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Safex

January 18, 2016

Mr. Mark Chandler
Operations Superintendent
Delaware County Regional Sewer District
7767 Walker Woods Blvd.
Lewis Center, OH 43035

Re: Delaware County Sewer District Gap Assessment Revised

Dear Mr. Chandler:

Enclosed is the final summary report for the Delaware County Regional Sewer District Pump House Gap Assessment conducted by Safex.

It includes the changes based on the reconsideration of several pump houses to be mixed waste as opposed to residential waste only. It also includes the report for Quail Meadows which was under renovation when the draft report was submitted.

If you have questions you would like to discuss, please contact me on my cell at 614.-563-6822.

Sincerely,
Safex

Ralph P. Oliveti

Ralph P. Oliveti, CSP
Sr. Project Manager

Reviewed by:

Dianne Grote Adams

Dianne Grote Adams, MS, CIH, CSP, CPEA
President

Enclosure

1.0 INTRODUCTION

The Delaware County Regional Sewer District (DCRSD) provides services for the collection and treatment of sanitary waste throughout the county. Operations within the department include operating full scale wastewater treatment plants, operating small scale "Package" treatment plants, emptying lift stations using a vacuum truck, performing video inspections of sewer lines and performing site and equipment maintenance.

In addition to the above, DCRSD also operates and maintains 25 pump stations throughout the District. As part of their continuing effort to upgrade the safety program within their organization, the Delaware County Regional Sewer District has contracted with Safex to conduct a Gap Assessment of the health and safety conditions within the pump stations that they manage and operate.

The objectives of the Gap Assessment were to visually inspect each of the pump stations, identify potential safety concerns and provide recommendations for addressing any deficiency that was identified. Observations made during the assessment were intended to address three primary topics:

- Safety or health hazards
- The requirements of the Electrical Classification Requirements from NFPA 820 (Standard for Fire Protection in Wastewater Treatment and Collection Facilities).
- Opportunity to reclassify Dry Walls to Alternate Confined Spaces prior to entry.

Included in this report are:

- An explanation of key points of the Fire Protection and Electrical Classifications from NFPA 820 that apply to the pump stations operated by DCRSD,
- An explanation of the process to reclassify a permit required confined space to an alternate space and the factors that would prohibit a space from being reclassified,
- An individual assessment sheet with observations, comments and recommendations for each of the pump stations that were included in the assessment.

2.0 FIRE PROTECTION AND ELECTRICAL CLASSIFICATION

Each pump station is classified as either Residential Waste or Mixed Waste. Residential pump stations service only single family or multi-family dwellings. Mixed Waste pump stations handle sewer waste from both residential and commercial locations. There are no pump stations in DCRSD that are classified as industrial.

Each pump station is comprised of both a Wet Well and a Dry Well.

- The Dry Well is the the portion of a pumping station designed to provide isolation and shelter or accommodations for controls or equipment associated with the pumping of wastewater. It is designed to completely and permanently exclude wastewater or wastewater-derived atmospheres.

- The Wet Well is the portion of the pumping station that receives and temporarily stores wastewater for the purpose of pumping.

Based on the understanding of the dry and wet wells, the following NFPA 820 requirements for electrical classification and fire protection have been identified as applicable to the DCRSD pump stations. Alternative classifications are based on continuous ventilation in the wells. Currently, the DCRSD wells are not continuously ventilated.

1. Residential Wet Wells that are not ventilated or not continuously ventilated at 12 air changes per hour. (From Table 4.2 Row 11, Line a)
   - Fire Protection — Combustible Gas Detection System in the Well
   - Electrical Classification — Class I, Division 2

2. Residential Dry Wells that are not ventilated or not continuously ventilated at 6 air changes per hour. (From Table 4.2 Row 12, Line a)
   - Fire Protection — Fire Extinguisher
   - Electrical Classification — Class I, Division 2

3. Mixed Waste Water Wet Wells that are not ventilated or not continuously ventilated at 12 air changes per hour. (From Table 4.2 Row 16, Line a)
   - Fire Protection — Combustible Gas Detection System in the Well
   - Electrical Classification — Class I, Division 1

4. Mixed Waste Water Dry Wells that are not ventilated or not continuously ventilated at 6 air changes per hour. (From Table 4.2 Row 17, Line b)
   - Fire Protection — Fire Extinguisher
   - Electrical Classification — Class I, Division 2

Of the twenty-five pump stations currently operated by DCRSD, fifteen (15) of them are classified as Mixed Waste and ten (10) are classified as Residential Only.

Each completed individual Pump House Assessment Form identifies the specific electrical classification and fire protection requirements for that Pump House. Items which do not meet the classification requirements are identified including recommended corrective measures.

Note: Waste Water Dry Wells with no ventilation could be "Unclassified" electrically if they are pressurized under the requirements of NFPA 496. None of the Dry Wells are pressurized.

3.0 CONFINED SPACE CLASSIFICATION AND POTENTIAL RECLASSIFICATION

All of the Wet Wells operated by DCRSD, with the exception of Alum Creek, are classified as Permit Required Confined Space as defined in 29 CFR 1910.146(b). This classification is based on the following hazards.

