AGENDA: CSO PHASE III STAKEHOLDERS MEETING

NARRAGANSETT BAY COMMISSION

DATE: April 10, 2014
TIME: 1:00 P.M.
PLACE: Narragansett Bay Commission
Corporate Office Building
One Service Road
Providence, RI 02905

PRESENTERS:

MIKE DOMENICA
RAY MARSHALL
TOM BRUECKNER
RICHARD RAICHE
TIMOTHY THIES
KEITH GARDNER

STAKEHOLDERS PANEL:

GREG GERRITT
MICHAEL GAGNON
PHIL HOLMES
JOE HABERAK
AL MANCINI
CHRISTIAN CAPIZZO
AMES COLE
TOM BORDEN
DAVID TURIN
PHILIP MANCINI
RACHEL CALABRO
DAVID CARR
LANCE HILL
JAMES TOOMEY
HAROLD GADON

BRIAN BISHOP
JAN REITSMA
MIKE WALKER
DORIS ASCHMAN
SHEILA DORMODY
STEVE COUTU

OTHER ATTENDEES:

ERIC BECK
MATTHEW PITTA
JOANNE MACERONI
MELISSA CARTER
GEORGE PALMISCIANO
JOHN HART
CHRISTINE COMEAU
MEG KERR
SHERRI ARNOLD
JAMIE SAMOS
AMBAR ESPINOZA

(HEARING COMMENCED AT 1:10 P.M.)

MR. DOMENICA: Again, welcome to the second Stakeholder Meeting regarding the Narragansett Bay Commission's Phase III, CSO Program. Thank you all for your participation in the first workshop. A couple of ground rules before we start the presentation, which today is on Gray Alternatives, otherwise, sometimes known as traditional structural types of controls for combined sewer overflow management.

Before we get into the presentation and before Ray says a few words, just a few housekeeping issues. First of all, I think we've been able to adjust here, but Stakeholders only at the main table here, you should have gotten, it looks like everyone did, a sign for your affiliation and name, which is helpful. So one representative from each Stakeholder group at the table.

If there's other representatives here, they can certainly attend at the back, but one speaker would be welcome. Please use the microphones, state your name very clearly. We had a little bit of difficulty last time associating comments with names and

affiliations, so state your name clearly, be sure to use the microphone. With regard to the minutes from the last meeting, the minutes will be posted on the website, the Commission's website. They are draft final. You probably haven't read them yet. If you have comments on them or corrections to them, please send those to Tom Brueckner, and the changes will be referenced in the next set of minutes from this workshop.

With regard to parking lot issues, I was probably confusing last time when I talked about parking lots. I was not talking about four-wheel automobiles, I was talking about the Board back there where if subjects come up that are pertinent, but not related to the discussion at hand at this particular workshop, the subjects we're covering, we would put it on a parking lot, list a board, and integrate it in future workshops, address it at that point when it's tied in more explicitly to the subject or the date.

So we'll continue to do that. There's no board there this time, but Jamie and I will take notes of issues. We'll tag them as

parking lot issues, keep track of them. They'll be referenced in the minutes that come out from this, and again, we'll integrate those into future workshops so that we're sure we cover them.

The agenda for today, you should have an agenda for today. I mentioned that it's grey infrastructure. At this point here, I think it would be helpful for all of us with the new faces to go around the table, and again introduce ourselves, your name and affiliation. It would be helpful.

MR. MANCINI: Phil Mancini, Town Engineer, Town of Johnston.

MR. BORDEN: I'm Tom Borden from the Narraganset Bay Estuary Program.

MR. COLT: Ames Colt, Rhode Island Bays, Rivers and Watersheds.

MR. GAGNON: Michael Gagnon, Director of Public Works, Town of Lincoln.

MR. HOLMES: Phil Holmes, representing the Rhode Island Shellfisherman's Association.

MR. GERRITT: Greg Gerritt, Friends of the Moshassuck, and the Environment Council

of Rhode Island.

MR. MANCINI: Al Mancini from the Division of Public Utilities and Carriers.

MR. GADON: Harold Gadon, Citizens Advisory Committee to the NBC.

MR. REITSMA: Jan Reitsma, Office of Governor Chafee.

MR. HABERAK: Joe Haberak, Rhode Island DEM.

MR. CARR: David Carr, Cumberland Sewer Superintendent.

MS. ASCHMAN: Doris Aschman, Rhode Island Department of Health.

MR. HILL: Lance Hill, City of Pawtucket.

MR. COUTU: Steve Coutu, DPW Director of East Providence.

MS. DORMODY: Sheila Dormody, Sustainability Director for the City of Providence.

MR. CAPIZZO: Christian Capizzo, Rhode Island Attorney General's Office.

MR. WALKER: Michael Walker, Rhode Island Commerce Corporation.

MR. TURIN: David Turin, US EPA.

MR. DOMENICA: With that, Ray.

MR. MARSHALL: Just one quick thing, I have no jokes. I just want to thank you all for coming and taking some time out of your busy schedules to provide the input that we need to reshape Phase III, so, thank you, very much, and whatever you have on your mind, make sure you get it out on the table into the record, so we can move forward in a positive fashion. That's it, thank you.

MR. DOMENICA: And Tom would like to make a few comments about some of the parking lot issues from last time.

MR. BRUECKNER: Tom Brueckner, Narragansett Bay Commission. And I was going to say the same thing, I think everyone tends to forget to say their name before they speak, so I'll just remind you again. Each time before you speak, for the benefit of the stenographer, it would be helpful to say your name.

I know going through the minutes from the last meeting, sometimes the stenographer was not able to get the person's name on the record for the next meeting. The

other thing is to make sure you speak up, and I've asked the stenographer if she cannot hear you or you're speaking too fast, to let you know, or if you don't say your name, let you know. So we'll try and cover that.

Now the minutes that were posted on the website were the draft minutes. We reviewed them, and we asked the stenographer to make some changes based on just some typos, primarily, and one or two names that were incorrect, which she did make the changes. Those new minutes were posted today by Jamie, so you probably haven't seen those.

And as Mike mentioned, as we go through this discussion about parking lot issues and any corrections you have, you can bring them up at this point in the meeting, and they will be a part of today's record. That's how we'll change the minutes from last time. And this is not a hearing, this is just really to keep a good record of what was said so we can go back to it for the next meeting. It's important that we at least get the gist of what you're saying down. Now, that being said, we talked about parking lot issues, and I went through the

minutes from the last meeting and found a few items that I wanted to talk about today as parking lot issues that I think we want to at least carry forward for discussion, or be aware of that it's an issue that hasn't been necessarily resolved, but we want to keep it on the table.

So the first one, and there was a lot of discussion at the last meeting about this topic, is affordability, and I have several categories under affordability, and I'm going to go through them, and I will state what my understanding was as to what was said during the meeting and what our parking lot issue resolution will be. So if I say something attributed to someone, and you feel that it wasn't quite what you said, I'm paraphrasing, feel free to correct me and say what you really have intended to say if I did it wrong.

The first one is on EPA affordability guidance. And I went through the minutes, it was suggested by Mr. Colt that the new EPA guidance on affordability is more flexible than the previous 1997 guidance. Mr. Turin of the EPA said in response, that the new

guidance was actually not that much more flexible but it is on the various costs that can be considered. In terms of affordability analysis, meeting household income, debt payment, and other forms of financial obligation can be factored in.

During Mr. Bard's presentation, he indicated that the affordability analysis being conducted by MWH will provide a greater degree of granularity by looking at median household income on a census track basis, and that this could substantially affect the determination of what is affordable. So subsequent to the meeting, I asked Mr. Turin if MWH's approach to drilling down to census tracks to determine affordability was consistent with the new EPA guidance on affordability.

And the other question posed today was if the cost that MWH is considering in their affordability analysis, specifically, for CSOs wastewater treatment facilities, sewer infrastructure and stormwater are consistent with EPA guidance. Dave said that EPA would have a representative at the May meeting to address these questions, and there's one other

question, as well, that I'll get to in a minute that we're going to ask him to speak about at the May meeting. So that's really the affordability guidance. I just want to make sure that the path that we're headed down with our consultant and our understanding about how affordability works is consistent with what EPA's new policy says. And I think having someone here from the EPA to talk about their policy, have them talk about it directly, would be helpful to us.

The second area is determination of median income. Ms. Karp's suggestion that median income should be based on median income of property owners, instead of the income of the occupants of the residence. A response from the floor said that EPA methodology uses the median household income of the residents of the community.

So our response is that in order to be consistent with EPA methodology, we will use the median household income of the residents of the appropriate political subdivision via the district community census track, whatever. Models for adjusting rates for most impacted

communities.

Ms. Dormody asked if MWH knew of any models being used in other places that are able to adjust rates for the most impacted communities or neighborhoods, including lifeline rates. Mr. Bard responded that the ability to adjust rates in this way is dependent on internal policies and state law. He did not say if he was aware of any existing models that addressed rate adjustment based on need. This issue will remain open pending further information on determination of affordability by EPA, and based on that, if we need to consider such a rate adjustment. So this is still a parking lot issue that will probably be touched upon at the next meeting in May when the EPA representative talks about affordability, and also carried through by our consultant.

The next item was commercial rates. Mr. Walker asked MWH what they were doing with regard to rate impacts for industrial and commercial users. Mr. Bard responded that 1997 EPA guidance only focuses on the residential indicator. Our proposed approach will be to complete the affordability analysis using the

residential indicator as prescribed by EPA. We will also estimate what the comparable commercial and industrial rates will be based on the affordable residential rate. Basically, as the percent increase is for the residential rate, we're going to assume the same percent increase for industrial and commercial rates. If allowable under EPA guidance, commercial and industrial rates will be considered as another factor in the affordability analysis similar to local debt, and things of that nature, unemployment.

NBC rates: Ms. Karp asked if NBC rates are pegged against water consumption. The answer is yes. Current NBC residential rate structure is a customer charge of $202.47 per year, that's a flat fee. And a water consumption charge of three dollars or 267 per hundred cubic feet. Meeting water quality standards: Mr. Bruekner stated, that was me, that EPA understands that you can't afford to do everything right away. So their approach is you do what you can afford now, but if we don't meet quality water standards when Phase III is complete, then EPA will ask what needs to be

done next to meet water quality standards, and what it's going to cost. And that you're never really done spending money until you meet the standards.

Later in the meeting, Mr. Reitsma suggested that this is not the way the EPA works, meaning, they don't require that you keep spending money up to your limit of affordability until you meet standards. So we've asked the EPA to clarify their position on attainment water quality standards and affordability. They said they would do so at the May meeting.

The next topic that I culled through that there were some questions on had to do with water quality. Ms. Karp's suggested that we ought to explore everything with the state of the water or bay, and not assume that Phase III is preordained. Also, the impact of discharges from Worcester and Woonsocket should be considered when determining what NBC has to spend on controlling CSO discharges.

Mr. Holmes stated that he would like to see water quality improve to support the salmon fishery. This reevaluation is to determine what is the best affordable

alternative, which may be entirely different from what is currently proposed. The reevaluation will consider the impact of discharges from rivers upstream of the CSO area through modeling of the receiving waters, using fecal coliform as an indicator of water quality. The reevaluation will not be able to identify what needs to be done to reestablish the salmon fishery or other fisheries for that matter, as it is probably a major study onto itself.

The impact on water quality then will be derived from the Phase III program, will be what it will be. We'll try and estimate what it will be based on, again, bacterial improvements, but associated with that, there would be improvements in other parameters for water quality, obviously, if we control bacteria, and other pollutants will also be controlled to some extent.

