# GUIDANCE PAPERS

TO FACILITATE THE IMPLEMENTATION

OF THE

# MEMORANDUM OF UNDERSTANDING

FOR THE

# NEPA AND SECTION 404

# INTEGRATION PROCESS

FOR

SURFACE TRANSPORTATION PROJECTS

IN

ARIZONA, CALIFORNIA, AND NEVADA

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# INTRODUCTION

These guidance papers have been prepared by staff of the MOU signatory agencies to facilitate its implementation. The papers provide guidance to the various offices of the signatory agencies for the integrated preparation and processing of NEPA documents and section 404 evaluations and permits for surface transportation projects in Arizona, California, and Nevada.

The guidance papers, which are summarized below, address different, but closely related elements of the NEPA and section 404 processes and are not intended to stand alone, but rather to be consulted as a whole. The papers provide direction on the preparation and processing of documents during the transportation planning, project programming, and project development stages of transportation facilities, to satisfy the intent/requirements of NEPA and section 404 of the Clean Water Act as related to aquatic resources. A list of acronyms and a glossary have also been included.

**Purpose and Need**
The definition of purpose and need is critical because it justifies the sponsoring agency's actions, some of which will cause environmental impacts, and because it determines the spectrum of alternatives to be considered, and the ultimate choice of the final alternative. This paper shows how the purpose and need definition should be refined as one progresses through the three stages, but not made so specific that the range of alternatives is artificially constrained.

**Alternatives Analysis / Aquatic Resource Avoidance**
Both NEPA and section 404 require that a range of alternatives be analyzed. The different perspectives of the two regulations on alternatives are discussed, and a selection process that should be followed through the three stages to meet NEPA and 404 requirements is described. The paper also discusses how to formulate alternatives that avoid and minimize impacts to aquatic resources.

**Compensatory Mitigation**
Compensatory mitigation, that is, replacing functions and values of aquatic resources to the extent practical, is discussed in this paper. Compensatory mitigation is only appropriate for offsetting impacts that have been found to be unavoidable during the alternatives analysis.

**Level of Data Needs/Threshold for Involvement**
This paper outlines the interagency process and the level of data needed (including information sources) at each stage.

These papers are to serve as working documents to provide uniformity and consistency in the format and content of the information and evaluations developed pursuant to the MOU. As working documents, they may be revised and/or supplemented as deemed appropriate by consensus of the signatory agencies to provide consistent interpretation and improved guidance. This guidance material should be integrated into each signatory agencies' guidance and procedures.

This material is not regulatory; nothing in these guidance papers is intended to diminish, modify, or otherwise affect the statutory or regulatory authorities of the agencies involved.

# PURPOSE AND NEED

## I. INTRODUCTION

"Purpose and need" is a critical element of the transportation planning, project programming, and project development stages because it performs two important functions:

- It establishes why the sponsoring agency is proposing an action while at the same time potentially causing environmental impacts, and

- It provides the basis for selecting reasonable and practicable alternatives for consideration; analyzing those alternatives in depth; and is an important factor in selecting the preferred alternative.

If the project purpose and need is defined to meet the above two functions, section 404 requirements related to defining the project purpose will be satisfied.

Under the National Environmental Policy Act (NEPA), "purpose" and "need" are closely linked but subtly different. "Need" may be thought of as the problem and "purpose" as an intention to solve the problem. Purpose and need statements should include increasing specificity as one progresses from transportation planning to project programming to project development. However, it is important to guard against premature specificity such that the range of alternatives considered becomes artificially limited.

Expressions of purpose and need must reflect statutory and regulatory requirements, fiscal and environmental resources, and community concerns. The identification of purpose and need (e.g., degree of congestion used as a goal in planning and designing transportation facilities) is an administrative process of high importance at all stages. Both the purpose and need, and the factors contributing to their identification, must be clearly documented in a manner acceptable to the owner/operator. If the purpose and need deviates from the usual and expected practice (i.e., from project performance and/or design criteria), the owner/operator may be called upon in the future to rely on this documentation to defend against tort liability actions.

For example, the degree of congestion that users are called upon to endure must reflect the available fiscal resources and a balancing of the desires of the users with the environmental/socioeconomic impacts of satisfying these desires. Freeways and arterials should normally be planned and designed to accommodate estimated traffic 20 years after completion of construction at a level of service at least equal to "C." However, a community based planning process may select a lower level of service goal in consideration of available fiscal resources and environmental impacts with appropriate documentation.

## II. PURPOSE AND NEED FOR THE TRANSPORTATION PLANNING STAGE

The regional transportation planning process, which includes systems, subarea, and corridor planning, should establish transportation goals and objectives for all major transportation investments. The transportation goals and objectives for systems and corridors are analogous to a statement of purpose under NEPA. A regional planning needs statement should clearly document a problem or short-fall in meeting goals and objectives.

Initially the purpose statement should be a general goal, such as to reduce congestion, improve safety, increase mobility, or to reduce pollutant emissions, so as to allow consideration of a range of alternative means to achieve the basic project purpose. The statement of purpose should not be so narrow as to preclude a reasonable range of alternatives from consideration. A narrow initial statement of purpose unnecessarily reduces the decision makers' flexibility to balance competing requirements.

The need for transportation projects should reflect the regional transportation plan's policies and should be expressed in terms of congestion, safety, or air quality, for example. Need should be quantified, providing a measure of the severity and geographic extent of the problem. For example, need could be expressed as a quantified short-fall in meeting defined regional objectives, such as those for mobility, accident frequency and air quality.

Documentation should be clearly summarized and referenced within the statement of need. Full documentation (in the form of studies, reports, etc.) should:

- include references in the statement of need,
- follow the project through the entire progr[illegible]ing, development and construction process, and
- be readily available upon the request of reviewing agencies (transportation and resource agencies).

Products of the transportation planning process (such as reduction in vehicle-kilometers or vehicle-hours of travel, improvements in travel speeds on the system, reduction in traffic accidents, savings in energy consumption, enhanced economic development potential, increased tax base, improved access to public facilities, etc.) should be presented to support the need for the transportation investment.

This purpose and need will serve as the basis for establishing the range of alternatives (such as alternative modes and technologies) to be considered during the transportation planning process (which may include corridor or subarea studies). These studies will ultimately determine project design concept and scope for the emissions analysis of the regional transportation plan required by EPA conformity regulations.

Even though a need may be easily established one should also consider the constraints of meeting this need, such as the presence of section 4(f) protected property (49 U.S.C. § 303), *waters of the U.S.* (see glossary), floodplains, endangered species, and historical properties.

The purpose statement should guide the range of alternatives that will be considered to respond to the established need. For example, responding to the need for access to the downtown of a metropolitan area could generate alternatives such as transit and feeder projects. Likewise, the need to improve highway safety may result in alternatives to reroute truck traffic, improve geometrics, or bypass or widen existing facilities.

## III. PURPOSE AND NEED FOR THE PROJECT PROGRAMMING STAGE

When a project identified in a regional transportation plan (RTP) is about to undergo a preliminary study (i.e., project assessment in Arizona and Nevada; project study report in California), the goals, objectives, and policies of the RTP will provide the foundation for defining the project purpose and need statement. As information is developed and more is learned, the purpose and need statement would be refined. During this refinement process, some project alternatives could possibly drop out (see Alternatives Analysis / Aquatic Resource Avoidance Guidance), thereby permitting a more focused analysis of the remaining alternatives. Need must be defined more specifically at this stage to support project programming.

For those projects which are not part of a regional transportation plan or for which no purpose and need have previously been established, the guidelines discussed above under Transportation Planning should be followed before project programming.

## IV. PURPOSE AND NEED FOR THE PROJECT DEVELOPMENT STAGE

The need for a project must be very specific at this point in the process. Information gathered during the transportation planning and project programming stages should ensure that the project need is well defined. It is critical that the process which identified and quantified this specific need be explained clearly and concisely within the NEPA environmental document, with specific references to previous studies. If the need is modified, sufficient data to document the changed circumstances should be provided.

The purpose and need statement at this stage should provide the framework for considering the avoidance or minimization of environmental impacts and any enhancement of environmental resources in the project area. Sufficient information should be available at this stage to consider all reasonable alternatives that will satisfy the established need.

## V. REFERENCES


| | | |
|---|---|---|
| 40 CFR § 230.10(a) | Basic project purpose. | (section 404) |
| 40 CFR § 1502.1 | Purpose. | (NEPA) |
| 40 CFR § 1502.13 | Purpose and Need. | (NEPA) |

Federal Highway Administration. Guidance Paper: "The Importance of 'Purpose and Need' in Environmental Documents." September 18, 1990.

Federal Highway Administration. Technical Advisory T 6640.8A. October 30, 1987. "Guidance for Preparing and Processing Environmental Documents." Attachment, Section V.D. Pages 13–14.

Yocom, T.G., R.A. Leidy, and C.A. Morris. 1989. "Wetlands Protection Through Impact Avoidance: A Discussion of the 404(b)(1) Alternatives Analysis." *Wetlands*. Vol 9, No. 2, pages 283–297. (Guidance for preparing alternatives analyses. Focuses on residential, industrial, and commercial projects.)

Intermodal Surface Transportation Efficiency Act of 1991. Pub. L. 102–240—December 18, 1991. Section 3012 Metropolitan Planning (49 U.S.C. app. § 1607(f)).

Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. § 303 ).

# EXAMPLES OF FACTORS TO CONSIDER IN DEVELOPING PURPOSE AND NEED DOCUMENTATION

## I. TRANSPORTATION PLANNING STAGE

### A. Purpose

1. Ensure "purpose" is consistent with transportation goals and objectives (e.g., mobility, safety, capacity, and congestion relief)

2. Ensure "purpose" constitutes a reasonable expenditure of public funds (benefit:cost)

3. Ensure "purpose" is broad enough to allow consideration of a full range of alternative ways to meet the defined need

### B. Need

1. Social Demands or Economic Development
   a. Discuss existing land use plans
   b. Identify projected land use plan changes
   c. Identify growth management/control ordinances

2. Modal Interrelationships
   Discuss project interface with airport, rail, port, and mass transit facilities

3. Capacity, Transportation Demand, and Safety
   a. Describe existing capacity and level of service
   b. List regional population/traffic forecasts
   c. Identify projected capacity needs and level of service
   d. Identify system safety needs

4. Air Quality Improvements
   a. Identify transportation control measures (e.g., high occupancy vehicle lanes, ramp metering, bike lanes, park & ride facilities)
   b. Identify transportation demand management (e.g., rideshare programs, mass transit subsidies)

## II. PROJECT PROGRAMMING STAGE

A. All of the project purpose and need information developed during the transportation planning stage must be carried forward, updated, and refined in the purpose and need discussion for the project programming stage (i.e., social demands or economic development, modal interrelationships, capacity and transportation demand, air quality improvements).

B. the following additional information should be provided:

1. Project Status
   a. Describe the history of the project (adopted corridors, land use plans, regional transportation plans)
   b. Describe the involvement of other agencies, including any previous planning, programming, or project concurrences/nonconcurrences
   c. Identify the actions pending (e.g., NEPA, final design, right-of-way acquisition, and permits)
   d. Provide the project schedule

2. System Linkage
   a. Indicate whether the project is a "connecting link"
   b. Describe how the project fits into the transportation system

3. Legislation
   Describe any Federal, State, or local government mandates (e.g., demonstration projects, sales tax measure projects)

4. Safety
   a. Describe the existing accident rate
   b. Describe the projected accident rate with/without project
   c. Compare the existing and projected accident rates to statewide average
   d. Explain how the project will improve safety

5. Roadway Deficiencies
   a. Describe operational deficiencies (substandard geometrics, inadequate cross-sections)
   b. Identify structural limitations (load limits)
   c. Discuss maintenance problems
   d. Explain how the project will correct deficiencies

## III. PROJECT DEVELOPMENT STAGE

All of the project purpose and need information developed during the project programming stage must be carried forward, updated, and refined in the purpose and need discussion for the project development stage (e.g., project status, system linkage, legislation, social demands or economic development, modal interrelationships, capacity and transportation demand, safety, roadway deficiencies, and air quality improvements).

