Floragon comm

HAFLEY Dan

From: HAFLEY Dan
Sent: Thursday, February 13, 2014 10:42 AM
To: 'Bill Avison'; 'Paul Ecker'; Rone Brewer
Cc: PETERSON Jenn L; POULSEN Mike; David Bartz
Subject: Resolution of "inputs" for Floragon risk assessment

Bill –

Attached is a Word document which contains email communications related to ecological risk assessment for the Floragon site. As you know, there has been ongoing discuss of eco risk assessment issues including whether weasel should be considered a receptor, and appropriate home range for Great Blue Heron, etc. In the attachment our final comments on outstanding eco risk issues are presented in red text (at the end of previous text for each topic). Please review our responses, and proceed with development of the risk assessment for the southern portion of the Floragon site including Bear Creek.

We apologize for the delay in getting this information to you. Our toxicology staff are completely overwhelmed with other work and graciously put this ahead of other projects to allow us to move forward at Floragon.

Respectfully,

Dan Hafley

Resolution of Ecological Input...

From: Paul Ecker [mailto:paul@ees-environmental.com]
Sent: Thursday, November 14, 2013 9:57 AM
To: HAFLEY Dan
Cc: POULSEN Mike; Rone Brewer; Taku Fuji (tfuji@anchorqea.com); Bill Avison; David F. Bartz, Jr. (dbartz@schwabe.com); Jerry Lawson; Brad Berggren
Subject: ECSI #0009: Floragon Remedial Investigation and Ecological Risk Assessment status: issues and progress

Hi Dan, thanks for sharing DEQ's comments in your 9/20 email below. Based on our recent discussions and lots of progress over the past two years, we agree that the Remedial Investigation for this site is nearing completion. The Avison team is prepared to begin work to complete the ecological risk assessment as soon as we can resolve two remaining technical issues (namely, DEQ's comments regarding Section 2.7.3 for the weasel/riparian mammals and Section 3.3.1 regarding the Great Blue Heron).

We appreciate DEQ's participation and input as we have worked together to develop a risk assessment approach that is technically sound, consistent with regulatory guidance, and reasonable with respect to actual site-specific conditions. Based on these criteria and as summarized below, we believe (1) that the weasel should be excluded from the risk assessment because there is no suitable habitat for this unlikely receptor at the Floragon property, and (2) the site use factor and exposure assumptions for Great Blue Herons as proposed in the PNG work plan (June 2013) are protective and represent reasonably likely site conditions, and should be adopted as proposed.

Please review our summary response to DEQ's recent comments below ***(>>>highlighted in bold blue text).*** We look forward to working with you to complete the RI and risk assessment at this site.

Thanks,
Paul

Paul Ecker, RG, LHG
EES ENVIRONMENTAL CONSULTING, INC.
240 N Broadway, Suite 203
Portland OR 97227
(503) 847-2740
paul@ees-enviro.com
www.ees-enviro.com

From: HAFLEY Dan [mailto:HAFLEY.Dan@deq.state.or.us]
Sent: Friday, September 20, 2013 3:56 PM
To: Paul Ecker; Rone Brewer; bill@avison.com

Cc: David F. Bartz, Jr. (dbartz@schwabe.com); 'Jerry Lawson'; POULSEN Mike
Subject: FW: Floragon RA WP

DEQ staff reviewed the ***Remedial Investigation Status Report*** for the Floragon site prepared by PNG Environmental, Inc. and dated June 18, 2013. Our primary focus was on Appendix E, the Ecological Risk Assessment Work Plan prepared by Sound Ecological Endeavors. We have a few comment on the work plan for your consideration.

Comments

Section 2.5. It is not a general ecological risk assessment protocol to replace non-detect values with ½ the detection limit. For evaluating site data, we follow EPA ProUCL guidance for statistical evaluations. EPA has standard approaches for evaluating non-detect values (typically using Kaplan-Meier methods), and strongly advises against substituting ½ the detection limit. However, in cases where similar chemicals are summed to evaluate effects from, say, dioxins/furans, it is reasonable to substitute ½ the detection limit for non-detect values.
>>>We acknowledge that using ½ the detection limit is an appropriate approach for calculating concentrations of chemicals that are to be summed due to their similar effects, such as dioxin/furan congeners. This approach will be incorporated into the Phase 2 RI risk assessment as suggested by DEQ. For other chemicals, we intend to following USEPA/ProUCL guidance and use the mdl, not ½ mdl for calculation of the exposure point concentrations (EPCs).
DEQ – Issue resolved.

