

Screening Calculations for Total Dissolved Solids, Chloride, and Sulfate Menu 7 - Discharge to an Intermittent Stream with Perennial Pools

Screen the Intermittent Characteristics of the Stream

Applicant Name:	Rock Creek Gas Plant
Permit Number, Outfall:	001
Segment Number:	0101

Enter values needed for screening:		Data Source (edit if different)
TDS CC - segment criterion - TDS	5000 mg/L	2010 TSWQS, Appendix A
Cl CC - segment criterion - chloride	1975 mg/L	2010 TSWQS, Appendix A
SO4 CC - segment criterion - sulfate	760 mg/L	2010 TSWQS, Appendix A
TDS CE - average effluent concentration - TDS	1070 mg/L	Permit application
Cl CE - average effluent concentration - chloride	93.9 mg/L	Permit application
SO4 CE - average effluent concentration - sulfate	499 mg/L	Permit application

TDS Screening

The TDS screening value is determined by first calculating an initial TDS concentration, C_{TDS} , as follows:

$$C_{TDS} = (TDS\ CC / 500\ mg/L) * 2,500\ mg/L$$

Where:

- C_{TDS} = TDS concentration used to determine C_{sv} screening value
- TDS CC = TDS criterion at the first downstream segment
- 500 mg/L = the median TDS concentration in Texas streams
- 2,500 mg/L = the minimum TDS screening value

$$C_{TDS} = 25000\ mg/L$$

The next step is to use the initial C_{TDS} to set the actual TDS screening value, C_{sv} , using the following table:

If C_{TDS}	=	Then TDS C_{sv}
$\leq 2,500\ mg/L$	=	2,500 mg/L
$> 2,500\ mg/L$	=	C_{TDS}
$> 6,000\ mg/L$	=	6,000 mg/L

Some specific types of intermittent streams have alternative screening values (C_{sv}):

Specific Type of Intermittent Stream	If C_{TDS} is	Default C_{sv} =
Dry except for short-term flow in immediate response to rainfall.	$< 4,000\ mg/L$	4,000 mg/L
	$\geq 4,000\ mg/L$	C_{TDS}
Constructed ditch conveying stormwater and	$< 4,000\ mg/L$	4,000 mg/L

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wastewater, considered water in the state.	≥ 4,000 mg/L	C _{TDS}
Within 3 miles of tidal waters.	—	6,000 mg/L

Once TDS C_{sv} is established, the next step is to compare the effluent TDS concentration, TDS C_e, to the screening value. Control measures, which may include effluent limitations, are considered for TDS if the effluent TDS is greater than the screening value.

Values needed for Screening	Data Source
TDS C _e - average effluent TDS concentration	1070 mg/L Permit application
TDS C _{sv} - TDS screening value	6000 mg/L Determined above

No control measures needed if: 1070 ≤ 6000
 Consider control measures if: 1070 > 6000

No control measures needed for TDS

Before establishing effluent limitations for TDS, review the "Final Evaluation and Additional Considerations for TDS" in the "Procedures to Implement the Texas Water Quality Standards." The specific circumstances may warrant an instream monitoring requirement or a source reduction plan rather than effluent limitations.

When effluent limitations are established in the permit, the daily average TDS limit is typically set equal to the TDS screening value. The daily maximum TDS limit is calculated as 2.12 times the daily average limit.

Total Dissolved Solids		
Daily Average	=	N/A mg/L
Daily Maximum	=	N/A mg/L

Chloride Screening

If TDS limits are necessary or there are concerns about chloride, additional screening can be performed for chloride. First calculate the screening value for chloride, Cl C_{sv}, as follows:

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$$Cl\ C_{sv} = (TDS\ C_{sv} / TDS\ CC) * Cl\ CC$$

Where:

- Cl C_{sv} = chloride screening value
- TDS C_{sv} = TDS screening value
- TDS CC = TDS criterion at the first downstream segment
- Cl CC - chloride criterion at the first downstream segment

Cl C_{sv} = **2370** mg/L

Once the Cl C_{sv} is established, the next step is to compare the effluent chloride concentration, Cl C_e, to the screening value. Control measures, which may include effluent limitations, are considered for chloride if the effluent chloride is greater than the screening value.

Values needed for Screening	Data Source
Cl C _e - average effluent chloride concentration	93.9 mg/L Permit application
Cl C _{sv} - chloride screening value	2370 mg/L Determined above

No control measures needed if: **93.9** ≤ **2370**
 Consider control measures if: **93.9** > **2370**

No control measures needed for chloride

Before establishing effluent limitations for chloride, review the "Final Evaluation and Additional Considerations for TDS" in the "Procedures to Implement the Texas Water Quality Standards." The specific circumstances may warrant an instream monitoring requirement or a source reduction plan rather than effluent limitations.

When effluent limitations are established in the permit, the daily average chloride limit is typically set equal to the chloride screening value. The daily maximum chloride limit is calculated as 2.12 times the daily average limit.

Chloride		
Daily Average	=	N/A mg/L
Daily Maximum	=	N/A mg/L

Sulfate Screening

If TDS limits are necessary or there are concerns about sulfate, additional screening can be performed for sulfate. First calculate the screening value for sulfate, SO₄ C_{sv}, as follows:

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$$\text{SO4 C}_{sv} = (\text{TDS C}_{sv} / \text{TDS CC}) * \text{SO4 CC}$$

Where:

- SO4 C_{sv} = sulfate screening value
- TDS C_{sv} = TDS screening value
- TDS CC = TDS criterion at the first downstream segment
- SO4 CC = sulfate criterion at the first downstream segment

$$\text{SO4 C}_{sv} = 912 \text{ mg/L}$$

Once the SO4 C_{sv} is established, the next step is to compare the effluent sulfate concentration, SO4 C_e, to the screening value. Control measures, which may include effluent limitations, are considered for sulfate if the effluent sulfate is greater than the screening value.

Values needed for Screening		Data Source
SO4 C _e - average effluent sulfate concentration	499 mg/L	Permit application
SO4 C _{sv} - sulfate screening value	912 mg/L	Determined above

No control measures needed if: 499 ≤ 912
 Consider control measures if: 499 > 912

No control measures needed for sulfate

Before establishing effluent limitations for sulfate, review the "Final Evaluation and Additional Considerations for TDS" in the "Procedures to Implement the Texas Water Quality Standards." The specific circumstances may warrant an instream monitoring requirement or a source reduction plan rather than effluent limitations.

When effluent limitations are established in the permit, the daily average sulfate limit is typically set equal to the sulfate screening value. The daily maximum sulfate limit is calculated as 2.12 times the daily average limit.

Sulfate	
Daily Average	= N/A mg/L
Daily Maximum	= N/A mg/L