And then the last topic that I culled through was alternatives. Ms. Karp stated that rainwater should be infiltrated back into the system, instead of into tunnels. Mr. Wrightsman stated that the people at the Stakeholders meeting have a lot of capability to

come up with solutions that can save money, and that there are new ways of doing things, and we ought to empower the people proposing those. The infiltration of rainwater will be evaluated under the green infrastructure alternatives, and I spoke to Jan just before the meeting to see if he wanted to speak, if he had any particular solutions in mind that we are not currently evaluating. So I'll ask if he would like to say anything at this point.

MR. REITSMA: I'm glad that my remarks caused a rephrasing of what was said about EPA because I think if I recollect what was said was EPA approached this as you spend what you can now, and then we have some money again to spend some more. I took issue with that characterization, which is not the way you're characterizing it now.

So it's very common for people to characterize EPA's thinking that way, and I suggest it's not a productive way. I think EPA is because the leadership is interested in working with regulated parties to come with cost effective ways. That was the tenor of my comment. I'm glad EPA will have a chance to

speak for itself. With the respect to innovative and new ways, paying for expensive projects, I think what I was getting at was that A, this is the kind of thing that doesn't only apply in the area of wastewater treatment, it's encountered in every infrastructure area that we deal with:

Transportation, being the great example, as well. How on Earth are we going to prevent this from going down the drain with our infrastructure given the budget constraints that we have, and whatever. And there are people, including actually people on the staff of the consultants, because I spoke with one that we presented at the last meeting, who has a special interest in this, as well as the special expertise, who are looking at alternative financing mechanisms with their colleagues, and the so what I'm suggesting, let's look at that as an issue in and of itself, instead of just thinking within the traditional ways of how we finance these things.

There may be ways to come up with alternative financing structures, as well as putting solutions together that have different

element that ultimately might be more cost-effective then when we do things the way we've always done. That was the tenor of that comment, and I'll be glad to work with the other folks, some of them around the table, to come up with more specific examples.

MR. BRUECKNER: So what I'm hearing is that the comments about putting our heads together had more to do probably with financing of the components of the program than not so much necessarily with the alternatives we're looking at for the actual implementation of the water quality improvements.

MR. REITSMA: I think it's both. I was primarily focusing on finances.

MR. BRUECKNER: Based on what we presented last time in terms of what we're looking at for alternatives, and we'll be talking about that again today and the next meeting. I don't know if there are any alternatives that you suspect we may not be looking at in terms of to be built for water quality improvement, is that safe to say?

MR. REITSMA: No, and I don't consider myself to be the expert in that regard,

either.

MR. BRUECKNER: Okay, fine. I would ask if anybody else has any other comments on any of the minutes, or anything that was discussed at the last meeting?

MR. BISHOP: The only comment I had, Tom had pointed out that there was some question coming, given the time from the last session which is what resulted in me being a Rhode Islander and going to where we used to meet instead of where we are meeting. I think there was some question of what my thoughts having participated in the previous venue as a skeptic, I would say, of any really kind of major industrial investment in CSO control, and.

I started, you know, how did I feel at the end of the process, or was I supportive, and I think, I believe Tom suggested to me that speaking in my stead, because I was off investigating sewer disposal in Jamaica, that he's right to say that, essentially, I agreed with what I understood to be the collective will when we left the last time, if there's anything kind of on the table now that gives me any pause in saying, you know, hey, we're right where we

left off, I tend to think that the kind of belief -- I didn't have the belief that what we had agreed was Phase III is the way to accomplish this, or this is all the way of delaying the next step, I would actually miraculously associate myself with Carolyn's comments to an extent that I didn't consider Phase III to have been an inevitability, or in Jan's perspective that it had something to do with just waiting until we had the money for Phase III.

I really thought we were going to look very, very hard at the extent to which Phases I and II accomplished what they were modeled to accomplish, whether we'd gain more or less, what they actually cost compared to what they modeled to cost, and at least try and use that real-world experience to guide perceptions of what at the time may have been a penciled-in Phase III. So with that kind of reservation, I would, otherwise, say Tom's right that I basically thought I was in pretty much in agreement where we left the last time.

MR. BRUECKNER: I just want to follow up, because you weren't here at the last

meeting, but with regard to water quality improvements from Phase I, we will be evaluating that as part of this process, because we actually have real data after Phase I was done, and we have a slide on it.

MR. BISHOP: I saw the slide.

MR. BRUECKNER: With regard to Phase 2 improvements because it won't be going on-line until the end of each year, we will try to anticipate through modeling what those improvements will be, and similarly with regard to Phase III, whatever alternatives take, we'll try and evaluate or model what the improvements expected would be with Phase III.

But I think it's safe to say, and it was one of the first items I talked about in this parking lot, was the question about Phase III and water quality standards. What do you have to do, what do you have to spend in order to meet water quality standards? And I think as Jan just referred to, that's the big question, we're going to have the EPA come in the next meeting to talk about that very thing, how much money do we have to spend, and when have we met water quality standards, when do we start, so

that's very germane to what we're going to do in Phase III.

MR. TURIN: I think as Jan mentioned last time, you've talked about it again today, I really would think that the way to think about it is that the obligation is to meet the water quality standards, and the EPA, and Congress and Clean Water Act on regulations implementing the law, don't envision that we are lightly, if ever, writing off attaining water quality standards for any specific waters.

And I think the important thing is to keep in mind that that is the goal. The goal is not how much money you spend, it's not about how much money you spend, but, of course, we recognize that meeting water quality standards is not something that's being done in a vacuum, and there's a certain amount that can be afforded up to a certain point, and then you work on how and when can we make the next step toward meeting water quality standards.

Now, I just think that the semantics, you know, is important, that the goal is clean water, the goal is not to have sewage going into the waters of the state, whether it

affects shellfishing or recreation or just the aquatic community, and I think to continue to represent it, it's the money that comes first is just amiss, not a good characterization.

MR. BRUECKNER: I think what I was saying, Dave, is basically what you're saying, that we right now for Phase III would spend, according to the affordability criteria from the EPA, what we can afford to spend. If when we're done we don't meet water quality standards, which is the goal that we would meet the standards, that at some point in the future you would then have to continue to address the issues affecting water quality, and spend more money in order to meet standards. I don't know if you're saying that's not correct.

MR. TURIN: It's the phrasing, and I don't want to belabor it here, because I am going to have someone that works very closely with our, in terms of our analysis affordability studies that people do, so I will defer to him, but I just wanted to say this is the second or third time today, and another time last week, where the money is being put first, instead of the water quality objective being put first.

And, you know, like I said, I think it's more of a way that you're thinking about how you're solving the problem, I think that the water quality goal isn't changing, the water quality goal is what it is, and then you do an analysis to figure out how close to that can we get.

MR. DOMINICA: Tom, I just suggest that this is really the subject of an expert's stakeholder's workshop to some degree, and probably future follow-up for that discussion as we go through this process. So I think we have a good sense of the tension here between the two, which is inherent from the Clean Water Act. It was there from the beginning, it's still there, so I suggest we just leave this issue on the parking lot until next meeting to follow up. Phil?

MR. HOLMES: On page 60, line 5, I was misquoted. The word that I said was bullraking, if you're not a Rhode Islander, you wouldn't know what it was, but you wrote down pole raking. And what I was saying about the salmon fishery is not that I want to see a salmon fishery, it's more of a type. We once had a salmon fishery, but we don't have it now.

If we got back different types of harvesting, whether it's shellfish or fish, the whole state would be better off because they'll be more income into the general population because of the increase in fisheries.

You've seen an increase in oyster farming, and that's good. We've seen an increase in the number of soft-shelled clam landings done by diving, that's good. Quahog landings are up, that's good, but we need variety, essentially, what I was trying to state.

MR. DOMENICA: Thank you.

MR. COLT: The minutes are more of a transcript of the whole meeting, so when I started to dig into them this morning, I realized we weren't going to be able to get through them all. It would be helpful if they were condensed somewhat in the future. I know that's an extra step, but that would be helpful. You tabled the discussion we were having. I think I would say, overall, we are not alone as a state in terms of trying to figure out how to replace and upgrade aging or decrepit infrastructure, both for water, wastewater,

transportation, and so forth. Other states are in a similar boat. And how we solve this problem long-term has, I think, a direct impact upon the ability for our state, particularly our urban economy to grow. So there's a great deal at stake in terms of really trying to use the innovative planning framework that is slowly coming forward as a tool to deal with these issues, and I'll leave it at that.

MR. DOMENICA: And we have a young lady joining us at the Stakeholder table, if you could just introduce yourself for the stenographer.

MS. CALABRO: I'm Rachel Calabro, I'm from Save the Bay.

MR. DOMENICA: Thank you, Rachel. Anything else, Tom, any other comments?

MR. BRUECKNER: I'm all set.

MR. DOMENICA: Okay, thank you. And with that, Rich Raiche will lead us through the grey structural divisional alternatives.

MR. RAICHE: Mercifully, for you all here assisting me in this presentation, and hopefully interactive discussion of Grey Infrastructure Alternatives, are Tim Thies and

Keith Gardner. So the general outline is that we'll start off with a bit of a basis of what our goals that we're trying to accomplish today are, and again, the nuts and bolts of the grey alternatives. The reason we're all here is to find alternatives to what the currently defined Phase III set of solutions is.

It's a substantial undertaking to reevaluate all of these alternatives, and in a defined plan and come to a consensus on what your redefined Phase III should incorporate.

So what we've done is we've segmented out into a couple of sets that we hope to work with you, the Stakeholders, over the course of the next five meetings as sort of a structural framework. You know, we do ask that you have some discipline along with us as we go through and step through all of the alternatives and how to evaluate them, because we do sort of need that framework so that we don't go off course. We do have this goal of wrapping up the redefined plan by the end of the year.

So today as in May, we will be looking at alternative developments. And we as consulting engineers can go through and evaluate

the technical feasibilities of various different approaches to solving these problems. In essence, in some instances, you simply can't fit a square peg into a round hole no matter how hard you try to jam it in there. But once you do find some technically feasible alternatives, there's a lot of nuances to how you implement them, and maybe nuances isn't the right word, because those other aspects of how you implement those solutions have a dramatic impact on cost of construction and operation, and the impacts to all the residences and the businesses in the region.

So that's what we hope to work with you over the course of the next two meetings, the focus on grey this month, and green next month. The following two meetings in June and September, we're broadening the horizon of alternatives and options and defining what they look like, then the next two meetings goes through the process of screening them down and evaluating them against each other, so that we have from a world of different pieces across the entire service area to sort of effect real alternatives to Phase III, as is currently

defined. Then the plan is that by October, we will have a really good sense for how all those different pieces fit together and develop a plan. So, again, today and May our focus is the top of the harbor. You're just defining what these alternatives are, and we will loosely use words alternatives and options, you know, it's sort of a limitation of the language you get a little bit lazy in it, but, for example, we'll say alternatively sewer separation or tanks, or green stormwater.

What we want to do is define what those look like for this application. What we'll do in today's meeting and next month's meeting, we'll start with a general overview of that classification of alternatives, we'll talk about it in sort of general terms, and hopefully define a little bit of what this collective groups feeling on those alternatives are, we'll then dive down into specific applications of those alternatives for each one of the CSO locations, so we'll be looking right at the neighborhood basis and identifying specific pros and cons for that alternative in that location. And again, we want to work with you in a

collaborative sense to define what these things look like. As we go through this process, it's inevitable that you'll start thinking about how you evaluate those alternatives, I mean, it's simply human nature to kind of want to jump to the end of the story.

