

Rule 915.a. - Soil Concentrations - Determination of Pathway to Groundwater

Operator Training

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Department of Natural Resources

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Topics

- Rule 915.a. Background and Purpose
- What is Residential SSL vs. Groundwater SSL
- Data Requirements to make a determination
- Important Takeaways to Remember



Portion of Table 915-1

Contaminant of Concern	Concentrations	
	Residential Soil Screening Level Concentrations (mg/kg) ⁷	Protection of Groundwater Soil Screening Level Concentrations (mg/kg) Risk Based (R) and MCL Based (M) ^{7,8}
Organic Compounds in Soils ^{6, 9, 10}		
benzene	1.2	0.0026 (M)
toluene	490	0.69 (M)
ethylbenzene	5.8	0.78 (M)
xylene (sum of o-, m- and p- isomers = total xylenes)	58	9.9 (M)
1,2,4-trimethylbenzene	30	0.0081 (R)
1,3,5-trimethylbenzene	27	0.0087 (R)
acenaphthene	360	0.55 (R)
anthracene	1800	5.8 (R)
benz(a)anthracene	1.1	0.011 (R)
benzo(b)fluoranthene	1.1	0.3 (R)
benzo(k)fluoranthene	11	2.9 (R)
benzo(a)pyrene	0.11	0.24 (M)
chrysene	110	9 (R)
dibenzo(a,h)anthracene	0.11	0.096 (R)
fluoranthene	240	8.9 (R)
fluorene	240	0.54 (R)
indeno(1,2,3-cd)pyrene	1.1	0.98 (R)
1-methylnaphthalene	18	0.006 (R)
2-methylnaphthalene	24	0.019 (R)
naphthalene	2	0.0038 (R)
pyrene	180	1.3 (R)



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Rule 915.a. Background and Purpose

- Background - Table 915-1 is based on US EPA Regional Screening Table, and uses two values
 1. Residential Soil Screening Level (SSL)
 2. Protection of Groundwater SSL
- A quick note on the Residential SSL
 - Is based on direct contact potential with soil through several pathways
 - ◆ incidental ingestion
 - ◆ dermal contact
 - ◆ inhalation of volatiles or dust

see EPA Regional Screening Levels (RSLs) User's Guide <https://www.epa.gov/risk/regional-screening-levels-rsls-users-guide>



Rule 915.a. Groundwater SSL

- Consistent with CDPHE - HMWMD uses of EPA RSLs
 - Groundwater protection SSL is the default, or generic SSL that COGCC applies
 - ◆ *conservative* of all cases to protect groundwater from residual soil contamination
- Determination is site-specific based on evidence provided by Operator
- Groundwater protection SSLs are *secondary* to actual measured concentrations of contaminants in groundwater. Groundwater sampling can be used to eliminate the groundwater pathway.