Section 2.6.1. Frequency of detection is intended as an approach to screen out low levels of common laboratory contaminants detected in environmental samples. DEQ needs to be convinced there is a solid reason to omit chemicals detected at the site. We expect that frequency of detection will be rarely used to screen out chemicals.
>>>DEQ's concern regarding use of a simple frequency of detection (FoD) screening to remove contaminants of interest is acknowledged. However, the original and ongoing intent of FoD screening is also to remove chemicals that are not detected and that are detected at a frequency and concentration that is entirely unlikely to result in risks to human health and the environment. We propose to use FoD screening for this reason but will provide the rationale for omission of particular chemicals.
DEQ – The purpose of a screening step in a risk assessment is to determine if chemical concentrations are unlikely to result in unacceptable risks to human health and the environment. It is inappropriate to skip this step. If a chemical is detected at a frequency and concentration that results in acceptable risk, that should be documented by screening. Frequency of detection alone is insufficient reason to omit chemicals.

Section 2.7.1. Riparian zones are considered sensitive habitat under Goal 5 of Oregon's Statewide Planning Goals. In addition, Oregon rules specify freshwater wetlands as sensitive habitat (OAR 340-122-0115 [50]).
>>>Acknowledged. However, most of the onsite riparian habitat has been severely degraded through historic mowing/maintenance and consists primarily of a 10 to 30 foot width of reed-canary grass and/or blackberries, with some red alder trees along the southwestern portion of the property. As discussed and described in prior documentation, this is and will remain an industrial/commercial property. As such, the riparian habitat will remain maintained and disturbed to some extent and is isolated from all other habitat except at each end of the creek as it enters/exits the subject property.

DEQ – We accept that the riparian habitat is not of high quality. This is addressed further in the comments below.

Section 2.7.3. We agree that the presence of small mammals living on the site is unlikely due to the unsuitable nature of the fill material. However, an animal such as the weasel, with a larger home range than a shrew, may live off the site and forage in the creek bed on the site. For the other Avison project, in June 2013 we agreed on an approach for evaluating exposure to the weasel over an area extending into the Floragon site. We acknowledge that this information was unavailable prior to preparation of the Floragon RI status report. For consistency, and give DEQ more credibility when conveying the results of both risk assessments to the public, we request an evaluation of potential risks to riparian mammals, using the weasel as a representative species. Exposure can be modified using a site use factor developed from the 39-acre home range of the weasel. Other factors for the long-tailed weasel include a food ingestion rate of 0.130 kg/kg-bw/day and a soil ingestion as a proportion of diet of 0.043. DEQ can provide additional information from the proposed Avison study as needed.

>>>Adding a weasel as a receptor in the ecological risk assessment (ERA) is an entirely new concept that was not part of our numerous technical meetings and negotiations in 2012-2013 that led to a group consensus and science-based decision to focus on the Great Blue Heron (GBH) eating a frog. We continue to accept the GBH→frog evaluation for the limited stream and riparian area at the Floragon site, but we do not believe that the weasel is an appropriate or reasonably likely potential receptor for this property. DEQ states that one reason for requesting the weasel be added to the Floragon ERA is to provide consistency with the separate, upstream Avison Mill #1 site. However, we believe that there is considerable difference in habitat characteristics between Bear Creek's riparian area at the Floragon site and the South Parcel at Former Avison Mill #1. Although suitable habitat is present for riparian mammals at the Avison Mill #1 site, we believe the same type of riparian habitat and surrounding upland habitat are absent at the Floragon site. DEQ can readily and honestly present this fact to the public, and we believe this approach is consistent with the ERA framework developed with frequent DEQ input at the Floragon site to date.

