Environmental Standard Review Plan

for the review of license renewal applications
for Nuclear Power Plants

Draft Report for Comment

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ABSTRACT

The Environmental Standard Review Plan for the Review of License Renewal Applications for Nuclear Power Plants (ESRP-LR) is to be used by the NRC staff when performing environmental reviews of applications for the renewal of power reactor licenses. The use of the ESRP-LR provides a framework for the staff to determine whether or not environmental issues important to license renewal have been identified and the impacts evaluated and provides acceptance standards to help the reviewers comply with the National Environmental Policy Act.

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ABBREVIATIONS

CFR	Code of Federal Regulations
EA	environmental assessment
EIS	environmental impact statement
EMF	electromagnetic field
EPA	U.S. Environmental Protection Agency
ER	environmental report
ESRP-LR	Environmental Standard Review Plan for License Renewal
FONSI	finding of no significant impact
FR	Federal Register
GEIS	Generic Environmental Impact Statement
GEIS-LR	Generic Environmental Impact Statement for License Renewal
HVTL	high-voltage transmission lines
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
NUREG	official NRC staff reports
OSHA	Occupational Safety and Health Administration
PDLR	Project Directorate License Renewal
SSCs	systems, structures, and components
USC	United States Code
USGS	United States Geological Survey

ENVIRONMENTAL STANDARD REVIEW PLAN FOR THE REVIEW OF LICENSE RENEWAL APPLICATIONS FOR NUCLEAR POWER PLANTS

PART A: GENERAL INFORMATION

A.1 INTRODUCTION

Under its rules for implementing the National Environmental Policy Act (NEPA), the U. S. Nuclear Regulatory Commission (NRC) is required to examine the environmental impacts that could occur as a result of renewing licenses of individual nuclear power plants under the proposed 10 CFR Part 54. To fully implement this responsibility, the NRC is modifying 10 CFR Part 51 and is developing three documents to control and define the necessary environmental reviews. A regulatory guide is being developed to help the applicant prepare an environmental report (ER) to be submitted as part of the application for license renewal. A Generic Environmental Impact Statement for License Renewal (GEIS), NUREG-1437, is being developed to establish the bounds and significance of potential environmental impacts during refurbishment and during the license renewal term of light-water power reactors. This document, the Environmental Standard Review Plan for License Renewal (ESRP-LR), is being developed to provide guidance to the staff for the review of the ER and the use of the GEIS. It should be noted that the analysis in the GEIS is based on license renewal for a period of not more than 20 years for each operating nuclear plant.

A.2 PURPOSE AND SCOPE

This review plan has been prepared as guidance for staff reviewers in the Office of Nuclear Reactor Regulation to assist in the environmental reviews of applications for renewal of operating licenses. The plan parallels Regulatory Guide 4.2, Supplement 1, "Standard Format and Content of Environmental Information for Applications to Renew Nuclear Power Plant Operating Licenses," which guides applicants on how to structure and present the environmental information to be submitted as part of the ER included in the application for renewal of an operating license.

The regulatory guide gives guidelines for the following: (1) the format and content of environmental information to be included in license renewal applications, (2) the use of generic environmental information presented in the GEIS, and (3) the additional information and analysis needed to supplement the GEIS for specific issues and regulatory requirements.

The primary purpose of this review plan is to ensure the quality and uniformity of staff reviews and to ensure that these reviews are focused on those environmental concerns associated with license renewal as described in 10 CFR Parts 51 and 54. Specifically, the renewal plan provides guidance to the staff regarding environmental issues that should be reviewed and provides criteria to help the reviewer evaluate the information submitted as part of the license renewal application. It is also the intent of this plan to make information about the regulatory process available and to improve communication between the NRC, interested members of the public, and the nuclear power industry, thereby increasing understanding of the review process.

The NRC staff's review of an application for renewal of an operating license is not intended to be a review of the original environmental concerns. Therefore, guidance offered in this plan differs from that given in NUREG-0555, "Environmental Standard Review Plans for the Environmental Review of Construction Permit Applications for Nuclear Power Plants." For license renewal, the staff should focus on the environmental impacts associated with approximately 20 additional years of plant operation and any refurbishment necessary to permit the additional operational period. The emphasis intended here is on providing guidance to staff reviewers on how to evaluate the specific environmental concerns associated with renewing an operating license as described in the ER submitted to the NRC.

The manner in which the staff applies this plan can vary from application to application and within a single application for different environmental issues. In some cases, the staff may be able to complete some portions of the review on a generic basis; in other cases, the staff may need to review plant-specific environmental impacts. The staff may select and emphasize particular aspects of an ESRP-LR section as appropriate for the specific license renewal application under consideration.

The ESRP-LR is part of a continuing regulatory standards development activity that documents current methods of review and provides the bases for orderly modifications to the review process. It will be revised periodically, as needed, to clarify content, correct any errors, and incorporate modifications approved by the Director of the Office of Nuclear Reactor Regulation.

This plan should be viewed as a living document to be revised as experience is gained during the review of the initial license renewal applications and ERs. The staff will consider comments and suggestions for improving the review plan; these should be sent to the Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Notice of errors or omissions should be sent to the same address.

A.3 DOCUMENT ORGANIZATION

The ESRP-LR has four parts. Part A contains general information concerning the purpose, scope, organization, and use of the document. Part B, presents those environmental issues that are defined as "Category 1" issues in the GEIS. These issues will be excluded from the review of individual license renewal applications by the proposed modifications to 10 CFR Part 51. Part C provides review guidelines for those environmental issues that are defined as "Category 2" issues in the GEIS. Part D identifies information needs and review guidelines for those environmental issues that are defined as "Category 3" issues in the GEIS.

One important concept needed for understanding the organization of both this document and the GEIS is the categorization of issues. In the GEIS, the NRC staff placed each environmental issue into one of three categories. The three categories are defined as follows.

Category 1

A generic conclusion on the potential impact has been reached in the GEIS for all affected plants. Such impacts will be excluded from the review of individual license renewal applications by the proposed modifications to 10 CFR Part 51.

Category 2

A generic conclusion on the potential impact has been reached in the GEIS for those plants that fit within defined bounds. In accordance with the proposed modifications to 10 CFR Part 51, each individual license renewal application must demonstrate that the plant and/or planned activities for license renewal are bounded by the GEIS for this impact. If this cannot be demonstrated the impact must be assessed.

Category 3

A generic conclusion on the potential impact was not reached in the GEIS for any affected plants. The proposed modifications to 10 CFR Part 51 require that the potential impact must be evaluated in each individual license renewal application.

Each section of the ESRP-LR is organized as, and is intended to be, a stand-alone document for the review of a specific environmental issue for license renewal. Each specific issue will be found in only one section of this document. Therefore, the reviewer will not need to consult other sections for performing the specific review.

Each environmental issue addressed in the ESRP-LR comprises the following review elements and staff instructions:

- Responsibilities. The primary and secondary responsibilities for the NRC staff review are listed.
- Purpose and Scope. These paragraphs describe the purpose and scope of the specific environmental issue under review. Appropriate GEIS sections are referenced.
- Required Data and Information. The reviewer is given the source and scope of data and information needed for the specific review subject.

- Analysis Procedure. The key review steps for the NRC staff's evaluation of the applicant's environmental assessment are provided.
- Evaluation. Evaluation criteria, along with Federal, State, and local laws affecting the environmental issue that must be evaluated, are listed and described as applicable. The evaluation steps necessary for staff consideration are given.
- Input to the Environmental Document. The principal features, species, environmental stressors, considerations, evaluations, and environmental inputs needed for the environmental documentation process are listed, along with appropriate staff guidance.
- References. The essential reference materials are listed for NRC staff consideration.

A.4 BACKGROUND

A.4.1 REQUIREMENT FOR ENVIRONMENTAL REVIEW

The NRC regulations in Title 10 of the Code of Federal Regulations (10 CFR) are being supplemented by the addition of proposed Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants." The new requirements stated in the proposed 10 CFR Part 54 are based on two important principles:

- (1) In general, the current licensing basis for each operating nuclear power plant provides and maintains an acceptable level of safety for operation during any renewal period. This principle is based on the Commission's initial finding of adequate protection for the initial design and construction of a plant, as well as on the Commission's continuing oversight and regulatory actions for these plants.
- (2) A plant's current licensing basis must be maintained during the renewal period, in part through a program to manage age-related degradation of systems, structures, and components (SSCs) that are important to license renewal. Therefore, 10 CFR Part 54 focuses on age-related concerns

requiring license renewal applicants to take the necessary actions to provide assurance that age-related degradation will be effectively managed so that the plant will continue to meet an acceptable level of safety during the renewal term.

The granting of a renewed operating license constitutes a major Federal action which requires an environmental review by the NRC. Under the proposed license renewal rule in 10 CFR Part 54, each application for license renewal must include an environmental report (ER) that complies with the requirements of Subpart A of 10 CFR Part 51.

A.4.2 REVISIONS TO 10 CFR PART 51 FOR LICENSE RENEWAL

The proposed amendments to 10 CFR Part 51 establish new requirements for environmental review of applications for renewal of operating licenses. These amendments would reduce the number of environmental issues to be addressed as part of a license renewal application. The scope of issues to be assessed in individual license renewal applications will be limited to those issues for which generic conclusions could not be reached. All applicants will have to assess impacts on threatened and endangered species, and impacts on local traffic conditions during periods of license renewal related refurbishment activities. For other issues to be included in ERs, all applicants will have to demonstrate that their plants fall within the bounds of plants for which generic conclusions could be reached, or, if issues do not fall within these bounds, they must be assessed. Also, as part of its ER, an applicant shall include an analysis of whether or not the findings of the assessments required above overturn the cost-benefit balance supporting license renewal found in the proposed amendments.

The proposed amendments codify the conclusions of the GEIS for those issues for which a generic conclusion can be reached. Appendix B to proposed Part 51 summarizes the findings in the GEIS on the scope and magnitude of environmental and other effects of renewing the operating license of an individual nuclear power plant. In the proposed appendix, the Commission also states its finding that the renewal of any operating license for up to 20 years will benefit society and will have accrued benefits that outweigh the economic, environmental, and societal costs of license renewal.

In addition, the proposed amendments eliminate the requirement that in all cases the NRC staff must prepare a supplemental environmental impact statement (EIS) for license renewal applications, and instead permit the staff to prepare an environmental assessment (EA) if certain conditions are met. The basis for this proposed change is that only a limited number of potential impacts need to be addressed in individual plant licensing. In many instances, this limited set of potential environmental issues will be found to have no impact at all or only a very small impact and, therefore, can be analyzed in an EA. However, there may be license renewal proceedings for which a supplemental EIS will be required. A supplemental EIS will be required if a finding of no significant impact (FONSI) is not concluded in the EA. If no significant impacts are found in the EA, the NRC will issue a FONSI.

On the other hand, if the EA should identify environmental impacts that would prevent the issuance of a FONSI, the environmental review process would require the development of a draft and a final supplemental EIS.

A.5 REVIEW OF APPLICANT'S ENVIRONMENTAL INFORMATION

Proposed 10 CFR 2.109 would allow the current license to remain in effect during the time the staff is reviewing the license renewal application, provided the licensee files a sufficient application at least 5 years before the current operating license is scheduled to expire. Although the staff expects to complete its review of a renewal application before the existing license expires, in some instances the staff may need more time to fully evaluate the technical and environmental information contained in the application.

The environmental review process for individual plant license renewal will begin when the applicant submits an environmental report focusing on the issues defined in the proposed amendments to Part 51.

For environmental issues, an application for license renewal should include the following:

- For each Category 2 item, the applicant needs to provide information to demonstrate that the plant seeking a renewed license is within the bounding conditions assumed in the GEIS. For plants outside the assumed boundary, the applicant should supply the additional information identified in the specific ESRP-LR section contained in Part C of this document, along with any supplemental discussion needed for the staff to understand the data and information submitted.
- For each Category 3 item, the applicant will need to furnish the data, information, and analysis identified in this specific ESRP-LR section contained in Part D of this document. The applicant should also submit any supplemental discussion needed for the staff to understand each Category 3 issue.

There has been sufficient experience with the environmental impacts associated with nuclear power plants to predict, with considerable confidence, the nature and magnitude of potential environmental effects that may arise from renewal of operating licenses. These environmental effects can be described and characterized in such a manner that the results can be applied to individual license renewal reviews. Accordingly, by means of a GEIS, the NRC has identified the issues and potential environmental impacts associated with license renewal, assessed their significance, and reached conclusions about whether the issues can be excluded from consideration in individual license renewal applications.

