Alternate Measures of Control (AMC)

for Secondary Clarifier #2 Confined Space Entry

Medium Hazard Atmosphere

City of Penticton AWWTP

March 5, 2015

**Alternate Measures Submission Elements:**

1. The space is a circular concrete secondary clarifier. The tank is 25 m in diameter and is just over 4m in depth. The tank floor has a minor slope towards the middle. There are two adjacent pipes, one is a 750 mm gravity feed from the bio reactor containing bio mass from the bio reactor (Typical water level (TWL) 343.443 m), second feed is a 200 mm pipe that is connected to the suction side of the return pumping system which pumps sludge back to the bio reactor TWL of 343.443 m
2. The space is isolated by:
   1. 750 mm gravity feed has a buried butterfly valve which was installed in 1990 and is exercised annually (no provision for double block and bleed or blanking) Spec sheet attached. Total head of water from bio reactor to bottom of clarifier is 6.028 m or 8.5 psi of head
   2. 200 mm suction line is isolated by a knife gate and a plug valve installed in 2013, engineered drawing attached. (no provision for double block and bleed or blanking) Even if we could double block and bleed the bleed would create a flooding hazard in below ground pump room and blind flanging would require piping to be dissembled with only one valve isolating worker in a below ground building while blind flange is being installed. The potential head on this valve is the same as the gravity valve as both valves are holding back 343.443 m bottom elevation of tank is 337.415 m = 6.028 m or 8.5 psi
3. Glenn Robertson 250-490-2553 [glenn.roberston@penticton.ca](mailto:glenn.roberston@penticton.ca) (City Safety coordinator) administers the Confined Space program for the City of Penticton, Glenn Robertson and Randy Craig (AWWTP Supervisor) prepared the Alternate Measures and Hazard Identification/Risk Assessment
4. Hazards to be addressed, see attached HIRA
5. Alternate Measures;

* 750 mm Butterfly is buried. The analysis of valves as a control measure should assume that all valves leak. However, there is no expectation that a properly installed and maintained valve will fail catastrophically if no work is being performed on it. It is recognized that systems will often permit some leakage; a means of pumping out the fluid will be undertaken. The stilling well that feeds the clarifier will be pumped empty down to the 90 deg bend and visual checks will be performed every 20 minutes while space is occupied, if the water level is observed rising in the stilling well (leakage) that level will be measured and recorded and if required we can pump that liquid out. If excessive leakage is observed the confined space will be evacuated and the issue will be addressed prior to re-entry.
* 200 mm knife gate, P. Eng. sign off attached

1. Workers will be orientated to AMC and required to sign off on their orientation see attached training sheet
2. AMC will be supervised by AWWTP Supervisor and regular visits documented
3. Time frame that the AMC needed is 1 year