By Ryan Janoch

Plugged In

Leveraging technology to master site inspections

A great storm water program consists of well-trained personnel, effective Best Management Practices (BMPs), and on-time inspections and reporting. In addition, sampling must be done according to permit requirements, comprehensive records should be kept and the associated risks should be understood. However, for many contractors and facility owners, the aforementioned requirements become more onerous with each new storm water permit that is issued. Correspondingly, the industry has had to adapt its compliance strategy to keep up with the increasing demands placed on it. This is becoming more evident, especially with site inspections, as they are key to fixing BMPs prior to rain events and avoiding compliance issues related to storm water discharge sampling (namely exceeding benchmarks, action levels, etc.). As tablets and smartphones now are commonplace on construction and industrial sites, they have fueled a trend toward leveraging mobile and cloud (online) technologies for site inspections, ultimately resulting in a dramatic increase in workflow efficiency and reduction in compliance issues.

The Cost of Getting It Wrong

Whether we are referring to an industrial facility or a construction site, the cost of a storm water program can have a significant impact on the owner's budget. California has a new industrial storm water permit that went into effect on July 1, 2015, and includes many small industrial facilities, such as wineries or breweries, that previously were not under the permit. These facilities are asking, "Why should I comply? Does the California State Water Resources Control Board have the resources to track even small

A correctly installed sediment control BMP (drain inlet filter) is shown here.

industrial facilities?" Likewise, with construction projects, storm water programs often are an afterthought because they are not a core part of getting a structure built or a site graded. Typically, costs and time spent on inspections and BMP installations divert resources from what construction managers or operations managers view as their jobs: construction and manufacturing, respectively.

However, while storm water programs seem like a cost and time sink, storm water regulations certainly are not going away, and ignoring them can only make the situation worse. Regulators can bring enforcement actions against sites for storm water permit violations, such as failing to implement proper BMPs or deficient storm water pollution prevention plans (SWPPPs). These enforcement actions can range from a verbal warning from a regulator that visits a site to a formal notice of violation (NOV) in the mail to financial penalties. In addition, there are third-party environmental organizations that bring citizen lawsuits under the Clean Water Act against permit holders—primarily industrial facilities—for storm water permit violations. These lawsuits typically result in costly legal bills, extra time spent by staff to defend them, and significant financial penalties (tens of thousands or even millions of dollars). Regulators and environmental organizations typically are drawn to sites with storm water program deficiencies that are visually apparent, such as excessive sediment trackout or discolored plumes of storm water entering drains. This makes site inspections a critical piece of a robust storm water program that can reduce the risk of non-compliance and the associated financial costs.

Training

A storm water program combining well-trained personnel with a proactive approach to BMP installation and, probably most importantly, BMP maintenance, can prevent the installation of extra or more advanced BMPs and additional time and money spent on consultants to explain violations. Trained storm water inspectors can have a range of credentials—some state required, such as California's Qualified SWPPP Practitioners (QSP) certification for construction sites—or are trained in-house or by a professional trainer hired by their employer.

Regardless of the certification or time spent in training, an inspector must be able to distinguish between good and deficient BMPs, identify potential unauthorized non-storm water discharges, and thoroughly document and communicate the inspection and corrective actions needed. Training typically is conducted once a year in a more formal setting, but managers often use site visits to continually train their staff on good inspection techniques. For example, a facility may hold a formal classroom session at the start of each permit year. For general staff, the session may be about storm water awareness, such as what a BMP is and what to do in the event of a spill. For the storm water team, including site inspectors, the training could be about proper BMP inspection, maintenance and installation. Hands-on training for the storm water team also is a good idea, because photos and slides can only go so far. Then, throughout the year, senior inspectors or managers can walk the site with an inspector as a refresher or supplement to the initial training. Training is the foundation for thorough site inspections, so it pays to invest a little time at the beginning to make sure inspectors can spot problems, thoroughly document the site inspection and communicate deficiencies clearly.

Documentation

Documentation of site inspections can take many forms, from the basic—a pre-printed paper inspection form—to the electronic, such as a mobile inspection form app on a smartphone. The same key criteria—date and time, observations, deficiencies and necessary corrective actions—are recorded and filed away as part of permits' recordkeeping requirements.