- The potential atmospheric hazards associated with the waste which applies to all of the Wet and Dry Wells,
- The engulfment hazard which applies to all of the Wet Wells

The Alum Creek Wet Well does not meet the definition of a confined space because entry is made through a stairway. Despite the fact it is not classified as a confined space, entry into the Alum Creek Wet Well should only done after atmospheric testing to ensure the atmosphere is not hazardous.

Wet Wells cannot be reclassified because of the potential for engulfment and the potential for atmospheric hazards which cannot be controlled by forced air ventilation.

The Dry Wells are classified as either Alternate Confined Spaces or Non-Permit Confined Spaces

- Dry Wells which have both fixed lighting and ventilation can be classified as Non Permit Confined Spaces provided the lights and ventilation are on throughout the entry.
- Dry Wells which have lights but no ventilation are classified as alternate spaces and can be entered by using portable forced air ventilation throughout the entire entry process.
- Dry Wells which have no lights and no ventilation are classified as alternates space and can be entered by using portable lighting and portable forced air ventilation throughout the entire entry process

The classification and entry requirements of each Dry Well are documented on the individual Pump Station Assessment Form in Appendix A.

4.0 SAFETY OBSERVATIONS

One safety concern of note is this pump station layout. The access openings to the dry well in two of the pumps stations is immediately inside the entry door. Removing the cover to the Dry Well creates a condition where employees inside the pump house are isolated from the outside because of the floor hole that is created. The hazard is further increased if the davit arm is installed for confined space entry which completely blocks the exit.

Access to the Dry Wells in two of the Pump Houses do not have covers. One of the two has a solid guardrail which provides adequate fall protection to employees in the Pump House but prohibits installation of the current davit used for confined space entry. The

second has a chain guarding the opening. The chain as installed does not meet the requirements of a guardrail as required in the OSHA Walking Working Surface Standard.

Consideration should be given to establishing a standard pump house design for future pump house installations which would address potential safety concerns prior to installation.

Other identified safety concerns are associated with maintenance items and are documented on the Pump House specific assessment sheet attached to this report in Appendix A. Regular safety inspections, such as monthly, would enhance the safety program and allow for identification of hazards and prompt corrective action.

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Alum Creek
Address: 7850 Worthington Road, Westerville
NFPA 820 Function: Mixed Waste

Wet Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	16a
NFPA Electrical Classification:	Class I Division 1
Fire Protection Requirements:	Combustible Gas Detection System

Observation from Assessment:

- The Alum Creek Pump Station wet well has standard stairways used for entry into the space/ As a result it does not meet the definition of a confined space.
- There is continuous ventilation inside the wet well and a combustible gas detection system.

Dry Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	17b
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There were no markings on the pumps and lights on the bottom level of the Dry Well indicating that they were electrically classified as Class I Div. 2; however, they appeared to be the same style pumps used in the North Star Dry Well which are Class I Division 1.

- There are open outlets on the bottom level which are not electrically classified.
- There is ventilation on the bottom level but it is not continuous.
- Fire extinguishers on multiple levels.
- Access to all levels is by stairway. This space would not be classified as a confined space.

Comments and Recommendations

- A combustible gas detection system should be on a calibration schedule.
- Because there is no entry level read-out of the combustible gas indicator it is recommended that air monitoring be conducted prior to any entry.
- The outlets on the lower level of the Dry Well need to be Class I Division 2 rated.

Assessment Completed By: Ralph P. Oliveti

Ralph P. Oliveti, CSP
Safex, Inc.

Date: 10/7/15

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Cheshire
Address: 2350 Africa Road, Galena
NFPA 820 Function: Mixed Waste

Wet Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	16a
NFPA Electrical Classification:	Class I Division 1
Fire Protection Requirements:	Combustible Gas Detection System

Observation from Assessment:

- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	17b
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There is no mechanical ventilation in the Dry Well
- The light inside the Dry Well has a regular light bulb. The fixture does not appear to be explosion proof. There is no cover over the light bulb.

Comments and Recommendations

- Install a combustible gas detection system in the Wet Well.
- Replace the fixture in the Dry Well with one that is rated for Class I Division 2 service.
- The space can be entered as an alternate confined space.

Assessment Completed By: Ralph P. Oliveti

Ralph P. Oliveti, CSP
Safex, Inc.

Date: 10/7/15

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Concord Road
Address: 10377 Concord Road, Dublin
NFPA 820 Function: Mixed Waste

Wet Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	16a
NFPA Electrical Classification:	Class I Division 1
Fire Protection Requirements:	Combustible Gas Detection System
Fire Protection Requirements:	Combustible Gas Detection Unit

Observation from Assessment:

- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	17b
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- The access to the Dry Well is directly inside the entrance door. When the base for the davit arm is installed, the employee serving as the attendant would not have a means of egress.
- There is an electrical outlet inside the control room which is slightly discolored potentially from a loose wire or short.
- There is no lighting inside the Dry Well.
- There is no forced air ventilation inside the space.