# ALTERNATIVES ANALYSIS
# AND
# AQUATIC RESOURCE AVOIDANCE GUIDANCE
# FOR TRANSPORTATION PROJECTS

## I. SUMMARY

For major Federal actions significantly affecting the human environment, the National Environmental Policy Act (NEPA) requires rigorously exploring and objectively evaluating "all reasonable alternatives" that meet the project purpose. NEPA requires a discussion of mitigation for adverse environmental impacts of alternatives, where mitigation is defined to include avoidance and minimization of impacts as well as restoration and creation of habitats. Section 404 of the Clean Water Act, which permits discharges of fill into the *waters of the United States* (see glossary), also requires consideration of practicable alternatives to avoid and minimize adverse environmental impacts, and further requires that these measures be exhausted before turning to restoration and creation of habitats.

### A. Alternative Selection

A reasonable range of options must be considered in the evaluation of alternatives. Alternatives can be eliminated, prior to detailed analysis, if they are not "reasonable" (under NEPA) or if they are not "practicable" (under 404). When evaluating alternatives, transportation agencies should give equal consideration to section 404 and Department of Transportation Act section 4(f) concerns, and select the alternative that would cause the least overall environmental harm.

### B. Transportation Planning Stage

Avoidance of large or valuable *aquatic resources* (see glossary) is best addressed at the systems planning stage. System or regional planning requires Metropolitan Planning Organizations (MPO's) to prepare Regional Transportation Plans (RTP's). The RTP and associated documentation (such as the environmental impact report in California), and corridor and subarea studies are appropriate vehicles in which to assess system design alternatives and their environmental effects. System design encompasses: system management strategies and the mode, general location, and capacity for the proposed regional transportation facilities; the purpose and need; the preliminary budget; and the design concept and scope. System design decisions related to the alternatives will be documented to support later project decisions. System design decisions, including design concept and scope, may be revisited if significant new information is discovered.

If the above documents are sufficiently detailed to address the information requirements of NEPA and section 404, and if the system planning decisions are responsive to the regulatory requirements of NEPA and 404, it is expected that the reviewing agencies will indicate their concurrence with these decisions.

### C. Project Programming Stage

Prior to programming, the project sponsor must develop adequate information on the environmental resources to analyze each alternative and to develop project cost

estimates for each alternative which includes the cost of avoiding or minimizing and compensating for the impacts to the environmental resources. The project sponsor should document earlier analyses, continue coordination with the regulatory and resource agencies (or initiate coordination if this project was in an RTP before the MOU was signed), identify potentially impacted aquatic resources, and develop an alternatives analysis adequate to identify funding needed for avoidance and/or mitigation. If adequately prepared, this should result in EPA and Corps preliminary agreement on the alternatives to be analyzed in the project development stage, including avoidance alternatives and conceptual mitigation.

D. **Project Development Stage**

If the agencies have not already agreed with decisions made at the planning and programming level, then the systems design and budget issues will need to be reviewed at this stage and concurrence obtained. More detailed analyses may be needed to evaluate location alternatives than were provided at earlier stages; these analyses should also consider design alternatives. To achieve concurrence from EPA and the Corps prior to the project decision, the project sponsors must follow the NEPA–404 Permit Concurrent Process (MOU Appendix A).

## II. INTRODUCTION

The goal of this paper is to provide guidance on conducting alternatives analyses to meet the requirements of both NEPA and section 404 of the Clean Water Act. This guidance is provided for project sponsors and the planning, regulatory, and resource agencies. It is to be used in the transportation planning, project programming, and project development stages. Although potential alternatives are evaluated at each of these three stages, it is not usually until the last stage (which includes NEPA and 404 permitting) that substantive determinations regarding the adequacy of alternatives development and analysis occur. This paper provides guidance on how to consider aquatic resource issues throughout all three stages of transportation planning. Also included for each stage is a summary of existing guidance, and examples to illustrate how the regulatory agencies view practicability.

The basic requirements of NEPA and section 404 of the Clean Water Act are described below.

A. **National Environmental Policy Act**

NEPA regulations require the preparation of an environmental impact statement (EIS) for major Federal actions which significantly affect the human environment. (An environmental assessment may need to be prepared to determine whether an impact is significant.) NEPA regulations (40 CFR Parts 1500–1508) require that an EIS rigorously explore and objectively evaluate all reasonable alternatives (See section III.A. below).

NEPA requires that mitigation measures be discussed as a part of each alternative or as a separate alternative applicable to the other alternatives. Mitigation pursuant to NEPA includes avoiding, minimizing, rectifying, reducing or eliminating over time, or compensating for the impact(s) (40 CFR § 1508.20).

## B. Section 404 of the Clean Water Act

### 1. Alternatives Analysis

The Guidelines promulgated under section 404 of the Clean Water Act specify that a permit can be issued for a discharge of dredged or fill material to waters of the United States only if the discharge is determined to be the least environmentally damaging practicable alternative (LEDPA) (40 CFR § 230.10(a); section 404 sets out other requirements as well; see section II.B.2. below). When a proposed project requires an individual permit for filling waters of the United States, an analysis of alternatives must be carried out. For this analysis, the LEDPA generally is the practicable alternative that either avoids waters of the U.S. or impacts the smallest area of waters.

For non-water dependent projects (essentially all surface transportation projects) that require filling of wetlands or other *special aquatic sites* (see glossary), the Guidelines also *presume* that there are upland alternatives available and that these upland sites are less environmentally damaging. The burden to prove otherwise is on the project sponsor. In particular, the "no project" alternative, and projects that avoid or minimize fill must be carefully analyzed. An alternative with fewer impacts to aquatic resources than the preferred alternative may be eliminated by demonstrating that it has other overriding severe environmental impacts.

### 2. Other Requirements of Section 404

a. The Section 404(b)(1) Guidelines state at 40 CFR § 230.10:

> Although all requirements in § 230.10 (including the alternatives analysis) must be met, the compliance evaluation procedures will vary to reflect the seriousness of the potential for adverse impacts on the aquatic ecosystems posed by specific dredged or fill material discharge activities.

b. In 40 CFR §§ 230.10(b)–(d), the Guidelines further state in part that:

> (b) No discharge of dredged or fill material shall be permitted if it:
>
> (1) Causes or contributes . . . to violations of any applicable State water quality standard;
>
> . . .
>
> (3) Jeopardizes the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, as amended, or results in likelihood of the destruction or adverse modification of a habitat which is determined by the Secretary of Interior or Commerce, as appropriate, to be a critical habitat under the Endangered Species Act of 1973, as amended. If an exemption has been granted by the Endangered Species Committee, the terms of such exemption shall apply in lieu of this subparagraph;

. . .

(c) . . . no discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of the waters of the United States. . . .

(d) . . . no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem. . . .

### C. Comparison of NEPA and Section 404

The analysis requirements of NEPA and 404 as regards avoidance are slightly different but fully compatible. A 1990 Memorandum of Agreement between EPA and the Corps (reference listed in section VI.A. below) recognizes the value of each mitigation component defined under NEPA, and in addition ranks them to ensure that avoidance of impacts occurs first, before efforts to restore or create compensatory habitats. The impact analysis associated with alternatives should be formatted to reflect this priority.

Because a section 404 permit can only be issued for the LEDPA, section 404 compliance usually requires a more detailed and specific analysis of the aquatic impacts of each alternative than NEPA. NEPA documents should provide enough information on alternatives to determine if selection of the preferred alternative complies with the 404(b)(1) Guidelines.

## III. ALTERNATIVE SELECTION

### A. Criteria for Identifying Reasonable Alternatives

The evaluation of alternatives must consider a reasonable range of options that could fulfill the project sponsor's purpose and need. Reasonable alternatives are those that "are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant" (Council on Environmental Quality, 1981; see VI.A below for reference).

The range of alternatives to be considered should include at minimum: 1) alternative ways of meeting the project sponsor's purpose and need at the same location, 2) alternative locations, and 3) the "no action" alternative. The evaluation of the environmental impacts of all reasonable alternatives must be presented in comparative form to provide a clear basis for choosing among options. If alternatives are eliminated from further analysis, either the environmental document or a separate alternatives analysis must discuss the reasons for elimination.

### B. Criteria for Identifying Practicable Alternatives

For transportation projects, generally, an alternative is practicable if it: 1) meets the purpose and need; 2) is available and capable of being done (i.e., it can be accomplished within the financial resources that could reasonably be made available, and it is feasible from the standpoint of technology and logistics); and 3) will not create

other unacceptable impacts such as severe operation or safety problems, or serious socioeconomic or environmental impacts.

Alternatives can be eliminated at any stage if they are not "reasonable" (NEPA), or if they are not "practicable" (404). However, the reasons for eliminating an alternative from detailed analysis need to be documented and discussed in the document prepared at that stage. Based on this information, the project sponsor must get EPA and the Corps of Engineers concurrence that there are no other less-environmentally damaging practicable alternatives than those identified.

## C. Consideration of Other Environmental Impacts

The Clean Water Act 404(b)(1) Guidelines require that the practicable alternative that would involve the least adverse impact to aquatic resources be chosen unless this alternative would have other significant environmental consequences (40 CFR § 230.10(a)). Similarly, section 4(f) of the Department of Transportation Act allows the transportation agency to reject an alternative as not feasible and prudent if "unacceptable adverse . . . environmental impacts" would result (FHWA, November 15, 1989). Thus, both regulations allow the potential for other significant environmental impacts to override either protection of aquatic resources (in the case of section 404), or preservation of public park and recreation lands, wildlife refuges and historic sites (in the case of section 4(f)).

Sometimes the only practicable alternatives that are available would either fill aquatic resources or impact section 4(f) resources. Thus, in some instances, it may be necessary to accept impacts to one resource in order to avoid or minimize impacts on another resource. The alternatives analysis should reflect the equal consideration of section 4(f) and section 404 concerns when evaluating alternatives. However, this equal consideration may change depending on specific project and community circumstances, and the magnitude of the impacts. The alternative that would result in the least overall environmental harm as determined through discussions with regulatory and resource agencies needs to be selected.

An important distinction to keep in mind when evaluating harm to non-aquatic (i.e., 4(f)) resources versus harm to waters of the U.S., is that, for the former, the alternatives selection process evaluates reasonable and prudent alternatives based on the "net harm" (**after** mitigation) of the alternative to 4(f) properties or other environmental resources. In contrast, for almost all section 404 alternatives analyses, the evaluation of practicable alternatives must consider the impact to waters of the U.S. that would result from the alternative **before** compensatory mitigation (see the "Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines" (February 6, 1990) for exceptions to this sequence). This MOA expressly states that "compensatory mitigation may not be used as a method to reduce environmental impacts in the evaluation of the least environmentally damaging practicable alternative." Therefore, if an alternative exists where the impacts to non-aquatic resources can be practicably mitigated, this alternative should generally be selected over one that would fill waters of the U.S.

