U.S FISH AND WILDLIFE SERVICE
COLORADO STATE OFFICE, GOLDEN, CO

Specific Comments To Document Entitled, "Final Work Plan, RFI/RI Work Plan For OU 3, Rocky Flats Plant," U.S. Department of Energy, Rocky Flats Plant, Golden, CO Environmental Restoration Program, December 6, 1991

February 1992

Specific Service comments to the subject document are as follows:

- **Section 1.3.5 Ecology**, p 17 of 32, ¶3: This paragraph states in part, "None of the vegetative species present at the RFP are reported to be on the endangered species list (EG&G, 1991a)." This statement is incorrect. **Section 8.1.4.3, Threatened and Endangered Species and Special Habitats**, correctly states that the Ute Lady's Tresses, Spiranthes diluvialis, is currently listed as a Federal threatened species. The Service suggests that the sentence in question above be replaced with the following: "No vegetative species currently listed in the Endangered Species Act, as yet have been found at RFP. However, adequate surveys are pending to confirm the presence/absence of a number of federally listed and candidate threatened and endangered botanical/faunal species potentially occupying a variety of suitable habitats associated with the RFP site.

- **Section 1.3.8 Environmental Monitoring**, p 24 of 32, ¶1: We suggest that a distinction between environmental monitoring of abiotic versus biotic matrices be delineated in this section. The section in question appears to deal solely with environmental monitoring of abiotic matrices. It should be stated, as appropriate, where a discussion of routine environmental monitoring of biotic matrices is located within the document. If no such monitoring has been or is being done, it should be so stated. If no consideration of routine monitoring of biotic matrices is currently underway, we recommend that a strategy be undertaken relative to each OU on a coordinated site-wide basis to scope, design and implement routine environmental monitoring of biotic matrices. In this way final OU remedies can be assured of incorporating decision-oriented data and information that drive toward protection of human health and the "environment," in the correct sense of the word.

- Section 3.2.3 ARAR Categories, p 17 of 20: It appears, with the exception of Aquatic Life TBCs and Agricultural Standards, that this section focuses primarily on issues concerned with human health. The Service recommends that a detailed discussion be undertaken of the category of performance, design, or other action-specific ARARs directed toward ecological concerns. Four such federal environmental statutes constitute fundamental ARARs for Service trust resources. They are as follows:

  1. The Endangered Species Act (ESA)
  2. Fish and Wildlife Coordination Act (FWCA)
  3. Migratory Bird Treaty Act (MBTA)
  4. Bald Eagle Protection Act (BEPA)

  These four ARARs should be addressed in such a discussion.

- Section 5.0, Table 5-1, Data Quality Objectives and Data Needs, Operable Unit No. 3, Characterize Ecological Setting, Characterize Terrestrial Biota, p 10 of 19: The Service recommends that an additional item, B-7, be added to the table to accomplish thorough post-mortem veterinary pathology and histopathology screening analyses, at a minimum, to the light microscope level, for appropriately determined terrestrial biota. The purpose of these analyses are to fill data gaps in COC and key receptor species selection criteria for terrestrial biota by ruling out potential adverse effects in each organ system from candidate organic and inorganic COCs. The Analytical Level should be "III/IV-Biological analyses." The Data Use should be for Toxicity Assessment, Exposure Pathways and potential Ecological Endpoints.

  Characterize Aquatic Biota, p 11 of 19: The Service recommends that an additional item, AQ-7, be added to the table for aquatic species, primarily fish. The same logic as appears for terrestrial biota above applies as justification for undertaking similar analyses for aquatic biota.

  It appears that Table 5-1 fails to consider amphibians in either the terrestrial or aquatic context. We recommend that evaluation of potential adverse effects to amphibious species be incorporated into the analytical strategy outlined in this table.

- **Section 6.0:** The Service requests that language be added to this section, and that Table 6-1 be modified, to ensure that the field sampling/investigation activities for OU3 have been reviewed with respect to ecological issues and concerns. We also request assurance that concerns properly ascribed to the collection of ecological data for purposes of risk assessment/evaluation activities have, in fact, been adequately addressed within this section.

- **Section 8.0:** We suggest that a table, similar to Table 8-1, Example U.S. Environmental Protection Agency and U.S. Department of Energy Guidance Documents and References For Field Investigations and Environmental Evaluations, be incorporated listing the five available NRDA Type B Technical Information Documents authored by the U.S. Department of Interior, CERCLA 301 Project. This seems appropriate since Energy has stated a commitment to collect EE data, especially data that may have utility in ecological risk assessment, consistent with 43 CFR 11.

- **Section 8.1, Introduction,** p 3 of 129, ¶1: The second sentence needs clarification. It currently states, "Contaminants from these drainages and the on-site Ous adjacent to these creeks, such because OU 3 is downwind of the RFP and includes the off-site and down-gradient portions of the Woman Creek and Walnut Creek."