Comments and Recommendations

- A combustible gas detection unit is required in the Wet Well.

- The electrical outlet which is discolored must be replaced.
- Consideration should be given to relocating the entry door to the control room to allow access to the Dry Well.
- If the entry door cannot be relocated, it must be determined whether there are relief valves on the inlet lines, and if there are relief valves, do they have a drop line or a hose to the floor.
- The Dry Well can be entered as an alternate space provided portable lighting and forced air ventilation is used.

Assessment Completed By: Ralph P. Oliveti

Date: 10/8/15

Ralph P. Oliveti, CSP
Safex, Inc.

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Clear Creek
Address: 4775 Scenic Drive, Powell
NFPA 820 Function: Residential

Wet Well

Ventilation Actual:	No continual ventilation
NFPA 820 Requirements:	11a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Combustible Gas Detection Unit

Observation from Assessment:

- No combustible gas detection unit was in evidence.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	12a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There is an exhaust fan in the Dry Well which is operated manually.
- There is an electrically classified light on the ceiling of the Dry Well.

Comments and Recommendations

- Changing the exhaust system from manual to automatic and setting it to 6 air changes per hour or more would reclassify the space Dry Well to Unclassified.
- The Dry Well can be entered as a non-permit confined space provided the exhaust system and lights are turned on prior to entry.
- A combustible gas detection system needs to be installed in the Wet Well.

Assessment Completed By: Ralph P. Oliveti

Ralph P. Oliveti, CSP
Safex, Inc.

Date: 10/8/15

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Deer Run
Address: 182 Valley Run Drive, Powell
NFPA 820 Function: Residential

Wet Well

Ventilation Actual:	No continual ventilation
NFPA 820 Requirements:	11a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Combustible Gas Detection Unit

Observation from Assessment:

- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	12a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There is no lighting inside the Dry Well.
- There is no ventilation inside the Dry Well.
- There is no cover over the access to the Dry Well. There is a single chain which serves at guard the opening.

Comments and Recommendations

- A combustible gas detection unit is required in the Wet Well.
- The opening to the Dry Well needs to be either covered or a guardrail meeting the OSHA requirements (top rail, midrail, toe board) must be installed.
- The Dry Well can be entered as an alternate space provided portable lighting and forced air ventilation are used.

Assessment Completed By: Ralph P. Oliveti

Ralph P. Oliveti, CSP
Safex, Inc.

Date: 10/8/15

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: East Alum Creek
Address: 201 Africa Road, Galena
NFPA 820 Function: Mixed Waste

Wet Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	16a
NFPA Electrical Classification:	Class I Division 1
Fire Protection Requirements:	Combustible Gas Detection System

Observation from Assessment:

- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	17b
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There is explosion proof lighting in the Dry Well.
- There is no ventilation inside the Dry Well.

Comments and Recommendations

- A combustible gas detection unit is required in the Wet Well.
- The Dry Well can be entered as an alternate confined space using a portable forced air ventilation fan.

Assessment Completed By: Ralph P. Oliveti

Ralph P. Oliveti, CSP
Safex, Inc.

Date: 10/8/15

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Golf Village
Address: 3242 Seldom Seen Road
NFPA 820 Function: Mixed Waste

Wet Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	16a
NFPA Electrical Classification:	Class I Division 1
Fire Protection Requirements:	Combustible Gas Detection System

Observation from Assessment:

- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	17b
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There is no mechanical ventilation in the Dry Well.
- There is a generator inside of the Pump House with automatic louvres which open when the generator starts to ventilate potential diesel vapors.

Comments and Recommendations

- A combustible gas detection unit is required in the Wet Well.
- The Dry Well can be entered as an alternate confined space using a portable forced air ventilation fan.

Assessment Completed By: Ralph P. Oliveti

Ralph P. Oliveti, CSP
Safex, Inc.

Date: 10/8/15

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Golf Village North
Address: 6873 Sawmill Parkway, Powell
NFPA 820 Function: Mixed Waste

Wet Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	16a
NFPA Electrical Classification:	Class I Division 1
Fire Protection Requirements:	Combustible Gas Detection System

Observation from Assessment:

- No combustible gas detection unit was in evidence.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	17b
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- An explosion proof light is installed on the wall.
- There is an exhaust fan which operates manually.
- The 2 relief valves have drop lines to the floor drain.

Comments and Recommendations:

- Changing the exhaust system from manual to automatic and setting it to 6 air changes per hour or more would reclassify the space Dry Well to Unclassified.
- The Dry Well can be entered as a non-permit confined space provided the fan and lights are turned on.
- A combustible gas detection system needs to be installed in the Wet Well.

Assessment Completed By: Ralph P. Oliveti

Ralph P. Oliveti, CSP
Safex, Inc.

Date: 10/8/15

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Lakes of Powell
Address: 555 South Liberty Street, Powell
NFPA 820 Function: Mixed Waste

Wet Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	16a
NFPA Electrical Classification:	Class I Division 1
Fire Protection Requirements:	Combustible Gas Detection System

Observation from Assessment:

- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	17b
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There are no lights inside the Dry Well.
- There is no ventilation inside the Dry Well.

