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Authors

Moran, L. A.

Morris, T. J.

Publication Date

2001-09-24

UTILIZATION OF A DESIGNATED ENVIRONMENTAL MONITOR FOR THE DESIGN, CONSTRUCTION, AND REGULATORY COMPLIANCE OF TRANSPORTATION PROJECTS

Moran, L.A. and T.J. Morris, Environmental Scientists,
KCI Technologies, Inc, 10 North Park Drive
Hunt Valley, MD 21030, phone 410/316-7851,
410/316-7895 (fax), lmoran@kci.com

Abstract

In April 1999, the Maryland State Highway Administration (SHA) initiated construction of the U.S. Route 113 project in Worcester County, Maryland. This multi-phased interstate roadway project will upgrade and dualize approximately 24 miles of existing two-lane highway to improve vehicular safety and traffic flow. As a special condition of the U.S. Clean Water Act, Section 404 permit, the SHA was required by U.S. Army Corp of Engineers-Baltimore District (COE) to utilize an independent Environmental Monitor to ensure compliance with all environmental permits and commitments, and to ultimately reduce the amount of total wetland and stream impact. Although the basis for the COE requirement can be found in Section 1505-2(c) and 1505-3 of book 40 of the Code of Federal Regulations (CFR), a designated Environmental Monitor has rarely been used or required.

The US 113 project included the first large-scale Design/Build effort that the SHA has undertaken. The planned phasing sequence is for Phase I and Phase III to be completed in a Design/Build manner, with Phase II and Phase IV in a traditional fully designed and advertised-for-bid manner. The COE permitted the entire project based on approximate thirty-percent complete designs and authorized an impact of 27 acres of nontidal wetlands and 1,975 linear feet of stream channel. The COE permitted this large impact with the understanding that the Environmental Monitor would be on-site on a daily basis to ensure that impacts would be avoided and minimized during construction using best management practices and other impact minimization methods. In addition to monitoring environmental permit compliance, the Environmental Monitor also ensures implementation of commitments made in documents completed during the National Environmental Policy Act (NEPA) process such as Environmental Assessments (EA), Environmental Impact Statement (EIS), Record of Decision (ROD) and the Memorandum of Agreement (MOA) for cultural resources.

The role of the Environmental Monitor is in addition to the services normally requested for Environmental Construction Inspection (ECI) in a number of ways. The Environmental Monitor must be the on-site environmental manager and problem solver. The Environmental Monitor is charged with three broad responsibilities:

1. To review design and construction activities with emphasis on avoidance and minimization and to ensure environmental commitments and requirements are incorporated into the construction of the project.
2. To function as an unbiased independent source of environmental expertise, including making recommendations of measures and actions to reduce impact and to rectify non-compliance issues.
3. To function as a liaison between the public, the participating department of transportation (DOT), and the regulatory agencies, specifically in relation to environmental commitments and coordination with the COE for problems/issues that may arise regarding construction associated with jurisdictional Waters of the United States.

Ideally, the complete environmental monitoring effort begins with involvement in the initial design phase and extends throughout the life of the construction project. To fulfill the assigned responsibilities, the Environmental Monitor performs daily inspections of the entire project site, maintains a physical presence during the full length of construction activities within environmentally sensitive areas, obtains periodic water quality data from streams and stormwater management facilities, and reviews all submittals for the ongoing project designs.

The Environmental Monitor is to be highly involved with project construction and public involvement/information aspects, including:

- Impact Avoidance and Minimization Documentation
- SWM ponds and planting

- Water quality
- Stream relocations/crossings
- Wetland protection/restoration/mitigation
- Existing vegetation protection
- Off-site fill/borrow areas (environmental issues)
- Construction staging areas (environmental clearances)
- Cultural and historical (Section 106/Section 4(f)) issues and commitments
- Other commitments made through the federal and state environmental review process including those made during the NEPA process.
- Information management including the development of a project website that provides information to the public on such topics as project description, need and purpose, construction schedules, and detours.

To date, Phase I (the first Design/Build portion) of the project has been completed and is open to the public for use. Phase II has undergone traditional design and advertisement and is currently in the eighth month of construction. Upon completion of Phase I and the as-built surveys, a final report was prepared that provided specific information on the avoidance and minimization measures that were undertaken during the Design/Build process, the total of wetland and stream impact for the respective phase of construction, and the amount of wetland and/or stream impact that was avoided through the efforts of the Environmental Monitor team. As a result of the environmental monitoring effort, there was a reduction of 2.34 acres of wetland impact from the original 8.97 acres of impact permitted by the COE. Additionally, there was more than an acre of forest impact reduction. There were relatively minor incidents in which the project became non-compliant with erosion and sediment control issues and the COE permit. Through the efforts of the Environmental Monitor, the non-compliance was discovered quickly and rectified within a timely manner, thereby avoiding potentially costly delays, COE fines, and project shut-downs. Environmental Monitor efforts are currently ongoing for Phase II and minimization efforts are consistently documented both from the design process and the current construction activities.

Based on the results of the first phase of construction, the use of an Environmental Monitor team for large environmentally complex projects, such as the U.S. 113 project, is a successful merging of the achievement of public infrastructure goals and adherence to current environmental regulations and policies. The SHA is continuing to use an Environmental Monitor for other transportation projects largely because of the success of US 113-Phase I. The SHA has identified important tangible benefits that have been brought to the transportation construction process as a result of using an Environmental Monitor. These benefits include the avoidance of costly delays and potential shutdowns from non-compliant actions; potential reduction of environmental impacts that lead to a reduction in mitigation costs and overall project costs; detection of unforeseen environmental problems/issues; the opportunity for SHA to receive immediate professional environmental advice and recommendations regarding a specific issue; the ability for the public to receive accurate information on design and construction issues and a timely response to their concerns; and a cost-effective method of proactive environmental protection. The total cost for the US 113 project is approximately \$115 million. The services of the Environmental Monitor will cost approximately \$980,000, approximately 0.85% of the project cost.

The utilization of an Environmental Monitor is a progressive mutually beneficial cooperative effort between DOTs and state and federal regulatory agencies. This type of cooperative effort can continue to set the stage for more expeditious initiation and completion of complex public-need/transportation projects throughout the country in a cost-effective manner, ensuring that appropriate environmental protection standards and safeguards are emplaced.