



## Web Forum: Construction-to-Maintenance Handoff

### Summary

December 5, 2019

A web forum was held for state Departments of Transportation (DOT) stormwater practitioners to discuss the process of handing off stormwater projects from Construction to Maintenance to promote surface water quality protection. Following is a summary of the main points discussed by each of the presenters.

#### Presentation 1

Pete Riegelhuth, District 5 NPDES Coordinator, California Department of Transportation, ***90% Walkthrough – Construction to Maintenance Handoff***

Permanent stormwater treatment BMPs were either not getting built or were not getting built as planned. A process was put in place to direct Construction to have a 90 percent walkthrough, because BMPs being built were either not functional or not maintainable. A project field walkthrough review with Maintenance is required at approximately 90 percent of project completion, and to identify items necessary to comply with the National Pollutant Discharge Elimination System (NPDES) Permit and the Construction General Permit. At final inspection, the resident engineer schedules a final inspection with Maintenance and other California Department of Transportation (Caltrans) divisions. During the 90 percent field review meeting, the resident engineer and district maintenance stormwater coordinator must complete Form MTCE 0023, "Construction to Maintenance 90% BMP Completion Walkthrough."

Topics to discuss during the walkthrough include post-construction runoff control treatment best management practices (BMPs); drainage systems; illegal connections/illicit discharges (IC/IDs), such as runoff from farms in rural areas; temporary construction site BMPs, typically near the end of a construction project; permanent erosion control (slope stability), especially in places that do not get a lot of rainfall; plant establishment contracts; and offsite contractor facility cleanup, including maintenance stockpile facilities, which require Facility Pollution Prevention Plans.

It is important to identify deficiencies and review the maintenance requirements with staff. These are found in the Caltrans Stormwater Quality Handbook Maintenance Staff Guide, which discusses treatment BMPs and their maintenance requirements. Each treatment BMP has its maintenance indicators, inspection frequency, and associated maintenance activities. Common issues include vegetated and non-vegetated infiltration areas and uncompacting soil where necessary; vegetative cover requirements and bioswales and biostrip maintenance; walking staff through areas with detention basins and infiltration basins; and checking for and

removing trash. Caltrans has approximately 20 years to comply with the zero-trash requirement by the State Water Resources Control Board.

Also discussed was pesticide use; treatment BMPs should not be installed in pesticide areas. Herbicides should not be used to kill grasses or court referral labor to remove grasses. No plastic is allowed on construction site BMPs. Trash must be picked up around treatment BMPs. There have been problems with mulch, so now Caltrans uses native grass sod. Irrigation must be working properly. Maintenance needs to understand how the various parts of the BMP operate, such as drain valves, emergency drain inlets, and orifices. Other things to review with maintenance staff include slope stabilization; scour problems; access points; proper drainage; treatment BMP markers to indicate where the BMP begins and ends; finalizing the treatment BMP inventory; determining whether alternative compliance is necessary; As-Built lists, calculations, and drainage plans/details/specifications; maintenance needs mapping; Caltrans Integrated Maintenance Management System (IMMS) form completion; and entering BMPs into the Caltrans IMMS database.

## **Presentation 2**

Heather Voisin, Green Infrastructure Engineer, and Jennifer Callahan, Stormwater Technician, Vermont Agency of Transportation, ***The Flow of Stormwater on VTrans' Projects – An Evolving Process***

The presenters discussed how the Vermont Agency of Transportation (VTrans) moves from design through construction then maintenance. Vermont's Act 64 is the Clean Water Act, which addresses a large range of programs. The two main components for VTrans are the construction and Transportation Separate Storm Sewer System (TS4) permits.

