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Chief, Rulemaking and Directives Branch  
Division of Administrative Services  
Office of Administration T-6D59  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

*2/10/2010*  
*75 FR 6737*  
*(2)*

Dear Sir or Madame:

RE: Review of the Generic Environmental Impact Statement for License Renewal of Nuclear Plants, NUREG-1437, Supplement 42, Regarding Duane Arnold Energy Center, Draft Report for Comment

The U.S. Environmental Protection Agency (EPA) has reviewed the Nuclear Regulatory Commission's (NRC) Generic Environmental Impact Statement (GEIS), Supplement 42, for the Duane Arnold Energy Center (Draft Report). Our review is provided pursuant to the National Environmental Policy Act (NEPA) 42 U.S.C. 4231, Council on Environmental Quality (CEQ) regulations 40 CFR Parts 1500-1508, and Section 309 of the Clean Air Act (CAA). The GEIS, Supplement 42, was assigned the CEQ number 20100040.

The NRC is proposing to renew the license of the Duane Arnold Energy Center (DAEC) for an additional 20 years beyond the expiration date of the facility's current 40-year license which is February 21, 2014. The facility is located in Linn County, Iowa, on the western bank of the Cedar River approximately 5.7 miles west-northwest of the city of Cedar Rapids and just less than 50 miles east-northeast of the Sac and Fox Tribe, Meskwaki Settlement. The 500-acre site contains a control/reactor/turbine complex serving a General Electric boiling water reactor with a generating capacity of 610 megawatts electric, two mechanical draft cooling towers, a wastewater treatment batch reactor, a low-level radwaste processing and storage building, an independent spent fuel storage installation (ISFSI), switchyard and other infrastructure. It is our understanding that the licensee does not intend to undertake any facility refurbishment activities as part of its license renewal. The facility uses the Cedar River for makeup water for the cooling water system. DAEC discharges small amounts of sanitary wastewater, cooling tower blowdown and stormwater through two outfalls to the Cedar River. DAEC utilizes four onsite wells, which are finished in a confined bedrock layer, for demineralizer makeup, potable water supply, an air cooling system and backup water supply.

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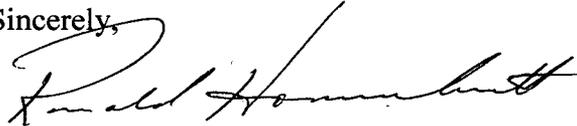
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Based on our overall review and the level of our comments, EPA has rated the draft Supplemental Environmental Impact Statement (SEIS) for this project Environmental Concerns-Insufficient Information (EC-2). EPA's detailed comments on aspects of the draft SEIS and a copy of EPA's rating descriptions are provided as an enclosure to this letter. This EC-2 rating is based on the uncertainty of potential impacts to aquatic resources near the Duane Arnold Energy Center (DAEC) and the evaluation of alternatives to DAEC license renewal.

We appreciate the opportunity to provide comments regarding this project. If you have any questions or concerns regarding this letter, please contact Joe Cothorn, NEPA Team Leader, at (913) 551-7148, [cothorn.joe@epa.gov](mailto:cothorn.joe@epa.gov), or Larry Shepard, at (913) 551-7441, [shepard.larry@epa.gov](mailto:shepard.larry@epa.gov).

Sincerely,



Ronald F. Hammerschmidt, Ph.D.  
Director  
Environmental Services Division

Enclosures

## Issue-Specific Comments

### Purpose and Need

We recognize that the draft SEIS relies upon the GEIS for its project purpose and need statement and that this statement is generic to all NRC license renewal decisions. However, we believe it is important to comment on this feature of the draft SEIS as it appears to influence the thoroughness of the document's evaluation of alternatives. Both the GEIS and the draft SEIS appear to confuse project 'purpose and need' with the proposed action itself (i.e., issuance of a renewed license) and, thereby, hinders the full consideration of all reasonable alternatives in this draft SEIS. In a NEPA context, the project purpose and need is to "provide an option that allows for power generation capability beyond the term of a current nuclear power plant operating license to meet future system generating needs, which may be determined by State, utility, and, where authorized, Federal decision-makers" (Section 1.2, Chapter 1). The expiration of the DAEC's current operating license and the need to meet existing energy needs in the region are what the NRC is responding to "in proposing the alternatives including the proposed action" (40 CFR 1502.13), only one of which is the renewal of the existing license. This fuller statement of project purpose and need is, in our estimation, an important distinction to providing a full, open review of all possible alternatives to meeting project purpose and need. This approach to purpose and need fully implements CEQ requirements regarding NRC's responsibility to "rigorously explore and objectively evaluate all reasonable alternatives", "devote substantial treatment to each alternative considered in detail", "include reasonable alternatives not within the jurisdiction of the lead agency" and "include the alternative of no action" (40 CFR 1502.14(a), (b), (c) and (d)).

