

2. Knowledge and experience within Design, Construction and Environmental.
3. Transitions between Capital functional units as staff leave (transfer of project history information).
4. Consistent interpretation of permits and agreements.

Areas of Success and Innovation

5. District demonstrated a system that successfully communicated commitments from the environmental document to Construction. The system is based on a checklist developed and maintained by Environmental for each phase of the project.
6. District developed several solutions focused on environmental compliance. These solutions in many ways mirror this team's recommendations. Key elements of the District ... process include an Environmental Coordinator who acts as a liaison between Environmental and Construction for the environmental process. District has a similar liaison position.

Table of Contents

Executive Summary
Introduction

Purpose

Objectives

Scope

The Process Review Team
Findings and Recommendations

Figure 1: STA District Map

Attachments

Attachment 1: Questionnaire

Attachment 2: District Mitigation Monitoring Reporting Record

Attachment 3: District Checklist

Attachment 4: District Contract Acceptance Checklist

Introduction

As a result of findings in construction inspections conducted in late 2000 and discussions with Environmental Coordinators of STA Headquarter Construction and Environmental Divisions, FHWA and STA decided to partner in a process review of STA' process of meeting environmental commitments during construction.

Environmental commitments are those mitigation measures identified in documents prepared pursuant to the National Environmental Policy Act (NEPA), the (state) Environmental Quality Act and requirements found in permits and agreements from regulatory and resource agencies. Meeting environmental commitments during construction varies in method as well as complexity depending upon the setting. To ensure a diverse blend of construction project examples, Districts ..., ..., ..., and ... (Figure 1) were selected for the broad range of environmental issues found within their geographical boundaries. These districts also provide a cross-section of rural and urban settings.

The Process Review Team (the Team) focused on identifying the process implemented by each district to comply with environmental commitments for the selected projects in the construction phase.

In each district, the Team first met with the Deputy District Directors for Design, Project Management, Construction and Environmental to review their internal process. Then the Team conducted a field review with Resident Engineers and their staff to see how the process transferred to construction. In general, the Team found that improvement is needed between the process developed to comply with policy and its implementation in construction.

A questionnaire was developed to assure that the review was able to identify the process, whether formal or informal, and to determine the extent of how the process was being followed. Prior to meeting, a questionnaire (Attachment 1) was sent to each district. The intent of disclosing the questions was to enable the districts to prepare their response and understand areas of interest to the Team. The Team also requested that each district select two or three projects for field review. The projects had to be at least 50 percent complete in the construction phase and have environmental commitments. The intent of pre-selecting projects was to allow each district an opportunity to illuminate the success of their processes.

At the completion of the District reviews, the Team compiled its findings. The Team then worked with a broader group of senior specialists to develop recommendations. In addition, the Team identified several innovative processes employed in the different districts.

This report identifies the recommendations and more importantly the innovative successes brought to light by this review. Overall, the Team recommends that formal policy and procedure be stressed by Management and followed through in its implementation during construction.

Purpose

The purpose of this effort is to review the processes used within STA to meet project commitments identified in environmental documents prepared pursuant to NEPA and (STATE LAW REFERENCED) and related regulatory permits. NEPA and (State law referenced) are the basic charters for protection of the environment and the foundation of this review. FHWA, in conjunction with STA, has the responsibility to meet the intent of these laws for federal transportation related actions under their jurisdiction. Therefore, FHWA establishes policy, sets goals, and provides a means for carrying out the policy to implement NEPA in its regulations. Furthermore, pursuant to 23 CFR 771.109, STA has implementation responsibilities. Processes used within STA to meet environmental commitments fulfill oversight obligations and ensure both NEPA and (STATE LAW REFERENCED) are implemented in transportation projects under STA' jurisdiction.

