

2025-09-02_Gasco: Draft FS Comments Working Session

Meeting Title:	Gasco: Draft FS Comments Working Session
Date/Time:	September 2, 2025 / 9:00 am - 5:00 pm
Attendees:	NW Natural: Bob Wyatt Pearl: Patty Dost AQ: Halah Voges (remote), Matt Davis, Ryan Barth EE: Rob Ede SES: Mike Crystal DOJ: Gary Vrooman DEQ: Wes Thomas, Amanda Wozab, Dave Lacey, Dan Hafley (remote), Heidi Nelson (remote), Amber Lutey, Sarah Van Glubt (remote) GEI: Carissa Mason (remote), Dave Terry (remote), Paul Jensen (remote), Matt O'Neil (remote), Tom Daigle (remote) *note - not all attendees participated in all discussions
Location:	DEQ NW Region Office / MS Teams

Meeting Notes:

Opening Remarks

- NW Natural wants to keep moving forward and get the Gasco facility cleaned up. NW Natural's goal for the meeting is to try to find where we disagree and may be stuck and then try to break us free. NW Natural hopes that we can identify key issues or pinch points and put us in a position to keep moving forward. NW Natural is a unique party, and the cleanup work at the site will need to be rate-payer funded. NW Natural has an obligation to be cost conscious. NW Natural wants to identify and implement a protective remedy, but does not want to duplicate risk reduction where it isn't necessary
- DEQ states that now is a very important time for cleanup work at the Gasco site. After more than 30 years of work, we are working towards selecting a final remedial action. Selecting a remedial action for Gasco is not a decision that DEQ is planning to take lightly. We understand that our selection of a remedy will come with a financial obligation for NW Natural. Our decision will also be scrutinized by other RPs, other agencies and Tribal nations, and the general public. We believe that it is imperative that we have a Feasibility Study that is true to the requirements of our rules and regulations to support our decision making and put us in a position to properly defend the selected remedial action. DEQ acknowledges that we are at a difficult place in the cleanup process. But we also want to emphasize that it is critical that we get this right. We believe that our comments on the FS reiterate and establish clear expectations for the FS. More than anything, DEQ wishes to receive a revised FS that meets our expectations and puts us in a position to select a remedy.
- DOJ reiterates DEQ's need to have a Feasibility Study that gives DEQ the information needed to select a remedy. DEQ's comments on the draft FS identify the items that DEQ is looking for.
- NW Natural wants to deliver an FS that provides DEQ with the information it needs to select a final upland remedial action.
- DEQ states that based on our past experiences, it is not clear that the meeting format is beneficial for resolving disagreements. DEQ notes that several of the discussion topics identified in the letter requesting this meeting are topics that we have discussed before. The first topic we will discuss today will be about how the FS can consider the IRAM when evaluating risk reduction achieved through hot spot treatment. We have previously met with NW Natural more than two years ago and discussed that same topic. Seeing that topic identified as a disagreement shows us that the meeting format did not previously work.

Disagreement: Letter Topic 2 (Consideration of IRAM and Other Early Removal Actions in the FS)

- DEQ reviews the comment excerpts cited in NW Natural's letter, and outlines our planned discussion topics. DEQ's discussion focuses primarily on the appropriate consideration of the barrier wall, and other removal actions, when evaluating the feasible extent of hot spot removal/treatment. While most of our discussion will focus on the barrier wall, the way other removal actions are considered in

the FS will depend on the scope and objectives of the removal action.