And again, that's sort of more of the focus of the subsequent two sets of meetings; however, if you just go into a room, and say, all right, let's list what are evaluation criteria are as sort of an esoteric exercise, you sort of draw a blank, it's a weird thing to do in the abstract.

So, actually, in the process of defining what these alternatives are and talking about specific applications in neighborhoods is actually quite good that you start thinking about how you might evaluate that.

So what I would suggest that if you have that sort of thought, please do raise your hand and identify your name for the stenographer, and we'll put it in the parking lot, so that in June when we go and focus on alternative evaluation criteria, we'll have like a nice working pool. So please don't feel the

need to censor yourself, because it's not the topic of conversation today. So, again, we need an organizing principle to go through what is a very large plan, and we'll step through, essentially, the process of how we've laid it out over this meeting and the next, is to start with a baseline, and then move progressively further away from that set of alternatives.

Now, the baseline Phase III plan that's identified by the previous planning effort is sort of a rough sketch, and there are a lot of details that need to be redefined, and there was a lot of intelligence that was gained from the implementation of Phase I and Phase II that we want to use to inform and better define what Phase III is.

So that's sort of why we're starting with that as an alternative in and of itself, including the sewer separation in the tunnels and the interceptors that are consolidation cost conduits that are associated with the tunnels, and then moving into localized combined flow handling, and then concluding today's meeting with stormwater control, which really sets the stage for May's meeting with the

focus on green stormwater options. Before we start diving into each one of these, it may be obvious to some people, or even if it is stuff that we deal with on a daily basis, it's a pretty good idea to recap for ourselves, sort of the fundamental differences between these alternatives. So for sewer separation, you know, what does it do and where does water go? And you need to think of how the water moves and is discharged, both in terms of the volume and in terms of quality.

So with sewer separation, it does that, it segregates the stormwater from the sanitary flow. All the wastewater goes to the wastewater treatment plants, and all of the stormwater gets discharged directly to rivers. The result of sewer separation in an area is that that it entirely eliminates the CSO.

So the flip side is that you do have a discharge of polluted urban runoff directly to the rivers, which is something that in the past 10 to 20 years, it has been discovered to be a major component of water quality degradation in receiving water body. Then you move into storage, both deep tunnel and

near-surface storage tanks. You're philosophically, you're keeping the combined system in the collection system, so the stormwater and sanitary flow are still combining in the collection system. So we still have sanitary flow and storm flow comingling, and what you're doing is around design parameters you're storing that combined flow. Now the plus side of that is that you then pump out those storage facilities and you're treating that combined flow at the centralized treatment plant, and you still do have CSO discharges to the rivers. Any storm that exceeds the design capacity is that you still do have the CSO discharge.

The plus side, unlike sewer separation, is that for any storm smaller than that design event, and possibly more importantly for the first flush of large storms where the stormwater is most polluted, you're still capturing that, then sending it to us at Field's Point and Bucklin Point Treatment Plant for a high level of treatment prior to discharge. There are water quality benefits to that approach. Another approach that we'll be

talking about today is localized treatment and discharge, we generally mean screening and disinfection, a sort of satellite small treatment facility. Under this, again, it has a design capacity, so you still have a CSO event and any time you have a rain event, larger than your design capacity, you do have some minimal treatment of that CSO, on the flip side is that because you still do have the infrastructure there to collect the stormwater and send it to the centralized treatment plants, is that for smaller storm events, much like the storage options, you are getting a high degree of treatment of polluted urban runoff.

Again, today we'll wrap up with stormwater control, which is really a system optimization. Again, if you were with us last time, remember our discussion of source pathway receptor categories. The sewer separation is the pathway near surface and tunnel storage, as well as localized treatment of discharge are receptor solutions.

The stormwater control really seems to manipulate the border between source and pathway. And the idea that you're trying to

segregate as much stormwater to the combined system as you can. From a volume and quality standpoint and point of discharge, it has a lot in common with the storage and treatment discharge categories, and that below a design capacity you're sending all of this polluted urban runoff to the treatment plant, and above the design capacity you're still essentially triggering a CSO event in the rivers.

MR. DOMENICA: Rich, before you go on to the next slide, one interesting point about stormwater or sewer separation that I think is appropriate right now, as Rich described it, it's taking the stormwater out of the combined sewer separate stormwater system, all of your stormwater now goes to the receiving water of some sort, so you have two separate systems.

One thing that wasn't recognized early on in the late '80s, early '90s, is that when that happens, it's an interesting phenomenon, with combined sewers because of the way they were designed, combined sewers were designed to take up to sometimes three times dry weather flow, at least twice dry weather flow,

sometimes two times dry weather flow to the wastewater treatment plant for treatment. So in designing a combined sewer to handle wastewater, it was also designed, in fact, to handle some amount of stormwater, so traditionally with combined sewers, the first flush of the storm when the streets were cleaned with the first part of the rainfall, went to the wastewater treatment plant. When you separate sewers, that first flush goes automatically to the receiving water.

So there's not only a sense of separating the sewers, you also lose some of the secondary treatment that is applied to that first flush of stormwater when you separate sewers, and that's been one of the factors with regard to water quality that's been important over the last 30 years.

MR. RAICHE: I would say to add on to that comment that as we enter the next decade and more attention is paid to stormwater discharge is that perhaps the old way of doing things did have benefit. John Sullivan from Boston Water and Sewer had said repeatedly that he wished that he had more combined sewers in

Boston because he captured the first flush and sent it on to Deer Island. And as we're looking at municipal separate stormwater discharge permits, municipalities are going to need to address water quality discharges from stormwater sources.

It is a great concern as to how to do that, because the state of the art for wastewater treatment has advanced significantly, but stormwater significantly is lagging behind. That is a little bit of a teaser to what we'll be doing in September.

So sewer separation, again, is exactly what it sounds like. You're taking what is usually a single pipe in a row that collects both sanitary and stormwater flow, and putting in two pipes: One dedicated for one, and one dedicated for the other. We've already started to tease a little bit of the advantages and the disadvantages.

Clearly, the advantages are reduced stormwater discharge to the NBC system, which then relieves the stress on the interceptor system that causes CSOs throughout the system. And we do sort of have a benefit at the

treatment plant because you are sending less water to the treatment plant, and you can see less of it there. There is the potential, although while you're digging up the street and putting it up in to your pipes, to sort of improve the streetscape in areas that haven't been touched for a very long time. Now, again, the disadvantages are you're increasing stormwater discharge to rivers.

Now, we were just sort of harping on the quality side, there's also a quantity impact, as well. Any of these rivers, and we're talking specifically of the Blackstone, and I suppose Seekonk, as well, the west, and Moshassuck Rivers.

So any of these rivers that have flooding potential are now putting more stormwater directly into them so you're exacerbating flooding issues. And during construction, there is major disruption to the neighborhood in these dense areas ripping up the entire street, and it is sort of difficult to do because you also have elicit discharge connections. So I'll hand it over to Tim.

MR. HILL: I just want to say the

other advantages to a sewer separation, obviously, our residents suffer a lot of problems, backup from the pipe, they back up into their homes, which is a major concern for our residents there. Separating those sewers will alleviate some of those problems.

MR. THIES: That's exactly the sort of interjection that we are hoping to have. I spoke a lot, and I do hope as we progress that we'll have ideas come out like that, but that's exactly the sort of contribution that we're hoping to have.

MR. GADON: I know one of the reasons is for the review of Phase III, and the delay is to determine if there was any creative scientific solution that was worthwhile. It looks to me like the alternatives being discussed are looking to redefine them. Is there anything new or exciting, creative coming up?

MR. THIES: I would say in general that the new and exciting stuff for today is loaded to the second half of today's presentation, and May is really the focus of everything that's new. I don't think very much

of anything from May's discussions were really seriously considered during the previous planning effort.

MR. THIES: So like Rich mentioned, NBC has some very recent experience with sewer separation from the Phase II project, and one thing to take away from the sewer separation process is that you're going to be into every street in your catchment -- okay, you're going to be disrupting every single street, and that has a lot of impact.

The complicating factors when you open up every street, go up exponentially, so it's really something to consider when you're looking at a sewer separation project.

Some of the factors include the impacts of the neighborhood, you get reduced visibility to some of the businesses along those streets, particularly if you're closing some of those streets for work. It's disruptive to pedestrians who are trying to cross the street; there's dust, there's noise from the construction, so it has a lot of impact to the neighborhood. There's also a lot of utility issues. Some of these CSOs were put in a

hundred, a hundred and fifty years ago, and a lot of utilities grew up around them, and they're on top of some of these CSOs. They go into these streets digging up these streets to put new pipes in.

You've got to deal with all of the utilities that are already in the street. You know, in some cases, a stormwater sewer separation project turns into a whole utility replacement project.

You're into the pipe replacement for water, for gas, and that gets very expensive in some areas. A lot of times utilities aren't located where we anticipated, we're replacing other utilities that we didn't even know were there.

One complicating factor which Rich touched on would be that because you're into so much of the street, disrupting so much of the street, that it may be an opportunity to improve the street, improve the streetscape in areas, and maybe add safety improvements like ADA compliant crosswalks and sidewalks, that could be seen as a benefit to those streets, but it does add cost to the project. And then there's

restoration, you know, you're in the street, you saw cut the pavement, you try to stay within that saw cut, you find that the pavement's not in good shape, you might wind up replacing all the pavement in that street, you might wind up replacing sidewalks in places that you hadn't anticipated.

So there's a lot of restoration issues that come along with this. And it's not unreasonable to assume that restoration costs could be 50 or 60 percent of the whole cost. The actual cost of pipe replacement and pipe installation might actually be the small part of the whole project when you get into some of these complicating factors.

So as part of the original Phase III baseline, sewer separation was proposed in four different catchment areas, three in Providence and one in Pawtucket. The first catchment area in Providence was the catchment area for 035.

Now, an interesting thing about 035 is this is just south of the 037, 027 catchments that are undergoing sewer separation right now. So one of the things that we'll consider when

looking at the sewer separation from this area and the viability of it is that we're going to be impacting a lot of the same neighborhoods that were impacted as far as 027 and 037, and we're going to impacting a lot of the same residents that live in this area.

Now, this particular catchment is a mix of residential and commercial development. It's about 136 acres in size, it's bounded by North Main Street, Rochambeau Avenue, Hope Street and Doyle Ave. And like I mentioned, it's just south of 037 and 027 which just completed their -- or working on their sewer separation projects right now.

What we'd like to do is open it up to the Stakeholders Group and find out, you know, are there other considerations, other than the things that I've mentioned about neighborhood impacts and utility impacts, so there are other things specific to this catchment area that we should be considering when we look at sewer separation for this area. I'd like to open it up to the Stakeholders.

MR. DOMENICA: One question I had, you made a comment that separation in this area

could affect the same neighborhoods in which separation projects had been done previously, why would that be?

MR. THIES: Well, the separation project that's being worked on right now is up in this area. So, really, it's the neighborhoods just to the north, but you talk about the same corridor, the same transportation corridors that run through both neighborhoods.

MR. DOMENICA: So it wouldn't be doing work back in those neighborhoods?

MR. THEIS: Correct, but the residents that commute down those streets, they're going down through construction again where they just completed construction.

MR. BISHOP: I'm wondering if you had as part of this presentation, or we can get the people who've been doing this work. I mean, I drive through it, I'm very aware of the distinction that they'd be more potential disruption there.

What I'm interested in is how extensive have the other utility replacements been, or how effective? You have an immense number of things that's a potential gain, you

have dealing with the storm, but I'm interested in how much other, you know, positive accomplishments, or potentially accomplishments, when people think about where'd this money come from, that potentially comes from other sources, many of them may be essentially ratepayers, the same ratepayers in another basket, so I'm not really trying to push that off in a bad way, I just want to understand it.