The intent of 40 CFR 1502.14 is difficult to achieve when project purpose and need are so directly linked to the reissuance of an operating license. An alternative which does not meet project purpose and need does not appear to be a reasonable or viable alternative by any measure. Inclusion of a 'no action' alternative within the SEIS is required under CEQ regulations at 40 CFR 1502.14(d). The SEIS states that the 'no action' alternative does not meet the project's purpose and need (e.g., Executive Summary, Comparison of Alternatives, page xix). Further, if purpose and need are tied to the proposed action, none of the alternatives to license renewal will meet project purpose and need and this contradiction appears to affect the rigor of the evaluation of these alternatives later in the draft SEIS (40 CFR 1502.14(a) and (b)). The draft SEIS links, throughout the document, the broad project purpose and need to the NRC's determination whether safety issues or environmental impacts should preclude license renewal. In simple summation, the NRC will renew the current license, unless its' analysis reveals significant safety or environmental issues that would preclude it. That appears to create the impression that the licensing decision is the project purpose. It would seem that the project purpose and need statement should not preclude selection of any of the alternatives, including the 'no action' alternative. Selection of any alternative to the NRC's proposed action, including 'no action', merely precludes the continued operation of this facility beyond the term of its current permit, but does not preclude actions by other decision-makers (e.g., "State regulators and utility officials," page xvi, Executive Summary) to meet this energy demand by some other means, including new generation sources (e.g., supercritical coal-fired, natural gas-fired, a combination), existing sources operating outside this region, conservation measures relying on reduced capacity

or a combination of these alternatives. In essence, selection of an alternative to license renewal is not precluded by NRC's regulatory responsibilities and is fully consistent with 40 CFR 1502.14(c) which provides for the inclusion of "reasonable alternatives not within the jurisdiction of the lead agency." The SEIS should clarify whether the purpose of the project is to meet the energy demands of the region currently met by DAEC operation or only a license renewal decision.

## **Affected Environment and Environmental Impacts of Operation**

### **Reactor and Confinement System**

Section 5.3 discusses Severe Accident Mitigation Alternatives (SAMAs) and, specifically, a SAMA for boron storage. Chapter 2 does not mention the use or storage of boron at DAEC. The SEIS should identify the extent to which boron is used within the energy production, fuel cooling and fuel storage system at DAEC. The SEIS should also characterize any available environmental data regarding off-site loss of boron.

Section 2.1.2 mentions that "the DAEC has not made batch release of liquid radioactive waste into the Cedar River since 1985" and later states that "there were no routine, periodic liquid batch discharges into the Cedar River" (emphasis added). The SEIS should rectify these two statements and clarify whether there were any batch releases of liquid radioactive waste to the River, routine or not.

### **Low-level Mixed Waste**

Section 2.1.2.4 states that DAEC "has not generated any LLMW during the last five years." DAEC's handling of Low-level Mixed Waste (LLMW) is described in Sections 2.1.2.3 and 2.1.2.5 without reference to this important piece of information. The SEIS would be improved if the treatment of LLMW in all three sections of the document was clarified and better coordinated.

### **Tritium**

Section 2.1.2 discusses routine discharges of tritiated wastewater collected from the site and site facilities, but does not provide any data which would characterize the amounts or trends in releases over the current license term. The draft SEIS simply states that "samples were within NRC standards" and that discharges from the sanitary system are consistent with those from 2004 through 2007. The SEIS would be more informative if it characterized the relation between historic releases and these NRC standards, provided more information regarding release trends and explained the rationale supporting the analysis of trend information for limited time periods (wastewater 2006 and 2007; groundwater and surface water 2006 and 2007). This section, as well as many others within the draft SEIS, cite Radiological Environmental Monitoring Program (REMP) data, but rely inappropriately on statements characterizing discharges as "consistent", "reasonable" and "no unusual trends." These statements are vague, dependent upon NRC judgment and are not supported by any quantitative summary in the document itself. The nature of this issue falls clearly within NRC's Category 2 as it is a function of the facility's performance

