CHAPTER 26

ENVIRONMENTAL MITIGATION BASICS

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During the planning phases of a project, the project team makes commitments to the public, stakeholders, and federal, state, and local agencies. These commitments are developed by environmental technical specialists as part of the National Environmental Policy Act of 1969 (NEPA) process and are stated in the environmental document through project development, in response to public comments, or as part of a required permit or approval. These environmental commitments must be carried through in the design, construction, operations, and maintenance phases of the project.

The following text defines the general types of environmental commitments and a procedure for a project manager to implement within the project team to ensure compliance with the environmental commitments is met when preparations for final design and construction are being conducted.

26.1 Environmental Commitments

Environmental commitments are all of the mitigation actions undertaken to minimize impacts on natural and manmade resources. While each commitment is developed separately for each issue of concern, commitments are coordinated on a project level to ensure that all are implemented.

In general, four broad categories of environmental commitments exist: avoidance, minimization, mitigation, and enhancements. The first aim is to avoid impacts entirely. When that is not possible, the second aim is to minimize impacts to the extent possible. Then, and only then, is mitigation considered. When practical or necessary, enhancements may be incorporated into the project as a method to offset the result of the impact.

These four categories are described in greater detail below.

26.1.1 Avoidance

Whenever practical, the project team revises the design of the alternatives to avoid impacts. Avoidance can include alignment shifts or modifications to go around or otherwise avoid a sensitive area. The decision to implement avoidance measures is determined based on practical reasons. These reasons include the feasibility to implement design modification and the cost of avoidance related to the importance of the sensitive area. A costly realignment to avoid common plant varieties, for example, is seldom justified. The same realignment may be justified, however, to avoid a Section 4(f) resource or an endangered plant species.

When avoidance occurs, it is important to document each change so that team members working on the project later in time are aware of any such decisions. If not documented, a value engineering or field modification during construction could unknowingly produce the unwanted impact, negating the earlier action.

26.1.2 Minimization

Minimization involves measures to reduce impacts. Minimization efforts result when the design of the alternatives could not be revised to avoid impacts. Design changes that can assist in modifying impacts could include alignment shifts, off-season construction to avoid breeding seasons, use of structures instead of slopes, alternative construction methods, the incorporation of drainage structures to control releases into protected waters, and measures to minimize traffic or construction noise. If complete avoidance is not practical, then reducing the potential impact to the lowest practical level becomes the goal. As with avoidance, when minimization occurs, it is important to document the change so team members working on the project later in time are aware of these decisions.

26.1.3 Mitigation

A project team implements mitigation activities only if a residual impact cannot be avoided or minimized. The environmental document identifies mitigation measures for the range of impacts of the proposed actions, regardless of whether the resources impacted would be considered significant. The goal of mitigation is to reduce impacts to the lowest levels practical, although mitigation seldom results in the elimination of all impacts. The document should review measures, such as design alternatives, possible land use controls that could be enacted, and other possible efforts (Council on Environmental Quality, 40 Questions). Best practices are important mitigations that should be noted. The document should also review mitigation measures that are outside the jurisdiction of the District of Columbia Department of Transportation (DDOT) to implement; however, this lack of jurisdiction should be noted in the discussion. The probability of implementation should be disclosed in the review, particularly when the mitigation falls outside DDOT control. If the mitigation measures have long-term implementation requirements and will not be ready in a timeframe commensurate with the occurrence of the impact, this fact should be noted also.

Mitigation measures generally fall into one of four action categories: repair or restore, reduce over time, replace, or compensate.

Repair or Restore

When a project team commits to repair or restore an area, the team is stating that it will restore an area impacted by the project to its preconstruction status, as feasible. Areas often considered for this activity are those that would be temporarily impacted or damaged by construction activities. This could include staging areas or temporary easements for construction access, or the removal of an existing feature to facilitate a required construction activity. Areas proposed for repair or restoration would not include areas considered permanently impacted by the project, such as permanent structures or roadbed features.

Most often, areas proposed for repair or restoration activities are those that have biological value. Restoration typically focuses on activities to reestablish the vegetation within the area. These activities should be conducted as soon as construction is completed in the impacted area. Details of these activities should focus on establishing a plant palette (list of plant species to use in revegetation efforts) to match (often referred to as “in kind”) or be compatible with the local environment, as well as considering irrigation needs.

Other types of repair or restoration activities can occur. These could repair any damage to nearby streets and other structures resulting from construction activities. When considering areas that have the potential for repair or restoration activities, first identify their existing use, then consider what would be constructed or conducted within that area, and finally, evaluate what damage might occur. It is important to note that the environmental document will provide commitments when repair or restoration activities are required for environmental reasons. However, some logistical repair work may not be specified. Because of this, contractors should be required to complete their work in the area by leaving it in as close to its original condition as possible. For example, a fence may need to be removed to allow vehicles to access a specific area. The contractor will want to ensure that the fence is replaced as soon as possible after construction has been completed in that area.

