

1 GENERAL GROWTH PROPERTIES, INC.

2

3 COLUMBIA, MARYLAND

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5 COMMUNITY FORUM

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7 GUEST SPEAKER: KEITH BOWERS

8 BI OHABI TATS

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11 The above-mentioned Community Forum was held on  
12 Wednesday, April 2, 2008, commencing at 7:30 p.m., at  
13 General Growth Properties, Inc., 10275 Little Patuxent  
14 Parkway, Columbia, Maryland 21044, before Robert A.  
15 Shocket, a Notary Public.

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21 REPORTED BY: Robert A. Shocket

2 MR. HAMM: Thank you all very much for  
3 coming out this evening to join us for what is the  
4 third meeting that we have scheduled. I'm Greg Hamm  
5 with General Growth Properties. This is the third of  
6 four meetings that we've scheduled to introduce the  
7 community to members of the team that has been  
8 assembled by General Growth Properties to work with us  
9 on what we believe is a very exciting opportunity, and  
10 that is to work on the completion and the restoration  
11 of the vision that is Columbia.

12 The first of our meetings began on March  
13 5th with Alan Ward of Sasaki Associates, who spoke  
14 primarily of some of his experiences around the world  
15 in different places in designing and making memorable  
16 places come to life. On March 19th we had Gale Dexter  
17 Lord from Lord Cultural Consultants talk similarly  
18 about her experience in different areas and different  
19 cultures, attempting to understand what constitutes a  
20 culture and how that might be brought forward. I found  
21 the question and answer period in that dialogue very

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1 fascinating and very instructive.

2 Tonight we have the pleasure and privilege  
3 of having Keith Bowers of Biohabitats join us. And I  
4 will get into Keith's background in a moment. And on  
5 April 9th we have Mr. Jaque Robertson, with whom I met

6 yesterday, who is one of the founding partners of  
7 Cooper Robertson, a preeminent architectural firm in  
8 New York who has done some really magnificent things  
9 around the world. And on April 28th we are going to  
10 present what we believe is the community's vision for  
11 the development and the redevelopment, in some cases,  
12 of downtown, as begun in the charrette process,  
13 continued through the focus groups and ultimately laid  
14 out in the framework document and as seen through the  
15 eyes of our team.

16                   And after the 28th we are going to have a  
17 number of additional meetings with the community based  
18 both on topic -- not both -- based on topic as well as  
19 geography and those will range from meeting with the  
20 transportation associates to undoubtedly meeting again  
21 with members of the environmental community and

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1 discussing various elements in great detail of what  
2 will become a submission to the county of a zoning  
3 change or amendments of the New Town zoning, which we  
4 would expect to file in June, early June.

5                   Once that is filed, it will be reviewed in  
6 its normal course and timing. That then will go to the  
7 Planning Board and the Planning Board will have public  
8 hearings as well and those will be followed by the  
9 Board of -- I beg your pardon, I'm mixing

10 jurisdictions, I almost said Board of Supervisors --  
11 the Council, the County Council. The County Council  
12 also will have public hearings and inclusion as well.

13           Tonight we hope this will be a dialogue as  
14 it was for the Lord presentation and to that end we  
15 will have microphones that can be found in the two  
16 center aisles. If you have a question, I'd like to ask  
17 you to raise your hand and some of our very good staff  
18 with General Growth will come and hand you the mike.  
19 Alternatively, you can write a question down and pass  
20 it in the middle to these aisles as well and they will  
21 read those.

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1           Our Website, if you have not looked at it  
2 recently, it's columbiatowncenter.info, is being  
3 updated and we're, it's getting better by the day, I  
4 think, and we have an opportunity there for questions  
5 and comments which are going to be addressed. And our  
6 hope is that prior to submitting anything in June we  
7 will come back and discuss how each of the comments and  
8 questions that were raised during the entire process,  
9 how we've attempted to consider those and address them.  
10 So, that's the process that we are a part of tonight.

11           And I'm very pleased that Keith Bowers has  
12 agreed to join us in this forum. I have had the  
13 privilege of visiting with him and working with him for

14 a very short period of time but he came very highly  
15 recommended by someone that I've known. Keith and I  
16 were speaking today about the size of his firm and the  
17 person who gave, who told me Keith was the right person  
18 to have on this task had three people when I met him  
19 and he now has a staff of, you know, over fifty or  
20 sixty, as does Keith.

21 So, suffice it to say, I have a great deal

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1 of confidence based on that recommendation. And Keith  
2 is somebody who clearly cares passionately about the  
3 environment, about opportunities for restoration and  
4 about Columbia. Biohabitats is a full-service firm  
5 that Keith will describe in greater detail and has been  
6 led under his very sturdy and sure leadership. Keith  
7 has more than 24 years of experience in innovation in  
8 ecological restoration. He's been instrumental in  
9 integrating conservation planning, ecological  
10 restoration and regenerative design initiatives  
11 throughout the country and is currently the Chairman of  
12 the Society for Ecological Restoration International  
13 and a member of the State of Maryland Wetlands  
14 Restoration Steering Committee. I had the privilege of  
15 seeing some of the things that I think he'll talk with  
16 you about tonight earlier today and I learned a great  
17 deal and am delighted to introduce you all to Keith

18 Bowers.

19 (Appl ause)

20 MR. BOWERS: Thank you, Greg. Thank you  
21 all for coming out tonight. I really appreciate it. I

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1 know I have two daughters that are in lacrosse and  
2 softball and all kind of sports activities and how  
3 tough it is to get out so I really do appreciate that.  
4 This is really a privilege for me as well. I grew up  
5 in Baltimore, and, in fact, I remember in the second  
6 grade our teacher taking us down to Columbia as it was  
7 being built. And we got to walk under one of the  
8 underpasses underneath one of the roads and as a little  
9 boy I thought that was just the neatest thing, that  
10 they're actually going to make bike paths and greenways  
11 underneath these roads. And that really stuck in my  
12 mind.

13 And as I went to the University of  
14 Maryland, I started looking into new town planning and  
15 urban design and really Columbia was an inspiration for  
16 me and really making me think about how to look at the  
17 ecology of the landscape and how to combine that with  
18 an urban planning standpoint. So, and then in the  
19 early 1980's I lived in Columbia for about four years.  
20 So, I am fairly familiar with Columbia. I've grown up  
21 near here. I've lived here for a little while. I'm

1 really privileged to be back and part of this team  
2 working on this project.

3                   This is one of my favorite quotes here:  
4 "Having to squeeze the last drop of utility out of the  
5 land has the same desperate finality as having to chop  
6 up all the furniture to keep warm." And unfortunately  
7 I think that's what we're doing to our landscape right  
8 now. And I think, though, that there are ways of  
9 reversing that trend and hopefully I can show you some  
10 projects and examples tonight of how to start reversing  
11 that trend there.

12                   But before we do that, I want to kind of  
13 set the context here because I think this context is  
14 important, and it's probably things that you're all  
15 familiar with but it's really led us or given us  
16 inspiration as a firm on how to think about some of  
17 these issues and think about how we develop the  
18 landscape and how we've impacted our environment and  
19 how can we use development in such a way that we're  
20 actually regenerating or restoring natural processes  
21 and ecological functions.

1                   Just a quick graph on human population. I  
2 think we're all aware of what's happened to the human  
3 population and we're using up a lot of our finite  
4 resources because of population growth. This is an  
5 example of the Baltimore-Washington region with the  
6 Chesapeake Bay in blue in the middle. The red is  
7 urbanization from the period of 1792 on the left all  
8 the way down the right-hand corner of 1992, and we can  
9 just see how urbanization has taken over the  
10 Baltimore-Washington corridor here.

11                   And I know you're all familiar with this  
12 because we all live this every day. But, what's  
13 happening in these urban areas is that we're really  
14 consuming a lot of our resources in terms of energy,  
15 natural resources and freshwater resources and we're  
16 also generating a lot of pollution in doing that. With  
17 that being said, I think that these urban areas have a  
18 lot to provide for us in the future in terms of how can  
19 we develop the landscape more sensibly, how can we do  
20 it in such a way to really lessen the environmental  
21 impact and preserve the outer regions of our landscape

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1 and our communities to really facilitate some of those

2 ecological functions and processes that we're beginning  
3 to lose.

4           You all may be also familiar with the  
5 ecological footprint, basically that the ecological  
6 footprint is a measure of the area that's needed to  
7 support a population's life-style. And right now the  
8 United States, China and India -- mainly China and  
9 India because of population growth but the United  
10 States because of consumption -- have the largest  
11 ecological footprints in the world. And in fact the  
12 United States has almost five times the world average  
13 and almost ten times more than what would be  
14 sustainable.

15           So, in other words, we're using more  
16 resources than what the earth is actually reproducing  
17 or providing for us. In fact, the whole world went  
18 into a deficit back in the 1960's where we're consuming  
19 more of our resources than what's being naturally  
20 regenerated so we're actually working in a deficit now.  
21 And that has important ramifications when we talk

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1 about, I think, sustainability and what does  
2 sustainability mean. Does it mean to sustain what we  
3 have now or is that not good enough and do we need to  
4 reach beyond that? I'll talk about that in a minute.

5           And this is just another illustration of

6 that ecological footprint showing the different  
7 countries and how large the ecological footprint is  
8 compared to one another and again the United States,  
9 India and China have some of the largest ecological  
10 footprints in the world.

