

LOSS RAC Discussion Agenda & Record of Decisions

Issue Paper for Meeting # _____		<i>Number of Members Present: _____</i>	
Engineering / Design Topics		Topic Number: 5	
		<i>50% +1= _____</i>	<i>Two Thirds = _____</i>
Topic Statement	Compliance with RCW 90.48 – Hydrogeology Reports		
Problem Statement	<p>Compliance with the water quality requirements in RCW 90.48 will require DOH to evaluate impacts on groundwater and surface water. A hydrogeology report will likely be needed to do this evaluation. The current LOSS rules do not have specific language requiring hydrogeology reports. Over the last 12 months, DOH has been requiring nitrate balances for certain LOSS projects but has not required a comprehensive hydrogeology report. Some project proponents have questioned DOH's authority and/or objectivity on requiring a nitrate balance.</p>		
Background	<p>ESSB 5894 was adopted by the legislature in 2007. The legislation requires DOH to amend the LOSS rules to comply with applicable sections of RCW 90.48 including surface and ground water standards and all, known, available, and reasonable methods of treatment (AKART).</p> <p>Many states now require comprehensive hydrogeology reports for a LOSS to evaluate potential impacts to groundwater, and as needed, surface water. In addition to baseline information, a comprehensive hydrogeology report may include a nitrate balance, phosphorus analysis, and/or a groundwater mounding analysis as necessary. Almost all states require a minimum of a nitrate balance for LOSS projects. A nitrate balance is one means of estimating the concentration of nitrates in the groundwater for a LOSS. A nitrate balance can be a "screening tool" based on a simple water balance approach or it can be an analytical model that provides a more precise estimate of nitrate concentrations.</p> <p>The objective of the nitrate balance has been to minimize the likelihood that groundwater will approach the nitrate groundwater criterion and drinking water maximum contaminant level of 10 mg/L. Its results can help determine the appropriate level of treatment. A subjective evaluation of site characteristics by staff has led to a nitrate balance requirement for some projects. Most west side LOSS projects and some east side projects have been required to do a nitrate balance in the past year. The nitrate balance method described in the Department of Ecology Permit Writer's Manual has been used for these projects. This approach is used by the majority of states that require nitrate balances. Many states also require a more sophisticated (and costly) analytical study for determining groundwater nitrate impacts from a LOSS. DOH has allowed literature values to be used for developing the nitrate balance where site specific hydrogeology data was not readily available. This approach has reduced costs for the project applicant but has provided less reliable results.</p>		

Issue Paper for Meeting # _____		<i>Number of Members Present: _____</i>	
Engineering / Design Topics	Topic Number: 5	<i>50% +1= _____</i>	<i>Two Thirds = _____</i>
Reference / Research	<p>Existing Authority (excerpted and paraphrased):</p> <p>WAC 246-272B</p> <p><i>Sec. 00101 Purpose, objectives and authority</i></p> <p>(1)(b) The purpose of this chapter is to protect the public health by minimizing adverse effects from a LOSS on ground and surface waters.</p> <p>(2)(b) This chapter regulates the location, design, installation, operation, maintenance, and monitoring of LOSS's to limit the discharge of contaminants to waters of the state.</p> <p><i>Sec. 03001 Applicability</i></p> <p>(7) Where this chapter conflicts with chapter 90.48 RCW, Water pollution control, the requirements under those statutes apply.</p> <p><i>Sec. 11001 Soil and site evaluation.</i></p> <p>(4)(c) The department may require any other soil and site information affecting location, design, or installation</p> <p><i>Sec. 20501 Minimum Land Area Requirements</i></p> <p>(1)(2)(ii)(e)(iv) Regardless of which method is used for determining minimum land area, field data, plans, and reports must support a conclusion the land area is sufficient to minimize public health effects from the accumulation of contaminants in surface and ground water.</p> <p>2007 Legislation:</p> <p><i>Engrossed Substitute Senate Bill 5894</i></p> <p>Sec 5. (1) For the protection of human health and the environment, the secretary should adopt rules for LOSS which include:</p> <p>(2)(a) Surface and groundwater standards established under RCW 90.48.035</p> <p>(2)(b) Those provisions requiring all known, available, and reasonable methods of treatment.</p> <p>RCW 18-220.020 Hydrogeologist License Required</p> <p>(1) It is unlawful for any person to practice, or offer to practice, hydrogeology for others in this state unless the person has been licensed under the provisions of this chapter.</p> <p>Chapter 173-200 WAC Ground Water Quality Standards</p> <p>Chapter 173-201A WAC Surface Water Quality Standards</p> <p>Design Standards for LOSS:</p> <p><i>Sec. 2 (4) and (10)</i></p> <p>These two parts require a minimum amount of groundwater information and a nitrate balance but only when ground water data is known.</p>		