The VTrans TS4 permit is an umbrella permit that contains requirements for the municipal separate storm sewer system (MS4), municipal separate general permit (MSGP), and operational programs. Within the MS4, the two main programs that compel VTrans to create structural stormwater BMPs are State Operational Permit and total maximum daily load (TMDL) implementation within the MS4 program. The State Operational Permit requires BMPs on projects creating one acre or more of impervious surface. This threshold will be lowered to 0.5 acres in 2021. Currently, 10 projects per year that fall under this program, and this is expected to double once the threshold is lowered. Within the MS4 permit, VTrans is required to implement TMDLs for impaired waters. The main TMDLs that require the implementation of BMPs is the stormwater impaired watersheds and the Lake Champagne Phosphorus TMDL. Currently, 60 BMPs are planned for the stormwater impaired watersheds; however, BMPs are still in the planning stage for the Lake Champagne TMDL. Since this TMDL covers over half of the state, many more BMPs are expected to be implemented. Currently, 17 are constructed and 20 are designed and planned for construction next season.

Vermont also has a statewide Construction General Permit (CGP), which is administered by the Department of Environmental Conservation (DEC) within the Vermont Agency of Natural

Resources. The permit program is a tiered, risk-based program with an initial assessment based on a variety of factors, including the amount of disturbance, distance to receiving waters, soil erodibility, slope steepness, and stabilization schedule. It is required for projects that have one acre or more of earth disturbance. Low-risk projects pose minimal risk to resources and generally do not require a technical review by DEC. Moderate-risk projects are larger, more complicated in nature, and have additional permit requirements. Individual permits have reporting requirements and need to have a designated erosion sediment control specialist working on behalf of VTrans. On average, 30 VTrans projects per year require compliance with this permit.

VTrans stormwater regulations have increased over the past 15 years. Dedicated agency staff has also increased from one to nine across the programs. The staff has had to learn how to communicate with each other and with the agency they work with. Stormwater staff is located in the Highway Division. VTrans staff is currently strengthening its stormwater programs, building partnerships to improve water quality throughout the state, and making water quality protection fundamental to the agency's way of doing business. The agency has a Highway Division, to which Design, Construction, and Maintenance report.

During the design phase, environmental section staff members review preliminary plans and hold a constructability meeting. The construction environmental engineer participates in the permit application and plans development review for moderate-risk projects or those with a general or individual permit. Online shared reviews are conducted with follow-up meetings at design milestones. The final plans are then reviewed with a PS&E pre-contract meeting. The construction environmental engineer steers the project throughout the construction process. He or she reviews the contract for environmental commitments and permit conditions, then holds a kickoff meeting and preconstruction conference. Once construction is underway, site visits are held, followed by the pre-final site visit and the final inspection. Sometimes follow-up visits are needed. Maintenance consists of consultation during design, the pre-final meeting with construction, creation of a maintenance plan, meeting with district staff, annual inspections, renewals every five years, and ongoing maintenance as needed.

Challenges including the time of year; differing site conditions, and situations that are "too late to fix". Successes include open and frequent communication and coordination between highway division stormwater staff, including regular check-ins on projects and using a shared workbook; and enhanced communication and coordination between highway division stormwater staff, including regular check-ins on projects and conducting the pre-final inspection. Using the online shared reviews has allowed for earlier input from all staff into the design process. This has helped flag issues promptly and make design changes.

After the presentations, the panelists addressed questions submitted by the attendees.

## Questions and Answers

**Question:** Does Caltrans use geographical information systems (GIS) to support stormwater BMP asset management?

**Answer:** Yes, we do. We have a statewide portal (GIS database) that shows all our storm drains, permanent treatment BMPs, etc. When a project is completed and before it goes out to bid, we enter all the stormwater treatment BMP information into this statewide database. After the construction walk through, the treatment BMP status is updated to either expired or constructed. We are still figuring out who is to enter the information into the database, but there is a place to go in there and accept the treatment BMP or show it was adjusted.

**Question:** In California, who is responsible for entering in all the data from the forms (MTCE 0023 plus As-Builts) into the Stormwater Database?