- Pearl asks DEQ to clarify the General Comment (1)(b): “The Gasco OU FS shall not assume that hot spot treatment does not result in risk reduction due to the presence of the ISS barrier wall.”
 - DEQ clarifies that the FS must not take a position that with the wall in place, hot spot treatment does not reduce risk.
- DEQ states that NW Natural’s position is contrary to previous discussions.
 - During the June 14, 2023 Upland/In-Water Remedy Path Forward meeting both NW Natural and Pearl understood DEQ’s position that one of the conditions to moving forward with the barrier wall is that the FS must identify potential hot spots and appropriately address hot spots without considering that the ISS wall is in place. DEQ cannot have our approval to move forward with the barrier wall change our remedy decision making and lead to a remedy that we would not have otherwise selected. We believe that our position that the FS must evaluate hot spots and identify a remedial alternative that removes or treats them to the extent feasible without considering the barrier wall was made clear in 2023.
 - DEQ is also concerned that NW Natural’s disagreement may impact the path forward for the IRAM. DEQ made its IRAM Decision with the belief that NW Natural understood and would strive to meet our FS expectations. We may need to re-visit the viability of implementing the barrier wall as an IRAM if NW Natural is unable to complete the FS in a manner that meets our requirements.
- NW Natural states that it is difficult to look at a remedial element that has been operating at the site for a long time and not consider it as part of the remedy. NW Natural has already spent \$97MM on the HC&C system and is moving forward with the IRAM. NW Natural is willing to look at environmental risks associated with the upland and figure out the best way to remediate upland risks for each relevant pathway, but we do not see how we can ignore a barrier wall that will be built before we implement any other action. NW Natural believes that the barrier wall will remove exposure pathways and thus remove risks. NW Natural wants to ensure that receptors are not at risk, but does not want to take actions that are duplicative. NW Natural wants the IRAM to deal with the groundwater to surface water pathway so that risks are addressed for the FS.
 - DEQ clarifies that we are not saying that alternatives presented in the FS cannot include the barrier wall. However, the FS must start with addressing hot spots to the extent feasible, independent of engineering controls, and then include engineering controls to contain what is left after hot spot removal/treatment to the feasible extent. That is the approach that would have been taken for the FS if we had not front-loaded an engineering control into an IRAM. As we said before, we are not willing to have the barrier wall lead us to select a remedial action that we would not have otherwise selected. In addition, the FS must consider the effectiveness and reliability concerns associated with engineering controls.
 - NW Natural believes that the FS should be focused on addressing risks in the most feasible way with the wall in place. NW Natural needs to consider if hot spot treatment is appropriate or necessary to address risks.
 - Pearl states that NW Natural must also comply with an EPA order that requires that a barrier wall is in place. NW Natural wants to move forward with the barrier wall to satisfy the obligations of the EPA Order.
 - DEQ responds that Pearl’s statement is inaccurate and misleading. EPA’s order does not require NW Natural to construct a barrier wall, it requires NW Natural to implement source control under DEQ’s lead oversight. Before NW Natural introduced the barrier wall concept, they submitted a Sufficiency Assessment Report that stated that both DNAPL and groundwater were sufficiently controlled for remedial action to proceed. EPA agreed with the SAR. It is clear to DEQ that at that time, neither NW Natural nor EPA considered a barrier wall necessary for satisfying the requirements of the EPA Order.
 - Pearl states that NW Natural has never heard DEQ state the belief that the HC&C system controls DNAPL.
 - DEQ and DOJ respond/clarify that based on previous agreements with NW Natural we understand that the upland remedial action will permanently address DNAPL source control needs.
 - DOJ states that FS is supposed to be presenting and evaluating cleanup options, and assessing each option on its own merits. DEQ is concerned that some of the remedial alternatives that are viable have not been evaluated. DEQ is not asking NW Natural to pretend that the barrier wall does not exist, but to recognize that the barrier wall may not be the best permanent remedy.
- DEQ reviews the relationship between risk reduction (as represented as residual risk) and FS