LOSS RAC Discussion Agenda & Record of Decisions

Issue Paper for Meeting # _____		<i>Number of Members Present: _____</i>											
Engineering / Design Topics		Topic Number: 5		50% +1= _____									
		Two Thirds = _____											
Questions	<ol style="list-style-type: none"> 1. Should the LOSS rules contain specific language which addresses hydrogeology reports? yes, go to questions #2 - #4. If no, go to question #4. 2. If the LOSS rules are revised to include hydrogeology reports, how much specificity should be included in the rule versus guidelines? Specifics might include: <ol style="list-style-type: none"> a. Should all sites be required to do a hydrogeology report or should it be site specific? b. What criteria should be used to determine which sites require a nitrate balance, phosphorus analysis, groundwater mounding analyses or other information? c. Should the size of the system (ex: greater or less than 14,500 gpd) be a factor? d. What methods are acceptable? e. How much real "data" should be required versus literature values? f. How would costs be considered? g. Is a licensed Hydrogeologist required? 3. If most hydrogeology requirements are included in <u>guidelines</u>, what is the minimum that should be included in the rules? 4. Would amending the LOSS Design Standards instead of revising the rules be a more reasonable approach? 												
Option A	Status Quo / No Change	<table border="1"> <tr> <th colspan="3">Committee Vote</th> </tr> <tr> <th>GRN</th> <th>YEL</th> <th>RED</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>			Committee Vote			GRN	YEL	RED			
Committee Vote													
GRN	YEL	RED											
Rationale / Pros & Cons	<p>Pro: Current rule language, although not specific to hydrogeology reports and nitrate balances, supports DOH's authority for requiring these reports. Clarifying DOH's authority and expectations in the rules is a relatively easy fix and would contribute to making the rules clearer and more "user-friendly".</p> <p>Con: The current language is not specific and results in confusion over DOH's authority to require hydrogeology reports. Also, it is costly for a project owner to learn, part-way through the process, that this additional report is necessary. Separate guidance could be developed that would help DOH in determining when and where hydrogeology reports would be required.</p>												
Draft Rule Language	None Proposed												
Option B	Revise the LOSS rule to specifically provide DOH authority to require hydrogeology reports that may include nitrate balances, groundwater mounding analyses, phosphorus analysis, etc. as determined by the department. <u>All projects would be required submit a comprehensive hydrogeology report.</u> Requirements for the contents of a hydrogeology report would be included in the LOSS guidance.		<table border="1"> <tr> <th colspan="3">Committee Vote</th> </tr> <tr> <th>GRN</th> <th>YEL</th> <th>RED</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>		Committee Vote			GRN	YEL	RED			
Committee Vote													
GRN	YEL	RED											

LOSS RAC Discussion Agenda & Record of Decisions

Issue Paper for Meeting # _____		<i>Number of Members Present: _____</i>										
Engineering / Design Topics	Topic Number: 5	<i>50% +1= _____</i>	<i>Two Thirds = _____</i>									
Rationale / Pros & Cons	<p>Pro: Provides clear authority for DOH to require a hydrogeology report. Minimizes subjective application of authority by requiring <u>all</u> projects to submit a comprehensive hydrogeology report. Includes specifics for hydrogeology reports in guidance versus rule which allows DOH to easily update and revise the requirements based on experience and new science.</p> <p>Con: Requires comprehensive hydrogeology analyses for all projects, including those projects where the risk of groundwater impacts are low. May result in unnecessary costs and delays for some projects.</p>											
Draft Rule Concepts	<p>The department shall require a comprehensive hydrogeology report which includes a nitrate balance and may include a groundwater mounding analysis, phosphorus analysis, or other information as determined by the department. The department shall evaluate and approve data collection methods. The department may require a pump test, monitoring wells, groundwater quality sampling, or other methods of data collection for the required analyses.</p>											
Option C	<p>Revise the LOSS rule to specifically provide DOH authority for hydrogeology reports to include nitrate balances, groundwater mounding, phosphorus analysis, etc as determined by the department. Include specific language for baseline hydrogeology evaluations in the rule. Requirements for the comprehensive hydrogeology report would not be included in rule but would be in a guidance document.</p> <p>All projects above 14,500 gpd would be required prepare a comprehensive hydrogeology report which would be submitted prior to approval of the engineering report. All projects between 14,500 and 3,500 gpd would be required to do a baseline hydrogeology evaluation. The baseline evaluation would be submitted as part of the pre-design document and would be used, along with other information, by DOH to determine if the site had a low, moderate, or high risk for impacts to groundwater or surface water impacts. Projects with a moderate or high risk would be required to do a comprehensive hydrogeology report. The baseline evaluation would require the use of available data but would not require new data be collected.</p>		<table border="1"> <tr> <th colspan="3">Committee Vote</th> </tr> <tr> <th>GRN</th> <th>YEL</th> <th>RED</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	Committee Vote			GRN	YEL	RED			
	Committee Vote											
GRN	YEL	RED										
Rationale / Pros & Cons	<p>Pro: Provides clear authority for DOH to require a hydrogeology report. Provides DOH a baseline evaluation to determine if a project has a low, moderate or high risk of impacting groundwater or surface water. Provides flexibility for DOH to require a comprehensive hydrogeology report for higher risk projects and not for low risk projects. Gives clear expectations for what is expected in the pre-design document. Reduces cost for low risk projects. Includes specifics for comprehensive hydrogeology reports in guidance versus rule which allows DOH to easily update and revise the requirements based on experience and new science.</p> <p>Con: Gives DOH discretion on when to require a comprehensive hydrogeology report. Even with well written guidance, this discretion would be based on a subjective analysis of risk and could result in arbitrary or inconsistent application of the requirements.</p>											
Draft Rule Concepts	<p>Hydrogeology. (New Section)</p> <p>The purpose of this section is to evaluate the hydrogeology impacts of a LOSS to help ensure compliance with the requirements of RCW 90.48 and to protect public health, safety, and the environment.</p> <p><u>LOSS between 3,500 and 14,500 gpd</u></p> <p>The department shall require all persons proposing a LOSS between 3,500 gpd and 14,500 gpd</p>											

