INTRODUCTION

Chapter 290.44 (e) and Chapter 217.53 (d) were written to regulate the separation of water and wastewater lines for new water installations and new wastewater installations, respectively. Throughout the history of these regulations, numerous exception cases have been added to the basic requirements, making navigation of the regulations complex for engineers, contractor, and inspectors. From selecting the correct Chapter to use (290 or 217) to selecting the correct basic requirement to selecting the correct exception case, finding the right separation solution can be confusing.

This paper presents a simple tool that was developed to easily navigate through the TCEQ water/wastewater separation requirements. It is an interactive flowchart that quickly guides you to the correct TCEQ Chapter and to your specific case. Further, you can click on your specific case and the tool navigates directly to the details developed to represent the TCEQ requirements. Research time and “head scratching” are greatly reduced with this easy-to-use tool. It is useful for engineers for design preparation, owners for plan reviews, contractors for construction options, and inspectors for confirming compliance. This free tool is available for download at URL address https://dunawayassociates.com/tceq-w_ww-sep-nav-tool/.

BASIC REQUIREMENTS

Chapter 290.44 (e) (1) through (3) and Chapter 217.53 (d) (1) through (3) publish basic requirements for water and wastewater line separation. These are the “ideal” cases that are often infeasible to achieve due to the underground congestion within linear corridors; thus, there is a need for the exceptions to the requirements, which will be presented in the next section. The following summarizes the Chapter 217 basic requirements:

1. Install water supply and wastewater collection system lines in separate trenches.
2. Install wastewater collection system lines below water supply lines.
3. Install wastewater collection system lines and manholes at least 9’ from water supply lines.

Similarly, the Chapter 290 basic requirements are summarized as:

1. Install potable water distribution lines at least 9’ in all directions from wastewater collection facilities.
2. Install parallel potable water distribution lines and wastewater mains or laterals in separate trenches.
3. No physical connection between drinking water supply and a sewer line.

As an example, consider a project that includes the installation of both new water lines and new wastewater lines. The figure below shows by green check marks which water/wastewater configurations are allowed by the basic requirements, and by red X’s which are not allowed.

Chapter 290.44 (e) (6) through (8) includes other miscellaneous water/wastewater separation requirements with respect to fire hydrants, potable or raw water supply or suction lines, and septic tank drain fields. The reader is encouraged to go to Chapter 290 to read these requirements.

EXCEPTIONS TO THE BASIC REQUIREMENTS

When a case cannot comply with the preceding Basic Requirements, Chapters 290 and 217 provide exceptions to the requirements along with their separation requirements. Although both Chapters must be complied with for any project, it is this author’s opinion that Chapter 290 is the
more restrictive of the two Chapters with respect to the Exception Requirements. Therefore, when a new waterline is to be installed (regardless of whether the wastewater line is proposed or existing) it is acceptable to abide by the Exceptions Requirements of Chapter 290. When no new waterline is proposed (all water lines are existing) and a new wastewater line is proposed, then the Exceptions Requirements of Chapter 217 can be followed.

The following lists summarize the water/wastewater separation exceptions cases included in Chapters 290 and 217 where the lines do not meet the Basic Requirements.

**Chapter 290 Exceptions Cases (New Water w/ Existing or Proposed Wastewater)**

1. Water & Wastewater Lines Parallel – 290.44 (e)(4)(A)
2. Water & Wastewater Lines Crossing
   a. Water under Proposed Wastewater – 290.44 (e)(4)(B)(iii)
   b. Water over Proposed Wastewater, 3 options:
      i. 290.44 (e)(4)(B)(ii)(I)
      ii. 290.44 (e)(4)(B)(ii)(II)
      iii. 290.44 (e)(4)(B)(iv)
   c. Water over Existing Wastewater, 2 options:
      i. Sewer not Leaking - 290.44 (e)(4)(B)(i)-1
      ii. Sewer is Leaking - 290.44 (e)(4)(B)(i)-2
   d. Water under Existing Wastewater - 290.44 (e)(4)(B)(iii)
3. Water Passing near Manhole - 290.44 (e)(5)

**Chapter 217 Exceptions Cases (New Wastewater w/ Existing Water)**

1. Water & Wastewater Lines Parallel
   a. Sewer at least 2’ Below Water - 217.53 (d)(6)(A)
   b. Sewer Not at least 2’ Below Water - 217.53 (d)(4) and (d)(6)(B)
2. Water & Wastewater Lines Crossing
   a. Water over Proposed Wastewater, 3 options:
      i. 217.53 (d)(7)(A)
      ii. 217.53 (d)(7)(B)
      iii. 217.53 (d)(7)(C)
   b. Water under Proposed Wastewater, 2 options:
      i. 217.53 (d)(5)(A)
      ii. 217.53 (d)(5)(B)
3. Water Passing near Manhole - 217.53 (d)(8)