## IV. ALTERNATIVES ANALYSIS FOR TRANSPORTATION PLANNING STAGE

Transportation planning requires Metropolitan Planning Organizations (MPO's) to prepare Regional Transportation Plans (RTP's) and Transportation Improvement Programs, and State Departments of Transportation (DOT's) to adopt a State Transportation Improvement Program.

### A. Existing Guidance

There is no specific, formal guidance on section 404 alternatives analysis for this stage of planning; however, the following documents serve as general guidance:

Intermodal Surface Transportation Efficiency Act of 1991. Pub. L. 102-240, December 18, 1991, 105 STAT. 1914.

Federal Highway Administration and Federal Transit Administration. Planning Assistance and Standards. 23 CFR Part 450 (FHWA); 49 CFR Part 613 (FTA).

### B. Early Coordination

The MPO's that have formally agreed to follow the NEPA-404 integration process should request that the Corps of Engineers, Environmental Protection Agency (EPA), Fish and Wildlife Service, and National Marine Fisheries Service review and comment on RTP's and associated environmental analyses as specified in the MOU under Transportation Plan Stage (MOU pages 4-5). See Level of Data Needs / Threshold for Involvement Guidance section II.A. for details regarding agency involvement and information transmittal to the regulatory and resource agencies at the transportation planning stage.

### C. Resource Identification

To meet the intent of section 404, it will be necessary for the MPO's to collect and analyze data on aquatic resources and listed and candidate species when preparing the RTP's. The MPO's should follow the Level of Data Needs / Threshold for Involvement Guidance specified for the planning stage. The MPO's may find it appropriate to develop, or request the project sponsors to develop, corridor or subarea studies focusing on system alternatives and environmental effects. The findings of these studies would be considered as the MPO's adopt the RTP.

### D. Initial Selection of Alternatives

1. Development of Alternatives

Once the basic project purpose has been agreed upon according to the Purpose and Need Guidance, all reasonable alternatives that meet the basic purpose should be identified, and objectively compared.

Alternatives analyses in the RTP can arise in two ways:

a. from system alternatives considered in the RTP environmental analysis. These include: facilities, demand management, systems management and land use.

b. from alternatives considered in corridor and subarea studies. These include modal choice, general alignment, and the development of the project concept and scope used in the emissions analysis.

Impacts to wetlands and other special aquatic sites can be most effectively avoided during Transportation Planning. Any reasonable actions or alignments which avoid adverse impacts to waters of the U.S. and *associated sensitive species* (see glossary) should be rigorously examined. If it is not possible to entirely avoid rivers, streams, and other linear waters of the U.S., crossings should be located to minimize impacts to aquatic resources. This could include such actions as shifting the alignment to reduce the footprint of the transportation facility on the aquatic resource.

2. Criteria for Identifying Practicable Alternatives

MPO's can eliminate from consideration project alternatives that are not practicable if they carefully document their reasons. The following practicability constraints may be used to carry out the initial selection of alternatives:

a. Not meeting the project purpose and need (formulated according to Purpose and Need Guidance),
b. Excessive cost of construction (including all mitigation),
c. Severe operational or safety problems,
d. Unacceptable adverse social, economic or environmental impacts,
e. Serious community disruption,
f. Unsuitable demographics (for mass transportation modes), and
g. Logistical and technical constraints

The transportation agency must provide detailed documentation to demonstrate that rejected less-damaging alternatives considered are not practicable. Refer to section III.B. of this guidance paper.

3. Example

The following example illustrates the alternative selection process at the planning stage. An MPO has identified a need to reduce congestion. The objective is to achieve/maintain at least "satisfactory" operating conditions (level of service "D") and the resource and regulatory agencies have concurred with objective. The MPO is only able to reasonably identify approximately $300 million with which to achieve this objective. Studies indicate that unless action is taken, operating conditions will deteriorate to "poor" (level of service "F"). The three alternatives identified by the MPO are described in the following chart.

HYPOTHETICAL ALTERNATIVES — TRANSPORTATION PLANNING STAGE

| **Alternative** | No Build | Alt. A<br>Highway Emphasis | Alt. B<br>Transit Emphasis | Alt. C<br>Highway/Transit Combination |
|---|---|---|---|---|
| **Congestion (Level of Service)** | poor ("F") | excellent ("A") | good ("B") | fair ("C") |
| **Cost** | none | $200 million | $450 million | $275 million |
| **Estimated Home/Business Displacement** | none | low (30) | high (200) | intermediate (75) |
| **Aquatic Resources Impacts** | none | 40+ hectares (~100+ acres), including vernal pools | < 2 hectares (~5 acres) | approx. 8 hectares (~20 acres), no vernal pools |
| **Associated Sensitive Species Impacted** | none | three, (two endangered) | none | one |

In this example, the no-build alternative is rejected as not being practicable because the purpose of maintaining at least "satisfactory" operating conditions is not met.

Alternative B is also rejected as not practicable due to excessive cost. While Alternative B achieves the purpose, and would involve the least impact of all the alternatives to aquatic resources, its cost greatly exceeds the reasonably expected funds. Alternative B may also be considered not practicable due to unacceptable socioeconomic impacts. The displacement of 200 homes/businesses with Alternative B, as opposed to 30 or 75 for Alternatives A and C respectively, would likely be considered unacceptable.

Only Alternatives A and C are identified as practicable. At this point the MPO must determine if there is a practicable alternative that avoids impacts to aquatic resources. If so, it must be selected, so long as it does not result in other significant adverse environmental consequences. In this case, it was found that there was not a practicable avoidance alternative, so the practicable alternative that would cause the least impact to aquatic resources was selected. Alternative C was chosen because it would destroy around 32 fewer hectares (~80 acres) of aquatic resources than A, affect only one instead of three sensitive species (two of which are endangered), and not impact vernal pools, a wetlands habitat type that is very difficult to replace.

## V. ALTERNATIVES ANALYSIS FOR PROJECT PROGRAMMING STAGE

This stage identifies the budgets for project delivery. Efforts should be to set budgets which maximize flexibility when identifying reasonable alternatives. For projects potentially impacting waters of the U.S. and associated sensitive species, the project sponsors must identify the full range of reasonable alternatives (including a focused evaluation of avoidance alternatives), their costs (including mitigation), and general environmental implications.

### A. Existing Guidance

Army Corps of Engineers. General Regulatory Policies. 33 CFR Part 320.

Army Corps of Engineers. Nationwide Permit Program. 33 CFR Part 330.

California Department of Transportation. "Guidelines for the Preparation of Project Study Reports." September 12, 1991.

Environmental Protection Agency. Guidelines for Specification of Disposal Sites for Dredged or Fill Material. 40 CFR Part 230.

Federal Highway Administration. Timing of Administrative Actions. 23 CFR § 771.113.

### B. Early Coordination

The transportation agencies should consult with appropriate resource and regulatory agencies (i.e., the Corps, EPA, Fish and Wildlife Service, National Marine Fisheries Service, state water quality agency, state fish and game agency, and federal land management agencies, such as the Forest Service or Bureau of Land Management) early in the programming stage. This may include inviting the agency representatives to participate on the Technical Advisory Team. Field visits to the project area by project sponsor staff and resource agency personnel are invaluable for identifying resources of particular importance and potential project alternatives. Resource agencies should become involved in refining project-level alternatives and the selection criteria at this stage.

### C. Resource Identification

The actual programming documents do not include environmental documentation. Rather, the related pre-scoping information (e.g., project assessments and project study reports) will address the potential impacts to these resources (see the Level of Data Needs / Threshold for Involvement Guidance).

### D. Initial Selection of Project-Level Alternatives

This step should be carried out using the selection criteria and process outlined above under IV.D., if it has not been documented at the planning stage. Resource and regulatory agencies may disagree with the transportation agencies on what constitutes "excessive," "severe," "unacceptable," or "serious" in determining practicability (see list of selection criteria, IV.D.2.). Thus, for projects that will have a major adverse effect on aquatic resources, transportation agencies must work closely with the resource and

regulatory agencies to get agreement on the magnitude of constraints needed to render alternatives impracticable.

E. **Example**

A transportation agency is proposing to program a project described by the local MPO's long range plan. The plan identified the project for the purpose of reducing future congestion to at least "satisfactory" (level of service "D" operating conditions. The transportation and programming agencies are only able to reasonably identify approximately $90 million to use for this purpose.

Three project alternatives have been identified by the transportation agency, and are described in the following chart.

HYPOTHETICAL ALTERNATIVES — PROJECT PROGRAMMING STAGE

| **Alternative** | C1 | C2 | C3 |
|---|---|---|---|
| **Congestion (Level of Service)** | fair ("C") | fair–good ("C"–"B") | good ("B") |
| **Cost** | $82 million | $87 million | $90 million |
| **Home/Business Displacements** | 19 | 10 | 10 |
| **Wetlands (Special Aquatic Site) Impacts** | 4 hectares (~10 acres) | 10 hectares (~25 acres) | 2 hectares (~5 acres) |
| **Endangered Species Impacted** | none | one | none |

At the programming stage, the intent of the project sponsor should be to identify the full range of practicable avoidance or minimization alternatives, all of which should be formally considered at the project development stage.

In this example, all the alternatives are within the range of expected funds and meet the project purpose. However, Alternative C2 would impact the greatest amount of wetlands and adversely affect an endangered species. Other practicable alternatives (C1 and C3) exist that avoid impacts to these resources to a greater extent. Therefore, Alternative C2 is rejected.

### F. Documentation of Earlier Analyses

For most mode and location (alignment) alternatives, the initial selection alternatives analysis probably occurred at the transportation planning stage. If so, the transportation agency must either:

1. Document these earlier decisions as described above under IV.D., and discuss how they meet the selection criteria listed at IV.D.2., or

2. Provide evidence that the regulatory and resource agencies already concurred at the planning stage.

For example, if one mode would be least damaging to aquatic resources but another mode was chosen during planning, the project sponsor should discuss in detail why the first mode is not practicable.

## VI. ALTERNATIVES ANALYSIS FOR PROJECT DEVELOPMENT STAGE

The discussion below addresses how to satisfy the requirements of the section 404 alternatives analysis in the context of a NEPA document.

### A. Existing Guidance

The following list includes guidance on section 404, NEPA, and section 4(f) of the Department of Transportation Act. A few of the entries are annotated to clarify how they pertain to section 404 analyses for transportation projects.

California Department of Transportation. December 27, 1990. "Project Alternative Assessment Process."

California Department of Transportation. June 7, 1991. "Mandatory Design Exception Procedures/Fact Sheet Outline." Division of State and Local Project Development, Office of Project Planning & Design.

Council on Environmental Quality. November 29, 1978. Regulations For Implementing the Procedural Provisions of the National Environmental Policy Act. 40 CFR Parts 1500–1508.

Council on Environmental Quality. March 16, 1981. "Questions and Answers About the NEPA Regulations."

Environmental Protection Agency. December 24, 1980. Guidelines for Specification of Disposal Sites for Dredged or Fill Material. 40 CFR Part 230.

Environmental Protection Agency and U.S. Army Corps of Engineers. February 6, 1990. "Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines."

Federal Highway Administration. October 5, 1987. "Section 4(f) Policy Paper." Director, Office of Environmental Policy, Washington D.C.