and site characteristics. Where data fall below accepted analytical detection levels, this should be specified and the level of detection identified. It is also not clear in many instances what environmental media are sampled for purposes of characterizing environmental contamination rather than human exposures. Surface water sampling, for instance, could include water column, sediment or fish tissue. The SEIS would also be improved if it discussed appropriate environmental media for monitoring for radiological contamination. An abundance of 'no detect' REMP results can indicate a very low level of environmental radiological contamination or that the facility is sampling the wrong environmental medium or sampling at the wrong location. The data provided are insufficient to support the NRC's conclusion that this is of 'small' significance.

These same rather qualitative statements are used to describe radiological contamination of gaseous effluent releases without substantive summary data in Section 2.1.2.2.

We recognize that the draft SEIS states that "the DAEC has not made batch release of liquid radioactive waste into the Cedar River since 1985" and is, instead, processed with treatment residue shipped offsite. However, it is difficult to assess the status of soil, wetland, and river sediment with regard to radiological contamination, particularly for tritium, without some characterization of the data acquired through DAEC's REMP. In addition, the draft SEIS does not summarize REMP data and characterize radiological status of fish or mussel tissue. Given the close proximity of DAEC to two conservation areas, Palo Marsh Wildlife Refuge (2 miles) and Wickiup Hill (directly across the river), it would seem prudent to thoroughly characterize the radiological character of these sites with regard to wildlife body burden. We suggest that, if data are not available which would identify concentrations protective of aquatic and terrestrial organisms, the SEIS should compare ambient data from the Region of Influence (ROI) to radiological data from areas isolated from facility emissions. Although reproducing great quantities of REMP data within the SEIS would not be practical, the SEIS should provide greater support to its conclusions regarding status, trends and significance of possible radiological contamination.

## **Bromine**

Section 2.1.2.4 describes the facility's use of hazardous materials to reduce biofouling in the water circulation system, including chlorine and bromine. The draft SEIS references the facility's National Pollutant Discharge Elimination System (NPDES) permit issued by the Iowa Department of Natural Resources (IDNR) as regulating the use of these chemicals. Although Iowa water quality standards address chlorine toxicity through ambient water quality criteria for chlorine and are reflected in the facility's NPDES permit, the State's standards do not have criteria for bromine or brominated compounds. The facility's NPDES permit does include provisions for biological toxicity testing for Outfall 001 which discharges cooling tower blow-down, but no limitations for bromine. The draft SEIS does not disclose whether bromine is present in the discharge from Outfall 002, sanitary waste discharge. The draft SEIS should thoroughly and specifically address the facility's approach to biofouling control, the types of biocides employed, the presence of biocides in discharges from Outfalls 001 and 002 and any potential impacts to aquatic life in the Cedar River.

## **Groundwater**

Section 2.2.3 briefly describes current radiological condition of site groundwater, but specifically identifies REMP data from only 2006 and 2007. In this section, there is no explanation offered for the use of this limited data set, the validity of drawing conclusions from this two-year data set, any description of trends in the radiological condition of site groundwater and no comparison to off-site or 'reference site' groundwater radiological condition. Nearby private well and monitoring well levels of gross beta and tritium are listed without any description of appropriate benchmarks beyond EPA's drinking water MCL or indication of trend. The SEIS would be improved if it included: the rationale behind installation of the nested monitoring wells on-site and in those specific locations; a summary table characterizing data for more than two years for site monitoring wells, nearby private wells and some off-site 'reference' wells; trend information; and appropriate benchmarks for comparison. Further, the draft SEIS does not specify possible response actions by the licensee based on the presence of radiological contamination in these wells. Public review of these data would be strengthened if there was more transparency regarding what radiological levels are 'expected' by NRC at this facility and what levels might raise concern for the NRC.

The draft SEIS mentions that the site monitoring wells lack a concrete pad at the surface. The SEIS should characterize the potential for radiological contamination of groundwater through infiltration of contaminated surface runoff into the well system. In addition, the SEIS should consider and discuss the possibility that underground piping might be responsible for groundwater contamination rather than infiltration from atmospheric washout.