MR. BRUECKNER: All of the gas lines were replaced on a 50/50 split with National Grid, and a lot of the waterlines were replaced because they're in the location where a sewer was going to the storm drain. Most of the streets were repaved, and I believe some of the other lines like Verizon had to be taken off and then moved, as well. So most of the utilities were affected.

MR. BISHOP: Does that include all of the services to the homes?

MR. BRUECKNER: No, just on the street.

MR. DOMENICA: Could you tell the Stakeholders whether there was a new sewer for separation, was it a new sanitary sewer, or a

new storm sewer put in?

MR. BRUECKNER: It was a new storm sewer and a new catch basin.

MR. DOMENICA: The difference there is interesting, because a new storm sewer means that you have a lot of control over the connections to that storm sewer, so you're much less likely to get illegal discharges or bacteria discharges, or sanitary discharges to the receiving water, because you're putting in a new storm sewer that goes to that receiving water when you control all of the the connections. And a new sanitary sewer, when you do it that way, you get a nice new sanitary sewer that goes to the plant, but you're always concerned about the remaining storm sewer that stays there whether there's a legal discharge ensuing.

So you can still get violations or bacteria because of those illegal or unknown discharges of that sewer, so it's a significant difference sometimes whether you put in sanitary or storm.

MR. HABERAK: I'm just curious, Tom, maybe you can address this, and, you know,

maybe you can address the picture. What the percentage of streets that require these storm sewers was and will be, because I noticed some of the streets have blue in it, and some of them are orange. I'm assuming that one has existing storm sewer service and one needs new storm sewer service. But just maybe speak on, is it every street that needs new storm sewers, or was it 50 percent, or 25 percent?

MR. BRUECKNER: I'm not sure what represents these numbers here.

MR. GARDNER: I don't have the percentages off the top of my head, but the one distinction in this neighborhood as opposed to 027 and 037 to the north, those are mostly single pipe existing systems, you know, brief review of the plans for this area indicate that a lot of these streets do have two pipes.

Now, it should be very -- I really want to note that if those aren't dedicated to storm and sewers, as far as we know, a lot of times when you have two pipes that were put in 50, 60 years ago, when new developments, redevelopments come along, you have all the cross connection that Mike was mentioning where

you have a lot of potential for the discharging. So in the end you do end up doing a lot of the same work that you would do with the single pipe system, potentially, so if that answers your question.

MR. BRUECKNER: One other thing I want to mention is that when you do sewer separation, we found that there are a number of homes that their downspouts are tied into the sanitary lateral from the house. Those need to be disconnected, which we haven't done yet, but we know from other communities that this is a major, major undertaking, that is extremely labor intensive in terms of dealing with the homeowners and very disruptive to the homeowners. So that's another negative aspect to me to sewer separation.

MR. COLT: It looks from this graphic that this time around you are not hitting Hope Street, it looks like you're just to the left, which is good, and then I believe you said the northern boundary is Rochambeau, that is an equally busy street. I think -- and it looks like Camp is part of that main north, south to the east of North Main. I think in this

case, the education effort was very good, you had a big impact with Phase II on the Hope Street business district, you got through that, and I have every reason to expect NBC would have an equally good public relations and education campaign, but I think you are going to have to face the fact that people will say you were just here, why are you back again? And that requires sort of more in-depth education about what this whole project is about as a whole. The other thing is you are going to tear up North Main again, and I guess there was some issues with DOT.

Ray, you told me this before, about they're requiring certain load-bearing characteristics for North Main that are kind of obsolete, and that significantly extended the work which is still ongoing on North Main.

And then finally, is there some way we can invest in the acceleration of this work, obviously, to minimize the disruption to residences and businesses that are going to be affected? And I'm sure you take that into account already with project planning, and so forth, but at least with North Main, is there a

quicker way we can do it if we're going to do this.

MR. MARSHALL: I don't have an answer as to whether there's a quicker way, but one thing we're able to do in Phase II is DOT was very cooperative, they worked with our contractor, which is Britto, in that particular area, and they were able to find a way to do this particular phase of the project a little quicker, rather than go back to a concrete base, they were allowed to add additional asphalt layers in order to come up with an equivalent loading factor, so that will expedite the restoration of that area, as opposed to Hope Street where we weren't allowed to do that.

MR. DOMENICA: With regard to the questions here. With no intent to cut off discussions about the alternatives in general and sewer separation at this point, we don't want to take too much time getting into the details, but we'll come back to this later as one of the alternatives for the Phase III areas.

This was more to understand the overall principles of the technology, its limitations, advantages, disadvantages, as

opposed to its application for this particular area, so if you have general comments, feel free or relate it to the overall technology.

MR. BISHOP: I just wanted to add that one of the caveats that Tom just gave regarding downspouts from homes. In some way it goes to the point I was making about whatever it is, the last hundred feet from the work that's done in the street, eventually, the homes which may have antiquated lead service and other problems, and it's not necessarily that this can solve all, it may not be practical, I'm quite concerned not just with the disruption around homes, but -- and this will come up, I'm sure, relative to some of the green alternatives that disconnecting down spots from homes from these connections.

In everything I've experienced in these areas is that clay soils, and I think that that to me, it's not just the work, but the reality of trying to move to essentially a country style in a French drain infiltration system in clay soils in a city is not necessarily in the, you know, it wouldn't be conceived of us improving the quality of life

inhabitants.

MR. REITSMA: I wanted to follow up on the issue that Brian raised, and maybe flip it, as well. If we knew what construction is going to be needed for other infrastructure in these areas, would that make a difference for evaluating viability of sewer separation versus other alternatives? You don't need to answer that today, but it's something you need to think about.

I think the larger issue is to what extent are we in fact approaching these kinds of things in integrated fashion instead of one by one, and it maybe sort of moot if all we're dealing with is relative catchment areas instead of larger areas. It's just an issue that may be we can address when we get back to it.

The other question I have that I would like to see addressed maybe at a later time is when we're talking about things like separating sewers and more sewer infrastructure, are we looking at things like what is the life of the system, but also what is going to happen over the life of the system in terms of resilience, weather patterns, flooding, all that

kind of stuff. I have no idea whether that's already being integrated into the evaluation, if not, I think in some of the areas that you're looking at it probably needs to be considered.

MR. HOLMES: I'd like someone from the Narragansett Bay Commission to give us an honest answer about how they really feel about sewer separation, on a straightforward hit us in the head with it, how do you really feel about it?

MR. BRUECKNER: I hope it's not something the Stakeholders want us to do again.

MR. DOMENICA: One of the issues there is that when you maintain the existing storm sewer system, those systems were designed probably 20, 30, 40, 50, 60 years ago for hydrologic patterns design criteria in place at those times.

Generally, those systems were designed maybe for a five-year storm. Anything beyond that, they're going to fill up, overflow into the streets, and the resulting ramifications with the change in hydrology in the watersheds with the imperviousness, in higher density development, more imperviousness,

change in rainfall patterns. The performances in the existing storm sewer system won't be what it was 50 years ago with regard to the area that it's serving.

MR. GADON: Those paved streets do not have potholes.

MR. DOMENICA: And that's another thing, too, is that part of the evaluation is the need to replace certain existing infrastructure anyway, whether it's storm or sanitary. There can be drivers there with regard to long-term asset management that would move this decision one way or another. Other comments?

MR. THIES: Okay, so I'll move through these next couple of catchment areas kind of quickly to keep us on track. So the other two catchment areas in Providence that were proposed for sewer separation was Outfall 039 and Outfall 056 which are actually adjacent to each other.

This is Outfall 039, 056 is just north of it. These are both on the west side of Providence. You've got Admiral Street running right down the middle of Douglas Avenue, as

well. Rhode Island School for the Deaf is right there. You've got Providence College down here.

A lot of the same types of issues in this area, you've got dense residential development, you've got commercial development in this area, so you're going to have a lot of the same types of disruption that we saw 027 and 037, so these two areas were both proposed for sewer separation as part of the original baseline. Then we have Outfall 206, this one is in Pawtucket. This is a relatively small catchment area.

This is only about 14 acres, but it's also a mix of residential and commercial development, there's also a number of community resources in this small catchment area, we've got a couple of churches in this area, and we have a YMCA, it's actually located right next to the outfall.

So, again, this one there's some heavy transportation corridors in this area, like you said, dense development here. You know, are there any other comments about these? I know I went through them kind of quickly, but these other three catchment areas, the two in

Providence and the one here in Pawtucket?

UNIDENTIFIED SPEAKER: Those were Phase III?

MR. THIES: Those are Phase III. This was the original proposal for Phase III.

MR. GAGNON: I'd just like to back up a little bit. Tom, why are you so against the sewer separation?

MR. BRUECKNER: Based on our experience, the disruption to the neighborhoods is unbelievable, and quite a difficult thing to coordinate with the businesses and the residences in that area. That's one issue.

The second was that when you're done, you have a stormwater discharge. And one of the topics of discussion at the last meeting was stormwater. Going forward, there's a commission that's looking at stormwater issues and how to handle them in the region. And to me this just creates more of a problem.

Down the road, instead it's like kicking the can down the road. What are we going to do with the stormwaters that we've now added to the rivers in the future. So those two. The other is maintenance. What we're

finding is that the existing storm catch basins that tie into the sanitary sewers, or combined sewers, are not maintained. So if we add more pipes to the streets, it will not be maintained, they probably won't work the way they should, so it's more infrastructure that needs to be paid for down the road, maintained.

MS. DORMODY: And just to add to Tom's comments, that new stormwater infrastructure would be managed by the municipality, not by the city, not by the Narragansett Bay Commission. And as we're having a parallel conversation, the municipalities' efforts to maintain the storm sewer is underfunded, to say the least.

MR. DOMENICA: Any other comments? All yours, Rich.

MR. RAICHE: I think it is worthwhile as we step through these alternatives, that if there are these sort of major stumbling blocks, or even deal breakers on the details that we're presenting here, I think that would be a good thing to get on record and incorporate as early as we can in the design. The Main Street restoration issue is certainly a

good one to flag for 035. Are there any similar stumbling blocks or major design considerations that we need to account for in either one of these areas that we need to discuss.

MS. CALABRO: I live in this neighborhood and the West River has serious flooding issues, that if you start adding a new stormwater discharge to the west you could have some issues.

MR. BISHOP: Just a point of order on that. I do think that for the most part that assumes that you didn't separate the sewers, you would collect. I understand that some of the stormwater at first flush, it can be collected or intercepted by the existing sewers, but there is an existing stormwater discharge in those areas which is what we're here about, so that this is isn't entirely new stormwater.

Now, the relief of it, or some other possible relief might relieve flooding, but it's not entirely new.

MR. RAICHE: If you maintain the combined system, you know, yes, there is an overflow, but every drop up to that overflow goes into the interceptor. When you separate,

none of it goes into the interceptor, and all of it goes into the rivers.

All right, before we move onto the next group of alternatives, are there any other sewer separation concerns or, you know, anything that is deemed advantageous or disadvantageous?

MR. HILL: There's an obvious advantage for these sewer separation and operational costs with the water treatment facilities, because there wouldn't be enough in the street that wastewater, as the stormwater as wastewater. Have those costs been calculated?

MR. DOMENICA: Good question. No one has mentioned whether sewer separation is more or less expensive in terms of what it cost. Any sense of that?