Federal Highway Administration. October 30, 1987. "Guidance for Preparing and Processing Environmental and Section 4(f) Documents." Director, Office of Environmental Policy, Washington D.C. (Guidance to FHWA field offices and project applicants on the preparation and processing of environmental and section 4(f) documents. Provides a good discussion of how alternatives should generally be developed for NEPA (EIS) purposes (Attachment pages 14–17). Also describes procedures that should be followed when wetland impacts will occur, and briefly states that the draft EIS should "evaluate alternatives which would avoid these wetlands" (Attachment page 27). However, it focuses on determining the impact to wetlands and demonstrating compliance with Executive Order 11990, not section 404, e.g., it lays out a procedure for a "Wetland Only Practicable Alternative Finding" to satisfy the Executive Order.)

Federal Highway Administration. November 15, 1989. "Alternatives Selection Process for Projects Involving Section 4(f) of the DOT Act." Director, Office of Environmental Policy, Washington D.C.

Yocom, T.G., R.A. Leidy, and C.A. Morris. 1989. "Wetlands Protection Through Impact Avoidance: A Discussion of the 404(b)(1) Alternatives Analysis." *Wetlands*. Vol 9, No. 2, pages 283–297. (Guidance for preparing alternatives analyses. Focuses on residential, industrial, and commercial projects.)

## B. Continued Interagency Coordination

It is critical for transportation agencies to coordinate with the resource and regulatory agencies throughout all of the transportation stages. If agencies have not been approached at earlier stages, contact with the resource and regulatory agencies (see list under IV.B.) at the project development stage will help determine the depth of the alternatives studies needed based on project scale and impact.

As NEPA documentation is developed, the transportation agency sponsor should obtain interagency concurrence on the direction of the alternatives analysis. During the NEPA stage the project sponsor should:

1. Follow the steps outlined in the NEPA–404 Permit Concurrent Process for EIS's and EA's/CE's (MOU Appendix A). These processes require interagency concurrence on purpose and need, and alternative selection criteria and process at various milestones.

2. Describe the results of this and any other coordination with the agencies in the Alternatives Analysis Report (see below).

## C. Preparing the Alternatives Analysis

For projects requiring alternatives analyses, both draft and final versions should be prepared in order to facilitate interagency input and concurrence. If a formal report is deemed unnecessary based on agency input, the project sponsor should determine from

the agencies which elements of the procedure below need to be informally transmitted. The components of each report are described below.

The 404 Alternatives Analysis should be presented in a separate section of the EA/ FONSI or EIS. However, if the outlined information is adequately discussed elsewhere in the document, these discussions can be referenced and summarized in the 404 alternatives analysis.

1. Draft Alternatives Analysis (to be included in the Draft NEPA document: see the NEPA–404 Permit Concurrent Process in MOU Appendix A)

   a. Proposed Action

      Describe the proposed action and explain the project purpose (see Purpose and Need Guidance).

   b. Resource Identification

      Follow the Level of Data Needs / Threshold for Involvement Guidance.

   c. Documentation of Alternatives Considered But Rejected During the Initial Analysis

      For most mode and location (alignment) alternatives, the initial selection of alternatives probably occurred at the transportation planning stage. If so, the transportation agency must either:

      (1) document these earlier decisions as described above at IV.D. and discuss how they meet the selection criteria listed at IV.D.2., or

      (2) provide evidence that the regulatory and resource agencies already concurred at the planning or programming stage.

   d. Impacts of Each Alternative

      The full range and scope of practicable alternatives need to be presented in comparative form, thus sharply defining the issues and providing a clear basis of choice among options. The impacts on the aquatic resources and associated sensitive species should be discussed for each alternative, such as the amount to be lost, functions and values affected, and indirect impacts (e.g., growth inducement) and cumulative impacts to aquatic resources. Where several alternatives would affect aquatic resources, a summary table comparing the various impacts of each alternative should be prepared.

      For projects that would result in a significant impact to wetlands or sensitive species, the project sponsor will provide more documentation on the impracticability of wetlands minimization or avoidance alternatives than would normally be needed for the purposes of NEPA. Project sponsors will justify in detail how the cost, performance, socioeconomic impacts or other factors make the minimization or avoidance alternative impracticable.

Project sponsors should also avoid using ambiguous terms such as "slight," "insignificant," "adverse," or "substantial" in the NEPA document when discussing environmental impacts, or project cost or performance. For example, in a draft EIS for a route extension, a less environmentally damaging alternative was eliminated partly because traffic impacts were "unacceptable" to a local city with no further discussion of what this term meant. Existing levels of service in another draft EIS were described simply as "unacceptable" or "adverse" to justify the construction of a new roadway. If such terms are used, they must be quantified with traffic data and modelling assumptions.

e. Example

The project sponsor has identified two practicable alternatives (see table below) for analysis in the draft EIS.

HYPOTHETICAL ALTERNATIVES — PROJECT DEVELOPMENT STAGE

| **Alternative** | C1 | C3 |
|---|---|---|
| **Congestion (Level of Service)** | fair ("C") | good ("B") |
| **Cost** | $82 million | $90 million |
| **Home/Business Displacements** | 19 | 10 |
| **Wetlands (Special Aquatic Site) Impacts** | 4 hectares (~10 acres) | 2 hectares (~5 acres) |
| **Hazardous Waste Dump Disturbance** | none | 600 meters (~1970 feet) of frontage |

It has been discovered that the construction of Alternative C3 would extensively disturb a hazardous waste dump, and seriously harm the underlying aquifer. Thus, even though it would fill less wetlands, Alternative C3 is the more environmentally damaging of the two alternatives. Alternative C1 is therefore the least environmentally damaging practicable alternative, and is designated as the preferred alternative in the final EIS.

f. Minimization of Impacts

Later analyses may consider location alternatives in more detail than the initial analysis and should also consider design variations. At this stage, enough detail on the project is known to make adjustments to avoid wetlands and associated sensitive species. In some cases, temporal measures (e.g., no construction during the breeding season) may avoid or minimize impacts to associated sensitive species.

Transportation agencies should consider, individually or in combination, design variations such as:

(1) Minor alignment shifts,
(2) Retaining structures,
(3) Bridging,
(4) Reduced cut and fill activity,
(5) Changes in profile,
(6) Changes in lane or median width,[1]
(7) Variable slopes (to bring the toe of slope out of sensitive areas)
(8) Specific construction methods

2. **Final Alternatives Analysis**
(To be included in the final NEPA document; see the NEPA-404 Permit Concurrent Process in MOU Appendix A)

The final 404 Alternatives Analysis should:

a. Summarize the information from the draft Alternatives Analysis, and

b. Clearly demonstrate that alternatives that would avoid aquatic resources to a greater extent than the preferred alternative are not practicable.

(1) If a practicable alternative that completely avoids aquatic resources exists, it must be selected unless that alternative has other significant adverse environmental consequences.

(2) If all the alternatives would result in some aquatic resource loss, the practicable alternative with least damage to aquatic resources must be selected unless that alternative has other significant adverse environmental consequences. The impacts to aquatic resources for each alternative must be evaluated **before** compensatory mitigation for this comparison (refer to section III.C. above).

3. **Record of Decision** (for EIS's only)

A record of decision must identify all alternatives considered and specify the alternative or alternatives which were considered to be environmentally preferable.

[1] Exceptions to mandatory design standards should be identified prior to the completion of the programming document if possible.

The record of decision must state whether all practicable means to avoid or minimize environmental harm from the alternative have been adopted, and if not, why they were not.

4. **Corps Approval of Alternatives Analysis**

The Corps of Engineers through its permit process will determine compliance of the alternatives analysis with the Section 404(b)(1) Guidelines and the public interest.

# COMPENSATORY MITIGATION

## I. INTRODUCTION

The Clean Water Act (Section 404(b)(1) Guidelines) requires that no discharge of fill material be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.

Mitigation is an action intended to reduce the effect of a specific activity. Mitigation includes: a) avoiding the impact altogether by not taking a certain action or parts of an action, b) minimizing impacts by limiting the degree or magnitude of the action and its implementation, c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment, d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, and e) compensating for the impact by replacing or providing substitute resources or environments (40 CFR § 1508.20).

This guidance identifies the procedure for developing compensatory mitigation for unavoidable impacts to *aquatic resources* (see glossary). It includes mitigation categories (c) and (e) outlined in the previous paragraph. Compensatory mitigation is the replacement of functions and values to the extent practical. As clarified in the "Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines" (February 6, 1990), project sponsors must take a sequential approach to mitigation; first, avoid aquatic impacts, then minimize impacts (see Alternatives Analysis / Aquatic Resource Avoidance Guidance). Once the project has been evaluated under this process it will then be possible to explore other forms of mitigation.

## II. TRANSPORTATION PLANNING STAGE

Where avoidance and minimization of aquatic resource impacts are not practicable, the project sponsor will identify preliminary compensatory mitigation needs. Impact levels will be based upon information obtained following the Level of Data Needs / Threshold for Involvement Guidance. At the transportation planning stage mitigation banking can be evaluated following initial determination from Corps and EPA that conditions permitting banking are present, and where banking will provide for equivalent or higher quality replacement of functions and values.

Mitigation banking for aquatic habitats is defined as the creation, restoration, or enhancement of wetland or other aquatic habitats and their functional values expressly for the purpose of providing compensatory mitigation in advance of proposed discharges into *waters of the U.S.* (see glossary) permitted under the section 404 regulatory program. Banks are created for an unknown number of future project impacting waters of the U.S.

Mitigation banking may be appropriate for compensating cumulative impacts on aquatic resources identified at the transportation planning stage. Initial identification of mitigation bank sites should be coordinated with local resource planning efforts. The location of any mitigation bank site should augment or be compatible with regional and local planning efforts, such as watershed planning, natural community conservation planning (NCCP), special area

management plans (SAMP), habitat conservation plans (HCP), multiple species management, and open space preserves.

## III. PROJECT PROGRAMMING STAGE

At this phase, the project sponsor needs to describe proposed mitigation, including the expected functions and values anticipated to compensate for unavoidable impacts. Mitigation cost estimates must be incorporated in the various alternatives being considered.

Programs using a common funding source may be able to develop, where indicated appropriate by Corps, EPA, and FWS, a mitigation bank for anticipated compensation commitments for several projects.

## IV. PROJECT DEVELOPMENT STAGE

The project sponsor needs to develop a compensatory mitigation plan, including a feasibility study, conceptual mitigation plan, and final mitigation plan. A feasibility study of candidate mitigation site(s) will be completed prior to circulation of the draft EIS. The Corps will review candidate site(s) following their jurisdictional determination. Candidate mitigation site(s) will be identified in the conceptual mitigation plan and the draft EIS. Following issuance of the record of decision, the final mitigation plan will be developed and submitted to the Corps for approval.

Throughout the development and implementation of a mitigation plan, a mitigation project management structure is needed to identify the responsible agency, the implementing agency, the monitoring agency, and timing of implementation in relation to the proposed project.

The mitigation project management structure will:

1. Establish goals and develop objectives
2. Determine scope of mitigation project
3. Designate mitigation project management and responsibilities
   a. Identify responsible agency
   b. Identify implementing agency
   c. Identify agency responsible for monitoring
4. Identify the timing of mitigation in relation to the proposed transportation project.
5. Identify a mechanism for preserving the mitigation area in perpetuity.

### A. Draft Environmental Document Development

After addressing all reasonable efforts to avoid and minimize impacts, the remaining unavoidable impacts can be mitigated by rectifying and/or compensating impacts to the affected environment.

