Stormwater 101: The Basics

Sonia Brubaker: Good afternoon and welcome to today's webcast titled Stormwater 101: The Basics.

This Webcast is sponsored by EPA's Office of Wastewater Management.

I am Sonia Brubaker with Tetra Tech and will moderate today's session.

Thank you all for joining us today.

We'll start by going over a few housekeeping items. For those of you new to EPA's Stormwater Webcast, I want to briefly summarize some of the Webcast features.

First, if you have any technical difficulties, you can call 1-800-833-2812 or click the Help button to receive technical support from ON24. Again, that number is 1-800-833-2812.

You may also use the Ask a Question area to post any technical issues you are experiencing. Please include a telephone number where you can be reached and we will help troubleshoot your problem.

We will have several question and answer sessions during the webcast.

To ask a question, simply type your question in the text box located in the lower left-hand corner of your screen. Then click on the Submit Question button. You don't need to wait until the question and answer period to submit your questions. In fact, there are a large of number of participants today so we highly encourage you to submit your questions early.

There will also be several occasions when our presenters will ask you questions. These poll questions will appear in the slide window. Please submit your answers in that same slide window, not in the Ask a Question box. And if you would like to see closed captioning, just click on the Closed Captioning button on the lower left corner of your screen.

At the end of the Webcast, you will be asked to complete an evaluation survey. The survey will be on a pop-up window, so please make sure that your pop-up blocker is turned off.

EPA offers the ability to receive certificates for those who view the live Webcast. In order to receive your certificate, you need to click on the Download Certificate button to view and print it. For sites with more than one participant, the last slide in this presentation will have a URL where you can download a blank certificate that you can fill in for each person at your site. Remember, that you must print the certificate after this Webcast. It will not be mailed to you.

This Webcast will be archived indefinitely so you can access it after today's live presentation. The archived Webcast will be posted within a few weeks on EPA's NPDES Training Website.

Nikos will now talk about today's exciting topics.

Nikos Singelis: Thank you, Sonia. This is Nikos Singelis with EPA's Office of Wastewater Management, and I wanted to welcome all of you to today's Webcast, Stormwater 101: The Basics. And I'm going to go through some of the things that we're going to talk about.

And then as we announced earlier, we are going to have a little quiz so you can test your NPDES knowledge today. And then during the rest of the Webcast, we'll tell you how many people got certain questions right or wrong, what the answers were, and all that good stuff.

So before we get to the quiz though, let me talk about the topics that we're going to cover today.

Obviously, today is an overview of the Stormwater Program and so we are going to be talking about the effects of stormwater runoff on the environment, the kinds of pollutants that are out there, and the effects that the volumes of stormwater also are causing on the environment.

Next, we're going to talk about the regulatory history and framework, where the program came from, so that you have some context of where these requirements in the Clean Water Act came from, and then the regulations and the permits that flow from those Clean Water Act requirements.

And then we're going to get into some of the details and we'll cover the Municipal Program, the Construction Program and the Industrial Program. We'll give you a quick review of those elements of each one of those three programs covering both the Phase I and the Phase II parts of the regulation.

So, let's get to our quiz, I think. I hope we have enough people online so that we can take a look at that. And the way we're going to work this quiz, you should, as Sonia announced before, you should be seeing a quiz now in a pop-up window on your computer.

If you're not seeing it, make sure that you turn off your pop-up blocker because that's probably the reason why you're not seeing it. And we're going to give you a few minutes to select the answers on this quiz, and I'll walk you through some of those things. And then, at the end of it, we'll ask you to submit your answers so that we can then tally them up.

So I'll go through some of this. For each one of the questions, we have seven questions here, and you want to choose the one answer that you think is best. This isn't a multiple choice game here.

So the first question here is – what year were the Phase II regulations finalized and issued, and you have a range of choices there.

The second question covers some of the publications that EPA and other agencies submit in the federal register, and we have a range of questions there, so do you want to tell us what kind of documents those are.

The third question asks you if you know what the acronym CFR means, and so you have some choices there.

In question number four, we're asking you, what time frame does the Phase II regulations give for MS4s to fully get their programs up and running after they have permit coverage?

The fifth question is related to the EPA Construction General Permit and its applicability. So you have a range of choices there.

The sixth question covers the number of different NPDES-related requirements that a construction site operator might have to comply with. And so you have a range of options there. For instance, in the first one there, EPA, and then there's 1 in parentheses meaning one sort of level or set of requirements, and then the other one gives you a range of options.

And then the seventh question deals with 80% removal of total suspended solids. And so you have some options there.

So, we will give you a few minutes to answer those questions. And when you are done, just simply hit the Submit button so you can submit all your answers together.

And again, if you're not seeing this quiz, make sure that your pop-up blocker is turned off.

And while we're giving you a few minutes to do that, Sonia will introduce our speakers today and cover some other little details. So listen in and answer questions at the same time.

Sonia Brubaker: Thanks, Nikos.

Again, I want to give you the telephone number in case you experience any technical difficulties. It is 1-800-833-2812. And if you can't see the quiz, please hit Refresh and you should be able to see it momentarily.

So while everyone is taking the quiz, I will tell you a little bit about the speakers for today's session.

Today's speakers are Nikos Singelis of EPA Headquarters, Thelma Murphy of EPA Region I, and John Kosco of Tetra Tech.

Nikos is a senior program analyst with EPA's NPDES Stormwater Program. Nikos has been with EPA's Stormwater Program for the last seven years and worked on many projects aimed at helping Phase II communities implement this challenging program.

Nikos authored the EPA Guidance on "Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites," led the development of EPA's Urban BMP Performance Tool and is a speaker across the country on various stormwater topics including StormCon and the International Erosion Control Association conferences.

Thelma Murphy comes to us today from the Region I office in Boston, that covers the New England states. She has been EPA's Region I Stormwater Coordinator since 1995 and has been with the agency since 1987. Her responsibilities include the implementation and oversight of the Region I Stormwater Program in all areas except enforcement.

She is an experienced NPDES permit writer and has worked on the development and implementation of the Construction General Permit, the Multi-Sector General Permit and the Small MS4 General Permit. Her duties also include working with states authorized to implement the NPDES Program to provide support in the implementation of their stormwater programs.

And finally, our third speaker, John Kosco, has over 15 years of experience working on stormwater and non-point source control programs, including stormwater program development, implementation and compliance in both the public and private sectors. John has led on-site evaluations of over 100 stormwater Phase I permit programs and has conducted stormwater compliance inspections at numerous industrial facilities and construction sites. He is also an experienced trainer having conducted dozens of workshops and training classes on a variety of stormwater topics.

John has authored several guidance documents, including "Minnesota Stormwater Construction Inspection Guide," EPA's "Municipal Stormwater Program Evaluation Guide," as well as EPA's "Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites."

And just a quick note for those of you who have just signed on, everyone should now be taking the quiz.

You could see a pop-up appear on your screen with the quiz. If you have your pop-up blocker is turned on, please turn it off.

For those of you familiar with our Webcast, this quiz is very similar to the evaluation survey that appears at the end of the Webcast. If you haven't already, go ahead and complete this quiz, and remember to click the Submit button when you are done.

As a reminder, the materials of this Webcast have been reviewed by EPA staff for technical accuracy. However, the views of the speakers and the speakers' organizations are their own and do not necessarily reflect those of EPA.

And just another note, we would try to answer as many questions as possible throughout this Webcast. But due to the high number of participants, all questions will not be answered. However, today's speakers' contact information is provided on your screen should you have any questions following the Webcast.

Now, we are ready to kickoff today's session.

Nikos, I'm going to hand it back to you.

Nikos Singelis: Thank you, Sonia. And so we'll take another couple of minutes just to fill that out, but I think you probably had enough time.

And by the way, you might be interested to know, I have record numbers of folks attending. We had over 2000 registrations and we'll give you a tally later on as to the number of people that is signed in.

I have to say I'm a little bit surprised, aren't you, John, by the number of people that we have with us today. We sort of thought this might be one of the lesser attended ones, so we were kind of wondering if you thought maybe we'd sneak in some kind of a surprise.

John Kosco: I guess this just shows there are still a lot of people that wanted to know the basics or are fairly new to the program. Maybe it means that not many people stay with the Stormwater Program very long because--

Nikos Singelis: That could be too, or maybe they think that we're going to announce Phase III or something like that, but I assure you, we're not going to pitch you any surprises today.

So, why don't we wrap up the quiz? So hit your Submit and then close that pop-up blocker, and we'll get on with our presentation.

So, John, you wanted to move us to the next slide and we'll start talking about some of the background for the Stormwater Program requirements.

John Kosco: Sure. Basically, one of the programs that really pushed along the Stormwater Program was the whole Nationwide Urban Runoff Program or NURP that was held between 1979 and 1983.

This was really the first and probably only nationwide comprehensive study of urban runoff pollution across the whole US. They looked at about a dozen locations across the US, really intensive monitoring. And the findings, they found really high levels of heavy metals and fecal coliform in the urban runoff and also higher concentrations of TSS and nutrients.

And this nationwide study was really the basis, and it helped support the needs for stormwater permitting requirements to be added to the 1987 amendments to the Clean Water Act. So that really pushed the whole program along.

So I'll turn back to Nikos to talk about the effects of stormwater runoff.

Nikos Singelis: Okay. So, many of you probably heard this before, but in the stormwater program, of course, we're concerned with water pollution, the basics of the Clean Water Act that we have been dealing with, you know, since the Clean Water Act was enacted in 1972, but also in the Stormwater Program, we're concerned not only with the pollutants in stormwater, but we're also very concerned with the volumes of stormwater that are coming off properties across the United States, particularly where we have a lot of impervious surfaces.

So as we move through this today, we're going to be talking about some of those different kinds of impacts. And keep in mind that this is kind of a different shift in the focus for EPA too, you know, historically, we have dealt strictly with pollutants and the Stormwater Program sort of takes us into a new realm where we're really considering the volumes of stormwater, and I think getting really a better look at watersheds and what's going on in the whole watershed considering those biological and physical attributes of streams too that are so important.

So, one of the things that's kind of interesting and maybe Thelma too can chime in on this one, is that we in the water program don't have a great handle on the water quality problems that are out there. We do have surveys like, on your screen right now, the National Water Quality Inventory, which is a compilation of state reports, and that does give us some information, but all of these sources tend to have some significant flaws. So it's hard for us in the Water Program to really get a good handle on sort of the national picture, particularly when you look at it from year-to-year-to-year, we don't sort of have a consistent way of doing that.

And so hopefully that will improve in the future, but it does sort of hinder our ability sometimes to get kind of--wouldn't you say—really feel sure that we're delivering an accurate depiction.

Thelma Murphy: Certainly. It's good as the data that we get, and you know how it's collected and how it changes over time. Sometimes they're changing year-to-year to have a consistent accurate picture all the time isn't always possible.

Nikos Singelis: Yeah, exactly.

Thelma Murphy: But we're doing the best we can with this.