- **Section 8.1.1, Approach and Objectives,** p 6 of 129: The first bullet item states, "Identify the complete exposure pathways between contaminant sources and biological receptors." The phrase "complete [emphasis added] exposure pathways" does not equate to identifying "all" [emphasis added] existing pathways. We suggest that the term "all" be inserted into the sentence so it reads, "Identify all the complete exposure pathways..."

- **Section 8.1.2.1 Task 1-Initial Planning and Conceptual Model Development,** p 7 of 129, ¶2: The Service requests that we, in our capacity as a Federal Natural Resource Trustee, in addition to the other Natural Resource Trustees, be allowed an opportunity to review and comment upon modifications to criteria for selection of COCs, target species, and reference areas.

- Section 8.1.2.3 Task 3-Ecological Investigations, p 8 of 129, ¶1: The second sentence in this paragraph addresses the conducting of field surveys. The Service encourages Energy to take seasonal use of habitats by biota, habitat types and habitat availability to biota for both aquatic and terrestrial communities into account. Also, field surveys should consider the extent that sources of environmental contamination and the specific COCs involved might skew or otherwise adversely affect the observations, data and information collected.

  - p 8 of 129, ¶2: The second sentence addresses, "Quantitative and more detailed qualitative field investigations," to be conducted in early Summer and Fall. The Service recognizes Task 8.1.2.3 as an appropriate location within the RFI/RI to address additional in-depth biota health index studies, consistent with the Type B TID, Injury To Fish and Wildlife Species. We recommend that Energy focus on sampling appropriately identified key receptor species, depending on individual COCs and their potential individual, additive/cumulative toxic effects upon these species recognized from the various literature sources. General health status screens of biota that include thorough gross post-mortem evaluations, histopathological evaluations and, potentially, pathological evaluations at the electron microscope level should be included at this juncture. Data and information from these essential, biologically/toxicologically-based studies will bridge important potential data gaps in the ecological risk assessment process.

- Section 8.1.2.3 Task 3-Ecological Investigations, Figure 8-1, Interrelationships Between Tasks for the Environmental Evaluation at Operable Unit 3: We recommend that Energy insert the studies of general health indices outlined in the previous comment on this section as a bridge between Task 3-Ecological Investigations, and Task 5-Exposure Assessment. Follow-up studies of this type should also be inserted/included at some point in the mechanistic process between Task 8-Final Planning and Task 9-Ecotoxicological Investigations. Further data refinement at this juncture will improve selection of field methodologies, 8.1, development of more specific DQOs, place greater confidence in the outcome of the Ecotoxicolgical Investigations and assist with Task 7-Uncertainty Analysis. Doing so will promote higher quality results and greater confidence in the conclusions of the Task 10-Risk Characterization and Report.

- Section 8.1.2.4 Task 4-Toxicity Assessment, p 11 of 129, ¶1: The Service concurs with the use two taxonomically unrelated species for these toxicity tests.

- Section 8.1.2.9 Task 9-Ecotoxicological Investigations, p 13 of 129: Please see our comment under Section 8.1.2.3 Task 3-Ecological Investigations and Figure 8-1, Interrelationships Between Tasks for the Environmental Evaluation at Operable Unit 3.

- Section 8.1.2.10 Task 10-Risk Characterization and Report, p 13 of 129, ¶1: We suggest that the following biological hierarchy be considered for general conceptual implementation within this task:

Colorado Front Range Ecosystem

RFP Site-wide Biosystem

Aquatic Communities Terrestrial Communities

(Integrate Guild/Trophic Level/Food-web relationships within individual communities and among community types for determining down-range/down gradient associated potential adverse effects to biotic natural resources)

Populations of Aquatic Species Populations of Terrestrial Species

- Section 8.1.3 OU 3 Contamination, p 14 of 129, ¶2: The last sentence of the paragraph states in part, "...but RFP-related organics are probably [emphasis added] not present in OU 3." This statement is insufficient. The statement implies the absence of verifiable and credible data to refute the probability that organics, in fact, are present in OU 3. The absence of credible data does not correlate with negative data. The off-site Ous have substantial probability that herbicides, insecticides and other organics used on-site may have made their way to off-site Ous. The Service recommends that these potential adverse effects be investigated in both abiotic and biotic matrices.

  - p 14 of 129, ¶3: The Service is especially concerned with potential adverse effects of heavy metals to biota in OU 3. A more detailed discussion of the role of heavy metals potentially causing adverse effects to natural resources seems be appropriate here.

- Section 8.1.4.1 Terrestrial Habitats and Receptors, p 16 of 129, ¶1: It appears that a more detailed description of habitats and potential receptors would be appropriate from currently available data. Organization of work tasks would be improved if greater effort and detail were placed here.

- Section 8.1.4.1 Terrestrial Habitats and Receptors: pp 17-18 of 129 are not present in our copy of this OU3 Work Plan.

- Section 8.1.4.2 Aquatic Habitats and Receptors, p 19 of 129: As in Section 8.1.4.1 Terrestrial Habitats and Receptors, we recommend that this section be expanded in more detail.