Reduce Over Time

Some mitigations take effect almost immediately, while others may be started but their benefits might not be fully realized for many years. For example, a grassy cover may be reestablished in a single growing season; however, a stand of trees might be replaced immediately, but could take decades to achieve the density and biological value of the original stand.

Replace

When a resource is impacted because the project needs to permanently occupy the space the resource initially occupied, replacement is often the only appropriate mitigation. If a roadside picnic area is impacted, a new roadside picnic area at a nearby location may be an appropriate mitigation by replacement. An in-kind replacement—wetland for wetland, picnic area for picnic area, tree for tree—is typically the preferred replacement, but in some cases, more creative replacements may be desirable, such as a ball field for a picnic area or a stream restoration for a wetland. The project team should coordinate replacement mitigations carefully with the appropriate regulatory agencies.

Compensate

Compensation is a type of mitigation to offset damages or displacements to land or facilities. It often occurs in the form of a cash payment or "in-lieu fee" from the agency leading the undertaking, disbursed to the party or parties impacted to make up for the loss. For example, when right-of-way requires the displacement of homes or businesses, a cash payment to the property owners is made for the property by the agency taking the action, and relocation assistance can be provided to offset other impacts.

26.1.4 Enhancements

An enhancement is a compensation that creates conditions better than those that existed before a project was constructed. An enhancement implies "doing a bit more to leave things better than they were before the project." These are most often required as part of permits (Clean Water Act) or approvals (Section 4[f]) for a project. Incorporating enhancements into a project is an approach that builds credibility and trust between transportation and resource agency staff, and with the public.

Enhancements are often best developed by considering activities that are natural extensions of what is already being done on a project. When conducting repair or restoration activities in a public wetland or other type of native habitat, a trail with educational and interpretive signage could be added. When an impact to a public park occurs, public art, landscaping, a playground, or paved pedestrian path to an area could be added. These enhancements go farther than just equal compensation for a loss, and typically serve as key elements when developing a "net benefit" for a Section 4(f) impact.

26.2 Carrying through on Environmental Commitments

Several methods exist to carry environmental commitments forward into design, construction, operations, and maintenance. The Environmental Commitments Summary and the Environmental Plan Notes are two of the most useful methods.

DDOT may appoint an environmental commitments manager to coordinate environmental commitments throughout the duration of the project. The environmental commitments manager prepares the Environmental Commitments Summary; attends project meetings, including design meetings; ensures that environmental commitments are incorporated into designs; and reviews all project documents, including NEPA documents, permit applications, permits, memoranda of agreement or understanding, value-engineering recommendations, constructability reviews, right-of-way requirements, and other documents related to project design or construction.

26.2.1 What Is an Environmental Commitments Summary?

An Environmental Commitments Summary is a compendium of commitments the project team made in the NEPA document. The team uses this summary to ensure that all commitments are communicated to designers and implemented during the project.

The Environmental Commitments Summary begins with the environmental commitments contained within the NEPA document. The Environmental Commitments Manager will coordinate the updating and expansion of this list to make them useful to the design team. Copies of any potentially applicable documentation, contact information, or any useful explanatory mapping or text will be included. This summary should contain all the information required to complete the design, including the Environmental Plan Notes, in accordance with the commitments made during the planning and NEPA process.

26.2.2 What Are Environmental Plan Notes?

Environmental Plan Notes are an important component of the Environmental Management System. The notes are how environmental commitments are communicated to the contractor and construction personnel. The engineering team writes the Environmental Plan Notes by using the data contained in the Environmental Commitments Summary and reviewed by the environmental commitments manager. The purpose of these notes is to inform the contractor and DDOT construction personnel of the environmental restrictions and mitigation commitments that they must incorporate into the project design and ultimately into the construction phase. The notes provide guidance throughout the construction process. Consequently, the notes must contain enough detail and relevant information to ensure that they can be implemented.

The Environmental Plan Notes are contract-specification and provision work items that each contractor must complete to fulfill its contract requirements. If an environmental commitment does not get incorporated into the plan and addressed in the construction contract by way of a specification or provision prior to being awarded, it is not binding on the contractor and may only be added through a contract change order.

Many Environmental Plan Notes are covered by standard specifications and best practices that are incorporated into most contracts. The environmental commitments manager will compare these requirements to project-specific commitments and ensure that project implementation efforts comply with environmental commitments. If not, the environmental commitments manager will develop nonstandard specifications to direct the contractor's work and incorporate these specifications into the Environmental Plan Notes.