Nikos Singelis: Yeah. And the EPA does have some efforts out that we're working on right now, particularly with larger rivers, to get a more statistically significant sampling across the country that we have a better story to tell. But if you look at the National Water Quality Inventory here, you look at different years you are going to see some different results. But anyway, it gives you an idea of kind of what's going on there.

We do have something like 35,000 miles of rivers that are impaired, stormwater being the source there, something like 1.4 million acres of lakes impaired, and about five or so thousand square miles of estuaries.

So it's also interesting too--I know John just moved the slide ahead there, but if you look at those--you would see an increasing percentage, and that I think is due to the fact that so many people live near the coast. I think it's something like 50% of the population lives within 50 miles or so of the coast.

Is that right, Thelma?

Thelma Murphy: I've heard that statistic.

Nikos Singelis: Yeah. So obviously, the urban centers tend to be around water, particularly at coastal areas and the Great Lakes states, and so we are seeing high, relatively higher impacts there from Urban Stormwater.

So Thelma, do you want to talk a little bit about some of the sources and the kind of pollutants that we're looking at?

Thelma Murphy: Sure. You know, this is just a quick snapshot to show some of the sources of pollutants that can impact - that affect the water quality, and it comes from, you know, all different types of activities including construction and industrial, and then the residential, which is also tied very closely to the urban development. So these are all sources of pollutants. And EPA's Stormwater Program tends to regulate the stormwater--regulate the sources in those categories--and we're going to talk about that a little bit later on in the Webcast.

And just some of the pollutants really in stormwater, you can just about have anything that's on the ground that can be transported show up in the stormwater, but typically you have things such as trash from littering. From the construction projects and construction sites, you'll tend to get sediments. You get metals from a lot of different industrial activities, and as well as pathogens and nutrients and oil and grease, and just about anything that could be on the ground could end up in your stormwater. Some of these are the hard thing to work with.

Nikos Singelis: Another thing, as I mentioned earlier, we are concerned with the volume of runoff. And one of the things that happens as we develop more and more land as depicted by this graphic that we borrowed from the Center for Watershed Protection, is that we see that as an amount of impervious surfaces in a particular area increase, obviously, there's an increase, an almost direct correlation really, with the amount of runoff that's being delivered to our streams, our rivers, lakes, et cetera, directly in the form of runoff.

So if you look at this graphic just really quickly, in a natural state where we have forest cover, a meadow cover, we'll have something along the lines of about 10% runoff, sometimes less, particularly in a densely-forested area. And you can see kind of the breakdown of the water cycle where it's going there.

And then if you look at the bottom, right there, you'll see in a heavily urbanized area where we have say 75% to 100% impervious surfaces, we've got dramatically increased runoff--perhaps 55% runoff--and then changes too in what's happening with the other parts of the water cycle, I would point out, particularly that the amount of water that's going back into the ground that's keeping our aquifers going and things like that is being reduced equivalently.

As I said before, we are very concerned in the Stormwater Program. We're starting to look more and more at a lot of research. If you're reading papers out there about what's going on in stormwater world, you'll see a focus on this geomorphology. That is the physical kind of attributes of stream systems in particular.

And we noticed, and the Center for Watershed Protection has done research, which we'll talk about in a little bit more detail later in this Webcast on this particular question, but we do see a relationship between urban development and the amount of stormwater that's coming off the land and the health of particularly smaller stream systems. So we'll be talking about that in more detail.

Another thing that we should mention too is the Clean Water Act really isn't a statute that deals with flood issues. There are other statutes out there that deal with that in other agencies.

But another consequence of adding more impervious surface, of course, would be to exacerbate flooding issues when we have really extreme events. So we also want to be cognizant of that, particularly at the local level as we're putting together our programs and we need to look at a range of considerations when we're planning our - particularly our post-construction stormwater controls.

Some other things that we see particularly in the aquatic habitat area, we, obviously, from the results of all of these pollutants and these volumes of stormwater we're seeing reduced aquatic habitat, both at the macro invertebrate level, the small critters that you'll find in the streambeds, and things like that, but also in fish populations and other reptiles and what not that depend on the water for their environment.

We often see increased stream temperatures. And by the way, I should mention a little piece of trivia for those out there listening that temperature actually is "a pollutant" under the Clean Water Act, and you'll see many rivers and streams and lakes that are actually impaired for temperature as the parameter. And when stormwater runs across a parking lot or something like that, it does tend to heat up and it can have a negative impact on the biology of the stream when it hits it, particularly in a trout stream or a salmon stream where these species are really dependent on that cold water.

And of course, another very common issue is the sediment, the increased sediment both in terms of turbidity and smothering of the stream beds that are essential for fish reproduction. And of course, we've all heard about reductions in dissolved oxygen in our waters due to excess nutrients, which cause algal blooms. And then when the algae die, it decomposes and sucks the oxygen out of the water -- a big thing that we're dealing with here in this region in the Chesapeake Bay and very common around the country.

On the next slide, we'll see just the three parts again of the stormwater program that are covered by the NPDES regulations -- the industrial sectors that we are regulating, and we'll talk about the details of this stormwater coming from industrial sources wherever they fall in the United States. We're also dealing with construction activity. Construction activity sometimes, there are two arrows there. You'll notice that inside an urbanized area and also construction outside of urbanized areas. And then lastly, MS4s is that term of ours, which means Municipal Separate Storm Sewer Systems, four Ss and 4 on the end, for those who are not familiar with that acronym. And that is probably the biggest and most complicated part of this program, and Thelma will lead us through a discussion of that later.

And then John, do you want to explain a little bit about the two different kinds of systems that are out there underground that we encounter in the United States?

John Kosco: Sure, Nikos.

This is a nice little graphic that EPA put together to explain urban wet weather flows. And if you look on the left side of your screen, that represents essentially a separate system. So you have separate sanitary sewer pipes that go to a wastewater treatment plant and then separate storm sewer pipes that go essentially to the river. So that is what is regulated under the Stormwater Program and that's what Nikos referred to as an MS4.

On the right side of your screen is a combined sewer system where both the wastewater and stormwater flow through the same pipe, that’s typically treated at the wastewater treatment plant except when you get heavy rains then it, can be bypassed from the plant.

Those combined sewer areas are actually addressed by EPA's Combined Sewer Overflow Program, so that is not technically part of the Stormwater Program. And actually, Thelma, when she talks about the definition of the MS4, will also address that.

Nikos Singelis: So just a bit about the regulatory history, as many of you probably remember, 1987 was really the big event for the Clean Water Act and where we really got a lot of changes to the Clean Water Act from the way it had been basically since 1972. 1987 amendments to the Clean Water Act or the Water Quality Act of 1987, as it was called, really ushered in some substantial changes to the Clean Water Act framework.

Among them, the creation of the entire Stormwater Program, which is what we're focusing on today, but there were certainly many others -- the creation of the State Revolving Fund Program, the creation of the Non-Point Source or the 319 Grant Program amongst many others. So, for the Stormwater folks, this is really kind of the event on the horizon there, wouldn't you say, Thelma?

Thelma Murphy: Absolutely.

Nikos Singelis: And so the Clean Water Act directed EPA to deal with three things, which we'll get in more detail. But first, medium and large municipalities, industrial activities, and then that last bullet there, others as determined by EPA to protect water quality, which led us to do some more work and study, and we'll talk about where that led us as well.

Thelma Murphy: Okay. Just kind of some background on the Clean Water Act and where we are with it, the regulatory history would be the Water Quality Act enacted in 1987 amended the Clean Water Act and added the Section 402(p), which deals with the Stormwater Program. And there were lots of pieces in it that were involved.

And the first part, this 402(p)(2), which is defining significant sources of stormwater and those were the sources that EPA had to regulate first in the whole program, and these are often called the Phase I sources. And it was folks that already had permits for their stormwater discharges. Those continue to be regulated. It defined industrial activities. There's a lot of - there's the categories of industrial activities, and this includes construction greater than 5 acres that's included in that definition.

And then it also included large municipal separate storm sewer systems and mediums, and a large system is greater than 250,000 people and the medium is greater than 100,000 people.

And it's important to note, and this is one of those little subtleties that people miss is that it's the population that were serviced by the separate storm sewer system. It wasn't necessarily the population of the city. So oftentimes, these communities were serviced by a combined system, which John talked about a little earlier, and if that population was subtracted out of the entire population, it may drop that population down below what was regulated under Phase I. So, some of the larger cities in my region weren't regulated under Phase I. And then we always have a catchall, which is anybody else that EPA felt needed to be regulated. So that was the kind of -- set the framework for it.

And then it defined--the (p)(3) section defined what is the standard for these discharges, what do they have to meet. And for industrial facilities, it was BAT. And for municipal facilities, it was the standard called MEP, which we'll cover a little bit further in the Webcast.

And then, it explained when we needed to get information and applications and permitting, and it then also required EPA to do a study and to figure out who else needed to be regulated under the program. And based on that study, EPA was told to regulate additional sources whose regulation was necessary to protect water quality. So that was the sixth, part six, issue of the regulation, so that's kind of the statute and the framework for how we set up the Stormwater Programs.

So we have the two phases. We have Phase I, which came out in 1990 after the Water Quality Act. And if you want to read it, feel free. It's in the CFR and it was published in 1990, and it's actually a good reference. It has a lot of history to it. And then Phase II came out in 1999, and again that's citations on your screen if you wanted to look through it and that's where we are and how we got here.

John Kosco: Yeah. Thelma, just a little bit on the basis of why Phase II came about, Thelma mentioned that Report to Congress that was required by 402(p)(5) and that report was put out in 1995. It's up on EPA's website. And the primary finding from that report is that EPA needed to address the smaller municipalities under the Stormwater Program. And then as a corollary of that there was a lawsuit filed by NRDC and they challenged several provisions of the Phase I role. One was that the construction site program being cut off at five acres was arbitrary. There wasn't a good justification for a lot of sites below five acres were not already covered. Then they also challenged the no-exposure provision, which we'll talk about later in the industrial. So those two things were also wrapped up and addressed under the Phase II regulation.

Nikos now will talk about the regulatory framework.

Nikos Singelis: Okay. We've created this graphic just to give you a simple thing. You might want to print this out and use it as a reference because it seems to me that in discussions with people, they often get confused about how all these pieces fit together. So this is my sort of conception of how it happened.

So just very quickly starting at the top, we have the Clean Water Act Section 402(p) that was just discussed. Then under that, still at the national level, we have the regulations which are 40 CFR 122 and a variety of sections there which we have referenced before.

And then we start moving into these state-by-state definitions, and so we have authorized states. Thelma will show us later. We have about 45 states that are authorized to implement the program. So depending on their structures and requirements, they have their own laws and regulations built off the Clean Water Act requirements and the EPA regulation. And then they issue their own permits in each one of those states and territories that are authorized to implement the program.

And EPA is still the permitting authority as five states - most of the territories and most Indian country lands, so we also issue permits and that's where really the rubber meets the road, and then we are covering that regulated universe that we mentioned before the MS4s, the construction sites and the industrial facilities. So hopefully, this little graphic kind of helps put that all into perspective for you.

