

	CONFINED SPACE HAZARD ASSESSMENT		HA # 7
	CONFINED SPACE NAME: Sumps (storm and sanitary)	ID # N/A	LOCATION: Library (2), Gerry Brewer Building (2), Fire Hall (2)
			DATE: November 2012

Confined Space?	YES	
YES ☒ NO ☐ Enclosed or partially enclosed?		
YES ☒ NO ☐ Limited or restricted entry/exit?		
YES ☐ NO ☒ Intended for continuous human occupancy?		
YES ☒ NO ☐ Large enough that a worker can enter?		

SPACE INFORMATION/DETAILS (IN OPERATION):			
SPACE DESCRIPTION: Below ground vertical cylindrical or rectangular shaped chambers that receives storm water runoff and street debris runoff (storm sump) or sanitary run-off (sanitary sump). Storm sumps distribute contents to storm sewers and sanitary sumps distribute contents to sanitary sewers.			
CONTENTS: Storm water runoff and debris (e.g., sticks, leaves), sanitary runoff, floats (start-up pumps), mercury/electronic switches, check valves and isolation valves, piping (PVC) <i>Equipment:</i> Two electric powered pumps with guard rails (sump pumps)			
PROCESS/FUNCTION/USE DESCRIPTION: Collects storm water runoff/wastewater/sewage from Library, Gerry Brewer Building and the Fire Hall and distributes to storm sewers or sanitary sewers.			
PHYSICAL CHARACTERISTICS: Cylindrical or rectangular shaped chambers DIMENSIONS: Approximate range (feet - 'ft'): 5 ft to 8 ft (D) x 4 ft Ø VOLUME: Range: 63 ft ³ to 128 ft ³ 5 ft to 8 ft (D) x 4 ft (W) x 4 ft (L)			
SPACE MATERIAL: Precast or poured concrete			
ENTRY CHARACTERISTICS: Locked square door			
LOCATIONS: 1 – top entry at grade		SIZE: 4 ft x 4 ft	
SECURING MECHANISM: Hinged lock			
ADJACENT VESSELS/SPACES/PIPING:			
NAME OF SPACE/PIPE	CONTENTS	TEMPERATURE	PRESSURE
Inlet & Outlet (6" Ø average)	Storm water or wastewater	No concern	No concern
Overflow (4" Ø average)	Storm water or wastewater	No concern	No concern

SCOPE OF WORK:
This Hazard Assessment (HA) refers to entry for the purpose of inspection (e.g., inspection of check valves and isolation valves). The majority of the work will be conducted from outside the space and includes removal of objects (debris, leaves) with a sucker truck (if required) and periodic maintenance of pumps with manual tools – the pumps are removed from the space via the chain and guard rails. <i>Hot work and other atmospheric contaminant generating activities are not included in this Hazard Assessment.</i>

HAZARDOUS ATMOSPHERIC RATING (LOW, MOD. HIGH)	Moderate	JUSTIFICATION: Potential for CO and H ₂ S to be greater than 10% of exposure limits.
COMPLETED BY:	Prepared by: Peter Bergholz, BSc, CIH, AMEC, November 2012 Reviewed by: Victor Leung, MSc, CIH, ROH, CRSP, AMEC, November 2012	INFO. SOURCE: Paul Elsoff & Richard Howard

CONFINED SPACE HAZARD ASSESSMENT

CONFINED SPACE NAME:
ID #

Sumps (storm and sanitary)

N/A

LOCATION:

Library (2), Gerry Brewer Building (2), Fire Hall (2)

HA # 7

DATE: November 2012

HAZARDS		UNDISTURBED SPACE POTENTIAL HAZARDS	WORK TASKS POTENTIAL HAZARDS	CONTROL MEASURES
ATMOSPHERE	Oxygen (O ₂) Deficiency	Yes Possible for closed up space prior to entry.	No	Monitoring for O ₂ . Continuous ventilation during entry.
	O ₂ Enrichment	No	No	
	Chemical	Yes Potential for hydrogen sulphide (H ₂ S) and methane to be present in spaces and carbon monoxide (CO) from adjacent vehicular traffic.	No	Monitoring for H ₂ S, methane and CO. Continuous ventilation during entry. General PPE: Coveralls, safety boots, work gloves, hard hat and safety glasses with side shields. For sanitary sumps, disposable Tyvek coveralls and disposable nitrile gloves are recommended.
	Biological	Yes Vermin (rats, mice or their excrement) may be present. For storm sumps, bacteria/fungi/sludge is possible in spaces that are wet or are not opened for prolonged periods. For sanitary sumps, the presence of pathogenic bacteria and sludge are possible in spaces at all times. Wastewater/sewage collects/passes through the sanitary sumps.	No	For storm sump entry, rinse space prior to entry if space contains large amounts of bacteria/fungi/sludge and wear General PPE . For sanitary sump entry, rinse space prior to entry and wear General PPE (disposable Tyvek coveralls and disposable nitrile gloves are recommended). Remove objects (debris, leaves, sludge) from outside the space at all times with sucker truck.
	Fire/Explosion	Yes Potential for combustion gases (methane) or volatile chemical substances to be present emitted from wastewater or from accidental/illicit dumping.	No	Monitoring for LEL. Continuous ventilation during entry.
SAFETY	Structural Hazard	No	No	
	Engulfment	Yes Potential if the outlet were to become plugged during entry (sanitary and storm) or during/following high rain fall (storm).	No	Water in sump must be pumped out from outside the space with sucker truck. Entry Supervisor to evaluate liquid level prior to entry. Entry prohibited if the flow level is surcharging and when significant precipitation is forecasted in the catchment area during entry. Harness and lifeline must remain connected during entry.
	Entrapment	No	No	