11 The ecosystem report that was done by, the  
12 Millennium Ecosystem Assessment Report that was done  
13 several years ago and published looked at all these  
14 different environmental factors. And, in fact, this  
15 is, I think, you know, this plays in, I think, to a  
16 little bit of climate change in looking at flooding  
17 throughout the world and showing that basically from  
18 1950 to 2000 the increase in the amount of floods  
19 throughout the world due to the severity of weather  
20 patterns. And in almost every continent you can see a  
21 really strong correlation of an increase in flooding

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1 basically from about 1980 and 1990, all the way to 2000  
2 and how that's really increased and I think that's  
3 indicative of the impact we're having on the earth.

4 The one thing that Al Gore talks about in  
5 the Inconvenient Truth is climate change but the one  
6 thing he really doesn't mention is the species  
7 extinction that's going on across the globe. And that  
8 should be just as important and just as worrisome as  
9 climate change is. And, of course, climate change is

10 one of the factors that's causing that but more so  
11 over-exploitation, habitat degradation, invasive  
12 species; There's other reasons for our loss of our  
13 species. And, in fact, the IUCN, or the World  
14 Conservation Union, has looked at what they call  
15 red-listing species, which means that these species are  
16 either becoming extinct or in danger of becoming  
17 extinct. One in four mammals, one in eight birds, one  
18 in three amphibians, one in three conifers are all at  
19 risk of extinction throughout the world; 50 percent of  
20 the reptiles, 52 percent of the insects, 73 percent of  
21 the flowering plants are.

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1 And if you look at a curve from 1800 all  
2 the way up projected to 2040, we see an exponential  
3 growth in the amount of species that are going to be  
4 become extinct. And this far surpasses any background  
5 level geologically that we've seen or that we've been  
6 able to tell on the earth and in fact it's anywhere  
7 from 1,000 to 10,000 times the background level. And  
8 the reason there's such a wide discrepancy there is  
9 that we've only really surveyed only a couple million  
10 species, that there could be ten to a thousand times  
11 more species out there that we don't even know about  
12 that are disappearing every day.

13 So, what we have also found is that there's

14 a huge correlation, and I think this has really come  
15 true lately. Many of you may have heard about the  
16 oceans and the depletion going on in the oceans and the  
17 cascading effect. In fact, in the Pacific Ocean when  
18 we have a decline in fisheries and fish because of  
19 over-exploitation of fisheries, all of a sudden the  
20 killer whales start feeding on the sea otters because  
21 they're not feeding on the fish. The sea otters, the

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1 decline in the sea otter population actually increases  
2 the sea urchins, which then eat up all the kelp bars.  
3 And when the kelp bars are gone, there's no place for  
4 the sea lions or the seals to hide anymore and so the  
5 killer whales are getting them even easier. And we're  
6 seeing this whole cascading effect of degradation of  
7 the species in the ocean and that's the same thing that  
8 is happening on the land as well.

9 So optimism, what is that? You know, is  
10 that really just using a paper with holes in it so we  
11 can stick plants in it or is it something a little bit  
12 more than that? What we have been really talking about  
13 a lot in our firm, Biohabitats, is that when we talk  
14 about sustainability we may be talking about using  
15 green design. And, in fact, I would say that most  
16 development that occurs now is conventional practice,  
17 which is one step better than breaking the law, right,

18 that we go out there and we have to meet the  
19 regulations and that's about it and that's all we do.  
20 And, I think we've all seen the impacts on our  
21 landscape because of that.

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1 Now with green design we have programs out  
2 there like LEED, which is Leadership in Environmental  
3 and Energy Design, which gives us metrics on how green  
4 we can be but really what that's doing is, it's a  
5 fantastic program and it's really making people and  
6 architects and builders and real estate folks pay  
7 attention to sustainability but it's being more  
8 efficient and being less bad instead of being more  
9 good. In other words, we're saving energy but we're  
10 maybe not converting energy from a carbon-based power  
11 source to a renewable energy source. And then to be  
12 truly sustainable, that's a hundred percent being less  
13 bad. That's still not being more good.

14 So, while we strive to be green and strive  
15 to be sustainable, we would make the argument that what  
16 we really need to be doing is being restorative. How  
17 can we use development practices to actually restore  
18 the landscape, restore ecological processes, not just  
19 do less harm to the landscape? And, in fact, if you  
20 want to go beyond that, how can we be regenerative?  
21 How can we not only regenerate these ecological

1 processes but how can we regenerate the human spirit at  
2 the same time, regenerate our relationships with one  
3 another and really maximize through the evolutionary  
4 potential that we have with ourselves, with our  
5 communities and with our landscape?

6           And so that's something that we have been  
7 toying with in our firm, is looking at how can we  
8 elevate land development and land management practices  
9 to be restorative or regenerative, and it's not an easy  
10 thing to do and we're all kind of learning and working  
11 on this together. And I think if we start doing that,  
12 we all of a sudden start, instead of having a  
13 trajectory that goes back down, because that's  
14 basically where we're going to get if you're just being  
15 sustainable, that we can have a trajectory that starts  
16 moving up this curve.

17           And, so, looking at regenerative, it means  
18 being aware that all things are interconnected, that  
19 we're coparticipants in the evolution of life. It's  
20 not just us; it's all the other species out there,  
21 flora and fauna. It's that we're operating on multiple

1 scales on multiple levels and throughout time. I think  
2 sometimes we fragment the view of the world that we  
3 have in terms of looking at only one scale or only one  
4 time period. And it's whole systems thinking for  
5 living systems. And I would argue that we haven't  
6 really been thinking about living systems as we develop  
7 our landscape, and if we start really thinking about  
8 living systems, biological systems and how they  
9 interact with what we're doing, then we're going to  
10 create a much more healthy environment.

11           And one of my colleagues out in Santa Fe,  
12 New Mexico, coined this term and I really like it.  
13 It's, "to engage in a riot of reciprocity." If we can  
14 do that with the landscape, if we can do that with the  
15 flora and fauna, if we can do that with each other,  
16 then I think we're going to make a very healthy and  
17 very vibrant community.

18           So, Biohabitats, we started about twenty  
19 years ago. As Greg said, we have close to fifty people  
20 in the firm. We're based in Baltimore, Maryland. We  
21 have offices throughout the United States and our

1 offices are based on bioregions, not political  
2 jurisdictions or not towns but bioregions and we have

3 people in each of those bioregional offices who  
4 specialize in that specific bioregion. We think that's  
5 a really smart way of looking at how to interact and  
6 work with communities that we work with throughout the  
7 country.

8                   We have folks, I myself am trained as a  
9 landscape architect but I've practiced really  
10 restoration ecology and conservation planning most of  
11 my career. We have ecologists and biologists and  
12 ecological engineers and water resource engineers and  
13 landscape architects and urban planners and soil  
14 scientists, and sort of all the "ologies" and all the  
15 scientists in the engineering profession. And what  
16 that's allowed us to do is really look at things from a  
17 whole systems standpoint and look at it from a  
18 multidisciplinary standpoint and attack these problems  
19 not just from an engineering perspective but from a  
20 biological perspective or from a cultural heritage  
21 perspective or from a human interaction perspective.

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1                   And we've really noticed over the past  
2 probably three to five years a convergence of  
3 conservation. In fact, if you've looked at the Nature  
4 Conservancy, probably ten or fifteen years ago they  
5 were all about buying and saving places throughout the  
6 world but now if you pick up one of their brochures

7 it's not only about saving those places but it's about  
8 restoring those places or looking at what the impact  
9 that climate change might have on our ecosystems and  
10 how to manage places in the future to provide corridors  
11 for species to move to adapt to climate change.

12 So, it's a much more active-engaged  
13 philosophy and we have really seen the convergence of  
14 conservation planning and ecological restoration and  
15 going beyond sustainability design to regenerative  
16 design and seeing all these come together. And I think  
17 this is a really exciting time to be involved in this  
18 type of work and to be involved in a project like the  
19 Columbia Town Center, where we can take some of these  
20 concepts and begin to integrate them into the master  
21 planning, planning and site design level.

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1 Most of our work back in the early 1980's  
2 had a lot to do with wetland restoration, the  
3 Chesapeake Bay critical area, as the Corps of Engineers  
4 and U.S. Fish and Wildlife, EPA, starting enforcing  
5 non-tidal and tidal wetland regulations and we found  
6 ourselves all of a sudden in a great position to not  
7 only work with some of these Chesapeake critical area  
8 plans but begin doing wetland restoration throughout  
9 the Bay. And one of our first projects was in the  
10 Inner Harbor -- this is Fort McHenry right here --

11 actually building an 11-acre marsh overtop of the Fort  
12 McHenry Tunnel as you go on one side of I-95 underneath  
13 the Harbor to the other side.

14           And that site has been fairly successful  
15 over the years. In fact, the National Aquarium was  
16 using it for quite some time as a teaching area to take  
17 kids out and the National Aquarium has invested a lot  
18 of time and energy to helping to keep that marsh going  
19 and cleaning up the trash in there and that type of  
20 thing. But it's really worked very well. In fact,  
21 we've done hundreds and hundreds of acres of wetland

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1 restoration throughout the Bay. We just finished a  
2 project down near Cox Creek, down near Key Bridge and  
3 doing some wetland restoration based on some of the  
4 dredge material they're dredging out of the Inner  
5 Harbor.