Specific requirements on frequency vary from state to state. For example, the California industrial general permit requires monthly dry-weather inspections of BMPs and non-storm water discharges versus the required quarterly facility inspections under the U.S. Environmental Protection Agency's Multi-Sector General Permit, the default industrial storm water permit for Massachusetts, New Hampshire, District of Columbia, Idaho and New Mexico. Likewise, Texas' construction storm water permit requires inspections of storm water controls or BMPs every 14 days, while California's construction general permit requires weekly inspections of BMPs.

Regardless of the frequency and information collected, every site inspection needs to be documented and stored per permit requirements—typically for five years. Managing stacks of paper, especially when dealing with multiple locations, can quickly turn into a drain on resources. Surprisingly, there are still inspectors who fax or mail their inspection forms into a main office. Most, however, have moved on to scanning paper forms into a PDF for online storage. Those folders often become a mess as different projects get mixed

Here, a good housekeeping BMP (sweeping) has not been effective, so a sediment control BMP (a drain inlet filter) is likely necessary.

together, and it became someone's job to make sure the forms actually get scanned and sorted. Now, from site inspection photos of unauthorized discharges such as oil, to GPS coordinates of drain inlets, inspectors are turning toward mobile and cloud-based apps to store their records in the event of a visit from a regulator, or worse, a lawsuit or NOV.

Communication

Cloud-based apps do not just aid in the event of a lawsuit or violation, but also can help prevent sites from ever reaching that point. With the push of button, a site inspector can share BMP deficiencies and corrective actions needed with all stakeholders. For example, one industrial facility completed its required monthly inspection using Mapistry's mobile app in one location, and in real time, the environmental manager had access to the inspection results, including deficiencies, back in the home office. Allocation of resources

to respond to those deficiencies can happen in minutes, not days or hours. Many environmental managers with multiple or even hundreds of sites cite communication between their field staff and the corporate office as their biggest problem with storm water permits. With electronic forms, there no longer is a gap between the field and office.

We see firsthand how consistency in naming conventions from site maps to inspection forms results in greater clarity on discharge locations, drainage areas and BMPs, because now all the terminology is the same regardless of the document. For example, Mapistry's service integrated maps with a SWPPP and inspection form to eliminate questions like, "Are discharge location O-1, O-2 and O-3 on the site maps different from the inspection forms, which say A-1, A-2 and A-3? Also, my SWPPP says Outfall A, Outfall B and Outfall C."

The other major challenge is with site locations in the field, which may not be obvious to a new inspector sent to a site without a map, or with an outdated map. Integrated GPS technology in mapping tools allows a field staff member to set GPS locations of outfalls one week and another staff member to walk out with a tablet the next week and see how close they are to the location to collect a sample.

Whether you communicate by fax, carrier pigeon or email, getting information to the right person after a site inspection is key. A centralized online dashboard can help get it there instantly while complying with storm water permit record-keeping requirements, thus saving staff from extra data entry or document scanning. From maps to inspection forms, more site inspectors are using technology to stay on the same page and communicate faster, more clearly and ultimately, more effectively.
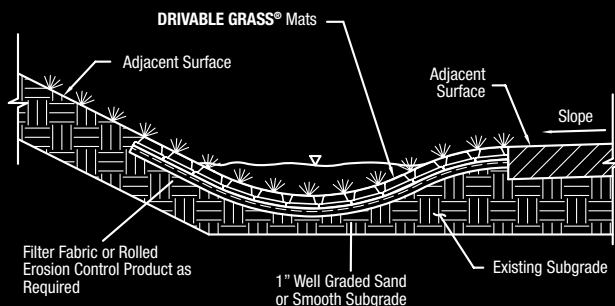
Technology as a Solution

At a minimum, a good inspection program combined with strong preventive maintenance can indentify or fix problem areas before they get out of control, and can prevent new problems from arising. Start with a solid training program and empower inspectors to identify small problems before they become million-dollar ones. Give them the resources they need, whether it is specialized training on sampling and field meter calibration or mobile apps and tablets. Ultimately, organizations can adapt to the age of more permit requirements and less time by utilizing technology to send reminders and store all storm water program documentation in one accessible place. With instant access to documents and clear, concise communication, organizations small and large can successfully deal with increased scrutiny without incurring additional financial costs by utilizing technology to increase their workflow efficiency. **SWS**

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