3.0 CONFINED SPACE ENTRY

This Section provides confined space entry requirements for all Town employees in accordance with 29 CFR 1910.146. These procedures do not apply to contractor employees. Each employer on the site is responsible for the safe entry procedures for their employees.

3.1. DEFINITIONS.

A. Confined spaces are defined as locations that:

1. Allows for entry of a worker.
2. Are not meant for routine human occupancy.
3. Have restricted means of egress.

B. There are two types of confined spaces recognized by the Safety and Health regulations:

1. *Permit required confined spaces* - Spaces where hazardous conditions may exist, and require the full entry procedures of this Section.
2. *Non permit required confined spaces* - Spaces where no hazardous conditions may exist. These spaces do not require specific entry procedures. An example of a non-permit required confined space would be a tank (i.e. clarifier or sludge tanks) under construction (note: a tank undergoing repairs may not meet this definition). However, this could change if a process were to be performed in the non-permit required space which would introduce a hazard (i.e. welding, painting).

3.2 INVENTORY OF ALL CONFINED SPACES.

A. An inventory of all confined spaces shall be developed for all work sites. This inventory shall include the type of space and the specific location. This inventory shall be maintained by each applicable supervisor, available for review for all affected employees, and updated as necessary. Subcontractors shall be provided with the confined space inventory for use in the development of procedures to protect their employees.

B. If, through the actions of any contractor, a confined space is either created or brought on site, the contractor shall provide this information to all other employers (including Town of Hardwick) on site to allow for employee protection.

C. Examples of confined spaces to be noted in the inventory include:

1. Manholes
2. Tanks/tank trucks
3. Excavations/pit

3.3 GENERAL REQUIREMENTS AND LABELING.

A. Confined space entry procedures shall be implemented by employees if entry is required into non permit required confined spaces where the work being performed introduces a hazard (i.e. spray painting, welding).

B. Permit required confined spaces shall be entered only in accordance with the provisions of this section.

C. All permit required confined spaces shall be labeled so that employees are adequately warned of the potential for hazardous atmospheres. Labeling is not required under the following circumstance:

1. The spaces are easily recognizable, numerous, and widely spaced (i.e. storm sewer manholes). Employees shall be instructed that these constitute confined spaces during required training. However, these locations shall be included on the inventory.
2. A complete inventory has been developed, all personnel have been trained in the use of the inventory, and the workers consult the inventory prior performance of any work which may require entry into a confined space, to determine whether the location to be entered is considered a confined space.

D. When non permit required confined spaces require the implementation of confined space entry procedures because of specific work operations (i.e. painting, welding), all entry points shall be labeled so as to alert all employees of the existence of the hazardous conditions. These signs shall only be removed when the hazard no longer exists (i.e. complete curing of the paint).

E. Non permit required confined spaces can only be designated by a Certified Industrial Hygienist, Certified Safety Professional, or Professional Engineer after review of the space(s), historical monitoring data, and other factors (i.e. injuries that have occurred). Therefore, all confined spaces shall be considered Permit required, unless specifically designated as a Non-permit space, in writing, by the Public Works Supervisor, or designee.

3.4 PROCEDURES PRIOR TO ENTRY INTO A PERMIT REQUIRED CONFINED SPACE.

A. Determine which space will require entry, and what potential hazards may be present (include hazards associated with the work process).

B. Select the appropriate equipment to measure the potential hazards. As a minimum, select a multi-gas meter capable to measuring oxygen levels, and combustible gas as percent of the
Lower Explosion Limit (LEL). Additional instrumentation or detectors shall be selected as needed. For example, a hydrogen sulfide detector shall be used for entry into manholes, detector tubes shall be used where hazardous levels of specific chemicals (i.e. l,l,l trichloromethane) are suspected. Contact your supervisor for assistance as needed.