**HAZARDOUS
ATMOSPHERIC RATING
(LOW, MOD. HIGH)**

Moderate

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**COMPLETED
BY:**
Prepared by: Peter Bergholz, BSc, CIH, AMEC, November 2012
Reviewed by: Victor Leung, MSc, CIH, ROH, CRSP, AMEC, November 2012

**INFO.
SOURCE:**

Paul Elsoff & Richard Howard

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HAZARDS		UNDISTURBED SPACE POTENTIAL HAZARDS	WORK TASKS POTENTIAL HAZARDS	CONTROL MEASURES
	Electrical	Yes Electronic switches/pumps present inside	No	Electrical source must be locked out.
	Access/Egress	Yes Piping present inside makes for a tight entry and no ladder exists.	No	Work with care as space opening is tight. Harness and lifeline must remain connected during entry. Portable ladder required. Maintain 3 points of contact on the ladder at all times.
	Fall	No	No	
	Slip/Trip	Yes Interior of space and floor surface will be wet and slippery.	No	Wear General PPE (safety boots) and work with care.
	Visibility/Light Level	Yes Insufficient lighting	No	Portable lighting (flashlight or portable light with GFCI) required.
	Baffles/Internal Arrangement	Yes Piping present inside space	No	Work with care
	Floor Openings in Space	No	No	
PHYSICAL	Noise/Vibration	No	No	
	Temperature	No	No	
	Non/Ionizing Radiation	No	No	
	Laser	No	No	
OTHERS	Ingestion/Skin Contact Hazard	Yes Contact with raw sewage/wastewater may occur in spaces.	No	Work with care and wear General PPE . Rinse space prior to entry if space contains large amounts of bacteria/fungi/sludge material. Practice good personal hygiene and wash hands thoroughly prior to break and at end of work shift.
	Mechanical Hazard	No	No	
	Traffic Hazard	Yes Some sumps exist inside parkade locations	No	Entrance to space must be physically isolated from vehicular and pedestrian traffic. Standby person or designated road-traffic crew must monitor traffic in the area.
	Hydraulic/Pneumatic Hazard	No	No	

CONTROL MEASURES REQUIRED:

Confined Space Permit: Yes

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CONTROL MEASURES REQUIRED:	
Atmospheric Testing:	Gas monitor with sensors for O ₂ , LEL, CO & H ₂ S. Monitor for methane (CH ₄) with LEL sensor.
Ventilation Requirements:	Provide mechanical ventilation (minimum 50 CFM) through the opening. Minimum ventilation requirements are based on achieving 20 air changes per hour.
PPE Requirements:	General PPE: Coveralls, safety boots, work gloves, hard hat and safety glasses with side shields. For sanitary sumps, disposable Tyvek coveralls and disposable nitrile gloves are recommended.
Lockout/Isolation:	Electrical source must be locked out. Isolation is not possible. Entry Supervisor to evaluate liquid level prior to entry. Entry prohibited if the flow level is surcharging and when significant precipitation is forecasted in the catchment area during entry.
Standby Person:	Yes, at or near entrance.
Communication Procedures:	Radio, voice
Rescue Procedures:	Standby person calls 911 and calls Entry Supervisor. Entry Supervisor will respond to scene. Self rescue (if possible) or removal by Standby Person (from outside space) using winch.
Required Rescue and Safety Equipment	Two-way radio, cellular telephone, harness (must be worn), tripod, winch, lifeline (attached at all times).
Other:	For storm sump entry, rinse space prior to entry if space contains large amounts of bacteria/fungi/sludge and wear General PPE . For sanitary sump entry, rinse space prior to entry and wear General PPE (disposable Tyvek coveralls and disposable nitrile gloves are recommended). Practice good personal hygiene and wash hands thoroughly prior to break and at end of work shift. Remove objects (debris, leaves, sludge) from outside the space at all times with sucker truck. Water in sump must be pumped out from outside the space with sucker truck. Work with care as space opening is tight. Portable ladder required. Maintain 3 points of contact on the ladder at all times. Portable lighting (flashlight or portable light with GFCI) required. Entrance to space must be physically isolated from vehicular and pedestrian traffic. Standby person or designated road-traffic crew must monitor traffic in the area.

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This Hazard Assessment (HA) pertains to the activity and confined space listed above. This hazard assessment is required to be reviewed within 3 years of preparation; any change in activity requires a review of this HA and a completion of a HA for the specific activity (especially when contaminants will be generated by an activity such as welding, radiation or chemical usage).