. Since this study, the ammonia-nitrogen loadings from Samsung have increased to 97% of all industrial loadings coming into the Walnut Creek WWTP.

   Austin Water engaged in discussions with Samsung and found that the increased loadings resulted from a change in their production processes. Austin Water began encouraging Samsung to investigate ways to do pretreatment and thus lower the amount of ammonia-nitrogen and sulfates entering the collection system.

2. **It is my understanding that Samsung was determined to be one source of the increased ammonia and sulfates; please identify the percentage of ammonia coming from industrial corporations and describe how that percentage is divided among companies.**

   Response: To determine the percentage of ammonia loadings from a Significant Industrial User (SIU), the loadings are calculated (concentration (mg/L) x flow (MGD) x 8.34 (conversion factor) in pounds per day for each day that a sample was collected. The average of all the loadings and the average flow (shown in table) are taken. Then the total loadings of all SIUs contributing to the Walnut Creek WWTP was calculated. To find the percentage of contribution of ammonia from each industry the ammonia loading for each SIU was divided by the total SIU loadings and multiplied by 100 to derive a percentage. Example:

   AI Lonestar:

   $$\frac{0.0806 \text{ (lbs/day)}}{8643.041 \text{ total SIU loadings (lbs/day)}} \times 100 = .0009\% \text{ (as shown in table)}$$

All Walnut Industries 2013-2017

Industry Name	Average Flow (MGD)	Average Daily NH3-N Loadings (lbs/day)	Average Concentration (mg/L)	% NH3N Loadings of total SIUs
AI Lonestar	0.0154	0.0806	0.626	0.0009%
Brooks	0.001886091	0.0104	0.663	0.0001%
Dell's Children	0.0406	22.994	67.913	0.2660%
Encore/DJO	0.0018121	0.0019	0.124	0.0000%
Flextronics	0.2037745	8.2992	4.883	0.0960%
Gunze	0.0045	0.89	23.570	0.0103%
HID	0.009091941	3.60	47.429	0.0416%
ICU Medical	0.409290227	3.82	1.119	0.0442%
JJPRC-MER	0.0190	0.868	5.471	0.0100%
LTD Materials (8107)	0.000528	0.002	0.558	0.00003%
LTD Materials (8115)	0.000809556	0.039	5.742	0.0004%
Magic Leap	0.0053526	0.006	0.133	0.0001%
NAMC	0.092076222	17.0800	22.242	0.1976%
NXP (Freescale-ED)	0.625	184.67	35.402	2.1366%
On-X	0.0048784	0.205	5.031	0.0024%
Samsung	4.95	8363.72	202.595	96.7683%
Seton	0.103360571	30.76	35.680	0.3559%
Stellarray, Inc	0.000335182	0.00285	1.020	0.0000%
Superconductor Technologies	0.000621818	0.00023	0.044	0.000003%
Sundance	0.001119167	0.03885	4.162	0.0004%
TC Landfill	0.00421	2.09	59.529	0.0242%
TLMI	0.001199155	0.00	0.153	0.00002%
TX DSHS	0.0628	3.87	7.397	0.0448%
TOTALS:		**8643.041**		**100.0000%**

3. **Please describe the extent of the increased levels for both ammonia and sulfates. (Sulfates are addressed in Question 10.)**

Response, Ammonia-Nitrogen: Historically, the influent flow into the Walnut Creek Wastewater Treatment Plant (WWTP) has contained concentrations of ammonia-nitrogen (NH3-N) at or below 30 mg/L. Since 2010, high concentrations of ammonia-nitrogen have continually been detected over 30 mg/L and continue to rise. The rise in ammonia-nitrogen concentrations became evident in the last quarter of 2010 (October-December). In November of 2010, the frequency of concentrations in samples over 30 mg/L began to increase with as many as 14 samples over 30 mg/L during the month of October 2011, and as many as three samples have been detected over 40 mg/L for ammonia-nitrogen at the influent of the Walnut Creek WWTP. These results indicate a trend of increasing ammonia-nitrogen concentrations. Loadings from Significant Industrial Users increased by 208% from 2011 to 2017.

4. **What are the total costs that AWU has incurred to remove these high levels of ammonia?**

   Response: Austin Water has performed a cost of service style analysis of treating the high levels of ammonia. For the current loadings, AW has estimated a cost of $3.2 million to treat the high levels of ammonia. The proposed Ammonia Surcharge would be designed to recover these costs from those customers with higher ammonia levels than our standard strength.

5. **Will the new ammonia surcharge include labor costs associated with treating the wastewater?**

   Response: Yes

6. **Does/do the company/companies responsible for these discharges have options for pre-treating the water before discharge? If so, why haven't those options been implemented?**

   Response: Yes, there is pretreatment technology for both sulfate and ammonia-nitrogen. AW has been in ongoing discussions with the SIUs regarding the ammonia-nitrogen and sulfate loadings and have encouraged implementing and installing pretreatment.
   Austin Water cannot detail the efforts of individual companies.

7. **Why are staff recommending a delay in implementing the ammonia surcharge?**

   Response: Austin Water has recommended an ammonia surcharge implementation date of November 2018. During discussions with our large volume customers over the last several months regarding the final cost of service results and rate reduction proposal, the need for further stakeholder discussions with all of the customers that would be charged the ammonia surcharge needed to take place. There are up to 5 known customers that would be charged the ammonia surcharge (Samsung; Spansion; NXP Ed Bluestein; NXP Oak Hill; possibly Novati aka Scorpios). The overwhelming majority of the surcharge, however, will be assessed to Samsung, as detailed in the chart on Question 2. Not all of the expected surcharge customers were involved in the cost of service discussions and process. Additionally, the stakeholders wanted to review and understand the assumptions included in the calculations of the surcharge. Therefore, the Joint Recommendation from Austin Water and our public involvement committee includes a statement supporting the November implementation date with the provision to provide a stakeholder process to discuss ammonia treatment costs, calculation of rates and processes.

8. **If available, please estimate the cost other ratepayers have borne as a result of AWU's increased costs to treat high levels of ammonia.**

   Response: Austin Water has performed a cost of service style analysis of treating the high levels of ammonia. For the current loadings, AW has estimated a cost of $3.2 million to treat the high levels of ammonia. The proposed Ammonia Surcharge would be designed to recover these costs from those customers with higher ammonia levels than our standard strength.

SULFATES

9. **Please describe the extent of the increased levels for sulfates.**

   Response: Influent sulfate concentrations at the Walnut Creek WWTP primarily fluctuated between 50 and 100 mg/L until 2010. At the beginning of the third quarter of 2010, sulfate concentrations began to increase, and have increased in a manner similar to ammonia-nitrogen.

10. **Since AWU cannot remove sulfates, please detail the environmental and other impacts associated with high levels of sulfates.**

    Response: Sulfate does not get removed in biological treatment systems. As a strong acid anion, sulfate reduces the alkalinity, which indirectly reduces the plant's ammonia treating capacity via nitrification.

11. **How does AWU plan to respond to the high levels of sulfates?**

    Response: Although not required by its permits, Austin Water is undertaking proactive measures to determine a defensible limit that is protective of surface water quality standards. This will require development of a local limit which will require extensive sampling and monitoring to determine all the loadings from different sources (from residential, commercial and significant industrial users). Once the local limit for sulfate is developed, it will be submitted as a pretreatment program modification to TCEQ. Then Austin Water will return to Council with a proposed revision to Chapter 15.10 to include a limit for this pollutant.