Objectives

The review objectives were to evaluate:

- Procedures used by STA to ensure that environmental commitments are designed into projects.
- Procedures used by STA to ensure environmental commitments are implemented during the construction phase.
- Procedures used by STA to ensure environmental commitments are addressed and transmitted to personnel responsible in the maintenance phase.
- Recommendations that will assist STA in improving existing guidelines and procedures to address the above items.

The Team investigated the project delivery process from project development through construction.

Scope

This review was a joint venture between FHWA and STA. The review was conducted between April and July of 2001. Four districts were selected for this review out of the districts which comprise the STA organization (Figure 1).

Figure 1

(Figure 1 has been removed to make this a generic report)

The Process Review Team

The team was sponsored by:

Chief Division Chief
Engineering Construction
Services Department of
FHWA Transportation
....Division

Five permanent team members were assigned with additional members invited as the need occurred. The team members were:

Construction Engineer FHWA Division	Environmental Coordinator Construction Division Department of Transportation
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Project Development Coordinator Design Division Department of Transportation	Environmental Coordinator Division of Environmental Analysis Department of Transportation
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Environmental Branch Chief
..... District

..... Department of
Transportation

Findings and Recommendations

While none of the districts visited had established a formal environmental compliance process, the team is aware that certain districts have implemented informal environmental/construction processes. These processes are noted in this summary. Recommendations are provided for the first four Findings. The last two Findings are examples of success and innovation.

Finding 1: Poor communication between Environmental, Design and Construction.

Based upon the review, the Team found that the construction staff has difficulties in contacting appropriate design and environmental staff to get advices for their environmental-related problems. The Team also saw gaps in how commitment information is passed through to the final plans.

Recommendation 1: Create an Environmental/Construction Liaison position for all Districts. Presently Districts 10 and 11 have Environmental/Construction Liaisons. The team found that this significantly improved the construction of environmental commitments. One role of this position is to facilitate communication between Construction and Environmental as well as provide Environmental technical support during the construction phase.

Recommendation 2: Maintain a current phone list/contact list of the PDT or the project team members. This list should be attached to the checklist identified in Recommendation 2. An example of this list is included as Attachment 2 to this report.

Recommendation 3: Develop an Environmental Commitments Summary Checklist or Guidance to convey environmental requirements. This checklist or guidance needs to be reviewed by Design, Construction, Environmental and other Project Development Team (PDT) members in coordination with the FHWA Transportation Engineer. An example of this process can be found in District's Environmental Compliance Quality Team Report, August 1997. The Mitigation Monitoring Reporting Record (MMRR) (Attachment 2) is similar in concept. This checklist is developed with the environmental document during the Project Report phase. It is to be presented at the project pre-job meeting by Environmental staff or the Environmental/Construction Liaison.

Recommendation 4: Continuity of Environmental staff throughout the process is IMPORTANT. Retention in the Environmental units is the key. Because this can be accomplished in many ways, recommendations for improving this problem should be left to the district's management.

Recommendation 5: Define and clarify construction engineering roles and responsibilities, especially the Project Manager. As with the Environmental staff, continuity from project inception through completion for the construction engineering is critical to ensure that environmental commitments are met. The Project Manager plays a key role in that process.

Recommendation 6: According to activity 270.50 of the STA Work Breakdown Structure Manual (WBS), the Environmental staff needs to participate in the

development of the ***Certificate of Environmental Compliance***. The team found that in many instances this was not happening. The team found that a similar form (Attachment 4) prepared by District ..., the statewide form (CEM-6301) used for documenting contract acceptance needs to include a certification that all environmental commitments were met. This form must be completed and signed by the Resident Engineer at the completion of construction. The team also feels this recommendation could also be further developed to help transfer environmental commitments to Maintenance.

Recommendation 7: Environmental commitments should be translated to contract bid items similar to Standard Special Provisions (SSPs) that were developed for storm water and hazardous waste.

Recommendation 8: District Environmental staff must review Plans, Specifications and Estimates (PS&E) packages to ensure that appropriate special provisions are included and shown on the plans. If the Environmental review does not occur, the package would not advance from District Office Engineer to HQ Office Engineer.