John Kosco: Great, Nikos.

And this is also just a nice summary of what the basic requirements are for an NPDES permit. So the three elements that you need in order to be required to have an NPDES permit, you need to be a point source, and that's generally defined by the regulation.

If your construction site is over an acre or one of these regulated industrial facilities, you're a point source. You need to be discharging pollutants and you need to discharge into the waters of the US. And if you meet those three criteria, then you must obtain an NPDES permit from either EPA or an authorized state.

There is this distinction between a point source and non-point source that we wanted to point out. Again, stormwater has expanded the definition of point source to include things that used to be a non-point source, things like the smaller towns that are now Phase II cities, things like construction below five acres is now regulated under a NPDES Program.

However, some stormwater sources or runoff sources are still covered under the non-point source program, things like agricultural runoff, construction below an acre in most cases, and small MS4s that are outside of these urbanized areas that are not regulated. So those non-point sources are generally not covered under the NPDES Program while the other items are.

Nikos Singelis: And John, I just have to interject that this is one of my little pet peeves is that stormwater is a point source. And how many times we've seen documents where that's kind of mixed up. So if you want to keep me happy, make sure that in your documents you put down stormwater as a point source.

John Kosco: Yeah. And then just a little bit more of the basics on the NPDES permits, there are two types of permits that the state or EPA can issue. An individual permit, which is generally one permit issued to one facility or it could be several facilities combined or a general permit where one permit is issued to many facilities, and the application for these are kind of backwards.

For an individual permit, the permittee typically applies first. The permitting authority writes the permit and issues it to them.

For a general permit, the permitting authority develops the permit and issues it, and then those many facilities that wanted to be covered under it apply for it after that. So it's important to understand the difference between those individual and general permits.

And as noted on the screen, these permits are issued for a maximum of 5 years, and that's actually a Clean Water Act statutory requirement.

Nikos Singelis: Okay, John. And just a summary slide here of the two phases, again, Phase I came about in 1990 and covers those medium and large municipalities over a 100,000 as Thelma mentioned. Also, industrial activity in 11 categories, and that this is another sort of confusing part too is that when you look at the Clean Water Act and the regulations, construction--large construction over 5 acres is actually an industrial activity. But oftentimes, in our guidance materials, we break out the entire construction program separately as really the third piece. Because it is so different, we've decided in many of our guidance documents and things like that, our presentation on the website to make a separate section there. So sometimes, that confuses people as well.

And by the way, Category 11, and we'll get into this in more detail later, covers light industrial activities there. And in Phase 1, that was only if there was exposure.

And then Phase II came along in 1999 and covered smaller municipalities in these "urbanized areas" and we'll explain that to you too in just a little while and smaller construction sites, basically one to five acres, and also changed this definition of no-exposure. It expanded the original Phase I provisions and also required when there is not exposure that the facility still provides a notice to the permitting authority, whether that is EPA or the state, every five years to say that they still have no exposure. And we'll get into a little bit more detail on those as we go along.

So, on the next slide, we have the answer to our first quiz question here. And actually, we just gave the answer away a second ago. So the question was, the Stormwater Phase II regulations were finalized and issued in what year? And the correct answer is C there, 1999. And I just, from our trusty folks here actually got the results from your answers during the quiz. We got 952 answers to this particular question.

And not surprisingly, there were a lot of wrong answers. Are you surprised, Thelma?

Thelma Murphy: Unfortunately, yes.

Nikos Singelis: Okay. So let me give you the breakdown, 16% percent to 1992. Okay, that's obviously wrong.

1998, we had about 19% answered that one.

25% got it right. Okay. So a quarter, but that's not really a passing grade folks, you know.

And then oddly enough, 40% said 2003.

Thelma Murphy: And I would guess that is because of when the permits were due...

Nikos Singelis: Yeah.

Thelma Murphy: ...where people had to apply for permits and that's what they were thinking about when they said 2003.

Nikos Singelis: Yeah. That the regulations were actually out there a good three plus years before that in 1999, giving folks lots of time to think about them, which is the answer to one of other questions coming up later.

So let's move onto the next one. This is a map of the authorized states.

Thelma Murphy: And this is, as Nikos mentioned earlier, most of the states are authorized to issue their own NPDES permits and hence their own Stormwater permits, but there are still a few states left in the country that EPA is the permitting authority, and two of them happen to be in my region so I work very closely with those two states.

And now, this is just a graphic showing that depiction. And then we--you know, with the Stormwater program in--as Nikos has said--came in 1987, this graphic is just showing how the number of folks covered by the NPDES permit program has increased with the passage of the Stormwater program.

And that 1992 date is the date that EPA first issued its first set of general permits for the construction and industrial facilities. So there was a spike in 1992. And then kind of leveled off, we have CAFOs which we're not talking about today -- thank goodness.

And we're in 2003, again, well, we had another round of permits being issued. There was another increase and we have to - we haven't mentioned it but we do need to - they look at - we cover urbanized areas with municipal program so there'll be a new census in 2010 and perhaps that number will go up again as more communities become part of the urbanized area.

And then finally, there's just a nice pie chart graphic just showing the breakdown of the permits. And as you can see from the graphic that stormwater permitting makes up almost 80% of all of the permitted universe for the NPDES programs. So we're pretty busy in here in the Stormwater program.

Nikos Singelis: Absolutely. We certainly are. Probably the most--in lots of ways, if you think about it--one of the most far reaching efforts that EPA has under the Clean Water Act is the Stormwater program.

Thelma Murphy: I would agree with that. I mean I jokingly say that anywhere it rains, we have stormwater...

Nikos Singelis: Absolutely yeah.

Thelma Murphy: ...because that's pretty much everywhere.

Nikos Singelis: Okay. So the next slide shows us the answer to question Number 2, and by the way, I just wanted to remind everybody that the quiz is over. And if you signed in late, we apologize for that. We will later post these questions as part of the package when we archive the website so you can see them.

But only those folks that were kind of on at the beginning could participate in this quiz. So if you're looking for that, we apologize for the limits of technology.

So anyway, so quiz answer two, this was a good one here. Does virtually everyday, EPA and other federal agencies publish documents in the federal register?

A site for such a document could be something like 64FR67822. This FR number means that this document is, and then you have a number of options here. And now, I'm sad to report that people failed this question as well. So you're going to be learning a lot today. First of all, the first answer here which was the most popular, 55% said it's a regulation and unfortunately, that answer is strictly incorrect.

4.8% said it was permit. So that answer also is not correct.

And answer number C was a law, 13.1%. This is really incorrect. Laws do not show up in the federal register.

And then D was either a regulation or a permit, 17.7% of that, and only 9% guessed the correct answer which is, "Who knows?" Because you can't tell anything from this at all.

A lot of times I see this and this is why we put this in here so, "Well, EPA published it therefore it's a rule and applies to me," but in fact, it could be any number of things as the bullet says down below.

It could be a proposed permit, it could be a final permit, it could be a regulation or it could simply be a notice about anything like a meeting, or a guidance document we're publishing, or maybe a comment period on something, or we want to gather some scientific information from people. So there's a whole range of reasons why we might publish something in the Federal Register. So keep in mind that FR--the Federal Register-- is like a newspaper and it contain lots of different things in it.

So now, we've got the next question here, quiz answer number three. So this one asked you if you knew what the acronym CFR meant. Now, good news here. Most people got this right.

A resounding 74% said regulation and, "Yeehaa!" You got it right. So CFR and I realized--actually, I never actually thought about this until I wrote these questions down--that FR and CFR have two of the same letters and it never dawned on me because I have always thought of them as really distinctly separate thing.

But CFR is the Code of Federal Regulation. So if you see a citation that says, CFR that does mean that it applies to you and it is a regulation. And EPA publishes, as I've said, regulations in the federal register and then later on, every year, the federal government compiles all the regulations that have been published and compiles them into the Code of Federal Regulations and issues a new code.

So if a regulation comes out say in January, you can find that regulation in the Federal Register--the newspaper--and you actually have to wait until, usually, I think until the summer, July, August, something like that.

Thelma Murphy: I think it's July...

Nikos Singelis: July.

Thelma Murphy: ...that they do a new one.

Nikos Singelis: And then they issue a new compiled Code of Federal Regulations and everything that was published that year has been recombined into the code.

John Kosco: It's just that like if you want to read the Phase I role, it's actually, you know, that the code of the CFR site that we had earlier, that it has to go--I mean, excuse me, the Federal Register site--than it is to go to the CFR site.

Nikos Singelis: Actually, the easiest way is to go to our website where we have it nicely broken down for you and we gave you those website addresses.

John Kosco: But it often comes like the Phase II rule is split across a number of CFR sections, so if you want to read just the Phase II rule, you can read the Federal Register notice on the Phase II rules where it's all combined into one.

Nikos Singelis: Okay. So we have two questions with the sort of mediocre results, and one question has good results. So we're going to move and ride along.

I have to understand there was a technical problem and question 4 did not appear, so we'll handle that separately.

So now, I think we're ready for some questions from the audience. Does anybody want to know anything, Sonia?

Sonia Brubaker: Oh, yes. Nikos, the questions are really pouring in, and I hope that you're ready.

So the first one, Nikos, is actually for you. Tony in North Carolina has several small communities in his region that have their own Phase II permits, and he's going to ask two questions.

What are the advantages and disadvantages of reapplying under a single permit for his region and note that one major road block would be co-liability and is this really a legal problem?

Nikos Singelis: That's a good question. And it is true. Most of the Phase II municipal permits have been general permits. Across the country, I would that say it's probably something in the neighborhood like 90% for the cases. The states and EPA have decided to use a general permitting process for the Phase II communities.

In a couple of cases, there are some individual permits for Phase II communities. I would think that one of the advantages of that process actually, since he did ask about the advantages, would be that that permit is more customized to the particular circumstances that that community and the watersheds that surround it are facing. So that would be one of the plusses. One of the disadvantages is that the individual permit process usually takes a little bit longer, because as John mentioned, before the applications comes in that they are regulatory time processes to go through all that before the final permit is issued. So most states are offering general permits at this point.

Thelma Murphy: I would agree with that. We are in Region 1 issuing general permits and all our states are also doing the general permit. But, you know, individual permits can be issued to one city or town, or they can do an individual permit for more of a county-wide where it covers several communities within the county, so it's kind of everybody has a little piece of requirement but it's still an individual permit issued to the county with co-permittees tied into it. So that's another way of doing it as well.

Nikos Singelis: Yeah. And we've seen some other, not to belabor this too much, but we've seen some other examples. For instance, we have nontraditional MS4 and some of those might be state Departments of Transportation. And some states have chosen to include those nontraditional MS4 in individual permits as well.

Do we have another question, Sonia?

Sonia Brubaker: Yes. And this one is for John. Rochelle asked, "What is the relationship between NPDES and TMDLs?"

John Kosco: And I'll let Nikos pipe in on this also--but basically, TMDLs stand for Total Maximum Daily Loads and that's a whole other area that we're not to going to get into too much detail on.