The draft SEIS states, with regard to groundwater conflicts, "concerns about water supply are not known from nearby private well owners (section 4.3.2)." The SEIS should describe the process by which the applicant or NRC staff solicited input from nearby private well owners. It is not clear whether these well owners were even contacted to determine if there were any local concerns.

## **Aquatic Life**

The SEIS would be improved regarding the presentation of ambient biological sampling/monitoring data if sampling design was more clearly linked to the purpose of monitoring, i.e., ambient characterization or contamination detection. Section 2.2.5.1 describes benthic macroinvertebrate sampling at the site from 1971 to 1999, but, based on the list of citations in Chapter 2, it appears that this actually represents two distinct sampling periods in 1971 and 1999 rather than a continuous sampling program. The draft SEIS appears to misrepresent the extent of the sampling data. Further, it is not clear what the intended purpose of the sampling projects was. Although statements made in Section 2.2.5.1 regarding the dominant influence of an unstable sandy river bed on the quality of the macroinvertebrate community are likely to be accurate, assessments regarding the potential impact of facility operation on riverine macroinvertebrates would be more defensible with an upstream/downstream sampling design using artificial substrates. As currently presented in the draft SEIS, the assessment of benthic macroinvertebrates is largely anecdotal and does not describe potential impacts of facility operation on this community.

The general assessment of the fish community of the Cedar River is based on USGS data collected at sites far distant from the DAEC site and could be misinterpreted by the public as representing the fish community in the vicinity of the site. The data collected from 1979 through 1983 was not cited in the draft SEIS and is almost 30 years old. More recent data collected from the river near the DAEC site would provide a more firm foundation for describing the riverine fish community. Again, a sampling design of using upstream and downstream sampling near the site would provide useful information on potential facility operational impacts, particularly regarding sport fish populations. Broad characterization of the Cedar River fishery from Cedar Falls to its confluence with the Iowa River is mostly anecdotal and does not speak to any potential impacts of facility operation. It is not clear what use the draft SEIS intends for this data regarding the review of environmental impacts.

Section 4.5 contains no summary data or discussion regarding effluent temperature from Outfall 001. Although discussed in the support documentation to the IDNR's NPDES permit for the facility, the SEIS should address what is typically a water quality issue for power generating facilities rather than providing no information regarding effluent temperature within the SEIS. Table 4-9 provides ambient river temperature data, but only in the context of public health risks from microbial organisms.

The draft SEIS also omits any characterization of radiological contamination in fish, mussel and wildlife tissue. The document briefly mentions, in Section 4.8.1, monitoring milk, food products, surface water, drinking water, groundwater, fish and sediment, but in the context of assessing human health dosage rather than in the context of characterizing environmental contamination. Relying on conclusions of significance drawn from the GEIS without some data characterizing the levels and trends of radiological contamination in nearby aquatic and terrestrial organisms provides little basis for the NRC concluding that "there are no impacts related to these issues beyond those discussed in the GEIS." This assessment is not transparent when the draft SEIS moves from the GEIS to NRC staff conclusions to determinations of insignificance without the support of a summary characterization of site-specific data. The SEIS reader has only the assurances of NRC staff to conclude that a proper evaluation of environmental impact has indeed occurred. Environmental data characterizing status in comparison to 'trigger values' or expected or 'natural' background concentrations would support the NRC characterization of 'small' significance.

### **Stormwater**

The draft SEIS describes tritium contamination within the wastewater collection and treatment system (Outfall 002) and explains its likely origin as downwash from facility venting operations and worker sanitary contributions. Outfalls 001 and 002 also discharge collected site stormwater. The draft SEIS does not characterize stormwater radiological contamination which reflects downwash from site structures. The SEIS should summarize REMP data and characterize radiological contamination resulting from air deposition and resulting surface runoff which is discharged through both facility outfalls. Stormwater is mixed with treated effluent from each outfall within each separate discharge ditch and any monitoring intended to characterize stormwater should have been performed in a location close to the final discharge point to the river.

## **Wastewater Treatment**

There is no discussion within the draft SEIS regarding potential wastewater treatment sludge contamination with radionuclides or the means by which the sludge is disposed. The SEIS should characterize this environmental medium and also describe how and where the sludge is disposed.