The NRC staff will perform the environmental reviews for license renewal by using this ESRP-LR. The primary reference for information on environmental issues and the staff's conclusions concerning these issues is the GEIS.

A.6 ENVIRONMENTAL DOCUMENT

The output from the NRC staff review will be an EA or a supplemental EIS, referred to as the "environmental document" in the individual review sections of this ESRP-LR. The NRC will issue a supplemental EIS if the impact from any of the environmental issues evaluated in the individual review sections is determined to be (1) negative and large or (2) negative, moderate, and not mitigated to a small impact. The NRC will issue the EA with a FONSI for all other impacts.

PART B: CATEGORY 1 ISSUES

Category 1 issues are issues for which a generic conclusion on the potential impact has been reached in the GEIS for all affected plants. Such issues are excluded from the review of individual license renewal applications by the proposed modifications to 10 CFR Part 51. Category 1 issues are listed in Table 10-1 in the GEIS. Table B.1 (below) also lists all of the Category 1 issues and references the GEIS section in which the issue is discussed.

Table B.1 Category 1 Issues

<u>ISSUE</u>	<u>GEIS SECTION</u>
<u>Surface Water Quality, Hydrology, and Use</u> (for all plants)	
Effects of refurbishment on surface water use	3.4.1
Altered current patterns at intake and discharge structures	4.2.1.2.1 4.3.2.2 4.4.2.2
Altered salinity gradients	4.2.1.2.2 4.3.2.2 4.4.2.2
Altered thermal stratification of lakes	4.2.1.2.3 4.3.2.2 4.4.2.2

Table B.1 (cont.)

<u>ISSUE</u>	<u>GEIS SECTION</u>
Temperature effects on sediment transport capacity	4.2.1.2.3 4.3.2.2 4.4.2.2
Scouring due to discharged cooling water	4.2.1.2.3 4.3.2.2 4.4.2.2
Eutrophication	4.2.1.2.3 4.3.2.2 4.4.2.2
Discharge of chlorine or other biocides	4.2.1.2.4 4.3.2.2 4.4.2.2
Discharge of sanitary wastes	4.2.1.2.4 4.3.2.2 4.4.2.2
Discharge of other chemical contaminants (e.g., metals)	4.2.1.2.4 4.3.2.2 4.4.2.2 4.4.4
Water use conflicts	4.2.1.3 4.3.2.1 4.4.2.1

Table B.1 (cont.)

<u>ISSUE</u>	<u>GEIS SECTION</u>
<u>Aquatic Ecology</u> (for all plants)	
Refurbishment	3.5
Accumulation of contaminants in sediments or biota	4.2.1.2.4 4.3.3 4.4.2.2 4.4.4
Entrainment of phytoplankton and zooplankton	4.2.3.1.1 4.3.3 4.4.4
Cold shock	4.2.3.1.5 4.3.3 4.4.4
Thermal plume barrier to migrating fish	4.2.3.1.6 4.3.3 4.4.4
Premature emergence of aquatic insects	4.2.3.1.7 4.3.3 4.4.4
Gas supersaturation (gas bubble disease)	4.2.3.1.8 4.3.3 4.4.4
Low dissolved oxygen in the discharge	4.2.3.1.9 4.3.3 4.4.4
Losses from predation, parasitism, and disease among organisms exposed to sublethal stresses	4.2.3.1.10 4.3.3 4.4.4
Stimulation of nuisance organisms (e.g., shipworms)	4.2.3.1.11 4.3.3 4.4.4

Table B.1 (cont.)

<u>ISSUE</u>	<u>GEIS SECTION</u>
<u>Aquatic Ecology</u> (for plants with cooling-tower-based heat dissipation systems)	
Entrainment of fish and shellfish in early life stages	4.3.3
Impingement of fish and shellfish	4.3.3
Heat shock	4.3.3
<u>Groundwater Use and Quality, Impacts of Refurbishment</u>	
Groundwater use and quality	3.4.2
Groundwater use conflicts (surface water used as make-up water - potentially affecting aquifer recharge)	4.2.2.1.3
Groundwater quality degradation (Ranney wells)	4.2.2.2.2
Groundwater quality degradation (saltwater intrusion)	4.2.2.2.1
<u>Terrestrial Resources</u>	
Cooling tower impacts on crops	4.3.4
Cooling tower impacts on native plants	4.3.5.1
Bird collisions with cooling towers	4.3.5.2
Cooling pond impacts on terrestrial resources	4.4.5
Power line right-of-way management (cutting and herbicide application)	4.5.6.1
Bird collisions with power lines	4.5.6.2
Impacts of electromagnetic fields (EMF) on flora and fauna (plants, agricultural crops, honeybees, wildlife, livestock)	4.5.6.3.2
Floodplains and wetlands on power line right-of-way	4.5.7

Table B.1 (cont.)

<u>ISSUE</u>	<u>GEIS SECTION</u>
<u>Air Quality</u>	
Air quality	3.3
<u>Land Use</u>	
Onsite land use	3.2
<u>Human Health, Impacts of Refurbishment</u>	
Radiation exposures to the public	3.8.1.7
Occupational radiation exposure	3.8.2.4
<u>Human Health, Impacts of Operation During License Renewal</u>	
Microbiological organisms (occupational health)	4.3.6
Noise	4.3.8
Electromagnetic fields, chronic effects	4.5.4.2.3
Radiation exposures to public	4.6.2.4
Occupational radiation exposures	4.6.3.3

Table B.1 (cont.)

<u>ISSUE</u>	<u>GEIS SECTION</u>
<u>Socioeconomics</u>	
Public service impacts (except transportation) of refurbishment	3.7.4
Public service (including transportation) impacts during license renewal term	4.7.4
Offsite land use impacts of refurbishment	3.7.5
Offsite land use impacts of license renewal term	4.7.5
Historic resources impacts of refurbishment	3.7.7
Historic resources impacts of license renewal term (transmission lines)	4.5.8
Historic resources impacts of license renewal term (normal operations)	4.7.7
Aesthetic impacts of refurbishment	3.7.7
Aesthetic impacts of license renewal term	4.7.7
Aesthetic impacts of license renewal term (transmission lines)	4.5.8
<u>Environmental Impacts of Postulated Accidents</u>	
Design-basis accidents	5.3.2 5.6.1
Severe accidents (atmospheric releases)	5.3.3.2 5.5.2
Severe accidents (fallout onto open bodies of water)	5.3.3.3 5.5.3
Severe accidents (releases from groundwater)	5.3.3.4 5.5.4
Severe accidents (economic consequences)	5.3.4 5.5.5
Severe accident mitigation design alternatives	5.4 5.5.6

Table B.1 (cont.)

<u>ISSUE</u>	<u>GEIS SECTION</u>
<u>Solid Waste Management</u>	
Nonradiological waste	6.2
Mixed waste	6.4
Spent fuel	6.5
Transportation	6.6
<u>Decommissioning</u>	
Radiation doses	7.3.1 7.4
Waste management	7.3.2 7.4
Air quality	7.3.3 7.4
Water quality	7.3.4 7.4
Ecological resources	7.3.5 7.4
Socioeconomic impacts	7.3.7 7.4

PART C: CATEGORY 2 ISSUES

The definition developed for Category 2 issues is as follows:

A generic conclusion on the potential impact has been reached in the GEIS for those plants that fit within defined bounds. In accordance with the proposed modifications to 10 CFR Part 51, each individual license renewal application must demonstrate that the plant and/or planned activities for license renewal are bounded by the GEIS for this impact. If such demonstration cannot be made, the impact must be assessed.

Category 2 issues are tabulated in Table 10.1 of the GEIS (Chapter 10). Part C of this document contains subsections that address the review of each of these issues and references the appropriate location in the GEIS where these issues are discussed.

C.1 GENERAL INSTRUCTIONS TO REVIEWERS OF CATEGORY 2 ISSUES

To review a Category 2 issue, the reviewer needs only three basic documents: (1) the GEIS, (2) the applicant's environmental report, and (3) this document, NUREG-1429. The GEIS describes the issues such as assumed boundary conditions analysis and discussion of the issues, and the conclusions reached for the environmental impacts for each issue. The reviewer can start with either the GEIS or this document to confirm that the issue under consideration is a Category 2 issue. Table 10.1 in the GEIS (Chapter 10) summarizes, by discipline, the issue and the conclusions reached and identifies the issue category. In this document, Part C identifies all Category 2 issues and references the appropriate GEIS section.

The reviewer has some latitude in the scope of the environmental review to be performed and the order in which review steps are to be performed. However, the reviewer may find the following review order helpful:

- (1) By use of Part C or the GEIS, confirm that the issue is a Category 2 issue.

- (2) Obtain the boundary conditions for the issue from this document and the GEIS reference identified in each Section of Part C.
- (3) Compare the boundary conditions for the applicant's plant to the assumed boundary conditions. If the applicant's plant falls within, or matches, the GEIS boundary, the reviewer obtains any needed information from the GEIS. If the plant does not fall within or match the GEIS boundary, the issue should be reviewed as an exception using the additional guidelines of Part C of this document.
- (4) Refer to the GEIS discussion, analysis, and conclusions for the issue to obtain the required data and information needed to understand the potential environmental impacts.
- (5) Refer to the analysis procedure and evaluation sections for each issue in Part C of this document to ensure that the methodology for Category 2 issues is understood and followed.
- (6) Provide a written input for the environmental document. Guidance is given in Part C as to the information that should be included in the environmental document.

C.2 SPECIFIC INSTRUCTIONS TO REVIEWERS OF CATEGORY 2 ISSUES

C.2.1 AQUATIC ECOLOGY

RESPONSIBILITIES:

Primary: PDLR

Secondary:

1. PURPOSE AND SCOPE

The purpose of this section is to direct the staff's review of the license renewal applicant's assessment of the impacts of license renewal on the aquatic environment and biota at and in the vicinity of the licensed facility.

Several of the issues surrounding aquatic resources with respect to license renewal have already been considered in the GEIS and are determined to be Category 1 issues. These issues are listed in Table B.1. The scope of this review is limited to the effects of thermal effluents, impingement, and entrainment on aquatic biota.

Impingement and entrainment are cooling system intake-related effects that are considered by the Environmental Protection Agency (EPA) or the State water quality permitting agencies during the development of National Pollutant Discharge Elimination System (NPDES) permits and Clean Water Act 316(b) determinations. Plants with approved 316(b) demonstrations are within the bounds of the GEIS (Section 4.2.3.1) for this issue and the license renewal application need not address entrainment or impingement. Plants without approved 316(b) demonstrations must consider both of these issues in the application.

The potential for heat shock is also a factor in NPDES permits. Plants must comply with State mixing-zone criteria and thermal discharge limits or, if these are unattainable, with site-specific variances. These site-specific variances take the form of Clean Water Act 316(a) demonstra-

tions. Plants having approved 316(a) demonstrations are within the defined bounds of the GEIS (Section 4.2.3.1), and thus renewal applicants need not evaluate heat shock in their application. Applicants for plants without approved 316(a) demonstrations must evaluate heat shock in the application.

II. REQUIRED DATA AND INFORMATION

The kinds of data and information required will be affected by site- and station-specific factors, and the degree of detail will be modified according to the anticipated magnitude of the potential impacts. The following data or information will usually be required:

- A. A description of the condenser cooling system. If the condenser cooling system uses only cooling towers for heat dissipation and approved 316(a) and 316(b) demonstrations are not required, then items B and C (below) may be omitted.
- B. Copies of approved 316(a) and 316(b) determinations. If these determinations are available, item C (below) may be omitted. If both of these determinations are not available, the evaluation must be continued for the issue lacking an approved determination.
- C. Recent data and information on the site and vicinity
 - 1. Location and value of the commercial and sport fisheries for both finfish and shellfish.
 - 2. Distribution and abundance of "important"¹ species of aquatic biota and identification of critical life-support areas such as

¹For the purposes of these environmental reviews, a species is "important" if a specific causal link can be identified between the proposed project and the species and if one or more of the following criteria applies: (a) the species is commercially or recreationally valuable; (b) the species is threatened or endangered (Pub. Law 93-205, 87 Stat. 884); (c) the species affects the well-being of some important species within criterion (a) or (b); or (d) the species is critical to the structure and function of the ecological system.

spawning areas, nursery grounds, feeding areas, wintering areas, and migration routes.