Recommendation 9: Providing guidance to Environmental staff for PS&E review will further ensure environmental compliance. This may be a job-aid such as a checklist.

Finding 2: Lack of knowledge and experience within Design, Construction and Environmental.

The review revealed that some design staff had little knowledge of general environmental objectives while the environmental staff had little knowledge of construction techniques and PS&E process.

Recommendation: Develop the following training for Capital Project Delivery staff:

- provide a short course on meeting environmental commitments
- joint training effort between STA and FHWA
- develop training on how to maintain the administrative record
- develop job-aids for Construction and Environmental staff
- provide guidance for PS&E review (checklist)
- provide training to environmental staff on construction procedures and techniques

Finding 3: Poor transition between Capital functional units as staff leave.

Based upon the review conducted with the District's Management staff, it was found that the formal process of transmitting environmental commitment information between the project's Capital Functional Units was inadequate.

Recommendation 1: Establish standards for maintaining project records. FHWA and STA legal staff should review these standards.

Recommendation 2: Project management and functional units must keep project history file up to date. Establishing procedures for project files and providing training to staff will improve performance.

Recommendation 3: STA should provide staff with direction on how and when to document communications with resource and regulatory agency staff then, in accordance with Recommendation 1 and 2 above, include these documents in the project file.

Recommendation 4: Conduct internal spot checks or audits by STA staff to improve the quality of project files.

Recommendation 5: Develop a statewide guidance for project record keeping.

Finding 4: Incorrect or inconsistent interpretation of environmental commitments.

The review team discovered that the environmental commitment requirements were sometimes inconsistently or incorrectly interpreted by the staff of different capital functional units. For instance, it was found that construction activities for the mitigation site on the State Route ... project in the City of was taking place at the wrong time of the year.

Recommendation 1: The Environmental Commitments Summary Checklist should be reviewed by the PDT in coordination with the FHWA Transportation Engineer (Finding 1, Recommendation 2).

Recommendation 2: Provide cross training between functional units focusing on best management practices, construction methods and contract language consistent with environmental commitments.

Recommendation 3: Include all permits in the Contractor's Bid Package.

- develop Office Engineer boilerplate for an environmental SSP
- use electronic contract packages
- make permits available on the internet

Finding 5: District Innovation - "Environmental Commitment Checklist"

District is constructing a multi-phase project on new alignment. The project has several complex environmental issues. During the review of this project, District ... demonstrated a system that successfully communicated commitments from the environmental document to the Construction staff. The system is based on a checklist (Attachment 3) developed and maintained by Environmental staff for each phase of the project. The checklist presents a summary of commitments found in the environmental document. Construction staff ensures these commitments are completed. Regular meetings between Environmental and Construction staff are held to check progress and to clarify any commitments that might not be clearly understood.

Recommendation: Use this as a statewide model.

Finding 6: District Innovation, "Environmental Compliance Quality Team".

District developed several solutions focused on environmental compliance. These solutions in many ways mirror the Team's recommendations. Key elements of the District ... report include an environmental commitments checklist that is used to monitor completion through construction and a construction liaison who provides environmental technical support during the construction phase as well as enhanced communication between Construction and Environmental staff.

Recommendation: Use this as a statewide model.

ATTACHMENT 1: QUESTIONNAIRE

ACCOMPLISHMENT OF ENVIRONMENTAL COMMITMENTS

TOPIC AREAS AND QUESTIONS

A. District Project Development

1. What process is followed to insure that recommended mitigation measures and permit conditions made during project development are incorporated into the project design; contract plans and specifications; and finally carried out in Construction?

What guidance or instructions are available to require documentation of environmental commitments and implementation at each stage of a project i.e., environmental, design, construction?