#### 1. Feasibility Study

The feasibility study is a preliminary investigation of candidate mitigation sites. The feasibility study information can be obtained by site visits, cursory investigations, record searches of existing databases, and referencing existing

plans and land use documents. The purpose is to quickly determine if conditions exist on site that will support the mitigation activity being proposed.

a. General Factors

(1) Political considerations
(2) Historical context
(3) Hazardous waste site in area
(4) Resource constraints—archaeology, threatened and endangered species
(5) Human use patterns
(6) Identify present internal and external stresses to the ecosystem
(7) Ownership of the candidate area
(8) Identify and address constraints on the land—easements, rights etc.
(9) Proposed and existing land use for site and adjacent areas
(10) Agricultural or quarantine issues, on, adjacent to site or in the vicinity

b. Existing Conditions

(1) Physical Factors

(a) Define the candidate area—map, description
(b) Landscape ecology considerations
(c) Soil issues—suitability, disturbed, salinity, toxic
(d) Groundwater hydrology—water table
(e) Surface hydrology
(f) Soil testing—texture, classification
(g) Topography, elevation and drainage pattern
(h) Water quality evaluation

(2) Biological Factors

(a) Determine historical evolution of the existing vegetation
(b) Identify existing habitat values and map habitat features
(c) Determine the extent of degradation on site
(d) Identify wildlife resources present
(e) Conduct plant surveys
(f) Determine if mitigation habitats conform to ecological situation on site
(g) Determine the presence of sensitive species

Collection of the preceding information will lead to a conclusion or a determination of suitability—whether the site possesses favorable characteristics which would make a successful mitigation likely.

2. **Conceptual Mitigation Plan**

The conceptual mitigation plan includes information about the specific mitigation which further elaborates upon the ability to successfully execute the mitigation.

This plan also serves to identify in general terms the extent and nature of the mitigation and should include:

- Habitat types and approximate hectares of impact
- Plant communities and habitat to be replaced
- Functions and values enhanced or created by the mitigation
- Discussion of buffer areas and habitat linkages
- General discussion of hydraulic design considerations
- Listing of species to be used
- Cost estimate
- Mitigation success criteria
- Monitoring criteria for evaluation of the mitigation

The 404 application to the Corps will include the management structure, candidate sites, feasibility studies and a conceptual mitigation plan.

B. **Final Environmental Document Development**

The final document needs to carry forward the information contained in the draft EIS. The feasibility study conducted during the selection process will determine suitability. The basis for selection will be the adequacy of the site to compensate for the functions and values impacted for the preferred alternative or each alternative in the draft EIS. The Corps will review the final candidate mitigation site(s) as part of its normal review at this stage. Before approval of the final environmental document, the Corps, EPA, and FWS must provide written preliminary agreement on the mitigation site(s).

C. **FONSI / Record of Decision**

The final mitigation plan and specifications must be approved by Corps before a permit will be issued. The final mitigation plans and specifications will be completed following the FONSI or record of decision.

**Final Mitigation Plan**

Several approaches have been formulated for restoring or creating wetlands. Each site has its own circumstances or conditions which dictate the approach or procedure to follow. Each Corps District has developed habitat mitigation and monitoring guidelines which outline the items desirable in a project mitigation plan. These documents should be considered as guidelines with the appropriate level of information and the timing of development dictated by the specific circumstances of the site and mitigation project.

## V. REFERENCES

Abell, D.L. 1989. Proceedings of the California Riparian Systems Conference: protection, management, and restoration for the 1990's; September 22–24, 1988; Davis, CA. Gen. Tech. Rep. PSW-110. Berkeley, CA: Pacific Southwest Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture; 544p.

Gore, J.A. 1985. The Restoration of Rivers and Streams: Theories and Experience. Butterworth Publishers, Boston. 280p.

Hammer, D.A. 1989. Constructed Wetlands for Wastewater Treatment: Municipal, Industrial and Agricultural. Lewis Publishers, Boca Raton. 831p.

Hammer, D.A. 1992. Creating Freshwater Wetlands. Lewis Publishers, Boca Raton. 298p.

"Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines," February 6, 1990.

Memorandum of Agreement between California Department of Transportation, Federal Highway Administration, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and the California Department of Fish and Game: "Early Mitigation Planning for Transportation Improvements in California," May 13, 1991.

Memorandum to the Field between the Environmental Protection Agency and the U.S. Army Corps of Engineers, dated August 23, 1993: "Establishment and Use of Wetland Mitigation Banks in the Clean Water Act Section 404 Regulatory Program."

# LEVEL OF DATA NEEDS / THRESHOLD FOR INVOLVEMENT

## I. SCOPE OF GUIDANCE

This guidance addresses the interagency process and level of data needed during transportation planning, programming and development for **only** *waters of the U.S.* and *associated sensitive species* (see glossary). This guidance does not cover the many other sensitive environmental resources and issues (such as threatened and endangered species not associated with aquatic habitats, recreation land, cultural resources, socioeconomic concerns, and air quality) that must also be addressed at these stages as required by the pertinent laws and regulations.

## II. TRANSPORTATION PLANNING STAGE

### A. Agency Involvement

1. All MPO's who find the transportation system or action likely to require a Corps individual section 404 permit should inform the applicable offices of the Federal and State agency MOU signatories.

   a. The MPO and State DOT should consult with other potential sponsoring, regulatory, and resource agencies to determine whether impacts to aquatic resources are likely to be substantial. If so, more detailed studies should be conducted to evaluate potential impacts. This study may be included in a subarea or corridor study.

      These studies and/or any RTP's that may contain these studies should be submitted to the regulatory and resource agencies for their input before the document is finalized.

   b. The State DOT's should determine on an annual basis which MPO's should meet directly with the resource and regulatory agencies to discuss the aquatic resource issues related to their RTP.

      The review of the Overall Work Program provides a venue to determine if the budget and work plans of MPO's consider the requirements of the NEPA–404 integration MOU.

   c. MPO's should send a copy of the circulated draft RTP and any associated environmental documents to the appropriate signatory agency contacts as identified in Appendix A. The transmittal letter should indicate whether there are potential significant impacts to aquatic resources.

2. For MPO's that have formally agreed to follow the NEPA–404 integration process:

   a. During the development of the draft RTP, the State DOT's will "review and comment on the adequacy of information and avoidance of sensitive resources presented in the RTP's and associated environmental analyses"

and "request federal regulatory/resource agencies to review and comment on the RTP's and associated environmental analyses" (MOU, page 5).

b. The Corps, EPA, FWS and NMFS will "provide input to draft RTP's (relating to waters of the U.S. and to associated sensitive species)" and "review and comment on RTP's and associated environmental analyses within the public review period: purpose and need, alternative selection, mode, environmental impacts including cumulative impacts" (MOU, page 5).

3. For MPO's that have no formal agreement:

a. During the development of the draft RTP, the State DOT's will "review and comment on the adequacy of information and avoidance of sensitive resources presented in the RTP's and associated environmental analyses" (MOU, page 5).

b. The State DOT may invite the regulatory and resource agencies to comment when it appears that an RTP will have unavoidable impacts to special aquatic sites. These agencies may then choose to become involved in estimating the extent of the resources at risk, and assessing the adequacy of the avoidance/minimization alternatives.

B. Data Needs

The RTP and associated environmental documentation will contain sufficient information to assess potential impacts to aquatic resources.

1. Information Sources

a. The extent and quality of existing resources must be assessed to determine if avoidance alternatives are needed. To accomplish this, information sources[1] that must be consulted at this stage are:

(1) FWS National Wetlands Inventory (NWI) maps,

(2) Natural Diversity Data Base (NDDB) or other natural diversity databases (the State DOT's should assist the MPO's with obtaining and accessing NWI maps and the natural diversity databases),

(3) FWS Endangered Species office for associated sensitive species lists, maps, and/or Habitat Conservation Plans.[2]

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[1] Aquatic resources may exist, but not be depicted in these general information sources; any such occurrences will need to be addressed when identified at a later stage.

[2] The Sacramento Field Office of the FWS now requires a full two years of monitoring for certain sensitive species to establish presence or absence (other field offices may also require this). Thus, the sponsor should consult the FWS early to determine the level of monitoring needed. In any case, the project sponsor must strive to establish the location of associated sensitive species or their habitats within the project area if the FWS or NDDB information indicates that they may be present.

b. It is recommended that the MPO's also consult the following sources:

(1) geographic information systems (GIS),
(2) USGS quadrangle maps,
(3) aerial photographs (check with the Corps, FWS, general plans, commercial sources),
(4) Soil Conservation Service soil survey maps,
(5) existing environmental documents,
(6) county and local general plans,
(7) individuals, including resource agency and/or academic personnel, who are familiar with the biological resources of the project area, and
(8) any other technical information provided by State DOT's.

2. Products

a. At a minimum, the MPO's shall provide the State DOT's and regulatory and resource agencies the following:

(1) The RTP and any associated environmental analyses.

(2) Maps at a scale no larger than USGS 15' quadrangles (1:48,000) of proposed projects or corridors in the RTP that potentially impact special aquatic sites and other waters of the U.S., and/or associated sensitive species. This mapping need not be of publishable quality (e.g., it could be a highlighted quadrangle map or NWI printout). The MPO should attach project descriptions or reference the RTP and/or the environmental analyses. NWI printouts or database printouts will also be attached if they are not otherwise summarized elsewhere.

(3) A quantification of purpose and need (i.e., goals and objectives) at a level of detail commensurate with the level of impacts (see Purpose and Need Guidance).

(4) A range of practicable alternatives that would avoid or minimize the impact to these resources (see Alternatives Analysis / Aquatic Resource Avoidance Guidance for information on determining practicability).

(5) An identification of preliminary mitigation needs (see Compensatory Mitigation Guidance

(6) A discussion of cumulative impacts on special aquatic sites and other waters of the U.S., and associated sensitive species within the documentation.

b. If the State DOT determines that a draft project assessment/PSR with a subarea, corridor, or other detailed study is needed (see A. Agency Involvement above), the MPO will provide the above information plus USGS

7.5' quadrangles (1:24,000) of the affected resources for each alternative (or an equivalent level of detail).

c. The RTP will demonstrate that MPO's have (1) used the resource information noted above and integrated it with other planning level mapping, (2) considered alternatives that would avoid impacts to identified resources, and (3) explored opportunities to first, avoid, and then minimize impacts. The RTP documentation should also discuss systems management strategies, mode choices, general location, capacity, and preliminary budget.

## III. PROJECT PROGRAMMING STAGE

### A. Agency Involvement

The MOU outlines the activities of each agency.

### B. Data Needs

1. Information Sources

The project sponsor should consult the information sources required and recommended for the **Transportation Planning** stage, above, if not done so earlier.

2. Products

As part of the project study report or project assessment, the project sponsor shall provide the regulatory and resource agencies the following:

a. A project description including purpose and need (see Purpose and Need Guidance.

b. Maps that show project alternatives, the aerial extent of and impacts to aquatic resources.

(1) Maps will be no larger than a 1:2400 scale, and need not be of publishable quality (e.g., highlighted maps or NWI printouts).

(2) Maps will depict the general vegetative communities within the study site.

(3) A 16-kilometer (~ten-mile) radius from the project site normally provides a useful frame of reference for developing a list of associated sensitive species to be considered during project studies. However, this will not be adequate in all cases. As a rule of thumb, the project sponsor shall consider all species associated with waters of the U.S. whose range includes the project site and whose life requirements may be met by the aquatic habitat types that are present within the survey area. Potential impacts to associated sensitive species need to be identified as accurately as possible.

(4) The maps of special aquatic sites and other waters of the U.S. should be verified in the field (a windshield survey is adequate).