- balancing factors (effectiveness, long-term reliability, and cost reasonableness).
- Residual Risk:
 - The first two criteria for evaluating effectiveness (OAR 340-122-0090(3)(a) re-state the requirements for conducting the residual risk assessment. When DEQ thinks about 'risk reduction' associated with remedial alternatives, we rely on the definition of residual risk. The higher residual risk, the lower the risk reduction.
 - Therefore, the effectiveness balancing factor, particularly the first two criteria, are most analogous to long-term risk reduction, and should be used when considering risk reduction in the context of cost reasonableness.
 - Pearl states that they always interpreted the language in Rule describing residual risk assessments to consider residual mass plus the effectiveness of engineering controls. These two factors are considered 'additive' and not separate.
 - DEQ clarifies that our intent is to show that residual risk is inherently linked to the evaluation of remedial alternative effectiveness. The residual risk assessment can and should assess each subpart on its own and in combination. Consideration of effectiveness should consider them separately.
- DEQ continues reviewing relationship between hot spot treatment and FS balancing factors (effectiveness, long-term reliability, and cost reasonableness).
 - Effectiveness:
 - Effectiveness requires evaluation without considering engineering controls.
 - Alternatives with more untreated waste are less effective; Alternatives that are less effective pose greater residual risk.
 - Evaluating RAA effectiveness without considering the barrier wall is consistent with Rule.
 - Effectiveness also scales with the long-term reliability of engineering controls. Alternatives that rely more on engineering controls are less effective, and alternatives that are less effective pose greater residual risk.
 - Long-term reliability
 - Long-term reliability requires considering the characteristics of the contamination being managed, the effectiveness of engineering controls over time, uncertainties in the long-term management requirements, and other relevant information
 - Contamination is highly toxic and highly mobile; and massive/widespread.
 - Absence of hydraulic controls could exacerbate contamination; engineering controls are mechanical in nature and required in perpetuity; must consider costs to sustain engineering controls and/or provide financial assurance
 - Review potential O&M costs for RAA 4 to illustrate uncertainty
 - NW Natural believes they can present a similar cost evaluation that looks at the cost of operation and maintenance associated with each alternative in the FS. NW Natural notes that the operation and maintenance costs remain somewhat high, even after treatment of all accessible hot spots.
 - DEQ continues reviewing relationship between hot spot treatment and FS balancing factors.
 - Reasonableness of cost
 - As stated in Section 3.3.5 of the FS Guidance, “Although no limiting value has been established for the “higher cost threshold” for treating hot spots of contamination, the Department generally expects that hot spots of contamination will be treated to non-hot spot levels (i.e., to concentrations or conditions which would not produce a hot spot). However, in situations where treatment to these levels is cost prohibitive or technically infeasible, another protective remedial action alternative will be selected. This alternative may include partial treatment of the hot spot, containment of the hot spot, or any other remedial action alternative appropriate for the given site conditions.”
 - Pearl states that their interpretation of the cost reasonableness quote from the FS guidance is that alternatives may include partial treatment, but that containment of hot spots is also acceptable.
 - DOJ clarifies that the reference to containment only applies when it is considered infeasible to treat all hot spots to non-hot spot levels. Containment is an acceptable approach where it is infeasible to treat hot spots.
 - NW Natural states that even though the long-term costs for operation and maintenance of engineering controls adds up, spending a lot of money as an up-front capital investment is not necessarily the best financial model, and doing so could lead to bankruptcy. NW Natural believes that the barrier wall and other engineering controls are necessary to have a protective remedy. NW

Natural notes that they have spent \$97MM to operate the HC&C system since it was installed, and the IRAM will cost \$67MM.

- DEQ appreciates the high costs of operating the HC&C system, and believes that this high cost (\$97MM over 10 years) speaks to our concern about NW Natural's ability to maintain the cost of operating and maintaining the HC&C system in perpetuity. DEQ states that if the capital cost for a remedial action that would treat hot spots would bankrupt NW Natural, that should be evaluated in the FS as part of the cost-reasonableness balancing factor. Bankrupting NW Natural would be a feasibility constraint, and would make it so that NW Natural would not be able to sustain the high cost for maintaining the engineering controls in perpetuity. How much capital expense would bankrupt NW Natural?
- NW Natural also believes that the HC&C system constitutes a 'treatment' technology and notes that groundwater extracted by the HC&C system is treated ex-situ and discharged to the river, protecting and restoring the beneficial use and scoring high for groundwater hot spot treatment.
 - DEQ disagrees that the HC&C system treats groundwater hot spots. The HC&C system is an engineering control and containment technology, not a treatment technology.
 - Pearl does not believe that NW Natural is being treated like other sites where hydraulic containment was supported by DEQ. Pearl and EE also note that DEQ's hot spot guidance also references containment of groundwater hot spots to protect the beneficial use of groundwater.
 - DEQ cannot speak to the specific factors that were considered at other sites relate to the cleanup decision making or reliance on engineering controls. However, it is important to recognize that Gasco is not like other sites, and the site conditions at other sites that lead to the selection of engineering controls may not be consistent with the conditions at Gasco. MGP residuals at Gasco represent significant mass over a large area, and we must consider the scope and scale of engineering controls that would be required to be effective in perpetuity considering the mass and scale of untreated contamination. While DEQ understands that the hot spot guidance could be more clear when it discusses restoration and protection of hot spots via containment, we believe that Pearl's quote from DEQ's hot spot guidance is taken out of context. When we review other sections of the hot spot guidance, it is clear that containment should only be considered after hot spots are treated to the extent feasible, and that where applicable, the remedial alternatives developed should include, at a minimum, i) treatment of the aquifer or surface water body and ii) hydraulic controls intended to prevent further migration of contamination.”
 - AQ asks what makes the HC&C system unique compared to other treatment technologies, and compares permeable reactive barriers with the HC&C system, noting that the HC&C system treats the extracted groundwater before it is ultimately discharged to the river. AQ also notes that the re-design of the HC&C system during the IRAM will include DNAPL recovery, which would remove hot spots.
 - DEQ explains the following:
 - Our FS guidance clearly defines remedial technologies that constitute treatment and those that constitute containment. Our classification of the HC&C system as a containment technology, and our classification of a PRB as a treatment technology are consistent with the FS guidance. Treatment aims to destroy or remove contamination permanently where containment aims to isolate contamination and manage risk over time.
 - The HC&C system is not designed to remove DNAPL, and only removes DNAPL coincident with its operation. Coincident removal of DNAPL does not equate to DNAPL removal. For a pump and treat system to be considered treatment, it would need to be designed in a way that targets the sources of contamination. For a site like Gasco, that would mean DNAPL recovery wells installed at 10- or 20-foot centers and screened across DNAPL zones across the entire footprint of the site. In the last 10 years of operation, the HC&C system has removed less than 2 percent of the estimated 'recoverable' DNAPL at the site, which demonstrates that it is not a treatment technology.
 - The HC&C system does nothing to meaningfully remove or destroy groundwater contamination at the site. The same is true for the re-configured HC&C system as part of the IRAM. The HC&C does not do anything to accelerate groundwater restoration timeframes or reduce contamination. While contamination is removed from the extracted groundwater, the MGP residuals in the subsurface continue to act as an infinite source of contamination, and operation of the HC&C system does not change the persistence of that source.
 - Pearl thinks that the HC&C system could be presented as a removal or treatment technology, regardless of how that factors into cost reasonableness. By implementing the IRAM, including