Comments and Recommendations

- A combustible gas detection unit is required in the Wet Well.
- The Dry Well can be entered as ab alternate confined space using a portable air blower and portable lighting.

Assessment Completed By: Ralph P. Oliveti Date: 10/8/15

Ralph P. Oliveti, CSP
Safex, Inc.

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Leather Lips
Address: 10838 Buckingham Place, Powell
NFPA 820 Function: Mixed Waste

Wet Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	16a
NFPA Electrical Classification:	Class I Division 1
Fire Protection Requirements:	Combustible Gas Detection System

Observation from Assessment:

- The angle of the access would classify it as a ladder and not stairs making the wet well a confined space.
- Due to the potential atmospheric hazards the space would be classified as permit required and cannot be reclassified.
- No combustible gas detection system was observed.
- There is ventilation but it is not continuous.
- There is a cover over the Wet Well which would not support a person. There is an opening in the guardrail which would allow a person to walk onto the tarp.

Dry Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	17b
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There were no markings on the pumps and lights on the bottom level of the Dry Well indicating that they were electrically classified as Class I Div. 2; however, they appeared to be the same style pumps used in the North Star Dry Well which are Class I Division 1.
- Outlets are electrically classified but one of the outlets is discolored indicating that there is a loose connection. It also appears the seal on that outlet is damaged nullifying the electrical classification.
- There is ventilation on the bottom level but it is not continuous.
- Fire extinguishers on multiple levels.
- Access to all levels is by stairway. This space would not be classified as a confined space.

Comments and Recommendations

- A combustible gas detection system (CGDS) must be installed in the wet well. Ventilation upgrades would only change the classification requirement from Division 1 to Division 2 and a CGDS would still be required.
- The discolored outlet on the lower level of the Dry Well must be replaced.
- Changing the ventilation in the Dry Well to automatic with a rate of 6 air changes per hour or better would allow the area to be Electrically Unclassified.
- The guardrail around the Wet Well must be extended and the opening to the ladder on the wet well needs to have a spring loaded gate which opens away from the ladder.
- A sign needs to be installed which identifies that no one is permitted to walk on the tarp.

Assessment Completed By: Ralph P. Oliveti Date: 10/8/15

Ralph P. Oliveti, CSP
Safex, Inc.

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Maxtown
Address: 7819 Maxtown Road, Westerville
NFPA 820 Function: Mixed Waste

Wet Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	16a
NFPA Electrical Classification:	Class I Division 1
Fire Protection Requirements:	Combustible Gas Detection System

Observation from Assessment:

- The angle of the access would classify it as a ladder and not stairs making the wet well a confined space.
- Due to the potential atmospheric hazards the space would be classified as permit required and cannot be reclassified.
- No combustible gas detection system was observed.
- There is ventilation but it is not continuous.

Dry Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	17b
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There were no markings on the pumps and lights on the bottom level of the Dry Well indicating that they were electrically classified as Class I Div. 2; however, they appeared to be the same style pumps used in the North Star Dry Well which are Class I Division 1.

- There is a florescent light on the bottom level which does not have a cover and is missing a bulb.
- Two sets of florescent lights have covers but the covers are not latched.
- There is ventilation on the bottom level but it is not continuous.
- Fire extinguishers on multiple levels.
- Access to all levels is by stairway. This space would not be classified as a confined space.

Comments and Recommendations

- A combustible gas detection system (CGDS) needs to be installed in the wet well. Ventilation upgrades would only change the classification requirement from Division 1 to Division 2 and a CGDS would still be required.
- Replace the bulb on the florescent light on the bottom level of the Dry Well and install a cover over the light.
- Latch the covers over the florescent lights.
- Changing the ventilation in the Dry Well to automatic with a rate of 6 air changes per hour or better would allow the area to be Electrically Unclassified.
- Consider developing a "Tailgate Talk" to provide information on Electrical Hazard Classification and what must be done to maintain the classification.

Assessment Completed By: Ralph P. Oliveti Date: 10/7/15

Ralph P. Oliveti, CSP
Safex, Inc.

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: North Star
Address: 2487 Wilson Road, Sunbury
NFPA 820 Function: Mixed Waste

Wet Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	16a
NFPA Electrical Classification:	Class I Division 1
Fire Protection Requirements:	Combustible Gas Detection System

Observation from Assessment:

- Access into the wet well is via a stationary ladder making the wet well a confined space.
- Due to the potential atmospheric hazards, the space would be classified as permit required and cannot be reclassified.
- No combustible gas detection system was observed.
- There is ventilation, but it is not continuous.

Dry Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	17b
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- The pumps and lights on the bottom level of the Dry Well were Class I Div.1.

- There were fluorescent lights on the bottom level which were not covered.
- There is ventilation on the bottom level but it is not continuous.
- Fire extinguishers on multiple levels.
- Access to all levels is by stairway. This space would not be classified as a confined space

Comments and Recommendations:

- A combustible gas detection system (CGDS) needs to be installed in the wet well. Increasing the ventilation would only change the classification requirement from Division 1 to Division 2 and a CGDS would still be required.
- Covers need to be installed on the florescent lights on the bottom level.
- Changing the ventilation in the Dry Well to automatic with a rate of 6 air changes per hour or better would allow the area to be Electrically Unclassified.