**Answer:** It varies district by district. Caltrans has twelve districts, and some are set up (San Francisco Bay Area), where there is a whole unit that performs permitting, temporary and permanent stormwater BMPs. Here in District 5, there are three of us in our NPDES unit with two construction stormwater coordinators and three maintenance stormwater coordinators. Basically, whoever needs to take care of it enters the information. I enter our information into our database, then Construction works with Maintenance to enter the information into 90% walk through form and verify all the treatment BMPs are completed.

**Question:** Caltrans describes a process where not everything goes as planned or gets built as designed. Do you have any plans for improving the process?

**Answer:** Yes, we do. In my District (Central Coast), we have a greater emphasis on the pre-job meeting with REs. Every project has a pre-job meeting. One with the Design group, environmental construction liaison and construction stormwater coordinator, we make a point to show the RE these are the BMPs to need get built and if you are going to change anything, you need to talk with us because we will have to make up for those and do not want to have to do alternative compliance. Statewide, Caltrans is training our construction stormwater coordinators to assure compliance with our NPDES Permit and Construction General Permit, inspecting treatment BMPs and assisting the REs with pre-rain season work that they need to do while reviewing and updating the contractor's Stormwater Pollution Prevention Plans (SWPPPs). This helps train our construction stormwater coordinators on permanent stormwater requirements, design requirements, and having staff out there on a more regular basis, looking at them while being constructed, rather than waiting until the end of construction and finding out something is wrong.

**Question:** If treatment BMPs do not get built as planned, the project is required to make up for that with Alternative Compliance. Has Caltrans had to do this, and what is Alternative Compliance?

**Answer:** In District 5, we have not yet had to perform alternative compliance. Caltrans has been a Phase I MS4 permittee since 1999. Our current permit requires that if we cannot do 100% treatment, we must do alternative compliance as determined by the Executive Director of the Regional Water Quality Control Board. Our permit is vague. In preparation for having to perform this, we coordinate extensively with our municipal partners. We meet regularly with our counterparts in the cities and counties. They develop watershed management plans and have a portfolio of projects. Hopefully, we can fund one of these projects with a cooperative agreement, as an example. It would be nice to have a banking system in place with the regulator, but we are not there yet.

**Question:** VTrans, can you elaborate on the process you went through to identify obstacles and opportunities in transitioning projects from Construction to Maintenance?

**Answer:** I do not think it was a "specific" process we went through to identify those obstacles, but when we started having more staff involved, we were able to take a closer look, and that is where it was realized that we were running into some issues. We have gone through and developed some of these other means to improve those lines of communication and we went through a mapping exercise where we brought all of the parties together mapped out what is our process so we could better understand the different roles and how a project moves from Design into Construction and into Maintenance Through that process, we were able to brainstorm where we could make improvements.

**Question:** In VTrans, do the Stormwater staff in DOT Districts meet in person at the Central office or is this done through web meetings/conference calls?

**Answer:** Most of it is here in the central office. All of our stormwater technicians are centrally located. Vermont is small enough to where we can get out and visit any part of the state within an hour or two, at the most three hours from corner to corner. It is fairly easy for us to be centralized for those functions. Meetings with the District staff are usually done onsite in the field. We have four regional stormwater technicians that oversee a certain region, so they focus on those areas and spend a lot of time in the field.

**Question:** VTrans, what does the actual handoff involve?

**Answer:** The handoff is from our Design staff to Maintenance (because our Construction section is mostly just shepherding the project as it was designed). The actual handoff is between the stormwater management engineer in design, who is making sure that the project as constructed meets what the permit shows, and that the initial designer's certification has been signed. Once it is ready, the stormwater management engineer will reach out to the stormwater technician in maintenance to let them know, sometimes via a simple email, to state that the project is ready for maintenance.

**Question:** VTrans, do you have a method for tracking projects or specific BMPs?

**Answer:** As we mentioned in the presentation, the tracking method is pretty simple process, an excel workbook with two tabs, one is while in design or construction, and once it is complete and finalized, the construction stormwater engineer will contact the regional maintenance stormwater technician, and they will physically move from construction tab to maintenance tab, and that is how we track BMPs. In Maintenance, we also have a GIS maintenance map to track all stormwater-related assets. That is how we perform inspections.