But Total Maximum Daily Loads assess an allocation of how much pollutants that water body can take before it becomes impaired, and it's done for impaired water bodies to get them back to health and clean water.

But the TMDL itself is not a regulation. It's not a requirement. So basically, the TMDLs are implemented in part through NPDES permits. So you're NPDES permit can contain a requirement to have you implement programs of BMPs to control that pollutant down to a certain level. So in a nutshell, the NPDES permit can contain the TMDL requirements in it.

Nikos Singelis: I would just add obviously that the TMDL program is a complex piece of program so we don't have time to go into all those details, but EPA did just start a Web page to deal with stormwater and TMDL issues, and you can find that on the Office of Wetlands, Oceans and Watersheds website which is www.epa.gov/owow. So there is a new page there.

We're also working on a guidance document to deal with some of these knotty permitting issues which we hope to have issued in the fall or in the wintertime this year. So we'll announce that through NPDES News when that comes out as well.

Any other questions, Sonia? I bet we have lots.

Sonia Brubaker: Yes. Thelma, quite a few people have asked this question, what does MS4 stand for?

Thelma Murphy: MS4 stands for Municipal Separate Storm Sewer System.

Sonia Brubaker: Great. Now we are ready for our poll question. Nikos?

Nikos Singelis: All right. So we're going to move on to the poll question here, and those of you who have participated before, this is just to get a better idea for us about who's attending.

So you click on the radio buttons there to the left, the little circle, to the left of each of the possible answers. So we'd like to know who you work for and who you represent. Are you with a Phase I city, a Phase II city, state or federal government, a consultant in the industry or some other group that we haven't captured there? And then at the bottom of your screen, you'll see a Submit Answer button.

And if you're in a big group, just mark the answer that best represents the people that are with you so we'll give you just a couple of seconds for that.

And while we're doing that, I should mention that our next webcast, if you've been following along, will be at the beginning of September but we've now decided we're going to change the subject matter for that. So we are going to be talking about Post-Construction in September and we'll have that updated on our website.

It's still the same day and same time but we have a new post-construction manual that John is going to be talking about a little while that the Center for Watershed Protection has been working on for us and we're about ready to issue that so we wanted to capture the moment and talk about that.

So let's look at the answers to this question here and see what we've got so far from people. Let me pull up the results and I will show you we've got a nice bar graph here.

So, as expected, big chunks there at Phase II communities. Oddly, we have lots and lots of state and federal government employees today with us learning about the basics of the stormwater program. Also, consultant and industry, so you can see there the range of people that are with us today.

And now, the next one is actually very important to us because it really helps us get a better handle on the number of people that are with us.

So again, same routine. Choose the answer to the left. We want to find out how many people particularly are in groups out there. So first, if you are stuck in your cubicle, like Thelma and I are most everyday, select Just Me, and then select the answer of it that best represents your group there and again, we'll give you a couple of minutes to answer that question, because this will really help us figure out the number of attendees.

I think something over 2000 computers are signed in today, is that right, Sonia?

Sonia Brubaker: That is correct.

Nikos Singelis: Yeah. But when we factor in the number of people that are in groups in conference rooms, it really will give us a better answer. So we may end up with sort of record attendance today, so we'll see how that goes.

John Kosco: Yeah, I think as well, while people are answering that question, we just want to note that although this is Stormwater 101 kind of basic webcast, we actually have done, I think a dozen or more webcasts, on very specific topics related to the Stormwater program, and those are all archived up on the EPA NPDES website.

So if you knew the program, I want to find out more details and specifics about various aspects, just go up there. You can download them to your iPod or computer and listen to it.

Nikos Singelis: Yes, you may be wondering why after doing this for three years, now we're finally getting to 101. I have no real good answer for you. Just like you probably have no good answer about why you're attending even though you're an expert in the Stormwater program out there so.

All right, let's see what we've got here in terms of folks and groups. And by the way, if you're in the big group and you couldn't get to your computer to answer this question, you can send it to us through the Question and Answer Box down there or email us later because we really would like to know.

So it looks like we've got about 70%, 71% there in cube-land and then we've got 22% small groups, and there you can see a 5% of bigger groups, et cetera, et cetera. So again, if in that time period, you didn't have a chance to tell us how big your group is, send us an email or submit it later on during this webcast.

So let's move on.

Let's see, we've got--we're going to now get into the details of the three parts of the program. So as we've discussed before, there are three major parts of the Stormwater program: the municipal, construction, and industrial pieces. And we've got some slides on each one of those as we go along.

All three of these emphasize the pollution prevention kinds of aspects. Most stormwater in the United States is not dealt with as we often deal with sewage treatment plants which are the treatment system at the end of the pipe. Most stormwater systems in the United States discharge whatever is in the pipe directly to the stream, the lake or the coastal water directly without any kind of treatment.

And so the emphasis of the stormwater program is quite different than what we've been used to and we are trying to prevent that pollution from entering that system in the first place. And as we also discussed now, as we're finding more and more about the impact of stormwater, we're also trying to reduce the amount of volumes of stormwater that are actually getting into those conveyance systems and being delivered to our waters.

So this is a pollution prevention program. We use the term *best management practices* to cover a wide variety pretty much anything that you might do out there to try to prevent stormwater pollution. So it would cover, the term *best management practice*, would cover structural items, things like wet ponds or rain gardens, that sort of thing, that you might use or silt fence on a construction site would all be best management practices.
But we'll also include the "nonstructural things" in that definition so sweeping up and picking up trash, using less fertilizers on their lawn, those are all best management practices as well.

And people often get kind of confused about that, and some people have, you know, slightly different definitions but that's the one that we use most commonly. So you'll see the term best management practice pop up on lots of the rest of the slides, but it really does cover a wide variety of activities and structures that we would use to try to prevent stormwater pollution.

So, we're going to get into the municipal program a little bit here. So one thing I wanted to point out, we did a little looking into the trends in land development. As I mentioned

before, a lot of the stormwater programs or stormwater problems are related to impervious surfaces, and impervious surfaces are created when we develop, when we have new housing developments or we build a shopping mall, roads and bridges. These are all impervious surfaces.

So we wanted to look into this a little bit and see--you know, we know population is growing in the United States and so we are going to have more development--and so part of the program tries to address how we deal with that development as we go along.

So over the last 20 years, the population in the United States has grown by approximately 25%. You can see there in the green, and then we thought it would be interesting to look at the amount of land that has been developed over the same time period.

And when I first saw this, I was rather shocked, but over that timeframe, approximately 45% of the land has been developed. So we're developing land at a far faster rate, at least over this last 20 years, than the population is actually growing. And a reason for that is--the main reason for that is--the kind of development that we're experiencing in the United States with these far flung developments that are farther and farther from the urban cores. Typically, in fact, I think I saw a statistic, that something like 90% of new development is on an acre or more--residential development--an acre or more, which is really pretty shocking when you think about it.

And then the consequences too that development on these far flung areas where you've got to get in your car to drive to everything, and you've got more and more shopping malls and parking lots that are associated with that because we are very much a car culture.

Another interesting statistic is that the average American family makes 12 car trips per day. And so if you think about it, that's a lot of--you need a lot of parking spots out there to accommodate your car for those 12 trips per day. Of course, most families have two or three cars, kids have cars, all that kind of stuff, and they're all making all these trips. So there's a lot of impervious surface out there that's associated with our particular development pattern of the present.

So one of the things, of course, that we're trying to do is to focus the attention of the stormwater program on those big picture aspects as well as the site specific.

So this next slide talks a little bit about that in terms of the hydrologic cycle.

Thelma Murphy: Yeah, this slide is kind of really showing graphically--the straight line is kind of showing what nature intended to happen during a typical rain event. In a typical situation, a stream flow peaks up when it rains and gradually goes down in a very kind of nice calm--calming kind of effect, actually if you look it. But because of a lot of development and larger volumes of storms, what happens is a large amount of volume at a very fast period of time, so you get higher peak flows which causes more of erosions, splashing, some scouring and it completely changes the normal hydrograph, or

hydrologic cycle of water. So this is just showing - this graph is just showing that how that happens due to increased development and increased flows from impervious surfaces.

Nikos Singelis: And one or two things to point out obviously, as Thelma mentioned, the peak is higher on the dotted line there where the development is. Also the volume of stormwater which is represented by the area under those, under the peaks, is much larger of course. And another thing to note on the left, there is the base flow, it's actually reduced. That base flow either into deep groundwater that recharges our aquifers or the shallow groundwater that keeps the small streams going during the dry periods.

And so one of the things that we see in watersheds with a lot of impervious surface in that has much more extreme variations in the flow of the streams, whether wet and dry, or dry which is very difficult for the biology to accommodate to.

In the next slide, which we borrowed also from the Center for Watershed Protection, which has done a lot of research into many of these kinds of questions, is a generalized relationship between impervious cover and stream quality. And here, I should point out that we are talking about small--what EPA calls first and second order streams--basically, the headwater stream. We're not talking about the Mississippi River here, but we're talking about these smaller streams.

And here, we're definitely seeing, as I mentioned before, the correlation between stream quality and the amount of impervious surfaces there, and this graphic is a little bit complicated. You might want to print it out and take a look at it.

And I know Tom Schuler is writing a paper with some other folks and that should be published soon. We'll try to make that available on the NPDES website on this very topic.

But basically, what it is showing is that for streams, when we have zero to about 10% impervious surfaces in a watershed, we're generally seeing sort of better quality there although some streams maybe impacted at that point. But then as we move above about that 10% to 12% range, we're definitely starting to see some degradation in the overall stream quality. And again, we're looking at the chemical, physical and biological aspects of streams here.

And depending on, of course, the nature of the stream, the watershed, the rainfall patterns, soils types and all that stuff, this is going to vary. So it's not an absolute number for every watershed. I want to caution people, but this is just to get across the idea that this relationship does exist.

And then as we move farther and farther out with impervious cover, we essentially start changing streams into drainage ways, and that's something that we want to try to avoid in the Stormwater program.

So you can read more about this, there's some existing papers on the Center for Watershed Protection's website, and a new paper should be out relatively soon on this as well...

Thelma Murphy: All right.

Nikos Singelis: So...

Thelma Murphy: I'm sorry.

Nikos Singelis: Let's go ahead, Thelma.

Thelma Murphy: All right.

Nikos Singelis: Let's talk about--because somebody did ask, what is an MS4, so here is the answer.

Thelma Murphy: Here is the answer. As we already all know from the question earlier, an MS4 is a Municipal Separate Storm Sewer System. And this is a shorter definition than in the regulation. But basically, it's a conveyance or system of conveyances that is owned by a state, a city, a town, a borough--there's a whole lot other entities that can own something--and it discharges into a water of the US. It's important to note that it's not a combined system which we talked about and it's not part of the publicly owned treatment works. It's just a system that is used from moving stormwater around. And it's interesting to note that part of a system includes the streets, the curbs and everything like that, so I think that's important to note.

