DEQ
Montana Department of Environmental Quality

ECOLOGICAL RISK ASSESSMENT GUIDANCE

CECRA requires that a facility be protective of public health, safety, welfare, and the environment. Protectiveness of the environment includes consideration of surface water, groundwater, and ecologic receptors (aquatic organisms, plants, and animals). Protectiveness of surface water and groundwater is ensured by requiring that the facility meet DEQ-7 standards and addressing the leaching pathway when determining soil cleanup levels. Protectiveness of ecological receptors requires a different analysis. Most facilities will not require a full eight-step ecological risk assessment as described in the EPA Guidelines for Ecological Risk Assessment but all require some ecological risk analysis to ensure protectiveness of the environment.

When assessing a facility, investigators need to gather information about the site, conduct a site visit, and document the findings. The following are features that should be investigated and relevant information about each feature documented.

- ☐ The presence/absence of surface water or wetlands (e.g., no surface water or wetlands exist at the facility or a slough is impacted by storm water discharge from the facility)
- ☐ Whether there is contamination in the surface water or sediment (e.g., a large river is present at the facility but does not appear to be impacted or contamination is clearly entering the stream and a sheen is present on the water)
- ☐ The presence/absence of evidence of animal activity such as scat, nests, dens, and burrows (e.g., pigeon nests and rabbit burrows were noted at the facility; however, facility operators discourage the presence of these animals or it is clear that the facility is a nesting ground for osprey or other raptors)
- ☐ A vegetation survey (e.g., the facility is entirely paved or vegetation control measures are part of active facility operations or the facility appears to be represent the primary source of vegetation for the area)
- ☐ Location and description of the site (size, remoteness, paved industrial, etc.) (e.g., the facility is a small, paved, currently-operating, gas station located in an urban area and surrounded by other industrial facilities or the facility is vacant, unpaved, relatively remote and may represent the only suitable ecological habitat in the area)
- ☐ Identification of site activities that may limit ecologic receptors (e.g., active lumber yard traffic and vegetation control discourage ecological use or the facility is not currently in use)
- ☐ Attractiveness of the site to ecologic receptors (e.g., the facility represents the only open space in the area, or the facility is surrounded by more suitable open space)
- ☐ Whether the facility has been designated as a wildlife refuge or management area; contains threatened or endangered species; it is a spawning area; there is a fish advisory; it has been classified as an impaired stream (this information is available from the Natural Heritage Program or Fish Wildlife and Parks)

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- Whether the contaminants bioaccumulate or have other known adverse effects on ecological receptors (e.g., dioxins/furans, polychlorinated biphenyls (PCBs), etc.)

Once the above information about the facility is documented, DEQ can make a determination regarding the appropriate level of ecological risk analysis required, which may include:

Level 1
At some facilities, it is obvious that there is no ecological risk posed by the facility. For example, a small, paved, currently-operating, commercial/industrial facility located in an urban area and surrounded by other industrial facilities may only require a brief discussion describing the site and indicating that the setting is not suitable habitat for long-term ecological exposure. Consideration is given to whether the future use of the facility is likely to be the same or to represent greater ecological risk. Documentation of the conditions of this facility as identified above can be done and no further evaluation will be needed.

Level 2
Facilities with undeveloped areas that may represent some form of ecological habitat may require additional discussion of the suitability of the facility for ecological use as compared to the surrounding area. For example, there may be unused portions of the facility that have limited incidents of plants and animals. However, there may be habitat nearby that is at least as suitable, if not more suitable, for ecological use such that no ecological receptors are expected to require the use of the facility as primary habitat. These facilities would not be identified as critical habitats for endangered or sensitive species. These facilities may have bioaccumulating contaminants but may be determined to represent an area of incidental exposure to ecological receptors and therefore would not need a food chain exposure evaluation for either humans or other consumers. This information will be documented in the risk assessment.

Level 3
If ecological habitats like surface water and sediment, wetlands, large areas of open space, etc. are identified at a facility, evaluation of background concentrations, upstream reference reaches, or reference areas may be appropriate. These evaluations would be quantitative or semi-quantitative and would be documented in the risk assessment.

- The quantitative portion of the analysis might include analysis of background samples for contaminant concentrations to be compared to facility concentrations or comparison with ecological screening levels like the EPA Ecological Soil Screening Levels (https://www.epa.gov/risk/ecological-soil-screening-level-eco-ssl-guidance-and-documentsd), Oakridge National Laboratory Benchmarks for Soils (https://rais.ornl.gov/documents/tm126r21.pdf), or the Biological Technical Assistance Group (BTAG) sediment or surface water screening benchmarks (https://www.epa.gov/risk/biological-technical-assistance-group-btag-screening-values) (note: the DEQ-7 aquatic life standards apply to surface water regardless of this ecological risk evaluation).
- The semi-quantitative portion might include measuring the quantity and diversity of plants or macro-invertebrates or other organism in a background/reference reach or area and comparing that to the facility.

Level 4

If the facility is determined to represent critical ecological habitat, a full 8-step ecological assessment described in the Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments - Interim Final (https://www.epa.gov/risk/ecological-risk-assessment-guidance-superfund-process-designing-and-conducting-ecological-risk) may be necessary.