Assessment Completed By: Ralph P. Oliveti

Ralph P. Oliveti, CSP
Safex, Inc.

Date: 10/7/15

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Peachblow
Address: 5001 South Old State Road, Lewis Center
NFPA 820 Function: Mixed Waste

Wet Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	16a
NFPA Electrical Classification:	Class I Division 1
Fire Protection Requirements:	Combustible Gas Detection System

Observation from Assessment:

- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	17b
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There is no mechanical ventilation in the Dry Well.
- The light inside the Dry Well has a regular light bulb. The fixture does not appear to be explosion proof. There is no cover over the light bulb.

Comments and Recommendations

- Install a combustible gas detection system in the Wet Well.
- Replace the fixture in the Dry Well with one that is rated for Class I Division 2 service.
- The space can be entered as an alternate confined space by using portable lighting and forced air ventilation.

Assessment Completed By: Ralph P. Oliveti

Ralph P. Oliveti, CSP
Safex, Inc.

Date: 10/7/15

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Tartan 20
Address: Harriot Road, Dublin, Ohio
NFPA 820 Function: Residential

Wet Well

Ventilation Actual:	No continual ventilation
NFPA 820 Requirements:	11a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Combustible Gas Detection Unit

Observation from Assessment:

- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	12a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There is a drain in the floor.
- There is a fan with a motor inside the Dry Well. Could not determine if it is designed for electrically classified area.
- The fan is manually operated.
- Light in the ceiling is electrically classified.

Comments and Recommendations

- A combustible gas detection system must be installed in the Wet Wells.
- Determine if the fan in the Dry Well is electrically classified.
- If the fan is changed from manual operation to continuous and operates at 6 air changes per hour, the Dry Well could be considered an Unclassified Area.
- The space can be classified as a non-permit confined space provided the fan is running and the lights are turned on prior to entry.

Assessment Completed By: Ralph P. Oliveti

Ralph P. Oliveti, CSP
Safex, Inc.

Date: 10/8/15

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Quail Meadows
Address: 8631 Liberty Road North, Powell
NFPA 820 Function: Mixed Waste

Wet Well

Ventilation Actual:	No continual ventilation
NFPA 820 Requirements:	16a
NFPA Electrical Classification:	Class I Division 1
Fire Protection Requirements:	Combustible Gas Detection System

Observation from Assessment:

- This location has two wet wells.
- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	17b
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- Due to the size and location of the entrance to the Dry Well a railing around the opening would be impractical if a rescue davit arm was utilized during confined space entry.
- There is lighting inside the Dry Well but could not determine if it is rated for Class I Division 2.

Comments and Recommendations

- Anyone located inside the Pump House during confined space entry into the Dry Well would be required to wear fall protection
- Consider installing an anchor point to be used for fall protection for an employee serving as an attendant during an alternate space entry.
- Determine if the lighting inside the Dry Well is electrically classified. If it is not it needs to be replaced or removed.
- A single combustible gas indicator with separate probes for each Wet Well would be appropriate to meet NFPA requirements for monitoring.
- The Dry Well can be entered as an alternate confined space using a portable forced air ventilation fan.

Assessment Completed By: Ralph P. Oliveti Date: 12/15/2015

Ralph P. Oliveti, CSP
Safex, Inc.

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Scioto Bluff
Address: 8939 Riverside Drive, Powell
NFPA 820 Function: Residential

Wet Well

Ventilation Actual:	No continual ventilation
NFPA 820 Requirements:	11a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Combustible Gas Detection Unit

Observation from Assessment:

- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	12a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There is an explosion proof ceiling light in the Dry Well.
- There is a guardrail around the opening to the Dry Well. Because of the location, the davit arm could not be installed for rescue.
- There is no ventilation in the Dry Well.

Comments and Recommendations:

- A combustible gas detection unit needs to be installed in the Wet Well.
- The Dry Well entrance should be modified. Either the railing should be modified so that it can easily be removed to install the davit or it should be completely removed and a grating placed over the entrance.
- The Dry Well can be entered as an alternate confined space using a portable forced air ventilation fan.

Assessment Completed By: Ralph P. Oliveti Date: 10/8/15

Ralph P. Oliveti, CSP
Safex, Inc.

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Scioto Reserve
Address: Near 8008 Tree Lake Blvd., Powell
NFPA 820 Function: Mixed Waste

Wet Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	16a
NFPA Electrical Classification:	Class I Division 1
Fire Protection Requirements:	Combustible Gas Detection System

Observation from Assessment:

- No combustible gas detection unit was in evidence.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	17b
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There is no ventilation in the Dry Well.
- There is no drain in the floor of the Dry Well.
- There are explosion proof lights on the side walls.
- The grating cannot be opened all the way. It is blocked by an electrical box and there is nothing currently in place to hold the grating up during entry.