3. Presence of endangered or threatened species and their habitat preference.
4. Estimates of the magnitude of the impact on those important species having commercial or recreational value, The estimates may be expressed in terms of dollars, lost opportunity for recreational pursuits, percent reduction in harvest, percent loss of habitat, or other appropriate quantifiers.

III. ANALYSIS PROCEDURE

The reviewer will perform the following steps to evaluate the renewal applicant's assessment of the impacts on aquatic ecology for plants using once-through cooling systems:

- A. Check the sufficiency of relevant information provided in the renewal applicant's ER by comparing it with the list of required data and information given in Section II. Any missing information can be resolved by requesting additional information from the applicant.
- B. Determine whether approved 316(a) and 316(b) demonstrations are required for the plant. If not, this issue is not applicable, and steps C, D, E, and F (below) may be omitted.
- C. Review the renewal applicant's determination of whether the conditions at the site are bounded by the GEIS envelope, which is as follows:
 - Plants for which a current 316(b) and, if necessary, a current 316(a) variance pursuant to 40 CFR Part 125, or equivalent state permits are available are bounded by the GEIS.

If the GEIS bounds the site-specific impacts, the review of this issue is complete and steps D, E, and F (below) may be omitted.

- D. Develop an understanding of the reasons, including any contentious issues, for the unavailability of current 316(a) and 316(b) determinations by consulting the ER and the appropriate permitting agency.
- E. Review the renewal applicant's determination of the amount and effects of impingement of fish and shellfish and entrainment of fish and shellfish in early life stages. Conduct this review in consultation with the EPA or State water quality permitting agencies regarding the status of NPDES permit reviews and 316(b) determinations. Of particular concern are effects on threatened or endangered species and on restoration efforts for anadromous fish. Guidance may also be found in the sections applicable to intake system impacts resulting from facility operations in NUREG-0555, "Environmental Standard Review Plans for the Environmental Review of Construction Permit Applications for Nuclear Power Plants," May 1979.
- F. Review the renewal applicant's determination of the effects of heat shock on aquatic biota. This review should include consultation with the EPA or State water quality permitting agencies regarding the status of NPDES permit reviews and, if applicable, 316(a) determinations. Guidance may also be found in the sections applicable to thermal discharges resulting from facility operations in NUREG-0555, "Environmental Standard Review Plans for the Environmental Review of Construction Permit Applications for Nuclear Power Plants," May 1979.

IV. EVALUATION

Facilities having approved 316(a) and 316(b) determinations are within the bounds of the GEIS, and no other evaluation is necessary. If either one of these determinations is not available, the evaluation for the unresolved issue should include the applicable standards and guidelines from the following:

- The Rivers and Harbors Act
- The Clean Water Act

- The Fish and Wildlife Coordination Act
- The Marine Sanctuaries Act
- The Coastal Zone Management Act
- The Endangered Species Act
- State and local laws affecting water quality
- "Guidelines for Developing or Revising Water Quality Standards," 1973, Environmental Protection Agency, Washington, D.C.
- Regulatory Guide 4.7, "General Site Suitability Criteria for Nuclear Power Stations"
- Memorandum of Understanding Between NRC and the Army Corps of Engineers, August 25, 1975
- Memorandum of Understanding Between NRC and EPA, December 31, 1975
- Guidelines for Dredging and Dredge Spoil Disposal," 40 FR 19794, May 6, 1975; 40 FR 41292, September 5, 1975

Within these guides and regulations, the reviewer may find a framework of those descriptive features of aquatic resources judged adequate for most situations of nuclear power station license renewal.

Evaluation of identified impacts will result in one of the following determinations:

- A. The facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS for this issue. The environmental impacts are therefore bounded by the analysis in the GEIS. No further analysis is required.
- B. The facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, and one of the following measures is required, as applicable:
 1. The impact is small and mitigation is not required. When all impacts are of this nature, the reviewer will recommend operation as proposed.

2. The impact is moderate but can be mitigated by specific design or procedural modifications that the renewal applicant has identified and determined to be practical and to which the applicant has committed. The reviewer should prepare a list of verified modifications and recommended measures and controls to limit the corresponding impact, and provide the list to the NRC project manager.
3. The impact is large or moderate and cannot be mitigated to a to small impact. When impacts of this nature are identified, the reviewer should investigate practical design or procedural modifications that would avoid the impact. If no alternatives can be identified, the reviewer will be responsible for providing the information to the NRC project manager.

V. INPUT TO THE ENVIRONMENTAL DOCUMENT

- A. Information to be included in the environmental document should accomplish the following objectives: (1) public disclosure of potential impacts resulting from the facility due to renewal of the plant's operating license, (2) presentation of the renewal applicant's demonstration that the issue is within the bounds of the GEIS or plant-specific analysis, and (3) presentation of staff analysis and conclusions.
 1. If the facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS, a statement to that effect, accompanied by a brief rationale and appropriate references to the GEIS, is sufficient.
 2. If the facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, additional discussion will be required. Where impacts are small, a statement to that effect, accompanied by a brief rationale, is sufficient. Where impacts are moderate but

mitigation will reduce the impact to a small impact, a statement that the renewal applicant is committed to meeting applicable guides and standards and to following good practices and that under these conditions impacts should be small, will be sufficient. The reviewer should discuss the applicant's commitments to meet applicable Federal, State, and local standards, and should describe mitigating actions that the applicant should take. Large impacts or moderate impacts that cannot be reduced to small impacts should be discussed in detail.

B. The reviewer will provide data or will ensure that data will be provided in the following area:

- A list of adverse impacts to the aquatic ecology that could be avoided or mitigated, applicant commitments, and staff recommendations of practices to limit the adverse impacts.

VI. REFERENCES

1. D. B. Emerson et al., "General Environmental Guidelines for Evaluating and Reporting the Effects of Nuclear Power Plant Site Preparation, Plant and Transmission Facilities Construction," prepared by Hittman Associates, Inc., for the Atomic Industrial Forum, Inc., Washington, D.C., 1974.
2. U.S. Environmental Protection Agency, "Processes, Procedures and Methods to Control Pollution Resulting From All Construction Activity," EPA 430-9-73-007, Office of Air and Water Programs Washington, D.C., 1973.
3. National Academy of Sciences and National Academy of Engineering, Ecological Research Series, Water Quality Criteria, 1972, Committee on Water Quality Criteria, EPA-R3-033, 1973.
4. U.S. Environmental Protection Agency, "Impacts of Construction Activities in Wetlands of the U.S.," EPA 600/3-76-046, April 1976.

5. L. L. Olmsted, and D. G. Cloutman, "Repopulation After a Fish Kill in Mud Creek, Washington County, Arkansas, Following Pesticide Pollution," Transactions of the American Fisheries Society, Vol. 102, No. 1, pp. 79-87, 1974.
6. W. T. Bryson, R. T. Lockey, J. Cairns, Jr., and K. L. Dickson, "Restocking After Fishkills as a Fisheries Management Strategy," Transactions of the American Fisheries Society", Vol. 104, No. 2, pp. 256-263, 1975.
7. D. L. Sorenson, M. M. McCarthy, E. J. Middlebrooks, D. B. Porcella, and J. H. Gabstatter, "Suspended and Dissolved Solids Effects on Freshwater Biota: A Review," Environmental Protection Agency, Corvallis, Oregon, April 1977.
8. W. M. Beck, Jr., and D. J. Klemm, "Environmental Requirements and Pollution Tolerance of Common Freshwater Chironomidae," EPA-600/4-77-024, Environmental Protection Agency, Cincinnati, Ohio, April 1977.
9. U.S. Nuclear Regulatory Commission, "Environmental Standard Review Plans for the Environmental Review of Construction Permit Applications for Nuclear Power Plants," NUREG-0555, May 1979.

C.2.2 TERRESTRIAL RESOURCES DURING REFURBISHMENT

RESPONSIBILITIES:

Primary: PDLR

Secondary:

I. PURPOSE AND SCOPE

The purpose of this section is to direct the staff's review of the license renewal applicant's assessment of the impacts of license renewal on the terrestrial resources, that is, important plant and animal habitats in the vicinity of the licensed facility.

The scope of this section is limited to consideration of impacts on terrestrial resources associated with onsite refurbishment activities. If important plant and animal habitats exist on a plant site but are avoided during the course of refurbishment activities, the impacts are considered insignificant, and no further evaluation is necessary. If effects on important plant and animal habitats cannot be avoided, the impact must be evaluated in the application. Assessments will be conducted in sufficient detail to allow the reviewer to check the renewal applicant's predictions and evaluations of potential impacts and recommendations about how these impacts should be considered in the license renewal decision. If necessary, the reviewer will recommend consideration of measures to mitigate the intensity of impacts.

Several of the issues surrounding terrestrial resources with respect to license renewal have already been considered in the GEIS and are determined to be Category 1 issues. These issues are listed in Table B.1.

The Category 2 issue to be considered is environmental impacts of refurbishment on terrestrial resources. The most significant refurbishment activity considered in the GEIS (Section 3.6) is expansion of onsite solid waste facilities.

II. REQUIRED DATA AND INFORMATION

The kinds of data and information required will be affected by site- and station-specific factors, and the degree of detail will be modified according to the anticipated magnitude of the potential impacts. The following data or information will usually be required:

- A. Identification of important plant and animal habitats on site or in the vicinity. If none, items B and C (below) may be omitted.
- B. Identification of any construction activities that are to be undertaken involving additional on-site land use that may affect important plant and animal habitats. If none, item C (below) may be omitted.
- C. Site, transmission corridors, and vicinity¹
 - 1. A map of the site and vicinity showing the area and boundaries of major wetland communities, special habitats (e.g., spring seeps, bogs, sink holes, rare or unique habitats), and any habitats used by "important"² species.
 - 2. A list of "important" terrestrial wetlands vertebrate species known to inhabit the site, and lists of invertebrate wetland species of local importance or concern as disease vectors or pests.

¹Roads and transmission corridors that only exist for or function to support the subject station, the continued use or modification of which in some way affects wetlands ecosystems, should be included.

²For the purposes of these environmental reviews, a species is "important" if a specific causal link can be identified between the proposed project and the species and if one or more of the following criteria applies: (a) the species is commercially or recreationally valuable; (b) the species is threatened or endangered (Pub. Law 93-205, 87 Stat. 884); (c) the species affects the well-being of some important species within criterion (a) or (b); or (d) the species is critical to the structure and function of the ecological system.

3. Estimates of the relative abundance of both commercially and recreationally important wetland game and other wetland vertebrates.
4. Estimates of the magnitude of the impact on these important species having commercial or recreational value. The estimates may be expressed in terms of dollars, lost opportunity for recreational pursuits, percent reduction in harvest, percent loss of habitat, or other appropriate quantifiers.
5. Lists of threatened or endangered wetland species that are known to inhabit the site, their site-specific habitat, and estimates of their populations.
6. Any proposed refurbishment activities expected to impact wetland communities that have been defined as rare or unique or that support threatened and endangered species.

III. ANALYSIS PROCEDURE

The reviewer will perform the following steps to evaluate the renewal applicant's assessment of impacts on terrestrial resources:

- A. Check the sufficiency of relevant information provided in the applicant's ER by comparing it with the list of required data and information given in Section II. Any missing information can be resolved by requesting additional information from the applicant.
- B. Review the renewal applicant's determination of whether the conditions at the site are bounded by the GEIS envelope, which is as follows:
 - Plants for which no construction activities are to be undertaken involving additional onsite land use that may affect important plant and animal habitats are bounded by the GEIS.

If the GEIS bounds the site-specific impacts, the review of this issue is complete and steps C, D, and E (below) may be omitted.

- C. The reviewer will consider the description of those important plant and animal habitats the renewal applicant asserts are affected by refurbishment activities. If the applicant adequately demonstrates that all such habitats will be avoided so that any adverse impacts are prevented, no further review is necessary.

The significance of any onsite loss of habitat depends on the commercial or recreational values of the plant or animal community involved. For important species having commercial or recreational value, the renewal applicant will estimate the magnitude of the impact. This may be expressed in terms of dollars, lost opportunity for recreational pursuits, percent reduction in harvest, percent loss of habitat, or other appropriate quantifiers.

- D. The reviewer will review the renewal applicant's analysis of the change in populations of threatened or endangered species inhabiting the site and surrounding areas.