**USING THE TOOL**

The struggle to find the correct options for a project is understandable with this list of scenarios. Chapters 290.44 (e) and 217.53 (d) are text for the most part, so the flow chart and visual components of this tool make the Exceptions Requirements much easier to understand and navigate.
The tool is called the “TCEQ Water/Wastewater Separation Requirements Exceptions Flow Chart”. Use of this tool assumes that the user has exhausted options to comply with the Basic Requirements and must now find a suitable Exception case. Answering a few simple questions will enable easy use of the tool:

1. Is the water line proposed or existing?
2. Is the wastewater line proposed or existing?
3. Are the water and wastewater lines parallel or crossing?
4. Is the water passing near a wastewater manhole?
5. Is the water line over or under the wastewater line?

Once these questions are answered, the user will quickly navigate through the flow chart portion of the tool to the correct case and click on the case, and the tool will take the user to the details and requirements for that case. A couple of simple examples will show how the tool is used.

**Example 1**

A new water main is proposed to cross under an existing wastewater main, less than 9’ apart. What are the water/wastewater separation requirements?

First, we answer the initial questions: 1. Water is proposed. 2. Wastewater is existing. 3. Lines are crossing. 4. Water is not passing near a manhole at this location. 5. Water is crossing under the wastewater.

Using these answers, the flowchart is used to find the correct case - 290.44 (e)(4)(B)(iii):
Upon clicking the referenced box, the tool goes directly to the details required for that case; see figure below. The detail provides the applicable TCEQ section, the required materials and construction, and the required separation of the water and wastewater pipes. The user can then click on the “Back to Flow Chart” button to return to the flow chart.

Example 2

A new wastewater line is proposed to be installed parallel with an existing water main with less than 9’ of separation. A portion of the wastewater line can be installed at least 2’ below the water main, but a portion cannot. What are the water/wastewater separation requirements?

As in the previous example, we first answer the initial questions:

1. Is the water line proposed or existing? Existing
2. Is the wastewater line proposed or existing? Proposed
3. Are the water and wastewater lines parallel or crossing? Parallel
4. Is the water passing near a wastewater manhole? No
5. Is the water line over or under the wastewater line? Some of both
Since the answer to Question #5 is “some of both”, we know that there are two applicable cases. Using these answers, the flowchart is used to find the correct cases - 217.53 (d)(6)(A) and 217.53 (d)(4)/(d)(6)(B):

Clicking on the two referenced boxes reveals the details for both cases (see next page).
NEW SEWER PARALLEL TO EX WATER <9' SEPARATION - AT LEAST 2' UNDER WATER
217.53 (d)(6)(A)

APPLIES IF NEW OR EX SEWER IS:
- <9’ from Ex Water

150 PRESSURE CLASS PIPE:
- Typically, ASTM D2241, DR-26 (160 psi); or
- AWWA C900 or C905, DR-25 (165 psi)
- DO NOT SPECIFY ASTM 3034 OR
ASTM F679 SDR-25
- CORROSION RESISTANT, NON BRITTLE
- JOINTS SEAL AT ATMOSPHERIC PRESSURE

NEW SEWER PARALLEL TO EX WATER <9' SEPARATION - NOT 2' UNDER WATER
217.53 (d)(4) and 217.53 (d)(6)(B)

APPLIES IF NEW SEWER IS:
- <9’ from Ex Water, and
- Above or less than 2’ below Ex Water

CASING PIPE:
- 150 PSI MIN
- MIN 2 NOMINAL DIA > SEWER PIPE
- SEAL BOTH ENDS - CEMENT GROUT, OR
MANUFACTURED SEAL
- SPACERS - MAX 5’ INTERVALS

Back to Flow Chart
CONCLUSION

The purpose of the tool presented in this paper is to allow the user to efficiently navigate through the TCEQ water/wastewater separation exception requirements. However, the user is strongly urged to become quite familiar with the TCEQ requirements for water/wastewater separation, and to contact a TCEQ representative if there are questions about the interpretation and application of their rules to project cases. As indicated in the Introduction this free tool is available for download at URL address https://dunawayassociates.com/tceq-w_ww-sep-nav-tool/.

REFERENCES