C. Determine the acceptable values for the hazardous conditions being measured, based on the equipment in use and the field calibration method. This includes determining the differences expected based on the actual calibration standard (i.e. methane or pentane typical for combustible gas meters), and the anticipated hazard. This information is available from the instrument manufacturer. In addition, the action levels (allowable levels) for the potential hazards shall be
determined. The action levels are determined as follows:

1. Oxygen	19.5% - 23.5%
2. Lower explosion limit	10%
3. Hydrogen sulfide	15 ppm
4. Carbon monoxide	25 ppm
5. Other toxic chemicals	Public Works Supervisor

D. Ensure all the equipment selected is within current manufacturer calibration.

E. Personnel trained in accordance with this section shall perform field verification of equipment as follows:

1. Combustible gas meters shall be calibrated using appropriate span gas for the detectors to be used. This span gas calibration shall be performed each time the instrument is turned on.
2. Detector tube pumps shall be checked for leakage using the manufacturer's procedures prior to each day's use.
3. Photo ionization detectors shall be calibrated using isobutylene, or other material, in accordance with the manufacturer's directions.
4. Other instrumentation shall be calibrated in accordance with manufacturer's directions.

F. Set up barricades around the space being entered as required. Set up any rescue or retrieval systems.

G. Institute any required lockout/tagout procedures that are needed (i.e. electrical, steam, liquid flow-pipe blanking.

H. Ensure that a second person (attendant) is available, and assists in the set up procedures.

I. Ensure a means of communication has been agreed upon between the entrant and the attendant.

J. *The attendant is not authorized to perform rescue involving entry into the space.*

Ensure that the attendant has a means to contact emergency rescue services (i.e. Fire Department).

K. Complete the attached Confined Space Entry Permit. Have the attendant verify the completion of the required actions. Then the Entrant Supervisor shall sign the Permit upon verification of completed actions. The Permit shall be maintained at all authorized entry sites until completion of the entry.

L. The Entry Permit is only valid for a maximum of eight hours. After the eight hours, a new Permit shall be developed using the procedures in this Section.

3.5 ENTRY PROCEDURES.

A. Carefully remove any access doors or covers. Check the area around the seal to ensure that no flammable situations exist prior to door or cover removal. Note: *Always check for oxygen levels first if the meter does not measure simultaneously. Low oxygen levels can cause LEL readings to be incorrect.*

B. Don any required personal protective equipment.

C. Upon removal of the access, check the immediate atmosphere using remote testing procedures to ensure the immediate atmosphere is safe. If any of the parameters being tested are outside the action level, do not enter. Use exhaust ventilation to either remove the contaminant(s) or to correct the oxygen deficient atmosphere.

D. If the initial test(s) are within allowable ranges, then slowly enter the space, continually testing the atmosphere in front and to the sides. In stratified atmospheres (i.e. vertical entries), testing shall be done 4 foot in advance of the direction of travel. Travel speed shall be such to allow for adequate instrument response time. The entire area where work is to be performed shall be tested prior to performance of any work.

E. Perform the work. Place the direct read instruments in a location that will not interfere with the work, allow for continual monitoring, and allow for noting any alarms which may activate.

F. Upon work completion, pick up all equipment and leave the space.

3.6 POST ENTRY PROCEDURES.

A. Replace all access covers.

B. Ensure all signs are visible and legible.

C.. Remove all lockout/tagout equipment.

D. Note any problems encountered while in the space on the Permit.

E. Finish the permit, and turn in to the Entrant Supervisor.

F. The Entrant Supervisor shall inspect the Permit for completion, and investigate any noted problems. Actions taken to correct noted problems shall be discussed with all authorized entrants and attendants for future implementation.

G. The completed Permit shall be maintained on file as required in this Section.

3.7 ALTERNATE ENTRY PROCEDURES.

As noted above, after determining whether a location is a confined space, then an evaluation is performed to determine the potential hazardous conditions present. If the only hazardous conditions present are exposure to airborne contaminants, and, if these contaminant levels are adequately controlled by local exhaust ventilation, then alternate entry procedures can be used.

Alternate entry procedures allow for entry into a confined space without the need for an attendant or emergency extraction equipment. In addition, a full Confined Space permit is not required to be
completed-only documentation (i.e. logbook) as to who entered, when entered and what the atmospheric measurements were prior to entry.

In order to use alternate entry procedures for a given space, the confined space shall initially be designated as a Permit required confined space, and full entry procedures as required above shall be implemented. After collection of sufficient data (usually 3-5 entries), a review of the air monitoring data shall be performed. If the data shows all air sampling data is within acceptable ranges and/or below the substance action levels, then the space can be designated as allowing Alternate Entry.