- the barrier wall, NW Natural is prioritizing addressing an important hot spot that is adjacent to the river.
- DEQ disagrees that the HC&C system is a treatment technology and would not approve that concept in the FS.
 - NW Natural reviews their commitments. These include the following statements and positions:
 - NW Natural will construct a barrier wall that will 'prevent or reduce risk' and include treatment of some DNAPL hot spots 'within the footprint of the barrier wall' in the 'most proximate upland area to aquatic receptors'
 - The HC&C system upgrades constructed as part of the IRAM will augment the existing HC&C system and support the efficiency and lifespan of the HC&C system. The upgrades will also include the Fill WBZ. NW Natural notes that the groundwater extracted via the HC&C system is treated and discharged back to the river.
 - The FS will evaluate alternatives that include contingency well-head treatment for the potential future beneficial industrial groundwater use.
 - The FS will include alternatives that evaluate the potential to restore the surface water beneficial use of groundwater in parts of the Gasco OU and contain groundwater that cannot be restored within a reasonable period of time.
 - The FS will evaluate alternatives that treat or remove a range of accessible MGP residuals, including an alternatives that treats or removes all accessible MGP residuals consistent with DEQ comments. The FS will consider the extent of risk reduction in the context of risk assessment exposure scenarios and will include discussion of the extent of risk reduction attributable to planned or current source control measures and how those source control measures contribute to restoration or protection of groundwater beneficial uses.
 - About 1/3 of MGP residuals are 'inaccessible' and the FS will acknowledge that these residuals will continue to impact groundwater in some areas for the indefinite future.
 - DEQ does not agree with several of these statements and do not believe that this approach is consistent with our hot spot rules. DEQ is obligated to select a remedial action that treats hot spots to the extent feasible.
 - NW Natural asks how to determine what is infeasible? What is the decision criteria that allows NW Natural and DEQ to decide what gets treated and what gets managed in-place?
 - DEQ believes that our comments on the draft FS outline an approach that would identify the remedial action alternative where hot spot treatment becomes infeasible. DEQ notes that while complete treatment of 'accessible' hot spots would potentially leave a nominal 1/3 of MGP residuals untreated, it would result in treatment of more than 4 million gallons of DNAPL and reduce the scope of engineering controls and improve their sustainability and long-term reliability - and also reduce the scale of untreated contamination if the engineering controls fail.
 - DEQ revisits prior discussions about cost feasibility and asks if NW Natural has considered a phased-approach to implementing the remedial action that would spread the capital cost of a RAA over a longer time period.
 - NW Natural has consider a phased approach and recognizes the potential benefits that a phased-approach could have. In a way, the in-river remedy will be phased over 3 years since NW Natural will need to work around the in-water work window, making it easier to spread the cost over a 3-year period. NW Natural also discusses an adaptive management approach to cleanup.
 - DEQ is not fundamentally opposed to an adaptive management style cleanup approach, but it could be very difficult to implement at Gasco given where the project is. We are moving forward with an adaptive management approach at a nearby site, where a series of IRAMs focused on treating hot spots are being implemented with the goal of revisiting the FS after all hot spots are removed/treated. For adaptive management to work, we would need to clearly define the goals and objectives for cleanup and the decision making process. DEQ not confident we could reach agreement with NW Natural about those decisions.