  - p 20 of 129, ¶3: This paragraph states in part, "As a result, Walnut and Woman Creek within OU 3 probably [emphasis added] do not support any fish populations." The Service recommends that all available data sources be assessed to specifically determine if fish reside in the reaches of Walnut and Woman Creeks in question. This information is very important for scoping and planning of tasks at this stage of the RFI/RI process and more detailed information on this topic should be added to the OU 3 Work Plan.

- Section 8.1.4.3 Threatened and Endangered Species and Special Habitats, p 21 of 129: The Service recognizes that further survey work is required to verify the presence/absence of Ute lady's tresses and the Preble's meadow jumping mouse, not only at OU 3, but site-wide and in adjacent site-associated geographical areas. This fact should be stated in this section and a discussion of other threatened, endangered and candidate species, likewise affected, should be inserted in this section.

- Subtask 1.3-Identify Data Quality Objectives, p 24 of 129, ¶3: The Service notes and wishes to emphasize to Energy that this paragraph forms a substantive basis for inclusion of investigative studies of general health status as previously described for assessing injury to fish and wildlife species comprising key receptor organisms.

- Subtask 1.4-Develop Selection Criteria, p 26-28 of 129: The Service is generally concerned with this section that data gaps for potential COCs may lead to inappropriately excluding some chemicals as COCs. As stated earlier, the absence of chemical concentration data in abiotic matrices, chemical residue data, toxicological and pathological data in key receptor species does not translate to verified no adverse effect scenarios. The potential for chronic, cumulative adverse effects in biota can not be adequately evaluated by residue data alone, nor even by effectively combining residue concentration data with toxicological data from the scientific literature. A substantial data gap may still exist. Allowing a data gap to occur without some mechanism to better fill the gap with substantive information, reduces the resolution of identifying potential chronic/long-term, adverse effects to receptor biota at the individual organism level for threatened /endangered species, and at the population, community, and biosystem levels for other key receptor species.

- Subtask 1.4-Develop Selection Criteria, p 26 of 129, Item 3: This item heavily relies on existing ARAR data, regulations and derived standards. It is important to note that significant site-specific conditions/circumstances can exist where such standards do not adequately protect biota. This is one reason why so few criteria exist for protecting biota from toxic environmental contaminants. The general health-based investigative studies described above provide far greater assurance and reduce uncertainty that performance based ARARs and standards/criteria resulting from data collected under the EE/Ecological Risk Assessment components will protect biota from adverse effects.

- p 27 of 129, ¶1: This paragraph states, "In addition, a chemical may [emphasis added] be included as a COC if:

> It is reported in greater than 5 percent of the samples analyzed for a given area; and at least one of the following:
>
> - It is widely distributed; or
> - It occurs in ecologically sensitive areas such as wetlands or seeps; or
> - It occurs in localized area of high concentration ('hot spots')."

The statement reflects this section in that it does not adequately account for potential non-accumulative adverse effects to biota from slug or event-related releases. The Service position is that bioconcentration and bioaccumulation are not necessary to cause adverse effects from some classes of toxic environmental contaminants. Exposure to radiation is one example. Some chemicals cause serious direct effects themselves or indirect effects via their metabolic degradation products. Residues are eliminated from the organism in a short time following exposure, however, if the adverse effects target the reproductive system, for example, potential exists for long-term population and community effects to occur.

- p 27 of 129, ¶3: The paragraph states in part, "The criteria for target species may include the following:

> Must potentially exhibit the effects of the COC
>
> Have a home range relative to the area of contamination
>
> Be economically important
>
> Represent an important component in the structure and function of the ecosystem"

The Service contends that neither, "home range relative to area of contamination," nor the "economic importance" of a given species necessarily adequately dictate the potential exposure and resulting potential for adverse effects to that species. Neither determination may be important if, for example, the species is listed as threatened or endangered or is covered under the Migratory Bird Treaty Act.

- p 28 of 129, ¶2: Reference areas should be used where possible, however, data from other types of investigative studies may be considered an appropriate alternative to a reference area in some circumstances. This should be determined with consultation and review by the Natural Resource Trustees on a case by case basis.

- Subtask 1.6-Develop Risk Assessment Strategy, p 31 of 129: The Service considers the "weight of evidence" approach a valid strategy. However, we note that a variety of combinations of risk assessment techniques and epizootiological approaches may be appropriate for use when applied to different species of biotic receptors. The Service is interested in having a process implemented that selects the correct or most appropriate combination for the circumstances presented.

- Subtask 1.6-Develop Risk Assessment Strategy, Method 3-Comparing Ecological Endpoints or Biomarkers, p 32 of 129: This section states that, "Biomarkers are specific effects on target organisms that can be assessed in the field for target species or populations." The Service draws a distinction between biomarkers and ecological endpoints. Biomarkers are measurable physiological changes or conditions that are present in an individual organism as a result of exposure to a toxic chemical. An example of a biomarker is a comparative measurement of cytochrome P450 in treated/exposed versus reference/control individuals. Analyses for cytochrome P450 can not easily be accomplished in the field. We recommend that Energy draw a more clear distinction between accepted definitions for the terms "biomarker" and "ecological endpoint."