Entry into confined spaces designated for alternate entry shall still require the entrant to perform initial atmospheric testing prior to entry, as well as periodic measurements while inside the space. If the measured atmospheric contaminant levels exceed established criteria, the employee shall exit the space, and shall not re-enter either without correcting the condition from outside the space, or, if entry is required, full Permit required entry procedures are used.

3.8 TRAINING

A. *Authorized entrants,* shall be trained in the following areas:

1. The requirements of the applicable regulation, and the provisions of this Section.
2. The selection, calibration and use of air measurement equipment.
3. The use and completion of the attached Permit.
4. The potential hazards associated with Confined Space Entry, and the methods

of detecting the hazards.

5. Means of protection for anticipated hazards.

B. *Authorized attendants,* shall be trained in the following areas:

1. The areas outlined under authorized entrants.
2. Emergency notification requirements.
3. Authorized emergency response procedures.
4. Maintaining the list of Entrants within the space at any given time.

C. *Entry Supervisor,* shall be trained in the following areas:

1. The areas outlined under authorized attendants and entrants.
2. Accident and problem investigation techniques.
3. Record keeping requirements.

D. *All other Town employees (as applicable),* shall be trained to:

1. Recognize confined spaces.
2. Not to enter confined spaces.

3.9 RECORD KEEPING/AUDITING.

A. Inventories of confined spaces shall be maintained until one year past project completion.

B. Confined Space Entry Permits shall be maintained for a minimum of one year.

C. Any airborne measurements that represent employee exposure shall be maintained in accordance with the provisions of this manual regarding medical records.

D. All Entry permits shall be reviewed annually by a trained entrant supervisor, to determine if procedures are being followed, and are adequate to protect employees. If necessary, the entry procedures shall be modified to ensure personnel are protected when entering locations.

3.10 MUTLI-EMPLOYER WORK SITES.

A. Town employees shall perform confined space entry procedures for Town employees only. All other site personnel shall perform confined space entry procedures in accordance with Federal and State regulations, and their own requirements.

B. Town personnel shall not enter confined spaces using other employers' completed Permits.

TOWN OF HARDWICK
PERMIT - REQUIRED CONFINED SPACE (PRCS)

Section/Location:_____Date/Time:_____
Supervisor:_____
Confined Space Identification/Location:_____
Purpose of Entry Authorized By This Permit:_____

Authorized Entrants:_____ _____ _____
_____ _____ _____

Authorized Attendants:_____ _____ _____
_____ _____ _____

ATMOSPHERIC TEST DATA.

1. Initial Testing.
Time:_____ Percent Oxygen:_____ Percent LEL:_____ H2S ppm:_____
CO ppm:_____ Other:_____ Other:_____ Other:_____
Tester Signature:_____

2. Retest (not to exceed every 2 hours)

Time	Percent Oxygen	Percent LEL	H2S ppm	CO ppm	Other	Other	Other	Initials	Comments
_____	_____	_____	____	____	_____	____	____	_____	_____
_____	_____	_____	____	____	_____	____	____	_____	_____
_____	_____	_____	____	____	_____	____	____	_____	_____
Allow-able Readings	19.5% To 23.5%	10%	15	25					

Note: If conditions are outside the accepted ranges, the space shall be ventilated, and retested, until conditions are acceptable. Note actions taken for unacceptable readings in the comment section.

3. Atmospheric Test Equipment Used:

Manufacturer	Model	Serial or Unit Number	Calibration Expiration Date	Span/Calibration Gas Used

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

*Span/Calibration gas shall be used every time atmospheric test equipment is turned on, prior to use, in accordance with manufacturer's directions. Use this section to also note other checks, such as leak test of Draeger tube pump.

TOWN OF HARDWICK
PERMIT-REQUIRED CONFINED SPACE (PRCS)

Person performing equipment calibration/date:_____

Person Completing Permit:_____

SUPERVISOR AUTHORIZATION: I have reviewed the work authorized by this permit and the information contained within. All applicable sections are complete. Entry is authorized.

Supervisor Name (if different from above):_____

Supervisor Signature/Date:_____

PERMIT VALID FOR NO LONGER THAN 8 HOURS
PERMIT SHALL REMAIN AT JOB SITE UNTIL WORK COMPLETED

CONFINED SPACE INVENTORY

l. SEWER TREATMENT PLANT

l. Influent Manhole - Located between the grit shed and headworks in the driveway. This manhole is the access to the main sewer line from the town entering the treatment process and it is four feet deep.