If threatened or endangered wetlands species are known to inhabit the area, and modifications are predicted to endanger them more, the reviewer will request through NRC management channels a "threshold examination" by the Department of Interior. This evaluation should be conducted in conjunction with the review of Section D.2.1, "Threatened and Endangered Species."

- E. The reviewer will evaluate the renewal applicant's analysis of the impact of habitat modification on attendant plant and animal populations.

IV. EVALUATION

In evaluating the adequacy of the description of terrestrial resources of the onsite and offsite areas, the reviewer will typically consult the applicable standards and guidelines:

- Regulatory Guide 4.7, "General Site Suitability Criteria for Nuclear Power Stations"
- Regulatory Guide 4.11, "Terrestrial Environmental Studies for Nuclear Power Stations"
- Fish and Wildlife Coordination Act
- Endangered Species Act
- Coastal Zone Management Act
- Memorandum of Understanding Between the Corps of Engineers, U.S. Army, and the USNRC for the Regulation of Nuclear Power Plants, 1975
- Memorandum of Understanding Between USNRC and USEPA on Responsibilities Under the Clean Water Act
- "Guidelines for Dredging and Dredge Spoil Disposal," 40 FR 19794, May 6, 1975; 40 FR 41292, September 5, 1975
- "Environmental Criteria for Electric Transmission Systems," Department of Interior and Department of Agriculture
- "Electric Power Transmission and the Environment," Federal Power Commission
- Flood Plains Management Act

Within these guides and regulations, the reviewer may find a framework of those descriptive features of terrestrial resources judged adequate for most situations of nuclear power station license renewal.

The reviewer will screen each predicted impact using criteria appropriate to the impacted segment of the ecosystem. For example, loss of more than a few percent of the habitat available in the region for an "important"

species could be considered of sufficient importance to require consideration of mitigating action. Where such mitigation of a predicted impact is required, the reviewer will recommend appropriate measures.

The following specific factors are to be included in the reviewer's evaluation:

- A. Loss of habitat for endangered or threatened wetlands species should be evaluated in the context of guidelines under the Endangered Species Act of 1973 in conjunction with the review of Section D.2.1, "Threatened and Endangered Species."
- B. The intrusion on or destruction of terrestrial plant communities that are regarded as representative of natural, undisturbed, or remnant communities or that show unusual ecological or geographical distributions.

Evaluation of identified impacts will result in one of the following determinations:

- A. The facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS for this issue. The environmental impacts are therefore bounded by the analysis in the GEIS. No further analysis is required.
- B. The facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, and one of the following measures is required, as applicable:
 - 1. The impact is small and mitigation is not required. When all impacts are of this nature, the reviewer will recommend operation as proposed.
 - 2. The impact is moderate but can be mitigated by specific design or procedural modifications that the renewal applicant has identified and determined to be practical and to which the

applicant has committed. The reviewer should prepare a list of verified modifications and recommended measures and controls to limit the corresponding impact, and provide the list to the NRC project manager.

3. The impact is large or moderate and cannot be mitigated to a small impact. When impacts of this nature are identified, the reviewer should investigate practical design or procedural modifications that would avoid the impact. If no alternatives can be identified, the reviewer will be responsible for providing information to the NRC project manager.

V. INPUT TO THE ENVIRONMENTAL DOCUMENT

A. Information to be included in the environmental document should accomplish the following objectives: 1) public disclosure of potential impacts resulting from the facility due to renewal of the plant's operating license, 2) presentation of the renewal applicant's demonstration that the issue is within the bounds of the GEIS or plant specific analysis, and 3) presentation of staff analysis and conclusions.

1. If the facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS, a statement to that effect, accompanied by a brief rationale and appropriate references to the GEIS, is sufficient.
2. If the facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, additional discussion will be required. Where impacts are small, a statement to that effect, accompanied by a brief rationale, is sufficient. Where impacts are moderate but mitigation will reduce the impact to a small impact, a statement that the renewal applicant is committed to meeting applicable guides and standards and to following good practices

and that under these conditions impacts should be small, will be sufficient. The reviewer should discuss the applicant's commitments to meet applicable Federal, State, and local standards, and other commitments to which the applicant has committed. The reviewer should prepare a list of verified modifications and should describe mitigating actions that the applicant should take. Large impacts or moderate impacts that cannot be reduced to small impacts, should be discussed in detail.

- B. The reviewer will provide data or will ensure that data will be provided in the following areas:
 - 1. Descriptive material on the terrestrial ecology of the site and vicinity needed to support the analyses.
 - 2. A list of the applicant's commitments and the staff's recommendations of practices to limit adverse environmental impacts of license renewal activities.

VI. REFERENCES

- 1. U. S. Environmental Protection Agency, "Processes, Procedures and Methods to Control Pollution Resulting From All Construction Activity," EPA 430-9-73-007, Office of Air and Water Programs, Washington, D.C., 1973.
- 2. M. B. Boyd et al., "Disposal of Dredge Spoil-Problem Identification and Assessment of Research Program Development," Technical Report H-72-8, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi, 1972.
- 3. U.S. Army Corps of Engineers, "Environmental Protection Measures for Construction Projects", Corps of Engineers, Seattle District, Seattle, Washington, 1971.

4. D. B. Emerson et al., "General Environmental Guidelines for Evaluating and Reporting the Effects of Nuclear Power Plant Site Preparation, Plant and Transmission Facilities Construction," prepared by Hittman Associates, Inc., for the Atomic Industrial Forum, Inc., Washington, D.C. 1974.

C.2.3 SOCIOECONOMICS--HOUSING DURING REFURBISHMENT AND REFUELING/MAINTENANCE OUTAGES

RESPONSIBILITIES:

Primary: PDLR

Secondary:

I. PURPOSE AND SCOPE

The purpose of this section is to direct the staff's review of the license renewal applicant's assessment of the impacts of license renewal on housing in the site region¹ of the licensed facility. Potential population-driven impacts on local housing during the refurbishment period and during periodic plant refueling and maintenance outages are discussed in Sections 3.7.2 and 4.7.2 of the GEIS.

The scope of this section is limited to the potential for impacts on local housing (e.g., availability, cost, quality) caused by those proposed plant refurbishment and refueling/maintenance activities associated with plant license renewal in the vicinity of those plants that do not fit within the population-related parameters discussed in Sections 3.7.2 and 4.7.2 of the GEIS. Housing impact during refurbishment and refueling/maintenance outages has been classified as a Category 2 issue. Other socioeconomic issues that have been classified as Category 1 issues, and therefore need not be addressed further, are listed in Table B.1 of this document.

II. REQUIRED DATA AND INFORMATION

The kinds of data and information required will be affected by site- and plant-specific factors, and the degree of detail will be modified according to the anticipated magnitude of the potential impacts. The

¹The reviewer will be guided by the definition of the site region contained in Regulatory Guide 4.2, Supplement 1. For purposes of this ESRP-LR, it can be assumed that the site region includes (1) the county in which the plant is located and (2) those portions of surrounding counties, including cities and urbanized areas (generally up to 50 miles from the station site), that could potentially experience significant housing impacts.

following housing-related data or information, which may be obtained from the ER, and supplemented as necessary from appropriate Federal, State, and local agencies, and housing-related business entities, will be examined:

- A. Population density and city size data with which the staff can determine whether the plant is situated within the bounds of population density and proximity to urban centers as defined in Section 3.7.2.3 of the GEIS.
- B. Existence of growth controls that limit housing development.¹ If the population density and city size data are within the bounds of the GEIS Section 3.7.2.3 and no growth control limits exist, then items C, D, E, F, and G (below) may be omitted.
- C. Number, types, and locations of housing units, including year-round, seasonal, second homes, mobile homes, hotel/motels, and public housing units and such housing characteristics as the vacancy rates for such units, monthly median gross rentals and costs, sites of units, and quality.
- D. Population change and economic development that could affect vacancy rates, rental prices, and the potential for inflation.
- E. Location of existing and projected housing and trailer parks; current temporary worker housing patterns; location, type, and value of current housing units; and forecasted location preferences of new personnel.
- F. Potential for converting housing units.
- G. The number of workers and duration of assignment for the refurbishment period and for periodic refueling/maintenance outages.

¹Growth controls that limit housing development typically consist of temporary moratoria on residential construction or ordinances that limit the annual number of new housing by relating residential construction to the adequacy or carrying capacity of local public services.

III. ANALYSIS PROCEDURE

The reviewer will perform the following steps to evaluate the renewal applicant's assessment of the impacts on housing during refurbishment and refueling/ maintenance outages:

- A. Check the sufficiency of relevant information provided in the renewal applicant's ER by comparing it with the list of required data and information given in Section II. Any missing information can be resolved by requesting additional information from the applicant.
- B. Review the renewal applicant's determination of whether the conditions at the site are bounded by the GEIS envelope. A plant is bounded by the GEIS envelope if:
 - 1. the plant is located within 20 miles of a city of 25,000 or more persons, or
 - 2. the plant is located within 50 miles of a city of 100,000 or more persons, or
 - 3. the population of the area within 20 miles of the plant is 75,000 or more persons, or
 - 4. the population of the area within 50 miles of the plant is 1,500,000 or more persons, or
 - 5. the population of the area within 20 miles of the plant is 50,000 or more persons and within 50 miles of the plant is 400,000 or more persons
 - 6. and, the plant is not in an area in which growth control measures that limit housing development are in effect.

If the GEIS bounds the site-specific impacts, the review of this issue is complete and steps C, D. and E (below) may be omitted.

C. The reviewer will verify the additional data submitted by the renewal applicant. The reviewer will next conduct an initial screening of housing characteristics in the region of the site to make a preliminary determination of potentially affected subregions and communities. At a minimum, the following factors should be considered:

- forecasted location preferences of new personnel
- forecasted number of personnel and duration of assignment during plant refurbishment maintenance outages
- location of existing and projected housing rental markets in the region
- transportation accessibility
- number and types of housing units
- locally enacted measures that limit housing development

D. The reviewer will next describe any impacted areas of the region and the associated communities and will predict the extent and magnitude of such impacts in terms of availability, inflation, changes in housing stock, accessibility to resident population, and length of impact during the post-refurbishment and refueling/maintenance outages. Where the effect on housing is expected to be minor, impacts may be described in qualitative terms. Where adverse impacts (i.e., impacts that should be mitigated or avoided) can be predicted, the reviewer will conduct a more detailed analysis and will, where practical, make quantitative estimates of the magnitude of the impacts.

- E. The reviewer will identify the renewal applicant's commitments to mitigate housing impacts if any such commitments have been made.

IV. EVALUATION

Evaluation of identified impacts will result in one of the following determinations:

- A. The facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS for this issue. The environmental impacts are therefore bounded by the analysis in the GEIS. No further analysis is required.
- B. The facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, and one of the following measures is required, as applicable:
 - 1. The impact is small and mitigation is not required. When all impacts are of this nature, the reviewer will recommend operation as proposed.
 - 2. The impact is moderate but can be mitigated by specific design or procedural modifications that the renewal applicant has identified and determined to be practical and to which the applicant has committed. The reviewer should prepare a list of verified modifications and recommended measures and controls to limit the corresponding impact, and provide the list to the NRC project manager.
 - 3. The impact is large or moderate and cannot be mitigated to a small impact. When impacts of this nature are identified, the reviewer should investigate practical design or procedural modifications that would avoid the impact. If no alternatives can be identified, the reviewer will be responsible for providing information to the NRC project manager.

V. INPUT TO THE ENVIRONMENTAL DOCUMENT

- A. Information to be included in the environmental document should accomplish the following objectives: (1) public disclosure of potential impacts resulting from the facility due to renewal of the plant's operating license, (2) presentation of the renewal applicant's demonstration that the issue is within the bounds of the GEIS or plant-specific analysis, and (3) presentation of staff analysis and conclusions.
1. If the facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS, a statement to that effect, accompanied by a brief rationale and appropriate references to the GEIS, is sufficient.
 2. If the facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, additional discussion will be required. Where impacts are small, a statement to that effect, accompanied by a brief rationale, is sufficient. Where impacts are moderate but mitigation will reduce the impact to a small impact, a statement that the renewal applicant is committed to meeting applicable guides and standards and to following good practices and that under these conditions impacts should be small, will be sufficient. The reviewer should discuss the applicant's commitments to meet applicable Federal, State, and local standards, and should describe mitigating actions that the applicant should take. Large impacts or moderate impacts that cannot be reduced to small impacts, should be discussed in detail.
- B. The reviewer will provide data or will ensure data will be provided in the following areas:
1. The scope of coverage and the objectives of the analysis.