(5) Following field review, impacts to special aquatic sites should be known to approximately 0.4 hectare (~one acre); impacts to other waters of the U.S. should be known to approximately 1.2 hectares (~three acres).

c. A discussion of the full range of reasonable alternatives including a focused evaluation of avoidance alternatives, their costs (including mitigation), and general environmental implications (see Alternatives Analysis / Aquatic Resource Avoidance Guidance).

d. A comparison (i.e., table or matrix) showing the relative impacts of the project alternatives on:

(1) the quantity (hectares) and general habitat quality of waters of the U.S. (showing special aquatic sites separately),

(2) the quantity (hectares) of associated sensitive species habitat,

(3) the magnitude of other significant environmental and socioeconomic resources.

e. The estimated functions and values of the proposed compensatory mitigation for unavoidable impacts of each alternative (see Compensatory Mitigation Guidance).

f. A discussion of cumulative impacts on aquatic resources.

## IV. PROJECT DEVELOPMENT STAGE

### A. Agency Involvement

1. The MOU outlines the activities of each agency. The process in the NEPA EIS-404 Permit Concurrent Process (MOU, Appendix A) should be used by project sponsors preparing EIS's. For EA's or CE's, the project sponsor should refer to the NEPA EA/CE-404 Permit Concurrent Process (MOU, Appendix A).

2. If sensitive species are identified in the project area, the project sponsor will need to coordinate with the FWS, NMFS, and the State Fish and Game Department to identify the full extent of the sensitive species habitat in the project area, the potential project impacts, and the appropriate avoidance, minimization, and compensatory mitigation measures (Fish and Wildlife Coordination Act).

3. Should the sensitive species involve listed, proposed, or candidate species or designated or proposed critical habitat, appropriate coordination under the Endangered Species Act will be required (e.g., early consultation, preliminary biological opinion, written request for species/habitat information, biological

assessment, informal consultation, formal consultation, biological opinion, conference, and/or conference opinion). Refer to 50 CFR Part 402 for the procedural regulations governing the interagency cooperation under section 7 of the Endangered Species Act of 1973, as amended.

B. **Data Needs**

Data requirements for the documents reference in the two NEPA–404 Permit Concurrent Process are described below.

1. Pre-Scoping (EIS) or Pre-Assessment (EA/CE)

   a. The "pre-scoping information" (see NEPA–404 Permit Concurrent Process) to be included in the project sponsor invitation letter to the regulatory and resource agencies is the information outlined in II.B.2, above and, in particular, should include a discussion of purpose and need (see Purpose and Need Guidance), criteria for selecting the range of alternatives, and the project alternatives to be evaluated in the draft EIS (see Alternatives Analysis / Aquatic Resource Avoidance Guidance). This information must be developed at this stage if not done so earlier.

   b. The "pre-assessment of waters of the U.S." will consist of the mapping information required at the Programming stage, as outlined above.

2. Notice of Intent (EIS's only)

   The NOI should summarize the following information from the pre-scoping stage:

   a. Purpose and Need (see Purpose and Need Guidance).

   b. Potential Alternatives and their impacts to aquatic resources and other environmental resources (see Alternatives Analysis / Aquatic Resource Avoidance Guidance).

   c. Potential Mitigation (see Compensatory Mitigation Guidance).

3. Draft Document Development/Corps Permit Application

   a. The project sponsor should refine the purpose and need and alternatives analysis as outlined in the Purpose and Need and Alternatives Analysis / Aquatic Resource Avoidance Guidances for the Project Development stage. The project sponsor shall incorporate any information obtained during the scoping process on waters of the U.S. and associated sensitive species.

   b. The project sponsor shall include the following information on special aquatic sites and other waters of the U.S. in the draft EIS/EA/CE:

      (1) A delineation of all wetlands which could be affected by the proposed project on 1:1200 scale maps using the following procedure:

(a) Agricultural Lands
In accordance with the terms and procedures of the January 6, 1994 "Memorandum of Agreement Among the Department of Agriculture, the Environmental Protection Agency, the Department of the Interior, and the Department of the Army Concerning the Delineation of Wetlands for Purposes of Section 404 of the Clean Water Act and Subtitle B of the Food Security Act," wetland delineations made by the Soil Conservation Service on "agricultural lands" (as defined in that MOA) will use the procedures described in the National Food Security Act Manual, Third Edition (NFSAM).

(b) Non-Agricultural Lands
For areas that are not "agricultural lands" (as defined in the above referenced MOA), the procedures described in the 1987 Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1, Department of the Army Waterways Experiment Station) will be used to make wetland delineations applicable to section 404.

Data forms supporting the delineation must be included.

(2) A delineation of other waters of the U.S. as follows:

(a) For tidal waters, the high tide line shall be determined as described at 33 CFR 328.3(d).

(b) For non-tidal waters, ordinary high water shall be determined as described at 33 CFR 328.3(e).

(3) Map units should be selected on the basis of a recognized classification system; for California it should be that of the CNDDB (Holland, R. F., 1986, "Preliminary Descriptions of the Terrestrial Natural Communities of California," California Department of Fish and Game, Unpublished Report, 156 pages). (Other classifications may be used in California if site conditions make them more appropriate.) Descriptive information for each mapping unit shall include the distribution of the unit within the study area, an estimate of the total number of hectares present, the dominant plant species, and the relative sensitivity of the vegetation. All plant and animal taxa encountered during site visits shall be listed by vegetation type in an appendix to the draft EIS.

(4) A detailed assessment of the functions and values of wetlands and other waters of the U.S. Functions are the physical, chemical and biological attributes of a wetland/waters without regard to their importance to society. Examples of functions include flood storage, wildlife habitat, groundwater recharge, etc. Values are those wetland/waters functions which generally are regarded as beneficial to society. Examples include recreation, aesthetics, groundwater recharge, etc. The assessment should determine which functions are performed by

the wetland/waters, the value of those functions, and how the project will affect the continued performance of the identified functions.

The project sponsor may consult the following references for further information on conducting the functions and values assessment:

Adamus, P.R., E.J. Clairain, Jr., R.D. Smith, and R.E. Young. 1987. "Wetland Evaluation Technique (WET); Volume II: Methodology." Operational Draft Technical Report Y-87-_, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Brinson, M.M., et. al. "Developing an approach for assessing the functions of wetlands." *In* (W.J. Mitsch and R.E. Turner, eds.) *Wetlands of the World: Biogeochemistry, Ecological Engineering, Modeling and Management*. Elsevier Publishers, Amsterdam.

California Department of Transportation. 1990. "Guidance for Consultants—Procedures for Completing the Natural Environment Study and Related Biological Reports." Caltrans Office of Environmental Analysis.

The Wetland Evaluation Technique II (WET II) is a methodology for assessing wetland functions and values. It was designed primarily for conducting initial, rapid assessments of wetlands. WET II with professional judgement is the current FHWA-recommended methodology for evaluating wetlands. Wetland assessments need to rely heavily on the wetland biologist's professional judgement and field experience.

(5) A detailed assessment of project impacts on special aquatic sites and other waters as follows:

(a) A discussion of the affected functions and values.

(b) A detailed description of project impacts, including the type of impact (e.g., habitat removal, fragmentation, introduction of exotic species), and its magnitude. These effects must be evaluated in the appropriate local or regional context. In most cases, a regional context will be appropriate. However, in some instances it may be more reasonable to evaluate the resource in a local context. For example, an aquatic habitat may be well represented in the region, but extremely scarce locally.

(6) A detailed purpose and need statement (see Purpose and Need Guidance).

(7) A draft Alternatives Analysis as described in the Alternatives Analysis / Aquatic Resource Avoidance Guidance (including both the "initial" and "refined" analyses).

(8) A feasibility study of candidate mitigation sites (see Compensatory Mitigation Guidance).

c. If associated sensitive species will be affected, the draft document shall also contain the following information:

(1) The biological assessment as described under A. Agency Involvement.

(2) Maps showing the occurrences of all associated sensitive species that have been identified within the survey area in relation to project features.

(3) The size(s) of the population(s) either in terms of numbers of individuals or habitat area occupied.

(4) The portion of the population(s) to be directly affected by each project alternative (expressed as a percentage of the total population in the survey area).

(5) The portion of the population(s) to be indirectly affected by each alternative (expressed as a percentage of the total population in the survey area).

(6) The amount of suitable habitat to be directly or indirectly affected under each alternative (e.g., will changes in habitat values caused by the project affect the long term survival of the population(s)? Are the anticipated effects adverse or beneficial?).

(7) The importance of project impacts within the context of the known distribution of the species (i.e., how many other populations are known to exist? What percentage of the total species numbers will be affected by the current project?).

d. When the project sponsor is evaluating significant adverse effects in an EIS and there are gaps in relevant information or scientific uncertainty, the project sponsor shall make clear that such information is lacking or that uncertainty exists by following the procedures outlined in 40 CFR § 1502.22.

e. For environmental assessments, the project sponsors need to state their preliminary determination regarding a FONSI within the draft EA.

f. The 404 permit application package shall contain:

(1) A completed section 404 permit application form.

(2) Information from the environmental document which provides
   (a) a description of the project and its alternatives;
   (b) discussions of the impacts to aquatic resources and the proposed mitigation; and
   (c) a draft section 404(b)(1) alternatives analysis.

4. Final EIS/EA/CE Development

   a. The final document shall include:

      (1) A final alternatives analysis identifying the NEPA preferred/404 least environmentally damaging practicable alternative (see Alternatives Analysis / Aquatic Resource Avoidance Guidance).

      (2) The final feasibility study of mitigation sites, identification of the mitigation site location(s), and a conceptual mitigation plan (see Compensatory Mitigation Guidance).

5. Record of Decision/FONSI/CE

   a. For environmental assessments, the basic decision would be either a finding that there are "significant" impacts to the human environment and an EIS will be prepared, or a finding of no significant impact.

   b. A FONSI will include a discussion of alternatives and mitigation measures that are appropriate to reduce adverse environmental impacts.

   c. A ROD will document the basic decision to carry out either one of the action alternatives or the no action alternative.

   d. ROD's and FONSI's will both include summaries of:

      (1) the basis for the decision on the least environmentally practicable alternative, and

      (2) the mitigation measures that will be incorporated into the project.

   e. Record of decision's and FONSI's are documents that are available to the public.

6. Corps Permit Decision

   Prior to the permit decision, the project sponsor shall:

      (1) Provide the final project design and mitigation plans and the mitigation schedule.

      (2) Complete the final mitigation plan(s) and specifications (see Compensatory Mitigation Guidance).