Comments and Recommendations

- Consider modifying the grating over the dry well so it can be completely opened for entry.
- Install a combustible entered as an Alternate Confined Space.
- The Dry Well can be entered as an alternate confined space using a portable forced air ventilation fan.

Assessment Completed By: Ralph P. Oliveti Date: 10/8/15

Ralph P. Oliveti, CSP
Safex, Inc.

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Seldom Seen
Address: 4820 Seldom Seen Road, Powell
NFPA 820 Function: Residential

2 Wet Wells

Ventilation Actual:	No continual ventilation
NFPA 820 Requirements:	11a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Combustible Gas Detection Unit

Observation from Assessment:

- No combustible gas detection system was in evidence.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	12a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There is a ventilation fan inside the Wet Well. There were no markings identifying it as appropriate for an electrically classified area.
- The light on the wall of the Dry Well is explosion proof.

Comments and Recommendations

- Install a combustible gas detection unit in the Wet Wells. One system would work for both wells.
- Determine if the fan inside the dry well is appropriate for an electrically classified area.
- The Dry Well can be considered a non-permit confined space provided the lights and ventilation fan are turned on prior to entry.

Assessment Completed By: Ralph P. Oliveti

Ralph P. Oliveti, CSP
Safex, Inc.

Date: 10/8/15

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Sherbourne Mews
Address: 1479 Sherbourne Lane, Powell
NFPA 820 Function: Residential

Wet Well

Ventilation Actual:	No continual ventilation
NFPA 820 Requirements:	11a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Combustible Gas Detection Unit

Observation from Assessment:

- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	12a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There is no lighting inside the dry well.
- There is no ventilation in the space.
- There is a metal plate covering the opening to the Dry Well.

Comments and Recommendations

- A combustible gas detection unit is required in the Wet Well.
- The Dry Well can be entered as an alternate confined space provided portable lighting and forced air ventilation is used.

Assessment Completed By: Ralph P. Oliveti Date: 10/8/15

Ralph P. Oliveti, CSP
Safex, Inc.

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Summerwood
Address: 3197 Africa Road, Galena
NFPA 820 Function: Mixed Waste

Wet Well

Ventilation Actual:	No continuous ventilation
NFPA 820 Requirements:	16a
NFPA Electrical Classification:	Class I Division 1
Fire Protection Requirements:	Combustible Gas Detection System

Observation from Assessment:

- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	17b
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There is an explosion proof light inside the Dry Well.
- Drain pipe into the dry well is for ground water

Comments and Recommendations

- A combustible gas detection unit is required in the Wet Well.
- The Dry Well can be entered as an alternate confined space using a portable forced air ventilation fan.

Assessment Completed By: Ralph P. Oliveti Date: 10/7/15

Ralph P. Oliveti, CSP
Safex, Inc.

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: The Oaks
Address: 7861 Harriot Road, Dublin, Ohio
NFPA 820 Function: Residential

Wet Well

Ventilation Actual:	No continual ventilation
NFPA 820 Requirements:	11a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Combustible Gas Detection Unit

Observation from Assessment:

- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	12a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There is a drain in the floor.
- There is a fan with a motor inside the Dry Well. Could not determine if it is designed for electrically classified area.
- The fan is manually operated.
- Light in the ceiling is electrically classified.

Comments and Recommendations

- A combustible gas detection system must be installed in the Wet Wells.
- Determine if the fan in the Dry Well is electrically classified.
- If the fan is changed from manual operation to continuous and operates at 6 air changes per hour, the Dry Well could be considered an Unclassified Area.
- The space can be entered as a non-permit confined space provided the exhaust system and lights are turned on prior to entry.

Assessment Completed By: Ralph P. Oliveti

Ralph P. Oliveti, CSP
Safex, Inc.

Date: 10/8/15

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Tillinghast
Address: 7833 Tillinghast Drive, Dublin
NFPA 820 Function: Residential

Wet Well

Ventilation Actual:	No continual ventilation
NFPA 820 Requirements:	11a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Combustible Gas Detection Unit

Observation from Assessment:

- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	12a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- The access to the Dry Well is directly inside the entrance door. When the base for the davit arm is installed, the employee serving as the attendant would not have a means of egress.
- There is an electrical outlet inside the control room which does not have a cover.
- There is no lighting inside the Dry Well.
- There is no forced air ventilation inside the space.

Comments and Recommendations

- A combustible gas detection unit is required in the Wet Well.
- The missing electrical outlet cover must to be replaced.
- Consideration should be given to relocating the entry door to the control room to allow access to the Dry Well.
- If the entry door cannot be relocated, it must be determined whether there are relief valves on the inlet lines and if there are relief valves do they have a drop line or a hose to the floor.
- The Dry Well can be entered as an alternate confined space provided portable lighting and forced air ventilation is used for the entry.

Assessment Completed By: Ralph P. Oliveti

Ralph P. Oliveti, CSP
Safex, Inc.