2. The steps taken in the staff analysis and reference to methodologies employed.
3. The findings regarding housing impacts during the refurbishment and refueling/maintenance outages periods. The level of detail provided will be related to the severity of the anticipated impact.
4. Identification and assessment of potential mitigation measures.

VI. REFERENCES

1. K. Branch, D. A. Hooper, J. Thompson, and J. Creighton, "Guide to Social Assessment: A Framework for Assessing Social Change," Social Impact Assessment Series, No. 11, Boulder, Co, Westview Press, 1984.
2. K. Finsterbusch, and C. P. Wolf, eds., "Methodology of Social Impact Assessment," Second Edition, Stroudsburg, Pa, Hutchinson Ross Publishing Co., 1981.
3. F. L. Leistritz, and S. H. Murdock, "The Socioeconomic Impact of Resource Development: Methods for Assessment," Boulder, Co, Westview Press, 1981.

C.2.4 GROUNDWATER QUALITY AND USE

C.2.4.1 GROUNDWATER USE DURING OPERATION

RESPONSIBILITIES:

Primary: PDLR

Secondary:

I. PURPOSE AND SCOPE

The purpose of this section is to direct the staff's review of the license renewal applicant's identification and assessment of the environmental impacts of groundwater withdrawal and use during the license renewal period. The issues to be addressed by the applicant are identified in the GEIS for license renewal.

The scope of this section is limited to consideration of the Category 2 hydrological issue concerning groundwater use conflicts during operation, including operational dewatering (GEIS Sections 4.2.2.1.1, 4.2.2.1.2, and 4.2.2.1.4).

A number of hydrological issues (surface water and groundwater) are addressed and resolved in the GEIS for license renewal. These issues have been determined to be Category 1 issues and are listed in Table B.1.

II. REQUIRED DATA AND INFORMATION

The kinds of data and information required will be affected by site- and plant-specific factors, and the degree of detail will be modified according to the anticipated magnitude of the potential impacts.

The following types of data and information will generally be required to assess the presence and magnitude of groundwater use conflicts during operation:

- A. Identification of any operational groundwater uses or operational dewatering activities (from the ER). If none, items B, C, D, E, and F (below) may be omitted.
- B. Locations of onsite wells, depths of wells, and operational pumping capacities and durations (from the ER). If pumping rates are less than 100 gpm and Ranney wells are not used, items C, D, E, and F (below) may be omitted.
- C. Descriptions of groundwater aquifers under the site, including characteristics needed to determine the size of cones of depression associated with onsite wells (from the ER).
- D. Determination of sizes of cones of depression associated with onsite wells (from the ER).
- E. Locations of any offsite wells (existing and known future wells) within the cones of depression of onsite wells, and the depths, pumping capacities, and water needs for such wells (from the ER). If no such offsite wells are identified, item F (below) may be omitted.
- F. Any mitigation measures proposed by the applicant to avoid or minimize any groundwater use impacts (from the ER).

The following standards and guides have been identified as applicable:

- State water laws and water rights
- Clean Water Act
- Safe Drinking Water Act

III. ANALYSIS PROCEDURE

The reviewer will perform the following steps to evaluate the renewal applicant's assessment of groundwater use conflicts during operation, including operational dewatering:

- A. Check the sufficiency of relevant information provided in the applicant's ER by comparing it with the list of required data and information given in Section II. Any missing information can be resolved by requesting additional information from the applicant.
- B. Determine whether groundwater is used at the plant or whether dewatering operations are conducted during plant operation. If not, this issue is not applicable to the plant, and steps C, D, and E (below) may be omitted.
- C. Review the renewal applicant's determination of whether the conditions at the site are bounded by the GEIS envelope, which is as follows:
 - Plants that do not use Ranney wells and either do not pump 100 or more gallons per minute of groundwater or do not have private wells located within the cones of depression of the plant wells are bounded by the GEIS.

If the GEIS bounds the site-specific impacts, the review of the issue is complete and steps D and E (below) may be omitted.

- D. Review the renewal applicant's determination of whether operational groundwater use or dewatering activities will impact offsite groundwater users (current and known future users). This determination should be based on the amount of water withdrawn on site, the recharge capabilities of the aquifer, locations and elevations of offsite wells, and water needs of other water users. If it is established that offsite groundwater users are not substantially affected, the analysis may be considered complete and step E (below) may be omitted.
- E. Review measures proposed by the renewal applicant to avoid or mitigate anticipated impacts. Estimate the effectiveness of such measures. If protection against anticipated impacts is insufficient

or unacceptable, develop staff positions on measures that would be considered acceptable.

The reviewer may also need to consult with appropriate Federal, State, and local agencies to determine currently applicable regulations and guides, and to ensure that the applicant has made commitments to comply with applicable regulations and guides. To the extent practicable, contacts with outside agencies should be coordinated with the PDLR to avoid unnecessary duplication of effort.

IV. EVALUATION

Evaluation of identified impacts will result in one of the following determinations:

- A. The facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS for this issue. The environmental impacts are therefore bounded by the analysis in the GEIS. No further analysis is required.
- B. The facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, and one of the following measures is required, as applicable:
 - 1. The impact is small and mitigation is not required. When all impacts are of this nature, the reviewer will recommend operation as proposed.
 - 2. The impact is moderate but can be mitigated by specific design or procedural modifications that the renewal applicant has identified and determined to be practical and to which the applicant has committed. The reviewer should prepare a list of verified modifications and recommended measures and controls to limit the corresponding impact, and provide the list to the NRC project manager.

3. The impact is large or moderate and cannot be mitigated to a small impact. When impacts of this nature are identified, the reviewer should investigate practical design or procedural modifications that would avoid the impact. If no alternatives can be identified, the reviewer will be responsible for providing the information to the NRC project manager.

V. INPUT TO THE ENVIRONMENTAL DOCUMENT

Information to be included in the environmental document should accomplish the following objectives: (1) public disclosure of potential impacts resulting from the facility due to renewal of the plant's operating license, (2) presentation of the renewal applicant's demonstration that the issue is within the bounds of the GEIS or plant-specific analysis, and (3) presentation of staff analysis and conclusions.

- A. If the facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS, a statement to that effect, accompanied by a brief rationale and appropriate references to the GEIS, is sufficient.
- B. If the facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, additional discussion will be required. Where impacts are small, a statement to that effect, accompanied by a brief rationale, is sufficient. Where impacts are moderate but mitigation will reduce the impact to a small impact, a statement that the renewal applicant is committed to meeting applicable guides and standards and to following good practices and that under these conditions impacts should be small, will be sufficient. The reviewer should discuss the applicant's commitments to meet applicable Federal, State, and local standards, and should describe mitigating actions that the applicant should take. Large impacts or moderate impacts that cannot be reduced to small impacts, should be discussed in detail.

VI. REFERENCES

1. U.S. Nuclear Regulatory Commission, "Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants," Draft Report for Comment, Vol. 1 Main Report, Vol. 2 Appendices, NUREG-1437, August 1991.

C.2.4.2 GROUNDWATER QUALITY DEGRADATION DURING OPERATION AT COOLING POND SITES

RESPONSIBILITIES:

Primary: PDLR

Secondary:

I. PURPOSE AND SCOPE

The purpose of this section is to direct the staff's review of the license renewal applicant's identification and assessment of the impacts of groundwater degradation resulting from seepage of cooling pond water. The issues to be addressed by the applicant are identified in the GEIS for license renewal.

The scope of this section is limited to consideration of the Category 2 hydrological issue concerning degradation of groundwater quality during operation at sites using closed-cycle cooling ponds (GEIS Section 4.4.3). The primary concern here is the potential degradation of groundwater as a result of seepage of cooling pond water into underground aquifers.

II. REQUIRED DATA AND INFORMATION

The kinds of data and information required will be affected by site- and plant-specific factors, and the degree of detail will be modified according to the anticipated magnitude of the potential impacts.

The following types of data and information will generally be required to assess the potential for the degradation of groundwater quality resulting from seepage of cooling pond water during operation for sites with cooling ponds:

- A. The use of closed-cycle cooling ponds. If such a pond is not used, items B, C, D, E, F, G, and H (below) may be omitted.
- B. The location of the plant. If the plant site is not located inland, items C, D, E, F, G, and H (below) may be omitted.
- C. Cooling pond characteristics (e.g., use of liners, use of impermeable materials, impermeable natural soils) that would prevent infiltration into local aquifers (from the ER).
- D. Types and concentrations of impurities in the cooling pond water, and the chemistry of soils along pathways to local aquifers (from the ER).
- E. Characteristics, including quality of water of local aquifers, that could be affected by infiltration of cooling pond water (from the ER).
- F. Federal, State, and local groundwater quality requirements, with emphasis on any changes to these requirements that may have occurred during the plant's operational period (from the ER and consultations with appropriate governmental agencies).
- G. Identification and characterization of all offsite groundwater users who could be impacted by degradation of aquifers (from the ER).
- H. Mitigation measures proposed by the applicant to avoid or minimize any groundwater degradation impacts (from the ER).

The following standards and guides have been identified as applicable:

- State water laws and water rights
- River Basin Commission guidelines and regulations
- Clean Water Act
- Safe Drinking Water Act

III. ANALYSIS PROCEDURE

The reviewer will perform the following steps to evaluate the renewal applicant's assessment of degradation of groundwater quality during operation for sites using closed-cycle cooling ponds:

- A. Check the sufficiency of relevant information provided in the renewal applicant's ER by comparing it with the list of required data and information given in Section II. Any missing information can be resolved by requesting additional information from the applicant.
- B. Determine whether a closed-cycle cooling pond is used at the plant. If not, this issue is not applicable, and steps C, D, E, and F (below) may be omitted.
- C. Review the renewal applicant's determination of whether the conditions at the site are bounded by the GEIS envelope, which is as follows:
 - Plants located at sites surrounded by salt marshes are bounded by the GEIS (from GEIS Section 4.4.3).

If the GEIS bounds the site-specific impacts, the review of the issue is complete and steps D, E, and F (below) may be omitted.

- D. Review the renewal applicant's determination of whether the cooling ponds could contaminate groundwater. This determination should be based primarily on the concentration of contaminants in the cooling pond water and characteristics of intervening soils and rock. If such contamination is determined to be highly unlikely, the analysis may be considered complete and steps E and F (below) may be omitted.

In performing this and the following assessments, give careful consideration to actual experience of the station over the past 20 or more years of operation. Data based on operational experience are considered more reliable than data based on predictions.

- E. Review the renewal applicant's assessment of the types and magnitudes of contamination introduced into the aquifer. Compare estimated contamination levels with Federal and State groundwater quality standards and with water quality requirements of other potentially affected users of groundwater. If Federal and State standards are met, and other groundwater users are not affected, the analysis is considered complete and step F (below) may be omitted.
- F. Review measures proposed by the renewal applicant to avoid or mitigate anticipated impacts. Estimate the effectiveness of such measures. If protection against anticipated impacts is insufficient or unacceptable, develop staff positions on measures that would be considered acceptable.

The reviewer may also need to consult with appropriate Federal, State, and local agencies to determine currently applicable regulations and to ensure that the applicant has made commitments to comply with applicable regulations. To the extent practicable, contacts with outside agencies should be coordinated with the PDLR to avoid unnecessary duplication of effort.

IV. EVALUATION

Evaluation of identified impacts will result in one of the following determinations:

- A. The facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS for this issue. The environmental impacts are therefore bounded by the analysis in the GEIS. No further analysis is required.

- B. The facility and/or planned activities generated the renewal of the plant's operating license are not bounded by the GEIS, and one of the following measures is required, as applicable:
1. The impact is small and mitigation is not required. When all impacts are of this nature, the reviewer will recommend operation as proposed.
 2. The impact is moderate but can be mitigated by specific design or procedural modifications that the renewal applicant has identified and determined to be practical and to which the applicant has committed. The reviewer should prepare a list of verified modifications and recommended measures and controls to limit the corresponding impact, and provide the list to the NRC project manager.
 3. The impact is large or moderate and cannot be mitigated to a small impact. When impacts of this nature are identified, the reviewer should investigate practical design or procedural modifications that would avoid the impact. If no alternatives can be identified, the reviewer will be responsible for providing the information to the NRC project manager.