2. Who is assigned to track the recommended mitigation, permit requirements, and other environmental commitments throughout to ensure that it is incorporated into the design and construction of a project?
3. What measures are taken to insure proper completion of environmental mitigation: checklists, computerized databases, other methods? How are changes monitored to ensure that commitments continue to be met, for example contract addendums or construction change orders
4. Who is responsible for maintaining mitigation features? For how long? What procedures are used?
5. Are environmental mitigation features being maintained in a manner consistent with their continued effectiveness? Is there a communication process set up for informing the Maintenance Branch of environmental commitments in a specific area? Are maintenance problems evident ?
6. Have commitments been made during the environmental process that could not be made in design or during the construction phase? If this has occurred, what changes were made, what process was followed?
7. Do you have any suggestions that would improve the existing procedures with regards to implementing environmental commitments?
8. How do you provide feedback to Environmental?
9. How do your Project Engineers/Project Managers become aware of environmental commitments and/or requirements?
10. When do the Project Engineers/Project Managers consult with the Environmental Branch? Is there consultation on-going during all steps of design?
11. What design reviews are done by the Environmental Branch?
12. Does the Environmental Branch review and concur with the final design?
13. How do you ensure that environmental commitments are feasible from a design and constructability point of view during the environmental process?
14. How do you provide feedback to Environmental?
 - a. How does Environmental convey to Design and the Construction Resident Engineer the environmental commitments for a project such as mitigation and permit requirements?
 - b. Is a distinction made by Environmental to Design and the Construction Resident Engineer between environmental commitments (required) and measures to minimize harm (not mandatory but desired)?
15. Are you aware that Environmental Certification is identified in the WBS and the Construction Manual?

16. Are you using this activity code and providing Environmental Certification?
17. How are you implementing the Environmental Certification process?

B. District Construction

1. What type of guidance has been issued to the Construction Office concerning the handling and implementation of environmental commitments?
2. Are the construction field personnel aware of environmental commitments of a project? If so, by whom and how is this done? Through written correspondence or verbal conversation?
3. How do you provide feedback to Environmental?
 - a. How does Environmental convey to Design and the Construction Resident Engineer the environmental commitments for a project such as mitigation and permit requirements?
 - b. Is a distinction made by Environmental to Design and the Construction Resident Engineer between environmental commitments (required) and measures to minimize harm (not mandatory but desired)?
4. During the pre-construction conference, is the contractor made aware of any environmental commitments? By whom? Is this documented? Are representatives from Environmental invited?
5. If changes need to be made, for any reason, to the planned environmental commitments, what process is followed and who is notified of the changes? Who approves these changes ?
6. After completion of the project, are the actions to accomplish the environmental commitments documented in contract records including any necessary special instructions for future maintenance? If so, what happens with the information (i.e., who is notified and reviews these records)?
7. Does the commitment involve on-going maintenance activities? If so, how is this accomplished? What is the process followed for assuring that maintenance activities are accomplished?
8. Do you have any suggestions that would improve the existing construction procedures with regards to implementing environmental commitments?
9. Was the commitment accomplished as stated in the Environmental Document?
10. Were there field changes to the scope of the Environmental Document? If so, what were these changes? What approval process was used? How was concurrence by externals documented?
11. Briefly describe how you are made aware of Environmental Commitments on projects.
12. Are CCO's that involve environmental commitments, directly or indirectly, always reviewed by the Environmental Branch?
13. What is the established process you follow that passes on environmental commitments to the Maintenance Branch?
14. Are you aware of the Construction Manual requirement (2-05-4, Environmental Review) that at the completion of construction the Environmental Branch with the Resident Engineer is to conduct a review to ensure that all environmental commitments were completed. In addition, a brief memo giving suggestions for improving future projects is to be sent to the appropriate District and Headquarters functional units? Is a report written on the completion of the project? If so, who receives a copy of the report and where are they filed? Does the report include the status of completing all the environmental commitments?
15. Are you aware that a Certificate of Environmental Compliance is identified in the WBS and the Construction Manual?
16. Are you using this activity code and providing Environmental Certification?
17. How are you implementing the Environmental Certification process?