MR. BRUECKNER: We do have some cost associated with our current Phase I tunnel, obviously, because we do provide treatment, but to compare it against sewer separation where there's no treatment required now for stormwater, but maybe in the future, it's hard to make that comparison because you don't know what it's going to be 10 years from now in terms of stormwater treatment. And I guess the

question is, I don't even know what you do for stormwater treatment 10 years down the road, are you going to build another treatment plant to treat stormwater? So it's just so far down the road in terms of costs and what you'd have to do, I can wrap our hands around it because we don't know.

MR. HILL: The stormwater that's currently going to the treatment facility, if you didn't have to treat that as an operational savings, do you have any idea of what that would be?

MR. BRUECKNER: I think I had done an estimate for someone. I guess it was about 10 percent extra we were charging, or it was costing us for treatment for CSOs.

MR. RAICHE: The volumes that we're talking about versus the total treatment capacity of Bucklin Point. The volumes that we're talking about because they're very small in relation to the overall treatment capacity of Bucklin Point Treatment Plant, your cost savings is probably pretty small. It would be an interesting exercise to go through, and we might be able to do that. I can't really say one way

or the other if we can come up with rational numbers for that.

MR. GAGNON: Tom, you mentioned there was a, roughly a 10 percent cost to treating the stormwater overflow. Is that borne by the Stakeholders equally, or is it proportioned to contributors?

MR. BRUECKNER: All the ratepayers pay for that.

MR. DOMENICA: Anything else?

MR. RAICHE: So the next major category we'll get into is the district tunnel, which is a fairly big alternative. On the source pathway receptor spectrum, again, this is a very large receptor solution. Again, it's a secondary treatment of combined flows, including the Urban runoff.

The construction impact is supposed to say sewer separation, which is very impactful to sort of a large neighborhood area. They sort of have small footprints around your working shafts. Once it's constructed, it has low operation and maintenance cost. Now, it's important to point out that tunnels are really only cost effective for very large flows. Their

construction of the tunnel has to be very deep. You don't want anything to infiltrate or ex-filtrate. You need it to be significantly deeper than foundations and other utilities, because you don't want to disrupt anything on the surface. So it's certainly not a cheap endeavor, however, it benefits more from the economy of scale than virtually any other alternative that we'll be talking about.

So if you are implementing a large systematic solution, tunnels suddenly become cost effective. The Phase III tunnel, again, in case anyone forgets, plans to extend from the Bucklin Point Treatment Plant in East Providence, up to the border of Pawtucket and Central Falls, essentially, following the Seekonk and Blackstone Rivers and essentially either through direct connections or a system of consolidation conduits or interceptors, or maintenance, a regulator modifications then use the existing set of interceptors, captures essentially all of the overflows to the Seekonk and Blackstone Rivers, and interceptor across town 220, which discharges to the Moshassuck.

Now, the routing for this thing,

and essentially why it came into play during the previous planning study is that the routing captures the two largest, essentially number one and number two largest output, 218 and 205, and picks up some intermediate ones.

So the next thing we want to talk about, let me state, there isn't a single alternative to the tunnel again. To get through a tunnel as an alternative, you need to be capturing a whole bunch of flow. So all these things that we're talking about, you know, the rest of this afternoon, and then into the May meeting, all of those we need to add or negate to add an alternative to the tunnel. But there are some ancillary components to the tunnel, namely, the interceptors for the consolidation conduit, where we can start to look at alternatives.

MR. DOMENICA: Rich, would this be a good time for a break?

MR. RAICHE: I think this will be a short segment, so we can finish this and get into a breakpoint. What we're talking about here is there are two interceptors involved with Phase II so the commission has an experience in

going into these. These are very large diameter sewers, typically, you're going to little deeper so the extent of open cut and cover in construction impacts the neighborhoods and travelways less. The advantage is that part of a tunnel solution that eases the siting requirements for the drop shaft in the tunnel, itself, and once implemented it's got low operation and maintenance cost, and again, helps relieve the strained collection systems.

You do still have the potential for major disruption during construction. Again, you're into deep construction, so it is on a per foot basis a little bit more expensive than, say, putting an eight-inch PVC sewer, and it may require easements or land acquisitions to facilitate.

So again, we're talking about three major interceptors here is it's a high cross street in the middle up in Central Falls, and then a long one across Pawtucket on Pawtucket Avenue.

Again, as we just did with the sewer separation here, is we just want to quickly kind of go through these. We've

identified some major design consideration. And giving your knowledge of the area, we also want to incorporate that into our preliminary findings. Tim will take over this piece and then we'll adjourn for some refreshments.

MR. THIES: I'll try and go through these briefly. Like Rich mentioned, interceptors were proposed into three of the catchment areas as part of the original Phase III baseline. Two in Pawtucket and one in Central Falls.

The first one in Central Falls is the Middle Street interceptor, and this picks up CSOs 201 and 203. And Middle Street in Central Falls is a two-lane road, just north of Interstate 95. It's between 95 and the Blackstone River. The northern half is a two-lane, one-way road just north of the off ramp for Exit 30. South of that is a one-lane road, single one-lane one-way road with residential properties on both sides.

So it's a heavily traveled traffic area. The interceptor that was originally proposed is a 30-inch diameter interceptor about 12 to 15 feet deep that runs down Middle Street,

and it goes down Middle Street where it intersects Cross Street. The interceptor was going to be off-sized to about 66 inches in diameter.

The reason for the increase in size is because at that point it's going to be picking up flow from 204 and 205. And like Rich mentioned, 205 is a very significant outfall, a lot of flow coming out of there.

From the intersection of Cross Street and Middle Street, it was going to pick up, like I said, 205 is to the northernmost drop shaft to the Blackstone Tunnel. The other one was the interceptor on High Street and Cross Street in Central Falls. A couple of interesting things about this proposed interceptor.

Just to the north in the northern area of the interceptor, right here, there is a railroad crossing there, so the interceptor would actually go underneath this railroad crossing, right near it next down from a two-lane street to a one-lane street, it would go through that corner, it's kind of a blind corner. So that roadway there has some issues

in and of itself, to add the construction of an interceptor right there would make it even more complicating. The interceptor that was proposed here was a 42-inch diameter interceptor, and it was going to be 8 to 15 feet deep along High Street, and to move along High Street, it was going to transition to Charles Street where it would bump up to a 48-inch interceptor. And again, it would actually run down Cross Street and go over the Cross Street bridge. It would actually be hung from the Cross Street bridge, and that was how it was originally proposed.

So that would be a 48-inch pipe, and it would take it to the northernmost drop shaft of the Blackstone Tunnel. So you can see that there are some real challenge to this interceptor alignment. And the last interceptor I'll talk about is the Pawtucket Avenue interceptor, and this was intended to pick up flow from Outfall 220.

Now, Outfall 220 has a floatable structure that NBC has just completed, and this structure is intended to pick up bottles and cans and prevent them from making their way out into the river. This was formerly Outfall 219

and 220, but when they built that floatable structure, they combined it essentially into one overflow structure. We just referred to it as 220, 219, now we're going to refer to 220. And this was proposed, this interceptor was going to go along Pawtucket Avenue and it was going to run essentially across the western half of Pawtucket, and because of the elevation change across that route, there's actually going to be a very substantial pump station installed at the Outfall 220 to pump it up over Pawtucket Avenue where it could go from a 48-inch diameter for main two-way, 52-inch diameter gravity line, so you're talking about some very substantial pipes in the street.

There was an alternate proposed for this interceptor, which I'll talk about in a second. But you have here for this interceptor, they said you're going across Pawtucket Avenue, which is a state roadway Route 1.

MR. GERRITT: You're crossing the watershed line there.

MR. THIES: As part of the line, you're running through a lot of very dense neighborhoods, residential, commercial

neighborhoods. You have a number of schools in this facility. The proposal was to take to the Outfall 217, and you have a substantial National Grid facility down there at 217. So there are a number of challenges with this interceptor. Before I move on to the alternate, the alternate that was proposed, is there any other comments about these three interceptor proposals?

MR. WALKER: The High Street railroad bridge, is that Amtrak's main line, or is that the link to Worcester?

MR. THIES: I'm not sure.

MR. WALKER: Either way, any of the effort in there has got to be considered keeping that rail line opening and functioning at all times. If it's coming from Worcester, that's the main cargo route that's coming down, and if it's the Amtrak mainline, that will just add time and money, so regardless, that's got to be a piece of infrastructure that has to be kept in service.

MR. REITSMA: Again, the ability of infrastructure like this to withstand what we're now worrying about in terms of extreme weather events, flooding events of a longer duration,

what happens during those events?

MR. THEIS: No, those will be considered as we evaluate the viability of each one of these alternatives.

MR. REITSMA: One more question. You're moving stormwater from one watershed to another. In this case that's usually something that's frowned upon. In this case, it may not be frowned upon, because there's some issues with the Moshassuck, with flood problems. Are there perspectives on that yet?

MR. GERRITT: I mean, when they get floods on the Pawtuxet or Blackstone, the Moshassuck, the nature of that valley is it's a much bigger valley and the river still exists, because 13,000 years ago with the geology issues, and so at least from, you know, the lower part of the Moshassuck you don't get major flooding issues because the river is so much lower than the streets, and there's very few houses along that because of the long-term industrial history.

MR. DOMENICA: Going back to the first part of your question, Jan, I do think it's important for the Stakeholders to be sure

that the Stakeholders understand that interceptors don't eliminate all overflows. There's a limit to how much an interceptor can take, there's always a bigger storm.

So one or more of these outfalls need to be left open for relief of that interceptor during big storms. So water quality standards that preclude any violation of instream standards need to be crossed within terms of approval of effective technology; is that correct, Tim?

MR. THIES: That's correct. I would always like to point out that the existing interceptor crosses that same divide. So I'm going to touch briefly on the alternatives that was evaluated as part of the 220 interceptor, and this was what they called the Stub Tunnel, and this was a 10-foot diameter tunnel that would connect Outfall 220 to the Blackstone Valley Tunnel across Pawtucket, right at the treatment plant, right at the Bucklin Point Treatment Plant. One of the benefits of this alternative is that it would actually reduce the diameter of the Pawtucket Tunnel slightly, although the length would eventually stay the

same. This would probably be more or less disruptive than installing something down Pawtucket Avenue into those neighborhoods. It would also eliminate the pump station at 220, but it would involve a new drop shaft and a new working shaft at Outfall 220.

MR. GERRITT: So this would be a deep tunnel?

MR. THIES: It would be a deep tunnel, somewhere between 75 and 190 feet deep. So is there any other discussion about the interceptor or the Stub Tunnel before we take a break?

MR. DOMENICA: Thank you, Tim. Let's take a 10-minute break. We have about an hour left, so grab refreshments back there. Rest rooms are out the door to the right, and we'll reconvene in 10 minutes.

(SHORT BREAK)

MR. THIES: So the next category of alternatives we'll take a look at is localized and combined flow handling. You've got the West River interceptor as an alternative, near surface storage and localized treatment and discharge. In terms of near surface combined

flow storage, we've got advantages and disadvantages.

Again, this provides for storage of peak flows, and again as we said at the top, this is the sort of approach where we then have the opportunity to treat it as the centralized treatment facility after the storm subsides. In terms of construction impacts, again, you sort of have a localized footprint, as opposed to sewer separation, we have a larger one.

A disadvantage for a combined flow storage is that it is combined flow so you are essentially dealing with rather dirty water, so you do need to have screening and floatables control, and substantial odor control. Those things contribute to higher capital costs for construction, and then continuing operation and maintenance costs.

You do have limited siting potential for these things in dense urban areas. There's a certain footprint to hold the volume of combined flow that we're talking about, which then leads into the land acquisition requirement. In terms of treatment and discharge, which again here we're talking about

screening and disinfection, much like the storage option provides capacity relief in the existing infrastructure. But again, much like the localized storage with combined flows, you've got high capital costs, high operation and maintenance costs, you're essentially creating a small treatment plant, satellite treatment plant at remote locations which is difficult to operate and maintain. You do still have residual pollutant loading to receiving waters.