V. INPUT TO THE ENVIRONMENTAL DOCUMENT

Information to be included in the environmental document should accomplish the following objectives: (1) public disclosure of potential impacts resulting from the facility due to renewal of the plant's operating license, (2) presentation of the renewal applicant's demonstration that the issue is within the bounds of the GEIS or plant-specific analysis; and (3) presentation of staff analysis and conclusions.

- A. If the facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS, a statement to that effect, accompanied by a brief rationale and appropriate references to the GEIS, is sufficient.
- B. If the facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, additional discussion will be required. Where impacts are small, a statement to that effect, accompanied by a brief rationale, is sufficient. Where impacts are moderate but mitigation will reduce the impact to a small impact, a statement that the renewal applicant is committed to meeting applicable guides and standards and to following good practices and that under these conditions impacts should be small, will be sufficient. The reviewer should discuss the applicant's commitments to meet applicable Federal, State, and local standards, and should describe mitigating actions that the applicant should take. Large impacts or moderate impacts that cannot be mitigated to small impacts should be discussed in detail.

VI. REFERENCES

- 1. U. S. Nuclear Regulatory Commission, "Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants," Draft Report for Comment, Vol. 1 Main Report, Vol. 2 Appendices, NUREG-1437, August 1991.
- 2. U. S. Nuclear Regulatory Commission, "Environmental Standard Review Plans for the Environmental Review of Construction Permit Applications for Nuclear Power Plants," NUREG-0555, May 1979.

C.2.5. PUBLIC HEALTH

C.2.5.1 PUBLIC HEALTH--THERMOPHILIC MICROORGANISMS

RESPONSIBILITIES:

Primary: PDLR

Secondary:

I. PURPOSE AND SCOPE

The purpose of this section is to direct the staff's review of the license renewal applicant's evaluation of the presence of thermophilic microorganisms (e.g., Salmonella sp., Shigella sp., Pseudomonas aeruginosa, Legionella sp., Naegleria, Acanthamoeba and thermophilic fungi), that have the potential for posing a hazard to public health.

The scope of this section includes those plants that use a cooling pond, lake, or canal, or that have once-through cooling systems that discharge to a small river (average flow less than 2830 m³/s). GEIS Section 4.3.6 discusses this issue.

II. REQUIRED DATA AND INFORMATION

The kinds of data and information required will be affected by site- and plant-specific factors, and the degree of detail will be modified according to the anticipated magnitude of the potential impacts. Data and information required for the evaluation of the existence, and potential for deleterious impacts, of thermophilic microorganisms include the following:

- A. Whether the plant uses cooling pond, lake, or canal, or discharges to a small river (flow rate less than $2830 \text{ m}^3/\text{s}$). If not, items B, C, D, E, and F (below) may be omitted.
- B. Available information on the occurrence of these pathogens, and factors germane to their presence in aquatic environs, which are potentially affected by plant operation.
- C. Temperature regimes of aquatic environs receiving warmer water.
- D. Information on the level of concentrations of these organisms that is considered hazardous to public health. Note: Occupational Safety and Health Administration (OSHA) or other legal standards for exposure to microorganisms do not exist at present.
- E. Information on potential control measures.
- F. Information on discussions with State health officials related to concerns about thermophilic microorganisms associated with the plant operation.

III. ANALYSIS PROCEDURE

The reviewer will perform the following steps to evaluate the renewal applicant's assessment of the impact of thermophilic microorganisms.

- A. Check the sufficiency of relevant information provided in the renewal applicant's ER by comparing it with the list of required data and information given in Section II. Any missing information can be resolved by requesting additional information from the applicant.
- B. Review the renewal applicant's determination of whether the conditions at the site are bounded by the GEIS envelope, which is as follows:

- Plants that do not use^a cooling pond, lake, or ~~✓~~ canal, and do not discharge into a small river (average flow less than 2830 m³/s) are bounded by the GEIS.

If the GEIS bounds the site-specific impacts, the review of this issue is complete and steps C and D (below) may be omitted.

- C. The reviewer should be aware of the results of analyses made for the presence of deleterious thermophilic microorganisms in the aquatic environment surrounding the plant. These microorganisms include the enteric pathogens *Salmonella* sp. and *Shigella* sp., as well as *Pseudomonas aeruginosa* and thermophilic fungi. In addition, analyses for the presence of unusually high concentrations of the normally present *Legionella* sp. (Legionnaires' disease bacteria) and the free-living amoebae of the genera *Naegleria* and *Acanthamoeba* should be known.
- D. The reviewer should be aware of any concerns of State health officials about thermophilic microorganisms associated with the plant operation.

IV. EVALUATION

Evaluation of identified impacts will result in one of the following determinations:

- A. The facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS for this issue. The environmental impacts are therefore bounded by the analysis in the GEIS. No further analysis is required.
- B. The facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, and one of the following measures is required, as applicable:

1. The impact is small and mitigation is not required. When all impacts are of this nature, the reviewer will recommend operation as proposed.
2. The impact is moderate but can be mitigated by specific design or procedural modifications that the renewal applicant has identified and determined to be practical and to which the applicant has committed. The reviewer should prepare a list of verified modifications and recommended measures and controls to limit the corresponding impact, and provide the list to the NRC project manager.
3. The impact is large or moderate and cannot be mitigated to a small impact. When impacts of this nature are identified, the reviewer should investigate practical design or procedural modifications that would avoid the impact that could be considered practical. If no alternatives can be identified, the reviewer will be responsible for providing information to the NRC project manager.

V. INPUT TO THE ENVIRONMENTAL DOCUMENT

- A. Information to be included in the environmental document should accomplish the following objectives: (1) public disclosure of potential impacts resulting from the facility due to renewal of the plant's operating license, (2) presentation of the renewal applicant's demonstration that the issue is within the bounds of the GEIS or plant-specific analysis, and (3) presentation of staff analysis and conclusions.
 1. If the facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS, a statement to that effect, accompanied by a brief rationale and appropriate references to the GEIS, is sufficient.

2. If the facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, additional discussion will be required. Where impacts are small, a statement to that effect, accompanied by a brief rationale, is sufficient. Where impacts are moderate but mitigation will reduce the impact to a small impact, a statement that the renewal applicant is committed to meeting applicable guides and standards and to following good practices and that under these conditions impacts should be small, will be sufficient. The reviewer should discuss the applicant's commitments to meet applicable Federal, State, and local standards, and should describe mitigating actions that the applicant should take. Large impacts or moderate impacts that cannot be reduced to small impacts, should be discussed in detail.

VI. REFERENCE

1. R.L. Tyndall, G. Kuhl, and J. Beeltheld, "Chlorination as an Effective Treatment for Controlling Pathogenic Naegleria in Cooling Water of an Electric Power Plant," in Water Chlorination, Vol. 4, Book 2, 1097-1103, 1983.

C.2.5.2 PUBLIC HEALTH--ELECTRIC SHOCK

RESPONSIBILITIES:

Primary: PDLR

Secondary:

I. PURPOSE AND SCOPE

The purpose of this section is to direct the staff's review of the license renewal applicant's assessment of the environmental impacts of electric shock from voltages induced in objects near operating high-voltage transmission lines (HVTLS).

The scope of this section includes only those portions of the HVTLS that connect the plant with the regional electric transmission grid. The scope also includes only acute shock effects. Other HVTL issues, including the issue of chronic health effects from HVTL electric and magnetic fields, are treated as Category 1 issues in the GEIS in Section 4.5 (see Part B of this document).

II. REQUIRED DATA AND INFORMATION

The kinds of data and information required will be affected by site- and plant-specific factors, and the degree of detail will be modified according to the anticipated magnitude of the potential impacts. Data and information required for evaluation of the existence of, or potential for, electric shock from HVTLS include the following:

- A. A demonstration that the HVTLS meet the National Electric Safety Code. If this demonstration can be made, items B, C, D, E, F, G, and H (below) may be omitted.
- B. National Electric Safety Code (current edition) and applicable State standards.

- C. HVTL electrical design and operating parameters, including operating voltage, operating current, line capacity, conductor type, conductor configuration and spacing, conductor clearances, and electric and magnetic fields at the center and edge of the right of way.
- D. Complaints to the applicant and to the relevant regulatory authority concerning electric shock from objects near HVTLs.
- E. Descriptions, including photos and maps, of large or linear metal objects near HVTLs, including buildings, fences, railroad tracks, and irrigation pipes.
- F. Grounding procedures for stationary objects along the rights of way.
- G. Changes since initial licensing including, operating voltage changes and nearby land-use changes.
- H. Potential for electric shock from large vehicles stopped under the HVTL.

III. ANALYSIS PROCEDURE

The reviewer will perform the following steps to evaluate the renewal applicant's assessment of the potential impact of electric shock from high-voltage transmission lines:

- A. Check the sufficiency of relevant information provided in the renewal applicant's ER by comparing it with the list of required data and information given in Section II. Any missing information can be resolved by requesting additional information from the applicant.
- B. Review the renewal applicant's determination of whether the conditions at the site are bounded by the GEIS envelope, which is as follows:

- Plants with high-voltage transmission lines that meet the National Electric Safety Code recommendations concerning the prevention of electric shock from induced currents are bounded by the GEIS.

If the GEIS bounds the site-specific impacts, the review of this issue is complete.

IV. EVALUATION

Evaluation of identified impacts will result in one of the following determinations:

- A. The facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS for this issue. The environmental impacts are therefore bounded by the analysis in the GEIS. No further analysis is required.
- B. The facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, and one of the following measures is required, as applicable:
 - 1. The impact is small and mitigation is not required. When all impacts are of this nature, the reviewer will recommend operation as proposed.
 - 2. The impact is moderate but can be mitigated by specific design or procedural modifications that the renewal applicant has identified and determined to be practical and to which the applicant has committed. The reviewer should prepare a list of verified modifications and recommended measures and controls to limit the corresponding impact, and provide the list to the NRC project manager.

3. The impact is large or moderate and cannot be mitigated to a small impact. When impacts of this nature are identified, the reviewer should investigate practical design or procedural modifications that would avoid the impact. If no alternatives can be identified, the reviewer will be responsible for providing the information to the NRC project manager.

V. INPUT TO THE ENVIRONMENTAL DOCUMENT

Information to be included in the environmental document should accomplish the following objectives: (1) public disclosure of potential impacts resulting from the facility due to renewal of the plant's operating license, (2) presentation of the renewal applicant's demonstration that the issue is within the bounds of the GEIS or plant-specific analysis, and (3) presentation of staff analysis and conclusions.

- A. If the facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS, a statement to that effect, accompanied by a brief rationale and appropriate references to the GEIS, is sufficient.
- B. If the facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, additional discussion will be required. Where impacts are small, a statement to that effect, accompanied by a brief rationale, is sufficient. Where impacts are moderate but mitigation will reduce the impact to a small impact, a statement that the renewal applicant is committed to meeting applicable guides and standards and to following good practices and that under these conditions impacts should be small, will be sufficient. The reviewer should discuss the applicant's commitments to meet applicable Federal, State, and local standards, and should describe mitigating actions that should be taken by the applicant. Large impacts or moderate impacts that cannot be mitigated to small impacts should be discussed in detail.

C.2.6 SOLID WASTE MANAGEMENT

RESPONSIBILITIES:

Primary: PDLR

Secondary:

I. PURPOSE AND SCOPE

The purpose of this section is to direct the staff's review of the license renewal applicant's assessment of solid radioactive waste management systems in order to determine the impact of storing these wastes and to determine compliance with applicable standards. The applicant's assessment should identify anticipated volumes of waste generated and should describe the waste storage systems to be employed.

The scope of this section includes consideration of long-term onsite storage of low-level radioactive waste when permanent offsite disposal is not available and how this increased storage affects the surrounding environment. Several of the issues surrounding solid waste management have been considered in the GEIS and are determined to be Category 1 issues. These issues are listed in Table B.1.

The scope of this section is limited to consideration of the Category 2 issue concerning long-term onsite storage of routine and refurbishment radioactive waste. Offsite disposal facilities are planned to handle refurbishment and normal operations waste streams from an additional 20 years past the original licensed operating period. However, if these sites are not available, plants in affected compact regions or unaffiliated States must plan for extended interim storage for an indefinite period. This review should consider the environmental impacts of such extended interim storage.