Based on a quick measure of potential riparian habitat along Bear Creek at the Floragon site, there is possibly up to 3.5 acres of possible weasel "habitat" (in reality there is probably much less possible habitat due to extensive paved/culverted/disturbed areas). The maximum possible site use factor would then be 3.5 acres divided by the 39 acre weasel home range provided by DEQ above, for a site use factor of 0.09. Because weasels are solitary, the ERA would be assessing very marginal habitat for a maximum of one adult male weasel and possibly one female weasel within the confines of riparian Bear Creek habitat at the Floragon site. Further, no site-specific riparian soil data is available from alongside the creek, so it is unclear how we could assess this issue without additional sampling and analysis, unless we use existing sediment data, which is very likely not representative of riparian conditions. The use of sediment data, as suggested in the DEQ comment ("forage in the creek bed"), is overly conservative as there are no or very few weasel prey items (primarily small mammals) using this exposure medium when it is dry (which is the only time a weasel would consistently access the sediment), and would have to be combined with an alternate use factor because the weasel could only access portions of the creek bed that are dry during the summer/early fall months. Thus, we could likely reduce the site use factor above by at least 50 percent to 0.045. Again, we believe this type of assessment is not appropriate or representative for the Floragon site.

DEQ – The use of Bear Creek as a corridor for wildlife was discussed in detail for the Avison project. The agreement for the Avison site was to include consideration of small riparian mammal (represented by the weasel) using Bear Creek as habitat. We acknowledge the lower habitat quality of the creek on the Floragon property, and the small area relative to the home range of the weasel. Both of these factors can be considered in the ecological risk assessment, which should include the weasel.

Section 2.7.3, first bullet. We want to confirm that the freshwater aquatic life in Bear Creek would include frogs in addition to invertebrates. The expanded discussion in Section 2.7.3.1 appears to cover this.
>>>A sediment/invertebrate risk-based screening will be conducted which would be considered to be protective of frogs exposed to sediment. No surface water/aquatic life screening has been proposed.
DEQ – Issue resolved.

Section 3.1, last paragraph. To clarify the terminology, congener concentrations should be multiplied by 2,3,7,8-TCDD toxic equivalence factors (TEFs) to calculate TCDD toxicity equivalents (TEQs) for fish.
>>>Acknowledged.
DEQ – Issue resolved.

Section 3.3.1, page 3-16, including Table 3-1. The assumption of a Great Blue Heron centered on the Molalla River is not appropriate for the guild the heron is representing, and may not be appropriate for the great blue heron. Birds could nest in the trees near the pond at the east end of Bear Creek, within about 1 mile of the site. According to the EPA Wildlife Exposure Factors Handbook, the mean fall feeding territory of a great blue heron is about 1.5 acres, and up to 21 acres in the fall. Given the better habitat quality away from the site for nesting, the winter feeding territory can be used with the onsite creek habitat area (2.6 acres) to calculate a site use factor. The migration factor should not be used for the guild in general, and also may not be appropriate for the great blue heron.
>>> In this case and for the Floragon site in particular, we believe that the GBH is not representing a guild or functional group. We discussed this exposure pathway repeatedly with DEQ and jointly developed the view of a single species reasonably exposed to site-related contaminants in sediment. At the Floragon site we have observed with DEQ over several years (consistent with historical patterns) the ephemeral nature of Bear Creek. With DEQ's participation, we concluded that a heron eating frogs is hypothetically possible and could be used as a potentially exposed species via this exposure pathway. The heron was selected even though none have been seen on the Floragon site during RI activities, and no herons have ever been documented nesting on or near the Floragon site. Herons nest near good food resources, which the on-site portion of Bear Creek is not. Thus, the realistic likelihood of nesting herons on or near the Floragon property is negligible and nesting in trees by the pond at the adjacent Avison Mill #1 site is also highly unlikely.

The 21 acre foraging area cited by DEQ applies to herons in an Oregon estuary, where food resources are very abundant. If a heron uses 21 acres of prime estuary forage, they will certainly use a much larger foraging area at an ephemeral stream such as Bear Creek with no fish inhabiting the creek. Multiple other references in the Wildlife Exposure Factors Handbook (WEFH) reflect herons' propensity to travel an average of approximately 5 miles and up to 14 miles. In an area where fields are predominant such

as the Floragon property and vicinity, this area type encompasses nearly 10 square miles or 6,400 acres, on average.