Issue Paper for Meeting # _____		Number of Members Present: _____	
Engineering / Design Topics	Topic Number: 5	50% +1= _____	Two Thirds = _____
<p>to submit a baseline hydrogeology evaluation for the purpose of determining whether the LOSS has a relative low, moderate, or high risk for impacting ground water or surface water. An applicant may choose to submit a comprehensive hydrogeology report without submitting a baseline evaluation.</p> <ol style="list-style-type: none"> 1. The baseline hydrogeology evaluation must be prepared by a qualified professional meeting the applicable license and/or certification standards, depending on the scope of the evaluation. Qualified professionals may be licensed designers, certified soil scientists, licensed engineers and licensed hydrogeologists. 2. The baseline evaluation shall be submitted with the pre-design report. 3. The department does not require new data collection for the baseline evaluation but does require the applicant to research and use available data. 4. The baseline evaluation shall include: <ul style="list-style-type: none"> ▪ 1:7,200 topographic map with township, range, and section showing all active and abandoned wells within ¼ mile of the drainfield, the location of the drainfield, location of the project, property boundaries, the probable direction of groundwater flow, 100 year flood plain, surface water, wetlands, drainage ditches, critical areas, and other potential contaminant sources. ▪ Well logs of active and abandoned wells within ¼ mile of the drainfield ▪ A description of all surface water features within ¼ mile including the location of beneficial uses ▪ Depths to groundwater ▪ Available groundwater quality data ▪ A description of all downgradient uses ▪ Estimated effluent quality and volume ▪ Drainfield and property size (acres) ▪ A nitrate screening balance ▪ Other available hydrogeologic information ▪ A discussion of probable groundwater and surface water impacts based on the above information 5. The department will review the baseline evaluation and other information including the pre-design report, soil logs, and the site review, and determine the relative risk of the site to be low, moderate, or high. 6. If the project is determined to have a low risk of impacting ground or surface water, the baseline hydrogeology evaluation will be sufficient. 7. For moderate and high risk projects or where it is determined there is insufficient information to determine impacts, the department shall require a comprehensive hydrogeology report. <p><u>LOSS 14,500 or Greater</u></p> <ol style="list-style-type: none"> 1. The department shall require all persons proposing a LOSS of 14,500 gpd or greater and all LOSS determined to be moderate or high risk to submit a comprehensive hydrogeology report. 			

LOSS RAC Discussion Agenda & Record of Decisions

Issue Paper for Meeting # _____		<i>Number of Members Present: _____</i>	
Engineering / Design Topics	Topic Number: 5	<i>50% +1= _____</i>	<i>Two Thirds = _____</i>
	<ol style="list-style-type: none"> 2. The purpose of the hydrogeology report is to characterize the site to allow the department to evaluate probable impacts to the groundwater and surface water from the proposed LOSS. 3. The hydrogeology report must be approved prior to approval of the engineering report. 4. All hydrogeology reports will contain a nitrate balance based on actual data including ground water gradient, hydraulic conductivity, background nitrate concentrations, and aquifer thickness. The department may require other analyses such as groundwater mounding or phosphorus analysis. 5. The department may require monitoring wells be installed for the purpose of pre- and post project data collection 6. The hydrogeology report must be prepared by a Licensed Washington State Hydrogeologist. 7. DOH shall review and approve or reject the hydrogeology report. Results may impact approved effluent rates and treatment requirements. 		