See EPA Regional Screening Levels (RSLs) User's Guide 4.8 Soil to Groundwater

<https://www.epa.gov/risk/regional-screening-levels-rsls-users-guide#soiltogw>

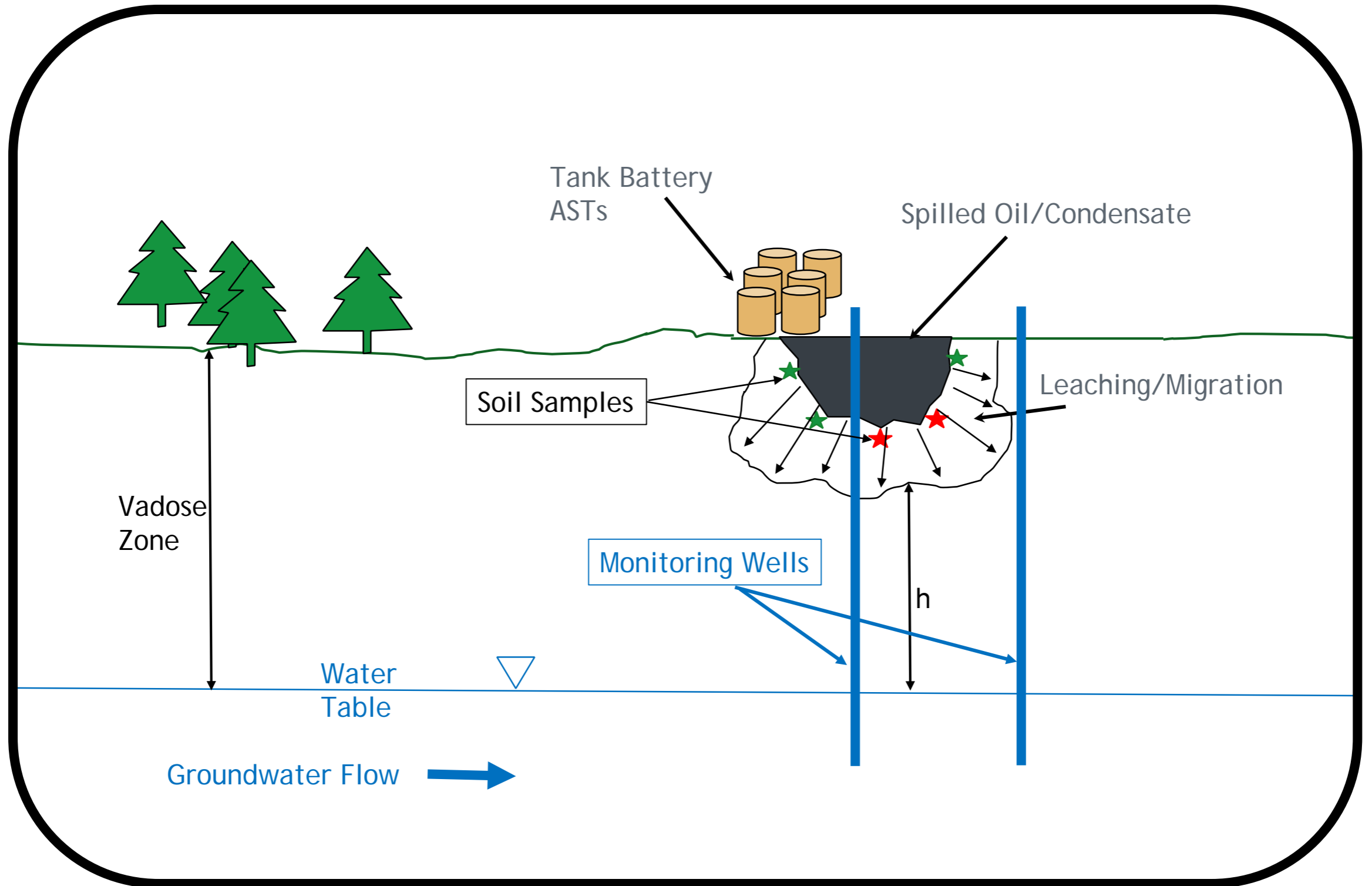


Rule 915.a. Groundwater SSL - Data Considerations

- Nature of the spill
 - Historic, long-term release vs. Surface Spills
- Site-specific hydrogeology
 - fine grained vs. coarse-grained
 - gradations, low permeability layers, structures
- Define the vertical and horizontal extent of contamination
 - Still required to define to the Groundwater SSL
 - ◆ limited exception for some surface spills
 - Define does not mean remove
- Depth to groundwater
 - depth from surface
 - distance from lowest impacted soil to groundwater
- The right combination above may allow Operator to achieve NFA Determination with residual soil impacts in exceedance of the Groundwater Protection SSL
- Collect data in consultation with COGCC Environmental Staff



Example GW Pathway Evaluation



Important Takeaways to Remember

- COGCC Environmental Protection Specialists will make a determination on which Soil Concentrations are appropriate based on Site Characterization data provided by the Operator.
- For purposes of delineating soil impacts, use the Protection of Groundwater Soil Screening Level Concentrations.
- Protection of Groundwater Soil Screening Level Concentrations are secondary to the actual measured concentrations in groundwater.
- If Groundwater is impacted, the Pathway to groundwater is considered to be completed, and the Protection of Groundwater Soil Screening Level Concentrations will apply.



QUESTIONS?

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