So here is a--it looks like a rather large MS4 just to get an example of, you know, what we're talking about--is a pretty much a city with streets and curbs and catchbasins and pipes and everything else, so that's what we're regulating with the Small MS4 Program. As we've talked about before, the Small MS4 Program deals with small MS4s located in urbanized areas, and this is a map showing an urbanized area. And often times, you know, the regulations are written such that the urbanized areas were subject to the program.

But often times, some permitting authorities require permits for the entire community, not just that in the urbanized area, which, you know, it seems to make sense if you're going to do a public education program, for example, you don't want to do it to half the community, you want everybody to be aware of it. So, an urbanized area doesn't recognize political boundaries, so it often chops things up, but this is this kind of a graphic showing, you know, what an urbanized area might look like.

John Kosco: I'll just note that, the regs cover any government entity that owns and operates a storm drainage system in an urbanized areas. That's obviously a city of a county, but it also could include public school districts--

Thelma Murphy: That's right.

John Kosco: --you know, Department of Defense facilities, you know, military--

Thelma Murphy: Colleges and universities.

John Kosco: --colleges, you know?

Thelma Murphy: Yeah.

John Kosco: Large post offices.

Thelma Murphy: Yeah. One separate--one building that's owned by a state or Federal entity is not going to be in the program, because they don't have a system. But if you have a large prison complex, a hospital complex, a state university, all those folks are regulated by the program.

John Kosco: Yeah. So Phase II actually really expanded the definition because Phase I really was only the city, the county--

Thelma Murphy: That's right.

John Kosco: --primarily.

Nikos Singelis: And it's also--another interesting little tidbit to note--is that Phase I, as you're about to talk to, was based on populations at the time of the regulation. So at the one time, you're in Phase I or you're not in Phase I.

But Phase II is updated every ten years by the Census Bureau. So every time there is a census--we'll get into that later--these maps, as an example of the previous slide that we just showed you, will be updated.

Thelma Murphy: That's right.

So, the Phase I program, as we talked about earlier, covers municipalities. The population is pretty much greater than 100,000 people, and some of the places were interconnected, so some places less than 100,000 might have been brought in, but I don't know that they were that many that were brought in with that.

There's about 250 permits covering the small MS4s in the country, and the--

Nikos Singelis: The large MS4s.

Thelma Murphy: Yeah, the large MS4s.

And most of the large MS4s are covered by individual permits. We issued individual permits for those large MS4s.

And the regulation, the 40 CFR regulations had very lengthy application requirements for the Phase I community. So they had to submit this two-part application.

Some of it was general information and then other parts were categorizing their system, doing sampling based on land use areas for various pollutants, and then they were required to develop a Stormwater program to reduce the discharge of pollutants to the maximum extent practicable.

So, just to talk a little bit about this MEP standard, that is a standard that municipal discharges of stormwater are held to, and it's considered to be - there's not a precise definition that we can point to anywhere that says, "MEP means this." There's kind of-- it's a little bit of a moving target because it's an iterative process and you need to keep going back and revisiting what BMPs are being implemented and make adjustments. And MEP for a large city or town may be very different than what MEP would be for a smaller community, so it's the *Maximum Extent Practicable* for the community.

So, the needs of one community may be different than the needs of another community, so this is somewhat of a difficult thing to actually define, but that is the standard that the municipal dischargers are held to. So what is envisioned is that, municipality will implement a Stormwater Management Program, evaluate the effectiveness of it, meaning, are they seeing improvements, are things changing, is the water quality getting better. And if not, then they need to go back and review what's going on and make adjustments and try something different, which is the iterative process.

So that's kind of a little snippet of MEP. I don't know if Nikos wants to add something to that.

Nikos Singelis: Well, I think that's a very good description. You know, for better or worse, this is one of those things that is not clearly defined, and it is unique to the Stormwater Program and the Clean Water Act.

There are other standards that apply--*Best Available Technology*, which we'll explain in a minute, or *Water Quality Standards*. But for Stormwater, there was a thought back when this program was created, but something different was appropriate for stormwater, because stormwater really is a very unique and difficult source to control.

So I think Thelma's, you know, sort of key points there, one that it is an iterative approach, so EPA kind of expects from permit cycle to permit cycle every five years, that the programs will continue to grow and expand and refine what they're doing.

Obviously, water quality is a piece of that, so the ultimate goal is to improve water quality down the road. And so water quality should be the thing that's kind of informing what we do next in the program, are we making progress, as Thelma said, or not? And

also, those differences between the kinds of communities that are out there. Obviously, smaller communities don't have the kinds of resources that bigger ones do, so there's not an equivalency there, but it's sort of appropriate to your conditions.

Thelma Murphy: Right.

And one of the things with the Phase I, just quickly to wrap that up, was Phase I did have monitoring requirements in it, and we issued the permits. Most of the permits for Phase I communities were issued in the early 90s, so we're on the second or third iteration for Phase I communities.

The Phase II program, because it's based on an urbanized area definition, defined by the Census Bureau, and an urbanized area, as I mentioned, is a Census Bureau definition that takes a central core and does an algorithm and calculates out, based on population density to figure out who is in. So what happens is, as we saw in the previous map, it's not drawn along political boundaries, so often times, communities that border larger urbanized areas are brought into this program because they're on the fringe of the urbanized area. So they're in the program. And we will look--because the Census Bureau happens every ten years, there'll be another census in 2010--so potentially more communities will be brought into the program.

And as I mentioned at the very beginning of this webcast when we're talking about the authorities that we always have this extra authority to designate anybody else that we feel needs to have permit coverage. So EPA has the authority, as well as the states, to pull in communities that are not in the defined urbanized area as needing a permit or, as I mentioned earlier, to require communities that have a partial piece in an urbanized area to implement their program in the entire urbanized area.

And as we were just talking earlier, it also includes these not--what we call nontraditional types of entities, including, you know, the military bases, public universities and prisons, and all these folks are--if they're located in the urbanized area, they are subject to the permitting requirements, as well as what we call traditional cities and towns in the program.

Nikos Singelis: Okay. This map shows the urbanized area of the United States according to the 2000 census.

So as Thelma was just mentioning, there are 464 urbanized areas, those sort of core areas of larger population. They cover 5000 plus communities across the United States, as we saw on that example of Allentown-Bethlehem, Pennsylvania. Many of the suburban areas, too, are included.

One hundred and ninety-seven million people are in the urbanized area, so about 70% of the United States, and interestingly lives on about 2% of the land area.

So again, if we go back to those water quality statistics that I was showing at the very beginning, and we look at the percentages, even if we know those aren't the greatest percentages in the world, we can see here that 2% of the land area is having 10%, 15%, 30% of the impact or the waters that have been assessed so far. So the relative magnitude of impact for urban land per square acre is pretty high, and in fact, I think the highest of all the different land uses, is urbanized areas in terms of the impacts that we'll have on water quality.

Thelma Murphy: So for the Phase II program, as we're talking about permits, typically, we issued the general permits and there are some instances where individual permits have been issued for the Phase II municipalities. And similar to the Phase I municipalities, Phase II municipalities need to develop and implement what's called a Stormwater Management Program, and again, the same standards apply to the Phase II folks that they need to reduce the pollutants to the maximum extent practicable.

Typically, Phase II communities don't have a monitoring requirement. EPA typically doesn't have it in their permits. States can certainly put monitoring in their permit, but it was not an initial component. It may come in the second permit term that we're doing because most of the Phase II permits are expiring right around now, 2008-2009, since the first permits came out in 2003, and so the second permit term may have some monitoring requirements in it.

So basically, for the way it works for the municipal permit is that, we--EPA or the state--would issue a general permit, and then municipalities would be required to submit what's called the Notice of Intent. And the Notice of Intent was to say what BMPs they are going to be using to meet the conditions of the permit and say that they're eligible for their permit. And what EPA will do is review the NOIs and will accept public comment on the Notices of Intent that come in.

And basically, I always describe the Notice of Intent as the plan of your program, the initial NOIs that came in basically outlined how municipalities were going to implement a program to meet the conditions of the first general permit. And the setup is that, you know, the permit requires six minimum control measures to be implemented, and Nikos is going to go over quickly what those six minimum measures are.

Nikos Singelis: Okay. We've got a couple of slides on each one of these minimum measures. And as John mentioned before, we do have a whole series of webcasts, so we have covered the details of each one of these six in great detail. So if you do want to know more than we're covering today, tune in to those archived webcasts. You can listen to them anytime.

But we do have the six minimum measures: public education, public involvement, illicit discharge, construction, post-construction, and pollution prevention, or municipal operations, is the last one.

So first, a little bit about public education and involvement and it occurs to me that this is one of our more sort of fundamental pieces of the Stormwater Program. If you think back to that map that I just showed you, 70% or so of the population in the United States is essentially covered by the NPDES Stormwater Program, and people everywhere in their everyday lives are contributing to stormwater problems, whether they are fertilizing their lawns too much, or using pesticides, or perhaps at their place of business, you know, they have a parking lot that's draining right into a stream without any kind of stormwater controls. There's a whole range of places where people in their daily lives and in their business lives impact stormwater.

And so, depending on what's going on in your community, the public education and involvement pieces--there are actually two minimum measures here--are very important. And so that's sort of the centerpiece of this diagram. But also keep in mind that public education and outreach is the central piece to each one of minimum measures.

So for instance, in the illicit discharge program, to make that program really work, if you can educate your citizenry to look out for those illicit discharges and call them in to you or report them to you, so you can go track them down, you'll have a much more effective program.

Same for any of these minimum measures. Another example would be in post-construction to educate your builders and your developers about post-construction BMPs and the importance of low impact development kinds of techniques, and the kinds of things that they want to be putting into those new developments. So it does reach out into all six of the minimum measures.

So a little bit about public education, of course, every MS4 is required to implement a public education program. The regulations say to distribute materials about the impacts of stormwater, and if you just follow what is the minimum required there, you're probably not going to have a very good public education program. So EPA recommends—and has a very nice manual called the "Getting in Step" manual for outreach campaigns. Website is listed there. It's also on your resource document.

I don't think we mentioned that, Sonia, that we have a resource document available to people. It's available on one of the buttons on your website there. It gives you some of the essential resources so they don't have to scramble and write down all these URLs today.

But here we're talking about going through this process starting at the bottom of the building blocks there about identifying some key things about your audience, what they know, what they don't know about stormwater, setting some objectives for the kinds of things that you want to accomplish, and then moving upward targeting your key audience, refining your message; developing a format for delivering that message, whether it's through TV, Website, print media, through a network, some kind of informal network in the community, et cetera, and then finally, evaluating that effort.

Again, as Thelma mentioned, the iterative approach evaluating it to find out whether it was effective. Did people change their behaviors? And if not, then we go back to the beginning and start that cycle again.

So, lots more on public education in our webcasts, we've had a couple of webcasts on that topic and also through that "Getting in Step" manual.

The third minimum measure is illicit discharge detection and elimination. And at this--for this minimum measure, we are lucky enough to have a manual developed for us by the Center for Watershed Protection, which is featured there.

And it helps--this manual really helps communities to run through a very logical process for assessing the situation in their communities then setting up a program that makes sense for them.