We're not treating the combined flow to a high degree, it's more screening and disinfection, so you do have water quality impact, and then you also have sort of logistical problems with these small treatment facilities. That would likely include chlorination and dechlorination for disinfection, so then we're talking about storage of chemicals and delivering the chemicals to these remote locations.

And again, we have to be right near or very close to where these outfalls are, and these outfalls are largely in residential and business neighborhoods, and in addition to the

actual constituents.

MR. BISHOP: The one thing, and this had occurred to me before in these areas is that in terms of this treatment one of the ironic things is that you have less of that problem where the most major outflow at the sewer treatment plant.

You already have an industrial facility there, it wasn't feasible at Field's Point to take the enormous overflow there and actually pump the water into existing treatment, but here where it's there, it was a ship channel, you didn't have any options.

I personally think that we should be looking pretty seriously at whether or not large overflows that have the potential for supporting some institutional structures even into the perceived water body, you know, might be cost effective.

MR. THEIS: The one alternative either tank or treatment, you'd be at or near the outfalls we're looking at, so in urbanized areas it's a bit of a challenge to find these locations. We do have a handful of them that we want to discuss. Today, the main ones are the

West River alternative. This is essentially an alternative to the sewer separation for 039 and 056, right here in sort of northwest Providence. The location near 220, which we've already identified as sort of a tunnel solution that would require sort of difficult interceptor across Pawtucket or possibly as an alternate subtunnel, so we can talk about localized solutions for 220.

And then for the northern outfalls, the 100 series in Central Falls, either as an alternative to the interceptor that Tim just discussed before the break, but also look at 205 and 218, which again are the two largest outfalls that we were talking about before, and how we discussed that an alternative to the tunnel will require a suite of smaller projects, and the localized flow handling would be a component of the overall program as an alternative, so we need to dive a little bit deeper into each one of these sites.

I should mention that Keith Gardner is now going to step through these alternatives, the localized flow. He will be mentioning a number of numbers, flow capacity either for

storage or for treatment. These numbers are based on previous reports, and at the kickoff meeting last month, we told you that we're building a model for the Bucklin Point service area, and that model would be used to determine real design capacity for these facilities, that model is not yet built. We sort of have a parallel endeavor going on for that.

So until we have those defined numbers, we're simply going to use the historic numbers as a starting point for those discussions. They may or may not vary up or down significantly or insignificantly, but we wanted to have a discussion today just to get things going.

MR. GARDNER: Okay, we're going to go through several of the alternatives that we looked at. If you take a look at some of these second requirements of the abutters to these facilities that would be significantly impacted by the localized flow control at these locations.

So the first one we'll take a look at here is the West River interceptor being evaluated, as Rich mentioned, as an alternative

to the sewer separation for the proposed Phase III facilities at 039 and 056. It should be noted that this was previously included. It was part of the 1994 CDR recommended alternative. As proposed, it would be six feet in diameter, 4,600 feet in length and approximately 10 to 25 feet below grade.

The route traveled would start up in the north adjacent to 056, connect to Branch Ave. interceptor, and travel down to Silver Spring Street here where it would connect into the Moshassuck Valley interceptor. So starting up here at Branch Avenue, it would run in front of the shopping plaza before going beneath the Louisquisset Pike, Highway 146, and beneath the river it would travel behind several commercial properties, the Hopkins Middle School and their playing field, behind an elderly housing facility before connecting back into the interceptor down here behind Walmart on Silver Spring Street.

The West River interceptor is a little different than the other alternatives we're taking a look at. It's the only interceptor relief for storage alternative, the

others will be tank or treatment facilities. So the West River interceptor has some of its own advantages and disadvantages. It would provide much needed relief for the Branch Avenue interceptor.

It also provides an alternative to the very disruptive sewer separation of 178 acres in the 039, 056 neighborhoods, but the construction of the six-foot diameter interceptor along the riverbank in front of several businesses, behind the school and behind an elderly housing facility makes it nondisruptive. Construction methods such as pipe jacking and microtunneling can ease that impact to the residence or constituents there. But it does require several good-sized construction sites and a relatively straight alignment which this provides in some areas. It would also require an acquisition of a new easement across many properties which can be difficult.

So before we go on to the next one, as did with the interceptors and sewer separations, I will open this up to any discussion of other impacts or limitations of

this type of option. And feel free at any point if something comes up in the next couple of slides, if you want to jump back and make mention of this, we can certainly do that.

MR. BISHOP: Do I understand that when you describe this collection, is that because it's ultimately going to a drop of the existing tunnel?

MR. GARDNER: So it's essentially a collection of existing flows from the interceptor, so it's interceptor relief.

MR. BISHOP: When it gets to the Walmart, is there a drop shaft there, I mean, you're basically tying into the existing tunnel?

MR. GARDNER: You're tying into the existing interceptor system.

MR. BISHOP: Okay. So that's going all the way back to the treatment plant?

MR. GARDNER: As I said, feel free to jump back if something comes to your mind.

MR. DOMENICA: How long would it take to construct something like that? What are you talking about in terms of a rough duration?

MR. BRUECKNER: Two to three years.

MR. BISHOP: I assume that, and I

know that we could call these the Bruekner alternatives, because they eliminate sewer separation, but I'm not sure -- if you look at the size of 039, I mean, I'm wondering, really, what anybody was contemplating in, you know, something that extensive for that remote and small of an output. It seems like an awful lot of construction in either case to go through.

MR. BRUECKNER: On the slide, you'll also notice it says provide relief for the Branch River interceptor. The current interceptor that takes the flow down Branch Avenue is surcharged in wet weather, meaning that it backs up substantially, and actually in some locations creates sanitary overflows which are illegal.

So this approach also provides for a relief of that interceptor in wet weather so you avoid those surcharging issues, and the answer with regards to Moshassuck River interceptor is no, there isn't a lot of capacity in that line either, and this really would be a storage facility, this interceptor would be storage until the storm's over. So that's when you really pick up for it.

MR. GERRITT: It looks like the end of this one is actually close as the crow flies to the northern terminence of the big tunnel. Has that been considered?

MR. BRUECKNER: Yeah, we thought about that, but that drop shaft was built, and is tied into the main spine tunnel in Outfall 032, and we really don't have any capacity built into the main spine for this, so it's not something we want to look at. If anything, if we were going to take this flow someplace, we'd take it over to the other tunnel, the new tunnel, if we were going to build that.

MR. BISHOP: Can I just ask if you were or if anybody can quantify the way that the overflows are quantified, if you can quantify the surcharge on Branch Avenue, in other words, the additional benefit that you're getting? I don't know how big of a circle that would be compared to what we're looking at.

MR. BRUECKNER: It would be a small circle, but it's a real bad problem because you're getting basically a sanitary sewer discharge on to the street in very big storms, and it's illegal.

MR. BISHOP: Just everybody buy a bottle of bleach.

MR. GARDNER: All right, onto Outfall 220. We've talked about this location several times already, as far as the location the outfalls go, but it is a very large overflow. So in local facilities, this remote location would be looked at as an alternative in the proposed 220 Pawtucket Ave interceptor, and the 220 sub-tunnel.

The storage tank at 220 would be approximately 7.6 million gallons, just to put that into perspective, that's about a 250-foot square and 16 feet deep, so it's a pretty large facility. So a tank was previously proposed at this site, it was proposed at Morley Field, an existing ball field between Moshassuck Street and Greenville Street on the banks of the Moshassuck River.

As we've discussed earlier, the area in Pawtucket surrounding this outfall is predominantly commercial. There's a large old mill type facility here, and a few large parking lots. In addition to the ball field, there's a shopping center down here, I believe there's a

grocery store and some other commercial facilities. A treatment and discharge facility at this location would be approximately the same size and located on the same type of a site. The big difference there is it would have a much larger aboveground footprint, as far as a utility to house equipment, chemical storage, those types of additional requirements that would go along with the treatment facility. So at this point, I'd like to open it up again for discussion.

MR. BORDEN: Can you compare the treatment of -- what's the primary, what does it compare to?

MR. THEIS: It's essentially screening, disinfection and discharge, that's the only high rate types of treatment that we would need to look at.

MR. BRUECKNER: That's with the screening disinfection alternative. If you're using the in surface storage as the storage tank, it's equivalent to secondary treatment because the intent would be after the storm, you'd pump that into the interceptor when there's room in the interceptor, it would go

into the treatment plant.

MR. GERRITT: I know that area really well, and actually north of 220, there's, you know, basically, some land that isn't being used. And I assume if they're doing an underground tank that you'll have to tear up Morley Field and put it back together, whereas the land north of 220, there's really nothing there, and, you know, it's a big parking lot, you know, another 150 feet up, but that parking lot is hardly ever used. It would seem to me that they should put it under the parking lot, or something like that, rather than under the ball field.

MR. BRUECKNER: We dealt with this issue. We did use that parking lot for construction laydown, and that parking lot actually is used, part of it by the facility on the weekends.

They have the Farmer's Market there, and they have events in the facility at night sometimes, and they use that for parking. So that's not true, that parking lot, a lot of the times is vacant, but much of the time is used, and our preference is not to go on to part

of the property if we can avoid it. We rather use the public property, if possible, and they may lose a couple of seasons on the ball field. That's kind of the way we've been going.

MR. GARDNER: I do want to point out before you get to the next question that the sights that are shown here in most cases are sites that were previously just identified as potential alternatives, so we'd like to open that up. If you know the area better, we'd love to hear from you.

MR. BISHOP: I just ask, if I take it from what you said, Tom, there's really essentially two options, either primary treatment at this site or a storage tank, not both?

MR. BRUECKNER: Correct. And really the advantage to the primary disinfection is you can probably treat the whole volume of the storm because it's continuously flowing through it, whereas when you have a near storage facility, the amount of volume that you capture is going to get secondary treatment. But once you fill up the tank, you're done, then you have no overflow with no treatment.

MR. HABERAK: Tom, I assume the 7.6 is three-month storm?

MR. BRUECKNER: The 7.6 is the three-month six-hour storm as it was identified in the CDRA.

MR. HABERAK: So what you're basically saying is four times a year you'd have overflow of raw sewage of raw CSO flow with the storage tank?

MR. BRUECKNER: Right, that would be sized for the three-month storm assuming that's
what we're going to be doing for design, which I think it is, and that would be based on the revised flows being developed through the new model, probably a better model than the one we had previously.

MR. HABERAK: Could you build a larger tank there to minimize some of the overflows that would be untreated?

MR. GARDNER: That is something we could look at, yeah. The next local flow control site that we would take a look at here is up in Central Falls, it's at the northern extent of High Street/Cross Street interceptor

that stands for the Phase III baseline. We would take flows from essentially CSOs 101 and 103, and bring those down to the northern terminance of the Pawtucket Tunnel.

So a local storage tank at this site would, you know, could be an alternative to that northern portion of the interceptor, but as we showed earlier, it does have some significant construction impacts of crossing beneath the railroad overpass right here.

A storage tank at this location would be about 5 million gallons. Again, that is just an estimated flow. To talk about scale, we'll revise that number as part of our evaluation. It would also involve a consolidation to bring flows down from 101, so essentially bring flows down to the location at 103.

A facility was previously evaluated at this location. It was proposed under a waterfront park, which is Pierce Park, there's a ball field right there, again, it's a public facility, some other surrounding abutters here, there's a detention facility right down here. It's a maximum security prison.