6           And then we worked out at Smith Island and  
7 have had the privilege of working throughout the Bay --  
8 in this case Smith Island -- doing some wetland  
9 restoration along the shoreline to protect some of  
10 these areas as they begin to be impacted by sea level  
11 rise and erosion that's taking place out there. That  
12 led us to doing a lot of stream restoration and, in  
13 fact, we still do a lot of stream restoration not only  
14 throughout Maryland but throughout the country. And I

15 think we've gotten quite good at it but there's still a  
16 lot to learn.

17                   And we have been able to take projects like  
18 this -- this is Spring Branch, which is in Timonium,  
19 Maryland. This is considered a trout stream by the  
20 State of Maryland, cold water stream. It drains into  
21 Loch Raven Reservoir, which is a drinking reservoir for

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1 Baltimore City. And you can see here that there isn't  
2 much habitat, much riparian zone. And it's basically  
3 an engineered system, which was fine for this  
4 subdivision that was built back in the late fifties to  
5 early sixties, and it got water from Point A to Point B  
6 pretty fast and there's no erosion on the stream banks.  
7 Some would argue that that's a pretty good system.  
8 Baltimore County figured out that it really wasn't  
9 supporting trout, wasn't quite good for Loch Raven for  
10 the water quality. What can we do to fix that?

11                   So, we went in using really sound  
12 engineering principles in terms of hydrology and  
13 hydraulics, looking at the biological systems of the  
14 stream channel, looking at what we call fluvial  
15 geomorphology, which is the study of water over the  
16 landscape and how it forms land patterns, and taking  
17 principles that were developed in those different  
18 science disciplines and applying it and go in.

19                   So, this is going to be a series of shots  
20 going from before to after, to about five years after,  
21 of going in and taking up the concrete, putting back

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1 down gravel in here, putting in pools and ripples into  
2 this stream, putting back the enders in here, restoring  
3 the riparian zone through here and then over time  
4 watching that grow in. We have a system like this  
5 today. And while this system biologically is really  
6 good, it also still handles those stormflows that that  
7 concrete channel can handle.

8                   So, we need to make sure that not only are  
9 we enhancing the biological functions of this stream  
10 but we're still handling the excess runoff from all the  
11 impervious surfaces upstream. And we believe we can do  
12 this in areas, where in the past we've used hard  
13 structures, in more of an engineering approach, we can  
14 go in and use a biological approach and still solve  
15 some of these issues that we have here.

16                   We also were involved in a project down in  
17 Arlington County and on the border of Arlington County  
18 and Alexandria. This is Four Mile Run. We were  
19 brought in as a consultant with Rhodeside & Harwell,  
20 which is a landscape architectural firm in northern  
21 Virginia and Alexandria. This is Four Mile Run in a

1 flood condition in 1975. And basically the Corps of  
2 Engineers came in at a later point in time and  
3 channelized the river through here, which is what the  
4 Corps likes to do a lot. In fact, the Corps has given  
5 us a lot of business of unchannelizing rivers and  
6 hopefully they'll keep doing that.

7           But really the emphasis of this project was  
8 not only how can we come back in and restore some of  
9 the ecological functions of this stream channel through  
10 here, Four Mile Run, but how can we make this an  
11 economically viable community, engaged community  
12 project. Because that's what really, that's what  
13 really makes these projects work, is to get the  
14 community involved to make this a project that enhances  
15 the quality of life of the residents that live through  
16 here and enhances recreational opportunities but also  
17 provides the biological, environmental assets that  
18 we're striving for.

19           So, we went through all the engineering,  
20 working again with the Corps of Engineers and the city  
21 and the county and looking at things like channel

1 formation and how the channels form, looking at  
2 flooding issues, because we still had to maintain flood  
3 control through this area because of all the  
4 infrastructure and development surrounding it, but how  
5 could we improve this biologically. The lower part of  
6 Four Mile Run is tidally influenced from the Potomac.  
7 The upper part is not. So, we had essentially two  
8 different types of systems here that we were looking  
9 at.

10                   We held a lot of community meetings,  
11 community design charrettes, to begin looking at  
12 options for Four Mile Run, began putting together an  
13 analysis of the different layers that would go into a  
14 plan like this, began work on coming up with sort of a  
15 visioning workshop and synthesizing that information  
16 and then Rhodeside & Harwell did these sketches but  
17 began to look at not only the stream corridor, which is  
18 in the lower left-hand corner but how can you take that  
19 green, what we call green infrastructure and begin  
20 moving it up into the neighborhoods and connecting  
21 these neighborhoods from an environmental standpoint

1 back down to the stream corridor, everything from new  
2 street trees and plantings to even green parking

3 garages and making them biologically more viable as  
4 well, and coming up with a plan that begins to knit the  
5 neighborhoods down to the stream corridor and restore  
6 that stream corridor.

7                   Right now the City of Alexandria and  
8 Arlington County are looking at putting out the first  
9 part of this as a, or first tidal section for design I  
10 believe later this year so they're just underway. This  
11 is the master planning method. But we're also looking  
12 at water quality and how to take runoff off of all the  
13 impervious surfaces that drain into Four Mile Run.

14                   And these are examples from throughout the  
15 world of how you can integrate in urban areas water  
16 quality best management practices, to begin treating  
17 some of this runoff and doing it in either an artful  
18 way, an urban design esthetic way, matching the urban  
19 vernacular, what you're trying to do, but make it fun,  
20 make it engaging and make people realize that the water  
21 running off some of these parking lots and impervious

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1 surfaces is the water that's actually going into these  
2 streams and rivers and ultimately in our area into the  
3 Chesapeake Bay.

4                   We have also had the pleasure of working  
5 throughout the Great Lakes with EPA doing, coming in  
6 after they do sedentary remediation, and I'm sure you

7 can imagine with all the industry around the Great  
8 Lakes there's a lot of sediment contamination that is  
9 in a lot of the rivers and mouths of the rivers along  
10 the Great Lakes.

11 EPA historically has been going in and  
12 doing that kind of sediment remediation but they just  
13 left the land, after they were done, kind of fallow and  
14 didn't do anything with it. And we've been working  
15 with them on developing ecological restoration master  
16 plans and really engaging the community in that effort  
17 in doing that.

18 And one of the interesting things I think  
19 out of these exercises that we do, because we hold  
20 community design charrettes and community visioning  
21 sessions, is that we gauge what their interests are,

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1 what their priorities are. And this one here shows  
2 that their priority is nature and their priority is the  
3 City of Superior; in other words, economics obviously  
4 and the vibrancy of the City of Superior is just as  
5 important as nature. So, it's really, I think,  
6 incumbent upon us to figure out how we can combine  
7 those two in a way that provides both, that isn't a  
8 compromise but it actually enhances both the nature of  
9 the city and the economic viability of the city. And  
10 that's something that we have been engaged in quite a

11 bit throughout the country.

12                   We've also been working at a lot of  
13 colleges and universities across the country as they go  
14 through major expansion modes with increasing  
15 enrollment. This happens to be the University of  
16 Virginia. UVA, some of you may be familiar with UVA or  
17 are graduates of UVA; we have been working with them on  
18 implementing a master stormwater management program  
19 with them.

20                   Although this looks like a normal parking  
21 garage, we began working with them to enhance the

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1 stream alongside this parking garage and stormwater  
2 management off of the parking garage to take something  
3 like this in terms of rebuilding this stream channel  
4 into this. And this handles all the stormwater off of  
5 that parking garage but it's a really a biologically  
6 rich area now. And, in fact, University of Virginia  
7 uses this as one of their outdoor classrooms now to  
8 teach kids from a biological standpoint and it's taking  
9 something like this and turning it into a really  
10 vegetated, vibrant, biologically rich system.

11                   We also worked with them on the Dell. The  
12 Dell was sort of this sacred area -- I guess it still  
13 is -- where kids came and played in sort of an informal  
14 play area but what most people didn't realize is there

15 was a piped stream underneath here that was piped  
16 decades ago. Part of their stormwater management  
17 strategy is actually to daylight this stream and bring  
18 it back to the surface, provide natural floodplain and  
19 provide stormwater management. So, we worked with them  
20 to develop a plan where we could daylight the stream,  
21 as you can see over here, and then provide stormwater

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1 management down here near some of the University  
2 buildings.

3           During construction here, this is  
4 daylighting that stream back to the surface, taking it  
5 out of this pipe, replanting or repairing the area.  
6 This was two years later, what this site looks like  
7 now, so, it's a fully functioning stream. It's  
8 daylighted back to the surface, provides the ecological  
9 and biological processes here and, in fact, it's so  
10 thick in some areas you don't even know that it's there  
11 anymore, but also working with the University on how to  
12 integrate stormwater management so it doesn't look like  
13 what I call the salad bowl effect, just a sort of a big  
14 empty turf basin out there, do it in way again that  
15 supports or reinforces the design aesthetic or design  
16 vernacular of the University.

17           And, working with the firm down in  
18 Charlottesville, Virginia, we were able to work with

19 them to develop this design. This is the stream  
20 channel as it enters the stormwater management pond.  
21 And you can see it takes on a much more formal approach

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1 here but it begins to blend in with the formality of  
2 the University of Virginia.