# Acronyms

| | |
|---|---|
| 4(f) | Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. § 303) |
| 404 | Section 404 of the Clean Water Act |
| 771 | 23 CFR Part 771, Environmental Impact and Related Procedures (FHWA) |
| AASHTO | American Association of State Highway and Transportation Officials |
| ADEQ | Arizona Department of Environmental Quality |
| ADOT | Arizona Department of Transportation |
| ADR | Alternative dispute resolution |
| AADT | Annual average daily traffic |
| ADT | Average daily traffic |
| BCDC | San Francisco Bay Conservation and Development Commission |
| BMP | Best management practices |
| CAA | Clean Air Act |
| Caltrans/CT | California Department of Transportation |
| CARB | California Air Resources Board |
| CCMP | County congestion management plan |
| CE | Categorical exclusion (NEPA) or categorical exemption (CEQA) |
| CEQ | Council on Environmental Quality |
| CEQA | California Environmental Quality Act |
| CFR | Code of Federal Regulations |
| CMA | Congestion management agency |
| CMP | Congestion management plan |
| CMS | Congestion management system |
| CNDDB | California Natural Diversity Database |
| Corps/COE | U.S. Army Corps of Engineers |
| CT/Caltrans | California Department of Transportation |
| CTC | California Transportation Commission |
| CWA | Clean Water Act (also known as the Federal Water Pollution Control Act (FWPCA)) Pub.L. 92-500, as amended by Pub.L. 95-217, 33 U.S.C. 1251, *et seq.* |
| CZM | Coastal zone management |
| CDFG | California Department of Fish and Game |
| DA | Department of the Army |
| DOI | Department of the Interior |
| DOT | Department of Transportation |
| EA | Environmental assessment |
| E.O. | Executive Order |
| EIR | Environmental impact report (under CEQA) |
| EIS | Environmental impact statement (under NEPA) |
| EPA | Environmental Protection Agency |
| ESA | Endangered Species Act |
| FHWA | Federal Highway Administration |
| FONSI | Finding of no significant impact |
| FTA | Federal Transit Administration |
| FWS | U.S. Fish and Wildlife Service |
| HCP | Habitat conservation plan |
| HEP | Habitat evaluation procedure |
| HOV | High occupancy vehicle |

| | |
|---|---|
| IPG | Intermodal planning group |
| ISTEA | Intermodal Surface Transportation Efficiency Act |
| LEDPA | Least environmentally damaging practicable alternative |
| LOS | Level of service |
| MOA | Memorandum of agreement |
| MOU | Memorandum of understanding |
| MPO | Metropolitan planning organization |
| NCCP | Natural communities conservation planning |
| NDOT | Nevada Department of Transportation |
| ND | Negative declaration (CEQA) |
| NEPA | National Environmental Policy Act |
| NFSAM | National Food Security Act Manual, Third Edition |
| NHS | National highway system |
| NMFS | National Marine Fisheries Service |
| NDDB | Natural Diversity Database |
| NOD | Notice of determination (CEQA) |
| NOI | Notice of intent (NEPA) |
| NOP | Notice of preparation (CEQA) |
| NPRM | Notice of proposed rule making |
| NPS | National Park Service |
| NWI | National Wetland Inventory |
| OST | Office of the Secretary of Transportation |
| PDT | Project development team |
| PN | Public notice |
| PR | Project report (Caltrans) |
| PS&E | Plans, specifications, and estimate |
| PSR | Project study report (Caltrans) |
| PSTIP | Proposed STIP |
| RGL | Regulatory guidance letter |
| ROD | Record of decision |
| ROW or R/W | Right-of-way |
| RTIP | Regional TIP |
| RTP | Regional transportation plan |
| R/W or ROW | Right-of-way |
| SCS | Soil Conservation Service |
| Section 4(f) | Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. § 303) |
| Section 404 | Section 404 of the Clean Water Act |
| Section 7 | Section 7 of the Endangered Species Act |
| SHA | State highway agency |
| SIP | State implementation plan (air quality) |
| SOV | Single occupancy vehicle |
| STIP | State transportation improvement plan |
| STP | Surface transportation system |
| CSWRCB | California State Water Resources Control Board |
| TCM | Transportation control measure |
| TIP | Transportation improvement program |
| TSM | Transportation systems management |
| U.S.C. | United States Code (Federal law) |
| USCG | U.S. Coast Guard |

| | |
|---|---|
| USFS | U.S. Forest Service |
| USGS | U.S. Geological Service |
| V/C | Volume/capacity |
| VMT | Vehicle miles of travel |
| WET | Wetland evaluation technique |

# Glossary[1]

**Action**—A highway or transit project proposed for FHWA or FTA funding. It also includes activities such as joint and multiple use permits, changes in access control, etc., which may or may not involve a commitment of Federal funds. 23 CFR § 771.107(b).

**Adjacent**—The term *adjacent* means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are *adjacent wetlands*. 33 CFR § 328.3(c).

**Annual element**—The portion of the transportation improvement program (TIP) which consists of projects proposed for implementation during the year. AASHTO.

**Aquatic resources**—All waters of the U.S. and associated sensitive species (both defined below).

**Associated sensitive species**—Sensitive species (defined below) which inhabit or depend on waters of the U.S. habitat for portions of their life cycle.

**Capacity**—(1) The maximum number of vehicles which has a reasonable expectation of passing over a given section of a lane or a roadway in one direction, or in both directions for a two-lane or three-lane highway, during a given time period under prevailing roadway and traffic conditions. (2) The number of passengers that can be transported over a given section of a transit line in one direction during a given time period (usually one hour) under prevailing traffic conditions. AASHTO.

**Categorical exclusion (CE)**—A category of actions/projects which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a Federal agency implementing these regulations (771 for FHWA) and for which, therefore, neither an EA or EIS is required. 40 CFR § 1508.4.

**Certification**—Approval by the Federal Highway Administration and the Federal Transit Administration of a local transportation planning process with regard to compliance with legislative and regulatory requirements. AASHTO.

**Control of access**—The condition where the right of owners or occupants of abutting land or other persons to access, light, air, or view in connection with a highway is fully or partially controlled by public authority. AASHTO.

**Cooperating agency**—Any Federal agency other than a lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or reasonable alternative) for legislation or other major Federal action/project significantly affecting the human environment. A State or local agency of similar qualifications or, when

[1] This glossary includes definitions obtained from the American Association of State Highway and Transportation Officials (AASHTO) *Transportation Glossary* (1983), the Code of Federal Regulations, the California Resources Agency CEQA regulations, and the Caltrans "Project Development Procedures Manual." Where a definition from one of these sources is used, a citation is provided at the end of the definition. Permission was obtained from AASHTO for the use of definitions from the *Transportation Glossary*.

the effects are on a reservation, an Indian Tribe may by agreement with the lead agency become a cooperating agency. 40 CFR § 1508.5.

**Corridor**—A strip of land between two termini within which traffic, topography, environment, and other characteristics are evaluated for transportation purposes. AASHTO.

**Cumulative impact**—The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. 40 CFR § 1508.7.

**Demand**—The quantity of transportation desired. AASHTO.

**Design capacity**—The maximum number of vehicles that can pass over a lane or a roadway during one hour without operating conditions falling below a preselected design level. AASHTO.

**Design concept**—The type of facility identified by the project, e.g., freeway, expressway, arterial highway, grade-separated highway, reserved right-of-way rail transit, mixed-traffic rail transit, exclusive busway, etc. 40 CFR § 51.392.

**Design scope**—The design aspects which will affect the proposed facility's impact on regional emissions, usually as they relate to vehicle or person carrying capacity and control, e.g., number of lanes or tracks to be constructed or added, length of project, signalization, access control including approximate number and location of interchanges, preferential treatment for high-occupancy vehicles, etc. 40 CFR § 51.392.

**Design speed**—A speed determined for design and correlation of the physical features of a highway that influence vehicle operation. It is the maximum safe speed that can be maintained over a specified section of highway when conditions are so favorable that the design features of the highway govern. AASHTO.

**Design volume**—A volume determined for use in design, representing traffic expected to use the highway. Unless otherwise stated, it is an hourly volume. AASHTO.

**Design year**—Twenty years after the transportation facility is open to traffic.

**Discharge of dredged material**—Any addition of dredged material into the waters of the U.S. The term includes, without limitation, the addition of dredged material to a specified discharge site located in waters of the U.S. and the runoff or overflow from a contained land or water disposal area. Discharges of pollutants into waters of the U.S. resulting from the onshore subsequent processing of dredged material that is extracted for any commercial use (other than fill) are not included within this term and are subject to section 402 of the CWA even though the extraction and deposit of such material may require a permit from the Corps of Engineers. The term does not include plowing, cultivating, seeding and harvesting for the production of food, fiber, and forest products (See 33 CFR § 323.4 for the definition of these terms). The term does not include *de minimis*, incidental soil movement occurring during normal dredging operations. 33 CFR § 323.2(d).

**Discharge of fill material**—The addition of fill material into waters of the U.S. The term generally includes, without limitation, the following activities: placement of fill that is necessary for the construction of any structure in a water of the U.S.; the building of any structure or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; dams and dikes; artificial islands; property protection and/or reclamation devices such as riprap, groins, seawalls, breakwaters, and revetments; beach nourishment; levees; fill for structures such as sewage treatment facilities, intake and outfall pipes associated with power plants and subaqueous utility lines; and artificial reefs. The term does not include plowing, cultivating, seeding and harvesting for the production of food, fiber, and forest products (See 33 CFR § 323.4 for the definition of these terms). 33 CFR § 323.2(f).

**Dredged material**—Material that is excavated or dredged from waters of the U.S. 33 CFR § 323.2(c).

**Easement**—A right to use or control the property of another for designated purposes. AASHTO.

**Effects**—*Effects* include:

(1) Direct effects, which are caused by the action and occur at the same time and place.

(2) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

*Effects* and *impacts* are synonymous. *Effects* includes ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. *Effects* may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial. 40 CFR § 1508.8.

**Environmental assessment (EA)**—A concise public document for which a Federal agency is responsible that serves to:

(1) Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact.

(2) Aid an agency's compliance with NEPA when no environmental impact statement is necessary.

(3) Facilitate preparation of an EIS when one is necessary.

An EA shall include brief discussions of the need for the proposal, the alternatives considered, and the environmental impacts of the proposal and alternatives, and include a listing of agencies and persons consulted. 40 CFR § 1508.9.

**Environmental impact report (EIR)**—A detailed statement prepared under CEQA describing and analyzing the significant environmental effects of a project and discussing ways to mitigate or avoid the effects. California Resources Agency, Title 14, section 15362.

**Environmental impact statement (EIS)**—A detailed written statement as required by section 102(2)(C) of NEPA. 40 CFR § 1508.11.

**Expressway**—A divided arterial highway for through traffic with full or partial control of access and generally with grade separations at major intersections. AASHTO.

**Fill material**—Any material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a waterbody. The term does not include any pollutant discharged into the water primarily to dispose of waste, as that activity is regulated under section 402 of the CWA. 33 CFR § 323.2(e).

**Finding of no significant impact (FONSI)**—A document by a Federal agency briefly presenting the reasons why an action/project will not have a significant effect on the human environment and for which an environmental impact statement will not be prepared. It shall include the environmental assessment or a summary of it and shall note any other environmental documents related to it (1501.7(a)(5)). If the assessment is included, the finding need not repeat any of the discussion in the assessment but may incorporate it by reference. 40 CFR § 1508.13.

**Freeway**—An expressway with full control of access. AASHTO.

**Headwaters**—*Headwaters* means non-tidal rivers, streams, and their lakes and impoundments, including adjacent wetlands, that are part of a surface tributary system to an interstate or navigable water of the U.S. upstream of the point on the river or stream at which the average annual flow is less than five cubic feet per second. The Corps may estimate this point from available data by using the mean annual area precipitation, area drainage basin maps, and the average runoff coefficient, or by similar means. For streams that are dry for long periods of the year, the Corps may establish the point where headwaters begin as that point on the stream where a flow of five cubic feet per second is equaled or exceeded 50 percent of the time. 33 CFR § 330.2(d).

**High tide line**—The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm. 33 CFR § 328.3(d).

**Human environment**—*Human environment* shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment. 40 CFR § 1508.14.

**Intermodal planning group (IPG)**—A regional organization of Federal agencies set up to oversee transportation planning activities in the states of that region. It may include representatives of the Federal Highway Administration, Coast Guard, Federal Aviation Administration, Federal Railroad Administration, Federal Transit Administration, Department of Housing and Urban Development, Environmental Protection Agency, and other Federal agencies. AASHTO.