Attachment 2: District ... Mitigation Monitoring Reporting Record

MITIGATION MONITORING and REPORTING RECORD

Date: November 2, 1994

11-Riv-86

Revision Date:

Enviro. Coordinator:

Task and Brief Description	Responsible Branch/Staff	Timing/Phase	Action Taken to Comply with Task	Task Completed		Remarks	Environmental Compliance	
				Initial	Date		Initial	Date
DESIGN KICK-OFF	Project Manager	Beginning of 1 Phase						
PRE-LOG IN REVIEW	Design	80% Plans						
ENVIRONMENTAL PS&E REVIEW	Environmental Coordinator	District PS&E Circulation						
IN-HOUSE PRE-CONSTRUCTION MEETING	Project Manager	Contract Award						
Transfer Resident Engineer Book	Project Engineer	Pre-const Meeting						
PRE-JOB MEETING WITH CONTRACTOR	Construction	Beginning of Construction						
ENVIRONMENTAL COMPLIANCE REVIEW	Construction	Safety Review						
DESIGN FEATURES MEMORANDUM	Construction / Design	Post Construction						
SOIL EROSION AND SILTATION (5.0)								
STA will comply with measures set	Proj. Mgmt./Const.							

forth in the National Pollutant Discharge Elimination System (NPDES) permit. (p.14)								
WATER QUALITY (5.0)								
Existing and future water quality will be monitored and controlled through the NPDES permit process. (p.15)	Proj. Mgmt./ Hydraulics							
Seed the R/W, including the median where appropriate, with native plants to establish vegetation (to provide habitat and reduce long term erosion.) (p.19)	Proj. Mgmt./ Land. Arch./ Const.							
Rehabilitate appropriate areas along the River by removing invasive plants. (p.15)	Proj. Mgmt./ Land. Arch./ Biology							
Proposed construction affecting the River will require the application for a 404 permit from the ACOE. (p.15)	Proj. Mgmt./ Proj. Dev./ Env. Steward.							
Proposed construction affecting the River and other drainages will require the application for a 401 permit from the U.S. EPA and the	Proj. Mgmt./ Proj. Dev./ Env. Steward.							
LIGHT AND GLARE (5.0)								

Install high pressure sodium lights at intersections to reduce glare. To minimize ambient light, narrowly shielded lights will be considered during design. (p.18)	Proj. Mgmt./ Proj. Dev.								
NOISE (5.0)									
Install earthen noise berms to reduce noise levels for several homes. (p.17)	Proj. Mgmt./ Proj. Dev./ Env. Analysis 'C'								
Minimize construction noise. Noise berms will be constructed as one of the first orders of work. (p.17)	Proj. Mgmt./ Proj. Dev./ Const.								
BIOLOGY (5.0)									
A pre-construction survey will be done, and Burrowing Owls will be excluded from any active burrow immediately prior to construction. (p.19)	Proj. Mgmt./ Biology/ Const.								
Seed the right of way, including the median where appropriate, with native plants to establish vegetation (to provide habitat and reduce long term erosion), approximately 100 acres will be seeded. (p.19)	Proj. Mgmt./ Land. Arch./ Const.								
Acquire and restore appropriate lands in the vicinity of the project. Site	Proj. Mgmt./ Biology								

<p>specifics, including mitigation/impact ratios, will be determined as part of the Section 404 permit process. The current plan proposes about 100 acres of restoration. (p.21)</p>								
<p>A mitigation plan for the alkali sink scrub will be prepared in coordination with the FWS. The plan will then be submitted and approved by FHWA prior to the remaining stages of the project (2 & 3) being advertised. (p.21)</p>	<p>Proj. Mgmt./ Biology/ Proj. Dev.</p>							
<p>FARMLAND (5.0)</p>								
<p>Consideration will be given to providing access to farmland which has been severed by the project. (p.22)</p>	<p>Proj. Mgmt./ Proj. Dev.</p>							
<p>STA intends to offer for lease, future interchange right of way for agricultural purposes. (p.22)</p>	<p>Proj. Mgmt./ Right-of-Way</p>							
<p>STA will investigate placing a conservation easement on farmland parcels to keep them in agricultural operation (such as excess parcel remainders). (p.22)</p>	<p>Proj. Mgmt./ Right-of-Way</p>							
<p>ENDANGERED SPECIES (5.0)</p>								