2. Wet Wells - Located at the end of the headworks, on the "loading dock" area built into the plant. This is a holding area for wastewater before it is pumped up to the lagoons. There are access hatches and built in ladders with a cat-walk in one of them. The wet wells are 12 feet deep.

3. Transfer Pipe - Located in between the two lagoons, at the south end. This is an access to the valves that control the flow between the lagoons and that direct the flow from the plant to the second lagoon. This access area is 13 feet deep.

4. Lagoon Effluent Manhole - Located at the north end of the second lagoon, it is where the effluent leaves the lagoon and flows to the chlorine contact tank (CCT). This manhole is seven feet deep.

5. Final Effluent Manhole - Located on the north side of the CCT, and the west side of the grit shed, it is where all effluent samples are taken and the last place in the plant before the treated wastewater enters the river. It is nine feet deep.

6. Aeration Supply Bunker - Located on the east side of lagoon #l in the middle. This is where the aeration supply lines are exposed inside a concrete bunker. The bunker is 13 feet deep.

7. Effluent Manhole - Located at the top right hand side of the north end stairs. This is an access area to the effluent flow and is 91/2 feet deep.

8. Effluent Manhole - Located on the north end in between the two lagoons. This is an access area to the effluent flow from the second lagoon and where effluent flow can come from the first lagoon. This manhole is eight feet deep.

9. Manhole - Located at the north end of the second lagoon, half way down the bank. This is a storm drain manhole that is 10 feet deep.

10. Manhole - Located at the northeast corner of the grit shed. This is a storm drain manhole that is nine feet deep.

11. Manhole - Located at the southeast corner of the door yard, just off of the pavement on the lawn. This is a storm drain manhole and is six feet deep.

12. Manhole - Located at the south end of the first lagoon on the lawn at the west end of the drainage ditch. This is a storm drain manhole and is 31/2 feet deep.

There is one more manhole at the north end of the first lagoon half way down the bank, at

least it is shown on the blue prints, but I was unable to locate it. I will assume it is about the same depth as the manhole on the north end of the second lagoon, about 10 feet deep.

2. SEWAGE PUMPING STATIONS

    1. Buffalo Street - 12 feet deep.
    2. Rte. 14 South - 12 feet deep.

3. VARIOUS MANHOLES THROUGHOUT SEWER DISTRICT - Too numerous to list.

EVALUATION OF POTENTIAL CONFINED SPACES
AND
ENTRY PROCEDURES

SPACE: MANHOLES (TOO NUMEROUS TO LIST INDIVIDUALLY)

Manholes are located throughout this facility and will include wetwells at pump stations. These manholes range in depth from 4 feet to 20 feet. Entry is gained by use of a portable ladder. There is no permanent ventilation installed.

The following checklist was used to determine potential hazards:

_____ Hydrogen Sulfide Present
_____ Greater Than 10% LEL
_____ Less Than 19.5% Oxygen or Greater Than 23.5% Oxygen

Potential hazards include explosion and toxic atmospheres. These manholes are determined to be permit required spaces. The following procedure shall be used when entering these manholes:

A confined space permit and the entry record sheet shall be completed prior to entry. Only trained personnel familiar with Hardwick's Safety Manual shall be allowed to be involved in confined space entry.

The multi gas meter shall be calibrated using span gas for the gas sensors used, prior to each shift's/days use and the atmosphere of this space will be tested for oxygen content, flammable gases and vapors, and hydrogen sulfide. These tests will be done prior to entry at various heights of this station.

A blower shall be used to give adequate ventilation any time conditions require it. Allow sufficient time for the blower to clear the atmosphere and continue to operate to provide a continuous supply of fresh air to entrants.

Entrant will be required to wear the following safety equipment: hardhat, gloves, proper clothing, eye protection and hearing protection if required.

A full body harness shall be worn and a tripod and winch will be used whenever possible, if they can not, then a retrieval line shall be attached to full body harness and two attendants will man the line.

Atmospheric testing during decent will be 4 feet in advance of travel and side to side.

After entry, the meter shall be carried by the entrant in advance of direction of travel.

Testing while entering and moving around in this space will be at a pace that allows reaction time of the meter. During an emergency situation the attendant shall utilize equipment listed on the permit and notify the fire department for help.

This policy is in effect as of 12/2/99