Date: 10/8/15

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Trotters Gate
Address: 9217 Riverside Drive, Powell
NFPA 820 Function: Residential

Wet Well

Ventilation Actual:	No continual ventilation
NFPA 820 Requirements:	11a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Combustible Gas Detection Unit

Observation from Assessment:

- A combustible gas detection system is not in evidence in the Wet Well.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	12a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- There is a florescent light fixture with a cover on it inside the Dry Well. It appears to be intended for Class I Div.2 use, but no markings were visible indicating that it is.
- There is a manually controlled exhaust vent inside the Dry Well.
- No relief valves were evident on the discharge lines into the Dry Well.

Comments and Recommendations

- Install a combustible gas detection unit in the Wet Well.
- Verify that the florescent light is designed for Class I Division 2 use.
- The Dry Well can be entered as a non-permit confined space provided the lights and exhaust fan are turned on prior to entry.

Assessment Completed By: Ralph P. Oliveti Date: 10/8/15

Ralph P. Oliveti, CSP
Safex, Inc.

Delaware County Regional Sewer District

Pump Station Assessment

Location

Pump Station: Vinmar
Address: 7869 Vinmar Way, Galena
NFPA 820 Function: Residential

Wet Well

Ventilation Actual:	No continual ventilation
NFPA 820 Requirements:	11a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Combustible Gas Detection Unit

Observation from Assessment:

- No combustible gas detection unit was identified.

Dry Well

Ventilation Actual:	No Continual Ventilation
NFPA 820 Requirements:	12a
NFPA Electrical Classification:	Class I Division 2
Fire Protection Requirements:	Fire Extinguisher

Observation from Assessment:

- Light is electrically classified.
- No ventilation inside the vault.

Comments and Recommendations

- A combustible gas detection unit is required in the Wet Well.
- The Dry Well can be entered as an alternate confined space using a portable forced air ventilation fan.

Assessment Completed By: Ralph P. Oliveti Date: 10/7/15

Ralph P. Oliveti, CSP
Safex, Inc.

DCRSD PUMP STATION LOCATIONS

			Residential	Commercial	Industrial
1	Alum Creek	7850 Worthington Rd Westerville	X	X	
2	Cheshire	2350 Africa Rd Galena	X	X	
3	Clear Creek	4775 Scenic Creek Dr. Powell	X		
4	Concord Rd	10377 Concord Rd Dublin	X	X	
5	Deer Run	182 Valley Run DR Powell	X		
6	East Alum Creek	201 Africa RD Galena	X	X	
7	Golf Village	3242 Seldom Seen Rd	X	X	
8	Golf Village North	6873 Sawmill Parkway. Powell	X	X	
9	Lakes Of Powell	555 South Liberty St Powell	X	X	
10	Leather Lip's	10838 Buckingham PL Powell	X	X	
11	Maxtown	7819 Maxtown RD Westerville	X	X	
12	North star	2487 Wilson Rd. Sunbury	X	X	
13	Peachblow	5001 South Old State Rd Lewis Center	X	X	
14	Phase 20	6841 Harriott Rd. Dublin Oh.	X	X	
15	Quail Meadows	8631 Liberty Rd North Powell	X		
16	Scioto Bluffs	8939 Riverside Dr Powell	X		
17	Scioto Reserve	By 8008 Tree Lake Blvd Turn Right on Golf cart path	X	X	
18	Seldom Seen	4820 Seldom Seen Rd Powell	X		
19	Sherbourne Mews	1479 Sherbourne Lane Powell	X		
20	Summerwood	3197 Africa Rd Galena	X	X	
21	The Oaks	7861 Harriott Rd. Dublin Oh	X		
22	Tilling Hast	7833 TILLINGHAST DR Dublin	X		
23	Trotters Gait	9217 RIVERSIDE DR Powell	X		
24	Vinmar	7869 Vinmar Way Galena	X		