3 So, the stream's in the background, comes  
4 through this rill here, and this is what it looks like  
5 in the wintertime now. So, it really looks quite  
6 beautiful in all different seasons. And, again, we  
7 brought back sort of the biological function of this,  
8 but it also was integrated into the landscape and the  
9 design of University of Virginia.

10 We work quite a bit with institutions  
11 across the country and government agencies on  
12 sustainability and what does sustainability mean, and  
13 in fact we've been working somewhat with Fort Belvoir  
14 as they look at accommodating more folks down there  
15 because of the base realignment that's going on across  
16 the country, and really start beginning to look at  
17 integrated strategies or interrelationships of  
18 strategies from a sustainability standpoint. We  
19 highlighted hydrology, biodiversity, urban heat island  
20 effect, nutrient cycling and carbon neutrality. That's  
21 five key areas that the base should be focused on. It

1 just happened to be the Pentagon. I don't know how  
2 that happened. But I think what was really valuable  
3 here, what we did -- whoops, I didn't mean to do that.  
4 I spend my life in PowerPoint.

5           What we're able to do here is take  
6 relationships, in other words, in this relationship  
7 hydrology and biodiversity, and look at the  
8 correlations or the potential conflicts between if we  
9 were to alter hydrology on the base, well, how would  
10 that affect biodiversity. We began looking at all the  
11 different relationships throughout and looking at this  
12 from a whole systems standpoint.

13           So, as the base made decisions on how they  
14 were going to grow and how they were going to change  
15 infrastructure on the site, how would that then either  
16 positively or negatively affect each one of these key  
17 areas that they helped us identify. And they're using  
18 that as part of their sustainability program and I  
19 think that's something that is really a valuable tool  
20 in terms of looking at if you're going to make  
21 tradeoffs, which we all need to make tradeoffs in some

1 of this, we need to make informed tradeoffs and the  
2 more informed we are about them, then I think the more  
3 we can either mitigate or minimize any potential impact  
4 in the future.

5                   We've been involved quite a bit with New  
6 York City in Jamaica Bay. Jamaica Bay is the National  
7 Gateway. National Parks Service, Fish and Wild Life  
8 Service has a refuge there. They're losing all the  
9 wetlands in Jamaica Bay. Some of that is being lost  
10 because of sea level rise; some of it is being lost  
11 because of historic dredging that's gone on in the Bay,  
12 like build John F. Kennedy Airport there and other  
13 situations throughout. But, we've been working with  
14 the City of New York, Department of Environmental  
15 Protection on trying to figure out why they're losing  
16 so many wetlands in Jamaica Bay and really beginning to  
17 investigate and study.

18                   Well, there is obviously a lot of urban  
19 runoff coming off of the five boroughs in New York  
20 City. There's a huge water quality issue. There's  
21 hydrodynamics issues with the change in the depth of

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1 the Bay and sediment transport and that type of thing.  
2 And we helped them develop an overall Jamaica Bay  
3 restoration and protection plan, which they're now

4 beginning to implement in there.

5                   But we came up with this model. I know you  
6 can't read the model back there but it basically looks  
7 at the stressors of the Bay, it looks at ecosystem  
8 responses based on those stressors and then it begins  
9 to look at what are some alternatives to restore the  
10 Bay and how they can minimize those stressors and then  
11 turn around and reverse some of the ecosystem responses  
12 that are taking place. Again, it's sort of looking at  
13 this from a whole systems standpoint to try to preserve  
14 and enhance some of the habitat that's out in the Bay.

15                   And, like many urban areas, it's heavily  
16 influenced by the surrounding ecosystem. In fact, what  
17 we did was we went to New York City and we said, you  
18 know, we really need to do what we call an urban runoff  
19 model. We need to look at what happens to rainwater  
20 when it falls in New York City and how it hits the  
21 pavement or hits the rooftops and what happens to it

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1 before it actually enters Jamaica Bay.

2                   And they really never looked at it from  
3 that standpoint before. They never looked at it from a  
4 whole systems standpoint of what happens in the  
5 flowpath of a raindrop when it hits, by the time it  
6 hits the Bay. And it really opened their eyes to think  
7 about what kinds of strategies they begin to look at

8 and apply in New York City, which is, you know,  
9 obviously huge. In fact, 500 miles of waterfront,  
10 8,000,000 people, 1.3 billion gallons of water per day,  
11 in wastewater, and when it rains one inch in New York  
12 City there's 9,150,000 gallons of runoff that they have  
13 to deal with. So, it's not an easy task.  
14 Unfortunately, they've tasked us with figuring out how  
15 to come up with the water quality best management  
16 practices to treat all this runoff. So, we're working  
17 on that project right now with New York City to begin  
18 looking at strategies to do that around the city.

19 But there are all kinds of strategies. You  
20 know, throughout the world people are coming up with  
21 all kinds of artful and innovative ways of handling

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1 rainwater, in this case a funnel coming down here.  
2 This happens to be the Northern Kentucky Sewer  
3 District, who has taken their whole complex -- and this  
4 is a cistern in the middle here, rainwater falls in the  
5 cistern and some of it goes down this cascading effect,  
6 runs out these gullies and it runs into bioretention or  
7 rain gardens.

8 It's a great teaching tool. In fact, kids  
9 from all over Cincinnati and Northern Kentucky come  
10 here and learn about rainwater and how it can be  
11 captured, how it can be reused or harvested, how it can

12 be infiltrated back into the ground, how it can be  
13 treated for water quality before it enters the streams.  
14 And, so, there are many different ways that we can  
15 begin looking at stormwater and integrate that in, and  
16 I think that's an important component as we look at  
17 Columbia New Town and redevelop parts of Columbia New  
18 Town, how can we use these kinds of urban, artful ways  
19 of celebrating water, not just putting in a pipe and  
20 putting it underground and swishing it out.

21 We worked with the Bronx Zoo quite a bit.

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1 I'm not sure how I'm doing on time here -- we worked on  
2 the Bronx Zoo for quite some time in helping them with  
3 a sustainability program. You know, one of the things  
4 that they looked at is that they were recognizing that  
5 they were bringing people in and teaching them about  
6 lions in Africa or about gorillas in Africa and  
7 elephants in Asia and getting people to donate money  
8 and think about conservation there but they weren't  
9 doing anything about their own backyards, about what  
10 people were doing in New York City or Westchester  
11 County or in northern New Jersey, and they thought wow,  
12 we're really missing an opportunity to be teaching  
13 people about their own ecosystems and their own native  
14 species in those areas.

15 And, so, we helped them look at sort of the  
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16 fabric. I mean, you can see that it's a quite a wooded  
17 parcel -- this is the Bronx River that goes through the  
18 Bronx Zoo -- of looking at sort of all the fabric  
19 around the exhibits and saying how can we make that an  
20 exhibit in and of itself and really teach people about  
21 the geology and the natural resources of this part of

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1 New York, and, you know, looking at everything from  
2 streetscapes and urban rain gardens and developing,  
3 looking at this from a natural ecosystem process  
4 standpoint and really figuring out what's happening to  
5 water as it lands on the Bronx Zoo, how can they be  
6 more sustainable in some of the practices they're  
7 doing.

8                   And, in fact, this is one of their major  
9 parking lots they have out there and the whole parking  
10 lot just drains right to the Bronx River, no treatment  
11 for anything. And if they're going to be stewards in  
12 talking about how can you conserve gorillas over in  
13 Rwanda and other places, I think they need to be doing  
14 something in their own backyard as well. In fact, the  
15 Wildlife Conservation Society, WCS, which runs the  
16 Bronx Zoo, is probably one of the foremost and  
17 respected conservation organizations in the whole  
18 world.

19                   So, working with them envisioning what, if

20 we could take that parking lot, go from this to this to  
21 this to this, right, how can we begin to do that in a

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1 way that again treats that stormwater, provides shade,  
2 reduces the heat island effect, provides habitat and  
3 canopy and really begins to celebrate that feature  
4 instead of having a stark parking lot out there. And  
5 I'm sure all of you would rather park in a parking lot  
6 on a 90 degree, 100 percent humidity day like that,  
7 like this parking lot than in a bare parking lot out  
8 there. So, it all enters in the whole quality of life  
9 issue as well.

10 North Carolina, we've been working with the  
11 University of North Carolina and here they're looking  
12 at developing a thousand-acre parcel of land in Chapel  
13 Hill to expand their campus because they're basically  
14 out of room, at UNC, in their main campus. And what  
15 they asked us to do is to come in and do an ecological  
16 analysis of this whole site to really begin to  
17 determine where they should build and not build based  
18 on the ecological components of the site. This is the  
19 first time the University has done this. And, in fact,  
20 we've been doing that with Duke. And both Duke and the  
21 University of North Carolina have world renowned

1 conservation programs as well but they weren't doing  
2 this type of thing in their own backyard; now they are.  
3 But, looking at things like water resources  
4 here and analyzing those water resources in terms of  
5 buffers and what's important and coming up with using  
6 GIS, Geographic Information Systems, to be able then  
7 weight these different resources, give them different  
8 values. And, in fact, it's not just us weighting these  
9 values, it's us working with the community, in this  
10 case, working with some of the professors and some of  
11 the classrooms and the academic institutions at UNC to  
12 help us in this process because they're the ones that  
13 are going to live here and reside here.