Utilize diversion channels during construction to prevent impacts to the desert pupfish. (p.22)	Proj. Mgmt./ Biology/ Const.							
Acquire a minimum of 20 acres which includes suitable pupfish habitat, within 1 year of the start of construction of Stage 3. (p.22)	Proj. Mgmt./ Right-of-Way							
HOUSING AND RELOCATION (5.0)								
Provide relocation assistance for residents of all homes and businesses displaced by the project. Resident displacees will be relocated into comparable decent, safe and sanitary housing. (p.24)	Proj. Mgmt./ Right-of-Way							
CULTURAL RESOURCES (5.0)								
Sites adjacent to project areas were designated "ESAs" and declared off-limits to construction activities. (p.27)	Proj. Mgmt./ Archaeology/ Const.							
VISUAL (5.0)								
Seed the right of way (including medians where appropriate) with native species, and plant native trees or palms at appropriate locations. (p.28)	Proj. Mgmt./ Land. Arch.							
Incorporate texturing	Proj. Mgmt./							

and coloring of structures/bridges, where practicable. (p.28)	Proj. Dev.							
The two largest channels (Ave. 68 and 57) will be earth bottomed, allowing plants to establish over time. (p.28)	Proj. Mgmt./ Proj. Dev.							
Concrete and rocks/gabions will be colored to match surrounding soil, where practicable. (p.28)	Proj. Mgmt./ Proj. Dev.							
Every effort will be made to save removed date palm trees, so that they can be replanted elsewhere in the valley. (p.28)	Proj. Mgmt./ Proj. Dev.							
Berms will be earthen, and therefore will blend in better with the environment than would walls. Also they will be rounded and with varying side slopes to provide a more natural appearance. (p.28)	Proj. Mgmt./ Proj. Dev.							
CONSTRUCTION ACTIVITIES (5.0)								
Noise barriers will be one of the first orders of work to help mitigate construction noise. (p.28)	Proj. Mgmt./ Proj. Dev./ Construction							
The Construction Resident Engineer will keep residents in the immediate area	Proj. Mgmt./ Proj. Dev./ Construction							

informed about construction operations. (p.28)								
Nighttime, weekend and holiday work near residences will be limited to 5 types of activities. (p.28)	Proj. Mgmt./ Proj. Dev./ Construction							
Compliance with STA Standard Specification 7-1.01I (July, 1992). (p.28)	Proj. Mgmt./ Proj. Dev./ Construction							

ATTACHMENT 3: DISTRICT CHECKLIST

ROUTE MITIGATION MONITORING REPORT

Project/Component:	EA	K.P.
Mitigation Log Number	Party Responsible for Mitigation Monitoring	
Required Monitoring/Reporting Frequency:	Implementation/Monitoring Phase: (circle) Design Construction Operation	
Mitigation Measure:		
Mitigation Monitoring Action Performed:		
<p>Mitigation Complete? Yes ___ No ___</p> <p>If yes, reference any supporting documentation such as engineering drawings, contract documents, or other reports as applicable.</p> <p>If no, itemize outstanding mitigation and reasons why measures were not implemented.</p>		

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In accordance with the Public Resources Code Section 21081.1, I hereby certify under penalty that the information contained herein is true and correct to the best of my knowledge.

Name/Title/Agency of Person Completing Report:

Signature:	Date:
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Signature of Project Manager:	Date:
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ARC
RECEIVED