Disagreement: Letter Topic 3 (Hot Spots of Contamination)

- NW Natural states that they agree with some of DEQ's hot spot comments, notably that the hot spot evaluation should include treatment of hot spots that contribute to the highest risks in lower remedial alternatives. However, NW Natural does not agree that adopting a mass/volume of hot spot treatment should represent risk reduction, or that mass removal achieves the same risk reduction per unit volume of treatment across the site. Hot spot location relative to contaminant exposure or receptors should be considered.

- DEQ does not agree with some of these concepts and we believe that the evaluation of effectiveness clearly requires consideration of mass removed/treated and untreated. As stated in Section 3.3.1 of the FS Guidance, “With the Department’s approval, when evaluating remedial alternative’s effectiveness, the anticipated post treatment or residual concentrations, mass or volume may be used as surrogates for the ‘magnitude of risk’ remaining at the facility.” However, DEQ’s FS comments provide a lot of flexibility for NW Natural to use their professional judgement to develop the gradations of remedial alternatives that will be evaluated in the FS. NW Natural is free to decide which hot spots they consider the highest priorities, and including treatment of those hot spots in the lowest alternatives. NW Natural is also free to decide how hot spot treatment is expanded as remedial alternatives gradually increase the amount of hot spot treatment. DEQ is not requiring NW Natural to structure the RAAs in any specific way or order.
- NW Natural would like to sequence or develop gradations of remedial alternatives such that the hot spot evaluation is based on exposure. NW Natural believes that this approach is better than trying to use DEQ’s previously established hot spot priorities. NW Natural would like to evaluate the number and percentage of hot spots treated for each risk pathway for every remedial alternative. NW Natural would quantify hot spot treated on a percentage reduction standpoint, as opposed to a quantity treated standpoint.
- EE/AQ provide an example of the approach NW Natural proposes. AQ/EE present a hypothetical remedial alternative for the Koppers GSA.
 - DEQ notes that we are not planning to comment on the hypothetical alternative. For the purposes of the meeting, we will take its description at face value. We may have comments on this alternative when we review the FS, but understand that this information is for illustrative purposes. That said, we disagree with specific information in the slide, including the statement that the barrier wall prevents or eliminates the groundwater to surface water pathway. We have commented on that several times. The barrier wall is an engineering control that would control the groundwater to surface water pathway, not prevent or eliminate it.
 - Pearl disagrees and states that the barrier wall prevents the groundwater to surface water pathway.
 - DEQ replies that we do not approve Pearl’s statement and will continue to disapprove it in our written comments on project deliverables.
- AQ/EE then present a table summarizing the hot spot treated volumes associated with the conceptual or hypothetical alternative. The table is organized by depth interval, risk pathway, hot spot volume, hot spot volume treated, and percent of hot spot volume treated.
 - DEQ does not understand the benefit of separating surface and subsurface soils in the table. But, at a glance DEQ is not opposed to presenting the information provided in the example in the FS. It appears to quantify hot spots and present the level of hot spot treatment for the hypothetical alternative. DEQ also suggests other information that could be useful for the table, including the applicable treatment technology and the percent of accessible hot spots treated.
 - NW Natural proposes developing a full range of remedial alternatives by geographical subarea, including tables with similar information to discuss at a future meeting. NW Natural would like to get DEQ’s input on the remedial alternatives before completing a detailed comparative evaluation in the revised FS.
 - DEQ is open to providing informal feedback on the full range of remedial alternatives, but we also want to be schedule-conscious. DEQ does not want an open-ended timeline for compiling the information to support a future meeting with NW Natural.
 - NW Natural agrees to provide DEQ with the information in the revised FS needed for DEQ to select a remedial action.

Disagreement: Letter Topic 4 (Protection vs Restoration of Beneficial Uses)

- DEQ believes that we previously discussed the requirement to treat groundwater hot spots to the extent feasible earlier in the day, but briefly reviews the comment excerpts cited in NW Natural’s letter, and outlines our planned discussion topics. This disagreement may represent a misunderstanding of our comment.
 - For clarification, the definition of “protectiveness’ in OAR 340-122-0040(4) requires groundwater hot spot treatment. Our comment is intended to convey that alternatives that do not include treatment of groundwater hot spots do not meet the definition of protectiveness. So, DEQ would not agree that alternatives that do not treat groundwater hot spot to the extent feasible “protect” the beneficial uses of groundwater.