14 And then taking a step out -- this is that  
15 site there -- but taking a step out, the whole Chapel  
16 Hill area, and looking at the stream network, looking  
17 at what we call the green infrastructure, the woodland  
18 corridors and what's important, we noticed in this case  
19 here that there's a really important woodland corridor  
20 that goes up through here. There's another important  
21 woodland corridor that goes up this way and whatever we

1 do on this site here has major ramifications to the  
2 connectivity of that landscape in terms of  
3 fragmentation. And then drilling back down on the  
4 site, we noticed that there's some interior forest in  
5 here that's critically important for certain habitat  
6 and that needs to be maintained.

7           So, what we ended up with was a map that  
8 showed basically that this area in the light color here  
9 from a development standpoint had a lot less ecological  
10 impact than any of these other darker green areas here.  
11 And now, so the University is now focusing strictly on  
12 this area right in here for development and leaving the  
13 rest of this acreage, about 7800 acres alone and not  
14 developing it because they recognized the ecological  
15 importance of it. And they would rather be more dense  
16 in here and build up than to build out and sprawl  
17 across this landscape, and preserve the rest of this  
18 from an ecological standpoint.

19           So, I think that there's things that we can  
20 do even in Columbia Town Center in taking some of these  
21 ideas and looking at how we can do that. In fact, we

1 started building a model here. From a sustainability  
2 standpoint, this happens to be natural habitat, all the  
3 inputs and what all the outputs are and we're working

4 with UNC now on a sustainability program of how to  
5 minimize these outputs or turn these outputs back in  
6 and recycle it through the campus itself. And it gets  
7 real complicated when we begin adding water and  
8 transportation and energy and habitat and all the other  
9 issues that we're dealing with on the campus here.

10 Real quickly, we're working out in Teton  
11 Valley, a great place. It's right on the other side of  
12 the Teton Mountains, from Jackson Hole in Idaho. And  
13 it's one of the major stopover areas for the Sandhill  
14 cranes that migrate from Canada down to New Mexico.  
15 And, in fact, Teton Valley is home to the largest  
16 Sandhill crane migration population down the Central  
17 Rockies. Unfortunately, much of the Teton Valley is  
18 being developed now in the resort communities. Farmers  
19 can't make a living there anymore. They typically grow  
20 barley out there. In fact, it's so cold they can't  
21 even grow potatoes out there because their growing

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1 season is so short. They can grow some wheat, some  
2 barley, but most of the farmers or most of the people  
3 that homesteaded that valley back in the late 1800's  
4 and early 1900's are selling their land because the  
5 land is more valuable from a real estate standpoint  
6 than it is from a farming standpoint.

7 In looking at that, we were brought in to

8 look at about 3,000 acres of this area, which is  
9 actually the prime feeding area for a lot of these  
10 Sandhill cranes. And this is the Teton River, which  
11 flows north out of here. The Teton Range is right down  
12 here off the picture. These are the Big Hole  
13 Mountains. But I think what was interesting here is we  
14 began looking at the pattern of the landscape here.  
15 These are the soils, different types of soils. And  
16 just from looking at patterns, which is something we do  
17 quite a bit, the soil patterns here, how this is  
18 actually an alluvial fan that geologically came out of  
19 this, what's now called Mahogany Creek, actually pushed  
20 the river out in this valley back around here and how  
21 that fan, to begin set up patterns for us in looking at

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1 it from an ecological standpoint.

2                   And then beginning to look at issues like  
3 the Sandhill crane, moose, the mule deer, the bear,  
4 swans; this is the site right here. It's part of the  
5 Teton Range. It's also part of the greater Yellowstone  
6 ecosystem and it's also part of what's called the "Y to  
7 Y," Yukon to Yosemite corridor through here. And so  
8 how can we go in if this site is going to be developed  
9 in such a way to preserve some of this habitat through  
10 here? So, we started looking at all these different  
11 relationships and all these different species patterns

12 throughout the valley here and began to map those.  
13 This is where the Sandhill cranes feed and this is the  
14 outline of our site so this site is responsible for  
15 about 80 percent of all the feeding area for the  
16 Sandhill cranes as they migrate through the valley.  
17 And, in fact, these roosts here are areas where they  
18 roost in the valley as well.

19                 So, what we typically do is do these  
20 species profile to really highlight the species, the  
21 habitat, what they like, what they don't like, what

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1 they need because we find that most communities and  
2 even most of our clients don't understand or don't  
3 realize this and if we can present it in such a way  
4 that brings these species to life and makes it part of  
5 this program, then that really helps.

6                 And the other thing that we do quite a bit  
7 is we do what's called story of places, and I think  
8 they're really important because a lot of people aren't  
9 connected to their place in a way, they don't know the  
10 geologic history of their place. They might not know  
11 the cultural history of their place, how it came about.  
12 Why, why was that stream there? Nobody really realized  
13 why the Teton River was pushed out there or why the  
14 soils were forming the way they were. As people begin  
15 to understand the history of their place and begin to

16 understand the story of that place, then when we talk  
17 about the future of that place and where to go from an  
18 evolutionary standpoint, then people become, I think,  
19 much more engaged and become more of restorative  
20 landscape and begin to do that.

21 So working with this, basically the story

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1 is right now that we've developed a plan where we're  
2 actually preserving 3,000 acres. We're preserving  
3 about 600 to 700 acres of crane habitat here. We're  
4 working with crane experts throughout the world to  
5 develop a crane management plan for this site. We're  
6 providing a big game corridor for moose and elk and  
7 mule-deer through here and we're providing even small  
8 game habitat that's going to be interspersed throughout  
9 the development. So, I think that there are ways that  
10 even though we may not be able to stop some of this  
11 development -- in some cases we would like to stop  
12 it -- but there are some ways where we can actually  
13 integrate it in with the environment.

14 I have a lot more to show you but I think  
15 we're running out of time. I think with that I'll  
16 leave it at that project and I thank you for your time  
17 and I would be happy to entertain any questions that  
18 you have. Thank you.

19 (Applause)

20 MR. HAMM: Thank you very much, Keith. As  
21 a native of Wyoming, I was very happy to see about the

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1 good work you're doing out west, so -- again if people  
2 have questions that they would prefer to write, they  
3 can pass them down the center aisles and if you would  
4 prefer to ask the question, microphones will be brought  
5 up as well.

6 MR. BOWERS: One second. I do have some  
7 slides of Columbia which I should get to. Okay? So I  
8 apologize for that. So we'll see -- let me click  
9 through this real quick. So, back to Columbia. Okay.  
10 So, one of the things, as Greg said, we've been working  
11 with Greg for a short time period now but we have been  
12 engaged on this project for about a year, year and a  
13 half. And one of the first things that we were asked  
14 to look at is sort of take a perspective of not just  
15 looking at the Town Center but looking at the region as  
16 a whole and begin to understand some of the ecology and  
17 some of the ecological processes that are going on.

18 And I don't pretend to be an expert at all  
19 in some of these areas; in fact, a lot of my staff has  
20 done all the detailed work here, so, hopefully I can  
21 answer any questions that you have on this. We're only

1 still just getting into this and uncovering things and  
2 I think what's going to be exciting over the next month  
3 to the next coming years is working with people  
4 throughout the community and learning more about  
5 Columbia.

6           One of the things that we like to do is  
7 take a step back and look at patterns, and look at  
8 patterns from a regional standpoint all the way down to  
9 a site-specific standpoint. And that's what we did  
10 here. This is Town Center right here. Here's 29 right  
11 here. Here's the lake. We began looking at, in this  
12 case, watersheds in the stream systems here and  
13 beginning to understand from a regional context how  
14 Columbia Town Center and Columbia area is connected and  
15 what are the shapes of the watersheds in the stream  
16 systems throughout. And now we've started layering in  
17 county parks and saying, okay, what are the big green  
18 open spaces that we have in the area and what are the  
19 relationships to those open spaces to some of these  
20 stream corridors and to the Columbia Town Center?

21           Then we began looking at publicly-owned

1 lands as well and starting layering those in and  
2 looking at those green spaces. Then we began looking  
3 at undeveloped lands and layering that layer in and  
4 then we began looking at lands with open spaces, and  
5 saying okay, here's sort of our green infrastructure  
6 network and our stream systems throughout here, how  
7 does that relate to Columbia Town Center right here,  
8 what are we a part of in terms of, in this case, the  
9 Little Patuxent corridor that runs down through here,  
10 which is really important.

11 In fact, the State of Maryland, through  
12 their Green Print Program, which is looking at green  
13 infrastructures throughout the state, has highlighted  
14 Little Patuxent River, and that corridor is a very  
15 important corridor for the State of Maryland. But we  
16 again look at other patterns of stream corridors of  
17 open space. And how can the redevelopment of Columbia  
18 Town Center be a catalyst to not only enhance or  
19 protect some of these corridors but actually enhance  
20 and restore some of these corridors as well.

21 Now, we started focusing more carefully on

1 Columbia Town Center here. Again, this is looking at  
2 streams and floodplains, the relationship they have to  
3 the Town Center, and we overlaid that with protected  
4 public space and that network of green space through

5 here. Then we began looking at forest interior spaces.  
6 Forest interior spaces are patches of forest greater  
7 than 50 acres and at least have or are at least 300  
8 feet from the edge. And those kinds of forest are  
9 disappearing fast in Maryland and disappearing fast  
10 throughout the East Coast.