## **Noise**

The draft SEIS characterizes noise levels at two locations on site to be above 115 decibels which is immediately injurious to humans. The document does not reference any noise conservation or hearing protection programs nor efforts to mitigate these impacts. Noise levels and operational parameters, such as the estimated frequency of circuit breaker operation (181 db), are based on estimates made in the facility's Final Environmental Statement (FES) in 1973. The SEIS should contain more recent information regarding noise levels and operational parameters which would verify the conclusions from the FES.

The draft SEIS does not address possible environmental impacts from noise on area wildlife. The Palo Marsh Wildlife Refuge is within two miles of the site and potential impacts of site noise on wildlife should be addressed in the SEIS.

## **Pleasant Creek Recreational Reservoir**

The 410-acre Pleasant Creek Recreational Reservoir (PCRR) was constructed on a tributary to the Cedar River northwest of the site for the purpose of providing water to the Cedar River during low flow conditions in support of DAEC operations. DAEC is authorized to withdraw water from the Cedar River to replenish the PCRR under elevated Cedar River flow conditions. IDNR regulates DAEC withdrawals under specified, seasonal Cedar River flow volumes. IDNR also permits DAEC to discharge water from the PCRR to the Cedar River at a rate equal to the consumptive use rate of the facility when river flow falls below 500 cfs. The PCRR is designated for aquatic life protection (Class B (Lakes and Wetlands)) and recreational use within Iowa water quality standards and is utilized, according to the draft SEIS, by the public for boating, fishing, hunting, camping, hiking and swimming. The SEIS should identify, since the original DAEC licensing, the number, frequency and volume of withdrawals from the Cedar River to the PCRR, the number, frequency and volume of discharges from the PCRR to the Cedar River and characterize any impacts to the reservoir environment and its use by the public at times of filling and discharge to the River. The use of the PCRR is very unique to this facility and warrants a complete assessment of the impacts of facility operation on that specific environment. These impacts could be significant if climatic changes to this region, possibly linked to greenhouse gas emissions, result in more frequent reduced river flows and, therefore, more frequent withdrawals from the PCRR.

## **Spent Fuel Storage and Independent Spent Fuel Storage Installation**

Although collective offsite radiological impacts of spent fuel storage are addressed under other NEPA documentation, the SEIS should describe the current status of the DAEC's Independent Spent Fuel Storage Installation (ISFSI) capacity and provide some projection of the need for spent fuel storage expansion over the course of a license renewal period that extends to 2034. This information does not pertain to radiological risk assessment and would not be adequately addressed in the 1996 GEIS and Addendum. Given the current status of the Department of Energy's application for license for the Yucca Mountain site, this information is germane to a discussion of short-term use and long-term productivity and an irreversible commitment of resources (40 CFR 1502.15). The need for continued storage, on-site, of spent fuel might extend well beyond the operating life of the facility itself. The status of each licensed facility with regard to storage of spent fuel varies and each SEIS should characterize that status and project change to that status over the lifetime of the renewed license.

### **Environmental Justice**

Section 4.9.7 does not appear to address the Sac and Fox Tribe, Meskwaki Settlement, which is within the facility's 50-mile Region of Influence. Figure 4-2 identifies the Meskwaki Settlement, but there is no discussion of this unique component of the regional community within the document.

The discussion of risks from subsistence consumption of fish and wildlife in Section 4.9.7.4 relies on data from 2007 only in several instances and concludes that risk is minimal without the benefit of any summary data from the facility's REMP. With regard to aquatic pathways and groundwater, the draft SEIS concludes that sampling "showed no significant or measurable radiological impact from DAEC operations" without providing some quantitative basis for making that statement. Aside from many anecdotal references to REMP sampling media and data from both single years or a short range of years, the draft SEIS makes broad statements regarding the lack of impact to the environment from DAEC operations without benefit of some presentation of REMP data and NRC's criteria for drawing that conclusion (e.g., fourth paragraph, page 4-29).

### **Environmental Impact of Alternatives**

The SEIS carries forward, for detailed evaluation, three alternatives and the 'no action' alternative, although the SEIS states that the 'no action' alternative does not meet project purpose and need. Fifteen other alternatives were considered, but dismissed before detailed evaluation. The three alternatives evaluated are: supercritical coal-fired generation; natural gas combined-cycle generation; and a combination of natural gas combined-cycle generation, conservation capacity increases and wind power.