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Table 4.2.2 *Continued*

Row[a]	Line[a]	Location and Function	Fire and Explosion Hazard	Ventilation[b]	Extent of Classified Area	*NEC* Area Electrical Classification (All Class I, Group D)	Materials of Construction[c]	Fire Protection Measures
11	a	RESIDENTIAL WASTEWATER PUMPING STATION WET WELL Pumping station transporting primarily residential wastewater	Possible ignition of flammable gases and floating flammable liquids	A	Entire room or space	Division 2	NC, LC, or LFS	CGD
	b			B	Entire room or space	Unclassified	NC, LC, or LFS	CGD
12	a	RESIDENTIAL WASTEWATER PUMPING STATION DRY WELL Dry side of a pumping station transporting primarily residential wastewater	Buildup of vapors from flammable or combustible liquids	D	Entire room or space	Division 2	NC, LC, or LFS	FE
	b			C	Entire room or space	Unclassified	NC, LC, or LFS	FE
13		OUTFALL SEWER Final discharge pipe from a treatment plant, transporting treated wastewater	N/A	NNV	N/A	Unclassified	NR	NR
14	a	SANITARY SEWER Sewer transporting domestic, commercial, and industrial wastewater	Possible ignition of flammable gases and floating flammable liquids	NNV	Inside of sewer	Division 1	In accordance with 8.3.5	NR
	b			B	Inside of sewer	Division 2	In accordance with 8.3.5	NR
15	a	COMBINED SEWER Sewer transporting domestic, commercial, and industrial wastewater and storm water	Possible ignition of flammable gases and floating flammable liquids	NNV	Inside of sewer	Division 1	In accordance with 8.3.5	NR
	b			B	Inside of sewer	Division 2	In accordance with 8.3.5	NR
16	a	WASTEWATER PUMPING STATION WET WELLS Liquid side of a pumping station serving a sanitary sewer or combined system	Possible ignition of flammable gases and floating flammable liquids	A	Entire room or space	Division 1	NC, LC, or LFS	CGD required if mechanically ventilated or opens into a building interior
	b			B	Entire room or space	Division 2	NC, LC, or LFS	CGD
17	a	BELOWGRADE OR PARTIALLY BELOWGRADE WASTEWATER PUMPING STATION DRY WELL Pump room physically separated from wet well; pumping of wastewater from a sanitary or combined sewer system through closed pumps and pipes	Buildup of vapors from flammable or combustible liquids	C	Entire space or room	Unclassified	NC, LC, or LFS	FE
	b			D	Entire space or room	Division 2	NC, LC, or LFS	FE
18		ABOVEGRADE WASTEWATER PUMPING STATION Pump room physically separated with no personnel access to wet well; pumping of wastewater from a sanitary or combined sewer system through closed pumps and pipes	N/A	NR	N/A	Unclassified	NC, LC, or LFS	FE

(continues)

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Table 4.2.2 *Continued*

Row[a]	Line[a]	Location and Function	Fire and Explosion Hazard	Ventilation[b]	Extent of Classified Area	*NEC* Area Electrical Classification (All Class I, Group D)	Materials of Construction[c]	Fire Protection Measures
35		WASTEWATER HOLDING BASINS, LINED OR UNLINED Open structures holding storm water, combined wastewater, untreated or partially treated wastewater	NR	NR	NR	NR	NR	NR
36	a	BELOWGRADE METERING VAULT Physically separated from the wet well and with closed piping system	Buildup of vapors from flammable or combustible liquids	NNV	Enclosed space	Division 2	NC, LC, or LFS	NR
	b			C	Enclosed space	Unclassified	NC, LC, or LFS	NR
37	a	BELOWGRADE METERING VAULT With an exposed wastewater surface	Possible ignition of flammable gases and floating flammable liquids	NNV	Enclosed space	Division 1	NC	NR
	b			B	Enclosed space	Division 2	NC, LC, or LFS	NR
38		COARSE AND FINE SCREEN FACILITIES *(See "Coarse and Fine Screen Facilities" in Table 5.2.2.)*						

Note: The following codes are used in this table:
A: No ventilation or ventilated at less than 12 air changes per hour
B: Continuously ventilated at 12 changes per hour
C: Continuously ventilated at six air changes per hour
CGD: Combustible gas detection system
D: No ventilation or ventilated at less than six air changes per hour
FDS: Fire detection system
FE: Portable fire extinguisher
LC: Limited-combustible material
LFS: Low flame spread index material
N/A: Not applicable
NC: Noncombustible material
NEC: In accordance with *NFPA 70*
NNV: Not normally ventilated
NR: No requirement

[a]The "Row" and "Line" columns are used to refer to specific figures in A.4.2 and specific requirements for each location and function.

[b]This column indicates the ventilation requirements for processes. Additional ventilation requirements are provided in Chapter 9. Ventilation signaling and alarm requirements are provided in Chapter 7.

[c]This column indicates the materials of construction for processes. Materials of construction for buildings in which these processes are housed are in accordance with the applicable building code and construction requirements provided in Chapter 8.

PUMP STATION VALVE VAULT SURVEY						
	LOCATION	LIMITED ENRTY/EXIT	DEPTH	EXHAUST FAN	AIR RELEASES	FLOOR DRAIN
1	Cheshire	yes	7 ft	no	no	yes
2	Concord	yes	7 ft	no	no	yes
3	Deer Run	yes	8 ft	no	2	yes
4	East Alum Creek	yes	9 ft	no	2	yes
5	Golf Village	yes	7 ft	no	no	yes
6	Golf Village North	yes	9 ft	yes	2	yes
7	Lakes of Powell	yes	8 ft	no	2	yes
8	Peach Blow	yes	6 ft	no	no	no
9	Quail Meadows	yes	7 ft	no	no	yes
10	Seldom Seen	yes	6 ft	yes	no	yes
11	Scioto Bluffs	yes	7 ft	no	no	yes
12	Shernborne	yes	7 ft	no	yes	yes
13	Scioto Reserve Golf	yes	8 ft	yes	2	yes
14	Scioto Reserve Clear Creek	yes	11 ft	no	2	yes
15	Summerwood	yes	9 ft	yes	2	yes
16	Tartan 20	yes	8 ft	yes	2	yes
17	Tillinghast	yes	7 ft	no	no	yes
18	Trotters gate	yes	8 ft	yes	2	yes
19	Oaks	yes	8 ft	yes	2	yes
20	Vinmar	yes	9 ft	no	2	yes