**Question:** There are a lot of ongoing issues around installing and maintaining treatment BMPs around agricultural areas. Other than keeping an open line of communication with the land owners, do you know of any other potential solutions to ensure BMPs are functioning efficiently?

**Answer:** Caltrans has many treatment BMPs adjacent to agriculture. At this point, I am not aware of any agriculture operation negatively affecting a treatment BMP. Agricultural operations, especially during harvest season, do tend to plug up drainage systems or get mud all over the road, affecting striping. We treat those situations as IC/IDs and deal with them at the lowest level possible. Our Maintenance folks will go out and talk with the land owner (farmer) and explain the permitting issue. If they are a repeat offender, our only avenue is to contact our Regional Water Quality Control Board, who can investigate and require the land owner to rectify the situation.

VTrans: We are pretty similar to California. One addition is we do have a line of communication with our Agency of Agriculture (Water Quality Section) that we can utilize if and when we have any issues.

**Question:** Is there a separate funding source for BMP maintenance versus normal roadside maintenance?

**Answer:** VTrans: We have a dedicated fund that is centrally located specifically for maintenance and compliance of our stormwater BMPs. The Regional stormwater technician works with the District staff to get the work done and fund it.

Caltrans' budget has about five or six different areas funded for various types of work. Our Maintenance Division has a separate budget for storm drain maintenance, erosion control, etc. Each District has an annual budget for that. We also go out about every two years and train our Maintenance staff on treatment BMP maintenance. Correct charging procedures for treatment BMP maintenance is part of that training. District budgets can fluctuate year-to-year.

**Question:** How did you deal with the constructability issue?

**Answer:** Caltrans: There are always changes during construction, and some of those are to stormwater treatment BMPs. Now that we are required to treat 100% of new and replaced impervious surfaces, or we have to perform alternative compliance, we have to make sure to have the pre-job meeting with the RE and bring this to the RE's attention. There is an RE binder with all of this information. If there are going to be any changes to the post construction runoff control BMPs, we need to know now, so we can replace them in kind or relocate them somewhere else on the job or in the watershed or by doing alternative compliance.

**Question:** Sensitive species may show up in stormwater facilities. What/how is guidance or accommodation incorporated into operations?

**Answer:** In California, for roadside maintenance, we have guidance, where we have identified environmentally-sensitive habitat. Our maintenance folks may be restricted because we know of an endangered species (plant or animal). Another thing we started exploring several years ago is the Safe Harbor Agreement with the Department of Fish and Game, where you get a permit to take endangered species before they move in. This is one way to deal with endangered species.

**Question:** There is inherent conflict between construction project closeout for bookkeeping and the time that nature needs to set up 70% cover. How do you get agency buy-in to prioritize (and wait for) establishment of vegetation?

**Answer:** VTrans: We recognize that there is some interest in getting projects closed out, but our experience has been that everyone is very supportive to not fully close out until vegetation has been established.

Caltrans: You do not want to hold the contractor's bond longer than necessary, so there is a desire to let a contractor go as soon as possible. One thing we can do is have an erosion control period. More recently, our Headquarters Landscape Architecture Branch has developed specifications and guidance for situations in areas where it may be hard to establish vegetation. There is a separate bid line item for establishing erosion control. Also, if the environmental permit(s) requires a three-year plant establishment, we will detach that as a separate contract, so we do not hold the contractor's bond for another three years.

**Question:** Is anyone utilizing drones (UAS) for inspections or inventory?

**Answer:** Caltrans: No, not for BMP inspection.

VTrans: We have a drone program that is relatively new, and we are exploring different opportunities, but not for checking for compliance on a construction project. It is more for emergency issues.

**Question:** Will the presentation be made available to participants?

**Answer:** Yes, the webinar (slides and audio), summary, and Q & A will be posted on the Center for Environmental Excellence by AASHTO website.