Using the scenario presented above, the site use factor would be 2.6 acres divided by 21 acres or 0.13. Using an estimate of average home range would be 2.6 acres divided by 6,400 acres or 0.0004. Using the extreme would be 2.6 acres divided by 17,000 acres or 0.00015. Our estimate of 0.0035 is very close to the average site use based on the foraging range versus the DEQ suggestion of 21 acres in an estuary. Our home range estimate is also based on very realistic assumptions of herons nesting or roosting in mature trees along the river, close to a higher quality foraging area and more abundant food items, that are not present along Bear Creek on or near the subject property. Using such realistic, average, exposure assumptions is appropriate for the more detailed ecological risk assessment as proposed in the June 2013 PNG report. For these reasons we believe that DEQ's suggestion for site usage adopts overly conservative assumptions that are not representative of site conditions.

DEQ – The intent of the GBH evaluation is to determine potential risks to a bird using Bear Creek habitat on the Floragon site. In this sense the GBH does represent a guild, so exact details of GBH characteristics should not detract from the general evaluation. Additionally, specific information related to the selected surrogate receptor for this guild indicates that Great Blue Heron colonies can be located near open agricultural fields with fallow fields, wet meadows and ditch edges where herons hunt (Eissinger, 2007, Great Blue Herons in Puget Sound. *Puget Sound Nearshore Partnership / Puget Sound Nearshore Ecosystem Restoration Project c/o Washington Department of Fish and Wildlife*, Olympia Washington). The presence of large trees in the area increases the probability of nesting. These areas are considered areas of good food resources, as they provide a range of terrestrial and freshwater prey species including frogs, voles and shrew.

Considering wetland, riparian and creek habitat surrounding the Floragon site, including the Bear Creek riparian corridor to the west bordering the Avison Site, avian use represents both a current and future reasonable use. For birds nesting in trees near Bear Creek between S. Molalla Road and S. Mathias Road, the linear riparian corridor (and adjacent fields) is approximately 150 acres. The area was estimated by using a distance of 3,600 ft. between the roads, and a riparian/field width of about 1,800 ft. An additional area will be the much smaller portion of Bear Creek on the Floragon property. The risk assessment should consider focused (high probability) use in this area, but can look at the larger local environment instead of focusing on only 21 acres. At the adjacent Avison site, potential exposure to a hawk is being evaluated, using a home range of 148 acres. Considering the size of local habitat, guild and surrogate receptor home ranges, and consistency with the Avison project, DEQ considers 150 acres a reasonable home range for GBH at the Floragon Site. Using this value, the site use factor is 2.6 acres / 150 acres = 0.017.

Section 5.1. We do not consider the toxicity index to be a very conservative estimate of the potential for risks to indicator species. The main chemicals of interest, dioxins/furans, are reasonably expected to exhibit additive toxic effects on animals. This is the basis for the standard TEQ approach, so an assumption of additivity is not overly conservative.
>>>Acknowledged. We note that while the assumption of additivity of dioxins or other "groups" of chemicals with similar effects may not be overly sensitive, adding together all chemicals, as is performed to calculate the toxicity index, is quite conservative unless there are very few chemicals of potential concern considered within the risk assessment.
DEQ – Issue resolved.

Sections 5.1 and 5.2. Opinions regarding uncertainties and conservatisms can be addressed in the uncertainty section of the risk assessment. Following Oregon rules, we will base decisions on a toxicity index of 1. For protected species, the TI is based on NOAELs. For non-protected species, the TI is based on LOAELs. This avoids having to use the default factor of 5 to convert NOAELs to LOAELs presented in our current guidance. (DEQ is revising our ecological risk assessment guidance to remove the Q=5 concept and instead explicitly compare with NOAELs and LOAELs). For non-protected species, we consider a comparison using acceptable levels based on LOAELs to be equivalent to an evaluation based on probability of exposure.
>>>Acknowledged.
DEQ – Issue resolved.

Feel free to contact project toxicologist Mike Poulsen directly if you have questions regarding these comments. Also, please note that I will be out of the October 1 to November 4, 2013. In my absence, Mike Poulsen will be "covering" for both the Avison and Floragon projects, and is authorized for any/all decision-making related to the sites.

Respectfully,

Dan Hafley

Daniel J Hafley, RG
Senior Project Manager/Hydrogeologist
NWR Cleanup Section
Oregon DEQ
(503) 229-5417