So, some of the key things there, of course, are having an ordinance in place. That ordinance needs to prohibit non-stormwater discharges to your system. It needs to give you access so that you can go and do your inspections and investigatory work when you need to, and of course, when you do find a problem, it's got to provide you with way of correcting that, one way or the other. Sometimes, that might be through a fine or penalty or the ability to compel somebody to correct a cross connection from a sanitary sewer system.

Also, we're looking for a map of the outfalls in the system. The manual--one thing I want to point out is that it does a really good job of getting you to assess the different sub-watersheds that you're dealing with, so that you can better target all your illicit discharge investigations to areas where you really do have a potential for possible problems. And then it also goes into how to train your system, how to track all these things, and again, that public education piece.

Thelma, do you want to talk a little bit about the construction measure?

Thelma Murphy: Sure.

The construction minimum control measure also requires an ordinance like the illicit discharge minimum measure. And the ordinance is to require construction projects within your community to utilize proper sediment and erosion control and good housekeeping practices. You need to be able to submit, be able to review plans that are submitted, and have the ability to assess fines and penalties if somebody is not following your local requirements.

The important thing is something that when you have the plan review process, it should be an integrated process. It should include people that understand what's happening in the plans, reviewing the plans, and have opportunities for comments on those plans for interaction with the public on the plan, and a post-construction piece should also be incorporated into the plan.

So you want to know what they're going to be doing while the construction is taking place, but then also how the systems are to be managed after construction. You should have some type of inspections of all these facilities or all these projects and the ability to respond to any complaints.

And again, as Nikos talked earlier, this measure also can tie into your education process where you're educating the developers that are going to be coming into the community on what exactly they need to do, and this is one of those ones where there's layers for the construction programs. So there's the local requirement, but there's also a Federal construction permit that would also--or potentially could also--apply to construction projects within your community.

John Kosco: Yeah. And post-construction is very similar to construction. It's actually often implemented together, but the basic requirement is to develop and implement a post-construction program for all new developments or redevelopments greater than an acre.

There is a requirement for an ordinance that requires plan review, design specs, maintenance and also requirements for a plan review process and a program to ensure that maintenance is conducted--and training.

There's a screenshot of a new post-construction guidance that the Center for Watershed Protection has put out. I'll talk about that in a couple of slides.

Thelma Murphy: The sixth minimum measure deals with---it's actually called good housekeeping and municipal operations. And basically, what's required in this is kind of another separate--just kind of another program within your program to deal with pollution prevention activities in municipal operations. And it has a training component you're supposed to train your employees and you can certainly use our Webcast series to help train your employees on some of the issues that deal with stormwater.

You should have standard operating procedures, you know, how, you know, for things such as how frequently are the streets wet, how frequently are the catchbasins cleaned, what is the schedule, you know all these things should be thought about and documented and planned out.

And the municipal operations section doesn't just cover the city streets and the sidewalks. It's all the municipal operations that exist. So, it's the buildings, it's the vehicles, it's the parks, it's the schools, the transfer stations. All those pieces need to be taken into account and evaluated and opportunities for pollution prevention activities to take place.

For industrial facilities, this is the set of municipal - for the municipal programs subject to Phase I. They have another component that dealt with the industrial side of their--of the industrial discharges into their system, and they had to control and monitor the discharges

from those industrial facilities that discharge directly to their municipal system and this was a requirement that only apply to the Phase I municipal systems.

Nikos Singelis: And, Thelma, I would add that for Phase II communities, well, it's not spelled out so clearly, the illicit discharge minimum measure is the logical place for Phase II municipalities to look at commercial and industrial facilities as well, and actually the guidance document has some very useful information about how to deal with that within a Phase II program. So in some ways, they're not called out separately as it was in Phase I, but in some ways, I think implied in the illicit discharge minimum measure.

So now, really quickly, just some other pieces of this, there is a provision that MS4s should pay attention to, and it's - we call it "shared responsibility." This is in the regulations now that you know these things, the Code of Federal Regulations at 122.35, which you can find on our website most easily, but this is a place where the Phase II regulations provide the opportunity for MS4s to share responsibilities.

And in my way of thinking, there's sort of two ways to do this. One would be where a group of municipalities band together and create a program or a piece of the program together. For instance, we have the example of Burlington, Vermont, which I think we've mentioned on a couple of other Webcasts, where the 15 or so communities around Burlington, Vermont banded together and each contributed $5,000 to come up with a very nice public education outreach campaign. So that's one possibility.

Another possibility may be where you are actually going to rely on somebody else to do something for you. So for instance, in the case of a community where the county has a very good sediment and erosion control program, and that they're doing all the things that are required by the Phase II requirements already, that community can say, "Well, the county program suffices. They are doing all these things, so we're going to rely on them. We don't need to develop another program."

So, those are some things that MS4s should take advantage of, particularly the sharing I think, in so many of these different things make a lot of sense, particularly for smaller communities.

Thelma Murphy: And just to add that it's - you know, there's a lot of information and a lot of stuff that's going on and there's no need for folks to reinvent the wheel if something is already existing in their area that they can build on or work with or form partnerships with to get things done. So it's important to, you know, look at what's happening within your community, within your area to see if there's something - somebody you can partner with or there's something that's already existing that you can build on that you're not trying to start from scratch from something.

Nikos Singelis: Absolutely. And I think the resource document gives some opportunities for folks who might want to look at the listserve and join the listserve that is mentioned there and also the non-point source toolbox for education and outreach has examples from all across the country of different things that you can use.

So just to summarize the MS4 permits here, as Thelma mentioned, most Phase I permits are in their second or third or some even starting their fourth permitting cycle.

Phase II was required to have permit coverage by March 10, 2003. And then, as we mentioned, they have five years to get the program fully up and running.

Now we know that because states issued permits at different times, so that timeframe is thrown off sometimes, so that's kind of a generalization, and that both of these programs require annual or periodic reporting.

So now, we come to the answer to the next one, and I understand that was a technical problem, and this one didn't show up for most people. But the question was, for those who weren't able to see it, the Phase II regulations provide the following time frame for MS4s to fully set up their programs after they get permit coverage. And the right answer was five years, as you can see there.

And then the bottom half, a little bit more details on the framework. So again, the regulations, as we discovered, were issued in 1999 and then permits had until March 2003 to issue those permits.

I mentioned that number of permitting authorities, including EPA in a couple of cases. We have to admit that we didn't always meet the deadline as well. We're a little late there.

And then after that, MS4s generally had about 90 days to actually get that permit coverage and then a five-year window after that to get their program up and running.

So right now, for many states and many communities, we're basically at the end of the first permit cycle, so we are expecting that many folks have their programs up and running at this point.

And so, John, why don't we cover the post-construction guidance real quickly. Again--

Nikos Singelis: --questions.

John Kosco: Okay. Just briefly because this will be the subject of our next webcast.

The Center for Watershed Protection, working with Tetra Tech and EPA, has developed a comprehensive guide on post-construction. So for a Phase II community on how to develop a post-construction program, it is the setup very similar to illicit discharge manual that CWP did a couple of years ago.

We're anticipating it says "Summer 2008." We're actually anticipating publishing this next week on CWP's website and you have those websites on there.

So just quickly, here's the different chapters, and it does step through the basic components of developing and implementing a program. So, it goes from program development in Chapter 2, talking about linking stormwater and land use in Chapter 3, the different stormwater criteria and approaches, developing an ordinance and stormwater guidance manual, all the way through plan review, inspection, maintenance, and tracking and evaluating your program. So it's a very comprehensive guide. It also includes a number of tools to help you develop your program, things like a model ordinance, a self-audit tool, checklist and various things like that.

So with that, Nikos, I will turn it over to Sonia to ask a couple of questions.

Sonia Brubaker: Thanks, John.

And yes, the questions keep rolling in, and based on our second poll question, we have over 3300 people listening in today. So we cannot answer all the questions posted during this webcast, and we're running just a little bit behind, but we will try to answer as many as we can.

So your next question.

Christine is wondering, and if it's a MS4 conveyance, it can also be a water of the US. For example, can a water owned and operated by a regulated MS4 be part of the MS4 system? Thelma or Nikos?

Nikos Singelis: Okay. I said we can take hard questions, but that's a really hard one.

Thelma Murphy: A really hard one.

Nikos Singelis: I would say that, generally speaking, that doesn't tend to happen. Most MS4 conveyance systems are, as Thelma mentioned, the roads, the streets, the gutters, the underground infrastructures, so often times, those are not obviously waters of the US.

Now, there are some cases where this can get a little bit gray where we have these open channels. And so there has been some discussion about that where there may be some overlapping situations where some of these things are considered waters of the US and are also part of that conveyance system. So there may be some limited cases where there are some overlaps.

So if the person that asked that question wants to send an e-mail in, we might be able to provide a little bit more information on some of those cases. But I would say, kind of as a generalization, would you agree with this, Thelma--generally, those things are pretty separate.

Thelma Murphy: Pretty much so, yes.

Sonia Brubaker: Great. Thanks, Nikos and Thelma.

Nikos Singelis: Okay, easy questions now.

Sonia Brubaker: Okay. John, this one is for you.

Ray in St. Louis County wants to know, if an urbanized area cuts the community in half, is the whole community included in the MS4 and even the portion that is not in the urbanized area?

John Kosco: Yes. Technically, I guess it all--it can depend on your general Phase II MS4 permit. But in general, the urbanized--it's only the urbanized area part of the county or city is included in the permitted area.

A lot of times, the cities address the entire incorporated boundary, but I think technically, it is only the urbanized portion of that city that is included.

Nikos Singelis: And I'm sort of shaking my head a little bit because at the regulatory level--remember, we had that graphic before--at the regulatory level, yes, it's the urbanized area.

But then we move in to the permit round, remember? And the 45 states have the ability to make their own decisions in the permit round and lots of states actually have included the entire community. So in order to answer this question, you actually need to read the permit in your particular state, because it is going to vary state by state.

But when you see it on the EPA website, we are talking about what's identified in the census. But then there's that second level where the states make decisions using that designation authority that Thelma mentioned earlier.

Sonia Brubaker: All right, great.

Now we do want to get through the rest of the session, so that wraps up the second Q&A session. But I do want to mention that we do have one more opportunity for questions and answers, so please keep submitting your hard questions.

Are we good?

Nikos Singelis: Okay. Thanks Sonia for setting that up for me.

So we're going to try - we are running a little bit late. Unfortunately, we are going to extend this just a little bit so just stick with us so we can get through all the material. And so we'll cover the construction section next very quickly.

As I mentioned before, we do have a lot of webcasts already on this topic. So I'm just going to go over this very briefly.

So we do cover construction. The discharges of stormwater from construction sites during the active construction period.

And back in 1999, remember when we finalized the Phase II rule, we did estimate that approximately 400,000 construction sites would be covered by the Phase I and Phase II program. And obviously that's going to vary widely every year depending on the economic conditions in the country.

Maybe for the last 10 years, we had a lot of construction sites. As we know, there is a lot of development the last couple of years. Obviously, that has changed rather dramatically. So this number is going to go up and down every year.