As with the 220 location, the treatment and discharge facility would be approximately the same size, per just scale purposes of a 5-million-gallon tank is about a 200-foot square and 16 feet deep, so you would have a large utility building for the equipment and tank storage.

MR. WALKER: Who owns these if they're primary treatment and discharge, and who operates them?

MR. DOMENICA: NBC.

MR. WALKER: Okay, so it would go into the calculation on affordability?

MR. DOMENICA: Yes.

MR. HABERAK: Tom, I would suggest again, I assume you picked the tank size based on the three-month storm. I'd suggest that you look at the economics. At this point, you'd have statistically four overflows a year. If it costs you slightly more to go to a 6 MGD plant, and you would only have three overflows a year.

It looks to me just like if you look at the driver on the size of the tank was just the size of the storm, as opposed to the cost to build a tank, is just a suggestion that

I would have. I'm assuming that the 5.1 you just said, that's the volume from a three-month storm, so we'll pick a 5.1 --

MR. BRUECKNER: I assume we'll do it off a cost curb, anyway, for the preliminary costing.

MR. BISHOP: Just a mathematical point, I think if it actually captures the three-month storm, you're talking two overflows a year.

MR. BRUECKNER: No, it's four. It occurs every three months.

MR. BISHOP: Right, and it captures the three-month storm, so it's the six-month storm you've got to worry about. Capturing the three months, you don't have an overflow.

MR. BRUECKNER: Anything over the three-month storms are the three-month, one-day storm would go over.

MR. BISHOP: No, your next step is -- you're saying, well, we can't get the four-month storm. It's a practical matter the way we think about these things. I'm pretty sure it's an exaggeration of the number of overflows we have.

MR. DOMENICA: Sometimes it's a little obscure.

MR. RAICHE: We'll address the design capacity of any and all facilities at a later meeting, probably we're at number 2, 3, 4, number 5, we'll get down to the details of that, including sensitivity analysis issues and basics of the design. But for today's purposes, we can look at the ballpark sizes.

MR. HILL: I'm sure there's data on how often these things overflow on a yearly basis.

MR. DOMENICA: I have a question, Joe, on your comment suggesting sizing. Could it be per gallon cheaper to do four, six-month storms than three. Is there anything in the consent decree or alternatively, do water quality standards dictate something here, or is this just cost-effectiveness.

MR. HABERAK: There's nothing in the water quality regs. It looks like you just take the size off a three-month storm, so you're strictly talking about cost-effectiveness, and if you can add another million gallons to the storage capacity for 5 percent more cost. What

value does that have on the number of overflows?

MR. DOMENICA: Or would it mean water quality standards?

MR. HABERAK: I think, basically, if you're going to have an overflow, it's not going to meet water quality standards. This will have overflow untreated, there's not going to be any treatment of this overflow. So the only way truly to meet water quality standards would be to capture all the overflows, so now you're kind of moving toward the goal is capturing all of the overflows. So if you can make it a little bit bigger and capture significant and more volume --

MR. DOMENICA: Perhaps, it wouldn't be as much in violation.

MR. HABERAK: Correct.

MR. BRUECKNER: Which gets into the issue of affordability.

MR. DOMENICA: We're going to limit questions to the Stakeholders group at the table there.

MS. CARTER: I just wanted to clarify about the design storm. So the CSO National Policy that EPA issued several years

back uses two approaches. One is the presumptive approach which is if you're treating to a level of control of four overflows a year, then you're meeting your water quality standards. There's another approach, the demonstrative approach where you go through a lot more water quality analysis to determine whether you're meeting your water quality standards.

So the four overflows per year is based on the presumption approach, and that's what's tied to the three-month storm. So the standard including most everywhere is if you are designing to a three-month storm, you're meeting a level of control of four overflows per year.

In some other communities they've used real storms. Those are all negotiated with the regulators if they're going to use a real storm year to control a number of overflows, but it's very, very common to use a three-month storm.

MR. BECK: I think most importantly is probably relative to the evaluation of alternatives when it comes to separation versus other alternatives, and I think where we could

have some clarity since, you know, in one aspect we're comparing it to the goal of the number of overflows so that design storm makes sense, so when you compare it to the backdrop of meeting water quality and you start to compare it to other alternatives of separation, the comment was made about capturing the first flush.

So what I would like to hear is some discussion when we get to that point. The amount of flow that's actually getting into the system and receiving, how much of that first flush in the watershed is actually being treated if only three-month storms can get into the interceptor, and I think that's a very important aspect of the evaluation.

MR. DOMENICA: Good luck to the parking lot.

MR. HABERAK: And just real quickly to speak on the whole presumptive versus demonstrative approach. EPA policy does say that if you have four overflows per year, you presume you will meet water quality, but we know we have a bacteria standards that if you have any overflow you're not going to meet water quality. So we have dealt with EPA and other

communities in the state that has a CSO, and they basically said to meet water quality you have to eliminate overflows.

MR. DOMENICA: Well, that's a very, very important statement, very important because we're dealing with a whole rash of alternatives that don't eliminate all overflows. So what you're saying is then sewer separation and elimination of all combined overflows would meet water quality standards?

MR. HABERAK: If you eliminate all overflows because you've got to meet water quality standards --

MR. DOMENICA: You mean, in theory, for CSO, but really in the water body, are you actually going to attain water quality standards?

MR. HABERAK: Any violation would not be related to the CSO, no, you'd eliminate its CSOs. But I just wanted to clarify that, you know, the presumptive approach is if you have more overflows, you'll presume you'll meet the water quality, but when we met with EPA they said no, that's not meeting water quality.

MR. TURIN: We have not applied the

presumptive approach at any communities in New England because the states in New England all have numeric bacteria criteria that apply all the time. There are regions in the country where that is not the case. And in those regions, they can in certain circumstances apply a presumptive approach, but that's not the case, generally.

MR. DOMENICA: I thought that Maine had seasonal excursions for bacteria. They don't have to meet bacteria standards in the winter.

MR. TURIN: I don't know if that's in their water quality standards or that's been in a separate process in order to reduce toxicity associated with chlorination. I think that's been on a case-by-case basis because the seasonality of the water uses up there.

MR. DOMENICA: Okay.

MR. REITSMA: So apart from the regulatory drivers, I'm just wondering that is a matter of planning or the from a commonsense perspective, and looking at what the trends are in terms of climate weather patterns, and other situations we often complain about, a

hundred-years storm and five-hundred-years storms occurring twice a year, or whatever. Whether it makes sense to think a little bit differently about this so when the suggestion is made if you look at whether it might be cost-effective. We keep that in mind, and not just because the regulation might be triggered down the line, but it makes sense.

MR. DOMENICA: Anything else?

MR. GARDNER: Getting back to site specific localized to flow handling. If a local flow handling site makes sense at Outfall 103 and 101, we can also take a look at it for 104 and 105.

They're intertwined in that if the Pawtucket Tunnel ends up being the receptor of these overflows, an interceptor is going to be needed to pick up these outlines, 101, 102, 103 and 104. And if it doesn't make sense at 103, we need to bring an interceptor to take that flow down to Pawtucket Tunnel and it's going to pass right by 104 and 105. So these two locations are intertwined in that respect.

Now, the Central Falls historic mill district is located along the Blackstone

River in this area. It is important to note that in the CDR this facility was identified at this location, and to quote, it noted that "Because of the hydraulics imposed by the existing CSO regulator the depth for this facility at this site would have to be close to 20 feet because of higher ground surface. Available through information suggested, this step may involve significant excavation."

So essentially what that means is that deep excavation in this area based on previous information is going to be very expensive, you're going to be into rock. So it would be a cost prohibitive site. Treatment at this location would be the same as --

MR. BISHOP: I was just going to ask if the depth of excavation required for treatment is the same as the depth of excavation required for this tank. You talked about the footprint being the same.

MR. GARDNER: So the depth of excavation, I mean, you can pump up to either facility and have an aboveground facility. We haven't really talked about that, but that is an

option to pump up when rock's an issue. So if there are any other eliminating factors for tanks in this area, please let me know.

So moving on to an area that we really haven't talked too much about. We mentioned earlier that the overflow for 205 is one of the largest overflows in the Bucklin Point service area. I think it's about 13 million gallons as estimated in the three-month, six-hour storm at the town of the CDRA. So our local facility at this location would pick up Outfalls 205, as well as the other 200 series outfalls.

Now, due to the large volume of picking up all of that flow which is about 13 to 15 million gallons all at one facility. The previous series broke that down into two facilities; one 6-million-gallon facility right on the river here, and another 7-million-gallon facility upstream that would pick up just a portion of 205.

Now, the alternative site at the time was an undersized used parking lot as of 2013, there was ribbon-cutting ceremony for a large medical commercial user at this location.

So we'd have to identify a new site upstream to pick up enough flow that would make a facility along the river here feasible.

A 15-million-gallon storage facility at this point, you know, it's a pretty narrow facility. It is private property, but it is only about a hundred feet wide, so storing that type of volume in that small of an area is pretty deep, in the area of 30, 35 feet, so that's a very large facility that we would be looking at in that area. So a facility in this area would be looked at to reduce the scope of the Pawtucket Tunnel.

The Pawtucket Tunnel was proposed to come up and end right about the same location. The Mill Street interceptor would still be needed to pick up the overflows in 201, 203, and 204. It should be noted here that a treatment and discharge facility located along the river here would need to capture the entire volume. We wouldn't be evaluating treatment off in the catchment area because of force main needed to get that treatment water to a receiving water body, so we're not taking a look at that at this time.

So at this point I'd like to open it up to discuss potential site limits for a facility of this size.

MR. WALKER: I'm just wondering why if you predominantly looked in the past at public facilities, why you went to Freight Street to a parking lot in the building that had the tenant that was relocated that now is occupied, and that whole area is pretty dense other than unless you're going to undercut the neighbors across the street on Freight Street there at the cemetery. That's about the quietest part of that whole area.

MR. GARDNER: I'm assuming that that's probably why those sites were chosen at that time. There really isn't a lot of open space in this area.

MR. WALKER: It's very dense, it's dark, industrial with neighborhoods that supported the industrial development that occurred in that area of Pawtucket and Central Falls in its history. So if you can't do that underground storage tank of that 15 million gallons, then what?

MR. BRUECKNER: Tom, I think that's

why they recommended a tunnel.

MR. WALKER: I just wanted to have the obvious stated. That's all.

MR. GARDNER: One of the things that we'll take a look at in the future is does the area allow GSI for this catchment. Does it get it there? The volumes that we're talking about is very large, so we'll get into that with a little more clarity next month.

MR. BISHOP: I did want to ask on that point, though, you suggested that if you use treatment, you'd have to do it all in that location, or a location adjacent to the river, and generally, you presented the footprint of treatment as requiring the same footprint as storage.

Again, I'm wondering if that's a hard-fast relationship, if there's a, you know, if there's a length-to-width ratio, an application in these facilities that matters, or whether or not that actually may have more technological adaptability to a site like this where you can't fit the storage you're talking about?

MR. GARDNER: The layout of the

site absolutely matters. It's something that we would take a closer look at is if this is deemed technically feasible. One of the reasons that I wanted to point out that the entire volume would be needed at the river facility is that with the storage option we were looking at capturing a portion of the flow upstream and then a portion of the flow downstream.

Theoretically, you could do storage upstream and treatment downstream. That's something that you could take a look at, but as the gentleman from Commerce RI mentioned, there's not a lot available land in this catchment to make that work.

MR. BRUECKNER: I think that maybe looking at a flow through here maybe at a smaller footprint, may be something we could consider.