**Isolated waters**—Those non-tidal waters of the U.S. that are: (1) not part of a surface tributary system to interstate or navigable waters of the U.S.; and (2) not adjacent to such tributary waterbodies. 33 CFR § 330.2(e).

**Jurisdiction by law**—*Jurisdiction by law* means agency authority to approve, veto, or finance all or part of the proposal. 40 CFR § 1508.15.

**Latent travel demand**—The potential number of trips that could be made by people who cannot now travel because of the inconvenience or unavailability of present modes or inability to use them. AASHTO.

**Lead agency**—The agency or agencies preparing or having taken primary responsibility for preparing the environmental impact statement. 40 CFR § 1508.16.

**Level of service (LOS)**—(1) A qualitative rating of the effectiveness of a highway in serving traffic, measured in terms of operating conditions. Note: the Highway Capacity Manual identifies operating conditions ranging from "A" for free flow operations to "F" for forced or breakdown flow (see glossary appendix). (2) The quality and quantity of transportation service provided, including characteristics that are quantifiable (safety, travel time, frequency, travel cost, number of transfers) and those that are difficult to quantify (comfort, availability, convenience, modal image). AASHTO.

**Match**—State or local funds required by the Federal government to complement Federal funds for a project. AASHTO.

**Metropolitan planning organization (MPO)**—That organization designated as being responsible, together with the State, for conducting the continuing, cooperative, and comprehensive planning process under 23 U.S.C. 134 and 49 U.S.C. 1607. It is the forum for cooperative transportation decisionmaking for the metropolitan planning area. 40 CFR § 51.392; 23 CFR § 450.104.

**Metropolitan transportation plan**—The official intermodal transportation plan that is developed and adopted through the metropolitan transportation planning process for the metropolitan planning area. 23 CFR § 450.104.

**Mitigation**—*Mitigation* includes:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action.
(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
(e) Compensating for the impact by replacing or providing substitute resources or environments. 40 CFR § 1508.20.

**Mode**—A means of transportation. Automobile travel, buses, light rail, dial-a-ride, etc., are different modes of travel. AASHTO.

**Navigable waters of the U.S.**—Navigable waters of the United States are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the

past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity. 33 CFR § 329.4.

**Network**—(1) A system of links and nodes that describes a transportation system. (2) The configuration of highways or transit routes and stops that constitutes the total system. AASHTO.

**Notice of intent**—A notice that an environmental impact statement will be prepared and considered. The notice shall briefly: (1) Describe the proposed action and possible alternatives; (2) Describe the agency's proposed scoping process including whether, when, and where any scoping meeting will be held; and (3) State the name and address of a person within the agency who can answer questions about the proposed action and the environmental impact statement. 40 CFR § 1508.22.

**Ordinary high water mark**—That line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. 33 CFR § 328.3(e).

**Owner/operator**—A state, regional, or local transportation or transit agency or authority having primary responsibility for the operation and maintenance of a specific transportation facility.

**Peak period**—That time during which the maximum amount of travel occurs; may be specified as the morning peak hour or the afternoon or evening peak hour or as both combined. AASHTO.

**Performance standard**—A formally established criterion for special activity which (a) outlines the work involved; (b) describes work methods and composition of efficient crews; and (c) lists the expected accomplishments or productivity rate. AASHTO.

**Pipeline project**—A transportation project that was extant on the date the "National Environmental Policy Act and Clean Water Act Section 404 Integration Process for Surface Transportation Projects in Arizona, California, and Nevada" MOU was signed.

**Practicable**—The term *practicable* means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. 40 CFR § 230.3(q).

**Preliminary study**—A generic term referring to the project assessment prepared in Arizona and Nevada and the project study report prepared in California. These documents provide preliminary project engineering and environmental information at the project programming stage.

**Public hearing**—A public proceeding conducted for the purpose of acquiring information or evidence which will be considered in evaluating a proposed transportation project and/or a DA permit action and which affords the public an opportunity to present their views, opinions, and information on such projects and permit actions. See 33 CFR § 327.3(a).

**Reevaluation**—(1) A written evaluation of a draft or final EIS prepared by the project sponsor in cooperation with FHWA/FTA for the purpose of determining whether or not a supplemental or new draft EIS is needed, (2) consultation between the project sponsor and FHWA/FTA after FHWA/FTA approval of an EIS, FONSI, or CE designation to establish whether or not the approved environmental document or CE designation remains valid. 23 CFR §§ 771.129 and 771.130.

**Record of decision (ROD)**—A concise public document prepared by the Federal agency at the time of its decision or recommendation to Congress which: (1) states what the decision was; (2) identifies all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives which were considered to be environmentally preferable; (3) identifies and discusses relevant factors including economic and technical considerations, agency statutory missions, and any essential considerations of national policy which were balanced by the agency in making its decision, and states how those considerations entered into its decision; (4) states whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not; and (5) adopts and summarizes monitoring and enforcement programs where applicable for any mitigation. 40 CFR § 1505.2.

**Regional transportation plan (RTP)**—See metropolitan transportation plan.

**Regulatory agency**—An agency which has jurisdiction by law.

**Resource agency**—An agency which has special expertise with respect to any environmental issue.

**Responsible agency**—A CEQA term for a public agency which proposes to carry out or approve a project, for which a lead agency is preparing or has prepared an EIR or negative declaration. For the purposes of CEQA , the term *responsible agency* includes all public agencies other than the lead agency which have discretionary approval power over the project. California Resources Agency, Title 14, section 15381.

**Right-of-way (ROW)**—A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes. AASHTO.

**Section 4(f)**—Refers to 49 U.S.C. 303 and 23 U.S.C. 138. 23 CFR §§ 771.107(e) and 771.135.

**Section 404 Permit**—A Department of the Army (DA) permit to authorize the discharge of dredged or fill material into waters of the U.S. pursuant to section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344).

**Individual permit**—A DA authorization that is issued following a case-by-case evaluation of a specific project involving the proposed discharge(s) in accordance with the procedures of 33 CFR Parts 323 and 325 and a determination that the proposed discharge is in the public interest pursuant to 33 CFR Part 320. 33 CFR § 323.2(g).

**General permit**—A DA authorization that is issued on a nationwide or regional basis for a category or categories of activities when:

(1) Those activities are substantially similar in nature and cause only minimal individual and cumulative environmental impacts; or

(2) The general permit would result in avoiding unnecessary duplication of regulatory control exercised by another Federal, state, or local agency provided it has been determined that the environmental consequences of the action are

individually and cumulatively minimal. (See 33 CFR § 325.2(e) and 33 CFR Part 330.) 33 CFR §§ 322.2(f) and 323.2(h).

**Regional permit**—Regional permits are a type of general permit. They may be issued by a division or district engineer after compliance with the other procedures of the section 404 permit regulations. If the public interest so requires, the issuing authority may condition the regional permit to require a case-by-case reporting and acknowledgement system. However, no separate applications or other authorization documents will be required. 33 CFR §§ 325.2(e)(2) and 325.5(c)(1).

**Nationwide permit**—Nationwide permits are a type of general permit and represent DA authorizations that have been issued by the regulation (33 CFR Part 330) for certain specified activities nationwide. If certain conditions are met, the specified activities can take place without the need for an individual or regional permit. 33 CFR § 325.5(c)(2).

**Letter of permission (LOP)**—Letters of permission are a type of permit issued through an abbreviated processing procedure which includes coordination with Federal and state fish and wildlife agencies, as required by the Fish and Wildlife Coordination Act, and a public interest evaluation, but without the publishing of an individual public notice. 33 CFR § 325.2(e)(1).

**Sensitive species**—Plant or animal species which are (1) Federal listed or proposed threatened or endangered species, or candidate species; (2) bird species protected under the Migratory Bird Treaty Act; (3) species protected under State endangered species laws and regulations, plant protection laws and regulations, Fish and Game codes, or species of special concern listings and policies, or (4) species recognized by national, state, or local environmental organizations (e.g., the California Native Plant Society).

**Sight distance**—The length of highway visible to the driver. AASHTO.

**Special aquatic sites**—Those sites identified in 40 CFR 230 Subpart E (i.e., sanctuaries and refuges, wetlands, mud flats, vegetated shallows, coral reefs, and riffle and pool complexes). They are geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region. 40 CFR § 230.3(q-1).

**Special expertise**—*Special expertise* means statutory responsibility, agency mission, or related program experience. 40 CFR § 1508.26.

**State transportation improvement program (STIP)**—A staged, multiyear, statewide, intermodal program of transportation projects which is consistent with the statewide transportation plan and planning processes and metropolitan plans, TIP's, and processes. 23 CFR § 450.104.

**Tidal waters**—Those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects. 33 CFR § 328.3(f).

**Tiered EIS**—*Tiering* refers to the coverage of general matters in broader environmental impact statements (such as national program or policy statements) with subsequent narrower

statements or environmental analyses (such as regional or basinwide program statements or ultimately site-specific statements) incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared. Tiering is appropriate when the sequence of statements or analyses is:

(1) From a program, plan, or policy environmental impact statement to a program, plan, or policy statement or analysis of lesser scope or to a site-specific statement or analysis; or

(2) From an environmental impact statement on a specific action at an early stage (such as need and site selection) to a supplement (which is preferred) or a subsequent statement or analysis at a later stage (such as environmental mitigation).

Tiering in such cases is appropriate when it helps the lead agency to focus on the issues which are ripe for decision and exclude from consideration issues already decided or not yet ripe. 40 CFR § 1508.28.

**Traffic**—The vehicles or persons passing a specified point during a given period.

**Annual average daily traffic (AADT)**—Daily traffic that is averaged over a calendar year.

**Average daily traffic (ADT)**—The average number of vehicles that passes a specified point during a 24-hour period. Unless otherwise stated, the period is a year.

**Generated traffic**—New traffic that develops as a result of an improvement or land use change.

**Induced traffic**—Traffic that is increased on a facility or route not by normal growth but solely by an improvement or change in the facility. AASHTO.

**Transportation improvement program (TIP)**—A staged, multiyear, intermodal program of transportation projects which is consistent with the metropolitan transportation plan. 23 CFR § 450.104.

**Transportation systems management (TSM)**—A part of the transportation planning process which identifies short-range, low-cost improvements for the urban transportation system (including both roads and public transportation). Its goal is to insure the most efficient use of the present transportation system, and it may identify improvements such as better fare structures for buses, traffic engineering changes, and new management systems for public transportation. AASHTO.

**Vehicle miles of travel (VMT)**—A measurement of the total miles traveled by all vehicles in an area. AASHTO.

**Volume**—The number of vehicles passing a given point during a specified period of time. AASHTO.

**Waters of the U.S.**—The term *waters of the United States* means

(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all water which are subject to the ebb and flow of the tide;

(2) All interstate waters including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purposes by industries in interstate commerce;

(4) All impoundments of waters otherwise defined as waters of the United States under this definition;

(5) Tributaries of waters identified in paragraphs (1)–(4);

(6) The territorial seas;

(7) Wetlands adjacent to waters (other than waters that are themselves wetland) identified in paragraphs (1)–(6).

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR § 123.11(m) which also meet the criteria of this definition) are not waters of the United States. 33 CFR § 328.3(a); 40 CFR § 230.3(s).

**Weaving**—The crossing of traffic streams moving in the same general direction accomplished by merging and diverging. AASHTO.

**Weaving section**—A length of one-way roadway at one end of which two one-way roadways merge and at the other end of which they separate. AASHTO.

**Wetlands**—The term *wetlands* means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. 33 CFR § 328.3(b); 40 CFR § 230.3(t).