11           And it's really important because there are  
12 certain species that only live in those interior  
13 forests and once those interior forests go away, the  
14 species tend to go away. And we wanted to find out  
15 where there are interior forests in the landscape here  
16 because whatever we do, we want to first do no harm but  
17 second, there are other ways of actually enhancing or  
18 increasing interior forests in the woodland community  
19 here.

20           Then we began looking at barriers to some  
21 of these corridors. They're barriers to enhancing this

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1 green infrastructure network. So we're all aware of  
2 what those barriers are and whatever we can do in terms  
3 of the redevelopment of Columbia Town Center or  
4 leverage from what we're doing with other public and  
5 private organizations that begin looking at taking down  
6 those barriers and enhancing some of those corridors  
7 through there.

8           Then we began looking at actually  
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9 characterizing the different types of woodlands on-site  
10 and we did that based on the dominant vegetation type  
11 within those woodlands. And I think we came up with 22  
12 different types or different forest communities  
13 throughout the area. Then we analyzed them. We looked  
14 at what we call flora species richness, we looked at  
15 structural diversity, we looked at invasion from  
16 non-native species, we looked at proximity to other  
17 forested areas and we weighted all that and we assigned  
18 values to these different areas to come up with what  
19 areas are more valuable from an ecological process  
20 standpoint, what areas aren't so valuable and how can  
21 we possibly go in and enhance or restore those areas

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1 that aren't so valuable.

2 We overlaid that with the floodplains and  
3 hydric soils, because we know how important floodplains  
4 and hydric soils are. Hydric soils are soils that are  
5 saturated or wet, usually indicative of wetlands or  
6 riparian areas near streams. They're important. We  
7 overlaid that with steep slopes, because we recognize  
8 the erosion potential of steep slopes and maybe that  
9 takes on a more important standpoint. And then we came  
10 up with sort of our initial findings. And really  
11 quickly again, this is just all preliminarily but again  
12 this corridor running right through here, the Little

13 Patuxent corridor, we believe is really important and  
14 from a fragmentation standpoint we need to minimize any  
15 fragmentation. We need to go in and enhance that  
16 corridor the best we can.

17 I just heard recently that they're going to  
18 be rehabbing a sewerline through there, which isn't  
19 going to help our case but maybe there's ways of  
20 working with Howard County and working with the  
21 agencies involved in that, to minimize impacts through

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1 there. But we will also recognize that this stream  
2 corridor up through Symphony Woods, which migrates back  
3 up through this way, is an extremely important corridor  
4 that we're going to try to maintain and preserve and  
5 minimize any fragmentation of that corridor.

6 Then we looked around the lake and we are  
7 aware of a lot of the issues with the lake and the  
8 sedimentation and looking at making sure that whatever  
9 we do in Columbia Town Center, we're actually enhancing  
10 the water quality of the lake and we're enhancing the  
11 habitat of aquatic and riparian diversity of the lake  
12 as well.

13 And then we started looking at how can we  
14 start bringing in green infrastructure, what we call  
15 "green fingers" into the more urban environment, and do  
16 it in a way that we're preserving invasive corridors in

17 these green open spaces but actually beginning to bring  
18 that in, everything from rooftop gardens to green walls  
19 to green infrastructure, using the different types of  
20 street trees, those types of things.

21 And so what we're really doing is, how can

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1 we integrate environmental ecological processes,  
2 environmental functions, biodiversity, habitat into the  
3 urban center of Columbia Town Center in a way that not  
4 only provides a great place to be from a liveability  
5 standpoint, from a dynamic, you know, exciting place to  
6 be, to live, to shop, to work or play, but how can we  
7 integrate that in with the ecological resources that we  
8 have around here that are so valuable? And so that's  
9 what we're going to be working and striving to do over  
10 the next month to hopefully years from now and working  
11 with all of you in order to try to do that. Thank you.

12 (Applause)

13 MR. BOWERS: Now we're ready for questions.

14 MR. HAMM: Thank you again, Keith. I  
15 wasn't sure if you were going to get to the Columbia  
16 portion during the question and answer or not but thank  
17 you for addressing it. One of the other things that we  
18 have asked Keith to do in addition to the scope of work  
19 that he began over a year ago is to really take a step  
20 back and look at not only Columbia Town Center but

21 obviously take a look at some of the current stormwater

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1 conditions as well as the impacts of the subwatersheds.  
2 And that's something that we are looking at very  
3 carefully and hope to be able to tell more about in the  
4 near future. So with that, Barb Nicklas from General  
5 Growth Properties and Keith will be delighted to answer  
6 your questions.

7 MS. NICKLAS: Okay, guys. So, the drill is  
8 the same as the past time. Anybody who would like to  
9 write the question down, if you would pass it to the  
10 center aisles and then anybody who would like to  
11 actually verbally ask the question of Keith can raise  
12 their hand. And we have people in the back with  
13 microphones. And we try to alternate, one from the  
14 audience, one from the cards. For any of you, by the  
15 way, who have looked on our Website and are wondering  
16 what happened to the presentation from last time, we do  
17 have the transcript up on the Website. We had some  
18 issues with the videotape from the second one. It will  
19 be up but it's just not up yet and we actually expect  
20 that this one will be up much, much faster. So, we  
21 have been and will continue to put both a videotape of

1 these sessions as well as a transcript for anybody who  
2 would rather read it.

3                   And the other thing I have to tell you all  
4 is that we are taping, as you know, so just, so that  
5 you all know that and know if you ask a question in  
6 person you will be on the Website. Okay. So, having  
7 said that, Devron and Candy, if you would take a  
8 question from the audience.

9                   MR. HOWELL: Yes. My name is Sherman  
10 Howell and my question has to do with affordable  
11 housing in Columbia while preserving our natural  
12 resources. Now, I spend a lot of time on the Eastern  
13 Shore with the Leadership Maryland and we studied a lot  
14 of the stormwater, runoff, whatever, involved in the  
15 Chesapeake Bay. And I also follow an organization,  
16 which is an international organization, called the  
17 Affordable Housing Institute. They focus on  
18 biodiversity and developing affordable housing  
19 ecosystems. Now, I'm quite certain you're fully aware  
20 that we're looking to develop a walk-over city here in  
21 Columbia, and that means more density. Okay?

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1 VOICE: More density.

2 MR. HOWELL: More density, more density.

3 So here's my question. What ecological design on  
4 improving on what we have can successfully, we can  
5 successfully get to deal with greater diversity  
6 downtown and even in some of the village centers, as  
7 well as comply with LEED and Smart Growth initiatives.  
8 Again this is on affordable housing in Columbia by  
9 preserving our natural resources.

10 MR. BOWERS: Is this mike on, speaker on?  
11 Can you hear me?

12 VOICES: Yes.

13 MR. BOWERS: Okay. I think that is a great  
14 question and it can be answered on several levels or  
15 several scales. One is that I think we're seeing all  
16 over the country where a lot of small towns and larger  
17 cities are looking at increasing density to accommodate  
18 future growth and for affordable housing. We're doing  
19 quite a bit of work out in San Francisco, where you can  
20 imagine the affordable housing problems they're having  
21 out there on the peninsula.

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1 And one of the debates that's going on is  
2 do we provide more infill and more density along the  
3 peninsula in San Francisco, increase that density or do  
4 we allow more sprawl south of San Jose and out in the

5 Sacramento Valley and what are the environmental  
6 impacts associated with each. And I would make the  
7 argument that in some areas we need to look at  
8 increasing density because I think if we increase  
9 density it means more opportunities for mass transit  
10 will work economically, it means a more livable, more  
11 exciting, more vibrant town area where, as you  
12 mentioned, you can walk to different services, whether  
13 it's the movies or shopping or schools or work, and  
14 that you would be then saving the resources of the  
15 urban sprawl that is occurring out in the suburbs or  
16 what's called the ex-burbs now, out even further.

17 So, I think we have to take a look at that  
18 from a regional level, number one, and number two,  
19 scale down that as we increase density in these urban  
20 environments, there will be areas where we're not going  
21 to get all the habitat or be able to restore all the

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1 ecological functions of the natural landscape in there  
2 but how can we begin to integrate in ecology and  
3 biological living systems into an urban environment.

4 And I think there's a lot of examples that  
5 are being done now throughout the world that are  
6 beginning to address that, everything from, as I showed  
7 up there, the stormwater, how to harvest rainwater, how  
8 to use that rainwater for drain systems, for irrigation

9 systems, how to use stormwater in an artful or civic  
10 way, how to improve water quality, how to -- we just  
11 recently renovated or built a new office and put in an  
12 interior green living wall in our office, which is the  
13 first one in the United States that actually is hooked  
14 up to the ventilation system and filters all the air in  
15 our office.

16 But you can do interior and exterior green  
17 walls. You can do roof gardens or green roofs.  
18 There's ways of even how you design street trees in  
19 urban environments, number one, using a variety of  
20 different species, and number two, using canopy and  
21 subcanopy trees provides a real diversity for songbirds

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1 and other insects where what we typically do in street  
2 trees is just put a monoculture of street trees, all  
3 the same size, all the same structure, and there's ways  
4 of even making that more diverse, making it more  
5 exciting, making it more appealing esthetically but  
6 also providing more habitat.