Obviously, for construction, the primary pollutant that we're concerned about is sediment. But one of the things that distinguishes the stormwater--the NPDES stormwater program from a lot of existing sediment erosion control laws that have been out there that often predate the NPDES program--is that we do focus also on these other pollutants that may be generated at the construction site, including things like trash and debris and concrete washout, paints and chemicals that might be spilled and those sorts of things.

For this next graphic here just shows the potential for erosion from an uncontrolled construction site. And you can see over on the far right, bare soil at an unmanaged construction site, might yield something like 35 to 45 tons of sediment per acre per year. And going all the way over to the last, a forested site is far less than 1 ton per year. In fact, it's probably less 100 pounds per year actually. So the differences can be quite dramatic and that's why the NPDES program is concerned with construction is because of that potential for a large amount of sediment to come off these sites in a very short amount of time.

So again as we've said all along, this is about prevention or minimizing the impact of construction. So we are looking at erosion control. That's a very important part of this. We're looking at keeping the soil in place. So for those who don't know erosion, erosion control is basically aimed at keeping that sediment in place, and sediment control, as it starts to move, we want to catch in the silt fence before it leaves the site.

Now one of the things that you'll see out there very often is that people only use sediment controls. I mean many, many of us have driven by a construction site. The only visible BMP out there is the silt fence. But one of the things that we want to start to change is to see a more of those controls whether it be matting or mulching or seeding to keep that sediment in place. So that's really the mark of good construction control at a construction site. And of course as I mentioned, the other ways too. We want to make sure that we control all of those.

Standards. We've talked about this a little bit and this applies both to construction and industrial so I will summarize it real quick here. But basically, the Clean Water Act requires us to meet both technology-based standards, which are generally best available

technology, and water quality-based standards. So this is different than the municipal program where Thelma talked about maximum extent practicable.

And right now in the construction program, basically we've dealt with two standards through the imposition of BMPs. So if you look at permits, they will require that construction operators implement BMPs to prevent sediment erosion problems at a construction site. And if they do all those things right, then we presume that that meets these standards.

And I should mention that that may start to change in the future. EPA's working on an effluent guideline for the construction industry right now, and that would affect the technology-based side of it and also on the water quality-based side it as we implement TMDLs, which is one of the questions before. If a stream segment is impaired for sediment or TSS, Total Suspended Solids, we may have specific requirements for construction sites through that route as well. But generally in our permits, we're handling those through a suite of BMPs that we require construction site operators to implement.

John Kosco: Yes, Nikos, this slide summarizes the activities regulated under the NPDES program for construction. As Thelma mentioned earlier, large construction above five acres is actually categorized as an industrial activity and regulated under that section at Clean Water Act. Small construction, in Phase II was actually designated under other water quality protections of the Clean Water Act. So that's between one and five acres. And the reason they did that is because of that challenge from NRDC that said five acres was arbitrary and capricious. But what EPA did was they lowered it to essentially the one acre, but it's a fuzzy one acre.

There are waivers that allow sites between one and five acres out of the program if they demonstrate no water quality impacts, and there are designations below one acre if they're causing a lot of water quality impact. So it is one acre but with some exemptions.

And then the definition of construction does include clearing, grading, excavating. It's important to remember that's more than just house or building construction. That can be road construction, utility lines built, a golf course constructed, you know, anything that disturb the ground, except of course agricultural, which is exempt from the Stormwater program by the Clean Water Act.

And then we also did want to introduce the concept of this common plan. So if your activity includes a common plan to develop a parcel, say above an acre or above five acres, but you're implementing that common plan in pieces, say four or five quarter acre lots individually, that would be covered by the program even though you're only disturbing a quarter acre at a time. If your common plan is above the one acre in size, then all of those individual activities in that common plan are covered.

And we'll move on now. Nikos will talk about some waivers.

Nikos Singelis: So we have in the construction program as John mentioned, for small construction only, that is construction under five acres, we do have a low-erosivity waiver possibility. EPA offers this in its construction general permit. And some other states do. And it is a state choice again as to whether they want to offer this waiver or not.

But this would apply in dry areas, particularly in places where we don't have a lot of rainfall or where during a particular part of the season there's very little chance of rainfall. And so, we use an erosivity factor. And there's a calculator on the NPDES website to see whether you can apply for this waiver or not. But if there's little chance of rain during your construction program, you might be able to apply for that waiver and opt out of the program.

The Phase II regulations also mention a couple of other waivers, the water-quality waiver and TMDL waiver, which I'm not going to get into. We actually don't offer those actively through the permitting program at EPA, but they are described on our website in some more detail, if you want to find out about those.

And qualifying local programs is another thing that I wanted to mention, similar but different from the shared responsibility that I mentioned for municipalities. This applies to construction programs and does allow a way for us to streamline the construction program. And EPA is actually working on this right now and hopes to implement it in the next six months or so in our construction general permit. As we mentioned before, EPA is the permitting authority in five states and some other areas. And so we're hoping to do that.

But basically, what we're trying to do here is recognize strong local programs that have good ordinances in place. And when we recognize those in the state or in the EPA construction general permit then we can basically streamline the requirements that a construction site operator would need to follow.

So just because we're almost out of time, I'm not going to get into the details of this. But if you want to read more about it, there is a document on our website about that.

So just to kind of summarize, the EPA construction general permit was initially issued in 1992 and we had several iterations including the 2008 version which just came out last month. And of course, authorized states issue their own construction general permits.

And so that takes us to Quiz Answer number five here. And so the question was, EPA issued the construction general permit. This permit, and the first option was applies to construction sites nationally. The second option, which is you can see there, is the correct answer, applies only to construction site in certain areas where EPA remains the permitting authority. And then you have some other options, particularly the next one which asked you if EPA CGP has any implications for an authorized state.

So let's say how people did when they were answering this, and uh-oh, I've got to report again that our class did not do so well on this one. So we had about 5% who said A, applies nationally; 13% actually got the right answer, which is B right there; 10% said C; and then most people--37% and 34%--said B and C or A and C. So lots of people got that one a little bit wrong.

So again, getting back to that framework that we showed you before, if you remember that graphic that I showed you, the Clean Water Act applies nationally. The EPA regulations apply nationally. And then permits apply in places where mostly state by state, and in the case of EPA permits, in the five states that we deal with. So our permits really affect the activities in the states that we are the permitting authority for. So hopefully that answers that one.

And let's see, Thelma's going to talk a little bit about a SWPPP so I'll turn it over to her.

Thelma Murphy: Okay. Well a SWPPP is a Stormwater Pollution Prevention Plan and it's what we require--it is the basis of the permit requirement is that construction projects need to develop and implement a Stormwater Pollution Prevention Plan. It needs to be in place prior to submitting your notice of intent for coverage and basically it identifies what the sources of pollutants are, what are the BMPs that you're going to be implementing to control those pollutants, and it requires--it defines frequency of inspections and different types of schedules that need to be--that will be implemented on the site and it identifies who's responsible for what aspect of the plan's implementation.

And EPA actually has a really good guide for developing a Stormwater Pollution Prevention Plan, and it's called the Guide to Developing a Stormwater Pollution Prevention Plan. It is available on our website. And it steps you through all the different requirements of the plan and, you know, things you should look for and things such as that. So I encourage folks to go to the website and download it and view it.

Nikos Singelis: Thanks Thelma.

And just a little bit of detail about this, actually I was the manager of this project and so this document--besides the document or the guidance document itself, it also includes a template, a SWPPP template which guides you through the process. It's in Word so you can download it and type right into it, and customize it for the permit requirements in your particular state.

We also have an inspection form. Construction sites are required to self-inspect their own site on a periodic basis that varies from state-to-state depending on the requirements, but it gives you a form to walk you around the site and help you inspect.

And we've also developed, if hadn't looked at this recently, at this website recently, we've developed two example SWPPP where we took two hypothetical projects--a residential project and a commercial project--and we filled out all the forms in detail, so

you can see what that looks like. So all those things are available to you at that website that we just mentioned.

And now John, I think we're at Quiz Answer Number six, is that correct?

John Kosco: That is correct.

Nikos Singelis: And Number six here is how many levels of NPDES stormwater requirements does a construction company have to comply with? And as you can see the correct answer there was B, which is EPA or state because of course, you know, permitting authority is either an authorized state or it's EPA, so that's an "or," and local as applicable. So the correct answer is one or two levels.

As we discussed an MS4, this requires to have a construction program. So they will have--but if you're outside of an MS4, in an unincorporated area, you're not going to have an NPDES-derived requirement, although that community may have its own requirements as well or may not. But if you are in an MS4, the answer would be two. So let's see how people did.

And yet again--oh well. I guess these questions are really hard. But anyway, 2% said one. Okay, so we know there are some cynics out there anyway; they figured that one just cannot possibly be the right answer. 37% actually got it right, so that's good--the state or EPA, and the local if applicable. 60% said three levels. And then again, the cynics again said, no, it can't be just one, it's got to be more so.

Thelma Murphy: Well in the sense of the folks who have said three, I have to say that in my region, where EPA is the permitting authority, we still--my two states we have authority over also have programs. So a construction project within my region and those two states would have--could have a local MS4 program, could have a state requirement as well as EPA's program.

So in defense of those folks, that answered to that question, they still could be right in certain areas.

John Kosco: That's a trick question.

Nikos Singelis: That was a trick question, though.

Thelma Murphy: Okay.

Nikos Singelis: Because that said NPDES stormwater requirement.

Sonia Brubaker: Okay.

Nikos Singelis: So anyway, there you have the answers and again, we're going to extend I think for a few minutes because we do want some opportunity to answer question so

stick with us. We have run a little bit over. We had a lot of material to cover. So let's get quickly into the industrial program. John's going to start us off and run through the industrial requirements real quick. And then we'll have some time for questions.

John Kosco: Yeah, that's right, Nikos. And so we will run about 10 minutes past the hour for those of you listening in.

The industrial program is a separate NPDES permit program to issue to approximately 100,000 industrial facilities. And the pollutants will obviously vary by industry sector. But you're looking at, you know, heavy metals, suspended solids, oils, and grease and, you know all the types of pollutants you would expect from these categories.

We'll go through the individual categories in a couple of slides but these are primarily your heavy manufacturing and processing types of facilities. And it can include any, you know, federal, state, or municipally-owned facilities.

So for example one of the categories is wastewater treatment plant discharges, stormwater discharges from waste water treatment plants. So those were obviously municipally-owned. And if they're covered, they should be required to comply.

And then we also cover the no exposure provision in a little bit more detail with some additional slides. But those facilities, if they qualify, are not required to submit for permit coverage, but they must submit this no exposure certification to let EPA know that they don't need to apply.

So similar to construction, we're not going to cover this slide in any detail, because it's very similar to construction. There are two Clean Water Act standards for industrial stormwater sources. They're technology-based standards and water quality-based standards; the technology-based standards being essentially the BMPs and SWPPP requirements.