## **Super Critical Coal-Fired Generation**

The cumulative air impacts of emissions associated with this alternative in combination with those of existing coal-burning facilities in eastern Iowa should be considered in Section 8.1. This issue is briefly mentioned in Section 4.11.5, but is not carried-forward to this evaluation. The significance of the impacts of this alternative on air quality and total regional carbon emissions should be evaluated in the context of all other carbon sources.

Mercury is a significant contaminant of concern associated with coal combustion. Many watersheds in close proximity to the DAEC have measureable levels of mercury in fish tissue. Further, mercury contamination is measured in fish tissue in areas far from their estimated source, primarily from air deposition. The assessment of impacts from hazardous air pollutants in Section 8.1.1.5, specific to this alternative, is insufficient, particularly with regard to mercury emissions. For this alternative, more information is needed in the SEIS regarding projected mercury emissions and the status of surface waters in the depositional path with regard to mercury.

Waste management issues discussed in Section 8.1.7 are not sufficiently characterized. Available disposal options for the large amount of ash and scrubber sludge are not evaluated. The results of this analysis, however, would be expected to further confirm the elimination of this alternative in comparison to the preferred alternative and the other two alternatives.

## **Evaluation of Alternatives**

Given the comparatively cursory evaluation of the three alternatives compared to the preferred action, it is not clear how the Executive Summary, Comparison of Alternatives, could conclude that "All other alternatives capable of meeting the needs currently served by DAEC entail greater impacts than the proposed action involving license renewal of DAEC." This conclusion, is not sufficiently supported by the alternatives analysis, consistent with the requirements of 40 CFR 1502.14(a). Notwithstanding the requirements for "rigorous" and "objective" alternatives analysis at 40 CFR 150.14(a), the NRC's expressed view of its responsibilities to determine whether "there are findings in the safety review required by the Atomic Energy Act of 1954 (AEA) or findings in the NEPA environmental analysis that would lead the NRC to not grant a license renewal..." (Executive Summary, page xvi) do not appear to necessitate any alternatives analysis.

Notwithstanding the summary of impacts contained in Tables I-1 and 8-5, there does not appear to be a rigorous evaluation of the three alternatives carried forward in the draft SEIS for detailed review as is required in 40 CFR 1502.14(a), (b) and (c). In our view, the power of the evaluation required by the National Environmental Policy Act, particularly an evaluation of a reasonable range of alternatives to a proposed action, is in a detailed and well-documented determination of whether it is good public policy to proceed with an action instead of an alternative to the proposed action. The discussion of this evaluation of a range of reasonable alternatives within the Executive Summary and Chapter 9 is not compelling and separation points critical to a decision to select the preferred alternative over an alternative are not evident.

As presently described in the draft SEIS, the impacts of the alternatives are characterized according to rather broad categories, primarily in isolation from each other and the proposed action. Rather than weighing of the impacts of each alternative, none of these alternatives are evaluated in direct comparison to the license renewal of the DAEC. In effect, the license renewal of the DAEC, or any existing facility, stands separately from all other alternatives and is evaluated on its merit alone. This intent is reflected, initially, in project purpose and need. Additionally, some significant impacts associated with continued operation of any existing facility are not addressed within the SEIS, but are addressed generically in the GEIS or other NEPA documentation, making a complete comparison of several large scale impacts of continued operation to the alternatives impossible. No comprehensive assessment or comparison of the merits of generating power by the existing facility or one of the alternatives is performed in this documentation. Unless the economic costs and environmental impacts of spent fuel transportation and disposal and facility decommissioning are somehow incorporated or summarized in the decision documentation supporting this license renewal decision, an equal comparison of alternatives to license renewal is not possible.

The SEIS should incorporate the evaluation of all the impacts of license renewal, addressed in other NEPA documentation, into the assessment of the preferred action and use that information to "rigorously explore and objectively evaluate all reasonable alternatives" as is required in 40 CFR 1502.14(a).

## **Draft Environmental Impact Statement Rating Definitions**

### **Environmental Impact of the Action**

#### **"LO" (Lack of Objections)**

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

#### **"EC" (Environmental Concerns)**

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

#### **"EO" (Environmental Objections)**

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative. EPA intends to work with the lead agency to reduce these impacts.

#### **"EU" (Environmentally Unsatisfactory)**

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

### **Adequacy of the Impact Statement**

#### **"Category 1" (Adequate)**

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.