Harvey Fresh & Harvey Water
Recycled Water Scheme

June 2023

Harvey Fresh WWTP – Chemical Doses

Acid Dosing [H_2SO_4] - Dosing of sulphuric acid ~ 400L/d pre-DAF. Acid is dosed in order to lower the pH in the feed to the DAF in order to optimise the performance of the DAF to remove fats/greases from the waste stream.

Caustic Dosing [NaOH]– Dosing of sodium hydroxide (caustic soda) ~ 150-200L/d post DAF. Caustic is dosed in order to raise the pH in the outlet from the DAF, bringing the pH from approximately 4.5 to 7 prior to feeding to the SBR's.

Note that the acid and caustic soda will neutralise each other. The resulting components will be sodium sulphate and water. Based on analysis results from Harvey Fresh and of the Harvey Dam water quality, the inflow will add < 0.09% more sulphate into the dam and < 0.02% more sodium into the dam, therefore a negligible increase.

UAN Dosing [$CO(NH_2)_2$] & [NH_4NO_3] – UAN is a blend of urea and ammonium nitrate. It is dosed into the feed to the SBR to provide a nitrogen rich food source for the micro-organisms in the SBR treatment process and the process needs a balance between carbon, nitrogen and phosphorus based food sources. Any ammonia in the UAN is nitrified to produce nitrate and nitrite components which are then denitrified to produce nitrogen gas and oxygen gas. The nitrogen is released to the atmosphere (which is predominantly nitrogen anyway), and the oxygen is used within the process by the micro-organisms within the treatment process, with a portion also released to the atmosphere. Any remaining nitrogen in the treated water will add <0.09% more nitrogen into the dam.

Ferric Chloride Dosing [$FeCl_3$]– ferric chloride is dosed into the SBR feed in order to facilitate precipitation of phosphorus compounds in the incoming water to the treatment facility. The iron in the ferric chloride reacts with the phosphorus, producing ferric phosphate which is insoluble. The ferric phosphate is then bound within the sludge produced at the WWTP from where it is disposed of in an approved manner off site. The concentration of chloride in the recycled water is actually lower than the background chloride concentration in the dam, so there will be no increase in chloride concentration in the dam due to the usage of ferric chloride dosing at Harvey Fresh.

Sodium Hypochlorite [NaOCl] – sodium hypochlorite will be dosed at the Harvey Fresh site in order to disinfect the recycled water before it is pumped to the Harvey Dam. A target free chlorine residual in the pipeline will be <2mg/L which will then be diluted by a factor of over 30,000 times. There will also be a natural decline in free chlorine concentration due to chlorine decay. Also note that sodium hypochlorite is typically utilised for disinfection of drinking water systems, so is unlikely to have a detrimental effect on the water quality in Harvey Dam.