Nikos Singelis: John, it might be interesting to note for people. Unlike construction on those technology-based requirements for industrial, there are actually effluent guidelines in place and an effluent guideline is a national regulation that covers in industry category. And so there are quite a number of effluent guidelines that apply to the industrial stormwater program.

John Kosco: Okay. And then also similar to construction, industrial facilities are required to develop Stormwater Pollution Prevention Plan. And the details of that SWPPP are generally covered in the general permit issued to that facility or issued for that state. And again, these rely on BMPs rather than end-of-pipe controls. The BMP is generally being a lot of good housekeeping type practices, cover and things like that.

So here you can see the different major categories of industrial activities that are covered. Again, things like the heavy manufacturing, landfills, recycling facilities, public transportation-type facilities, sewage treatment plants.

As we discussed before, large construction is technically a regulated industrial category, but that's typically covered under separate general permits. We cover that under the category that Nikos just covered.

However, there is this category of light industrial activity. And what happened when Phase II was these facilities were basically exempt. They were told, if you don't think you need a permit, you don't need to come in, you don't need to talk to EPA, you don't need to do anything. Well, EPA was sued on that, and found that these facilities shouldn't be essentially self certifying that they weren't causing a problem. EPA shouldn't leave it up to them to decide. So EPA needs to issue some guidance or form to help them decide whether they're eligible for this no exposure or not.

So EPA developed the form with Phase II, developed more specific requirements. So any industrial facility can qualify for this no exposure if they meet certain requirements and notify EPA.

So what is this no exposure provision?

Again, the original only applied to light industrial activities and no certification was required. With the court case, though, it was changed where there is now a no exposure certification form. You can download it from EPA's website. And if you answer all the questions, check off that you are not providing any industrial activity as outside, you're not doing any--exposing any activities to stormwater run off--you could qualify for this no exposure provision and essentially not need to comply or apply for the NPDES permit.

So it leaves these facilities that are essentially all the activities are conducted indoors, it lets them out of the NPDES stormwater permit program.

And I think Nikos was going to, or Thelma's going to talk about the MSGP.

Thelma Murphy: While the Multi-Sector General Permit is the permit we use to regulate industrial discharges. There's different sectors depending on different types of industrial activity, 29 in total. And again, it deals with Stormwater Pollution Prevention Plans, which would typically be the BMPs.

The original permit, which was published in 1995, was developed based on using specific industry data that we collected during the group application process that took place in the early 90s which doesn't exist anymore. But based on the all the information we got from that, we developed the 1995 version of the multi-sector permit.

We reissued it in 2000. And we public noticed a new version of it at the end of 2005, and it should be reissued soon. And each of the states, the individual states that are authorized, have their own industrial permits. Some have the Multi-Sector Permit and some just have a general industrial permit, covering this facility.

Nikos Singelis: That's true and you heard Thelma sort of back pedal there a little bit on the re-issuance, but we do expect, it has been expired for a long time. And the latest that I heard is that it be out by the beginning of September, and trust me, we in EPA, have been waiting for a long time for this too and want to do it as quickly as we can. And Thelma also mentioned too that we call it a Multi-Sector General Permit. But if you're looking for it in your particular state, it maybe called something different.

So that takes us I think to Quiz Question Number seven. Boy, we went through that really fast.

So here's my favorite question out of all of these--80% removal of total suspended solids--and first option was there, is a Clean Water Act requirement that applies to all dischargers including stormwater, which was incorrect; is a Clean Water Act requirement that applies to wastewater treatment plants, is also incorrect; cannot be found in the CWA and doesn't apply to NPDES stormwater, is the correct answer.

And it's just amazing, this is one of those great urban myths that exist through the stormwater program. You will find this all over the place. People will mention it in speeches and conferences. You'll see it on brochures for different devices that you can buy that EPA requires 80% removal of TSS.

Well now you know the truth folks. This is not true at all. In fact, we actually have an entire webcast that we did several months ago on the whole issue of BMP performance and we don't even like percent removal as a way of measuring the performance of BMPs. So there are a whole lot of things wrong with this one but it is one of those great urban myths that keeps circulating, so let's see what came up in terms of answers here -- 32% answered A. Let's see 14% answered B. Only 17% got it right. And 36% answered D there.

So again, not doing so well but we hope that you've got this as a take-home message and anytime you see this 80% removal, you can intelligently tell people, this is not a Clean Water Act requirement.

All right so, now said we're going to extend a little bit here so let's take some questions from the audience because I know we do have a lot, but we do have some flexibility here so folks, stick with us and let's try to answer, you know, five or six or seven questions if we can get to them.

Sonia Brubaker: All right Nikos. We do have a few minutes to answer additional questions. But first, I want to remind you that this seminar will be archived so you can access it after today's live presentation. The archived webcast will be posted within a few weeks. Revisit EPA's NPDES training website to view this archived presentation.

As a reminder, we have listed the speakers' contact information in case you would like to contact them after today and as Nikos mentioned earlier, you can find a comprehensive

resource list by pressing the Resources button on your screen. You will need Adobe Acrobat Reader to view this document.

Finally, a webcast evaluation survey will soon appear at your screen. Please complete the survey and let us know your thoughts. We do appreciate your feedback as we work to improve our webcasts. And if you do not see an evaluation survey on your screen, please turn off your pop-up blocker.

And as an added note, don't forget to download the certificate. Click on the Certificate button to print the certificate after this Webcast because it will not be mailed to you.

Now there was a problem with the certificate, but it is now fixed. All you have to do is press the key F5 on your keyboard to refresh your console--Web page. So I'm going to give you extra couple of minutes so you guys can refresh and please let us know if you still cannot download the certificate.

And as always, if there are multiple people in the room with you, you can click on this link to customize your certificate and print a copy for everyone attending. Now we have time for additional questions.

So this first question is for Thelma. Timothy from South Carolina has asked if a construction site is not located with an MS4 area, is it still required to have an NPDES permit?

Thelma Murphy: If the construction site is not located in the MS4 area, my guess would be that the state would have a construction permit that perhaps would apply. There needs to be a point-source discharge as we talked about at the beginning of the webcast, so need to have a discharge of pollutants to a water of the state for needing a permit. So if there is a discharge, it does need a permit.

Nikos Singelis: Yeah, so I think the generalized answer to that in most parts of the country, the answer would be yes and they would need coverage under the state construction general permit if that construction site discharged, an acre or above, as we mentioned, or as a part of a larger common plan of development for some of the smaller ones and as Thelma mentioned.

So, for most places in the United States, have that potential for a discharge to a water that you asked. So we would certainly strongly recommend that they get permit coverage.

Sonia Brubaker: All right, great.

And John, Nancy from Missouri wants to know if an industry discharges to a permanent MS4, does that industry need an NPDES permit?

John Kosco: The answer depends on the type of industry and whether it's specifically required to get coverage under the multi-sector general permit or the state's industrial

general permit. So it really doesn't matter whether they discharge to an MS4 or not, if they're covered under one of the SIC codes in the industrial general permit, then no matter where they're at, whether they have MS4 or outside MS4, as long as they're discharging to water of US, they needed NPDES permit coverage for their industrial stormwater sources.

Nikos Singelis: And again, that's where the stormwater sources even just to clarify, maybe they didn't quite hear this right, but the industry cannot discharge processed wastewater to a storm sewer system and if they did, that would be violation of a whole bunch of different things. But for their stormwater discharges, if it's an industrial site that's covered as John mentioned, they would need stormwater coverage under an industrial permit.

Sonia Brubaker: All right. Now Nikos, Robert in Montana mentioned that increases in stormwater quantity discharges can often result in negative water quality impact. How is quantity addressed in the stormwater regulation?

Nikos Singelis: That's a good question. And as we've been discussing all day today, we are obviously very concerned about the volumes of stormwater coming off of different places. But if you look at I think a strict reading of the Clean Water Act requirements and the regulations, you're going to see much more of a focus on the pollutants.

And so where we're at today basically is that we're providing guidance that people should be paying attention to the volume aspects as well. And you'll see some of that also now starting to crop up in different state permits and different ways as well. So it can be addressed on a state-by-state or permit-by-permit basis as well. But if you look at the, as I said, if you look at the Clean Water Act, you're not going to see too many words that really relate to that very clearly.

Sonia Brubaker: All right. Thanks, Nikos. And Thelma, Joe from South Dakota asked if large construction activities—those greater than five acres are considered industrial activities--do those construction sites have more regulations than small construction sites that are one acre to five acres and do they have any regulations that fall under both the industrial and construction?

Thelma Murphy: Well--

Nikos Singelis: Do you want me to answer that?

Thelma Murphy: Yeah, you can--yes.

Nikos Singelis: I can't speak for every state out there but for EPA, there's really not much difference in our permit between large and small. In fact, there's no particular difference right at that break point between five acres and above and five acres and below.

In our permit, the one thing that comes to my mind that is different that kicks in when you got a drainage area of 10 acres or more that you need to have a sediment pond. So we do have that requirement.

Now states may vary and have different things but basically those requirements are the same. There's not a whole lot of difference except that sometimes you'll see, like in our permit that 10-acre requirement for a sediment pond.

Sonia Brubaker: All right, great.

And Nikos?

Nikos Singelis: Is this going to be a hard question Sonia?

Sonia Brubaker: Listen to them. No, Nikos, to wrap up the session, Vivian wants to go back to the basics. Please explain why stormwater is a point source.

Nikos Singelis: Okay. That's a good question. I think we can easily answer that one.

Stormwater is a point source because as we described the MS4 system, the municipal separate storm sewer system that most communities have, is a system of conveyance.

And if you look at the details in the Clean Water Act as to what makes up a point source, any kind of system that conveys stormwater is a point source.

So as Thelma mentioned earlier, the pipes under the streets and actually that curbs on the streets themselves are actually a conveyance system. If you have open channels next to a roadway, those are part of the conveyance system as well. So any of those things make up the definition in the Clean Water Act for a point source.

Construction is also mentioned specifically in the Clean Water Act as a point source. So Congress made a determination that construction was a point source as well. Industrial facilities and stormwater--in industrial facilities is eventually collected and conveyed some place--so that fits as well.

I think I actually - do we have time for one more, Sonia?

Sonia Brubaker: Now? Actually we--

Nikos Singelis: No, we don't. Okay. All right, fine.

Sonia Brubaker: Well thank you Nikos that certainly clarified things for me.

So at this time, I'd like to conclude today's Webcast. So thank you Nikos, Thelma, and John for presenting today and of course, thanks to everyone who joined us.

If you are still having problems with the certificate, please follow the URL that is now on your screen and customize your own certificate.

So our next Stormwater Webcast is scheduled for September 3rd on the Center for Watershed Protection's *New Guide for Building an Effective Post-Construction Program*. This webcast will focus on the guide itself, and provide tools for managing stormwater in your community.

Registration will be announced about two weeks before the webcast so please check EPA's NPDES training page at www.epa.gov/npdes/training for the latest information. An announcement will also be sent out through NPDES News, so please sign up for this email newsletter if you have not done so already.

That ends our webcast for today. Thank you for joining us.