II. REQUIRED DATA AND INFORMATION

The kinds of data and information required will be affected by site- and station-specific factors, and the degree of detail will be modified according to the anticipated magnitude of the potential impacts. The following data or information will usually be required:

- A. A demonstration that the plant will have access to a low-level radioactive waste disposal facility. If such access is demonstrated, items B, C, D, E, and F (below) may be omitted.
- B. A description of the systems (both temporary and permanent) to be provided (constructed).
- C. Anticipated quantity and characteristics of the wastes.
- D. Ultimate disposal of treated waste materials.
- E. Federal, State, and regional standards and regulations for storage of radioactive wastes.
- F. Applicable memoranda of understanding between State governments and the NRC.

III. ANALYSIS PROCEDURE

The reviewer will perform the following steps to evaluate the renewal applicant's assessment of the impacts of solid radioactive waste management:

- A. Check the sufficiency of relevant information provided in the renewal applicant's ER by comparing it with the list of required data and information given in Section II. Any missing information can be resolved by requesting additional information from the applicant.

B. Review the renewal applicant's determination of whether the conditions at the site are bounded by the GEIS envelope, which is as follows:

- Plants that will have access to a low-level radioactive waste disposal facility are bounded by the GEIS.

If the GEIS bounds the site-specific impacts, the review of this issue is complete and steps C and D (below) may be omitted.

C. The reviewer should consider the potential for short- and long-term damage to terrestrial ecosystems, especially for movement of toxic materials to groundwater, and transfer into food chains. As necessary, the reviewer will evaluate the renewal applicant's analysis of all effluents and will assess the applicant's compliance with applicable Federal and State quality criteria.

D. Procedures for waste-handling should also be analyzed. Proposed waste systems should be compared with other standard designs to determine the adequacy of the system for protecting the environment.

IV. EVALUATION

The reviewer will confirm that all potential impacts resulting from operation of waste systems have been addressed in this review or by other reviewers.

Evaluation of identified impacts will result in one of the following determinations:

A. The facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS for this issue. The environmental impacts are therefore bounded by the analysis in the GEIS. No further analysis is required.

- B. The facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, and one of the following measures is required, as applicable:
1. The impact is small and mitigation is not required. When all impacts are of this nature, the reviewer will recommend operation as proposed.
 2. The impact is moderate but can be mitigated by specific design or procedural modifications that the renewal applicant has identified and determined to be practical and to which the applicant has committed. The reviewer should prepare a list of verified modifications and recommended measures and controls to limit the corresponding impact, and provide the list to the NRC project manager.
 3. The impact is large or moderate and cannot be mitigated to a small impact. When impacts of this nature are identified, the reviewer should investigate practical design or procedural modifications that would avoid the impact. If no alternatives can be identified, the reviewer will be responsible for providing the information to the NRC project manager.

V. INPUT TO THE ENVIRONMENTAL DOCUMENT

- A. Information to be included in the environmental document should accomplish the following objectives: (1) public disclosure of potential impacts resulting from the facility due to renewal of the plant's operating license, (2) presentation of the renewal applicant's demonstration that the issue is within the bounds of the GEIS or plant-specific analysis, and (3) presentation of staff analysis and conclusions.
1. If the facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the

GEIS, a statement to that effect, accompanied by a brief rationale and appropriate references to the GEIS, is sufficient.

2. If the facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, additional discussion will be required. Where impacts are small, a statement to that effect, accompanied by a brief rationale, is sufficient. Where impacts are moderate but mitigation will reduce the impact to a small impact, a statement that the renewal applicant is committed to meeting applicable guides and standards and to following good practices and that under these conditions impacts should be small, will be sufficient. The reviewer should discuss the applicant's commitments to meet applicable Federal, State, and local standards, and should describe mitigating actions that should be taken by the applicant. Large impacts or moderate impacts that cannot be mitigated to small impacts should be discussed in detail.

B. The reviewer will provide data or will ensure that data will be made provided in the following areas:

1. A discussion of adverse impacts to ecosystems or to land use resulting from the storage of waste for an indefinite period.
2. A list of renewal applicant's commitments and the staff's recommendations of practices to limit adverse environmental impacts of operational activities.
3. A discussion of any deficiencies in operational monitoring programs that should be corrected by additional monitoring provisions.

VI. REFERENCES

None.

C.2.7 SURFACE WATER QUALITY DURING REFURBISHMENT

RESPONSIBILITIES:

Primary: PDLR

Secondary:

I. PURPOSE AND SCOPE

The purpose of this section is to direct the staff's review of the license renewal applicant's program to minimize impacts on surface water during refurbishment activities.

The scope of this section is limited to plants that will be conducting construction activities, for example, to create or expand onsite storage capability for spent fuel and/or low-level radioactive wastes generated during the license renewal period. The scope is further limited to the construction activities themselves and the time period during which the construction is performed. This is a Category 2 issue as discussed in GEIS Section 3.4.1. Internal plant refurbishment activities are not within the scope of this section.

II. REQUIRED DATA AND INFORMATION

The kinds of data and information required will be affected by site- and plant-specific factors, and the degree of detail will be modified according to the anticipated magnitude of the potential impacts.

The following data or information will usually be required:

- A. A determination as to whether major construction activities (e.g., the construction of onsite spent fuel and low-level radioactive waste storage facilities) will be needed as part of license renewal. If not, items B and C (below) may be omitted.

- B. A brief description of the facilities to be provided or expanded and the associated construction activities.
- C. A description of the applicant's program to mitigate potential impacts associated with the proposed construction activities.

The following regulation has been identified as applicable to this issue:

- Clean Water Act

III. ANALYSIS PROCEDURE

The reviewer will perform the following steps to evaluate the renewal applicant's assessment of the impact of construction activities on surface water quality:

- A. Check the sufficiency of relevant information provided in the renewal applicant's ER by comparing it with the list of required data and information given in Section II. Any missing information can be resolved by requesting additional information from the applicant.
- B. Review the renewal applicant's determination of whether the conditions at the site are bounded by the GEIS envelope, which is as follows:
 - Plants for which no major construction activities associated with license renewal will occur are bounded by the GEIS.

If the GEIS bounds the site-specific impacts, the review of this issue is complete and steps C and D (below) may be omitted.

- C. The reviewer should assess the applicant's proposed construction activities and proposed measures to mitigate any potential impacts on surface water in the vicinity of the site. Generally, it would be

expected that the applicant would comply with the requirements of Section 319 of the Clean Water Act (these requirements are often referred to as "best management practices"). The GEIS contains an analysis of the environmental impacts applicable to plants that comply with these requirements. The reviewer should refer to GEIS Section 3.4.1 for this analysis.

- D. If the renewal applicant has not committed to best management practices, the reviewer should perform an impact assessment in accordance with the guidance given in NUREG-0555.

IV. EVALUATION

Evaluation of identified impacts will result in one of the following determinations:

- A. The facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS for this issue. The environmental impacts are therefore bounded by the analysis in the GEIS. No further analysis is required.
- B. The facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, and one of the following measures is required, as applicable:
 - 1. The impact is small and mitigation is not required. When all impacts are of this nature, the reviewer will recommend operation as proposed.
 - 2. The impact is moderate but can be mitigated by specific design or procedural modifications that the renewal applicant has identified and determined to be practical and to which the applicant has committed. The reviewer should prepare a list of verified modifications and recommended measures and controls to

limit the corresponding impact, and provide the list to the NRC project manager.

3. The impact is large or moderate and cannot be mitigated to a small impact. When impacts of this nature are identified, the reviewer should investigate practical design or procedural modifications that would avoid the impact. If no alternatives can be identified, the reviewer will be responsible for providing the information to the NRC project manager.

V. INPUT TO THE ENVIRONMENTAL DOCUMENT

Information to be included in the environmental document should accomplish the following objectives: (1) public disclosure of potential impacts resulting from the renewal, (2) presentation of the renewal applicant's demonstration that the issue is within the bounds of the GEIS or plant specific analysis, and (3) presentation of staff analysis and conclusions.

- A. If the facility and/or planned activities generated by the renewal of the plant's operating license are bounded by the GEIS, a statement to that effect, accompanied by a brief rationale and appropriate references to the GEIS, is sufficient.
- B. If the facility and/or planned activities generated by the renewal of the plant's operating license are not bounded by the GEIS, additional discussion will be required. Where impacts are small, a statement to that effect, accompanied by a brief rationale, is sufficient. Where impacts are moderate but mitigation will reduce the impact to a small impact, a statement that the renewal applicant is committed to meeting applicable guides and standards and to following good practices and that under these conditions impacts should be small, will be sufficient. The reviewer should discuss the applicant's commitments to meet applicable Federal, State, and local standards, and should describe mitigating actions that should be taken by the

applicant. Large impacts or moderate impacts that cannot be mitigated to a small impact should be discussed in detail.

VI. REFERENCE

1. U. S. Nuclear Regulatory Commission, "Environmental Standard Review Plans for the Environmental Review of Construction Permit Applications for Nuclear Power Plants," NUREG-0555, May 1979.

C.2.8 CONSIDERATION OF ALTERNATIVES

RESPONSIBILITIES:

Primary: PDLR

Secondary:

I. PURPOSE AND SCOPE

The purpose of this section is to direct the staff's review of the license renewal applicant's assessment of alternatives to renewing the plant's operating license.

The GEIS evaluated alternatives to the renewal of a plant's operating license and generically determined that the renewal of a plant's operating license is preferable if the following conditions are met: (A) the plant is not located in California, Oregon, Washington, or Arizona, and (B) the economic cost of the renewal of the plants operating license does not exceed a threshold criteria specified in Appendix H to the GEIS. The scope of this section is limited to guidance for the review of whether the applicant meets these conditions and, if the applicant does not meet these conditions, guidance for the review of the most reasonable alternative to renewing the plant's operating license.

II. REQUIRED DATA AND INFORMATION

The kinds of data and information required will be affected by site- and plant-specific factors, and the degree of detail will be modified according to the anticipated magnitude of the potential impacts.

The following data or information will usually be required.

- A. An economic analysis which determines whether the threshold criteria in Appendix H of the GEIS is met. If the threshold criteria is met, item B (below) may be omitted.

- B. If the threshold criteria included in GEIS Appendix H cannot be met, justification for choosing the license renewal alternative is required.
- C. If the plant is located in California, Oregon, Washington, or Arizona, an assessment of geothermal generating capacity as an alternative to license renewal is required.

III. ANALYSIS PROCEDURE

The reviewer will perform the following steps to evaluate the renewal applicant's assessment of alternatives:

- A. Check the sufficiency of relevant information provided in the renewal applicant's ER by comparing it with the list of required data and information given in Section II. Any missing information can be resolved by requesting additional information from the applicant.
- B. Review the renewal applicant's determination of whether the cost of alternatives is bounded by the GEIS envelope, which is as follows:
 - Plants which meet the threshold criteria in Appendix H of the GEIS and which are not located in California, Oregon, Washington, or Arizona are bounded by the GEIS.

If the plant meets the threshold criteria in the Appendix H of the GEIS, step C (below) may be omitted.

If the plant is not located in California, Oregon, Washington, or Arizona, step D (below) may be omitted.

- C. The reviewer should evaluate the applicant's justification for choosing the license renewal alternative. This review should consist of three elements: identifying the most reasonable alternative, estimating the economic and environmental costs

associated with implementing the alternative, and comparing the economic and environmental costs of the alternative with projected costs associated with continued plant operation during the license renewal period.

- D. The reviewer should evaluate the applicant's cost analysis for the geothermal generating capacity alternative to renewal of the plant license. This review consists of two elements: estimating the environmental and economic costs associated with implementing the alternative, and comparing the environmental and economic costs of the alternative with projected costs associated with continued plant operation during the license renewal period.

IV. EVALUATION

Evaluation of the alternatives analyses will result in one of the following determinations:

- A. The plant is bounded by the GEIS.
- B. The threshold criteria provided in GEIS Appendix H is not met and a detailed cost analysis of the most reasonable alternative source of baseload electricity generation has shown plant license renewal to be justified as the most cost-effective option.
- C. The analysis of the geothermal generating capacity alternative has shown plant license renewal to be the most cost-effective option.

V. INPUT TO THE ENVIRONMENTAL DOCUMENT

Information to be included in the environmental document should accomplish the following objectives: (1) public disclosure of potential impacts resulting from the facility due to renewal of the plant's operating license, (2) presentation of the renewal applicant's demonstration that the issue is within the bounds of the GEIS or plant-specific analysis, and (3) presentation of staff analysis and conclusions.