7 There's also now technologies coming out  
8 where we can take stormwater off streets and sidewalks  
9 and use that in wells underneath the sidewalks to  
10 actually supply waterless trees and vegetation growing  
11 along the edge of the streets so we don't have to  
12 artificially maintain them. So, if we start thinking

13 about these kind of things from a whole systems  
14 standpoint, we begin to realize some of these solutions  
15 that really not only increase biological diversity and  
16 habitat but also enhance the whole quality of life and  
17 liveability.

18 So, I think that more and more we're  
19 recognizing how to do that and starting to incorporate  
20 that into urban areas. And I think Columbia Town  
21 Center, you know, based on the vision that Rouse had

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1 when he envisioned Columbia, what a way to continue  
2 that vision and really take it into the, you know, the  
3 middle and end of this century and even into the next  
4 century.

5 MS. NICKLAS: Okay. Question from out  
6 there on the card. "Should we be going ahead with  
7 dredging our lakes before restoring the watershed?"

8 MR. BOWERS: Wow. Well, I think both is  
9 needed. I think both, you know, if you're interested  
10 in maintaining the depth and quality of the lake in  
11 terms of potential algae blooms and nutrients, and the  
12 sediment has already accumulated in there, then you  
13 have to dredge the sediment but I also think that that  
14 needs to go hand in hand with looking at doing best  
15 management practices throughout the watershed to  
16 address water quality issues, to address stream erosion

17 and sediment transport through these stream systems to  
18 try to minimize that in the future.

19 MS. NICKLAS: Someone from out there?

20 MS. JEFFRIES: Hello. Can you hear me?

21 Does it work?

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1 VOICES: Yes.

2 MS. JEFFRIES: Okay. I'm Elaine Jeffries.

3 And I never thought about celebrating water and I do  
4 know that it's our most important item for this world.  
5 Last month we had Gail Lord here and she came up with  
6 the idea -- and I really was excited by it -- that our  
7 downtown should have a structure, a museum, that is  
8 something the whole world would be interested in and  
9 serve Columbia very well.

10 So, my suggestion is to bring together your  
11 two ideas and we have a Celebrate Water Museum along  
12 with our art and place for people to do art, and in it  
13 would be -- I just started to think, when you said  
14 celebrate water; I immediately thought about that last  
15 month. And we can have green walls. We can places  
16 where children play. We can have scientists from all  
17 over the world come. We can have scientists there.  
18 I'm sure there's lots of grant money for things like  
19 that, too, which is more important. What do you think?

20 (Applause)

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MR. BOWERS: Sounds great.

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1 MS. NICKLAS: Sounds like a great idea.  
2 Oh, sorry. You're supposed to be answering. Okay. A  
3 question from out there from the card. "You expressed  
4 a concern about invasive non-native (sic) species but  
5 won't native (sic) species be under stress as we  
6 experience global warming?"

7 MR. BOWERS: Yes. They're non-native  
8 species.

9 MS. NICKLAS: Non-native.

10 MR. BOWERS: Not non-native species.

11 MS. NICKLAS: I read the card but -- nope,  
12 it did say native. Sorry to whoever wrote it.

13 MR. BOWERS: So, so, one of the things was,  
14 one of the issues that's flying around the science of  
15 conservation and restoration is global warming and how  
16 that's going to affect our ecosystems. And, in fact,  
17 one thing a lot of the scientists are saying is that we  
18 can look at our past ecosystems and use that as sort of  
19 a benchmark on how to restore our ecosystems for the  
20 future but we also have to look at our crystal ball and  
21 think ahead about what's happening from a climate

1 change standpoint, from pollution, from other ways that  
2 we've impacted these natural resources or these  
3 ecosystems.

4                   And the term that's being thrown around now  
5 is called novel ecosystems, which means that we try to  
6 learn as much as we can from the past but we recognize  
7 that the future is going to give us something totally  
8 different. And how can we set on a trajectory right  
9 now to restore an ecosystem or restore the woodlands  
10 out here or restore the stream systems in such a way  
11 that they're adaptive over time but they're also  
12 resilient? And I don't think anybody has really  
13 figured that out yet but we're talking about it a lot.  
14 We're thinking about it a lot. We're thinking about  
15 how these ecosystems will evolve, the climate change,  
16 how they'll evolve with increasing nutrients in the  
17 soil and in the air and how we can set these ecosystems  
18 up so they can adapt over time but still be somewhat  
19 resilient to the small changes that go on. So, it's an  
20 issue that I don't think anybody has answers on but  
21 we're all thinking a lot about it and are striving to

1 come up with ways to go about doing it.  
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2 MS. NICKLAS: Okay. Thanks. Out here?

3 PARTICIPANT: Okay. I know that Columbia,  
4 one of the goals of Columbia was to enhance the land,  
5 in fact, enoble the land, is what Jim Rouse said. So  
6 today, I mean -- so they did what they felt I'm sure  
7 were best practices at that time. So, today could you  
8 explain what the key components of sustainability are?

9 MR. BOWERS: Wow. I think, I mean, I could  
10 explain what my impression of key components of  
11 sustainability are but I would, I mean, that's really a  
12 community decision on what you all think the key  
13 components of sustainability are for Columbia. In  
14 terms of the natural resources, I think Columbia was  
15 pioneering in its time in terms of setting up these  
16 stream valleys and green corridors and pathways and  
17 done a tremendous job in sort of setting that framework  
18 up.

19 Now it's looking at sort of the impacts  
20 that have happened over time in terms of invasive  
21 species, in terms of erosion of some of the stream

1 channels, some of the things that we're now discovering  
2 that we didn't know thirty or forty years ago that  
3 urbanization and suburban development would cause. And  
4 so now it's a matter of going back in and looking at  
5 those problems and those issues and figuring out what

6 are the best solutions to try to fix them. And, you  
7 know, economics, liveability, how successful we may be  
8 in the future all have to be taken into consideration.

9           But I would challenge all of us -- and I  
10 know this is a discussion we have had with the design  
11 team -- that really we shouldn't be telling you what we  
12 think sustainability is, you should be telling us what  
13 sustainability is, what you want to be sustainable in  
14 the future. And that's what's going to be lasting.  
15 And, you know, one of my colleagues in Massachusetts,  
16 he's fond of saying that the hardest thing about  
17 sustainability is sustaining sustainability. Right?  
18 We can put in a green roof, we can put in one of these  
19 water quality features but if we walk away from it,  
20 it's going to deteriorate and fail. How do we set up  
21 the institutional framework, the institutional

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1 commitment, the stewardship to sustain sustainability?

2           And I think that's probably one of our  
3 greatest challenges, not just here but in every place  
4 that we work, is how to get the community engaged and  
5 involved enough to do that. And I think that to me  
6 would be really the key to success in this project or  
7 any of the other projects we're working on, is to  
8 really engage the community that way and get them to  
9 sustain sustainability for the long-term.

10 MS. NICKLAS: Okay, Keith. "What do you  
11 see as the biggest challenge for Columbia in terms of  
12 restoration and sustainability."

13 MR. BOWERS: What I just said.

14 MS. NICKLAS: I see. Okay. All right.  
15 There was actually a very interesting one here. "The  
16 Little Patuxent River has been straightened in lieu of  
17 nature meandering streams. It has been recommended  
18 that the stream should go back to meandering in order  
19 to minimize the silt going to the lake. Do you concur  
20 with this recommendation and could you talk about the  
21 procedure if taken to deal with the Corps of

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1 Engineers?" Sorry if I didn't read this right.

2 MR. BOWERS: So, a lot of times I'm asked  
3 about environmental problems and what the fix is, and I  
4 feel like a doctor, when somebody just comes and says,  
5 "Well, I've got something on my leg. What do I do to  
6 fix it?" And I, really without studying it or  
7 diagnosing what the problem is I can't say whether that  
8 is the real fix for that. But what I can say is that I  
9 think we know enough about stream dynamics, about  
10 hydrology and hydraulics, about sediment transport,  
11 about the way streams operate that we recognize that  
12 when we put lakes, artificial lakes and stream valleys  
13 or stream systems that don't typically have lakes, that

14 we interrupt that sediment flow process, that in some  
15 cases we relocate the stream to the side and straighten  
16 it, and from a hydrology, hydraulic standpoint that  
17 begins to affect or accelerate in some cases erosion  
18 and begins to either accelerate or decelerate  
19 sedimentation in the stream channel and it begins to  
20 cause problems in terms of habitat and biological  
21 diversity.

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1           So, I think anytime we can take a system  
2 and turn it back or restore it back to its sort of  
3 natural dynamic, natural process, natural function,  
4 then we begin to eliminate lot of stressors that I  
5 talked about earlier and possibly minimize the amount  
6 of sedimentation that's going into some of these lakes.  
7 So, it could very well be a solution that we should  
8 take a serious look at.

9           PARTICIPANT: I can't tell you how thrilled  
10 I am that in the two years that I've been following  
11 this that we've gotten from, maybe we ought to have  
12 some voluntary programs around green buildings to --  
13 green buildings, well, that's just barely breaking the,  
14 not even breaking the surface, that we need to look  
15 beyond that. I'm just absolutely thrilled that that  
16 kind of mindset is where we are now. And, as Barbara  
17 said, the first goal of Columbia was to respect the

18 land and to enoble the land -- I love that -- and that  
19 whatever you and your firm can do for us, with us, that  
20 would be wonderful. But I have a feeling that your  
21 biggest impact will be helping us, leaving us as a

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1 community with the capability to use this kind of total  
2 systems thinking, to look at all the different aspects  
3 of this issue.