MR. GARDNER: This is just a photo of that front street location. So the second largest overflow in the Bucklin Point service area is Outfall 218. It's located on the border of Pawtucket and East Providence at the Seekonk River.

It's located on Beverage Hill Ave.

between School Street and Prospect Street. The area that's surrounding this facility is primarily industrial commercial with a couple of pockets of residential neighborhoods. The Boys' and Girls' Club in Pawtucket has recreational facilities on the river at their Elson Campus, Dunnell Park is further up, upstream Pawtucket. The Mount St. Mary's Cemetery to the southeast in East Providence and is cut off from this map, but just to the south here is the Bucklin Point Wastewater Treatment Facility. So local control in this area in Pawtucket would be intended to control discharges from Outfall 218.

So if you want to add a site like this location here, an empty parking lot would be 400 by 150 by almost 30 feet deep. It's a lot of flow in a very small area to be captured.

MR. BISHOP: I just wanted to inquire where the actual existing outfall outlets. I see the diamond, maybe there's an exposed surface waterway from where that diamond is, or is that really where the outfall is?

MR. GARDNER: That is the location of the regulator for the outfall, and the actual discharge to the river is over here.

MR. BRUECKNER: Actually, it discharges upstream in that brook, that's Bucklin Brook, and the outfall is really is where that blue diamond is. Just downstream from that blue diamond is another floatables control facility that was installed eight years ago. That provides floatables control now. So the actual outfall pipe ends where that blue dot is, that's also where the regulator is.

MR. BISHOP: And if I could continue is, do we have any sense of -- one thing that's done on these drawings, and maybe it's more relevant here because it's so close to the treatment plant of the topography. What the vertical elevation of that outfall is compared to the treatment plant, or the possibility of the surcharge of pipe maybe right into the river into the treatment plant?

MR. BRUECKNER: I think the elevation is there, but the question is where we're going to do it in the treatment plant and what we're going to do with it, because the treatment plant currently picks up the flow from a discharge right at the plant just before overflow. We talked about that at the last

meeting.

That overflow -- now we upgraded the plant to provide wet weather treatment for that overflow, and I don't think we have the capacity built in right now for 218 right now, so we have to go back and make further modifications to the the plant to accommodate additional wet weather flow from 218 if we were going to do that, and we have to build an interceptor down to the plant because the current interceptor, obviously, doesn't have the capacity for that flow.

MR. BISHOP: It just occurred to me in terms of thinking outside of the box, most of the interceptor construction has been talked about as jacking things underground, and here we're right around the corner in the water from there. If I had this flow to convey, you know, I might be trying to run a pipe on the water.

MR. BRUECKNER: Or we could just run it downstream. There might be a capacity there and do an open cut, but again, you've got the disruption associated with that.

MR. BISHOP: I understand that, it's just that there doesn't appear to be, at

least from where it currently outfalls running towards the river, there's not a neighborhood disruption, and if there's any possibility of taking advantage of the water body to house or hold the pipe.

MR. GARDNER: I'm not sure I'm following what you're saying, use the water body for storage?

MR. BISHOP: Well, either possibly use the water body for storage. You're actually an an area where it's wide enough, but I'm talking about, I mean, last I heard they put pipes in the water. That's a technology that exists, I think.

MR. BRUECKNER: Put a pipe in the water to get it from point A to point B?

MR. BISHOP: Rather than excavating through neighborhoods or jacking a pipe to get to that.

MR. BRUECKNER: It would be more costly to do under water, and probably not allowed environmentally. To get a permit to that would be probably impossible when there's an alternative across the land to do it.

MR. HABERAK: I don't know if

anybody here knows, but just south of that Outfall, I think it was Pawtucket Ready Mix, I thought that they closed.

MR. BRUECKNER: The land was for sale, and I went to a meeting the other night, and the prospective buyer wants to construct a trucking warehousing operation there, and it basically would take up the whole site.

MR. HABERAK: It's vacant now, but there's plans for it.

MR. BRUECKNER: I think this emphasizes one of the problems with these types of facilities is siting. And particularly because it's so densely populated, that means there is so much commercial residential, makes siting difficult.

MR. GARDNER: If I could follow up on that and also following up on the comment that Mike Walker made specifically about that one area in Pawtucket that I think it applies to other areas, in particular, river waterfront areas. How we go about communicating with the right people in the communities, I happen to know that in Pawtucket and Central Falls a great deal of community planning has happened with

respect to waterfront redevelopment, quite a bit of both public and private investment in that to which this is all very relevant and vice versa. And I'm just curious, for example, Pawtucket how that gets integrated with this discussion. Typically, in Central Falls they would be keenly interested in seeing some of this, and maybe you already had the discussions with them, but how do we make sure that conversation happens?

MR. BRUECKNER: What we've typically done is after we've come up with a conceptual plan, it looks good on paper. Technically does it work, that would be the next thing, as well as meeting with either property owners or local communities to verify that it's something that you can actually do. For example, you look at the Pawtucket Ready Mix site, I thought about six months ago, I thought, that would be a great site for a tank. Well, that was six months ago, and now not so much. Somebody wants to do a construction that's going to contribute to the economy and jobs in that area, and help their business, and we're not so wild about that idea anymore because somebody else can use that site very productively.

MR. REITSMA: I just want to point out that there are in the case of Pawtucket, there's fairly advanced plans on the table that are available that could be useful for you to take a look at.

MR. DOMENICA: Anything else?

MR. GARDNER: I think we can summarize some of the advantages or disadvantages. I also have the neighborhood ramifications that contribute to development ramifications. And I think we definitely put community development in the mix that wasn't currently on there. We only have a couple of minutes, and I do want to try to reset the stage.

This was intended as a bit of a segue into the next meeting. A couple of points in terms of stormwater flow control and management. Now we we're just talking about receptor type solutions, and now we're talking more about control and pathway interruption.

On the grey side of stormwater we do have some options, and they involve hyaluronic controls. The idea is that anything that keeps stormwater out of the combined sewer

amounts to sewer separation, and if we can throw out catch basins we keep stormwater on the surface and divert to someplace where we can deal with stormwater, it's a lot easier than dealing with combined flow. And there are certain technology that we don't need to get into, particularly. And then dealing with stormwater in terms of storage and treatment for combined flow, because it's relatively clean compared to combined flow, you have lower capital costs than any of those facilities. So we did want to, at least for this meeting, get back and say, all right, how would this impact the sewer separation areas? Because you do need to have a certain set of topography and the way water flows in order to do these sort of things in a catchment.

But we did want to sort of define -- what can we do in terms of just stormwater control in the sewer separation areas that might then limit the extent of sewer separation? So for 035, again, the area along North Main Street. We do have certain conditions in there that are conducive for it. In terms of stormwater management of what would we do,

because it's a state road, in terms of stormwater management there.

And we do know that the soils down there are not very good for infiltration. We do sort of have conditions there that we can look at in our next meeting in terms of stormwater control. But in comparison, the 039, 056 area we don't have those conditions very much. We have very shallow curb reveal. Well, we've got a topography where major transportation thoroughfares wind up becoming essentially dams, so we have difficulty doing these sort of stormwater controls in those areas. It's entirely not suitable on the southern end. On the northern end, we've sort of a edge in between Douglas and Admiral where we might be able to do something, but it's only marginally successful.

MR. WALKER: You talk about the marginal curb reveals, but how much of that is attributable either now, or would be attributable in the future on effectiveness on pavement overlay that is going to change your profile down the line. So if you do this, does it impose some other restriction or requirement

on either the municipality or the state in the future to either maintain it at the current reveal, or they can't make a change, or is it a permitting activity, what does it mean? And I hope you're going to talk about that next month.

MR. GARDNER: Yes, exactly. In order to manipulate the direction of the stormwater flow on the surface you would need to look at a certain street grading, and then other things, kind of like raised crosswalks, and all those sort of things would need to stay in place, so in this case, Providence would need to be on board with what we're doing with the surface streets and maintain that, otherwise, the system breaks down. That's exactly the sort of details that we can table for the next meeting.

MR. WALKER: And I'll take that a step further that what I wouldn't want to see is a shifting of where the expense occurs for the life cycle, so that the affordable issue gets missed when we're in the discussion of alternatives.

MR. GARDNER: Just a couple of pictures just to illustrate the curb reveals.

206 is a different story. We do actually have some potential for 206, the stormwater control. We've got some median curb reveal. So I'm now 30 seconds over. I think we just want to have some time for additional questions before we adjourn.

MR. BRUECKNER: I just want to make one comment. Please make note that time for the next meeting is 9:00, not 1:00. All the remaining meetings will be starting at 9.

MR. BISHOP: I think I was maybe a little too specific in where I started with Tom, but in looking in a very general way at the possible options obviating a tunnel or obviating some of what had been proposed for Phase III, it seems obvious that the overflows driving the tunnel project look to be 204, 205, 218, and there is currently some treatment apparently in places at the treatment plant already.

And so I think what I intended to say was I would really, that's an area where I don't think there's magic technology, but I think that there are potentially ways of thinking about capturing that. Even short term, if we're talking about when can the ratepayers

afford to build another tunnel when they're paying for the one they've already built, I do think that where there may not be permanent solutions, you know, whether or not there are in-water solutions, whether or not you can dam the brook and provide surface storage in order to have, you know, short term, you know, water quality effects, and I don't know -- obviously we know there's a cement plant, now a trucking plant going in there.

I don't know what the precise neighborhoods and the topography are like, and I know there are plenty of things that people don't like, or plenty of effects that you have to consider, but I would certainly look at, I think we don't really have any thought at all, whatsoever, about short-term ideas, or possibly interim.

We've always looked at whether or not that any other ideas are the long-term solution, or should we just invest in a more expensive long-term solution. So I'd be very interested in looking at the neighborhoods and topography around in the immediate area of those big overflows.

MR. GADON: How many of your staff stay here on a constant basis? Are they permanently situated here right now from MWH?

MR. BRUECKNER: No, they're from Boston.

MR. GARDNER: We don't sit in the offices here. We have posts to encourage them.

MR. GAGNON: I'd just like to state sort of what I hit on before was that the cost of the upgrade of the storage tanks, the tunnels, whatever they should be, should be proportioned to those people that are causing or those communities that are causing the combined sewage overflow, and I'll leave you with that.

MR. BRUECKNER: One last thing, Mike, parking lot issues. I think there might have been some that came up. If you can read what you've got, we'll put it in the record, and we'll have it.

MR. WALKER: I have a question on water quality standards, which we deferred to the water quality standards meetings.

MR. BRUECKNER: We're going to have the EPA here.

MR. DOMENICA: There were a number

of comments regarding neighborhoods that I won't go through now, but with regard to particular suggestions on neighborhoods or points, but those will get picked up in the alternatives development. I think there's a question on application demonstrative approach, which is water quality standards, along with the affordability issues.

MR. BRUECKNER: And one last thing. The stenographer will prepare the minutes, and as soon as we get them in their final form, we'll have them on the website. As soon as they're available, we'll send them to everyone.

MR. DOMENICA: Okay, thank you, very much. Drive safely.

(HEARING CONCLUDED AT 4:15 P.M.)

C-E-R-T-I-F-I-C-A-T-E

I, PAULA J. CAMPAGNA, CSR, a Notary Public, do hereby certify that the foregoing is a true, accurate, and complete transcript of my notes taken at the above-entitled hearing.

IN WITNESS WHEREOF, I hereunto set my hand this 30th day of April, 2014.

_____

PAULA J. CAMPAGNA, CSR, NOTARY PUBLIC/CERTIFIED COURT REPORTER

MY COMMISSION EXPIRES: April 25, 2018

IN RE: CSO Phase III Stakeholders Group

DATE: April 10, 2014