- A. If the plant meets the threshold criteria given in GEIS Appendix H, the reviewer should state that the plant's cost analysis is bounded by the GEIS and should also give a brief rationale as to how the criteria are met as well as appropriate references to the GEIS.
- B. If the threshold criteria are not met, the reviewer should discuss how the most reasonable alternative was identified and the results of the cost analyses, including comparison with the costs of extended operation of the existing plant for the license renewal period.
- C. If the plant is located in California, Oregon, Washington, or Arizona, the reviewer should discuss the results of the alternatives analysis for geothermal generating capacity.

VI. REFERENCES

None.

PART D: CATEGORY 3 ISSUES

The definition developed for Category 3 issues is as follows:

A generic conclusion on the potential impact was not reached in the GEIS for any affected plants. The proposed modifications to 10 CFR Part 51 requires that the potential impact must be evaluated in each individual license renewal application.

Each applicant for license renewal must address the two Category 3 issues identified in the GEIS. In general, the information and supporting analysis are expected to show that Category 3 issues have no greater potential environmental impacts than those for the currently licensed and operating plant. It may also be possible to conclude that the potential environmental impact is diminished.

The two Category 3 issues are as follows:

- threatened and endangered species
- local traffic conditions during refurbishment

D.1 GENERAL INSTRUCTIONS TO REVIEWERS OF CATEGORY 3 ISSUES

An applicant for license renewal must gather information and evaluate the potential environmental impacts for each of the two Category 3 issues, identified above. The staff should determine whether the applicant has reviewed and prepared an evaluation for each Category 3 issue as part of a sufficient application.

As part of the NRC's responsibility under NEPA, the staff has already evaluated and reviewed the potential environmental impacts for the currently licensed plant and found them to be acceptable on the basis of the impacts and mitigating actions committed to as part of the current operating license. The focus of the analysis for these Category 3 issues should be on refurbishment and the additional operating activities generated by the renewal of the plant's operating license and the anticipated environmental impacts caused by the performance of those activities.

For each Category 3 issue, the reviewer should generally follow the review methodology outlined in Part D of this document. The reviewer should ensure that the applicant has furnished the data, performed the analysis, and evaluated the potential environmental impacts to permit the staff to review the issue.

D.2 SPECIFIC INSTRUCTIONS TO REVIEWERS OF CATEGORY 3 ISSUES

D.2.1 THREATENED AND ENDANGERED SPECIES

RESPONSIBILITIES:

Primary: PDLR

Secondary:

I. PURPOSE AND SCOPE

The purpose of this section is to direct the staff's review of the license renewal applicant's assessment of the impact of plant refurbishment and continued operation on endangered or threatened species.

The scope of this section includes both federally listed and candidate endangered or threatened species (see GEIS Section 4.2.1.1.1).

II. REQUIRED DATA AND INFORMATION

The kinds of data and information required will be affected by sit- and plant-specific factors, and the degree of detail will be modified according to the anticipated magnitude of the potential impacts.

Data required for the evaluation of the impact of refurbishment and continued operation on endangered or threatened species include the following:

- A. Endangered Species Act (16 USC 1531-1534). Endangered Species Act regulations (50 CFR Parts 17, 23, 222, 225-227, 402, 424, 450-453).

- B. Lists of endangered, threatened, and candidate species whose range includes the area of the plant and the area immediately surrounding the plant. These lists are available from the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.
- C. Copies of biological assessments prepared to meet the requirements of the Endangered Species Act.
- D. Records of additional actions taken by the applicant to meet the requirements of the Endangered Species Act.

III. ANALYSIS PROCEDURE

The staff's review should be guided by the requirements of the Endangered Species Act. The reviewer should ensure the following:

- A. The appropriate consultations have been carried out over the operating lifetime of the plant with the appropriate agencies to identify any new endangered, threatened, or candidate species.
- B. That appropriate biological assessments have been carried out.
- C. That appropriate additional actions under the Endangered Species Act have been or will be taken.

IV. EVALUATION

Evaluation of the impact of plant refurbishment and continued operation will result in one of the following findings:

- A. Endangered, threatened, or candidate species are not present and there is, therefore, no impact.

- B. Endangered, threatened, or candidate species are present, but there is no impact, so no mitigative actions are needed.
- C. Endangered, threatened, or candidate species are present and the applicant has taken appropriate measures, in consultation with the appropriate agencies, to mitigate the impact.
- D. The impact is large or moderate and cannot be successfully mitigated. When impacts of this nature are identified, the reviewer should investigate practical design or procedural modifications that would avoid the impact. If no alternatives can be identified, the reviewer will be responsible for providing the information to the NRC project manager.

V. INPUT TO THE ENVIRONMENTAL DOCUMENT

This section of the environmental document should present a list of any endangered, threatened, or candidate species present onsite or near the plant and any measures agreed upon with the appropriate agencies to mitigate the impacts of plant refurbishment and continued operation on endangered, threatened, or candidate species. If endangered, threatened, or candidate species do not inhabit the applicant's site, this fact should be clearly stated in the environmental document. The results of recent biological assessments should be summarized in the environmental document.

VI. REFERENCES

None.

D.2.2 SOCIOECONOMICS--TRANSPORTATION DURING REFURBISHMENT

RESPONSIBILITIES:

Primary: PDLR

Secondary:

I. PURPOSE AND SCOPE

The purpose of this section is to direct the staff's review of the license renewal applicant's assessment of the impacts of license renewal on regional and local transportation services in the site region¹ of the licensed facility. Potential impacts to local transportation networks during the refurbishment period are discussed in Section 3.7.4.2 of the GEIS.

The scope of this section includes the potential for traffic-related transportation impacts (e.g., traffic delays, accident rates, road damage, and maintenance) within the site region caused by those proposed plant refurbishment activities associated with license renewal. Transportation impacts during refurbishment have been classified as a Category 3 issue. Other socioeconomic issues that have been classified as Category 1 issues, and therefore need not be addressed further, are listed in Table B.1.

II. REQUIRED DATA AND INFORMATION

The kinds of data and information required will be affected by site- and station-specific factors, and the degree of detail will be modified according to the anticipated magnitude of the potential impacts. The following transportation-related data or information, which may be obtained from the ER and supplemented as necessary from appropriate Federal, State, and local agencies, will usually be required:

The reviewer will be guided by the definition of the site region contained in Regulatory Guide 4.2, Supplement 1. For purposes of this ESRP-LR, it can be assumed that the site region includes (1) the county in which the plant is located and (2) those portions of surrounding counties, including cities and urbanized areas (generally up to 50 miles from the station site), that could potentially experience significant transportation impacts.

- A. A description of the magnitude, origins, routes of workers and the duration of the proposed plant refurbishment outage.
- B. Significant changes that have occurred (and are projected to occur before refurbishment) to regional and local highway systems, including existing infrastructure (which should be accompanied by a map), carrying capacity, traffic flows and constraints, commuting patterns, and condition of roads and highways, since the operating license was issued.
- C. Residential and nonresidential development that has occurred (and is projected to occur before refurbishment) since the operating license was issued.
- D. Type, availability, and usage of public transportation.
- E. Modifications associated with refurbishment that might affect traffic flow to and from the plant site.

III. ANALYSIS PROCEDURE

The reviewers will perform the following steps:

- A. Check the sufficiency of relevant information provided in the renewal applicant's ER by comparing it with the list of required data and information given in Section II. If insufficient information has been provided, the reviewer should request additional information from the applicant.
- B. Assess the applicant's analysis of potential transportation impacts using the data provided by the applicant. The recommended approach is to make a best estimate of likely impacts, and also estimate maximum impacts, thereby bounding forecasted future transportation impacts. The applicant should conduct the analysis in several steps (these follow) and the reviewer should assess the analysis. The

analysis should use data developed at the time of the operating license review and should consider changes that have occurred during the plant's operational period to the present time, and should predict changes that may occur up to the time of the refurbishment.

1. Characterize historical and current transportation conditions in the site region in order to establish the baseline conditions. Use all transportation attributes reflected by data in Section II that may be impacted by refurbishment activities. Provide frequency distributions, cross-tabulations, and graphic representations of the data as appropriate.
2. On the basis of historic and projected trends, coupled with factors other than refurbishment that may affect changes in transportation, project baseline conditions without refurbishment.
3. Transportation impact will be influenced by such "demand" factors as the number of commuting workers, the number of workers per vehicle, the availability and use of public transportation or contractor-provided van pooling, and the use of transportation systems by secondary workers and dependents. These demand factors need to be compared with "supply" factors, such as the availability and condition of transportation infrastructure and roadways and transportation system management experience, personnel, and equipment. Determine transportation impacts and changes in levels of service, for example, traffic congestion and financial and other pressures on local and State jurisdiction to mitigate impact.

4. As suggested in the GEIS, the reviewer should focus on the potential for highway impacts while, at the same time, recognizing that impacts can occur with air, river, and rail systems as well, and that transportation may involve the movement of goods as well as people.
5. Transportation impacts can be expected to be exacerbated when the in-migrant population concentrates in a few locations. For the best estimate, assume that the in-migrant population will settle in the same proportion as current site workers with similar characteristics in the identified communities, taking account also of preferred location. For the maximum impact estimate, assume that all in-migrant workers will choose housing in one of the smaller communities, thereby concentrating transportation effects.
6. Report any anticipated transportation impacts in such terms as anticipated traffic congestion by location, declines in levels of service, infrastructure improvement requirements, increased potential for accidents, accelerated deterioration of roadway beds and surfaces, system costs, and public concerns.
7. Finally, describe any impacted areas and associated communities of the region in which transportation impacts have been identified. Also, describe the duration of the impact. Where the effect on transportation is expected to be minor, impacts may be described in qualitative terms. Where adverse impacts (i.e., impacts that should be mitigated or avoided) can be predicted, the applicant should conduct a more detailed analysis and will, where practical, make quantitative estimates of the magnitude of the impacts and plans for their mitigation.

IV. EVALUATION

Evaluation of identified transportation impacts as a result of refurbishment activities will result in one of the following determinations:

- A. The impact is small and mitigation is not required. When all impacts are of this nature, the reviewer will recommend operation as proposed.
- B. The impact is moderate but can be mitigated by specific actions (e.g., staggered shifts, subsidized van pooling, trailer park development). For these cases, the reviewer will consult with local public authorities for verification that the applicant's recommended actions are practical and will mitigate the impact to a small impact. The reviewer will prepare a list of verified modifications and recommended measures and controls to limit the corresponding impact and will provide the list to the NRC project manager.
- C. The impact is large or moderate and cannot be mitigated to a small impact. When impacts of this nature are identified, the reviewer should investigate practical design or procedural modifications that would avoid the impact. If no alternatives can be identified, the reviewer will be responsible for providing the information to the NRC project manager.

V. INPUT TO THE ENVIRONMENTAL DOCUMENT

Information to be included in the environmental document should accomplish the following objectives: (1) public disclosure of impacts resulting from the refurbishment of the facility for license renewal, (2) presentation of the basis for the staff analysis, and (3) presentation of staff conclusions, recommendations, and conditions regarding identified environmental impacts and associated mitigation measures.

The following types of information should be provided:

- a statement of the scope of coverage and the objectives of the analysis
- a summary of the steps taken in the staff analysis and reference to methodologies employed
- a summary of the finding of the analysis regarding transportation impacts as a result of refurbishment (the level of detail provided will be related to the severity of the anticipated impact)
- identification and assessment of potential mitigation measures

VI. REFERENCES

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2. K. Finsterbusch, and C. P. Wolf (eds.), "Methodology of Social Impact Assessment," Second Edition, Stroudsburg, Pa, Hutchinson Ross Publishing Co., 1981.

F.L. Leistritz, and S.H. Murdock, "The Socioeconomic Impact of Resource Development: Methods for Assessment," Boulder, Co, Westview Press, 1981.

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10. SUPPLEMENTARY NOTES

11. ABSTRACT (200 words or less)

The Environmental Standard Review Plan for the Review of License Renewal Applications for Nuclear Power Plants (ESRP-LR) is to be used by the NRC staff when performing environmental reviews of applications for the renewal of power reactor licenses. The use of the ESRP-LR provides a framework for the staff to determine whether or not environmental issues important to license renewal have been identified and the impacts evaluated and provides acceptance standards to help the reviewers comply with the National Environmental Policy Act.

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