- Rule and guidance make a clear distinction between treatment and containment. Hot spot rules require treatment to restore or protect.
- The draft FS does not propose an effective treatment technology for groundwater, and defaults to containment. DEQ's comments reflect that we do not approve the concept that the barrier wall and engineering controls "protect" the beneficial use of groundwater since they do not treat the groundwater hot spots. The IRAM does nothing to address the industrial groundwater beneficial use.
- DEQ's comments reflect that we do not approve the concept that the barrier wall and engineering controls 'protect' the beneficial use of groundwater since 1) they do not treat the groundwater hot spots, and 2) do not address all relevant beneficial uses.
- DEQ agrees that NW Natural must treat groundwater to restore or protect its beneficial uses. To meet that requirement, NW Natural must treat groundwater hot spots to the extent feasible. However, engineering controls to protect beneficial uses may also be required, but that is in addition to treatment and not in lieu of treatment, unless treatment is infeasible.
- Pearl does not agree that NW Natural must treat groundwater to restore or protect its beneficial uses.
- DEQ states that we will rely on Rule to guide our decision making when we review the revised FS. DEQ does not believe that further discussion would be productive. DEQ recommends that we move to the next topic.

Clarification: Letter Topic 5 (FS Alternative Assembly by Geographical Sub Area)

- NW Natural summarizes a process that starts with a technology screening for each GSA. The technology screening would be slightly different than the one presented in the draft FS to accommodate other DEQ comments (e.g., remove the requirement that technologies be applicable to multiple GSAs). Then NW Natural would develop remedial alternatives for each GSA that provide the hot spot treatment gradations and include the cost per % hot spot treated analysis. The final step would be to carry forward GSA-scale remedial alternatives into a site-wide remedial alternative framework which would include a more quantitative scoring of balancing factors. The challenge is that each GSAs will have different numbers of remedial alternatives, and NW Natural will need to use judgement to compile and sync up the site-wide alternatives. NW Natural also plans to include one remedial alternative that just includes engineering controls and institutional controls. NW Natural believes that this approach will determine the extent of feasible hot spot treatment.
 - DEQ comments that it is too difficult for us to provide feedback on high-level concepts. We believe it would be better to discuss this approach during the future meeting that will include discussion of the full range of remedial alternatives in each GSA.
 - AQ will work through a timeline to develop the materials needed to support the next discussion.

Clarification: Letter Topic 8b (MGP Residual Thickness Calculations)

- AQ requests to discuss DEQ's comments regarding the methodology for calculating DNAPL thicknesses. The draft FS relied solely on TarGOST data to estimate DNAPL thickness and DEQ's comments require additional lines of evidence (e.g., boring logs).
 - DEQ further clarifies that the TarGOST data set was not developed to characterize DNAPL thickness, that many of those logs were collected from areas where we did not expect to find DNAPL or at the fringe of DNAPL bodies in the upland. These locations are likely not representative of conditions within the uplands. Our comment is intended to provide a larger dataset of more representative borings.
 - AQ acknowledges and understands DEQ's comment and concern. AQ believes that there are some areas where there are enough representative TarGOST data, and others where additional lines of evidence would be beneficial for estimating thicknesses. Is AQ able to use professional judgement to decide when to include additional lines of evidence and when TarGOST alone is sufficient?
 - DEQ does not want to review a proposed approach that differs from our comment, nor do we want to micro-manage how NW Natural addresses our comments. If AQ understands our concern and would like to use their professional judgement to determine the best way to resolve our comment, then we recommend that AQ provide a response to our comment that describes how it was addressed. We will review the response and the approach when we review the revised FS.

Other

- Pearl notes that DEQ's conditions for IRAM approval provided in the FS comment letter require NW Natural to recommend a remedial alternative that removes/treats hot spots to the extent feasible.

NW Natural is not able to recommend such an alternative, but will provide an alternative that removes/treats hot spots in the FS. NW Natural understands that DEQ will select the appropriate remedy and that DEQ may select a remedial alternative that differs from the one NW Natural recommends. If NW Natural provides an remedial alternative that DEQ can select, but NW Natural does not recommend, how would DEQ approach IRAM approval?

- DEQ will consider the question internally and we can follow up once we are able.