4                   Because, the thing that keeps gnawing at  
5 me, as we look at downtown, as we look at Columbia in  
6 general, as we look at the region, is we have this view  
7 of, well, you talk about barely legal, let's just  
8 barely make it legal and that will be okay with them,  
9 let's just barely make it legal over there but not look  
10 at well, if we do that over there, what does that do to  
11 a village center over here or what does that do to a  
12 downtown over there when we allow that to happen. So,  
13 taking that whole ecological view of the development  
14 will be just a wonderful legacy to leave. And thank  
15 you.

16                   MR. BOWERS: And I would even expand on  
17 that. It's more than an ecological view. It's looking  
18 at it from an ecological, economic and cultural,  
19 because I think those three main categories have to be  
20 looked at together in terms of looking at a whole  
21 system. So, right, I mean, if Columbia Town Center

1 doesn't work economically, it's not going to be  
2 sustainable no matter how much, how many green  
3 technologies we place in there. If it's not going to  
4 be an exciting place to live, it's not going to be  
5 sustainable. So, liveability to us, in terms of the  
6 way we think about sustainability, liveability has to  
7 be one of the major components there. If people can't  
8 make a living, if they aren't excited to be there, if  
9 they don't have affordable housing, if, you know,  
10 they're frustrated all the time, then it's not going to  
11 be sustainable.

12 MS. NICKLAS: Okay. We have a very  
13 practical question here. "Can we maintain  
14 weed-and-pest-free green lawns in downtown Columbia  
15 without polluting our watersheds in the Bay?"

16 MR. BOWERS: Absolutely. In fact, there  
17 are golf courses all across the United States now that  
18 are using totally organic methods to maintain their  
19 golf courses. So, there's no reason why we couldn't  
20 implement totally organic lawncare systems throughout  
21 and to significantly reduce or eliminate some of the

1 nitrogen and phosphorous and chemicals that  
2 are impairing the way.

3 MS. NICKLAS: Out here.

4 MS. THOMPSON: Hi. I'm Louisa Thompson  
5 from Wilde Lake. You mentioned that there are  
6 floodplains and hydric soils and steep slopes running  
7 throughout Town Center and those are places where you  
8 can't do infiltration types of stormwater management.  
9 But some of the types of stormwater management you  
10 mentioned I think can be done. So, two-part question.  
11 Do you have a sense yet of how much land would be  
12 available for infiltration and then could you describe  
13 the alternatives?

14 MR. BOWERS: That's a great question  
15 because we were just discussing that earlier this  
16 morning, and, you know, the State of Maryland has  
17 recently revamped their stormwater management because  
18 even though they were one of the first in the country  
19 to develop stormwater management regulations, they  
20 recognized that the regulations they developed in some  
21 cases were doing more harm to some of the stream

1 channels than was actually doing good.



6 days, you'll get it saturated but then you have to  
7 provide storage big enough to hold that water.

8                   In other areas we'll be looking at treating  
9 water through filtering systems, biological filtering  
10 systems or in some cases maybe even mechanical  
11 filtering systems and then taking that water and  
12 distributing it further down the landscape or out into  
13 the landscape or back into the stream channel but it  
14 will go through some kind of filtering process before  
15 it's discharged back into the stream channel. So,  
16 we're going to take advantage as much as possible with  
17 infiltration and then we'll be looking at other  
18 techniques.

19                   I think the other thing with stormwater  
20 that has been done historically is that we collect all  
21 the water in one place and try to manage it and that's

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1 really the hardest thing to do. The more we  
2 concentrate stormwater, the harder it is to then treat  
3 it and manage it. The more we can disperse stormwater  
4 and spread it out across the landscape or spread it  
5 within the soils that we have, the easier it is to  
6 treat in the long run. Although it might be a bit more  
7 expensive, it might a bit more maintenance-intensive,  
8 it's a lot better from an ecological standpoint.

9                   And then the last thing that we always like

10 to talk about stormwater that nobody really talks about  
11 because they think that bioretention and these  
12 structural devices are more sexy, but you know what?  
13 Trees do a tremendous amount of stormwater management,  
14 a tremendous amount. And, the more we can provide  
15 canopy cover over -- imagine if from the air you  
16 couldn't even tell that Columbia Town Center was there;  
17 you couldn't even see the roof of the mall. Imagine  
18 what that would be like if a canopy covered the whole  
19 area through there. Then your stormwater management  
20 would significantly decrease. And, so, the more we can  
21 get trees and canopy cover throughout, the better off

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1 we're going to be and that's something we're going to  
2 strive for.

3 MS. NICKLAS: Okay. A couple more. I know  
4 it's 9 o'clock now but we had Keith speak a little  
5 while longer so we started the Q and A a little late so  
6 I'll take a question from the card and a question from  
7 out there. "Any example of Biohabitat restoration that  
8 has not lived up to its expectation as planned; what's  
9 the maintenance effort to prolong its viability?"

10 MR. BOWERS: I always said if I couldn't go  
11 back to a project and find something wrong, then it's  
12 time for me to get out of the business. So, I have to  
13 say that every project -- I mean, you know, trying to

14 restore nature is extremely complex and extremely  
15 difficult. There's always curve balls that are thrown  
16 your way and always things that don't end up the way  
17 you had originally planned. And one of the things that  
18 we've learned over the past 24 years is you really have  
19 to take an adaptive management approach to conservation  
20 and restoration and, you know, these green practices,  
21 in other words, that you can try to predict and

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1 engineer as much as you can in the beginning when you  
2 implement something but you've got to maintain it.  
3 You've got to manage it over time. You cannot walk  
4 away from it. Even these rain gardens that are being  
5 put in, that is concentrating all the pollutants in  
6 that one area. And that's great because they're not  
7 being dispersed downstream in the streams and rivers  
8 and the Bay but that's going to require maintenance and  
9 it may require digging up that rain garden in ten or  
10 fifteen years and completely redoing it.

11 So, these green, you know, when we start  
12 looking at sort of these green infrastructure  
13 techniques and combining them in urban areas, they will  
14 require maintenance and management and that goes back  
15 to sustaining sustainability. Imagine if we had jobs  
16 that were created throughout Columbia where we had  
17 stewards of the land, and their job was on the land to

18 treat invasive species and manage water quality devices  
19 and manage green roofs and that type of thing; it would  
20 be a great economic stimulus program. It would be  
21 great green jobs and you would actually be the steward

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1 of the ecological systems of Columbia. So, I think,  
2 you know, we're naive if we think that we can implement  
3 these things and then walk away, that they're going to  
4 take long-term care and management.

5 MS. NICKLAS: Okay. We'll take another  
6 question from --

7 PARTICIPANT: You were talking about the  
8 lake being sediment holders. Are they a net negative  
9 and what in your perspective is the value of having the  
10 lake -- which are very pleasant to walk around -- but  
11 in this kind of ecological perspective?

12 MR. BOWERS: Well, you can take a purist's  
13 standpoint and say that lakes aren't natural to this  
14 landscape and that the lakes interrupt these stream  
15 valleys and fragment these streams. Then you can look  
16 at lakes and say well, yeah, but they also provide  
17 maybe some amphibian habitat, they provide some  
18 shoreline wetlands, they provide recreational  
19 opportunities, they provide esthetic value and they  
20 might even provide some cultural value. And, so, you  
21 have to kind of weigh those values with the potential

1 ecological impacts that they might have. And, so, I  
2 don't have a particular answer one way or the other.  
3 Again, I think that's a call the community has to make.  
4 But most certainly lakes in Maryland when they're put  
5 into stream valleys or put right on a stream channel do  
6 have negative effects on the stream, both upstream and  
7 downstream, and unless they're managed very carefully,  
8 those effects are mitigated or minimized and they will  
9 keep happening. So, you know, again I think it's a  
10 community decision on how valuable the lakes are and  
11 what kinds of functions and values they provide for the  
12 community.

13 MS. NICKLAS: Thank you, Keith, and thanks  
14 again to all of you for coming.

15 (Applause)

16 MS. NICKLAS: As Greg said, we have one  
17 more of these community forums where we are bringing  
18 our consultant team in -- that's next Wednesday -- and  
19 it's Jaque Robertson of Cooper, Robertson & Associates.  
20 And we should have this up on the Website probably the  
21 beginning of next week. The Website is there for

1 questions and comments and we are cataloging all your  
2 questions and comments. And again we really appreciate  
3 you coming and all of the input and look forward to  
4 carrying on the dialogue. Thank you.

5 (Forum concluded at 9:04 p.m.)

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1 State of Maryland.

2 Baltimore County, to wit:

3 I, ROBERT A. SHOCKET, a Notary Public of  
4 the State of Maryland, County of Baltimore, do hereby  
5 certify that the within-named proceedings personally  
6 took place before me at the time and place herein set  
7 out.

8 I further certify that the proceedings were  
9 recorded stenographically by me and this transcript is  
10 a true record of the proceedings.

11 I further certify that I am not of counsel  
12 to any of the parties, nor in any way interested in the  
13 outcome of this action.

14 As witness my hand and notarial seal this  
15 7th day of April, 2008.

16

17

18

19

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Robert A. Shocket,

Notary Public

20 My Commission Expires:

21 November 1, 2010